

## Hiatus Resolution in the Ndau Cliticisation Domain

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### Abstract

*This article examines hiatus resolution in the cliticisation domain. Specifically the article examines hiatus in Ndau procliticization. The Ndau cliticisation domain resolves and tolerates hiatus in some specific contexts. The article argues that hiatus is resolved in adverbial and possessive proclitics-host boundary, but it is tolerated in copulative ndí and its allomorphs-boundary. The major findings of this study are that vowel coalescence is used to resolve hiatus in the cliticisation domain. Coalescence is the preferred strategy across a Prosodic Word boundary, precisely across a host-clitic boundary (Postlexical Level), and it involves the elision of V with the preservation of the feature [open] that is passed onto the following vowel. Using the tenets of Optimality Theory, hiatus is tolerated in procliticization when V<sub>2</sub> is a vowel of a host of a copulative proclitic /ndi-/ and its allomorphs because Realize Morpheme outranks ONSET.*

**Keywords:** *cliticisation, copulative affix, coalescence, hiatus, procliticisation*

### Introduction

This study seeks to provide an analysis of hiatus resolution in the Ndau<sup>1</sup> cliticisation domain. Hiatus refers to a heterosyllabic sequence of adjacent vowels. This study adopts a syllable-based approach to hiatus because it attributes hiatus resolution to the ill-formedness of onsetless syllables in word medial position. We adopt this approach primarily because, as noted by Goldsmith (1995), the syllable is a natural domain for the statement of many phonotactic constraints (Goldsmith, 1995). Therefore, all hiatus resolution strategies are “resyllabification” (Myers, 1987:222) processes that are meant to preserve the syllable structure of Ndau. This study seeks to examine how hiatus is eliminated and tolerated in yet other well defined contexts in the Ndau cliticisation domain. This research seeks to answer the following specific question; how does Ndau deal with vowel hiatus in the cliticisation domain?

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<sup>1</sup> Ndau is a language spoken in Chipinge and Chimanimani districts of Manicaland province of Zimbabwe.

As noted in Bantu literature like Karanga (Mudzingwa, 2010; Mudzingwa, 2013), Zezuru (Mudzingwa, 2010; Mudzingwa & Kadenge, 2014), Ndebele (Sabao, 2012) and ciNsenga (Simango & Kadenge, 2014), in Nda, hiatus resolution creates an onset for the second onsetless vowel ( $V_2$ ) because the second syllable lacks an onset. Onsetless syllables are generally marked in Bantu and the resolution of vocalic hiatus is generally attributed to the high ranking markedness constraint ONSET, which requires syllables to have onsets, thus disallowing heterosyllabic  $V_1.V_2$  sequences which would arise where hiatus is maintained (Casali, 2011; Ito, 1989; Prince & Smolensky 2004; Simango & Kadenge, 2014).

According to Casali (1997:5), “there are a variety of ways in which languages deal with sequences of vowels that arise through morphological or syntactic concatenation.” Casali (1997), for example, further notes that another alternative is to leave the sequence unchanged and syllabify the two vowels into separate syllables known as heterosyllabification. Many languages do not readily tolerate adjacent heterosyllabic vowels and vowel sequences may be subject to any one of several possible hiatus resolution strategies that include glide formation, vowel coalescence, secondary articulation, consonant epenthesis (default insertion and spreading), assimilation and vowel deletion (Casali, 1996; Kadenge, 2010a; Mtenje, 2007; Mudzingwa, 2010; Myers, 1990; Orié & Pulleyblank, 2002; Rosenthal, 1997; Sibanda, 2009). All these hiatus resolution processes are motivated to satisfy the constraint ONSET; hence, they are triggered to maintain the syllable structure of the language under investigation.

Kadenge (2010a, 2010b), Mudzingwa (2010), Mudzingwa and Kadenge (2011), Mudzingwa (2013), Mudzingwa and Kadenge (2014), Kadenge and Simango (2014) have argued that different hiatus resolution strategies operate in different morphosyntactic and phonological contexts. These studies conclude that Zezuru and Karanga have a complete ban on hiatus resolution in all morphosyntactic contexts and five strategies are employed to ensure that it never surfaces, viz., vowel coalescence, glide-formation, secondary articulation, elision and spreading (epenthesis). These strategies form a conspiracy to eliminate onsetless syllables. A phonological ‘conspiracy’ is a set of separate rules with a similar function of ridding the surface forms of certain unwanted configurations (Kisseberth, 1970). This means that Zezuru and Karanga ban hiatus without exception.

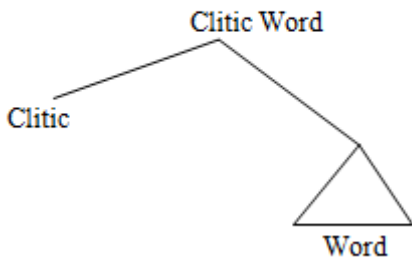
However, Mtenje (2007) argues that hiatus is resolved in some domains and tolerated in others in three Malawian languages namely, Cindali, Citonga and Cinyika. Following the same debate, Simango and Kadenge (2014) and Kadenge and Simango (2014) argue that in ciNsenga also a Malawian language, hiatus is completely banned in the nominal domain, that is, between the prefix and the noun stem but is tolerated in the verbal domain exclusively between the inflectional stem and macrostem. Building on these studies, this present study is different from previous studies on Shona phonology which have concluded that hiatus in the clitic group is resolved without exception and vowel coalescence is used to resolve hiatus within this clitic-group (Harford, 1997; Kadenge, 2010a; Mudzingwa, 2010; Mudzingwa, 2013; Mudzingwa & Kadenge, 2014). The present study hypothesizes that Ndaou resolves and tolerates hiatus in the cliticisation domain. Specifically, Ndaou resolves hiatus in adverbial and possessive proclitics but Ndaou tolerates it in some copulative proclitics. The main challenge is to account for the fact that in this language, in the same domain- cliticisation, vowel hiatus is tolerated in some specific contexts but banned in yet other contexts. In order to account for that paradoxical situation, this study argues that hiatus is not resolved when  $V_2$  belongs to a host of a copulative proclitic but resolved when  $V_2$  belongs to a host of an associative (adverbial) and possessive proclitics. This implies that Ndaou possesses a phonological system which is intricately sensitive to its morphology and morphosyntax. We will demonstrate that this fact can be adequately explained by appealing to insights from Optimality Theory (Prince & Smolensky, 2004). The use of domains in the analysis of hiatus shows that hiatus resolution is conditioned by the phonology and morphosyntactic structure of the language under investigation (Mutonga, 2016).

### **Adverbial, Possessive and Copulative Proclitics**

This section examines the adverbial, possessive and copulatives as proclitics. It demonstrates the prosodisation of these clitics in Ndaou. Cliticisation can generally be defined as a process by which a clitic is appended either to the front or back of the host word (Mberi, 2002). Clitics are defined as bound morphemes which seem to be intermediate between an affix and a word (Taylor, 1989). This is because, in some respects, clitics are like words whilst in some respects, they are like affixes and yet certain characteristics suggest that these clitics form a category on their own (Taylor, 1989).

Adverbial affixes and possessive are called prepositions, (Myers, 1990:81). These prepositions function as proclitics. Mkanganwi (1995:68) observes that, “all Shona proclitics... are appended to the substantive phrases [noun phrases] to form what in traditional Shona terminology is called ..., adverbial [associative] and possessive forms...” The copulative affix *ndí* and its allomorphs *ngá*, *ngé*, *ngó* attach to class 2a nouns, demonstratives, possessive pronouns and selectors (hosts). The structure of procliticization<sup>2</sup> in Ndaui is shown below:

**PROCLITICISATION: PROCLITIC + HOST**



**Figure 1: Procliticisation (Mudzingwa, 2010:7)**

In Figure 1 above, the proclitic attaches to a Prosodic Word to form a Clitic Word. The boundary between the clitic and the host is a Prosodic Word boundary. Of interest to this research is the fact that hiatus is completely banned in the adverbial and possessive proclitic –host boundary but tolerated in the copulative proclitic *ndí* and its allomorphs *ngá*, *ngéngó* -host boundary.

The following examples show the formation of a clitic word in nominals:

- [2] (a) /ná=ù-j-ù/ [nójù]  
 ASSOC-STAB-CL.1.DEM.AFFIX<sup>3</sup>  
 ‘With this one’

<sup>2</sup> Hiatus is also created in enclitics. Enclitics are a disparate group of monosyllabic morphemes which include adverbials, question words, nouns and pronouns which can appear at the end of the phonological word. Hiatus in encliticisation is resolved by vowel coalescence. Encliticisation is excluded in this study because the present study seeks to explain how hiatus is tolerated and resolved in Ndaui procliticization.

<sup>3</sup> The following abbreviations are used in this paper: ASSOC = association; STAB = stabilizer; CL = class; DEM = demonstrative; PRON = pronoun; COP = copulative, CV = consonant –vowel, C = consonant; V = vowel; OT = optimality theory, RV = right vowel; RM = realise morpheme.

- (b) /ná=i-dʒò/ [nédʒò]  
ASSOC-STAB-CL.10.PRON.AFFIX  
'With them'
- (c) /ná=à-kò/ [nàkò]  
ASSOC-STAB-CL.12.DEM.AFFIX  
'With it'
- (d) /sá=ù-jù/ [sójù]  
ASSOC-STAB.-DEM.AFFIX  
'Like this one'

Proclitics in Ndau have the CV structure which can be attached to either a C-initial or V- initial stem.

Thecopulative proclitic /ndí-/ and its free-varying allomorphs /ngá, ngé, ngó/ is attached to nouns in class 2a, demonstratives, pronouns and selectors. Consider the following examples:

- [3] (a) <sup>nd</sup> í=à-mtèt-wà / [ndíàm-tèt-wà]  
COP AFFIX-CL.2a-mr mtetwa  
'It's Mr. Mtetwa.'
- (b) /<sup>nd</sup> í =à-tètè/ [nd í àtètè]  
COP AFFIX-CL.2a-aunt  
'It's aunt.'
- (c) /<sup>ngé</sup>=à-pò/ [ngéàpò]  
COP-AFFIX-CL.16-STAB-that place  
'It's that place.'
- (d) /<sup>ngé</sup>= à-wà / [ngéàwà]  
COP AFFIX-CL.6- these ones  
'It's these ones.'
- (e) /<sup>ngé</sup>= à-vò/ [ngéàvò]  
COP AFFIX-CL.6-they are theirs  
'They are theirs.'
- (f) / <sup>ngé</sup>= à-ké / [ngéàké]  
COP AFFIX-CL.1-they are his or hers  
'They belong to him or her.'

From the demonstratives, pronouns and selectors are the hosts and they are 'stabilized' so that they satisfy the disyllabic minimality requirement imposed on Prosodic Words. These are the attachment sites for clitics. The augmentation of attachment site for clitics, demonstrates that clitics do not attach to Prosodic Stems but to Prosodic Words.

### **Theoretical Framework**

This analysis is couched in Optimality Theory (Prince & Smolensky, 1993, 2004) and Moraic Phonology (Hayes, 1989)<sup>4</sup> in which syllabification is a consequence of best-satisfying syllable structure well-formedness constraints. These theories offer an account of hiatus resolution by showing that surface outputs can be accounted for in terms of optimal satisfaction of a universal set of violable constraints (Casali, 1996). According to Kager (1999:xi), the central idea of the OT theory is that:

Surface forms of language reflect resolutions of conflicts between competing demands or constraints. A surface form is 'optimal' in the sense that it incurs the least serious violations of a set of violable constraints, ranked in a language-specific hierarchy... Languages differ in the ranking of constraints, giving priorities to some constraints over others.

OT recognizes two basic types of constraints: markedness constraints and faithfulness constraints. Markedness constraints militate against dispreferred output structures by assigning violation marks to output candidates guilty of these structures. For example, syllables without onsets are considered 'marked' structures cross-linguistically; the constraint ONSET assigns violation marks to all candidates with onsetless syllables. According to McCarthy (2002), constraints in OT must assess the faithfulness of the output to the input. This faithfulness is measured in terms of Correspondence, which is defined as a relation between the elements of a string  $S_1$  and the elements of a string  $S_2$ . Correspondence captures faithfulness by requiring every segment of the input to have a correspondent in the output and vice versa. McCarthy and Prince (1993, 1995) identify various Correspondence relations which can be characterised as constraints. In other words, faithfulness constraints, on the other hand, require that output candidates be faithful to the input. Violation marks are assigned to output candidates which have in some way altered the

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<sup>4</sup> This study also utilises insights from Feature Geometry (Clements & Hume, 1995).

input form. Faithfulness constraints are generally assumed to be of two types: DEP constraints, which prohibit the addition of new information, and MAX constraints, which prohibit the loss of information. DEP and MAX constraints may be further specified depending on the particular ‘information’ in question—for example, faithfulness constraints may be formulated in terms of faithfulness to features, segments, moras or any other information present in the input. The interaction of faithfulness and markedness constraints with respect to ranking determines the optimal analysis of any given input (Prince & Smolensky, 2004). One of the merits of employing OT in this thesis is that OT recognizes the role of the marked configuration (ONSET), and OT captures the central aspect of the conspiracy: to repair hiatus. OT captures the generalisation that the goal of each of the strategies is ONSET satisfaction. This constraint is schematized as follows:

- (1) ONSET  
o [V (syllables must have onsets)]  
(Ito, 1989:223)

This constraint requires all syllables to begin with onsets hence all onsetless syllables are marked. Following Kadenge (2013), the analysis of hiatus resolution presented in this article appeals to markedness, alignment and correspondence constraints. The constraints used in this research are general syllable structure constraints and constraints on segmental representation.

### **Data Presentation and Analysis**

According to Mutaka and Matanji (2000:43), “vowel coalescence refers to the process where two vowels of different qualities merge into one.” However, in this study, vowel coalescence is considered as elision of  $V_1$  with preservation of the feature [open], which is passed on to  $V_2$  (Snider, 1985). Coalescence is the preferred strategy across a prosodic word boundary and precisely across a host-clitic boundary. In the cliticisation domain, either in proclitics or in enclitic, the preferred hiatus resolution strategy is coalescence, which is restricted to this domain. The left and right edges of the host are crucial because when the same clitics occur in other contexts hiatus is resolved by spreading. We assume that coalescence is the preferred strategy in this morphosyntactic domain, and only when it is blocked does

spreading operate. Vowel coalescence, which fuses two vowels to form a single moraic vowel, is represented in the figure below:



**Figure 2: Correspondence Diagram for Coalescence**

Figure 2 above shows that when two input vowels  $V_1$  and  $V_2$ , are merged to form a single moraic vowel on the surface, the features of  $V_1$  and  $V_2$  are fused to form single vowel which represent features of both  $V_1$  and  $V_2$ . This strategy does not result in the deletion of a vowel but all segments in the input ( $V_1$  and  $V_2$ ) have output correspondence ( $V_{1,2}$ ). As a hiatus resolution mechanism, coalescence, driven by the need to prevent the surface realisation of onsetless syllables, is also always invariably in violation of a constraint \*MERGER. This constraint militates against two segments that are distinct in the input to be merged as a single segment in the output. This again is in a bid to offset the violation of the higher ranked constraint, ONSET. In the verbal and nominal domains, where coalescence is not available as a repair strategy, the constraint \*MERGER is highly ranked. In contrast, in the cliticisation domain, where the vowel coalescence repairs hiatus, it is lowly ranked.

### Adverbial and Possessive Proclitic

The following examples illustrate coalescence in adverbial and possessive proclitics; coalescence occurs across a prepositional proclitic and its host. In all these examples,  $V_1$  is consistently  $V_1$  /a/ and  $V_2$  is /u/, /i/ or /a/. In the examples provided below, the prosodic word is in square brackets and the clitic group in angled <> brackets.

(1) /a1 + i2/ → [e2]

[4] (a) /ná=ì-ní/ [néní] <ná=[ìní]>

ASSOC-CL1.1.SG-PRON

‘With me’

(b) /ná=ì-sù/ [nésù] <ná=[ìsù]>

ASSOC-CL1.PL-PRON

‘With us’

(c) /sá=ì-m-í/ [sémí] <sá=[ìmí]>

ASSOC-STAB.-PRON

‘Like this you’



- (d) /wá=ì-k-ó/ [wékó] <wá= [ìkó]>  
 CL.3-POSS PREFIX-STAB-PRON  
 ‘Those of that place’
- (e) /rá=ì-k-ó/ [rékó] <rá= [ìkó]>  
 CL.5-POSS PREFIX-STAB-PRON  
 ‘That belongs there.’
- (f) /tʃá=ì-k-ó/ [tʃékó] <tʃá= [ìkó]>  
 CL.7-POSS PREFIX-STAB-PRON  
 ‘That belongs there.’

The examples above show that when the proclitic in the form of CV is attached to its host which has VCV shape, it results in coalescence. The examples above show the pattern that, if the low-front vowel /a/ is fused with the high-front vowel /i/, the result is the middle-front vowel /e/. [a+i=e].

- (2) /a1 + a2/ [a2] →
- [5] (a) /ná=à-vó/ [návó] <ná=[ àvó]>  
 ASSOC-CL1.PL-DEM.AFFIX  
 ‘With these ones’
- (b) /sá=á-k-ó/ [sákó] <sá=[àkó]>  
 ASSOC-STAB.-DEM.AFFIX  
 ‘Like this one’

The example above shows the pattern that when the vowel (V<sub>1</sub>) of the proclitics is a low-front vowel /a/ and is in sequence with the initial onsetless syllable which is also a low-front vowel /a/, the two vowels fuse to form a single low-front vowel /a/. The fusion of identical vowels is referred to by Bakovic (2007) as ‘Identity Coalescence’ or ‘Coalescence under identity’. In this case, there are no changes in vowel quality. This is evidenced by the fact that the output correspondents, indexed to a single output segment, remain faithful to their respective input correspondent in featural identity. In the above example, there is no deletion of the vowel segment either V<sub>1</sub> or V<sub>2</sub> but they merge.

- (3) /a1 + u2/ [o2] →
- [6] (a) /ná=ù-j-ú/ [nójú] <ná= [ùjú]>

ASSOC=STAB-CL.1-DEM.AFFIX		
‘With this one’		
(b) /sá= ù·m-ú/	[sómú]	<sá= [ùmú]>
ASSOC-STAB-CL18-DEM.AFFIX		
‘Like inside there’		
(c) /h̥á= ù·j-ú/	[h̥ójú]	<h̥á=[ùjú]>
COP-STAB-CL.1-DEM.AFFIX		
‘Here he/she is!’		
(d) /sá = ù·j-ú /	[sójú]	<sá= [ùjú]>
ASSOC-STAB-DEM.AFFIX		
‘Like this one’		

The example above shows that when the low-front vowel /a/ merges with the high-back vowel /u/, the result is the middle-back vowel /u/. The combination of the vowels in a sequence determines the vowel in the output. Height is an important feature that determines the output vowel. Two moraic segments merge to form a unique single moraic segment. In each of these cases, the ‘coalesced’ vowel retains the place feature of V<sub>2</sub>, and the height feature of V<sub>1</sub> /a/ which is consistently [open]. In terms of Feature Geometry (Clements and Hume, 1995), vowel coalescence is the elision of V<sub>1</sub> with the preservation of the aperture feature [open] which is passed onto the following vowel (V<sub>2</sub>) (Mudzingwa & Kadenge, 2014:132) as shown below:

(4)	/a/ [open] [pharyngeal]	+	/u/ [labial]	=	[o] [open] [labial]
(5)	/a/ [open] [pharyngeal]	+	/i/ [coronal]	=	[e] [open] [coronal]
(6)	/a/ [open] [pharyngeal]	+	/a/ [pharyngeal]	=	[a] [open] [pharyngeal]

In all cases of coalescence, the feature [open] of the first vowel is retained. Vowel coalescence as demonstrated above can be formally analysed using the constraints that motivate, coalesce and block other candidates from surfacing. Table 1 below shows vowel coalescence in

adverbial procliticisation. The same obtains for possessive procliticisation.

**Table 1: Constraints Motivating Coalescence**

/sá <sub>1</sub> =ù <sub>2</sub> jú/ 'like this one'	ONSET	ANCHOR L	V: L	ALIGN L	MAX OPEN	*MERGER
(a) [sá <sub>1</sub> =ù <sub>2</sub> jú]	*!					
(b) [sá <sub>1</sub> .jú]				*!		
(c) [sù <sub>2</sub> .jú]		*!			*!	
(d) → [só <sub>3</sub> jú]				*!		*!
(e) [só <sub>3</sub> .jú]			*!			*!

The table above shows that candidate (a) is ruled out as the output because it violates ONSET constraint. ONSET constraint blocks it because it does not allow the onsetless syllables /u/ to exist in the output. Candidate (b) violates the ALIGN L constraint. The candidate (c) which deletes the V<sub>2</sub> is disqualified by ANCHOR L constraint which requires the left edge morpheme [sá-] in the input to correspond with the left edge morpheme of the output. Candidate (d) is blocked in the alignment constraint ALIGN L, and UNIFORMITY-IO constraint which strongly disallow the vowel /o/ in the output to correspond to two vowels /a/ and /u/ in the input. Although, these constraints strongly disallow candidate (d), there are both lowly ranked constraints in the cliticisation domain. In this regard, candidate (d) is the optimal candidate that appears at the surface. Candidate (e) is also a competitive candidate which lengthens the fused vowel. This candidate cannot be the optimal because it is strongly blocked with the highly ranked markedness constraint V: which does not allow the existence of long vowel in Ndaou phonology.

### Non-Resolution of Hiatus in Copulative Procliticisation

The above examples have illustrated the morphosyntactic context in which hiatus is resolved in the cliticisation domain. However, there are yet other morphosyntactic contexts where hiatus is tolerated. This is a paradox because Ndaou has both a hiatus prohibiting grammar as well as a hiatus permitting grammar. Hiatus seems to be created and tolerated in some morphosyntactic contexts in the cliticisation domain; hiatus is tolerated when the copulative affix (proclitic) is attached to the nouns in class 2a, demonstratives and pronouns (hosts). Consider the following examples:



front [i] occurring in V<sub>1</sub> position before a low [a], the high vowel will undergo elision. In other words, the serial ordering of the vowels in the above examples would yield or rather; trigger other repair strategies like vowel elision. Although the conditions of coronal elision are met but vowel elision is not employed either because this would be too costly – the morphological information carried by the vowel would all be lost and it results in ungrammatical forms. Vowel elision is blocked because it would result in zero exponence for a morpheme. Vowel elision in this morphosyntactic context is blocked by a morphological constraint Realise Morpheme (RM) (Kurusu, 2001). This constraint requires the morphological information contained in the underlying presentation to have phonological representation on the surface. RM can be understood as a function mapping each morpheme onto some phonological substance with which it is affiliated (cf. Walker, 2000). Again, in the cliticisation domain, hiatus is allowed when the copulative affix/ *ngá-*/ which has allomorphs [*ngá-*, *ngé-*, *ngó-*] is attached with near demonstratives and pronouns. Consider the following examples:

### Demonstratives

- [9] (a) /*ngé-ì-jí*/ [ngé.ì.jí.]  
 COP AFFIX-CL.9- STAB-this one  
 ‘It’s this one.’
- (b) /*ngò-ù-wú*/ [ngò.ù.wú.]  
 COP AFFIX- CL.3-STAB-this one  
 ‘It’s this one.’
- (c) /*ngé-à-pá*/ [ngé.à.pá.]  
 COP-AFFIX-CL.16-STAB-this place  
 ‘It’s this place.’
- (d) /*ngé-à-wá*/ [ngé.à.wá.]  
 COP AFFIX-CL.6- these ones  
 ‘It’s these ones.’

### Possessive Pronouns

- [10] (a) /*ngé-àngú*/ [ngé.à.ngú.]  
 COP AFFIX-CL.6-they are mine  
 ‘They are mine.’
- (b) / *ngé-à-ké*/ [ngé.à.ké.]  
 COP AFFIX-CL.1-they are his or hers

‘They belong to him or her.’

- (c) /*ngé-àvò*/ [ngé.à.vò.]  
 COP AFFIX-CL.1-they belong to them  
 ‘They belong to them.’
- (d) /*ngé-èdù*/ [ngé.è.dù.]  
 COP AFFIX-CL.1-they belong to us  
 ‘They belong to us.’

### Selectors

- [11] (a) /*ngé-ìpí*/ [ngé.ì.pí]  
 COP AFFIX-CL.9-which one  
 ‘Which one’
- (b) /*ngé-ìm<sup>wé</sup>*/ [ngé.ì.m<sup>wé</sup>]  
 COP AFFIX-CL.9-one of them  
 ‘One of them’

Again, from the above data, vowel coalescence is not possible because  $V_1$  is not /a/. Therefore, the serial ordering of  $V_1$  and  $V_2$  does not condition vowel coalescence. If we elide  $V_1$ , we will have ungrammatical forms such as,

- [12] (a) /*ngé-ì-jí*/ [ngé.ì.jí.] \**[ngìjí]*  
 COP AFFIX-CL.9- stab-this one  
 ‘It’s this one.’
- (b) /*ngò-ù-wú*/ [ngò.ù.wú.] \**[ngùwú]*  
 COP AFFIX- CL.3-STAB-this one  
 ‘It’s this one.’
- (c) /*ngé-àpá*/ [ngé.à.pá.] \**[ngàpá]*  
 COP-AFFIX-CL.16-STAB-this place  
 ‘It’s this place.’
- (d) /*ngé-àwá*/ [ngé.à.wá.] \**[ngàwá]*  
 COP AFFIX-CL.6- these ones  
 ‘It’s these ones.’
- (e) /*ngé-àngú*/ [ngé.à.ngú.] \**[ngàngú]*  
 COP AFFIX-CL.6-they are mine  
 ‘They are mine.’
- (f) / *ngé-àké*/ [ngé.à.ké.] \**[ngàké]*  
 COP AFFIX-CL.1-they are his or hers

- ‘They belong to him or her.’
- |     |   |             |           |
|-----|---|-------------|-----------|
| (g) | /ɲgé-àvò/<br>COP AFFIX-CL.1-they belong to them<br>‘They belong to them.’ | [ɲgé.à.vò.] | *[ɲgàvò]  |
| (h) | /ɲgé-èdù/<br>COP AFFIX-CL.1-they belong to us’<br>‘They belong to us.’    | [ɲgé.è.dù.] | *[ɲgédù]  |
| (i) | /ɲgé-ì pí/<br>COP AFFIX-CL.9-which one<br>‘Which one?’                    | [ɲgé.ì.pí]  | *[ɲgìpí]  |
| (j) | /ɲgé-ì mʷè/<br>COP AFFIX-CL.9-one of them<br>‘One of them’                | [ɲgé.ì.mʷè] | *[ɲgìmʷè] |

Since the copulative proclitic is carrying morphological information that cannot be tempered with the morpheme-specific constraint Realise Morpheme (RM) explains the non-resolution of hiatus in this morphosyntactic context. Given the fact that RM requires phonological parsing of underlying morphemes. This constraint is ranked higher than ONSET. This constraint is defined as follows:

[4] Realise Morpheme (RM)

For every morpheme in the input, some phonological element should be present in the output (Kurusu, 2001:38)

RM is a morphological faithfulness constraint militates against the repair of hiatus when  $V_2$  belongs to the host of the copulative proclitic. In the same vein, the deletion of the second vowel is prevented by Max-RV, which does not allow deletion the rightmost vowel in a sequence of two or more vowels. This can be taken to be a case of positional faithfulness where the rightmost vowel is always in a ‘strong’ position. (For a discussion on positional faithfulness, see Beckman, 2004). In the cliticisation domain, hiatus is tolerated as long as  $V_2$  is the vowel of the host of a copulative affix. Clearly this suggests that hiatus is tolerated so long as  $V_2$  part of the host of the copulative proclitic. The strategy employed is not to repair hiatus under such circumstances. The hiatus between vowel sequences means that surface violations of ONSET are compelled under the duress of

satisfying the highest ranked constraint Realise Morpheme. The following table presents a formal of hiatus in cliticisation.

**Table 2: Hiatus in Cliticisation**

/n <sup>d</sup> <sub>1</sub> -à <sub>2</sub> -mú <sup>h</sup> á <sup>h</sup> ngá/ 'it's Mr. Mhlanga'	Realise Morpheme	ONSET	MAX RV
(a) n <sup>d</sup> <sub>1</sub> . à <sub>2</sub> . mú. há. ngá		*	
(b) n <sup>d</sup> <sub>1</sub> . mú. há. ngá	*!		*
(c) n <sup>d</sup> à <sub>2</sub> . mú. há. ngá	*!		

In the table above, candidate (a), which is fully faithful and has a heterosyllabic sequence of vowels, violates ONSET. It is the winner because it satisfies the high-ranking constraint Realise Morpheme which does not allow the resolution of hiatus when V<sub>2</sub> is a vowel of host of a copulative proclitic. Therefore, the non resolution of hiatus in Ndaup copulative proclitics is sensitive to some morphological information. The second and third candidates are eliminated because they violate the highest ranked constraint though satisfying the lowly ranked constraint – ONSET.

### Conclusion

The findings of this study are that Ndaup tolerates and resolves hiatus in the cliticisation domain. Specifically, Ndaup tolerates hiatus in some copulative proclitics and resolves hiatus in adverbial and possessive proclitics. Ndaup employs vowel coalescence to resolve hiatus in adverbial and possessive proclitics. This strategy is meant to satisfy the markedness constraints, namely ONSET. In order to account for the tolerance of hiatus in some copulative proclitics, this study evoked Realise Morpheme constraint. This constraint militates against the repair of hiatus when V<sub>2</sub> belongs to the host of the copulative proclitic. Realise Morpheme is ranked higher than ONSET constraint and this allows the existence of hiatus in copulative proclitic. A follow-up study is envisaged as there is still need to look at the interaction between hiatus resolution and prosodic minimality in Ndaup.



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