Noun-Noun compounds in Dangme

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This paper examines the class of Dangme compound words that consist of two nouns within the framework of Construction Morphology. The paper indicates that the constituents of Dangme noun-noun compounds are either simplex or complex, with the latter being compounds or affix-derived complex nominals. The study shows that the constituents of N-N compounds in Dangme may not share the same semantic characteristics; yet a covert relation such as "part of", "ingredient of", "causer of" and "location of" holds between them, and this unexpressed relation constitutes pragmatic information that affects the interpretation of the compounds. It is shown that some nouns may lose part of their core semantic properties when they occur as constituents of compounds, resulting in the non-compositionality of the compounds in which they occur. This is the case especially with exocentric N-N compounds in the language which would have be interpreted metonymically or metaphorically because their meanings are constructional properties rather than the compositional function of the meanings of their constituents.

1. Introduction

Compounds are characterised as words that are formed from other already existing words. They may be classified in various ways, using criteria like the presence and position of a head constituent, the semantic properties of the output and the syntactic category of the constituents and/or of the output (Scalise & Bisetto 2009a, 2009b; Scalise & Vogel 2010; Bisetto & Scalise 2005; Dressler 2006; Appah 2013a; Appah et al. 2017; Bauer 1998; Lieber 2009). Basing the classification on the syntactic category of the constituents yields compounds that combine various word classes, including noun-noun, noun-verb, verb-noun, adjective-noun, and noun-adjective. Each such compound type comes with varying properties that may be the subject of interesting linguistic analysis.

Although compounding is acknowledged as a prominent word formation process in Dangme, a Kwa language spoken in Ghana, compounds in the language have been largely under-researched. Therefore, the purpose of this paper is to make a little contribution through the study of the nature of Dangme noun-noun compounds like those in Table 1.

Table 1: N-N compounds in Dangme

Base 1	Gloss 1	Base 2	Gloss 2	Compound	Translation
gɔ̀	pawpaw	*tsō*	tree	*gɔ̀ tsō*	pawpaw tree
tsopà	medicine	*tsɛ*	owner	*tsopàtsɛ*	herbalist
sɔ̀lēm	prayer	*tsũ*	building	*sɔ̀lem tsũ*	church building
wɔ́	deity	*yò*	woman	*wɔ́ yò*	priestess
mã̀	town	*tsɛ̄*	father	*mã̀tsɛ̄*	king
tɛ́	stone	*sà*	mat	*tɛ́ sà*	boulder

We discuss the structure and semantic properties of the compounds, paying particular attention to the relations existing between the constituents of the compound and whether or not the meaning of the compound as whole is a compositional function of the constituents. We observe that, in terms of structure, Dangme noun-noun compounds are binary-branching, mostly right-headed constructs, and their constituents can themselves be complex, either compounds or derived words. Also, the semantic relations between the constituents vary, although there are some recurrent patterns, including compounds in which the referent of one constituent is *part, ingredient, cause*, *location*, etc. of the referent of the other constituent. It is observed that there are some compounds whose meanings cannot be deduced from the literal meanings of the compound constituents. Such exocentric compounds have to be interpreted by means of some figure of speech such as metaphor and metonymy.

In the rest of the paper, we present a brief characterization of compounds in section 2, a sketch of the Dangme language in section 3 and a brief introduction to the framework of Construction Morphology (Booij 2010b), in section 4. We then discuss the data on Dangme noun-noun compounds in section 5, employing ideas and formalism from Construction Morphology. We conclude the paper in section 6.

2. Characterizing compounds

As noted above, compounds are said to be formed by combining already existing forms. Although this characterization sounds simple, linguists differ on what they see as the nature of compound constituents (cf. Bauer 2005, 2006; Lieber & Štekauer 2009; Scalise & Vogel 2010; Appah 2013b; Montermini 2010; Omachonu & Onogu 2012; Ralli 2013). This is because constituents of compounds seem to vary within and across languages, as seen in the varied terms used to describe compound constituents, including *roots* (Harley 2009), *stems* (Lieber 2004; Plag 2003; Ralli 2009), *bases* (Katamba & Stonham 2006; Appah 2013b), *words* (Spencer 1991; Fabb 1998) and *lexemes* (Bauer 2003; Haspelmath & Sims 2010). This lack of agreement on the nature of compound members seems to result from the varied nature of compound constituents across languages. As Scalise and Vogel (2010) observe, the items referred to as stems, roots and words are different elements in different languages. They note, for instance, that stems in Greek are bound forms while in English, they are free forms. Additionally, words in some languages (e.g., Mandarin Chinese) tend to be monomorphemic whereas in a language like Swahili, they usually consist of several morphemes.

These issues have prompted the suggestion that compound constituents and the compounding process should be defined on language-specific bases, taking into account the morphology of the language (cf. Aikhenvald 2007). However, as noted by Appah (2013b: 152), this suggestion will "result in *ad hoc-ness* and would not advance the cause of developing a general theory of language". Guevara and Scalise (2009) attempt to deal with the issues in extant definitions of compounding by approaching it in categorial terms: $[X \; r \; Y]_Z$, where X, Y and Z are lexical categories and 'r' represents an unexpressed grammatical relation between X and Y. This definition assumes that a compound has a lexical category Z which may be different from its constituent X or Y, or both (cf. Scalise & Vogel 2010).

Another well debated aspect of the study of compounding is how to account for the semantics of especially noun-noun compounds. Two main views have been canvassed, which Spencer (2011) characterizes as *Lees' solution* and *Downing's solution*, after Lees (1960) and Downing (1977). Lees' solution assumes that there is a small(-ish) set of general semantic

relations in noun-noun compounds. The assumed finite set of semantic properties includes general categories like *appearance* (catfish), *event participant – agent* (flower seller), *purpose* (writing desk), *location* (garden chair), and *patient* (swan song). In this approach, the meaning of a compound is constructed by enumerating the set of semantic properties of the head and corresponding appropriate properties in the non-head based on which a paraphrase is constructed which defines the compound. Thus, in this approach, *tree house* is a possible compound because a house has to have a location, which is named by the first constituent, etc. (cf. Spencer 2011: 490).

The controlling assumption in Downing's solution is that the relation between the constituents of compounds is specified pragmatically and hence could be any relation at all. Proponents believe that there is some arbitrary relation ℜ or 'R' which is pragmatically and contextually determined (Allen 1978). This relation may very well be semantically definable (e.g. 'N2 is located at N1). However, it does not necessarily need to involve any semantic predicate that is associated with any lexeme in the compound. It is assumed that on a given occasion of use, a hearer is expected to construct some plausible (though not necessarily unique) relation between a modifier and a head. Given this understanding, a compound like *bike girl* can denote a girl with some relation to the notion 'bike' (e.g. she has just left hers in the driveway, she rides to school on a bike, she mends bikes for a hobby/living, etc.). Similarly, *pea princess* can have many different interpretations which will be limited only by the speaker's/hearer's imagination. Also, in an imaginary society where roads are owned by individual and can be bought and sold freely, so that people can specialize in selling streets, a compound like *street seller* could refer to one who sells streets (Spencer 2011; Appah 2015).

Downing's solution approach to the semantics of compound is what underpins the categorial definition of compounds proposed by Guevara and Scalise (2009). This is also our view of the semantic of semantics of noun-noun compounds, and deal with it in section 5.

A relatively less controversial issue in the study of compounding is how to classify compounds, although varied approaches are adopted, depending on what is of interest. One approach uses the grammatical relation between the constituents, yielding three types of compounds – appositive, attributive and coordinate. Another approach, use the presence and/or position of a head constituent which determines the properties of the compound, including its syntactic category, so that if the head is a noun, the compound will be a noun, if it is a verb, the compound will be a verb, etc., and the head can occur on the left or right, giving left-headed and right-headed compounds. Headedness also leads to a distinction between endocentric (internally headed) and exocentric (externally headed) compounds. A third approach uses the syntactic category of the constituents, yield many combinations of word classes, including noun-noun, noun-verb, verb-noun and verb-verb.

In this paper, we are interested in noun-noun compounds, the most common type of compound in languages that employ compounding as a word formation process. They have been the subject of major studies in many languages (cf. Downing 1977; Clark et al. 1985; Bauer 1998, 2001, 2008, 2009, 2017; Giegerich 2004; Gagné 2002; Gagné & Spalding 2006, 2010; Guevara et al. 2009; Guevara & Pirrelli 2011; Libben et al. 2003). For example, Scalise and Vogel (2010: 10) observe that traditional work on compounds focused primarily on two structures – noun-noun compounds, also called root compounds, and the so-called synthetic (or verbal nexus) compounds, in which one of the constituents is a derived noun with verbal or adjectival base. Thus, even synthetic compounds are noun-noun compounds. Indeed, the literature shows that, although other compound types may not exist in a particular language, it is difficult to find a language that has compounding but lacks the class of noun-noun

compounds. We will mention research from a few African languages to illustrate this, given that the pervasiveness of noun-noun compounds in the familiar (European) languages is well documented (cf. Downing 1977; Bauer 1998, 2009, 2017; Scalise 1992; Ralli 2009, 2013).

Akrofi-Ansah (2012) identifies noun-noun, noun-verb and noun-adjective compounds in the Ghanaian language Lɛtɛ, with noun-noun being the commonest type. She observes that verb-noun and adjective-noun compounds in Lɛtɛ are mostly borrowed from Akan and are not productive in the language. Compound types identified in Akan are noun-noun, noun-adjective, verb-noun, noun-verb and verb-verb (Dolphyne 1988; Anyidoho 1990; Anderson 2013; Appah 2013a, 2013b). Some authors add Adjective-nouns compounds to Akan compounds. However, Appah (2013a) argues that Adjective-noun compounds do not exist in Akan because the supposed adjectives in such combinations are nominalized prior to the compounding process, making the resultant compound, noun-noun constructions. In C'lela, spoken in Nigeria, three types of compounds are identified, based on the syntactic categories of the constituents: noun-noun, noun-adjective and verb-noun, with noun-noun compounds being the commonest and most productive (Aliero 2013). In Igala, noun-noun, noun-verb, noun-adjective, verb-verb and verb-nouns compounds have been identified (cf. Omachonu & Abraham 2012).

Aside from occasional mentioning of compounding as a word formation process in the language, there are only two studies dedicated to compounding in Dangme. The first is Lawer (2017), which forms the basis of the present study. It discusses Dangme compounds in all its dimensions, positing many types of compounds in the language, including noun-noun compounds. The rest are noun-postposition, noun-verb, noun-adjective and verb-noun compounds. The other study is Caesar (2018), which also deals with many issues in the study of compounding and shows how they manifest in Dangme. She defines compounding as "a word formation process which involves the combination of at least two potential free forms belonging to open word classes" (Caesar 2018: 52), and posits various types of Dangme compounds, including noun-noun, noun-adjective, verb-noun, noun-postposition and what she calls clausal compounds reduced to personal and town names. This is where the paper begins to show weaknesses in analysis. For example, in the discussion, various affixes are separated from the closest bases and it is unclear whether they are meant to be affixes of the closest constituents or they belong to the whole compound, needless to say that whatever choice the author makes will have implication for the analysis.[1]

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[1] Again, she posits a class referred to as "clauses as compounds". See the example below.

Clause Phonetic					**Form**
Á	plɛ́	nɛ̀	á	hyɛ̀.	[áplɛ́nájɛ̀]
3PL	VP	CONJ	3PL.OBJ	VP	(a place name in Ada)
They turn and they look					
'They should turn and look.'					(Caesar 2018: 68)

The Author writes: "there are certain nouns whose meanings enable us to relate them to an underlying structure of a main clause. These nouns refer to humans, locations and events. These compounds are formed as a result of experiences or events that one might have gone through in life. This process may be described as agglutination. These are special simple and compound sentences, and I cannot at the moment provide a systematic analysis since all have subjects, verbs, objects, conjunctions, negation, adjectives, postpositions, etc. The merging of words of this kind to form a compound is that the compound may denote a place or a personal name."

The problem, in our view, is that the author fails to distinguish between compounding and lexicalization or univerbation. Thus, the criterions for compoundhood is rather loose, allowing for even pronominals and conjunctions to be accepted as compound members, although the author claims that the constituents of compounds

The present study aims to present a detailed study of Dangme noun-noun compounds with the view to unravelling their general and unique properties, showing to what extent they conform to identified crosslinguistic formal and semantic properties of compounds in general and noun-noun compounds in particular. We identify endocentric and exocentric types. We show that Dangme noun-noun compounds are mostly right-headed endocentric constructs in which the left-hand modifiers bear varying relations to the head and evokes various context-specific interpretations of the head. Another aim of this study is to show how the properties of noun-noun compounds may be accounted for in Construction Morphology.

3. Dangme language

Dangme is a Kwa language of the Niger-Congo phylum, spoken by about 1.4 million people in Ghana (Dakubu 1987). The language is taught in some basic schools in three out of the sixteen political regions in Ghana: Greater Accra Region, which is estimated to have the highest number of speakers, is followed by Eastern Region and Volta Region (Akortia 2014: 2). The dialects are Ada, Krobo, Ningo, Gbugbla, Sɛ and Osudoku (Dakubu 1988). It has been observed (e.g., Ameka & Dakubu 2008) that there are some small communities, east of the Volta that trace their origin to Dangmeland, though most of the people of these communities have shifted to Ewe as the language of their daily life. According to Caesar (2012: 19) there are also some speakers of Dangme in Nyetoe and Gatsi in Togo.

Dangme is the majority language in communities where it is taught as a subject in schools. The language is also studied at the tertiary level in the Department of Ga-Dangme at the University of Education, Winneba. The language also features on radio and television programmes and is one of the nine government sponsored languages in the country. The language shares borders with other Kwa languages, including Akan, Ga, Ewe and Hill Guan (Ɔkere and Lɛtɛ). Figure 1 represents the family tree of Dangme.
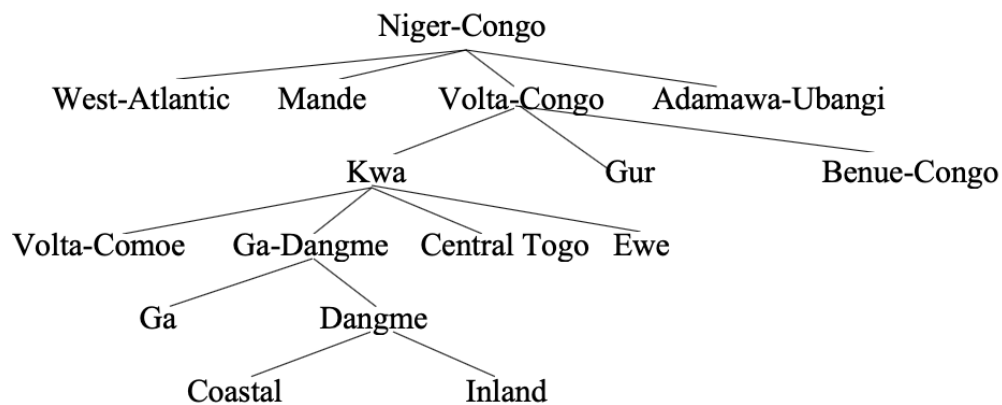

Figure 1: Family tree of Dangme (Dakubu 1987; Lawer 2017)

Regarding the linguistics, there are twelve vowel phonemes in the language, seven oral / i, e, ɛ, a, u, o, ɔ / and five nasal / ã, ɛ̃, ĩ, ũ, ɔ̃ / vowels (Caesar 2012: 18). The vowels can be

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"are potential free forms belonging to open word classes" (Caesar 2018: 52). Finally, it is unclear whether the basis for inclusion of some constructions as compounds is formal or semantic.

lengthened, with length indicated in the orthography by doubling the vowels, as in /ii, ee, ɛɛ, aa, uu, oo, ɔɔ/. Vowel Length in the language is phonemic, as we see in the minimal pair *tũ̀* 'jumped' and *tũ̀ũ̀* 'very dark' (Lawer 2017). Dangme has an inventory of twenty-two consonants, all of which are capable of occupying the onset position in syllables (Ɗakubu 1987: 13).

Dangme is a CV syllable structure language with occasional syllabic consonants, usually the bilabial nasal /m/ that occurs at word final positions, as in *lám̀* 'act of singing' and *fiɛ́m̀* 'act of playing' (cf. Ɗakubu 1987; Lawer 2017).

Mid [ˉ], low [`] and high [´] are the three contrastive level tones in Dangme (Caesar 2012; Ɗakubu 1987; Owulah 2014), and tone has both grammatical and lexical functions in the language (Lawer 2017; Caesar 2012).

In terms of syntax, Dangme is an SVO language with a verbal system in which every verb phrase contains one main verb. The verb in a clause bears verbal features of aspect, polarity and mood (Caesar 2012). Dangme, according to Caesar (2012: 20), does not have tense. It has also been argued that Dangme has no prepositions but rather relational noun particles which occur after the head noun (cf. Adi 1997). These relational nouns include *se* 'back', *no* 'top', *mi* 'inside', and *he* 'around'. Lawer (2017) agrees with Adi (1997) regarding the claim that these words are nouns and they combine with other nouns, especially concrete ones to form nominal compounds.

4. Construction morphology

Construction morphology (CxM) is a theory of linguistic morphology that builds on insights from Construction Grammar (CxG). It is an approach to the grammar of words which seeks to properly account for the properties of complex words, in relation to "syntax, morphology, and the lexicon, and […] the semantic properties of complex words" (Booij 2010a: 543).

The main tenets of CxM are a theory of word structure, a theory of the notion of 'construction' and a theory of the lexicon. The basic unit of analysis is the constructions, which pairs a particular form and a particular meaning, and may not be completely compositional, but has to be predictable (Booij 2016). Constructions are formed by constructional schema which abstracts over the properties of existing form-meaning complexes and serves as a pattern for forming similar constructions. Thus, in CxM each word is a linguistic sign, a construction. Thus, compounding patterns may be represented as constructional schemas like (1), which is for right-headed endocentric compounds.

(1) $< [[a]_{X_i} [b]_{Y_j}]_{N_k} \leftrightarrow [SEM_j \text{ with relation } \mathfrak{R} \text{ to } SEM_i]_k >$ (Appah 2013b: 70)

In this schema, the double arrow symbolizes the relationship between the form and the meaning. Upper-case variables, *X* and *Y,* stand for the major lexical categories (nouns, verb, etc.). The variables *a* and *b* stand for arbitrary sound sequences. The variables *i, j,* and *k* are lexical indexes on the phonological, syntactic, and semantic properties of the words (Appah 2013b: 70).

Morphological constructions exist in the mental lexicon of speakers together with schemas that they instantiate. Two kinds of relations hold in the lexicon: "instantiation" which exists between a schema and the word formed by the schema and "part of", which exists between complex forms and their constituents (Appah 2015; Booij 2010a). For instance, in (2)

we see that the Akan right-headed N-N compound *àsɔ́rédáń* 'chapel' instantiates an abstract schema from which it inherits some of its features. It also inherits features from the constituents, *àsɔ́ré* 'church' and *dáń* 'building' with which it shares a *part of* relation.

(2)   < [[N]ᵢ [N]ⱼ]ₙₖ ↔ [SEMⱼ used for SEMᵢ]ₖ >
       |

       [*àsɔ́ré*]ₙᵢ [*dáń*]ₙⱼ]ₙₖ ↔ [*dáǹ*ⱼ used for *àsɔ́ré*ᵢ]ₖ >

          church   building   "chapel"   (Appah 2015: 363)

   It is understood that constructions which share features or common constituents are also connected in the lexicon. For example, *àsɔ́rédáń* is linked with other schemas that contain either *àsɔ́ré* such as *àsɔ́ré twèné* 'church drum' and *àsɔ́ré káá* 'church vehicle', or the constituent *dáń* such as *sùkúú dáń* 'school building' and *dɔ̀tè dáń* 'mud building' (cf. Appah 2015). The multiple relations which constructional schemas share "creates the network of related words" that models the lexical knowledge of the speakers of the language (Appah 2015: 364).

5.   Dangme noun-noun compound formation

Dangme noun-noun (hereafter, N-N) compounds are formed by combining two nouns of varied formal and semantic characterization into a new lexeme, and the process is very productive, consistent with crosslinguistic patterns of productivity in N-N compounding, which is attributable to the flexibility of the head-modifier relationship between the constituents (Bauer 1998; Fabb 1998; Dressler 2006; Lieber 2009; Scalise & Vogel 2010; Guevara & Pirrelli 2011; Akrofi-Ansah 2012; Omachonu & Abraham 2012; Aliero 2013; Appah 2013b). As observed in the literature (Downing 1977; Gagné 2002; Gagné & Spalding 2010; Spencer 2011; Appah 2013b), in such compounds, the non-head constituents are assigned various interpretations, which evokes new context-specific meanings for the head constituent. This enhances the productivity of N-N compounds and strengthens the general usefulness of compounding as a pattern of word-formation. In this section we discuss Dangme N-N compounds based on the data in Table 2. We discuss their structure and interpretation, paying attention to the relation between the constituents.

5.1 *The structure of Dangme N-N compounds*

In terms of structure, we observe that Dangme N-N compounds appear in two main orthographic forms. In the first, the compound members are written together, as in *mã̀tsɛ̄* 'king' [lit. town owner], *blɔ̄nyà* 'roadside' and *yòtsē* 'husband'. In the second pattern, which has the majority of Dangme N-N compounds, the compounds members are separated, as shown in Table 2. They include *nìné nguɛ́* 'finger', *mã̀tsɛ̄ dã̀* 'royal wine', *sìklì dã̀* 'soft drink', *lā tsō* 'firewood', *wɔ́ tsũ* 'shrine' and *té sà* 'boulder'. A third orthographic pattern in Dangme compounds has hyphenated members (Caesar 2018). However, this orthographical pattern appears not to be used in the formation of N-N compounds. this type of compounds are usually names of people made up of "a noun and an adjective or a noun and a numeral", according to Caesar (2018: 55). For instance, the compound *tètè-tsū* '*tɛtɛ̄* who is fair in complexion' consists

of the noun *tètè* 'a second male born' and *tsū* 'red'. Again, the name *Nà* 'a fourth male born' and *wàyó* 'small/little/younger' are combined to form *Nà-wãȳó* which means '*Nà* who is younger or smaller in size'. In the form *tètè-ényɔ̄* 'second *tètè*', we see the name *tètè* 'a second male born' combine with the numeral *́ényɔ̄* 'two' (Caesar 2018; Lawer 2017). Conventionally, all of them are written with the constituents hyphenated. The orthographical form of Dangme compounds, as consisting of solid/closed, spaced and hyphenated is consistent with what has been found in Akan (Dolphyne 1988; Appah 2013b), Lɛtɛ (Akrofi-Ansah 2012), Ga (Appah 2019) and English (Fabb 1998; Bauer 1998). However, there is no specific rules on these writing conventions crosslinguistically, as some hyphenated and combined words may sometimes be written as separate words in the same language and by the same author (Fabb 1998).

Table 2: N-N compounds in Dangme

Base 1	Gloss 1	Base 2	Gloss 2	Compound	Translation
àgbèlì	cassava	*bà*	leaf	*àgbèlì bà*	cassava leaf
àkáté	groundnut	*hwónyũ*	soup	*àkáté hwónyũ*	groundnut soup
Akoto[2]	A name	*hɛ̃g̃mɛ̃*	eye	*akoto hɛ̃g̃mɛ̃*	Jagger bush
bí	child	*nyɛ̀*	mother	*bí nyɛ̀*	lactating mother
blɛ̀fó	maize	*gbà*	barn	*blɛ̀fó gbà*	maize barn
da̅	wine	*búé*	pot	*da̅búé*	'drunkard'
gɔ̀	pawpaw	*tsō*	tree	*gɔ̀ tsō*	pawpaw tree
lā	fire	*zũ*	soil	*la zũ*	sandy soil
lā	fire	*té*	stone	*lā té*	'earthen stove'
lā	fire	*tsō*	wood	*lā tsō*	firewood
lā té	fire stone	*kùé*	hut	*lā té kùé*	kitchen
mã̀	town	*tsē̄*	father	*mã̀tsē̄*	king
mã̀tsē̄	king	*dã̀*	wine	*mã̀tsɛ̄ dã̀*	wine for kings
mì	belly	*tɔ̄*	bottle	*mì tɔ*	Pot belly
mṹnyṹ	speech	*yē-lɔ̄*	eat-AGENT	*mũ̀nyũ̀ yēlɔ̄*	judge
nĩ̀né	hand	*nguɛ́*	finger	*nĩ̀né nguɛ́*	finger
pà	river	*tsō*	tree	*pà tsō*	bridge
pàm	river	*lò*	fish	*pàm lò*	fish
sà	matress	*tsō*	tree	*sà tsō*	bed
sĩ́klì	sugar	*dã̀*	drink	*sìklì dã̀*	soft drink
sɔ̀lēm	prayer	*tsũ*	building	*sɔ̀lem tsũ*	church building
tsō	tree	*pókú*	root	*tsō pókú*	tree root
tsopà	medicine	*tsɛ*	owner	*tsopàtsɛ*	herbalist
té	stone	*sà*	mat	*té sà*	boulder
twi	heart	*tsɛ*	owner	*twí tsē̄*	quick tempered person
wē	house	*sè*	back	*wē sè*	menstruation
wē	house	*tsē̄*	father	*wētsē̄*	landlord
wɔ́	idoleity	*yò*	woman	*wɔ́ yò*	priestess
wɔ́	ideityol	*tsũ*	house	*wɔ́ tsũ*	shrine
yī	head	*nyã̀*	mouth	*yī nyã̀*	forehead

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[2] Akoto is a name of a person

| *yo* | woman | *tsɛ* | owner | *yotsɛ* | husband |

The constituents of Dangme N-N compounds may be simplex or complex. Compounds like *àgbèlì tsō* 'cassava stick' and *wɔ́ tsũ* 'shrine' [*lit.* deity house] have simplex constituents, because none of their constituents is a compound or a derived complex word. See the structure in (3).
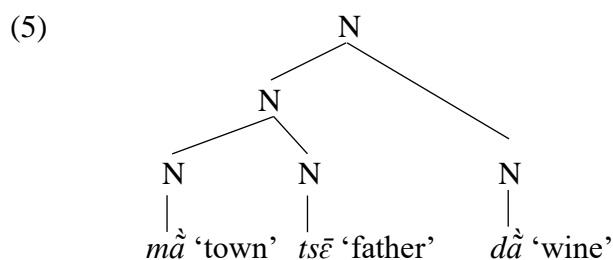
(3)
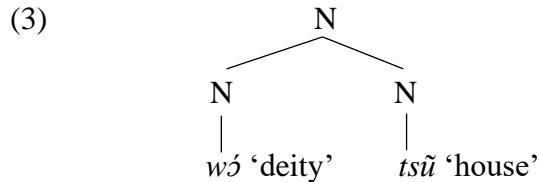
The compounds with complex bases are those whose constituents are either themselves compounds or derived words formed through suffixation. The first group of N-N compounds with complex bases have at least one of their constituents derived through suffixation. In the compound *tsu mã̀-lɔ* 'mason' [*lit.* house + build-AGT], for instance, we identify the agentive suffix on the right-hand verbal base. See the internal structure in (4).

(4)
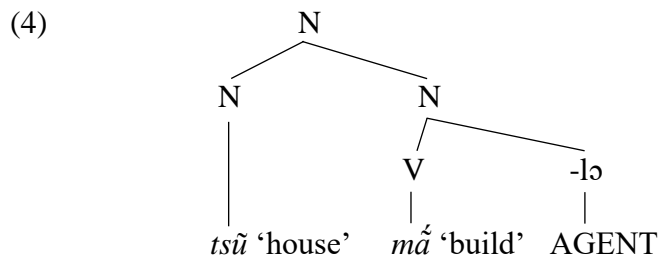
This is the so-called synthetic or verbal nexus compound. Thus, the structural analysis presented here is just one of two options that have been proposed in the literature for such compounds (Selkirk 1982; Lieber 1983; Botha 1980; Botha 1984; Appah, et al. 2017). The alternative analysis has the derivational suffix attaching to a noun-verb compound base, as in [[tsu]ₙ [*mã̀*]ᵥ]ₙ - *lɔ*]ₙ. This analysis assumes the existence of a class of N-V compounds which tend not to be productive across languages. For languages like English and Dutch, the class of N-V compounds is almost completely unproductive, making this analysis less favoured. However, the issue of the lack of productivity of N-V compounds is circumvented by what Booij (2010b) calls embedded productivity, by which it is argued that in the context of the suffixation, the embedded, otherwise unproductive, N-V construct becomes productive.

Dangme appears to have limited number of derivational affixes. Therefore, derivation as a word formation process is not very productive in the language. As a result, complex words in the language are usually compounds. Therefore, as the data show, complex constituents of compounds are usually compounds, making the compounds recursive (cf. Plag 2003: 134). Dangme N-N compounds with compound constituents include *mã̀tsē dã̀* [[[*mà*]ₙ [*tsɛ̀*]ₙ]ₙ *dã̀*]ₙ 'royal wine [*lit.* king wine]', *lā tɛ́ kùé* [[[*la*]ₙ [*tɛ́*]ₙ]ₙ *kúé*]ₙ 'kitchen', and *sɔ̀lem tsũ* [[sɔ̀lèm̀]ₙ + [tsũm̀]ₙ]ₙ + [sɛ̃́]ₙ]ₙ 'chapel seat/pew'. It appears, based on the present data, that the complex bases are left-hand constituents. This means that the compounds are left-recursive, as shown in (5).

(5)

```
                    N
                   / \
                  /   \
                 N     \
                / \     \
               /   \     \
              N     N     N
              |     |     |
            mã̌ 'town'  tsɛ̄ 'father'   dà̌ 'wine'
```

The bilabial nasals that terminates some of the nouns represent two distinct morphological units that cliticize on words. One unit is the nominaliser *mi*, which occurs on deverbal nouns (e.g., *sɔ̀lè=m̀* 'prayer', *ye=m* 'eating' and *gbà=m* 'prophecy'). So, the full forms of the words are *sɔ̀le m̀i, yēmi* and *gbà mi*. The other *mi* occurs as a bilabial nasal clitic on nouns, encoding the meaning 'inside', so *pàm* 'river inside' and *tsũm* 'room' in the compounds *pàm lo* 'fish' and *tsũm sɛ̃* 'room chair' are realised in full as *pá mì lo and tsũ mì sɛ̃.* Thus, the compounds have nominal compounds as left-hand constituents.

Note that *mi* has been classified as a postposition, a view which Lawer (2017) has argued against, maintaining that *mi* is a locative noun.

5.2 *Semantic relations between the constituents of N-N compounds*

The constituents of N-N compounds tend to be from different grammatical and semantic classes, and there is usually a relation between them which forms the basis for their interpretation (cf. Scalise & Vogel 2010; Downing 1977; Gagné & Spalding 2006, 2010; Gagné 2002; Guevara & Pirrelli 2011; Guevara, et al. 2009). However, sometimes, a full interpretation of N-N compounds requires an appeal to pragmatics, in addition to identifying the morphosyntactic structure in which they occur and the semantic information that is available in the constituents (Bauer 1979). As Bauer and Tarasova (2013: 3) observe, "the morphosyntactic structure provides minimal semantic information (compatible with all compounds); most information on interpretation comes from the context of use." This makes it possible for two or more compounds with a common constituent at the same slot in the compounds to have different interpretations. Thus, the kind of relations that the variable constituents share with the common constituent differ in various compounds. For example, in English, while *pill* in *sleeping pill* causes/induces sleep, the *pill* in *sea-sickness pill* rather prevents seasickness. Hence, the relation between *pill* and the other constituents in each compound is different (cf. Bauer & Tarasova 2013). Within the context of Guevara & Scalise's (2009: 108) categorial characterization of compounds [X ℜ Y]z, the interpretation of N-N compounds will require that the nature of ℜ to be ascertained. Since ℜ is not explicit, the missing semantic information is reconstructed in context in order to adequately interpret the N-N compound (Bauer & Tarasova 2013).

The nouns that form constituents of N-N Dangme compounds vary quite a bit in their semantics. They may be concrete (e.g., *wē* 'house', *sà* 'matress', *tsō* 'stick'), abstract (e.g., *sɔ̀lèm̀* 'prayer', *mǔnyǔ* 'speech'), animate (e.g., *yēlɔ̄* 'glutton', *tsɛ̄* 'father', *yò* 'woman', etc), inanimate (e.g., *dà̌* 'wine', *wē* 'house', *kùé* 'hut'), mass (e.g., *sìklì* 'sugar', *dà̌* 'wine', *zũ* 'soil'), count (e.g., *yò* 'woman', *mã̌* 'town', *tsō* 'tree'), kinship (e.g., *tsɛ̄* 'father', *bí* 'child', *nyè* 'mother') etc., and the compounds that they form may be endocentric or exocentric, the former being the majority. The endocentric compounds are generally right-headed constructions. The Few exocentric compounds in our dataset are in Table 3. All the rest in Table 2 are endocentric.

Table 3: Exocentric N-N compounds

Base 1	gloss	Base 2	Gloss	Compound	meaning
mì	belly	*tɔ̄*	bottle	*mì tɔ*	pot belly
twi	heart	*tsɛ*	owner	*twí tsɛ̄*	quick tempered person
wē	house	*sè*	behind	*wē sè*	'menstruation'
da̰	wine	*búέ*	pot	*da̰ búέ*	'drunkard'
Akoto³	A name	*hɛ̰̃gmɛ̰̃*	eye	*akoto hɛ̰̃gmɛ̰̃*	Jagger bush

As expected of N-N compounds, there is flexibility in the semantic relations between the constituents of Dangme N-N compounds. This sometimes requires contextual information to interpret, as noted above. However, with some encyclopaedic knowledge, the nature of the relation between heads and their modifying constituents, especially in endocentric N-N compounds, is usually decipherable, as they tend to emanate in part from the lexico-grammatical properties of the constituent nouns. We find certain recurrent relations between the constituents of Dangme N-N compounds in our dataset, as shown by the collection of relations in Table 4.

Table 4: Relations between constituents of Dangme N-N compounds

Base	Relation	Base	Example	Translation
N1	INGREDIENT OF	N2	*àkáté hwónyũ*	groundnut soup
N1	LOCATION OF	N2	*tsũm sɛ̃*	room chair
N2	PART OF	N1	*blɔ nyà̰*	roadside
N1	CAUSE	N2	*la zũ,*	ash
N2	MAKE	N1	*jé bɔ̀lɔ*	creator of the universe
N2	USE	N1	*pà tso*	bridge
N2	PROPERTY	N1	*zíá zũ*	sandy soil
N2	POSSESSION/OWNERSHIP	N1	*wē tsɛ*	landlord
N1	LIKE	N2	*mì tɔ*	pot belly

Considering the fact that the compounds are endocentric and right-headed, we may position a general constructional schema capturing the common properties of the compounds. This abstract schema is presented in (6), and it indicates that there is a nominal compound (N_k) which is a type of the right-hand constituent (N_j) and it shares a certain unspecified relation $\Re$ with the left-hand constituent (N_i).

(6)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_j$ with relation is $\Re$ to SEM$_i$]$_k$ >

This schema abstracts over all the compounds, but it allows for the specification of the relation $\Re$ in instantiating schemas. It also allows for overrides by default inheritance, so that unique properties of individual compounds may override properties inherited from higher level schemas. This is shown in (7), where the relation $\Re$ is spelt out as "ingredient of".
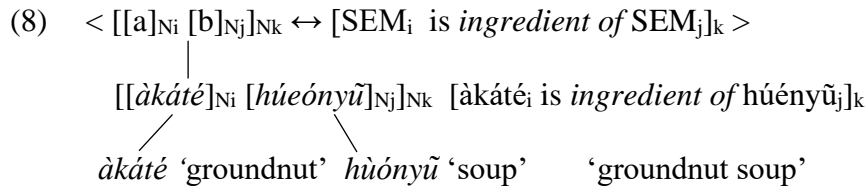
(7)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_j$ with relation is $\Re$ to SEM$_i$]$_k$ >
                    |
        < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_i$ is *ingredient of* SEM$_j$]$_k$ >
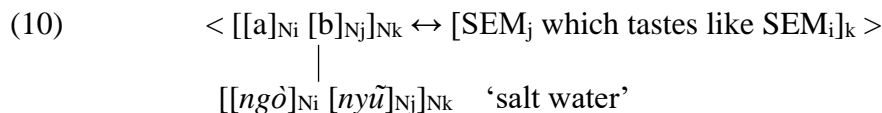
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³ Akoto is a name of a person

These inheritance and overrides continue to lower level schemas where the properties of individual compounds are specified and actual phonological strings substitute for the variables, $[a]_{Ni}$ and $[b]_{Nj}$. For instance, as shown in Table 2, the relation *ingredient of* is exemplified by the compound *àkáté hwónyũ* 'groundnut soup', in which the first constituent *àkáté* 'groundnut' is the *ingredient of* the second constituent *hwónyũ* 'soup'. The same relation exists between *síklì* 'sugar' and *dã̀* 'wine' in *síklì dã̀* 'soft drink' [lit. sugar wine], where *síklì* is the ingredient for making *dã̀*, as well as *wíé hwónyũ* 'palm nut soup' and *bà tsipã* 'herbal medicine' [lit. herb medicine]. The properties of compounds with this relation may be schematized as shown in (8).

(8)   < $[[a]_{Ni}\ [b]_{Nj}]_{Nk}$ ↔ $[SEM_i$ is *ingredient of* $SEM_j]_k$ >
            |

        $[[àkáté]_{Ni}\ [húeónyũ]_{Nj}]_{Nk}$ [àkáté$_i$ is *ingredient of* húényũ$_j]_k$

        àkáté 'groundnut'   *hùónyũ* 'soup'   'groundnut soup'

As we noted above, sometimes the relation between the constituents is variable. For example, the left-hand constituent of the compound *síklì dã* is not just an ingredient of the referent of the right-hand constituent, but *síklì* 'sugar' may also be construed as a "property of" the right-hand constituent, ascribed to it by the non-head constituent. Similarly, in the compound *zíà-zũ* 'sandy soil', *zũ* 'soil' is understood to have a property, *zíà* 'sand'. However, unlike *àkáté* 'groundnut' in *àkáté hùónyũ* 'groundnut soup', *zũ* 'soil' is not made from *zíà* 'sand' and therefore cannot be construed as ingredient of *zũ* 'soil'. The *property of* relations may be schematized as (9).[4]

(9)   < $[[a]_{Ni}\ [b]_{Nj}]_{Nk}$ ↔ $[SEM_i$ is a *property of* $SEM_j]_k$ >
            |

        $[[síklì]_{Ni}\ [dã]_{Nj}]_{Nk}$ ↔ [*síklì* is a *property* of *dã*]$_k$
        /   \
      síklì 'sugar' *dã* 'wine' 'sugary drink'
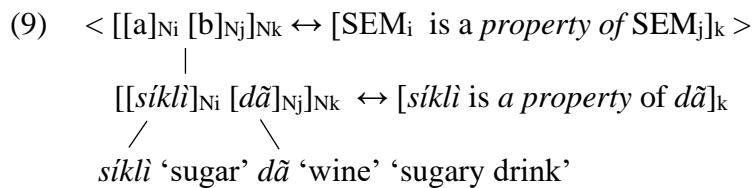
We observed that *síklì dã* 'soft drink', *síklì* 'sugar' designates both an ingredient and a property of the product because the referent of the compound is made of or contains sugar. The same can be said about the compound *ngò nyũ* 'saltwater'. However, there are traditional drinks that are not made from *sugar* in the sense that no *sugar* is added, but they are regarded as *síklì dã* because of their taste; they have the property of *síklì* 'sugar'. Thus, the *property of* relation may further be specified as "tastes like" for the compounds *síklì dã* and *ngò nyũ*. This is captured in the schema in (10).

(10)   < $[[a]_{Ni}\ [b]_{Nj}]_{Nk}$ ↔ $[SEM_j$ which tastes like $SEM_i]_k$ >
                    |

        $[[ngò]_{Ni}\ [nyũ]_{Nj}]_{Nk}$ 'salt water'

Property of relation, as seen in (10), may be contrasted with the relation existing between the constituents of the compound *lā zũ* 'ash' [lit. fire soil] in which the left-hand

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[4] In subsequent schematic representations, we simplify the representational machinery, doing away with some higher-level schemas, and the specification of the *part-of* relation between the compound and its constituents.

constituent *lā* 'fire' does not ascribe a property to *zũ* 'soil' but rather is understood as the causer of *zũ* 'soil'. The 'causer' relation is illustrated in schema (11) with the compound *lā zũ* 'ash'.

(11)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_i$ is causer of SEM$_j$]$_k$ >
   |
   < [[*la*]$_{Ni}$ [*zũ*]$_{Nj}$]$_{Nk}$ ↔ [*zũ*$_j$ caused by *là*$_i$]$_k$ >   'ash'

The constituents of some Dangme N-N compounds share a *part-whole* relation, where the relation ℜ is realised as 'part of'. This is seen in the compound *blɔ̄ nyã* 'roadside' [lit. road mouth] whose constituents are *blɔ̄* 'road/path' and *nyã̀* 'mouth'. In compounds that exhibit this kind of relation, usually the right-hand constituent names a part of the referent of the left-hand constituents (the whole). The same relationship exists between *àgbèli* 'cassava' and *tsō* 'tree' in the compound *àgbèlì tsō* 'cassava stick'. The noun *àgbèlì* is used for both the tuber 'cassava' and the plant. Hence, *àgbèlì* 'cassava' in this compound refers to the whole plant of which *tsō* is a part. Other compounds that show this kind of relation include *nàné ngúέ* 'toe' [lit. leg finger], where *ngúέ* is part of *nàné*. Note that, in Dangme, *ngúέ* is used for both finger and toe. However, when it is used in isolation without a modifier like *nàné* 'leg' or *nìné* 'hand', the meaning 'finger' is implied. The *part of* relation is captured in (12), exemplified by the compound *àgbèlì ˋtsō*.

(12)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_j$ is *part of* SEM$_i$]$_k$ >
   |
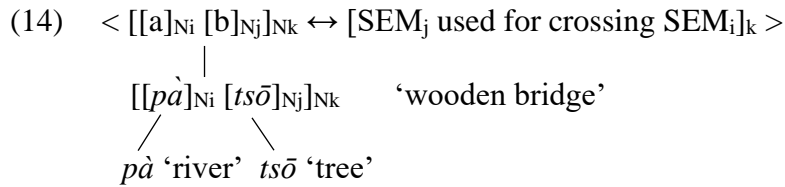   [[*àgbèlì*]$_{Ni}$ [*tsō*]$_{Nj}$]$_{Nk}$ 'cassava stick'

Location of is another relation that occurs between the constituents of N-N compounds. Here, the referent of one of the constituents names the location of the referent of the other. For instance, the referents of the left-hand constituents of the compounds *tsũ̀ mì sἔ̃* 'room chair' and *pà mì lò* 'fish' name the location of the right-hand constituents, *sἔ̃* 'chair' and *lò* 'fish' respectively. That is, *sἔ̃* 'chair' is located in *tsũ̀ mì* 'inside room', whiles *lò*[5] 'fish' is also located in *pà mì* 'inside river'. The *location of* relation is shown in (13) with the compound *pà mì lɔ̄* 'fish'.

(13)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_j$ located in SEM$_i$]]$_k$ >
   |
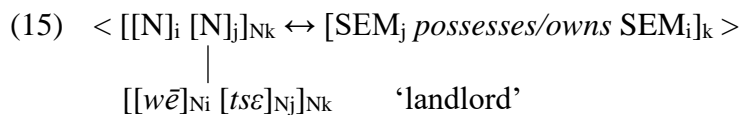   [*pàm̀*]$_{Ni}$ [*lò*]$_{Nj}$]$_{Nk}$ 'fish'

A relation, *used for*, holds between constituents of N-N compounds in which one constituent names the entity that is used to carry out some activity in relation to the other constituent. For instance, in the compound *pà tsō* 'wooden bridge for crossing a stream/river' [lit. river tree], *tsō* 'tree' is used for crossing *pà* 'river'. There may be trees at the bank of the river, but these are not called *pà tsō* because they are not used for crossing the river. So *pà tsō* refers to a specific kind of *tsō*. A similar relation can be observed between the constituents of the compound *gbà hē tsō* 'ladder', where *tsō* 'tree' is understood as an instrument used for climbing *gbà hē* 'hut side'. The 'used for' relation indicates that one of the constituents of the

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[5] Dangme does not have separate lexemes for fish and meat. They are both called *lò*. To distinguish them, *pà mì* 'inside river' or *de* 'game' or the name of the animal whose meat is implied is mentioned to qualify *lò*.
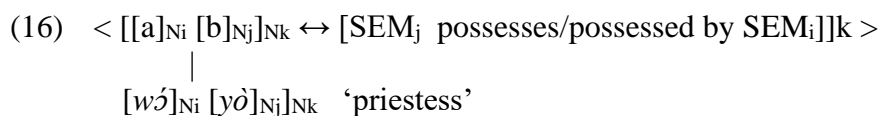
compound, mostly the right-hand constituent functions as an instrument. In the compound *blɛ̀fó gbà* 'maize barn', the right-hand member of the compound, *gbà* 'barn' is *used for* storing *blɛ̀fó* 'maize', the left-hand member of the compound. The 'used for' or instrument relation is captured in (14).

(14)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_j$ used for crossing SEM$_i$]$_k$ >
                    |
         [[*pà*]$_{Ni}$ [*tsō*]$_{Nj}$]$_{Nk}$ 'wooden bridge'
              /   \
         pà 'river'   *tsō* 'tree'

Another relation that is seen among constituents of Dangme N-N compounds is *possessor/owner of*, where the referent of one of the constituents is understood to possess/own the referent of the other constituent. In the compound *wē tsɛ* 'landlord' for instance, the right-hand constituent, *tsɛ̄* 'owner' owns the left-hand constituent, *wē* 'house'. Other N-N compounds exhibiting this kind of relation are *ngmɔ tsɛ̄* 'farm owner' and *yo tsɛ̄* 'groom' [lit. woman owner]. The possessor relation also holds in the compound *sìká-tsɛ* 'rich man' [lit. money owner]. However, for the referent of this compound, one must be seen or assumed to possess a significant amount of money to merit the term. Thus, *sìká-tsɛ* is used to refer to very rich persons. The possessor relation in the compound *wē tsɛ* 'landlord' is shown in (15).

(15)   < [[N]$_i$ [N]$_j$]$_{Nk}$ ↔ [SEM$_j$ *possesses/owns* SEM$_i$]$_k$ >
                    |
         [[*wē*]$_{Ni}$ [*tsɛ*]$_{Nj}$]$_{Nk}$ 'landlord'

In the compounds *wɔ́yò* 'priestess' [lit. deity woman] and *wɔ́tsɛ̄* 'priest' [lit. deity owner/father], one assumes that the right-hand constituent is the *possessor of* the left-hand constituents, which is the primary meaning. That is, in *wɔ́yò* 'priestess', and *wɔ́ tsɛ* 'priest', *yò* 'woman' and *tsɛ* 'owner' are construed to possessing *wɔ́* 'deity'. However, the possessed entity in *wɔ́ yò* and *wɔ́ tsɛ,* may be viewed from the other direction, so that it is possible to argue that *wɔ́* 'deity' rather possesses *yò* 'woman' and *tsɛ* 'owner, father'. This is because *wɔ́*, as a deity, chooses whoever it wants as its agent or worshipper. Thus, the relation is subject to construal and perspectivization (Verhagen 2007). Possession relation holding between constituents of the compound *wɔ́ yò* is illustrated in (16)

(16)   < [[a]$_{Ni}$ [b]$_{Nj}$]$_{Nk}$ ↔ [SEM$_j$ possesses/possessed by SEM$_i$]]k >
                    |
         [*wɔ́*]$_{Ni}$ [*yò*]$_{Nj}$]$_{Nk}$ 'priestess'

5.3 *Interpreting Dangme N-N compounds: The X-centricity dimension*

As the foregoing discussion has shown, the interpretation of N-N compounds depends primarily on two factors: the relation holding between the constituents and the accessibility of the meanings of the compound constituents. The interpretation becomes relatively easy when the semantic properties of the constituents are preserved in the compound and the relation holding between the compound members is also available to the speaker/listener. However, the availability of the core semantic properties of the constituents is not enough to accurately

interpret the compound because it is clear from the literature that the interpretation of compounds requires both linguistic knowledge and extra-linguistic or pragmatic information (Downing 1977; Bauer 1979; Spencer 2011). Thus, with some encyclopaedic knowledge and access to the meanings of the constituents and the compositional meaning of the resultant compound, in accordance with the compositionality principle (Fodor & Lepore 2002; Dever 2006), most N-N compound may be fully interpreted, taking a Downing's solution approach to accounting for the semantics of the compounds.

For example, to interpret *lā zũ* 'ash' [lit. fire soil], the core semantic properties of the constituents are considered together with the semantic relation holding between the constituents, which could be any of the following: *zũ* 'soil' has the property of *lā* 'fire', *zũ* is located at *lā*, *lā* makes/*c*auses *zũ*, or *lā is* the ingredient of *zū*. This could be complicated further by the fact that the relation between the constituents could be viewed from different directions, as noted above in relation to *wɔ́yò* 'priestess', and *wɔ́ tsɛ* 'priest', so that the same compound *lā zũ* could be construed as *lā* ha*s* the property of *zũ*, lā is located at *zũ*, *zũ* causes *lā*, *zū* is the ingredient of *lā*, etc. Clearly, some of the relations sound outlandish, while others are plausible. However, we assume that because the relation between N-N compounds is conventionalised, not all possible relations may be deemed acceptable to speakers of the language. This prevents what has been described by Bauer (2006) as superficial ambiguity, where a wrongful relation between the constituents of the compound impedes communication. For instance, for the compound *lā zũ*, it appears that only the relation *lā* causes *zũ* is ac*c*eptable. Other N-N compounds which may be interpreted relatively easily like *lā zũ* 'ash', because they are each a type of the right-hand constituent, include those in (17), where *nĩ̀né nguɛ́* [lit. hand fingers] 'fingers*'* is a type of *nguɛ́* [fingers], *lā tsō* 'firewood' is a typ*e* of *tsō* 'wood', *wɔ́ tsũ* 'shrine' is a type of *tsũ 'ho*use' and *pà mì lò* 'fish' is a type of *lò*.

(17)   *wɔ́ yò*   'priestess'   s*ɔ̀lēm tsũ*   'chapel'
           wē tsɛ   'house owner'   *nĩ̀né nguɛ́*   'fingers'
           wɔ́ tsũ   'shrine'   *pà mì lò*   'fish'
           lā tsō   firewood'

The approach described above works for most N-N compounds because the meanings of the constituents are accessible from the compounds, even if in context some meanings narrow or broaden due to semantic drift (Ajiboye 2014; Bauer 2006; Fabb 1998). Indeed, generally, N-N compounds that have modifier-head structure tend to be hyponyms of their head constituents, meaning the referent of the compound is a type of the right-hand constituent, the semantic head. So, the approach works. However, there are compounds which will be impossible to interpret without resorting to some figure of speech like metaphor or metonymy because their properties are generally not traceable to their constituents. These are the exocentric compounds. They fail the hyponymy test because they are not hyponyms of their head constituents, if any, or some crucial feature needed to interpret them is not present in the compound (Appah 2016, 2017, 2019). Consider the compound *wē sè* 'menstruation' [lit. house back]. In interpreting this compound, the relation 'part of' is perceived between the constituents (*sè* 'back' is understood as part of *wē 'hou*se'). Yet, the meaning of *wē sè is not* the back of the house, so that we can argue that the compound satisfies the hyponymy test. Rather, the compound refers to that which is done at the back of the house, the activity. Thus, the compound has to be interpreted metonymically to refer to the activity that is carried out at the

location named by the literal meaning of the compound. The activity being referred to is the washing down or taking a bath which is done at the back of the house where bathhouses are located traditionally.

Again, in the compound *mì tɔ* 'pot belly', neither the right-hand constituent nor the left-hand constituent of the compound can be said to be the semantic head. That is, though, the relation between the compound members is clear, with the left-hand member "being like" the right-hand member, the compound's meaning 'pot belly' is not directly traceable to either constituent. Rather, it refers to one who is identified by the potbelly he possesses. This type of compound, then, is a possessor exocentric compound because it refers to one who possesses a potbelly (Appah 2019).

A pair of exocentric compounds which look like the possessor exocentric compounds just discussed are *hìɔ̀ tsɛ̄* 'mad person' [lit. sickness owner] and *twí tsɛ̄* 'quick tempered person' [lit. heart owner], which also have to be interpreted metaphorically. Unlike the possessor type, the referent of these compounds is more like undergoer/experiencer/patients of the compositional meaning of the compounds.

The final type of exocentric compound which we find interesting is *akoto hɛ̃gmɛ̃* 'jagger bush' [lit. akoto's eye]. The referent is not a type of *akoto* nor *hɛ̃gmɛ̃* 'eye'. Rather, it refers to that which '*causes some effect on Akoto's* eye'. This is not coded in either constituent of the compound, and therefore, neither of them is the head of the compound.

6. Conclusion

In this paper, we have discussed N-N compounds in Dangme and presented a CxM representation of their properties. We have shown that the compounds combine two nouns of the same or different semantic and formal classes. Regarding the structure of the compounds, it has been shown that the compounds may have simplex or complex bases which may be derived words or compounds, making the compound recursive, and left-recursive because the complex bases which are compounds occur on the left. We have also shown that the compounds may be exocentric and semantically headless, or they may be endocentric with the heads usually occuring on the right.

The discussion has shown the potentially complicated process of interpreting compounds. Although the constituents of Dangme N-N compounds come from different semantic classes, and the relationship between them varies, there are some recurrent relations, including *part of*, *ingredient of*, *causer of, location of*, and *possessor of*, unexpressed pragmatic relations between compound constituents that determine the combination of the constituents and affects the interpretation of the compounds.

We have shown that the meanings of the individual constituents and the relations between them may only be the starting point in the interpretation process. Ultimately, pragmatic factors influence how compounds are interpreted. This is true for even regular endocentric compounds. For the class of exocentric compounds, however, the meanings of the individual constituents and their combined meanings may only be the basis for deciphering the actual meaning of the compound, which will be by means of some figure of speech like metaphor or metonymy because their meanings are constructional properties rather than compositional functions of their constituents.

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