UNRAVELLING THE COMPLEXITY OF CINYANJA COMPOUND WORDS: A DISTRIBUTED MORPHOLOGY APPROACH

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ABSTRACT

Compound words are found in most languages and play an essential role in the lexicon of the majority of languages because they reflect the interface between morphology, phonology, syntax and semantics. The present study seeks to provide a broader analysis of Cinyanja VNcompound words with a non-derived noun in the nominal position based on Distributed Morphology framework provided by Halle and Marantz (1993). Therefore, the main aim of this paper is to show the intricate processes involved in the formation and interpretation of compound words. The data used in this study were mainly collected from secondary sources which included written sources in Cinyanja. The findings of the study arising from the syntactic analysis of the compound words provide insights on the insertion of the noun class prefix in the derivational process. Furthermore, using Distributed Morphology in the interpretation of lexicalised meaning, the findings provide insights on the complexities and creativity involved in the construction of compound words in Cinvanja.

Key words: Compound Words, Distributed Morphology, Noun Class Prefix, Cinyanja

Introduction

Cinyanja (N31), is a Bantu language spoken in Zambia, Mozambique, Zimbabwe and Malawi. However, in Malawi where it is widely spoken, it is called Chichewa. In Zambia, Cinyanja, is mainly spoken in the Eastern region of Zambia. As a Bantu language, Cinyanja has an agglutinative morphology and it is also known for its expressive vocabulary and thus it provides an excellent exemplar for investigating compound word formation within the paradigm of Distributed Morphology (DM). In Cinyanja, compound words are morphologically complex words formed by combining two or more individual words whose actual meaning may not be predicted from their constituent parts as illustrated below:

1. (a	a)	ci-pha-dzuwa	
	,	7-kill-sun	
		'killer of the sun'	(literal Meaning)
		'beautiful girl'	(lexicalised meaning)
(1	b) 1	m-pala-utsi	
		1-scrape-smoke	
		'smoke scraper'	(literal meaning)
		'liar'	(lexicalised meaning)

In examples (1a & b) above, the compound words comprise two words whose actual meaning is not predictable from the constituent parts. In (1a) the actual meaning of *cipha-dzuwa* is 'beautiful girl' while the lexicalised meaning of *mpala-utsi* in (1b) is 'liar'. Then, it follows that understanding the formation and interpretation of compound words in Cinyanja poses both theoretical and empirical challenges. Therefore, this article seeks to provide a comprehensive analysis of verb-noun (VN) compounds with a non-derived noun (N) within the framework of DM. This approach was originally formulated to capture the interconnectedness that exists between different linguistic components such as morphology, syntax and phonology in the formation of words and complex phrasal structures. Through the Distributed Morphology lens, we aim to explore the intricate structure of Cinyanja VN compounds, and show how the morphological, and syntactic features; and the vocabulary items interact to bring out the complex structure of compound words.

Distributed Morphology Framework and its Principles

The analysis of this article is guided by the theory of Distributed Morphology which supports the interconnectedness between levels of linguistic analysis. These levels are morphology, phonology, syntax and semantics (Halle & Marantz, 1993). The basic principle of DM is that, in the formation of both complex words and complex phrases a unique generative system is involved (Halle & Marantz, 1993; Harley & Noyer, 1999; Embick & Noyer, 2007). The main idea of DM is that morphology is not an isolated component of grammar but that it involves a distributed network of multiple components of grammar such as syntax, morphology, phonology and semantics. Consequently, in DM, the process of forming words involves three distinct lists. The first list according to Marantz (1997) is the narrow lexicon which provides primitives which are functional morphemes and lexical roots called the terminal nodes in syntax (Harley & Noyer, 1999). The roots consist of open class categories, and are considered acategorial because they assume their category when they merge with a category defining feature bundle in the form of a functional head. The functional heads may also include affixes, for example the plural -s on houses and the past tense -ed on housed. In this list the roots and the functional morphemes are not supplied with phonological features. However, these features are provided in the second list.

The second list is the vocabulary which includes phonological exponents which are inserted later after syntactic operations in the mapping to phonological form (PF). It is in this list where possible vocabulary items that match the node targeted for insertion compete for insertion and only the vocabulary item (VI) with the specified vocabulary items is selected and combined with other elements to form complete words. For example, the VI for a word "cat" includes information about its pronunciation, meaning and other irregularities it may have.

The third list, which is called the encyclopaedia contains roots which are the core elements that carry essential lexical meaning of a word. They are usually bound to specific semantic content and are combined with functional features to

create complete words, for example, a root *bake* carries the basic meaning of cooking through baking and when combined with the past tense functional feature, it forms the word 'baked'.

Distributed Morphology uses Vocabulary Items as word templates, Functional Features as abstract building blocks for grammar, and Roots as core elements carrying the lexical meaning. These three lists work together to construct all the words and expressions, including compound words used in language.

Compound Words in Cinyanja/Chichewa

Cinyanja, as a Bantu language, exhibits a rich morphological system of words which include compound words. Compound words are formed through the process of compounding which is a branch of morphology that deals with word formation. According to Ralli (2010: 57)' the process of compounding involves the combining of words or stems to form new complex items. For example, the combination of *flower* + *pot* forms the word 'flowerpot'. The combined words are called compound words. Plag (2003:135), defines a compound word as: "A word that consists of two elements, the first of which is a root, a word or a phrase, the second of which is either a root or a word." The definition of compound words by Plag (2003) is quite comprehensive and accommodates compound words from many languages. What is more intriguing about Plag's (2003) definition is the inclusion of terms 'root' and 'word' which are characteristic feature of compound words in Cinyanja as shown in the examples 1(a) and (b).

The compound word in example (1a) above comprises a root -pha 'kill', and the word dzuwa 'sun' in the nominal part. In example (1b), the compound word contains the root -pala 'scrape' and the word utsi in the nominal part. Basciano, et al. (2011), in their comparative analysis of Bemba, Italian, and Mandarin Chinese, assert that most Bantu nominal compounds are formed by a concatenation of two nominal stems, which are usually preceded by a noun class marker. They aver that initial noun class markers, for example, ka- and mu- prefixed to Bemba compound words such as ka-tensha-mabula 'authoritative person' and mu-sunga-bantu 'hospitable person', are nominalising prefixes because they derive nouns from verbs. They argue that although these prefixes are homonymous with noun class 1a and noun class 1, they are derivational prefixes. Although Basciano, et al, consider the noun class prefix as a nominalising prefix, they did not analyse it from the DM lens. Njobvu (2020a) asserts that the noun class prefixes in compound words can either be derivational or inflectional, and Carstens (2008) considers them to be cardinal in determining the number feature of compound words, which, in DM, is a functional feature in list 1.

Regarding the morphological structure of compound words, Guthrie (1967) provides foundational insights into the morphological structure of compound words as having a distinctive feature in Bantu Languages. A study on compound words by, Bresnan and Mchombo (1995) examined the structure and interpretation of complex expressions in Chichewa. Their study focused on the morphological and syntactic properties of these expressions, particularly how they are formed and understood

within the language. However, though Bresnan and Mchombo's examination of compound words explored the interaction of morphemes in compound words, they did not use a distributed morphology view to classify these complex structures as compound words. They instead applied the Lexical Integrity Hypothesis to analyse them. The study revealed that complex expressions, such as *mkhala-pamwala*, are compound words because their internal structure is inaccessible to syntax.

Further research by Njobvu (2020b) analysed the internal structure of verbnoun compounds with a locative in Cinyanja. Njobvu, like Bresnan and Mchombo also applied the Lexical Integrity Hypothesis to determine whether compound expressions containing a locative were indeed compound words. The results indicated that, despite having an internal verb phrase structure, these complex expressions with a locative are compound words. Unlike Bresnan and Mchombo (1995) and Njobvu (2020b) examination of compound words, Sproat (1985) investigated the syntax and semantics of Chichewa Compound words by delving into the nuances of compounding and its contribution to expressive communication. Currently, there is a scarcity of information on the use of Distributed Morphology to analyse and interpret compound words in Cinyanja.

Research Methodology

This study used a qualitative approach in collecting compound words. The data for the study mainly collected from secondary sources. The following was the main data sources for the phrasal compounds in Cinyanja; *English-Chinyanja Dictionary* (Paas, 2005); *Chichewa/Chinyanja English Dictionary* (Paas, 2013) and *Oxford Chichewa-English/ English-Chichewa Dictionary* (Paas, 2016). Other sources included selected articles written on Bantu languages. Further, researchers used our collective knowledge of Cinyanja to supplement secondary data. The main purpose of using secondary sources was to extract compounds with a VN combination from previous research. In the method adopted, only compounds with an initial noun class prefix that consists of a verb and a noun without inflectional material internal to the compound words were considered. The next section presents the mini corpus of compound words in Cinyanja and their morphological structure.

Morphological Structure of VN Compounds

In this section, we present the morphological structure of compound words with a VN composition in Cinyanja. As alluded to earlier, the VN compound words under analysis comprise a verb preceded by noun class marker and a non-derived noun in the nominal position. These compounds can be systematically presented as below:

CM + V + N

The examples for the VN compounds with a non-derived noun (N) are presented below. The singular forms are all classified as (a) while the plural examples are classified as (b).

2.	a.	m-sung-a cuma 1-keep-FV 7.wealth 'wealth keeper' 'treasurer'	(literal meaning) (lexicalised meaning)
	b.	a-m-sung-a cuma 2-1-keep-FV 7.wealth 'wealth keepers' 'treasurers'	(literal meaning) (lexicalised meaning)
3.	a.	ci-ph-a-dzuwa 7-kill-FV-5.sun 'killer of the sun' 'beautiful girl'	(literal meaning) (lexicalised meaning)
	b.	a-ci-ph-a-dzuwa 2-7-kill-FV-5.sun 'killers of the sun' 'beautiful girls'	(literal meaning) (lexicalised meaning)
4.	a.	m-pal-a-utsi 1-scrape-FV-14.smoke 'smoke scraper 'liar'	(literal meaning) (lexicalised meaning)
	b.	a-m-pal-a-utsi 2-1-scrape-FV-14.smoke 'smoke scrapers 'liars'	(literal meaning) (lexicalised meaning)
5.	a.	ka-byal-a-ufa 1a-plant-FV-14.mealie-meal 'planter of mealie-meal' 'bastard'	(literal meaning) (lexicalised meaning)
	b.	a-ka-byal-a-ufa 2-1a-plant-FV-14.mealie-meal 'planters of mealie-meal' 'bastards'	(literal meaning) (lexicalised meaning)
6.	a.	m-tol-a-nkhani 1-collect-FV-9.story 'collector of stories'	(literal meaning)
	b.	'news reporter'a-m-tol-a-nkhani2-collect-FV-10.story'collectors of stories''news reporters'	(lexicalised meaning) (literal meaning) (lexicalised meaning)

The compounds in (2-6) above refer to humans, and have *a*- added as a plural prefix. Interestingly, the compound word with a class 7 prefix *ci*-, that refers to humans, also takes the class 2 noun prefix *a*- instead of the regular class 8 prefix *zi*- (cf. Njobvu, 2020a; 2020b). Similarly, the compound word with the class 12 prefix *ka*- which is a diminutive prefix also takes class 2 noun prefix *a*- in the plural instead of the class 13 plural prefix *ti*-.

The plural compounds categorised as (b), have a plural marker added to the compound. In this type of VN compound words, the V constituent is made up of the verb stem and the final vowel *-a*, which Nurse (2008) calls a neutral vowel. The nouns in these compounds do not take a class prefix in the singular or plural. This is a general property of these nouns belonging to noun classes (e.g., 5, 9, 14), and mass nouns such as *cuma* 'wealth' in (2) that they do not take a prefix. Further, the general structure of these compounds resembles the famous English example of *truck-driver* (see Lieber, 2009; Padrosa, 2010) where the affix seems to be attached to the verb.

However, when the singular noun class prefix is subtracted from the compound as in (7b), the compound expression becomes unacceptable.

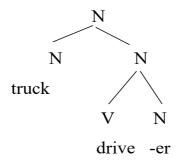
- 7. a. m-tol-a-nkhani 1-collect-FV-9.story 'news reporter'
 b. *a-tol-a-nkhani 2-collect-FV-10.story
 - 'news reporters'

Considering that the compounds in (2-6) above can be pluralised shows that they are nouns. Further, the noun class prefix is a prominent feature in these compounds, and Carstens (2008) analyses them as inflectional morphemes.

Morphological Analysis of Cinyanja VN Compound with non-derived N

This section, shows that the VN compounds with a non-derived noun in Cinyanja are similar to the synthetic compound of the truck-driver structure. As a result, the semantic interpretation of the compounds would follow the morphological representation. Ackerman and Neleeman (2004), note that it is possible to analyse the internal structure of synthetic compounds based on the morphological representation of the internal structure of synthetic compounds shown in (8) below. In this structure the nominalising affix-*er*, merges first with the V *drive* to realise an N *driver* and later merges with the N *truck* to form the compound word *truck-driver*.

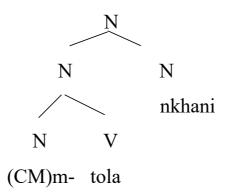
8. truck-driver



In (8) above, the nominalizing affix-er, is suffixed to the headword *drive* and not to the entire compound.

In the internal structure of compounds in (9) below, the researchers also show that the class marker (CM) *m*- as a nominalising prefix merge first with verb *tola* to realise a noun *mtola* 'collector' which later merges with the noun *nkhani* 'stories' to realise the compound word *mtola-nkhani* 'News reporter'.

9. m-tola-nkani



In (9) above, the nominalising affix *m*-, is prefixed to the verb *tola* 'collect' and not to the entire compound word.

The representation of compound structures above are in tandem with Haspelmath and Sims (2010) representation of synthetic compound structures based on the view that derivational affixes are attached to either the semantic or the formal head not the entire compound word. This is the lexicalist view of analyzing words. However, this is different from the syntactic view which Distributed Morphology rides on. In DM the process of word formation is not solely governed by a single morphological component but involves multiple distributed operations. This is discussed in the next section.

Analysis of VN Compounds within DM Framework

As alluded to earlier, Distributed Morphology views the process of word formation as the result of combining smaller pieces of meaning in a distributed manner across different modules of grammar. This section, shows that the principles of Distributed Morphology can be used to analyse the structure and meaning of the VN compound words with a non-derived N. In Cinyanja, compound words are formed by combining smaller morphemes with specific meaning as demonstrated in the words presented in Table 1 below.

S/N	Compound	Functional Feature (Noun Class Marker)	VP		Lexicalised Meaning
	Compound		Root 1 Root2		
а	msunga-cuma	m-	sung-a 'keep'	cuma 'wealth'	'treasurer'
b	cipha-dzuwa	ci-	ph-a 'kill'	dzuwa 'sun'	'beautiful girl'
с	mpala-utsi	m-	pal-a 'scrape'	utsi 'smoke'	ʻliar'
d	Kabyala-ufa	ka-	byal-a 'plant'	ufa 'meali meal'	'bastard'
e	Mtola-nkhani	m-	tol-a 'collect'	nkhani 'stories'	'news reporter'

Table 1: Constituent parts of VN Compounds with Non-derived N

The examples in Table 1 above show that the noun class marker precedes the roots, and the combination of the two roots provide a VP translation.

As stated earlier, in DM, roots are acategorial and only realise their category when they merge with a category defining feature bundle, which can be realised by a suffix (see Funch &Van der Wal, 2018). In Table 1 above, all verbs end in the suffix a-, e.g., sung-a, pal-*a*, *tol-a* etc., which suggests that the vowel is a verbaliser, and a head that turns the acategorial root into a verb (Harley, 2009; 2014). With this in mind, we argue that VN compounds with a non-derived N are not formed by the nominalising of the verbal root but that the verbal root is nominalised after it has combined with the noun to form a VP and the entire structure is nominalised to realise the nominal compound. Based on this observation, we argue that the VN compound is formed when the noun class prefix is attached to the derivation after the verb and noun have merged to form a VP.

In Table 1, we see that when the two roots merge they form a VP structure to which the noun class prefix is added to realise the compound whose lexicalised meaning is given. We also notice, in Table 1 above, that compound words are built from morphemes, which are the smallest meaning-bearing units in a language. Each morpheme is associated with a vocabulary item, which contains phonological and syntactic information.

By using Distributed Morphology, the morphemes and vocabulary items in a compound word such as *mtola-nkhani* can be analysed as having the following three morphemes;

- i. m- (derivational morpheme, indicating the noun class marker of the word)
- ii. tola (root, meaning 'collect')
- iii. nkhani (root, meaning 'stories')

Each morpheme is associated with its corresponding vocabulary item, containing syntactic and phonological information. As regards, the syntactic structure, the DM approach posits that the syntactic structure generates abstract representations of words. Thus, the syntactic structure for *mtola-nkhani* can be represented as follows:

10. [[m-][[tola] [a][nkhani]]]

This structure shows that *m*- is a class prefix and *tola* and *nkhani* form a morphological unit while *-a* serves as a connector.

During vocabulary insertion, the abstract syntactic structure is mapped to the appropriate vocabulary items, which contain the necessary phonological content. The process of vocabulary insertion would yield a morphological structure with phonological representation. For *mtola-nkhani*, vocabulary insertion would yield something like:

11. [[m-tol][a][nkhani]]

The morphophonological rules come into play to ensure that the compound word is pronounced correctly. These rules govern how morphemes interact and may cause sound changes or assimilation.

In the example in (11) *mtola-nkhani*, the morphophonological rules would handle the combination of *m*- and *tola* to form *m-tol* (with the *-a* serving as a connector) and then the combination with *nkhani* to yield the final compound *mtola-nkhani* meaning 'collector of stories.'

In the given context, the compound word *mtola-nkhani* is used as a lexicalised term with a specific meaning: 'news reporter'. This meaning arises from the specific contextual usage of the compound, where it has evolved to refer to someone who collects and reports news stories. Lexicalisation refers to the process where a compound word's meaning becomes fixed and specialised within a particular language community, going beyond the literal meanings of its individual morphemes.

Finally, Distributed Morphology helps us break down complex compound words in Cinyanja by identifying the roots and applying Functional Features to explain how the meanings of the individual elements combine to create the overall meaning of the compound. The analysis also accounts for potential semantic shifts and the cultural context in which the language is used.

How Lexicalised Meaning is Negotiated using the DM Lens

By applying the DM lens, the formation of VN compound words in Cinyanja involves multiple levels of structure, including the syntactic, morphological, and semantic components as illustrated above. In the following section, we attempt to demonstrate how DM can be used to negotiate lexicalised meaning in compound words. In order to do this, the syntactic, morphological and semantic levels will be considered. The analysis will be based on three of the compound words. These are *cipha-dzuwa, msunga-cuma* and *kabyala-ufa*.

In the compound word *cipha-dzuwa*, DM can be used to negotiate meaning by exploring the multiple levels of structure. At the syntactic level, the different elements of the compound are combined to create a complex structure. In this case, *ci*- serves as a noun class prefix, while *pha* and *dzuwa* are the root words carrying vital meaning.

At the morphological level, each element of the compound undergoes morphological processes to fit the grammatical rules of Cinyanja. These morphological rules and processes are distributed across the syntactic components. The semantic component of DM plays a crucial role in determining the overall meaning of the compound by combining with the individual meanings of each component to derive the compound's lexicalised meaning. As shown above, *pha* means 'kill' and *dzuwa* means 'sun'. Nonetheless, the lexicalised meaning of *cipha-dzuwa* is not the literal meaning 'killer of the sun' but rather 'beautiful girl'.

To negotiate the lexicalised meaning of *cipha-dzuwa* as 'beautiful girl', the semantic component of DM must consider the cultural and conventional associations of the Cinyanja language. It is likely that *cipha-dzuwa* has acquired a figurative or idiomatic meaning over time, where the combination of 'killer' and 'sun' is used metaphorically to refer to a 'beautiful girl'. This process of semantic negotiation happens within the framework of Distributed Morphology, where the compound's interpretation goes beyond the literal meanings of its individual parts.

Another compound word, *msunga-cuma*, which literally means 'keeper of wealth' whose lexicalised meaning is 'treasurer', can also apply DM principles to interpret the hidden meaning. At the syntactic level, the compound word *msunga-cuma* can be analysed in terms of its constituent parts. The *m*- prefix marks the compound word as belonging to noun class 1, which often includes human nouns in Cinyanja. Further, the root *sunga* and *cuma* as individual root morphemes are core elements that carry the essential meaning which contributes to the compound meaning.

At the morphological level, DM deals with the inflection and derivation of morphemes. In the case of *msunga-cuma*, each morpheme undergoes morphological processes consistent with Cinyanja grammar. For example, the prefix '*m*' agrees with the noun class of the referent, indicating that the compound relates to a human entity. For the semantic level, the semantic component of DM plays a crucial role in interpreting the lexicalised meaning of the compound. It combines the individual meaning of '*m*' with '*sunga*' and 'çuma' to derive the intended interpretation, which, in this case is 'treasurer', this process goes beyond the decoding of the literal meaning of individual components.

Having presented the three levels for negotiating meaning, the researchers now claim that the interpretation of the lexicalised meaning 'treasurer' from the literal meaning 'keeper of wealth' is as a result of the semantic extension or shift in the compound's meaning. While the literal meaning 'keeper of wealth' suggests someone who takes care of money, the lexicalised meaning 'treasurer' broadens this concept to encompass a person who has a more official administrative role in managing finances particularly in an institution or organisational setup.

Further, the interpretation of the lexicalised meaning 'treasurer' may be influenced by the cultural conventional factors. The compound word *msunga-cuma* may have become rooted with the specific meaning of *treasurer* through its frequent use over time and specific association with financial responsibility in Cinyanja-speaking communities.

In the case of another compound word *kabyala-ufa*, DM can be used to explain how the lexicalised meaning 'bastard' is negotiated from the literal meaning of 'planter of mealie-meal'. Like the compound word *msunga-cuma* 'treasurer', in the example above, at the syntactic level, the compound word *kabyala-ufa* is analysed in terms of its constituent parts. The prefix *ka*- is a noun class 12 diminutive marker, used to indicate smallness or endearment. Whereas the roots *byala* and *ufa* are individual morphemes contributing to the meaning of the compound.

At the morphological component level, DM deals with inflection and the derivation of morphemes. In *kabyala-ufa*, each morpheme undergoes morphological processes consistent with Cinyanja grammar. For instance, the diminutive *ka*-marks the noun class 12, indicating a small or endearing version of the root noun. The semantic component on the other hand, plays a critical role in negotiating the lexicalised meaning of the compound by combining the individual meaning of *ka-*, *byala*, and *ufa* to derive the intended meaning interpretation, 'bastard'. The interpretation of bastard goes beyond the interpretation of individual words to semantic reanalysis. In DM, the compound's meaning can be subject to the reanalysis based on its use in real life communicative situations. The compound *kabyala-ufa*, may have undergone the process of semantic reanalysis overtime, where its original meaning of 'bastard'. This kind of shift can be claimed to be influenced by cultural attitudes or societal associations between planting and illegitimate children.

Finally, DM provides a theoretical framework to understand how the syntactic, morphological, and semantic components of the grammar collaborate to negotiate the lexicalised meaning of compound words like *cipha-dzuwa*, *msunga-cuma* and *kabyala-ufa*, in Cinyanja. The process involves considering contextual, conventional, and cultural factors, leading to a figurative extension of the compounds' original meaning.

Conclusion

In order to analyse the structure of compound words with a non-derived N in the nominal part of the compound word in Cinyanja, individual compound elements were classified. The structure revealed that the VN compounds comprise the class marker, verb and noun (CM+V+N). In exploring the intricate structure of Cinyanja compound words through the lens of Distributed Morphology, a theoretical framework that unveils the interconnectedness of various linguistic components, two possible structures of analysing compound words were discussed, the morphological structure and the syntactic structure.

In the morphological structure, it was indicated that the noun class prefix attaches to the verb and not to the entire compound, and that the structure of the VN compound resembles the synthetic compounds. In the syntactic analysis of the compound structure, the noun class prefix was said to be added to the verb phrase to realise the compound word, and that the –a suffixed to the verb is a verbaliser.

The syntactic analysis followed the Distributed Morphology framework which supports the views that word formation involves a distributed network of multiple components of grammar- the syntax, morphology, phonology and semantics.

The analysis of the structure of the compound words has revealed that the interpretation of compounds'lexicalised meaning goes beyond the mere interpretation of individual words rather it includes the semantic reanalysis of compound words based on contextual, cultural attitudes as well as conventional beliefs demonstrated in the meaning interpretation of *cipha-dzuwa*, *msunga-cuma* and *kabyala-ufa*. The morphological analysis of these compounds provides a deeper understanding of the language's word formation processes and linguistic creativity. The combination of morphemes in Cinyanja compounds reveals the intricate interplay between morphology and semantics, contributing to the expressive capacity and rich lexical inventory of the language. As an essential aspect of Cinyanja linguistic structure, compounding highlights the dynamic nature of word formation and its role in shaping the language's evolving lexicon.

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