

A grammar of Tadaksahak a northern Songhay language of Mali Christiansen-Bolli, R.

Citation

Christiansen-Bolli, R. (2010, March 31). *A grammar of Tadaksahak a northern Songhay language of Mali. Berber Studies*. Retrieved from https://hdl.handle.net/1887/15180

Version: Not Applicable (or Unknown)

License: License agreement concerning inclusion of doctoral thesis in the

Institutional Repository of the University of Leiden

Downloaded from: https://hdl.handle.net/1887/15180

Note: To cite this publication please use the final published version (if applicable).

2. Phonological Structure

2.1 Syllable Structure

In this section we describe the basic syllable patterns observed. In a word almost all consonants can occur in almost all positions. We do not give specifications here but discuss the restrictions under 2.2.3.

Tadaksahak has the following syllable structures:

(1) Syllable structure

open syllables	closed syllables
CV	CVC
CVV	CVCC

In word-initial position, the onset may be absent, and vowel-initial syllables occur, e.g. *iiles* 'tongue', *ákrar* 'ram'. Doubly closed syllables only occur in word-final position and always contain the feminine singular suffix *-t* as their final element, e.g. *tadábert* 'pigeon' (see 3.2.2). Long vowels only occur in non-final open syllables.

2.2 Consonants

2.2.1 Inventory of phonemes

There are 32 consonantal phonemes. The whole series of the alveolar consonants also appears pharyngealized. This feature is marked by a dot under the consonant. The signs are the orthographic representations used in this work. c and j represent [tf] and [dʒ] respectively, y represents [j] and r[r] On the table below, the letter 'v' indicates voicing, '-v' stands for voiceless and '+v' for voiced.

(2) Consonants

	Labial		Alveolar		Pharyngeal	-ized	Dalatal	5	Velar	5	Pharvndeal		Laryngeal
	-V	+٧	-V	+ V	-V	+ V	-v	+٧	-V	+٧	-V	+ V	
Stops		b	t	d	ţ	ḍ	С	j	k	g	q		
Fricatives	f		s	Z	ș	<u></u>	ſ	3	Χ	Y	ħ	٢	h
Glides		W						У					
Laterals				/		!							
Taps				r		ŗ							
Nasals		m		п		ņ				ŋ			

2.2.2 Evidence for Consonantal Contrasts

Here are some examples of the different contrasting environments for the consonants as word initial, syllable initial, intervocalic, and syllable final where this position is possible. Contrast between same place of articulation with different voicing and adjacent points of articulations are given.

(3) Contrasts with consonants

С		gloss		gloss
b/m	báy	to know	máy	to own
	bún	to die	mún	to throw out
	abáktaw	old cushion	amákţaŗ	leaving the well
	áblaγ	chunk of earth	ámlay	meat (kind of)
	alʒíb	pocket	ajím	thousand
b/f	bér	to be big	fér	to open
	bún	to die	fún	to pierce
	<i>ʒiibíitan</i>	dirt (pl)	jíifatan	corpses
	ábram	white turban	áfraw	feather / wing
	<i>şéţəb</i>	to put on a belt	<i>şéţef</i>	to spit
b/d	báy	to know	dáy	to buy
	bíibi	to be black	biidí	bone

	yibrár	to be bad	yídraɣ	to be decorated
	yírkəb	to pull	yínkəd	to sneak to
d/t	dudú	to pour	tudú	to respond
	bídaw	canister	lítam	turban (kind of)
	átri	star	ádri	crack in skin
	yífəd	to borrow (s.th.)	yíbət	to snatch
d/ḍ	déləg	to decorate	<i>ḍə́ḷəm</i>	to accuse unjustly
	éedag	place	éeḍag	herb, sp.
	adágar	part	aḍágaļ	father-in-law
	anáfad	tobacco pouch	aņáfaḍ	infection
d/j	jinjí	neck	diŋgá	forgetfulness
	tadábert	pigeon	tajábert	fonio, sp.
	cindí	part	cinjí	rain
g/k	guná	to see	kuná	to find
	guurú	metal	kuurú	leather / skin
	yígbəs	to wear	yíkbəl	support
	létəg	waistcloth	<i>şéţək</i>	to point
		heaviness		
g/j	geení	head louse	jeejí	to hang up
	gíman	to be good	jinán	luggage
	ígitan	elevations (pl)	ijíiman	thousands (pl)
g/γ	gáafa	crime	γáafaf	striped polecat
	áagar	tree, sp.	áaγar	straw, sp.
	agírid	granary	ayíri	white spot (on dog)
	yírgəm	to be upset	yírɣəm	to warn
	yáhag	to last	yáhaγ	to ransack
q/k	qóq	to be dry	kós	to cut
	léqəm	to strengthen	lékəm	following (n)
	yíqbəl	to fulfill prayer	yíkbəl	to support
	abáaleq	dust	t(a)séelək	young woman
k/c	karáy	ball	caráy	friend
	keedí	be on	ceedí	spoon
	arkílla	mosquito net	arcíni	hyena
	sékiyki	try in vain	təgmací	alphabet
f/h	fánfi	pump	hánʃi	dog
	alfáydat	importance	səlhá	make cry
	ífayan	edges	íhayan	descendants

<i>,</i>				
s/z	sérgeg ayásar tásleft íblis	to join (string) jumping on (n) ax (kind of) devil	zérgez ayázar tázleft ágliz	to walk fast pond eagle, sp. left over (n)
s/ʃ	séryəd ássayal téskənt afáryas	to appease fonio, sp. excrement (k.o.) tortoise	∫érγə∫ á∬aγal tí∫kənt ∫érγə∫	to facilitate work (n) greeting to facilitate
s/ș	séded íssakan sébes	to support nests (bird) to exhaust	şə́dəş íşşakan yíbbəş	to hit songs to chew
z/3	zézel tamázaq	to drive dispute	zízil tamáazaq	to draw water Tamasheq
z/ż	éezaw yízgəg yízləg	heron, sp. to play around to carry on shoulder	éeza yízgəg yízļəg	grass, sp. to make accept to search for (lost animal)
x/ɣ	xúruru	to have large holes	γúruuru	to rustle (dry leaves)
	axárxar yíxrək	tearing apart (n) to lose one's way	ayáryar yíyres	barren plain to cut straight
x/ħ	yímsax xátim axáruk yíxdəm yímsax	to sniff (water) pers. name creation to work to sniff (water)	yínsaɣ ħád aħákam láħdas assáħ	to whistle pers. name reign (n) lentils strength
ት/ የ	alħál aláaħit	custom wooden tablet	al\$ár alá\$an	refusal curse (n)
ħ/h	ħáaʃi talmáħa alħál	bone (kind of) toy mat custom	hánſi tasáhart álham	dog lid (pot) anger (n)
w/b	wá áwwa ṭáw	to be healed pers. name to reach	bá ábba dáb	IMP(perative) particle daddy (voc.) to cover
w/y	wáy	woman	yáy	to be fresh

		, memeregican	on dotal o	, 0
	yaawén	female camels	yaayén	freshness, pl
	aryén	water	arwén	men
	yáy	freshness	yáw	female camel
I/d	lébək	being skinny (n)	débət	to be able to
	ámlay	fatless meat	ámdaγ	giraffe
	yél	green grass	yéd	to return
l/r	yílmaγ	to dive	yírmaɣ	to be afraid
	yíγləf	to entrust to	yíγrəf	to span (drum)
	téefalt	coin	téefart	recompense
	áʒwal	mark	áʒwar	jujube fruit
I/ <u>İ</u>	<u>ļ</u> aabú	clay	labás	to be dangerous
	éeļab	pit (kind of)	éelaw	elephant
r/d	ríiba	profit (n)	díidi	to trample
	tərícin	saddles (k.o.)	tədican	tent posts
	áwwur	shield (kind of)	áwwud	boil (n)
r/γ	<i>báara</i>	to be (in)	báaɣa	to want / to love
	ayə́ri	white spot (dog)	ayə́yi	crevice
	ámrar	rope (kind of)	ámɣar	old person
r/ṛ	yíkrəm	to fold	yíkṛəm	to rest (animals)
	ahára	potassium	éefaṛa	wind from south
	abákar	young ram	fákaŗ	to reveal
m/n	maaní	grease	náani	here (it) is!
	takámmart	cheese	takánnart	forehead
	adími	antelope, sp.	adínit	world
	eeſám	fat (kind of)	éeſan	tooth
m/w	ménəγət	to wither	wéneneg	to walk about
	alámes	chick, sp.	aláweg	branch (kind of)
	áɣrəm	town	áɣraw	yoke (kind of)
n/ŋ	na	to give	ŋa	to eat
	kaŋ	to fall	kan	to be sweet
n/ņ	ánna	mom (vocative)	áaṇa _,	shrub, sp.
	yaníd	to have a fever	yaṇəṇ	to be trained (camel)

2.2.3 Distributional Restrictions

In the following subsections we discuss distributional restrictions of the different consonants. A type of consonant found 'in all positions'

means that the positions 'word initial, syllable initial, intervocalic, syllable final and word final' are attested in our data. Consonant sequences are also discussed for the position 'syllable final'.

2.2.3.1 Labials b and f

/b/ and /f/ occur in all positions but in mono-morphemic lexemes /b/ is never found preceding voiceless stops (/t/, /k/, /q/). The voiceless fricatives /s/, /x/ and /h/ are found following /b/.

The voiceless/voiced distinction of the labials is realized as /b/ versus /f/. This is evident from the IMPERF prefix /b- that assimilates in voicing to /f- if the following C of the verb root is voiceless. Examples are found under (3.1.4.2).

Loanwords from e.g. French beginning with /p/ are regularly reinterpreted and pronounced f by speakers who do not know French, e.g. Fr. *porte-monnaie* 'purse' becomes *fartemáani*, and Fr. *projet* 'project' is pronounced *faróʒe*.

2.2.3.2 *Plosives*

The only plosives that have restrictions in distribution are the affricates c [tf] and j [ct]. We have no evidence of them in word-final or syllable-final position, except when they are part of a geminated consonant, as for example in hijjj 'piston'. The following examples illustrate alternations in which /c/ in syllable initial position before a front vowel alternates with /k/ before a back vowel or in syllable final position.

(4) Alternations between /c, j/ and /k, g/

irkána	hyenas	arcíni	hyena
kúŗukud	to have shame	takaṛácet	shame
húgu	tent / house	híjen	tents / camp
gá	self	jén	selves
təzə́kwin	storms	táazice	storm
íhəktan	tent awnings	ahácet	tent awning
yígmək	to spell (word)	<i>tégmaci</i>	alphabet

Further examples are under 3.2.3.1.1. with the plural morpheme.

/c/ and /j/ are restricted in their distribution at the lexical level. In stems, they do not occur preceding the back vowels /u/ and /o/. However, in actual speech, due to vowel deletion, /c/ and /j/ may appear before back vowels, e.g. the noun *cijí* 'night' can be followed by the demonstrative *óoda* 'this' meaning 'the night in question'. The rules for final vowel deletion lead to an allowed pronunciation [ci'dʒo:da]. However, there exists another noun 'tonight' *cigóoda* composed of similar elements but frozen to an expression that is pronounced [ci'go:da].

2.2.3.3 Fricatives

In this group the sibilants (/s/, /ṣ/, /z/, /ʃ/ and /ʒ/) have a status of their own. Sibilant harmony is discussed further under 2.4.1.4.

Fricatives are attested in all positions. Only f and h do not occur word finally. This may be due to corpus limitations.

2.2.3.4 Nasals

We have evidence of all nasals in all positions. m is stable, whatever the following consonant.

(5) Examples with /m/

mânnameamánanafishámγarold person

attáram west

n and \dot{n} assimilate with the place of articulation of the following C. For more details see 2.4.1.1.

(6) Examples with /n/

nínto drinkándiyou (pl)anáfhigh grassayíiwantent campnákarḍafto wriggleáṇayṇalittle bell

yíndəb throw an arrow

éewaņ shrub, sp.

 η only occurs in a few lexical items. In syllable-final position it is pronounced [η g].

(7) Examples with /ŋ/

ηa to eat

amássanna cook (person)

tiŋlíst [tɪŋgˈlist] English káŋ [kæŋg] to fall

2.2.3.5 Liquids

The liquid / is found in all positions.

(8) Examples with /I/

lémto twistyílito leaveálkas(tea) glassáylalportable trough

We have not found any examples of the pharyngealized liquid / in syllable-final position except as part of a geminate.

(9) Examples with /l/

ļáabuclaybéṣṣaḷḷionionéelabpit, sp.

2.2.3.6 Taps

 $\it r$ is rarely found word-initially. There is a clear preference by the speakers to add a vowel before the flap. The French word 'radio' is taken over as $\it aragó$.

(10) Examples with /r/ and /r/

ríiba benefit (< Arabic)

arádayold goatargánmale camelábrugresin (kind of)

báarar child

ríiri to expand (tent)

Phonological Structure

férfer to rub foot on camel's neck

yíkṛəm to rest fákaṛ to reveal

Long r is pronounced as a trill, e.g., $b\acute{a}arar$ ['bæːrar] / $barr\acute{e}n$ [ba'ren] 'child / children'.

2.2.3.7 Glides y and w

Both are found in all environments and can be geminated.

(11) Examples with /w/ and /y/

wa to heal awici bracelet

Awwa personal name

áwrum pit of jujube

waw to curse

yaw female camel

avvár moon / month

ayyár moon / moi yaynáy to be new caráy friend

2.2.4 Consonant clusters

2.2.4.1 Word initial clusters

The word initial cluster 'nasal' + 'C' that is allowed in Mainstream Songhay is not found in Tadaksahak. The Songhay word /nda/ 'and / with' is pronounced *ənda* 'and / with' in Tadaksahak.

Other word initial clusters are not allowed either. When necessary, an epenthetic vowel is added preceding the cluster. This is for example the case in clauses with verbs that have no pronoun enclitic, as in indefinite relative clauses, e.g., $surg\acute{o}y \ eb=d\acute{u}t$ 'a woman (who is) pounding'

Loans from languages with initial consonant clusters are resyllabified to conform to the system, e.g., *baruwét* 'wheelbarrow' < French: 'brouette' [bruɛt] or *faróʒe* 'project (n) < French: 'projet' [prɔʒɛ].

2.2.4.2 Clusters with different consonants

Word-internal clusters with different consonants are very frequent. Basically all consonants can follow each other. Only very few combinations are not attested (see also Nicolaï 1979). One partial restriction of /b/ is discussed in 2.2.3.1 while clusters with /c/ and /j/ are discussed in 2.2.3.2.

2.2.4.3 Long consonants

All consonants can be geminated, with the exception of $/\chi$ /, /h/ $/\Gamma$ / and /h/. Long consonants are analyzed as a succession of two identical consonants. We give here a few minimal pairs:

(12) Minimal pairs with long consonants

lexeme	gloss	lexeme	gloss
yíli	to go out	yílli	to soar (bird)
imə́ḍan	pastures	iméḍḍan	tears
tébət	to be stolen	tébbət	to knock
yíṇəṣ	to hobble, (one- sided)	yíṇṇəṣ	to pull away (with teeth)
albána	sickness (kind of)	albánna	bricklayer
híjen	camp	hijjén	pistons
yízəļ	to pay	yízzəļ	to stretch out
iháran	herds (small animals)	íharran	lions
baarén	horses	barrén	children

Consonantal length is independent of stress, as shown in the table below.

(13) Long consonants and stress

lexeme	gloss	CV pattern with stress
áγalla	wall	Ý.CV C.C V
mammaní	odor, perfume	CV C.C V.C Ý
hillí	horn	CV C.C Ý
hurrú	to look for	
korrá	heat	

2.2.4.4 Word-final clusters

The only clusters allowed word-finally contain the consonant /t/ as their last element. This consonant consists of the second part of the discontinuous morpheme t(a)-...-t ('feminine / diminutive / nominalizer'). See (3.2.2.1.1) for details.

(14) Word final consonant clusters with I-tI

tail

talánkawt

tadáryalt blind person

tabáyort riches tabáremt reed, sp.

2.3 Vowels

2.3.1 Inventory of Vowels

The following chart lists the main phonetic realizations found in Tadaksahak vowels.

(15) Vowel chart (phonetic)

		short	
high	i		И
high lowered	I		
mid-high	e	ə	0
mid-low	ε	Λ	0
low	æ	e/a/a	

	long
İ.	U.
	O.
E.	o:
æː	aː

As will be shown below, these can be analyzed as realizations of the following vowel phonemes:

(16) Vowel chart (phonemic)

	short		
high	i		и
mid-high	e	ə	0
low		a	

	long	
ii		ии
ee		00
	aa	

2.3.2 Evidence of Vocalic Contrasts

The vocalic contrasts are proven by the following examples of stressed vowels in similar environment. When no stressed vowels were attested, unstressed vowels are presented. The first section contrasts short vowels with each other.

(17) Short vowel contrast

V	lexeme	gloss	lexeme	gloss
i/e	danjí	charcoal	danjé	silence
	bí	yesterday	be	on (PP)
	dis	to leave alone	les	make dirty
i/ə	dis	to leave alone	dézdez	to castrate (kind of)
	áabit	chaff, sp.	éebət	taking quickly (n)
	alíkaf	horse saddle	iléktan	branches
	aʃʃifit	rope (saddle)	dégəffət	to give a light hit
	táddabit	night without moon	kéṛəbət	be joined
i/a	ígazan	cheeks	agázaw	cheek
	ízzay	son / fruit	ázanzo	milk (kind of)
	alíkaf	horse saddle	alákat	twig
	didá	to walk	tabá	to taste
i/u	dis	to leave alone	tus	to erase
	hiná	to cook	hunán	to leave
	didá	to walk	dudú	to flow
i/o	dis	to leave alone	dos	to touch
	aɣə́ɣi	crevice	anóɣo	sickness of skin
e/ə	tafáyert	oval receptacle	tavéevart	dried wood
C/O	tadábert	pigeon	támbərt	grazing in the
	lauaberi	pigeon	tarribert	night (n)
e/a	héw	to cry	háw	to attach
	ténada	fever	tanáfrit	suffering
e/u	fér	to open	fúr	to throw

e/o	lés	to make dirty	dós	to touch
ə/a	lébek téffak	meager (n) tomorrow	téffak táafart	tomorrow rope (kind of)
ə/u	tənə́fas kərtə́ba	sprinklings trousers	tənúfas tugúdu	stories tree, wood
ə/o	ségen dézdez téga	to kneel down to castrate (kind of) to be taken	sóγon dós toogá	to hobble (knee) to touch T-shirt
a/u	áɣlal zaná	portable trough to churn (milk)	áɣlul zurú	eternity to run
	guná	to see	hunú	to leave
a/o	tarákat	shrub, sp.	taródayt	fruit, sp.
	agádod	old waterskin	akóko	tree, sp.
	báq	to break	qóq anáva	to be dry
	amáyo zará	part of the turban lizard, sp.	anóyo borá	skin disease person
u/o	tús	to erase	dós	to touch
	guná	sight	borá	person
	yúhu	to be born	yóŗu	to be worn
	kurúkuru	to burn	korókoray	to be very white

The evidence for short /e/ is relatively weak since there are only few lexemes with /e/ on the whole, and /e/ is especially rare in open syllables. Consider the examples below under /ee/.

(18) Long vowel contrasts

V		gloss		gloss
i/ii	íbatan	chaff, sp.	íibatan	losses
	ízzay	son	ίiʒi	fly
	ikádan	fireplace	íikaran	puppies
	cijí	night	ciidí	salt

e/ee	<i>ténada</i>	fever	téeraya	sweat
	təzárcetan	rolled leather strings	kéreeri	to be hanging
	ilánjezan	drums (kind of)	tadágeera	cheese racks
ee/aa	éenar	antelope, sp.	áanar	eyebrow
	éeɣar	cooking pot	áaɣar	straw of cram-cram
	heebú	market	haabú	hair
a/aa	tabá	to taste	táaba	tobacco
	áɣaba	bit	áɣaata	monitor lizard
	tamázaq	dispute	tamáazaq	Tamasheq
	abánaw	grass, sp.	abáaleq	dust
aa/oo	áarab	Arab	óorag	flame
	baaʃí	waterbag	booſí	ashes
	abáaleq	dust	abóoraɣ	date fruit
	áγaata	monitor lizard	áyoora	1-3am
u/uu	imúņas	camels	imúuṇas	hobbled animals
	hunú	leaving (n)	huurú	fire
	búkut	to pound	búuɣu	working together (n)
	guná	sight	guurú	iron
uu/oo	úuraɣ	gold	óorag	flame
	huurú	fire	tooká	ashes (kind of)
	amúudər	animal	abóoraɣ	date fruit
	arúuru	back (body part)	aróoko	saddle (kind of)
0/00	borá	person	booráy	giraffe
	takóṭayt	cow hump	takóokayt	fruit (doum tree)
	akóko	tree, sp.	aróoko	luggage saddle
	koká	baobab powder	tóodat	humid soil

With the mid vowel /o/ - /oo/, the evidence for a phonemic length contrast is rather weak. In open syllables the long mid vowels are much more frequent than their short counterparts. In addition to the forms given above, one may cite the following cases: <code>igóriʒən</code> 'black solution'; <code>tafógit</code> 'metal point of sheath'; <code>sogá</code> 'to indicate', <code>borá</code> 'person'; <code>izámolan</code> 'marks of recognition'; <code>komáami</code> '(walk) with bent neck (camel)'.

2.3.3 Vowel Realizations

Pharyngealized consonants, as well as uvular and pharyngeal consonants (x, y, q, f) and \hbar) influence the realizations of the vowels. This is most evident in the case of /a/. In a word with a pharyngealized consonant, it is lowered and retracted to be realized [a], e.g. [enéfed] 'tobacco pouch' <> [aṇáfad] 'infection'.

Similarly,	/i/ is lowered	to [ɪ] or [e]
	/e/	to [ε]
	/a/	to [a]
	/o/	to [၁]
	/u/	to [o]
	/ə/	to [ʌ]

The vowel /a/ shows the widest range of realizations. For more details see under 'Influence of palatals on /a/' (2.3.3.1) and examples in the texts. On the whole, unstressed vowels tend to be pronounced as more central and lax so that their quality is not always clear in rapid speech. Yet asking the speaker to slow down will render full Vs where schwa was perceived beforehand.

Examples:

[rerːæd]	baarar	'child'
[ébːċ]	ooda	'this'

Nicolaï (1979a:342) comments on this fact saying that "Il semble que l'importance et la netteté de réalisation des unités du système consonantique soient corrélatives d'une certaine labilité dans les réalisations des phonèmes vocaliques…".

The realization of schwa is strongly dependent on the phonetic context, e.g. $ni=m-s-\acute{o}|o|=i$ [nɪmˈsɪlɪli] 'that you make them follow'.

The same speaker may pronounce the same utterance with different V qualities. A request to repeat will often produce a different V 'color' in slower speech. The following example is given in rapid speech: i=b-idu-an [i'bədwan] 'they assembled there'.

The least conspicuous environment for good quality vowels is word or utterance final in open syllables where the realizations are short and plain, i.e., with no possible variation.

2.3.3.1 Palatals preceding and following /a/

The palatal phonemes /c/, /j/ and /y/ (Y) have a strong influence on the realization of a following /a/ in a closed syllable of a monosyllabic root. The phonetic difference between /a/ and /e/ is neutralized in this position, and are realized $[\varepsilon]$.

/YaC/, /YeC/
$$\rightarrow$$
 [Y ϵ C]

The underlying /a/ reappears when the addition of a morpheme allows the syllable to be opened. Notice that in all examples below also the rule 'long V shortening in closed syllable' (see 2.4.1.9) is in effect. Consider the following:

(20) Realization of /a/ following palatal Cs

```
singular plural gloss
['jɛw] [jaː'wɛn] yáw 'female camel'
['tʃɛw] [tʃaː'wɛn] cáw 'call'
['dʒɛw] [dʒaː'wɛn] jáw 'help'
```

Compare, with undelying /e/: héw 'wind': singular ['hɛw], plural [hɛː'wan].

A syllable that is closed by /y/ also neutralizes the phonetic realization of /a/, i.e. $/Cay/ \rightarrow [C\epsilon y]$. The following examples show that this rule pertains both to words with a Songhay and to words with a Tamasheq background.

(21) Realization of /a/ preceding /y/ (Songhay cognates)

singular	plural		gloss
[ˈzɛj]	[zaːˈjɛn]	záy	'theft'
[ˈjɛj]	[jaːˈjɛn]	yáy	'freshness'

Etymologically Tamasheq nouns also follow the rule that /a/ is pronounced $[\epsilon]$ when followed by /y/. The following examples show the nominalization pattern /aCaCaC/ for two verbs with three consonants in the root. 'to fill' has a final /y/ in the root that provokes the different pronunciation of /a/.

(22) Realization of /a/ preceding /y/ (Tamasheq cognates)

noun	phonetic	verb	gloss
aḍánay	[aˈḍanɛj]	< ḍə́nəy	action of filling
adálag	[e'deleg]	< déləg	decoration

2.3.4 Vowel Distribution

There are some restrictions on the occurrence of vowels according to the syllable type they are found in, and their position in the word.

In the first place, long vowels only occur in non-final open syllables. In closed syllables and in word-final position, only short vowels are allowed.

In the second place, schwa cannot occur word-finally.

As shown in the following chart, there are hardly any restrictions on combinations of vowel qualities in one word. One remarks gaps as concerns the combination of two mid vowels (/e/, /o/). As the mid vowels are relatively rare, this may be accidental. The combination /u/ - /o/ is only found in two borrowings from French, *fúrno* 'brazier'(< 'fourneau') and *bússol* 'compass' (< 'boussole'). The combination /o/ -/o/ is only attested in borrowings from sedentary Mainstream Songhay: *róogo* 'yams', a food not traditionally planted by the nomads, *sóoro* 'storey' (unknown for tents), also *góoro* 'cola nut' is not part of the nomadic culture.

(23) Possible combinations of V_1 and V_2 in words

V_2	j	e	a	ə	0	U
V_1						
i	ciidí	hillén	didá	íiləs	ibóoraɣa	<i>Sifu</i>
	salt	horns	walk	tongue	n	make drink
					fruits, sp.	
e	feejí		ténada	ayéeyər		éesu
	sheep		fever	dried meat		bull
а	baarí	danjé	qaará	ahégeg	agóogis	abútu
	horse	silence	n	pilgrimage	braid (kind	navel
			study		of)	
ə	méṭṭi	béllen	kərtə́b	débət	séfoyfoy	agérəfu
	change	wrestle	a	be able	to click	kneeling
			trousers			
0	booſí	borén	goorá	zórbəba	góoro	óoruf
	ashes	people	sit	fruit, sp.	cola nut	acacia, sp.
И	wuliiwu	áagud	túurag	wulátwulat	fúrno	gussú
	li	er	at	bend in the	brazier/grill	hole
	carry sth.	eagle,	permissi	wind		
	by two	sp.	on			

2.4 Sound rules

2.4.1 Consonants

2.4.1.1 Assimilation of place of articulation of /n/

/n/ regularly assimilates with the point of articulation of the immediately following C. This rule applies inside a lexeme as well as between words in a phrase or clause. Consider the following examples with assimilated forms in the verb stem and forms without assimilation in the corresponding verbal nouns.

(24) Assimilation of /n/ within lexeme

phonetic verb stem verbal noun gloss ['jɪmbaɣ] *yínbaɣ* anábaɣ hit on the cheek

[ˈjɪmfaɣ]	yínfaγ	anáfaγ	provide
[ˈjɪntəz]	yíntəz	anátaz	pull strongly
[jɪŋˈkaḍ]	yinkád	anákad	circumcise

This assimilation rule is also in force at word boundaries. The GEN(itive) postposition n is a good illustration

(25) Assimilation of genitive n over word boundaries

possessive pronoun + noun	gloss
aɣa₌m báarar	my child
aγá₌m farká	my donkey
aɣa₌n táŋgud	my girl
aγá₌n caráy	my friend
aɣá₌ŋ karfú	my rope
aɣá₌ŋ way	my wife
aγá₌n qaarán	my studies

2.4.1.2 Nasalization in the vicinity of /n/

When followed by a sibilant, /n/ is mostly realized as nasalization of the preceding vowel, e.g.

(26) Nasalization when /n/ precedes a sibilant

phonetic		gloss
[ˈyı̃ːṣi]	yíṇṣi	to beg
[aˈɣaʃῖːʃa]	aɣáʃinʃa	bone (kind of)
[ˈgɔ̃ːʃi]	gónſi	snake
[ˈmaː̃zarnat]	mánzarnat	bright green leather
[aˈtæ̃ːʒi]	atánʒi	snack

2.4.1.3 Devoicing of voiced fricatives

Due to regressive assimilation, voiced fricatives are devoiced when followed by a voiceless consonant, cf. the following examples with /ɣ/.

(27) Devoicing of /y/ lexeme internal

phonetic		verbal noun	gloss
[ˈjɪxsər]	yíɣsər	ayásar	to jump down on / jumping down on
[ˈjɪxʃid]	yíɣʃid	aɣáʃad	be ruined / accident

['jɪxfəl] yíyfəl ayáfal be locked / locking

Similarly, the element $a\gamma$ - (first person singular subject ciltic) is pronounced [ax] when preceding a Mood-Aspect-Negation morpheme starting with a voiceless consonant.

(28) Devoicing of /y/ at morpheme break

phonetic		morpheme	gloss
[axsəˈwi]	aɣ₌sə-wí	1s=NEG.IMPERF-kill	I won't kill
[axtəˈwi]	aγ₌tə-wí	1s₌FUT-kill	l will kill

Cf. the perfective negation $n\theta$ -, before which γ is retained.

[aynə'wi] ay=nə-wí 1s=NEG.PERF-kill I did not kill

A special case is provided by the imperfective morpheme IMPERF b-, which becomes a voiceless fricative /f/ when followed by a voiceless consonant. Find the examples under (3.1.4.2).

2.4.1.4 Sibilant harmony

We have not found mono-morphemic words that contain two different sibilants (/s/, /z/, /s/, /s/, /s/, /s/). Place of articulation and voicing of these sounds are the same within the word.

(29) Examples of sibilant harmony

gloss

azágaz wild cat (Felix silvestris)

ázanzomilk (kind of)áazəzvulture, sp.azámmazrabee-eater, sp.

afásas stick of Calotropis procera

alxasáyis amulet (kind of)

fasús to be light (not heavy)

aṣáaṇạṣrope (kind of)áʃʃaʃturban (kind of)kərʃiʃinto be coarseaʒáaʒibphantom

zízil to draw (water from well)

Sibilant harmony also applies to loanwords from French originally containing different sibilants. In such loans, harmony of the sibilants is regressive and the last sibilant in the word enforces the preceding sibilants, e.g. <code>fakóf</code> 'army bag' (< <code>sacoche</code>), <code>sosét</code> 'socks' (< <code>chaussettes</code>).

Sibilant harmony in causative derivations will be treated under (3.1.3.2.).

2.4.1.5 Irregular loss and assimilation of /-k/

Two frequently used verbs show irregular loss or assimilation of /k/. The first example is yéekat (< yed + -kat) 'to return here'. The second example is yíkkəl (< yídkəl) 'to lift up'. The original consonants are found in the verbal noun adákal 'elevation'.

2.4.1.6 Optional consonant metathesis

In a few words optional consonant metathesis has been observed. When asked about it, speakers would invariably claim that both words mean the same and either could be used.

(30) Examples of metathesis

máyrəs ~ máryəs	keep the character of
táyrast ~ táryast	kind of white stone found in the region of Kidal
záyraf ~ záryaf	to have big spots (for sheep, goat, camel)
irédyan ~ iréydan	old weak goats (sg <i>arádaɣ</i>)
táyhast ~ táhyast	kind of camel saddle

Other words with the similar consonant combinations like *zaɣrí* 'day', *áɣraw* 'kind of yoke', *áɣrəm* 'town, village' *áɣri* 'aborted animal' do not have variants with metathesis.

Another case of optional metathesis is found with the verb 'to respond' *wázab* which is also heard as *záwab*.

2.4.1.7 Long consonants at morpheme boundaries

In a number of contexts, morpho-phonological consonant lengthening takes place in intervocalic position at morpheme boundaries. It is not entirely clear what role is played by stress and both lexical stress and noun phrase intonation sometimes seem to have influence on consonant lengthening. The morphemes concerned are the genitive

n, the Mood-Aspect-Negation markers *m*- and *b*- and the particle *ag* 'son of'. Moreover, lengthening takes place with the initial consonant of a verb in the unmarked perfective aspect.

2.4.1.7.1 n 'genitive' and ag 'son of'

When the genitive marker n occurs in intervocalic position, this consonant is lengthened.

(31) Intervocalic genitive n

borá nn áa-yil 'at the right hand side of a person GEN SG-right.side person'
húgu nn ámmas inside a tent
tent GEN interior
ayó nn a-ffóo-da that (only) one
DET GEN SG-one-DIC

This also applies to the possessive pronouns ni=n 'your' and i=n 'their' when followed by a vowel-initial noun.

(32) Possessive pronoun

ní₌nn a-náarag your spouse 2s₌GEN SG-neighbour í₌nn i-náarag-an their spouses 3p₌GEN PL-neighbour-PL

The shape of the two first person possessive pronouns prompts for other changes (2.4.2.4). *ay=n* 'his/her/its' and di-syllabic *ande=n* 'your(pl)' do not undergo lengthening.

The particle ag 'son of' used in personal names behaves the same way, i.e., g is lengthened before vowel initial names, e.g., agg Abdulay 'Son of Abdulay'.

2.4.1.7.2 Mood-Aspect-Negation markers and unmarked perfectives

When preceded by a vowel, the Mood-Aspect-Negation markers b 'imperfective' and m 'subjunctive' are lengthened. This is found, among others, when they are – as is normally the case – preceded by a pronoun clitic.

(33) Imperfective b- lengthened

[aɣa'bːəgməm]	aγa₌bb-égməm	'I chew (tobacco)'
[nɪˈbːəgməm]	ni₌bb-égməm	'you chew (tobacco)'
[a'b:əgməm]	a₌bb-égməm	's/he chews (tobacco)'

(34) Subjunctive m- lengthened

[aɣa'mːəgməm]	aγa₌mm-	'that I chew
	<i>égməm</i>	(tobacco)'
[nɪˈmːəgməm]	ni₌mm-ágməm	that you chew
		(tobacco)'
[a'mːəgməm]	a₌mm-ágməm	'that s/he chews
		(tobacco)'

More discussion on these morphemes is found under 3.1.4.2.

In positive perfective forms, where there is no overt Mood-Aspect-Negation marker, the initial consonant of the verb stem is lengthened under the same circumstances.

(35) Initial consonant of verb lengthened

[aɣa'dːəbəta]	aɣa₌ddə́bət₌a	'I can do it'
[nɪˈdːəbəta]	ni=ddə́bət=a	'you can do it'
[a'dːəbəta]	a₌ddə́bət₌a	's/he can do it'
[aɣa'jːɪbəta]	aɣa₌yyíbət₌a	'I snatched it'
[nɪˈjːɪbəta]	ni=yyíbət=a	'you snatched it'
[a'jːɪbəta]	a=yyíbət=a	's/he snatched it'

With monosyllabic stems that carry the stress on the only syllable of the verb, this lengthening appears very strongly. With very long verbal stems, and disyllabic stems with the stress on the second syllable, it appears to be less strong.

Verb stems preceded by vowel final elements, e.g. the focus marker na-, the determiner ayo and the question word ci ('what/who'), show the same effects as observed with the subject pronoun clitics.

(36) Other contexts that provoke consonant lengthening

áŋga	nə-yyíddər₌a	It's him who held it.
3s.EMF	P FOC-hold₌3s	
ánga	na-hh-áddar-a	It's him/her who holds it.

3s.EMP FOC-IMPERF-hold=3s

ayo yyáhag-an the one that lasted

DET last-ADJZR

surgóy ayo bb-éddər the woman he is married to

woman DET IMPERF-hold

cí wwí₌a Who killed him/her/it?

what/who kill=3s

cí bb-édder₌a Who is married to her?

what/who IMPERF-hold=3s

2.4.1.8 Word-final V-shortening

In word-final position the contrast of vowel length is neutralized. The following examples illustrate this point. Adding the plural morpheme permits the realization of what could be considered an underlying long V:

(37) Word final V-shortening

V	singular	plural	gloss
I	bitígi	bitigíitan	shop (< Fr 'boutique')
	ħáaʃi	ħáaʃitan	bone (kind of)
Ε	fərdəddé	fərdəddéetan	bat
	<i>íizace</i>	izácenan	youth
Α	<i>tégna</i>	təgnáatin	reproach
	kərtə́ba	kərtə́batan	trousers
U	heebú	heebúutan	marketplace
	bukturú	bukturútan	toad
0	kádago	kadagóotan	tree, sp.
	aróoko	aróokotan	saddle (kind of)

Note that in all the examples above the stress lies on the long V, even when the singular had the stress on another V. This may have some influence on the length also.

2.4.1.9 V-shortening in closed syllables

Vowel length is neutralized in closed syllables. The underlying length of the vowel shows up when the plural morpheme is suffixed and the formerly final closed syllable is opened.

(38) V-shortening in closed syllables

singular	plural	gloss
tafágit	təfágiitan	metal point of sheath
ajím	ijíiman	a thousand
aléteḍ	iléteeḍan	rib / side
ahácet	iháceetan	tent awning
tadágat	tədágaatin	place of pasture
abákaḍ	ibákaaḍan	sin

Some rare occurrences of long vowels in closed syllables can be explained as due to consonant elisions. Often the lost consonant reappears in a morphologically changed form.

(39) Long vowels in closed syllables

lexeme	gloss	plural	Tamasheq cognate
abóoɣ	water skin	ibíyaɣ	(< W: abăyoɣ/ibəyaɣ)
aníil	ostrich	iníyal	(< W: anil/inəyal)
akáat	mistletoe, sp.	<i>akáwat</i> variant of the same	(< W: akăwăt)

2.4.1.10 Vowel contractions

There are several cases of vowel contractions over word or morpheme boundaries. We will illustrate this in the following section in situations with a) verb and pronoun enclitic; b) suffixes on verbs; c) plural morphemes on nouns; d) noun and demonstrative; e) V-initial nouns preceded by V-final words.

The overall rule of vowel constructions is as follows:

$$V_1\# + V_2 \rightarrow V_2$$

The outcome of the contraction is a short vowel when V_2 is short and a long vowel when V_2 is long. We will treat the different occurrences in detail and then make some amendments to this first general rule.

2.4.1.10.1 Verb and pronoun enclitic

The most regular and frequent elision happens at the end of V-final verbs when personal pronouns follow the verb. In this case, the final V of the first word is dropped.

(41)	<i>a)</i>	a=ddumb(ü)=a. 3s=cut=3s he killed it.		[adːumˈba]	
	b)	a₌ddumb(ú)	áari	hé.	[adːumˈbæːɾiˈhe]
		3s₌cut	1p	thing	
		he killed someth	ing for	r us.	
	-1	- 1-11-731 8	_	£!!	[

c) a=ddumb(ú) íi=se feejí [ad:um'bi:s(ə)fɛ:'dʒi]
3s=cut 3p=DAT sheep
he killed a sheep for them.

In the transcription in this work we will write the dropped final V in brackets.

Verbs that drop the last vowel all have a Songhay background.

(42) Verbs dropping final /u/

Tadak	gloss	Songhay	(KCH)
dudú	to pour	door	
hunú	to leave from	hun	
tunú	to get up	tun	
hurrú	to look for	wir	
dumbú	to cut	dumbu	
guŋgú	to guide (animal)	gurje	
húuru	to enter	huru/a	(KS)
zumbú	to get down	zumbu	(KS)
zurú	to run	zuru	(KS)

/u/-final Verbs of Tamasheq origin seem to have an underlying /w/ that is normally realized as /u/. These verbs do not drop the last vowel when followed by a pronoun, but change it into a glide before the pronoun.

```
(43) a=b-fúgu áa=ka [ab'fugu'wa:ka]
3s=IMPERF-look.down 3s=LOC
s/he looks down on it.
```

The following verbs behave the same way:

(44) Tamasheq cognates surfacing /w/

Tadaksahak	gloss	Tamas	heq (W)
ſĭſu	to make drink	ſăſwu	
ſidu	to assemble	ſidəw	
ſúgu (he) ka	to look down on (sth.)	∫ugu	(WW)
súku	to light (fire)	suku	(WW)

Parallel to the back vowel /u/, the front vowel /i/ behaves differently according to etymology. Songhay cognates drop the final /i/ while Tamasheq cognates surface a semi-vowel /y/ when a pronoun follows.

(45) Verbs dropping final /i/

Tadak	gloss	Songhay (KCH)
keedí	to mount (animal)	kaar
yéeri	to vomit	yeer
diní	to take	din
jeejí	to hang	deeji

(46) Tamasheq cognates surfacing /y/

Tadak	gloss	Tamasheq (W)
yíṛẓi	to stick sth. into	ərzəy
yíγli	to go / turn around	əγləy
yíṇṣi	to beg	aṇsəy
yílbi	to take out of	əlbəy

Final /e/ and /o/ on verbs are so rare that not many observations can be reported for these vowels. See below for $m\delta$ 'hear' (other items: $bab\delta$ 'be numerous', $sot\delta roro$ 'drop regularly').

Verb-final /a/ is dropped both in verbs of Songhay and in verbs of Tamasheq origin. For example, when the plural clitic =i is added to these verbs the final /a/ is dropped. The stress of the final syllable of the verb is carried over to the pronoun enclitic, e.g.

```
(47) a=kkun(\acute{a})=i s/he found them.

a=3\pi/(\acute{a})=i he cleaned them (wells) out
```

(48) Verbs dropping final /a/

Tadak	gloss	etymology
guná	to see (s.b.)	KCH: guna
habá	to harvest (wild grass)	KCH: haabu 'gather'
báaɣa	to want / to love	KCH: baa
hiná	to cook	KCH: hina
kuná	to find	KCH: kumna 'pick up'
ŋá	to eat	КСН: ŋаа
yeezá	to skin (animal)	W: azu 'to skin'
yismá	to clean (intestines)	W: asəṃ 'clean by rubbing'
zaaná	to churn (butter)	D: əss-unda 'churn' W: azənu 'calabash to churn butter'
zilá	to clean out (well)	D: əšla 'clean out (well)'

One notes, however, one complication, When the second element is the enclitic =a 'he/she/it', forms with and without the enclitic are pronounced differently. The forms without the enclitic have a final unreleased glottal stop, while those with the enclitic don't, cf.

```
(49) a=dd\hat{a}[ad:\hat{a}?] it is done! a=dd\hat{a}=a [ad:\hat{a}] s/he did it.
```

In a running text it is not easy always to hear the 3s pronoun. In some of our transcriptions we note the possibly present pronoun in brackets with a question mark (=a?).

2.4.1.10.1.1 Monosyllabic stems

Vowel-final monosyllabic verbs present different behavior as to their final vowel when followed by a vowel-initial element. Note that all these verbs have a Songhay background. In a first group, the vowel is deleted according to the general rule. This is found in three verbs, *da* 'to do', *na* 'to eat', *na* 'to give', and *ci* 'to say', e.g.

(50) Deletion of final -a in na 'to give'

	verb + 1s	+3s
phonetic	[anːaˈɣaj]	[a'n:æ:s(e)]
	a₌nn(a) aɣáy	a=nn(a) áa=s(e)
morphemes	3s₌give 1s.IO	3s=give 3s=DAT
gloss	s/he gave me	s/he gave him

(51) Deletion of final -i in ci 'to say'

	verb + 1s	+3s [a'cːæːs(e)]	
phonetic	[acːaˈγaj]		
	a₌cci aγáy	a=cci áa=se	
morphemes	3s₌say 1s.IO	3s=say 3s=DAT	
gloss	s/he said to me	s/he said to him	

In a second group, all concerning *i*-final verbs, the vowel is maintained and a palatal glide is inserted. This concerns the verbs *wi* 'to kill', *ʒi* 'to kick', and *fi* + PRN *ka* 'to be lost to somebody'.

(52) No deletion of final -i in 3i 'to kick'

	verb + 1s	+3s
phonetic	[a'ʒːiʲa'ɣaj]	[aʒːiː'ʲa]
	a₌ʒʒí aɣáy	a=ʒʒi=á
morphemes	3s₌kick 1s	3s=kick=3s
gloss	s/he kicked me	s/he kicked him

Finally, the verb mo 'to hear' keeps its vowel in all contexts except with the 3p pronoun i, e.g.

(53) Treatment of final -o in mo 'to hear'

	verb + 1s	+ 2s
phonetic	amːo'γaj	a'mːoːna
	a₌mmo (a)γáy	a₌mmó (a)na
morphemes	3s₌hear 1s	3s₌hear 2s.DAT
gloss	s/he heard me	s/he heard you
	+3s	+3p
phonetic	a'm:o:s(e)	a'mːiːs(e)
	a=mmó (aa)=s(e)	a=mm(ó) ii=s(e)
morphemes	3s=hear 3s=DAT	3s=hear 3p=DAT
gloss	s/he heard him	s/he heard them

It will be shown later (2.4.1.10.5) that /o/ also overrides vowels of other morphemes.

2.4.1.10.2 Noun and demonstratives asénda, áyda, adí, óoda

Following the general rules of vowel-coalescence, vowel-final nouns that are followed by one of the determiners beginning with a vowel regularly lose their final vowel in favor of the vowel of the determiner.

- (54) lizac(e) asénda zá, aɣo ḍḍéṛəṣ ay₌n hawrú...
 ['iːzatʃa'sɛndə...]
 youth DEM.FAR LC DET spice 3s₌GEN meal...
 so that young man who spiced his meal...
- (55) anda-gguná gand(a) áyda... [gan'dεjdə]
 2p-see land DEM.PROX
 you(pl) see this land (here)...
- (56) ni₌yy-igrá h(e) adí? [haˈdi]
 2s₌understand thing ANA
 do you understand this?
- (57) ...íizac(e) adí a-ṣṣóṭ-kat... ['i:zatʃa'di] youth ANA 3s=jump-∨EN ...this youth jumped...
- (58) a₌báara guss(ú) óoda. [guˈsːoːdə]
 3s₌be hole DEM.NEAR
 he is in this hole.

2.4.1.10.3 Vowel-initial words preceded by vowel-final words

Final vowel-elision happens constantly where vowels meet each other at word boundaries.

To illustrate just a short utterance said by a visiting person:

(59) [iʒwar'tʃidʒa'd:æ?' / ha'dizaxtəjid'wa'hidʒɛn]
iʒwar cíj(i) a=ddá h(e) adí z(a) aɣ=tə-yidwá híj-en
almost night 3s=do thing ANA LC 1s=FUT-return camp-PL
it is almost night, so I will return home.

Unless there is a short pause as in this example to mark the end of the first statement, final vowels are dropped in many places: noun + conjugated verb; discourse particle + conjugated verb. In this utterance, two lexemes are recognized only by a single consonant that is left in the realization.

There seems to be a hierarchy higher than word level that rules over the rhythm of utterances. We have not studied this topic to a degree that we could give firm indications of rules that govern.

2.4.1.10.4 Exceptions

There are two words in the language that do not follow above rules of elision. One of them is the DET $a\gamma o$. Final |o| always overrides the following vowel when it is part of the same noun phrase, e.g.

(60) zamá aarú ayo (a)yda a=ttén ['ærwa'yojdə] after man DET DEM.PROX 3s=arrive after this man (here) arrived...

When $a\gamma o$ is the last element of a NP, as before relative clauses, the following pronouns keep their initial vowel and the final /o/ sound is also produced. In that case, a glide is inserted between the two words, e.g.

(61) áffayal ayo a=mmáy nin ka a=bbén. [ayowa'm:ɛj] work DET 3s=have 2s LOC 3s=be.finished the work he has for you is finished.

The other word with exceptional behavior is *he* 'thing', which keeps its final vowel when it is in subject position or when it occurs in a heavily marked head of a noun phrase. In this case the second vowel is deleted. Consider below examples.

- (62) hé (a)-ssínnihil áa-se kuná. ['he:'s::ɪn::ɪhɪ'læ::seku'na]
 thing 3s-be.much 3s-DAT find.NV
 he was very ill (he is used here as a euphemism for sickness)
- (63) he (a)y(o) óoda zá... [he'yo:də'za...] thing DET DEM.NEAR LC so, this...

Yet consider the occurrence in (56) above, where the whole noun phrase is almost pronominal in its character, and where the regular vowel contraction takes place.

2.4.1.10.5 Suffixes on verbs

There are two vowel-initial suffixes which appear on verbs, These are the adjectivizer AJDZR *-an* and the directional allative ALL *-an*. We will treat their influence on the verb-final vowels one by one.

An /i/ preceding the suffixes is not dropped; instead a semivowel [j] appears between the basis and the suffix. One reason for this behavior could be the fact that some of the verb roots have an underlying final consonant -y# which is realized as V (see 'Final V-shortening rule'). Etymologically many, but not all, of these can be traced to Tamasheq roots with final /y/. Adding a V-initial morpheme allows this final C to be realized.

(64)	final -i			
	Tadak	with suffix	gloss	etymology
	ſí	ʃiʃʃiyán	be lost / lost	SonKS: ʃii
	háași	háaṣiyan	to look there	?
	méţţi	məţṭiyán	to change	TamW: măṭṭăy
	yíɣli	yiɣliyán	to turn around	TamW: əɣləy

(there)

The only exception we have in our data is the verb *keení* 'to sleep' (KCH: /kani/). In its meaning 'to sleep away from home' it is realized *keenán* (< keení+-an).

Verbs of Songhay origin with final /u/ normally drop their final vowel before the vowel of the suffix. Verbs of Tamsheq origin often have an

Phonological Structure

41

underlying final /-w/ that reappears when the V-initial morpheme is added.

(65) final -u

Tadak	with suffix	gloss	etymology
hunú	hunán	leave from there	KCH: hun
húuru	húuran	enter there	KS: huru/a
kukú	kukán	long (adjective)	KCH: kuu
múnsu	munsuwan	be nourished	W: mănsăw
yóṛu	yoruwan	be used (clothes)	M: ərəw
yíṣku	yişkuwan	be dried up	W: əskəw
yúhu	yuhuwan	be born	W: ihu

In the case of a-final verbs, the two vowels are coalesced:

(66) final -a

Tadak	with suffix	gloss	Songhay KCH
ceená	ceenán	be small / small	ciina
dingá	dingán	forgetfulness / to forget	dinaa

The rare verbs that end in /o/ have different behavior (see also 2.4.1.10.1.1).

(67) final -o

Tadak	with suffix	gloss	Songhay KCH
babó	babón	'be numerous/many'	bobo 'much'
kó(y)	kón ~ koyán	'to leave there'	koy
mó	monán	'to hear there'	mom

2.4.1.10.6 Plural morphemes on nouns

The plural morpheme *-en,* which is used with nouns of Songhay origin, causes regular deletion of a stem-final vowel, e.g.

(68) plural morpheme -en

noun + PL realization gloss

noun + PL	realization	gloss
borá + en	borén	'person / people'
huuwá + en	huuwén	'milk / kinds of milk'
tugúdu + en	tugúden	'tree sg/pl'
bundú +en	bundén	'stick sg/pl'
hamborí + en	hamborén	'mortar sg/pl'
biidí +en	biidén	'bone general sg/pl'

This process of adding the plural morpheme brings about additional changes to the last consonant of the stem. In many, but not all, nouns with a velar /k/ or /g/, the velar is changed to a palatal before the suffix *-en* (cf. also 2.2.3.2) e.g.

(69) alternation k/g with c/j

noun + PL	realization	gloss
hiŋká+ en	hiŋkén	'two, sg/pl'
guŋgú + en	guŋgén	'belly sg/pl'
tuŋgú + en	tuŋgén	'turban (kind of) sg/pl'
farká + en	farcén	'donkey sg/pl'
baŋgú + en	banjén	'well sg/pl'
aŋgú+ en	anjén	'place (general) sg/pl'
haŋgá + en	hanjén	'ear sg/pl'

2.4.1.11 /ay/ < /a/

In the first element of a compound (mainly numerals), word-final /a/ is changed to /ay/. As shown below, this does only concern /a/-final elements, in C-final 'fifty' an epenthetic schwa is inserted.

```
(70) iʃʃá + təméṛwiṇ > iʃʃɛ́y-təméṛwiṇ 'seventy'
seven + ten.PL
taaṣá + təméṛwiṇ > taṣɛ́y-ṭəméṛwiṇ 'ninety'
nine + ten.PL
fammúʃ + təméṛwiṇ > fammúʃ-ə-təméṛwiṇ 'fifty'
five + ten.PL
```

When the enclitic $a_{=}$ 'he/she' joins the genitive n, |a| becomes $[\varepsilon y]$.

ay=n 'his, her'

2.4.2 Resyllabification

There are several environments in the language that lead to resyllabification. The most frequent is adding the plural morpheme, then there are conjugations and also some possessive contexts demand it. The following illustrates the different environments.

2.4.2.1 Plurals

Adding morphemes to a stem (e.g. plural) may lead to restructuring of the word.

(72) Plurals

singular	plural	gloss
aarú + en	arwén	man/men
éelaw + an	élwan	elephant/s
íiləs + an	ílsan	tong/s
báarar + en	bárren	child/children

2.4.2.2 2s combinations

A restructuring of syllables also happens in contexts where morphemes are joined together. Resyllabification takes place when ni_{-} '2s' combines with MAN markers of the shape CV- with a voiceless initial consonant. '2s' is then realized θn_{-} .

```
(73) ən=sə-báy=a
2s=NEG.IMPERF-know=3s
don't you know it?
```

When the imperative particle $wa \sim ba$ precedes this construction, the schwa is deleted.

```
(74) wá-(ə)n=sə-d(a) ayáy ['wansəda'yaj...]

IMP-2S=NEG.IMPERF-do 1s.IO

don't do to me...
```

Apparently, a sequence of four CV syllables is not allowed in a word. The presence of the consonant /n/ is enough to identify the 2s pronoun.

The complementizer sa behaves in the same way when it precedes

words beginning with a voiceless initial consonant such as *kəlá* 'once' in the following example.

(75) tanéfust əs kəla ay-nə-mó (aa)-se story COMP once 1s-NEG.PERF-hear 3s-DAT a story that I have never heard of.

2.4.2.3 Compound numbers

Resyllabification also takes place in compound numerals, which may be due to the same constraint as above. Cf. the following example, in which four open syllables would follow each other. A short vowel is inserted between the two number units to allow proper pronunciation in slow speed.

(76) Resyllabification 'thirty'

phonetic ['kaṛḍaṭəˈmɛṛwɪṇ]
underlying/slow speech kaaṛáḍ-[ə]-təméṛwiṇ
morphemes three-ten.PL
gloss thirty

The speakers do not seem to be conscious of this process. When they repeat slowly, they have no resyllabification. But as soon as the same person uses the word in a running conversation the resyllabified form is used.

2.4.2.4 Possessive pronouns

The 1s and 1p possessive pronouns aya=n (1s=GEN) 'my' and ara=n (1p=GEN) 'our' are resyllabified when they precede a noun with an initial vowel. The second vowel in the pronoun is dropped and the genitive n forms a syllable with the following vowel of the lexeme.

(77) Resyllabification in possessive pronouns

morphemes	gloss
aγ(a)₌n anáarag	my neighbor /
	my spouse
aɣ(a)₌n iḍúulin	my in-laws
ar(ə)₌n almán	our herd
ar(ə)₌n íɣidan	our kids (goat)
	aɣ(a)₌n anáarag aɣ(a)₌n iḍúulin ar(ə)₌n almán

The other possessive pronouns have a monosyllabic shape (*ni=n* 2s, *ay=n* 3s, *i=n* 3p) and do therefore not behave this way. *and=n* (2p=GEN) 'your pl' has already a closed syllable and cannot be shortened by dropping the last V.

2.5 Stress

Tadaksahak shows clear evidence of lexical stress (cf. also Nicolaï 1980). A stressed syllable is realized with a higher pitch and more powerful air stream than an unstressed syllable. Words with four and more syllables may also carry a secondary stress on another syllable.

Stress is lexical and unpredictable. Every lexical item has at least one syllable that carries the stress. Pronoun enclitics and grammatical morphemes may or may not have inherent stress.

Long vowels do not obligatorily carry the stress. However, when a long vowel is present, the stressed syllable can only be one syllable removed from it.

The speakers are aware of word stress and use this feature to create riddles by putting the stress on the wrong syllable to cause the hearer to misunderstand the utterance.

Over an utterance different rules are applicable than over the single word, i.e., the lexical stress may shift to some other syllable.

There are some stress patterns that are frequent and new imported vocabulary often follows such established patterns. Some morphemes provoke stress pattern changes when they join roots, e.g. causative S(V)- and derivator t(a)-...-t. We will discuss these stress changes in the morphology part of this work.

2.5.1 Stress in disyllabic words

In disyllabic words all stress patterns are possible. There is no influence of syllable shape on the possible stress patterns, e.g.

(78)	Stress in (C)VC.CV words			
	farká	donkey	gánda	ground, earth
	kullú	all	gónfi	snake
	dumbú	to cut	múgru	to get built
	yidwá	to return in afternoon	yífri	to feel

	igdá ~ iddá	because	ágli	ruminated grass
			áwsa	gall
(79)	Stress in (C))VV.CV words		
	feejí	sheep	íini	color
	baarí	horse	óoda	this
	maaṛá	ten		
(80)	Stress in (C)	V.CV words		
	adí	ANA (1 item)	ána	for you
			ígi	deed (2 items)
(81)	Stress in (C)	VC.CVC words		
	farkák	to be fine/thin	tábsit	acacia flowers
	katkót	to simmer	zálgat	left hand side
	harkúk	always	rúmsut	to desire meat
	kandín	in the past	wánjin	to refuse
	argán	camel	áhwar	decoration (kind of)
	alxér	peace	ádbug	aardvark
(82)	Stress in (C)	VV.CVC words		
	kaaṛád	three	áanut	stick to make fire
	qaarán	to study	áadal	wild cat, sp.
(83)	Stress in (C)V.CVC words			
	ahún	hold it!	áhuḍ	wind (kind of)
	agúd	moment	béleq	to be dusty
	cijín	last night	bídaw	canister
	bəkáw	jinn	gédəm	be upside down

2.5.2 Words with three syllables

In words with three syllables stress may be on any of the three syllables, e.g.

(84) Initial stress

hánaka unidentified itemtúhuya camel's hump

Phonological Structure

háḍaḍi to be swollen

ágala south

áanibo child born out of wedlock

éesawa attention, readiness

áyaata monitor lizardáyaatir dried clay ground

áadanan gutságaŋgo crouptáfadla warttánaflit wellness

álankam place behind (on animal)

kárwali to cling to

bérzekum to be wrapped up

Words with three syllables and a long initial vowel are rare. They always carry stress on the first syllable.

(85) medial stress

tugúdu tree, wood

bakáti packet (< English)
yafáta to be in a clinch

abútu navel

adácel palm of hand

yazúurag to be left free (animal)

azámar lamb aláaku dirty water tayíiwa ashes (kind of)

tabárda blanket (kind of)

asílgi tobacco pouch (kind of)

tabírjit ring (kind of) tadáamil interest

abárkot stomach (kind of)

(86) final stress

mududú porridge (kind of)aragó radio (< French)

```
adagíg crystallic powder
ajeráw river / the River (Niger)
hamborí mortar
bukturú toad
jinjirí to pray
tangarí to lie
kalkatáw corn
```

This stress pattern is the least frequent observed among the trisyllabic words.

2.5.3 Words with four and more syllables

The last syllable of a word with four syllables never carries the stress, the first only very rarely, e.g.

```
(87) words with four syllables
```

```
mákkabani tree sp.
abúgara
             gazelle sp.
akásamba
             pit (kind of)
akáskaabu ring (kind of)
tawalágan
             bone (kind of)
amungúlu
             powder (kind of)
ayarzébbi
             acacia sp.
tangalóoti
             barrel
aməsyárrət part of intestins
             to hit off its stem (cram-cram)
xərənxərət
```

The following list shows words with four syllables derived from verb stems or words with the feminine/diminutive marker (t-...-t), e.g.

(88) words with four syllables (multi-morphemic)

```
amənóokalking(< ménəkəl to be king)</th>amadáryalblind person(< dáryal to be blind)</td>tawénənəstdizzinesstatéwəqətspot (of dirt)tatungúrutpart of bedtasəkérkərtawl (kind of)(<kérkər to part (hair))</td>
```

tazanábat ewe having given birth twice in one yeartatanáqayt point in scripturetatanáqit

(89) words with five syllables

akayáŋkaya basket (kind of)

anafáraʃa crazy person (< fíriʃ-it to be crazy)
tamazazáydart patient woman (< zézaydər to be patient)

amandáraso ~ plant sp.

amandárasal

almukárkada tea (kind of) (<Arabic)

akawkáwaſka woodpecker sp.aragáyragay stick of tent (kind of)

abalibáali sheep breed

Words with five syllables only carry stress on the penultimate or the ante-penultimate syllable.