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ASSIMILATION IN DABIDA

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Abstract: The paper deals with vowel and consonant assimilation in Dabida, Bantu (E74a). While often exhibiting vowel sequences, Dabida nevertheless presents a lot of cases of contact and distant vowel assimilation occurring in verbal roots, stems, suffixes, noun final *-a*, attributive and presentative demonstratives. Consonant assimilation occurs with nasal prefix [N-] (of noun classes 9/10) homorganic to root initial voiced stops and affricates. All types of assimilation in Dabida belong to the category of morphophonemic rules, but not to phonetic ones.

Key words: Bantu, Dabida, morphophonology, morphophonemic rules, assimilation, vowel harmony

АССИМИЛЯЦИЯ В ЯЗЫКЕ ДАБИДА

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Аннотация: Статья посвящена вокалической и консонантной ассимиляции в языке дабида группы банту (E74a). Будучи исключительно толерантным в отношении допустимых комбинаций гласных, дабида тем не менее демонстрирует многочисленные случаи контактной и дистантной вокалической ассимиляции. Ассими-

ляция действует в глагольных корнях, основах, суффиксах, конечном гласном *a* существительного, в атрибутивных и презентативных местоимениях. Консонантная ассимиляция возникает в префиксальном показателе [N-] 9 и 10 именных классов, гоморганном начальному согласному корня, если последний представлен звонким смычным или аффрикатой. Все типы ассимиляции в дабида относятся к сфере морфонологии.

Ключевые слова: языки банту, дабида, морфонология, морфонологические правила, ассимиляция, гармония гласных

1. Introduction

Dabida (*kidaβida*) is a Bantu language of south-eastern Kenya coded E74a (inside Nyika-Taita group E70) in Guthrie's referential classification (Maho 2003: 646). The language is native to at least 274,000 speakers (Simons & Fennig (eds.) 2019). G. Philippson and M. Montlahuc consider Dabida as part of "Kilimanjaro Bantu" — the name they use as "a cover term for the languages known as Chaga and Taita" (Philippson & Montlahuc 2003: 475). Dabida is a minority language represented by several closely related dialects (or territorial variants) that are mutually intelligible. It is not used in formal domains in Kenya, since it does not have official status, but it has been used for missionary purposes (Philippson & Montlahuc 2003: 475). The Holy Bible ("*Ilaɣo jiboie kwa wandu wose*") in Dabida was published by the Kenya Bible Society in 1997. The overwhelming majority of Dabida people know Swahili — the national and official language of Kenya.

Dabida is rather poorly described. The literature available to the authors of this paper is the following: (Philippson 1983; 2014; Odden 2001; 2006; Philippson & Montlahuc 2003; Sakamoto 2005). In addition, there exist some articles on Dabida, as well as a preliminary grammar (in Russian) "Jazyk Dabida": (Ryabova 1987; 2000; 2008). The present article is a description of vowel and consonant assimilation in the Mbololo (Kimbololo) dialect.

1.1. Data sources

Most of the data come from two Kenyan students in Moscow, Duncan Mwanjila and Michel Mwamba, who are native speakers of the Mbololo dialect of Dabida. Both students used two Dabida textbooks, “Mashomo ga imbiri” and “Chuo cha mashomo ga kawi”.

1.2. Phonology

1.2.1. Prosody

Dabida is a tonal language distinguishing two level tones: high and low (Philippson & Montlahuc 2003: 481), with the tonal system based on the rightward shift of high tones from their underlying position (Odden 2006: 34)[1]. However, since tone in Mbololo does not seem to play a distinctive role in the lexicon, and tones are not relevant to the subject of this study, they are not marked in this article.

1.2.2. Vowel system

There are five vowels in Dabida. They are listed in Table 1.

There is no vowel length contrast in Dabida, and the vowel sequences always straddle two syllables (Philippson & Montlahuc 2003: 477).

Table 1

Vowel system

Backness / Height	Front	Central	Back
High	*i*		*u*
Mid	*e*		*o*
Low		*a*	

[1] For a description of the Dabida tonal system see (Odden 2001; 2006; Philippson 2014; Philippson & Montlahuc 2003).

Dabida allows sequences of vowels. Thus, within word boundaries all but three possible combinations of two different quality and of the same quality vowels have been attested: *aa*, *ai*, *ae*, *au*, *ao*, *ii*, *ie*, *ia*, *io*, *ee*, *ei*, *ea*, *eu*, *eo*, *uo*, *ui*, *ue*, *ua*, *oo*, *oi*, *oe*, *oa*. The vocalic combinations occur both within morpheme boundaries and at morphemic junctures:

(1) ***aa*** *-ɓ**aa*** — *m**a-a**sikari*
big CL6-soldier
'big' 'soldiers'

(2) ***ai*** *mw-**ai*** — *u-tʃ**a-i**-tumbuli-a*
CL1-girl CL1.S-FUT-CL4.O-answer-FIN
'girl' 'He will answer them.'

(3) ***ae*** *m**a-e**mbe*
CL6-mango
'mango fruit (pl)'

(4) ***au*** *n-dʒ**au***
CL9-bull
'bull'

(5) ***ao*** *h**ao*** — *m**a-o**le*
where CL6-scrap
'where' 'scraps'

(6) ***ii*** *l**ii*** — ***i-i**ndi*
when CL5-bone
'when' 'bone'

(7) ***ie*** ***-**kal-**ie***
get.sharp-FIN_{PFV}
'to sharp'

(8) ***ia*** *Ø-kof**ia*** — *-ɓ**i-a***
CL9-hat be.angry-FIN
'hat' 'to be angry'

(9) ***io*** *Ø-k**io*** — ***i-o**sosi*
CL9-night CL5-bat
'night' 'bat'

(10) ***ee*** *Ø-t**ee***
CL9-lie
'falsehood; lie'

(11) ***ei*** *β**ei*** — *nde-di-β**e-i**-lol-a*
allegedly NEG-1PL.S-PROG-CL4.O-look.for-FIN
'allegedly, ostensibly' 'We do not look for them.'

(12) ***ea*** *Ø-β**ea*** — *-s**e-a***
CL9-wish sit-FIN
'wish' 'to sit'

(13) ***eu*** *m-b**eu***
CL9-grain
'grain'

(14) ***eo*** *m-b**eo***
CL9-cold
'cold'

(15) ***uo*** *tʃ-**uo*** — *k**u-o**goʃa***
CL7-book CL15-washing
'book' 'to wash, washing'

(16) ***ui*** *l**u-i***
CL11-palm
'palm of the hand'

(17) ***ue*** *-el**ue***
'dirty'

(18) ***ua*** *m-b**ua*** — *-y**u-a***
CL9-nose buy-FIN
'nose' 'to buy'

(19) ***oo*** *ku-t**o-o***
2SG.S-taste-FIN_{SUBJ}
'You should taste.'

(20) ***oi*** *ki-t**oi***
CL7-thief
'thief'

(21) ***oe*** ***toe*** 'always'

(22) ***oa*** *mb**oa**mb**oa*** — *-k**o-a***
slowly cough-FIN
'slowly' 'to cough'

Only three combinations are not attested in our data, all of them containing the vowel *u* in the second position of the sequence: *iu*, *ou*, *uu*. At this point it is not possible to state whether the absence of such sequences in the list is due to a data gap or if there is a phonological restriction for *u* following the vowel of the same height or backness. Nevertheless, we have found these sequences within word combinations:

(23) *m-nd**u*** ***u**-ɓoie*
CL1-man CL1-handsome
'a handsome man'
(24) *m-ɗek**i*** ***u**-ɗek-e*
CL1-cook CL1.S-boil-FIN$_{SUBJ}$
'A cook should cook.'
(25) *m-ɲang**o*** ***u**-ɣu*
CL3-door CL3-this
'this door'

A final vowel and an initial vowel of two adjacent words never coalesce.

Combinations of more than two vowels VVV and VVVV (*iao*, *uao*, *aia*, *uai*, *iaua*, *euio* and some others) are infrequent and are always distributed among several morphemes. The VVV sequences only occur in the pre-stem part of finite verb forms, in the interrogative pronoun 'what/which' that takes verbal concords and in a few verb stems in combination with a final suffix:

(26) ***u-a-i**-βon-a*
CL1.S-PRS-CL4.O-see-FIN
'He sees them.'

(27) *meda* ***i-ao***
CL4.river CL4-what
'what rivers'
(28) *-z**ai-a***
get.used-FIN
'to get used'

Vowel combinations of the VVVV type are typical only in the pre-stem part of finite verb forms in combination with a root initial vowel:

(29) *βa-β**ia-u-a**β-a*
CL2.S-PRS-CL1.O-clean-FIN
'They are cleaning him.'
(30) *nd**e-u-i-o**bu-aɣ-a*
NEG-CL1.S-CL4.O-fear-DUR-FIN
'He does not fear them.'

Glide formation takes place when vocalic elements /*u*/ and /*i*/ of noun class prefixes and concord markers coincide with a segment that begins with a vowel:

(31) *m**u**-ana* ***u**-a-po* > *m**w**-ana **w**-a-po*
CL1-child CL1-CONN-1SG.POSS
'my child'
(32) *m**u**-engere* *ɣ**u**-a* *mori* > *m**w**-engere ɣ**w**-a mori*
CL3-light CL3-CONN CL3.moon
'moon light'
(33) *mi-lungu* ***i**-a-ke* > *mi-lungu **y**-a-ke*
CL4-god CL4-CONN-3SG.POSS
'his gods'
(34) *n-daɣa* ***i**-a-kal-ie* > *n-daɣa **y**-a-kal-ie*
CL9-knife CL9.S-PRF-get.sharp-FIN_{PFV}
'sharp knife'

1.2.3. Consonant system

There are 26 consonants in Dabida. All consonants can form CV or VC combinations with any vowel: *iriso* 'an eye', *kifurute* 'a butterfly', *maasikari* 'soldiers', *βitʃasikiriaɣa* 'they will be listening'.

Table 2

Consonant system

Place of articulation / Manner of articulation	bila-bial	labio-dental	alveo-lar	postal-veolar	palatal	velar	glottal
Stop	*p* *b*		*t* *d*			*k* *g*	*h*
Nasal	*m*		*n*		*ɲ*	*ŋ*	
Affricate			*tʃ* *dʒ*				
Fricative	*β*	*f* *v*	*s* *z*	*ʃ*		*ɣ*	
Implosive	*ɓ*		*ɗ*				
Approximant	*w*		*l*		*y*		
Vibrant			*r*				

The CC consonant combinations are rather frequent but actually only the following ones occur:

(a) syllabic *ṃ* plus any consonant:

(35) ***ṃ-n****dʒiɣe* *u-tʃa-**ṃ-k**und-a* ***ṃ-ɓ****ori* ***ṃ-l****atʃa*
CL1-girl CL1.S-FUT-CL1.O-love-FIN CL1-singer CL1-tall
'A girl will love a tall singer.'

(b) any consonant plus the semivowel *w*:

(36) ***ɣw****a-Ø-**βw**aɣ-**w**-a* ***ʃw****aʃwa*
CL3.S-PRF-kill-PASS-FIN quickly
'It was killed quickly.'

(c) the homorganic nonsyllabic nasals *m*, *n*, *ŋ* plus the stops *b*, *d*, *g*, *dʒ* that form the following clusters: *mb*, *ndʒ*, *nd*, *ŋg*:

(37) *βa-**nd**u* *__nd__e-βi-tʃa-βi**ŋg**-a* *Ø-ĩimba*
CL2-man NEG-CL2.S-FUT-drive.off-FIN CL10-lion
'People will not drive off lions.'

1.3. Morphological structure of the verb and noun

1.3.1. Morphological structure of the verb

According to Nurse (2006: 90), "the verbal word has a similar structure in most Bantu languages:

Initial — Subject — Negative — TA — Object — Root — Extension(s) — Final — Suffix".

In Dabida, the simplest morphological structure of a finite verb form (in the affirmative) is the following:

Subject — TAM — Object — Root — Final,

where Subject is the subject marker indicating the class or person and number of the action subject; Final is one of the three ending markers — the default (or imperfective) suffix *-a*; the perfective suffix *-ie*; the marker of the subjunctive (or optative-hortative) mood *-e*. TAM and Final are pre-radical and post-radical verb formatives respectively representing tense, mood and aspect of the verb. The pre-stem TAM can also have zero marking:

(38) *ni-**tʃa**-ku-tesi-**a***
1SG.S-FUT-2SG.O-help-FIN
'I will help you.'
(39) *βa-ndu* *βi-**Ø**-zam-**ie***
CL2-man CL2.S-PRF-get.bad-FIN_{PFV}
'bad people'

Dabida verb forms can also contain: 1) the durative pre-final suffix *-Vɣ*; 2) the post-final suffix of the plural imperative; 3) derivative extension(s) EXT including the passive voice suffix.

1.3.2. Morphological structure of the noun

The most notable nominal morphology characteristic of Dabida, similarly to other Bantu languages, is the presence of nominal classes. There are 15 noun classes in Dabida. The Dabida noun typically consists of a CV, V, N or Ø prefix and a root (or stem). Most noun prefixes have allomorphs conditioned by the root initial phoneme.

Table 3

Noun class prefixes

Class	Root initial phoneme		Examples	Exceptions	
	_C	_V		Hiatus	Fusion
1	2	3	4	5	6
1	*mu-* ~ *ṃ-*	*mw-*	*ṃ-ndu* ~ *mu-ndu* ‘man’ *mw-ana* ‘child’		
1a	*Ø-*		*Ø-ndee* ‘father’		
2	*ßa-*	*ß-*	*ßa-ndu* ‘people’ *ß-ana* ‘children’	*ßa-arabu* ‘Arabs’	*ßomi* ‘husbands’ *(< ßa-umi)*
2a	*Ø-*		*Ø-aka* ‘brothers’		
3	*mu-* ~ *ṃ-*	*mw-*	*ṃ-lamba* ‘baobab’ *mw-adu* ‘beehive’	*mu-embe* ‘mango tree’	*mori* ‘moon’ (< *mu-eri*)
3a	*ßu-*	*ßw-*	*ßu-ɣosi* ‘old age’ *ßw-aya* ‘shyness’		

Continuation of Table 3

1	2	3	4	5	6
4	*mi-*		*mi-ɣondi* ‘mountains’ *mi-adu* ‘beehives’		*meri* ‘moons’ (< *mi-eri*)
5	*i-*		*i-ɣo* ‘stone’ *i-asikari* ‘soldier’		
6	*ma-*		*ma-ßaßa* ‘wings’ *ma-ososi* ‘bats’		*meso* ‘eyes’ (< *ma-iso*)
7	*ki-*	*tʃ-*	*ki-dʒu* ‘shadow’ *tʃ-andarua* ‘mosquito net’	*ki-oro* ‘ladle’	
8	*vi-*	*v-*	*vi-teto* ‘languages’ *v-adu* ‘shoes’	*vi-oro* ‘ladles’	
9	*N- /_C*$_{\text{voiced stop}}$ *N- /_C*$_{\text{voiced affricate}}$ *Ø-/*$_{\text{—other consonant}}$	*Ø-*	*m-bela* ‘rhinoceros’ *n-dʒoɣolo* ‘cock’ *Ø-loli* ‘truth’ *Ø-iŋge* ‘leopard’		
10	= 9				
10a	*tʃu-*	*tʃw-*	*tʃu-mbo* ‘songs’ *tʃw-aka* ‘voices’		
11	lu-	lw-	*lu-mbo* ‘song’ *lw-aka* ‘voice’	*lu-i* ‘palm’	
12	*ka-* *ka-Pref-R*	*k-*	*ka-ɣosi* ‘dear old man’ or *ka-m-ɣosi* *k-ana* ‘baby’ or *ka-mw-ana*		
13	*du-* *du-Pref-R*	*dw-*	*du-ɣosi* ‘dear old men’ or *du-ßa-ɣosi* *dw-ana* ‘babies’ or *du-ß-ana*		

End of Table 3

1	2	3	4	5	6
15	*ku-*		*ku-dîßa* ‘to hunt, hunting’ *ku-ogoʃa* ‘to wash, washing’		
16	*a-*		*a-ndu* ‘place, places’		

In classes 1 and 3, the *mu-* prefix is *m-* (not *mw-*) in front of labials as sequences *-wo-* and *-wu-* seem to be implausible in Dabida (see *w*-deletion rule in § 2.1.1): *m-umi* ‘husband’, *m-oɗa* ‘river’, *m-oɗo* ‘fire’, *m-uɲu* ‘salt’.

2. Vowel assimilation

Although vocalic sequences in Dabida are numerous and diverse, it is a language with consistent and active assimilation. Dabida presents all formal types of vocalic assimilation. The assimilation occurs in most word classes and belongs to the category of morphophonemic, but not phonetic, rules.

2.1. Contact vowel assimilation

Cases of contact vocal assimilation, i.e., processes in which two adjacent different quality vowels become more similar to each other, only take place in Dabida verb forms and in a few nouns.

2.1.1. Contact vowel assimilation in verb forms

Contact vocal assimilation involves the Final *-e* of a subjunctive (or an optative-hortative) form that has the pattern Subject — Ø— [Object] — Stem — Final *-e*:

(40) *-las-a* ‘to shoot’ → *ku-las-e*
2SG.S-shoot-FIN_{SUBJ}
‘You should shoot / must shoot! / shoot!’

(41) *-ßeser-a* ‘to wait’ → *ßi-ßeser-e*
CL2.S-wait-FIN_{SUBJ}
‘They ought to wait / they should wait / let them wait.’

If the Final *-e* follows the root back labials /*u*, *o*/ or glide /*w*/ it becomes *-o* as the result of labial assimilation; the glide disappears.

$$e \rightarrow o \;/\; u, o, w\_$$
$$w \rightarrow \Lambda \;/\; \_o^{2}$$

(42) *-taku-a* ‘to cut’ → *ku-taku-e* > *ku-taku-o*
2SG.S-cut-FIN_{SUBJ}
‘You should cut / you ought to cut.’

(43) *-to-a* ‘to taste’ → *ßi-to-e* > *ßi-to-o*
CL2.S-taste-FIN_{SUBJ}
‘Let them taste/they ought to taste.’

(44) *-ho-a* ‘to get cool’ → *machi ɣi-ho-e* > *ɣi-ho-o*
water CL4.S-get.cool-FIN_{SUBJ}
‘Let the water cool.’

(45) *-ɲw-a* ‘to drink’ → *u-ɲw-e* > *u-ɲ-o*
CL1.S-drink-FIN_{SUBJ}
‘He should drink / let him drink.’

This process is not phonetic, since the language exhibits the sequence *-ue* in other cases, cf. *ßul**ue*** ‘pollution’, *-ßur**ue*** ‘ripe’.

The same case of labial assimilation with glide disappearance takes place in Dabida passive verb forms that contain the passive marker allomorph *-w-* after a stem final consonant and the allomorph *-lw-* standing between two vowels: *-lim-a* ‘to cultivate’ > *-lim-w-a* ‘to be cultivated’, but *-rede-a* ‘to bring’ > *-rede-lw-a* ‘to be brought’.

[2] The *w*-deletion rule is evidently due to the fact that *wo*, as well as *wu*, is implausible in the language, or at least not attested in our data.

(a) The subjunctive Final *-e* assimilates to the glide of the passive voice marker just like to labialization and becomes *-o*, while the glide disappears:

(46)	*kor-w-a*	→	*ku-se-kor-w-e*	> *ku-se-kor-o*
	burn-PASS-FIN		2SG.S-NEG-burn-PASS-FIN_{SUBJ}	
	'to be burnt'		'You should not be burnt.'	
(47)	*-ɣiri-lw-a*	→	*ßi-ɣiri-lw-e*	> *ßi-ɣiri-l-o*
	prevent-PASS-FIN		CL2.S-prevent-PASS-FIN_{SUBJ}	
	'to be prevented'		'They should be prevented / let them be prevented.'	

(b) When the verb Final is the perfective *-ie*, the passive *-lw-* is inserted between /*i*/ and /*e*/, the suffixal *-e* changes to *-o*, and the glide dissapears:

(48)	*-umb-ie*	→	*-umb-i<lw>e*	> *umb-i-l-**o***
	create-FIN_{PFV}		create-FIN_{PFV}<PASS>	
	'to create'		'to be created';	
(49)	*-dʒ-ie*	→	*-dʒ-i<lw>e*	> *-dʒ-i-l-**o***
	eat-FIN_{PFV}		'eat-FIN_{PFV}<PASS>	
	'to eat'		'to be eaten'	

2.1.2. Contact vowel assimilation in nominal forms

Cases of contact vowel assimilation in nouns are very rare in Dabida and only occur in a few words at the juncture between the prefix and the root. An example is the noun *ßomi* (CL2) 'husbands' (sg. *m-umi*), that exists instead of the expected *ß-umi*. Here, *-o-* appears at the juncture of prefix *ßa-* and the root beginning with *-u-*, resulting from a reciprocal assimilation of the two vowels with a subsequent contraction: *au* > *oo* > *o* (*ßa-* + *-umi* > *ßoomi* > *ßomi*).

The *u-* of *mu-* (CL3) assimilates to the root vocalic initials *-o-* and *-e-*: *mu* + *o* > *moo*, *mu* + *e* > *moo* with the subsequent contraction, *cf. mu-* + *-eda* > *mooda* > *moda* 'river'; *mu-* + *-odo* > *moodo* > *modo*

‘fire’; *mu-* + *-eri* > *moori* > *mori* ‘moon’; *mu-* + *-omu* > *moomu* > *momu* ‘mouth’.

CL3 nouns are the singular of CL4 nouns with the prefix *mi-*, and this prefix always preserves its shape. Only in case of root initial *e* or *o* (and only in a few words) is there assimilation and contraction, cf. *mi-* + *-oda* > *meeda* > *meda* ‘rivers’; *mi-* + *-odo* > *meedo* > *medo* ‘fires’; *mi-* + *-omu* > *meemu* > *memu* ‘mouths’; *mi-* + *-eri* > *meeri* > *meri* ‘moons’.

CL6 prefix *ma-* also does not change its shape. The only case of phonetic change involving *ma-* occurs in the noun *meso* ‘eyes’, with the reciprocal assimilation of the prefix and the root vowels with a resulting contraction: *ma-* + *-iso* > *meeso* > *meso*.

The contemporary view on Bantu morphophonemic rules permits one to consider these cases as fusions that serve to remove a hiatus. The following are types of fusion (coalescence) that are possible in nouns under discussion:

$$a + u \rightarrow o$$
$$u + o \rightarrow o$$
$$u + e \rightarrow o$$
$$i + o \rightarrow e$$
$$i + e \rightarrow e$$
$$a + i \rightarrow e$$

2.2. Distant (noncontact) assimilation

Unlike most Bantu languages, Dabida is a language with a rather rich noncontact vocalic assimilation system. Various phenomena of noncontact assimilation appear in most of its word categories.

2.2.1. Distant assimilation in nominal forms

According to Schadeberg (2003: 157), the locative suffix **-inɪ* “is certainly an innovation and not a retention from PB”. A phenomena primarily attested in Eastern and Southern Bantu (Zones E, G, P and S) is depicted by Zeller, whereby locative nouns are derived from non-

locative ones "by means of the suffix *-(i)ni* or one of its cognates *-(e)ŋ* or *-ɲi*" (Zeller Ms: 5–7):

(50) a. Kivunjo-Chaga E62
mesa-ɲi
CL9.table-LOC
b. Swahili G41-43
bunge-ni
CL5.parliament-LOC
c. Tharaka E54
kanisa-ni
CL12.church-LOC
d. Sesotho S33
motse-ŋ
CL3.village-LOC
e. Southern Ndebele S407
endl-ini
CL9.house-LOC

According to Philippson & Montlahuc (2003: 482), the "Dabida locative suffix has the shape *-inyi*" and its initial vowel coalesces with the final vowel of the stem to which it is suffixed: *tʃìa* 'path' > *tʃìeɲi* 'in the path, on the way; *ɲumba* 'house' > *ɲumbeɲi* 'in the house, at home'.

In our opinion, the locative suffix **-inɪ* should be viewed as being of the form *-ɲi* in Dabida. When the suffix occurs in nouns with final vowels *u*, *i*, *o*, *e*, the latter are not influenced by its *i*:

(51)	*i-no*	>	*i-no-ɲi*
	CL5-toe		CL5-toe-LOC
	'big toe'		'on the big toe'
(52)	*m̩-ɣondi*	>	*m̩-ɣondi-ɲi*
	CL3-mountain		CL3-mountain-LOC
	'mountain'		'up the mountain'

(53) *momu* > *momu-ɲi*
CL3.mouth CL3.mouth-LOC
'mouth' 'in the mouth'
(54) *lw-embe* > *lw-embe-ɲi*
CL11-horn CL11-horn-LOC
'horn' 'on a horn'

However, if the locative suffix is incorporated into nouns with a final *a*, the process of distant regressive assimilation takes place, as a low final *a* turns into a middle *e* under the influence of the high locative *i*:

$$a \rightarrow e \; / \; \_ɲi$$

(55) *m̩-saŋgaɣ**a*** > *m̩-saŋgaɣ**e**-ɲi*
CL3-sand CL3-sand-LOC
'sand' 'in/on the sand'
(56) *mod**a*** > *mod**e**-ɲi*
CL3.river CL3.river-LOC
'river' 'in/by the river'
(57) *m-buß**a*** > *m-buß**e**-ɲ**i***
CL9-field CL9-field-LOC
'field' 'in/at the field'

If the noun final *a* (that has become *e* according to the rule above) follows the labial *u* or the glide *w*, then it is simultaneously labialized while the *w* is dropped. The morphophonemic rules of the process are:

$$e \rightarrow o \; / \; u, w$$
$$w \rightarrow ʌ \; / \; \_o$$

(58) *m̩-k**u**a* > *m̩-ku**o**-ɲi*
CL3-stream CL3-stream-LOC
(59) *i-f**w**a* > *i-f**o**-ɲi*
CL5-burial CL5-burial-LOC
(60) *n-deŋg**w**a* > *n-deŋg**o**-ɲi*
CL9-danger CL9-danger-LOC

2.2.2. Distant assimilation in verb forms

A similar case of regressive noncontact assimilation occurs in plural imperative verb forms in which the verb Final *-a* preceding a special plural imperative marker *-ɲi* turns to *e* under the influence of the vowel *i* within:

a → *e* / _*ɲi*

(61) *ʃom-**a**!* → *ʃom-**e**-ɲi!*
read-FIN read-FIN-PL.IMP
'Read!' (sg) 'Read!' (pl)

(62) *sikiri-**a**!* → *sikiri-**e**-ɲi!*
listen-FIN listen-FIN-PL.IMP
Listen!'(sg) 'Listen!' (pl)

An example of full regressive assimilation is the verbal durative suffix *-Vɣ*[3] that occupies a pre-final position within a verb and has two variants: *-aɣ-* and *-eɣ-*. The suffix is *-aɣ-* if it stands before the default (imperfective) Final *-a*, but *-eɣ-* before *e* of the perfective Final *-ie*, since the suffix breaks the Final and its vocalic element just echoes the vowel following it:

(63) *-ʃom-a* > *-ʃom-aɣ-a*
read-FIN read-DUR-FIN
-ʃom-ie > *-ʃom-i<eɣ>e*
read-FIN_{PFV} read-FIN_{PFV}<DUR>

(64) *-lim-a* > *-lim-aɣ-a*
cultivate-FIN cultivate-DUR-FIN
-lim-ie > *-lim-i<eɣ>e*
cultivate-FIN_{PFV} cultivate-FIN_{PFV}<DUR>

(65) a. *ni-tʃa-lim-aɣ-a*
1SG.S-FUT-cultivate-DUR-FIN
'I will be cultivating.'

[3] According to Philippson & Montlahuc (2003: 495), *-aɣa* is "a suffix that is found in combination with pre-stem TAM markers"; *-ieɣe* "is the curious suffix, which would appear to be a combination of /*-aɣa*/ and /*-ie*/".

b. *ne-re-lim-i<eɣ>e*
1SG.S-PST-cultivate-FIN$_{PFV}$<DUR>
'I cultivated.'

2.2.3. Distant assimilation in demonstrative pronouns

Vowel assimilation occurs in Dabida demonstrative pronouns. It is a full vowel assimilation in attributive demonstratives and assimilation to the place of articulation in presentative ones.

There are three degrees of demonstratives in Dabida: 'Near', 'Far' and 'Referential'.

The root of the 'Near' attributive demonstrative 'this, these' is the class concord morpheme itself which has 15 realizations (one per each of the 15 noun classes[4]). Besides the root expressed by the class concord, the 'Near' demonstrative pronoun consists of a pre-root vocalic morpheme *V* that echoes the root vowel element in all the forms.

Table 4

Paradigm of the demonstrative 'this, these'

Class	'this'	Class	'these'
1	*V + u > uhu*	2	*V + βa > aβa*
3	*V + ɣu > uɣu*	4	*V + i > ihi*
5	*V + dʒi > idʒi*	6	*V + ɣa > aɣa*
7	*V + tʃi > itʃi*	8	*V + vi > ivi*
9	*V + i > ihi*	10	*V + ri > iri*
11	*V + lu > ulu*		
12	*V + ka > aka*	13	*V + ɗu > uɗu*
15	*V + ku > uku*		
16	*V + a > aha*		

[4] The class concord morphemes for demonstratives are: *u* (CL1), *βa* (CL2), *ɣu* (CL3), *i* (CL4), *dʒi* (CL5), *ɣa* (CL6), *tʃi* (CL7), *vi* (CL8), *i* (CL9), *ri* (CL10), *lu* (CL11), *ka* (CL12), *ɗu* (CL13), *ku* (CL15), *a* (CL16).

In the forms *uhu*, *ihi*, *aha* a consonantal element *h* serves to remove the possible hiatus of two identical vowels.

The presentative demonstrative 'here it is / here they are' consists of the root, which is the class concord marker itself and the morpheme of structure *hV* that precedes the root.

Table 5

Paradigm of the presentative demonstrative 'here it is / here they are'

class	'here nearby this is'	class	'here nearby these are'
1	*hV + u > hoyu*	2	*hV + ßa > haßa*
3	*hV + ɣu > hoɣu*	4	*hV + i > heyi*
5	*hV +dʒi> hedʒi*	6	*hV + ɣa > haɣa*
7	*hV + tʃi > hetʃi*	8	*hV + vo > hevi*
9	*hV + i > heyi*	10	*hV + ri > heri*
11	*hV + lu > holu*		
12	*hV + ka > haka*	13	*hV + ɗu > hoɗu*
15	*hV + ku > hoku*		
16	*hV + ku > hoku*		

The shape of initial morpheme vowel V_1 depends upon the V_2 of the root in this way:

V_1		V_2
a	⇐	*a*
o	⇐	*u*
e	⇐	*i*

All initial morpheme vowels resemble those of the roots. If the root vowel is /a/ they remain the same: *ha* ← *ßa* (CL2), *ha* ← *ka* (CL12); when the root vowel is /u/ or /i/ they are of the same backness, but differ in height: *ho* ← *yu* (CL1), *ho* ← *ku* (CL15), *he* ← *dʒi* (CL5), *he* ← *tʃi* (CL7).

The semivowel *y* in the forms *hoyu* and *heyi* serves to prevent possible vowel contraction.

2.3. Vowel harmony in verbal forms

The cases of non-contact vocalic assimilation described above are not typical for the Bantu languages. The typical and widely spread type of vocalic assimilation is verbal vowel harmony (as a type of distant vocalic assimilation) with the degree of height as the main assimilation factor. Vowel height harmony (henceforth VHH) exists in Dabida appearing in those parts of verbal forms that consist of a bare root or of a root and some post-root derivational suffixes traditionally named extensions (henceforth EXT).

As typical for Bantu, the majority of verb roots in Dabida have the structure CVC: *-dîβ-* to hunt', *-ɗek-* 'to cook'; fewer roots are of the structure: VC *-ak-* 'to burn', CV *-ki-* 'to save', C *-tʃ-* 'to come', C*w* *-ʃw-* 'to die'. There are roots with more complex structure, such as CVCV *-ʃinu-* 'to surprise', (C)VNCV *-umbu-* 'to cut', CVCVC *-βeser-* 'to wait', CVCVCV *-ʃoɣono-* 'to hurt'. Historically, they are usually derived forms. Nowadays they are primary roots or primary stems.

VHH does not allow mid vowels /o, e/ to co-occur with high vowels /i, u/ and low vowel /a/ within a verbal root. In other words, vowels of adjacent height levels are incompatible: *-βanik-* 'to hang' *-suvuri-* 'to hope', *-kimbi-* 'to run', *-puruk-* 'to fly', *-tʃiru-* 'to increase', *-kai-* 'to live', - *ɗuŋgumi-* 'to doze', but *-soɣod-* 'to approach', *-borok-* 'to bellow', *-βoŋge-* 'to get drunk', *-ʃeker-* 'to spoil', *-βeser-* 'to wait', *-ʃoɣono-* 'to hurt'.

Dabida has extended VHH to verbal derivational suffixes, EXTs, that have the shape V, VC and fill the slot between the root (the primary stem) and a Final. One EXT (or much, less frequently, two) stands immediately after the root, producing such derived verbal forms as the applicative (directive), the causative, the quasi-passive (stative), the reciprocal, the associative and the reversive. The significant portion of corresponding EXTs has two variants, the selection of which depends upon the root vowel height. The morphophonemic rule concerning the realization of the underspecified vowel V of the suffix EXT is:

$$V \rightarrow i \,/\, i, u, a$$
$$V \rightarrow e \,/\, e, o$$
$$(V \rightarrow o \,/\, o)$$

Applicative: *-i-/-e-*, *-ir-/-er-*:

(66)	*-ram-*	‘to jump’	>	*-ram-i-*
	-lim-	‘to plough’	>	*-lim-i-*
	-nus-	‘to smell’	>	*-nus-i-*
	-ɓok-	‘to bark’	>	*-ɓok-e-*
	-ɗek-	‘to cook’	>	*-ɗek-e-*
	-fuŋ-	‘to take out’	>	*-fuŋ-ir-*
	-soɣod-	‘to approach’	>	*-soɣod-er-*

Stative (or neuter): *-ik-/-ek-*

(67)	*-ɗîm-*	‘to can’	>	*-ɗîm-ik-*
	-ɓar-	‘to break’	>	*-ɓar-ik-*
	-kund-	‘to want; to love’	>	*-kund-ik-*
	-βon-	‘to see’	>	*-βon-ek-*
	-ɗek-	‘to cook’	>	*-ɗek-ek-*

Causative: *-ir-/-er-, -iʃ-/eʃ-* (or *-oʃ-*), *-is-/-es-*

(68)	*-βaβ-*	‘to have pain’	>	*-βaβ-ir-*
	-id-	‘to go by’	>	*-id-iʃ-*
	-βiŋg-	‘to follow’	>	*-βiŋg-is-*
	-βon-	‘to see’	>	*-βoɲ-er-*
	-ɣoɣom-	‘to incline’	>	*-ɣogom-eʃ-*
	-om-	‘to come dry’	>	*-om-eʃ-*
	-oɣ-	‘to wash oneself’	>	*-oɣ-oʃ-*

It should be mentioned that most of the Kilimanjaro Bantu languages have undergone the “deharmonizing innovation”, Dabida being the only language of the group that has preserved the vowel harmony (Philippson & Montlahuc 2003: 493–494).

Nevertheless the vowel harmony of Dabida is often violated in applicative verb forms with root mid /o/ or /e/, where the EXT can be both *-i-* and *-e-*: *-ɣend-* 'to go' > *ɣend-e-/ɣend-i-* 'to go to smb.', *-ɣod-* 'to say' > *ɣod-e-/ɣod-i-* 'to tell smb.' The forms with *-e-* possibly appear under the influence of Swahili.

Reciprocal *-an-*, associative *-aɲ-* and reversive *-u-* EXTs do not follow VHH rules:

(69) *-kaɓ-* 'to fight' > *-kaɓ-an-* 'fight hand to hand'
-nuɣ- 'to follow' > *-nuɣ-an-* 'follow each other'
-horeʃer- 'to consolate' > *-horeʃer-an-* 'consulate each other'

(70) *-ɗamb-* 'to travel' > *-ɗamb-aɲ-* 'travel together'
-ɗeɗ- 'to speak' > *-ɗeɗ-aɲ-* 'have a talk'
-ʃom- 'to read, to study' > *-ʃom-aɲ-* 'read/study together / at the same time'

(71) *-kutʃ-* 'to squeeze' > *-kutʃ-u-* 'unclench'
-el- 'to become light' > *-el-u-* 'become dark'

3. Consonant assimilation

A case of consonant assimilation appears in noun classes 9/10, which have identical morphological elements and follow common rules for the phonetic shapes of their noun prefixes. The latter are two phonologically conditioned allomorphs: the non-syllabic homorganic nasal prefix [N-] and the zero-prefix *Ø-*, the selection of which depends on the root initial phoneme. [N-] only appears before root-initial voiced stops and voiced affricates and turns into /m/, /n/ or /ŋ/ as a result of the assimilation to the place of articulation:

(72) *N → m/_b* *m-bua* 'nose'
N → n/_d, dʒ *n-daɣa* 'knife', *n-dʒala* 'hunger'
N → ŋ/_g *ŋ-golo* 'heart'

In all other environments, the prefix has zero form. It appears in nouns begining with the vowels and in nouns with any voiceless stop, fricative, sonorant or implosive root initial: *Ø-asubuhi* 'morning', *Ø-tee* 'lie', *Ø-tʃoki* 'bee', *Ø-pusi* 'cat'.

This phenomenon is very typical in Bantu languages.

4. Conclusion

The survey of Dabida vowel and consonant assimilation shows that this language possesses a rather rich assimilation system evidently standing out in comparison with cases of assimilation in many other Bantu languages including Kilimanjaro Bantu, which have mostly undergone the "deharmonizing" innovation.

While allowing sequences of vowels, Dabida nevertheless presents numerous cases of contact and distant vowel assimilation that can be both (a) progressive and regressive as vowels governing the assimilation belong to roots as well as to suffixes, (b) partial and full when the vocalic element just echoes the vowel governing the assimilation. The phenomenon of vowel assimilation operates in nouns, verbs and demonstratives of Dabida, occurring in such domains as verbal roots, stems, suffixes, noun final *-a*, all forms of 'Near' attributive and presentative demonstratives.

The major assimilation factor is vowel height. Less frequently, it is backness. Verbal vowel height harmony (a type of a distant vowel assimilation) exists in Dabida, appearing in those parts of the verbal forms that consist of a bare root or of a root and some post-root derivational suffixes EXT.

The only case of consonant assimilation attested in Dabida is with nasal prefix [N-] (of noun classes 9/10) homorganic to root initial voiced stops and affricates.

All types of assimilation in Dabida belong to the category of morphophonemic rules, rather than phonetic ones.

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Abbreviations

1, 2 — 1st, 2nd person
CL1, CL2 … CL15 — noun class marker
C — consonant
CONN — connective
DUR — durative suffix
FIN — final verbal suffix / verbal ending
FIN_{SUBJ} — final verbal suffix of the subjunctive form
FIN_{PFV} — final verbal suffix of the perfective form
FUT — future
EXT — extension
FUT — future
IMP — imperative
LOC — locative
NEG — negative
O — object marker
PASS — passive
POSS — possessive pronoun
PRF — perfect
PROG — progressive
PL — plural
PRS — present
PST — past
S — subject marker
SG — singular
TA — tense-aspect
TAM — tense-aspect-mood
V — vowel
VHH — vowel height harmony

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