

A Grammar of Wandala

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A Grammar of Wandala

by

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I dedicate this modest work to the memory of my parents Franciszka and Emanuel Frajzyngier, who did not live to see this book in print.

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Abbreviations and typographical conventions

1	First-person	NEG	Negative
2	Second-person	NOM	Nominalizer
3	Third-person	NP	Noun phrase
AFF	Affected	NUM	Numeral
APPL	Applicative	ON	Extension ‘on’
Ar	Arabic	ONOM	Onomatopoeic
ASSC	Associative	OPT	Optative
C	Consonant	OUT	Extension ‘out’
C.FOC	Contrastive focus	PAST	Past
COL	Collective	PB	Phrasal boundary
COM	Comment marker	PL	Plural
COMP	Complementizer	POL	Polite
CONJ	Conjunction	POSS	Possessive
DAT	Dative	PNCT	Punctual
DEF	Definite	PRED	Predicator
DEM	Demonstrative	PREP	Preposition
DEST	Destinative	PRES	Presentative
DET	Determiner	PRO	Pronoun
EP	Epenthetic	PROG	Progressive
EX	Existential	PROX	Proximate
EXCL	Exclusive	Q	Question
F	Fula (Fulfulde)	R	Root
FOC	Focus	R1	First reduplicant
FUT	Future	R2	Second reduplicant
G	Glide	RE	Reverse
GEN	Genitive	REFL	Reflexive
GO	Goal	REM	Remote
H	Hausa	RQ	Rhetorical question
HL	Human locative	S	Source; subject
HYP	Hypothetical	SEQ	Sequential
IMP	Imperative	SG	Singular
IN	Inner space	T	Target
INCL	Inclusive	TAG	Tag question
INTNS	Intensifier	TO	Destinative preposition ‘to’
K	Kanuri	TOG	Together (plural participants)
Lam	Lamang	TOP	Topicalization
M	Masculine	TR	Transitive
N	Noun; nasal consonant	V	Vowel

VENT Ventive

VN Verbal noun

Wandala material enclosed in slash brackets / . . . / represents the underlying form. Wandala material enclosed in square brackets [. . .] represents the phonetic form in broad transcription. Wandala material enclosed in parentheses (. . .) indicates optional material. English material enclosed in square brackets [. . .] indicates material that is included in the translation but that has no overt morphological representation in the corresponding Wandala text. Conventional typographical usage is not listed.

Examples from natural discourse begin with a capital letter and have final punctuation. Examples obtained through elicitation begin with a lower-case letter and do not have final punctuation. Many, but not all, such examples have ‘(elicited)’ appended to the English translation.

Chapter 1

Introduction

1. Names, speakers, places, and classification

The self-name of the language described in this grammar, *w-á wándàlà*, consists of the noun *wè* ‘mouth, language’, the genitive marker *á*, and the noun *wándàlà*, which can serve both as a head and as a modifier of a noun phrase:

- (1) *nóovà tánkìní yèságdzà nàrwàndzà*
nóo và tán kìnì yè s-á gdzà
 PRES day DEF C.FOC 1SG come-GO small
 ‘Here today, I brought a small story’
nàrwàndzà
 story
ánwá wándàlà
án w-á wándàlà
 ASSC mouth-GEN Wandala
 ‘in Wandala.’¹

The self-name of the people is *wándàlà*. A single Wandala man is called *žil wándàlà* (*žilé* or *žillé* ‘man’ in isolation). A Wandala person is called *ùr wándàlà* (*wrà* ‘person’).

The form *hàhà* ‘land’ combined with the noun *wándàlà* designates the land of Wandala:

1 The full presentation of a typical example in the present grammar consists of four lines: (1) a broad phonetic transcription reflecting vowel deletions, epenthetic vowels, and audible pauses marked by spaces. This line reflects the rhythmic structure of the utterance. Often, the rhythmic structure does not overlap with the word or morpheme divisions; (2) the underlying structure of the morphemes for the given context, with hyphens separating affixes and spaces separating words; (3) glosses; and (4) free translations. Some examples do not contain the broad phonetic transcription and consequently consist of three lines only. Wandala morphemes within the text are represented in either citation or underlying form, depending on whether the underlying form is relevant for the purpose of the given paragraph or not. When the recorded forms differ from forms obtained during analysis, this is noted as ‘recording different’, or ‘not in the recording’.

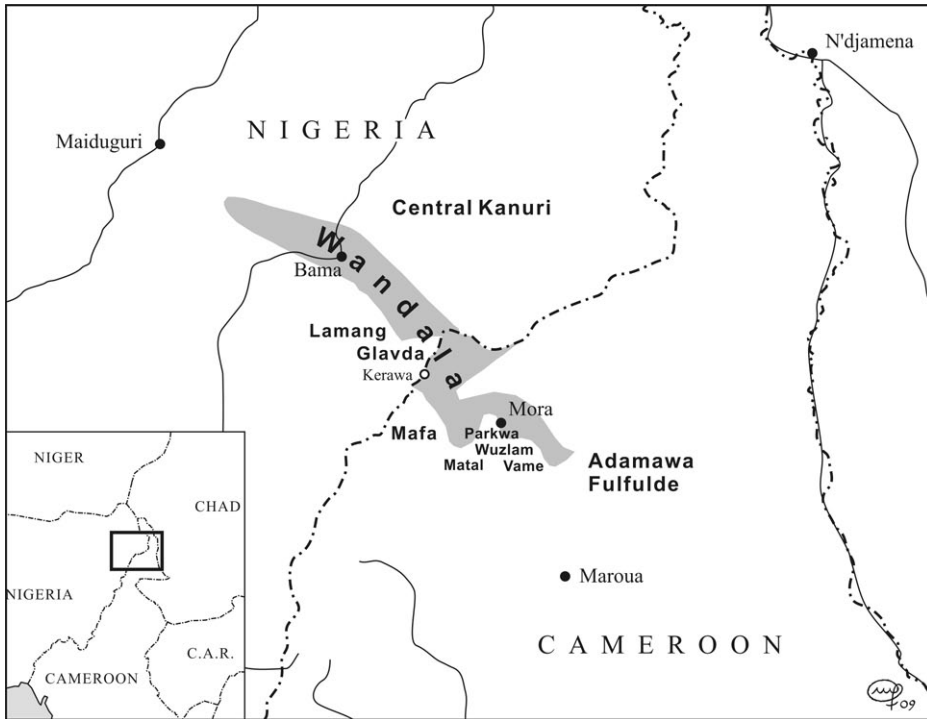
- (2) *làrúúsá mé* [pause] *làrúu sámhàhà wándàlà*
làrúúsà á mé làrúúsà á-m hàhà wándàlà
 marriage PRED where marriage PRED-IN land Wandala
 ‘Marriage where? Marriage in the land of Wandala.’

In general scholarly literature and in official documents, speakers of the language and the language itself are referred to as ‘Wandala’ or as ‘Mandara’, the term used by Hausa, Fula, and Kanuri speakers and government officials. The Sultan’s palace in Mora displays the sign *Sultanat de Wandala*. In Newman’s 1977 classification, the language is referred to as ‘Wandala’. In Jungraithmayr and Ibrizimow’s 1994 lexical reconstructions, the language is referred to as ‘Mandara’. *Ethnologue* gives the name ‘Wandala’ with alternates ‘Mandara’, ‘Ndara’, and ‘Mandara Montagnard’. In studies of the language itself, it is referred to as ‘Mandara’ (Mirt 1969-70, 1971; Eguchi 1969; Frajzyngier 1984; Whaley and Fluckiger 1980 and their other common or separate publications, as listed in the references). Some speakers prefer the term ‘Mandara’ partly because that is the way the language and people are sometimes referred to in French and English, the official languages in Cameroon and Nigeria. Some speakers claim to disprefer the name ‘Mandara’, even if they use it themselves, especially when speaking French, English, Hausa, or Fula. Given that the term ‘Mandara’ is not the only one used in reference to the language and people, and given that it does not yet have a long tradition or an extensive usage in scholarly literature, there is no reason to retain this potentially foreign ethnonym.

According to *Ethnologue*, the language is spoken by some 23,500 speakers in Northern Cameroon and 20,000 speakers in Nigeria. In Cameroon, many speakers live in Wandala communities, while in Nigeria, they are dispersed among speakers of other languages.

Wandala people used to wield considerable influence in the extreme north of Cameroon. The capital of the Mandara Sultanate (the term used in historical literature), founded in the sixteenth century, has moved a number of times over the years and is currently located in Mora. The Sultanate was an important political entity in the region from the seventeenth through the nineteenth centuries (Forkl 1983, 1984, 1985, 1989, 1993, 1995; Barkindo 1989; Lange 1977). For anthropological and cultural information on Wandala, see Fluckiger 1980 and Forkl 1988. Among the present inhabitants of Mora, there are Moslems, Christians, and believers in traditional religion. Some refer to the third group by the term *Kirdi*² *Mora* ‘Mora pagans’, perceived by some as derogatory (cf. Forkl 1986).

2 The term *kirdi* ‘pagan’ is commonly used in Fula.



The name ‘Mandara Mountains’ designates a mountain chain inhabited by speakers of various Central Chadic languages, most of whom share similar agricultural practices and similar culture, including oral literature, tools, and elements of architecture (Seignobos 1982). Because of their geographical proximity these groups often participated in the same historical events, albeit not always in the same roles. For bibliography and other information on the ethnic groups of the area, see Gerhard Müller-Kosack’s website dedicated to the Mandara Mountains: <http://www.mandaras.info/index.html>. As there is some anthropological and cultural information and an abundance of historical information available concerning Wandala, references to anthropological facts in the present work are limited to a bare minimum, and there are no references to historical events.

Newman 1977 and Jungraithmayr and Ibrizimow 1994 place Wandala in the A.4 group of ‘Biu-Mandara’, labeled ‘Central Chadic’ by Jungraithmayr and Ibrizimow, a term accepted in the present work.

Speakers of Wandala have been in contact with major languages of North-Eastern Nigeria and Northern Cameroon, viz. Hausa (Chadic), Kanuri (Nilo-Saharan), and Fula (West Atlantic, a group of Niger-Congo family). Many Wandala speakers are multilingual, with Hausa and English being the second and third languages in Nigeria and Fula and French being the second and third languages in Cameroon. Some Wandala speakers also know Kanuri. Nevertheless, as of 2009 there are Wandala speakers who do not know Fula, Kanuri, or Hausa.

Lexical borrowings from vehicular languages are quite abundant. Many Wandala are Moslems, and consequently many items pertaining to religious and moral terminology, names for some customs, and a large number of proper names are borrowed from Arabic, usually via Kanuri, Hausa, or Fula.³

3 According to information that I could not check for accuracy there are four major and two minor clans in Mora. Major clans are:

sànkɾé Chiefs of Wandala come from this clan, members of which are said to be warriors and chiefs, but not farmers.

níižà The clan reputed to be that of spiritual chiefs. Their chief is called *líižà*, i.e. ‘one of *íižà*’. Members of the clan are said to have been involved in hunting and spiritual matters. The only potential etymon is the noun *ížè* ‘salt’.

vàkòké The clan of animal husbandry and farmers.

mìfállàmà A clan said to be related to Kanuri. Members of the clan are believed to be descendants of Kanuri who brought Islam to Wandala and intermarried with Wandala. They are farmers and teachers of Islam (‘marabouts’).

Minor clans:

màyá A clan of hunters that used to inhabit Dulo but was absorbed by the Wandala. It is not known what language they spoke before they were absorbed by the Wandala.

máǰwàné Formally a ‘clan of warriors’. Now they farm and raise goats and sheep.

2. Dialect variations

According to traditional Wandala folk wisdom, there are thirty-three varieties of the Wandala language, and no person can speak more than six of them. This belief testifies to the native speakers' recognition of the existence of Wandala as a separate language, and to the mutual intelligibility among its dialects. The incorporation of the awareness of language unity and dialectal diversity in the folk wisdom, regardless of the validity of the beliefs held, is in itself an interesting fact, given the absence of Wandala from any educational curriculum. This awareness may be linked with the long political tradition and spread of the Mandara Sultanate. The radio station in Maroua used to have a weekly one-hour program in Wandala.

I have collected data on two varieties of Wandala. In 1980, I worked with one speaker from Pulka (Nigeria). The remaining data come from the dialect spoken in Mora (Cameroon) and vicinity and were provided by a number of speakers starting in 1990, with most of the material being collected in the years 2004-2008. Even for the variety spoken in Mora, there are significant differences among speakers. Some have voiceless continuants in word-initial position where others have voiced continuants. Some have continuants where others have affricates. I have even observed differences in the speech of members of the same family, where one speaker would have a high-central vowel and another speaker a mid-central vowel, and where one speaker would have a lateral continuant palatalized in environments where other speakers would have a non-palatalized variant. For some speakers, velar nasals are realized with a velar stop, viz. [ŋg], rather than just [ŋ], especially in the first-person plural inclusive independent pronoun *ŋr*. There are also differences in syntactic structures, more specifically in relative clause constructions. Some differences may be due to extensive contacts with other languages, but the influence of these contacts varies for individual speakers. One of the interesting effects of language contact on syntax is that multilingual speakers of Wandala tend to give SVO order in sentences elicited through an SVO language while monolingual speakers provide verb-initial responses. This may be the source of reports that Wandala is an SVO language.

Data gathered by Johannes Lukas, as described in Mirt 1969-70 and 1971, come from a variety of areas. Given the fact that the origins of individual examples in Mirt are not marked, it is not possible to identify and describe regional characteristics on the basis of those data. In order to avoid premature generalizations, I refrain from making statements regarding dialect differentiation. The present work is based mainly on the most common variety of Wandala spoken in and around Mora, as represented in the speech of several male speakers ranging in age from 20 to over 60 years. Two speakers were siblings.

3. Scholarship on the language

Lukas gathered data on Wandala in the course of several seasons of fieldwork spanning more than twenty years, as described in Mirt 1971. In comparative notes accompanying his grammar of Giziga (1970), Lukas cites Wandala data. On the basis of Lukas's field-notes, Heide Mirt published two papers, one covering aspects of the vowel system (1969) and the other covering aspects of the verbal system (1969-70). Even though the present grammar differs substantially with respect to the analyses offered by Mirt (some of which, dealing with phonology, can also be found in Lukas 1970), one should recognize the considerable contributions she made even though working mainly with data gathered by someone else.

Paul Eguchi published notes on Wandala (Mandara) spoken in Mora (Eguchi 1969). Annie Whaley and Cheryl Fluckiger's collaboration resulted in a number of publications (Fluckiger and Whaley 1981a, 1981b, 1983). In 1980, they prepared at least seven issues of the mimeographed 'Wandala pedagogical grammar notes'. I had access to notes nr. 1, 3, and 7, each containing between four and five pages. Cheryl Fluckiger also filled out a six-page grammatical questionnaire I prepared in the early 1980s. My heartfelt thanks go to her for this scholarly generosity.

The present grammar is based on data gathered through my own fieldwork over a period of many years. My work with the speaker from Pulka in 1980 resulted in a paper (Frajzyngier 1984) dealing with an issue for which the present grammar provides a more satisfactory analysis. Wendy Morris, while a graduate student at the University of Colorado, did some work based on my field notes. I have used Wandala data in a several comparative studies (e.g. Frajzyngier 1996, 2002). All data and many of the analyses of Wandala in my previous publications are superseded by the present grammar.

The closest relative of Wandala that has been described is Malgwa (Löhr 2002). Language assistants I worked with, and who had contact with Malgwa, insist that Wandala do not understand Malgwa, although they can understand individual words. Lexical similarities between the two languages are indeed extensive. Löhr's description focuses on phonology and morphological paradigms. Although there are significant phonological and lexical similarities between Malgwa and Wandala, even in these two areas there are many differences. Some of the differences may be due to different analyses. In order to assess whether the differences are due to different analyses or represent genuine differences between the languages, one would need to reanalyze data in both grammars using the same theoretical framework. Löhr's description contains little information about the syntax of Malgwa or the interaction of the phonology and the syntax, and leaves under-described the interaction of the verbal morphology with the rest of the grammatical system, a crucial issue for

the structure of Wandala. So, even if the two languages are closely related, the present grammar and Löhr's grammar supplement each other.

4. The aim, scope, and theoretical approach

The present grammar is intended to be a complete description of all coding means as represented in the texts gathered. The coding means are phonological means, morphological means, lexical categories and subcategories, linear order, repetition of morphemes, lexical items, and phrases. The grammar also aims at a description of the functions coded by these means. The phonological means, including segmental and supra-segmental structures and phonological processes, are described in chapter 2. The use of morpho-phonological means for the coding of the syntactic organization of the utterance is described in chapter 3. Lexical categories and associated inflectional morphology are described in chapter 4. Specific functional domains where the inflectional means interact with other coding means, viz. with linear order and phonology, as well as linear order and tone are described throughout the grammar.

The illustration of forms of morphemes and constructions often involves elicited phrases and simple or complex sentences in isolation. These illustrations should not be taken as instantiations of natural language nor should they be used as evidence of the functions involved. The form of all natural clauses in Wandala codes information on how the listener should interpret the clause, viz. independently or in connection with the preceding discourse. That information cannot be conveyed in the translations of most examples.

Considerable effort went into providing the evidence for all forms and all functions discovered. The grammar is verifiable in that another scholar may check whether the postulated forms, processes, and functions actually exist in the grammar of the language and have the properties ascribed to them. The grammar intends to be partially explanatory in that, for certain means, it explains why the language has the forms it has. The explanations do not cover all the formal means.

5. The importance of Wandala

A description of Wandala is particularly important because of the system-wide interaction of phonology, morphology, and syntax. Wandala has grammaticalized phonological means marking several types of connection between the elements of the utterance. The types of connections are: (1) membership of the same grammaticalized relationship, (2) a grammaticalized relationship when none is expected given the properties of lexical items involved; and (3) the end of the clause or sentence. This marking enables the listener to parse the

discourse into sentences and clauses and to identify the roles of various elements in the utterance. The phonological means include use of the root form, addition of a final vowel, and tone. For a wide variety of morphemes, the root form indicates that the following noun phrase is an object. The root + *a* form indicates that the following noun phrase is the subject. The high tone on the morpheme indicates that although the lexical and grammatical properties of the antecedent phrase would imply no connection with the following phrase, the two phrases should nevertheless be interpreted together. The high tone is thus used to code one type of genitive connection, a transitive predication for inherently intransitive verbs, and a comment clause that can be added to any type of sentence. In this way, the language overtly marks the syntactic organization of the utterance, dividing it into phrases, clauses, and sentences. The epenthesis of the mid-front vowel *e* to morphemes that underlyingly end in a consonant codes the clause- or sentence-final position, or a pause in all other positions. The phonological means, the epenthetic vowel *e*, the high tone, and the vowel *a* thus represent a class of morphemes that do not carry any meaning of their own but without which the utterance cannot be interpreted.

This grammaticalization has in turn resulted in the most important typological characteristic of Wandala, namely that the coding of some grammatical relations, such as subject and object, is distributed over a wide range of morphemes. With respect to these relations, and also for some other relations, the language is neither head-marking nor dependent-marking. While dependent marking never occurs, some suspected instances of head-marking, such as between the verb and the object or the verb and the subject, are to a large degree subsumed by the type of connection among the elements of the utterance.

A number of characteristics of Wandala phonology, morphology, and syntax differ considerably even from the closely related Chadic languages Lamang and Hdi. Wandala has three underlying vowels: *a*, *i*, and *u*; and six phonetic vowels: *a*, *i*, *u*, *ə*, *e*, and *o*. The three underlying vowels differ in the functions they perform. All three may be part of the underlying form of a lexical morpheme. Only one grammatical morpheme, however, has the phonetic realization *u*, which is most likely a predictable variant of the underlying *w*. Only one morpheme consists only of the vowel *i*. The vowel *a* is the only segment (tones may differ) of a large number of morphemes, including: the third-person singular subject and object pronoun; the locative predicator; the verbal plural marker; the goal marker; the genitive marker; the verbal noun marker; and the most widespread of all, a marker of one type of phrasal connection. Some of these functions may turn out to be related through grammaticalization processes, an interesting subject for a separate study.

Wandala has two tones. The functions of the tones differ among the various classes of morphemes. While both tones can be part of the underlying structure of a noun, tones are not part of the underlying structure of verbs but have an important grammatical function.

The language has a rich verbal morphology coding syntactic and semantic relations within the clause. An unusual characteristic of Wandala is that in clauses in which no noun phrase is topicalized, focused, or represents switch reference for the subject, there may be at most one nominal argument. This argument follows the verb. Subject pronouns must precede the verb (except in the backgrounding aspect) even if there is a nominal subject in the clause. These pronouns are not prefixes, as other constituents can separate them from the verb. The pragmatically neutral clause has the form $S_{[\text{pronoun}]}-V-(NP)$, where NP can be either a subject or an object. This configuration has far-reaching effects on other aspects of the grammar, viz. on the morphology of the verb and on the deployment of additional syntactic means. Interestingly, for a closely related Malgwa, Löhr 2002 states that Malgwa has the structure SVO, even if in the sample of texts attached to her grammar there are many clauses with the nominal subject following the verb.

Inflectional markers on the verb indicate the grammatical relation of the noun phrase following the verb; semantic relations within the clause; spatial orientations of the event; tense; aspect; mood; discourse status of the clause; and the point of view from which the proposition is presented. The negative marker and the content interrogative markers follow the verb and precede the nominal subject and objects, a structure that is shared by very few Central Chadic languages and is very rare in languages of the world (Dryer 2009). The semantic role of the noun phrase that follows the negative marker or the content-interrogative marker is marked by the form of the negative and interrogative markers.

In addition to the pronominal subjects that precede the verb, verbs can have subject suffixes that mark aspectual and modal functions different from those marked by subject pronouns preceding the verb. Subject pronouns follow the verb in the negative perfective.

The grammar of Wandala may well hold the key to the understanding of historical changes in Chadic syntax. Most Chadic languages are subject-initial. Some languages in the Central branch are predicate-initial in all tenses and aspects, and some languages are verb-initial in the perfective aspect and verb-medial in the imperfective aspect. Since the nominal argument in Wandala follows the verb and the pronominal subject precedes the verb, this language may represent an intermediate stage between subject-initial and verb-initial languages. However, a descriptive grammar is not the proper place to argue for different comparative analyses. Once the facts of Wandala are well understood, it may indeed serve as an exemplar of an intermediate stage in the study of syntactic change in languages without a written tradition.

The present grammar dispels several misconceptions regarding the phonological, morphological, and syntactic structure of Wandala, misconceptions that have percolated into a number of comparative Chadic studies, including some by this author.

6. An outline of the grammar of Wandala

6.1 Phonology

The language has a rich consonantal inventory. There are over forty consonantal segments. Some segments are simple in the sense of having one place of articulation, and others are complex ('heavy', in Frajzyngier 2004) in the sense of having two or more places of articulation. There are three underlying vowels. There are significant differences in the phonotactics of consonants and vowels in the underlying structures and in phonetic realizations. Although a number of morphemes underlyingly end in a consonant or consist of a consonant (and tone) only, no word, apart from some ideophones and a few very recent borrowings, can end in a consonant in isolation in the surface structure. Since glides also require an epenthetic vowel in word-final position, this provides a piece of evidence that glides in Wandala are phonologically consonants.

Word- and morpheme-final vowels constitute a major coding means for the syntactic system of Wandala. Only two vowels may occur in the word-final position: *a*, for the majority of lexical items, and *e*. The vowel *e* in the clause-internal position signals a pause. The vowel *e* is epenthetic in this position and is suffixed to morphemes that underlyingly end in a consonant. In clause-internal, non-pre-pausal position, most lexical items and grammatical morphemes can end in either a consonant or the vowel *a*.

Although the underlying forms can begin with complex consonant clusters, including geminated consonants, only some clusters are allowed in the word-initial position in the phonetic realization. The presence of the word-final vowel codes the phrase-final position. The absence of the word-final vowel codes the clause-internal position. Vowels that are grammatical morphemes by themselves rather than part of a grammatical morpheme are not deleted.

Wandala has labial and palatal harmonies triggered by consonants but having vowels as their targets.

Tone plays an important role in the grammatical system, coding tense, mood, aspects, relationships between nouns, and semantic relationships within a proposition. The tone also codes several lexical distinctions. Tone also has an important, although at present poorly understood, role in the rhythmic structure of the utterance. The rhythmic structure does not coincide with the

lexical and morphological divisions of the utterance, as demonstrated throughout this grammar in the broad phonetic transcription (first line) of many examples. There are complex rules concerning tonal behavior accompanying vowel fusion, vowel insertion, and vowel deletion. Most generally, the low tone is replaced by the high tone when two vowels fuse.

6.2 Lexical categories

In addition to nouns and verbs, Wandala has a relatively large number of adjectives and adverbs. It also has a category ‘predicator’. Predicators differ from verbs in a number of characteristics.

Within the nominal system, there is a class of nouns characterized by the reduplicated second syllable; the class comprises a large number of body parts, names of animals, and insects. No syntactic consequences are associated with this class.

6.3 Morphology

Affixation in Wandala includes suffixes, a very few prefixes, and one infix. Grammatical morphemes that precede verbs, including subject pronouns, are not phonologically linked to the verb and can be separated from the verb by other morphemes. Prefixes have been observed only in the nominal system, and in most cases are not productive, representing vestiges of an older grammatical system.

Inflection has been observed only in verbs and is limited to just one morpheme *a*, potentially an Afroasiatic retention (Greenberg 1951) coding the plurality of the verb.

Suffixes occur in all lexical categories. They are added to nouns or verbs before these lexical items are inserted into a higher formal structures, e.g. a phrase or a clause. Suffixes on verbs code semantic and grammatical relations within the clause, directionality, point of view, verbal nouns, and a host of other categories. Suffixes on nouns code plural number, genitive relation, and pronominal possession. Suffixes added to numerals and adjectives derive nouns.

Tones on verbs and subject pronouns code tenses, aspects, and moods.

Reduplication is a major morphological means available in different lexical categories. Reduplication has different forms and different functions even within the same lexical category. Some functions of reduplication are shared across lexical categories. Reduplication may also have phrases in its scope. The reduplication of the interrogative phrase *jìbà rà* ‘thing Q’ yields a nominal category *jìbà-r-jìbà-rà* ‘all kinds of things, whatnot’. Verbs have two types of complete reduplication, each type coding a different aspect. Reduplication is also a means to derive adverbs from other lexical categories.

Gemination of consonants is available as a coding means for verbs only. It has two functions within the verbal system. In the imperfective aspect, it marks transitive verbs when there is no overt nominal or pronominal object in the clause. It also codes the imperative mood.

Nominal inflectional morphology is limited to the plural suffix added to some nouns only and the genitive marker coding one type of relationship between two nouns.

Verbal inflectional morphology, viz. reduplication, infixation, and suffixation, codes aspect (reduplication, tone); mood (tone); number (infixation and reduplication); subject; direct and indirect object; goal; ventive extension; applicative extension; spatial configuration of the event; and co-participation. Functions referred to as 'causative' in traditional literature are subsumed under the category 'goal', which, however, has a much larger scope. The language has no passive form, i.e. a form indicating that the subject of a transitive verb is not the expected controller but rather the affected argument.

Inflectional changes on subject pronouns that precede the verb code tense. Auxiliary verbs and prepositions code aspectual systems, modality, altrilocality, and sequential clauses.

6.4 Linear order as a coding means

The juxtaposition of two nouns is a coding means for kinship relations. The juxtaposition of a [+locative] verb and a toponym referring to a Wandala town or a noun from a very limited set is a coding means for locative predication. Locative predication with other nouns, including other toponyms, requires the use of prepositions.

Subject pronouns precede the verb but are not prefixed to the verb, in that they are not part of the phonological unit represented by the predicate. They can occur in verbless clauses, and they can follow the verb in negative perfective.

Constraints on the linear order interact with the morphology of the verb and with the phonological means of coding throughout the grammatical system.

6.5 The internal organization of the utterance

All prepositional phrases begin a new phonological phrase, as evidenced by the fact that lexical items that have the root- and phrase-final *a/e* vowel alternations have the vowel *e* before the prepositional phrase, including in the position before the locative predicator *a*.

A most interesting case is presented by the question words *m* 'where', *w* 'what', and *wàr* 'who', which in the phrase-final form have what appears to

be the epenthetic vowel *e*, viz. *mè*, *wè*, and *wàrè*; end in a consonant before an object; and have the vowel *a*, viz. *mà*, *wà*, and *wàrà*, before the subject.

6.6 The structure of the noun phrase

Nominal and adjectival modifiers, determiners, and quantifiers follow the head. Some adjectives, however, can function as the head because they not only occur in phrase-initial position in the noun phrase but can also be linked to the following noun by the genitive marker. Wandala shares this interesting characteristic with certain other Chadic languages, e.g. Hausa (Newman 2000).

Wandala makes a most interesting distinction between two types of nominal modification: kinship terms and some ethnonyms, where modification is coded by juxtaposition of the head and modifier (in that order), and all other relations, where modification is coded by the genitive marker *á* added to the head. Most modifiers follow the head, although adjectives can both precede and follow the head.

6.7 Grammatical relations within a clause

The language makes a distinction between the grammatical relations ‘subject’ and ‘object’. There exist distinct sets of subject and object pronouns. The coding of the grammatical roles of nominal arguments crucially depends on the inherent properties of verbs. Some verbs take the controller as their unmarked argument, and others take the affected entity as their unmarked argument. The coding of the grammatical roles of noun phrases is subsumed by a much broader distinction between the root, root + *a*, and root + *á* forms that precede nominal arguments. Either the nominal objects or the nominal subject can occur after the verb, but they do not have to immediately follow the verb. Constituents other than arguments can follow the verb. Since both arguments can occupy the same position in the clause, a nominal subject and a nominal object cannot co-occur in the same clause unless one of them is fronted. The fronting of an argument codes topicalization, focus, or switch reference. The distinction between the nominal subject and the nominal object, a fascinating issue in Wandala syntax, is coded by subject pronouns and, most important, by the ending on the morpheme preceding the argument. This morpheme can be the verbal stem, a verbal extension, the negative morpheme, a question word, or a few other constituents. Use of the root + *a* form of these morphemes indicates that the following noun is the subject, while use of the root form indicates that the following noun is the object. The grammatical relation is thus coded by a combination of two means: the lexical category ‘noun’ and the ending on the preceding morpheme.

When the noun phrase directly follows the verb, the distinction between the subject and object depends on the aspect and on the inherent transitivity of the verb. In the perfective aspect of transitive verbs, the ending *a* on the verb indicates that the following noun phrase is the subject. The root ending indicates that the following noun phrase is the object. In other aspects and with other types of verbs, the ending *a* on the verb may code the following noun phrase as the object.

Subject-initial and object-initial structures, SV and OV respectively, when they occur, are products of the resumption of a preceding argument in a subsequent clause.

6.8 Semantic relations within the clause

The semantic relations that may be coded in the clause include: the indirect object; the affected subject or object; the co-participants; the associative argument; the source and the target for predicates involving movement.

The coding of indirect objects depends on the inherent properties of verbs. Verbs that take an indirect object as their inherent characteristic, such as the verb ‘to give’ and some verbs of saying, are marked by an object pronoun that indicates the indirect object. Verbs that do not inherently take indirect objects must have an object pronoun followed by the third-person singular object pronoun. The third-person singular object pronoun codes the indirect object function of the preceding object pronoun.

The affectedness of the subject or another argument is coded by the applicative extension *v*. An event performed for the benefit of the subject or another argument is coded by the ventive extension *w'*, realized as *ú* in the inter-consonantal position. The associative relation is coded by the extension *án*, identical with the associative preposition. The spatial relations are coded by the source extension *s*, the target extension *t*, the inner-space extension *m*, and the ‘on’ extension *ar*.

6.9 Number

The verbal system codes number in two ways. The plurality of the addressee in the imperative is coded through the suffix *wa*. The infix *a* codes plurality of the event, which in the case of transitive verbs may imply plurality of the object. This means constitutes a retention from an earlier grammatical system, possibly going as far back as Proto-Afroasiatic (Greenberg 1951).

There is one plural marker in the nominal system, *a* or *ahà*. This marker is used mainly with human nouns. It does not, however, have to be used if the noun is modified by a numeral larger than one.

6.10 Locative predication

The functional domain of the locative predication includes the following functions: directional predication, stative predication, point of view, spatial orientation with respect to the locative complement, manner, and altrilocality.

The forms of locative predications in all functions depend on the inherent properties of the predicates and the complements. If the predicate is inherently locative and the complement is inherently locative, no locative predicator or preposition is used in the predication. If the predicate is not inherently locative, the locative predicator *á* must precede the complement. If the predicate is locative but separated from the complement by other material, such as the subject or the object, the predicator *á* must also precede the complement. If the complement is not inherently locative, i.e., if it is not a locative adverb; a noun corresponding to 'home', 'compound', 'town'; or a place where Wandala live, the locative complement must be marked by a preposition. Spatial specifiers that situate the subject or object with respect to the locative complement may in turn follow a preposition.

Directionality of the event is coded by the auxiliary verbs *dà* 'depart' and *sà* 'come from', which follow the main verb of the clause. The markers of directionality may occur even if the main verbs are *dà* 'depart' and *sà* 'come from'. Verbs coding the manner of movement precede verbs coding directionality.

Altrilocality indicates that the event happens at a place different from the place where subject is or will be. Altrilocality can be coded either from the point of view of the preceding place or from the point of view of the subsequent place. Altrilocality coding differs from the coding of directionality in that the markers of altrilocality, derived from the verbs *dà* 'depart' and *sà* 'come from', are first in the construction, and the other verbs are considered complements of the verbs coding altrilocality.

6.11 Locative extensions

Wandala has grammaticalized a number of locative verbal extensions involving movement of the subject or object. The category ventive codes movement toward the speaker or the place of speech. The inner-space extension *m* indicates movement of the subject or object into an enclosed space. The target extension *t* indicates movement toward a target. The source extension *s* indicates movement from the source. The latter two extensions add directionality to the verbs of movement and the features 'movement' and 'directionality' to the verbs that do not code movement. Both extensions have acquired other, non-locative, functions.

6.12 Adjuncts

Adjuncts, or noun phrases that can be added to any clause, can be coded by four means: (1) inherent lexical adverbs; (2) adverbs derived through the reduplication of any lexical item; (3) the destinative preposition *gà*; or (4) complexes consisting of the predicate *á* followed by preposition *t* or *m*. Adverbs can occur in clause-initial or clause-final position, but they cannot occur in the position between the verb and the argument.

Targets of comparison are a type of adjuncts as they can be added to a number of predications. Equal comparison is coded by the preposition *skè*, which precedes the target of comparison. Unequal predication is coded through the verb *jà* ‘surpass’. The target of predication can be marked by the preposition *ár* ‘on’, by the destinative preposition *gà* ‘to’ or by the associative preposition *án*.

6.13 Verbless predication

Verbless predications serve a variety of functions, whose only common characteristic is the absence of the verb. Locative verbless predication must have the locative predicator *á*. The form of the locative verbless predication is: *S á* (PREP) NP.

Equational predication has the form NP NP, with the first NP being the subject. Attributive predication has property concepts preceding the subject. Property concepts have the root + *a* form preceding the subject even if their citation forms end in the vowel *e*.

Affirmative existential predication has the predicate *ánkwà* preceding or following the element whose existence is asserted. The different word orders code the information status of either the predicate or the element whose existence is asserted. Negative existential predication is coded by the form *ḃákà* following the element whose existence is denied.

Possessive predication has the form NP1 *án* NP2, where NP1 represents the possessor and NP2 the possessum.

6.14 Aspect

There are different aspectual systems in affirmative and negative clauses. In the affirmative clause, the aspectual system distinguishes: the perfective aspect, which has a variety of forms coding the grammatical roles of the following nouns; an imperfective aspect formed with the verbal noun; an imperfective aspect formed through the subject pronoun followed by the reduplicated verbal noun; the backgrounding aspect, which has the form R1ProR2; the punctual aspect, formed with the suffix *hè*; and the inceptive aspect, formed with the auxiliary *tsè*. The elicited data demonstrate also the

existence of the progressive aspect, formed through the particle *t-irè*, which appears to be a composite structure consisting of the preposition *t* ‘on’ and the noun *irè* ‘head’; and the stative aspect, formed with the associative preposition *án*. The roles of noun phrases are marked in different ways, depending on the aspect and on the inherent properties of verbs.

A verb in the punctual aspect represents the event as a whole, and cannot be followed by a nominal object. A nominal subject can be added to the punctual aspect only with the destinative preposition *gə*.

In addition to aspectual distinctions, various aspects carry different discourse functions. The backgrounding aspect provides the background for the interpretation of the following clauses within the same sentence. It also provides the comment on the preceding clauses within the same sentence. The punctual aspect provides the discourse background for the following narrative.

6.15 Tense

The tense system of Wandala includes the unmarked form coded by low tone on the subject pronoun. This form can have reference to the past or the general present. This form is in contrast with the specific present, coded by high tone on the subject pronoun. This form refers to a specific time in the present, which may be the time of speech or another time defined in the previous discourse. The future tense is coded by the auxiliary *d*, derived from the verb ‘go to’, or by the verb *kàtə* ‘want’. The specific past time is coded by high tone on monosyllabic verbs and on the final syllable of bisyllabic verbs. The subject pronoun has low tone in the specific past. Trisyllabic verbs code the specific past by high tone on the first syllable.

6.16 Mood

The unmarked clause in Wandala codes the speaker’s belief in the truth of the proposition. The evidence for this hypothesis is provided by the fact that the hypothetical and all other moods must be overtly marked. The hypothetical mood and hedging on the truth can be coded by a variety of means, including the marker *má* in clause-initial position. Another means is the use of the expression *bà kà* ‘you say’.

The deontic modality has two sub-domains, imperative (an order to the addressee(s)), and obligative (wishes with respect to all grammatical persons). The imperative is coded through gemination of the initial consonant. This gemination triggers a number of phonological changes, including the insertion of epenthetic vowels and the raising of the tone on the first syllable of the verb. The obligative mood is coded through the high tone subject pronoun followed by the imperative form of the verb.

6.17 Negation

Negation of verbal clauses is coded through the obligatory negative morpheme *k* (*kà* in phrase-final position) placed after the verb and before the nominal subject or object. The position of negative markers in Wandala is the same as the position of question words in interrogative clauses, which also precede the subject or the object of the clause. Negation can also be coded by the morpheme *tà* placed between the subject pronoun and the verb. This morpheme must co-occur with the negative marker *k*. There is a special verb coding the non-existence or the absence of an entity, the negative equivalent of a predicate coding the existence of an entity. The reduplicated form of the verb, which codes backgrounding aspect, cannot occur in negative clauses. The system of aspects in negative clauses is different from aspects in affirmative clauses in that it consists of a completive and non-completive distinction. The non-completive aspect is coded by the form Pro V(root) NEG. The completive aspect is coded by the form V-*a*-Pro NEG. Within the non-completive aspect there is a distinction between the unmarked and specific present tense. Prohibitive predication has the root form of the verb with high tone followed by the negative marker *kà*.

6.18 Questions

There is a fundamental difference between the coding of polar questions and the coding of content questions. Polar questions can be coded by intonation or by the particle *hè*, which occurs after the predicate but before the arguments or adjuncts. This marker thus occurs in the same position as the negative marker *k*. Polar questions can also be coded by the disjoint conjunction *mtú* ‘or’.

Polar questions can have the simple or the reduplicated form of the verb, and accordingly have a full range of tenses and aspects.

Content questions can be marked in two ways. One is through question words that code the semantic classes ‘human’, ‘non-human’, and ‘place’. Other classes, such as ‘reason’, are derived through the use of prepositions with a content question word. Content question words, similarly to the polar question marker *hè*, occur after the verb but before the nominal arguments and adjuncts. The grammatical role of the content question word is coded through the same means that code the grammatical role of the nominal arguments. These means depend on the inherent properties of verbs. The grammatical role of the nominal arguments that follow the question words is marked in the same way that all other morphemes mark grammatical roles: the root ending indicates that the following noun phrase is the object, and the root + *a* form indicates that the following noun phrase is the subject.

The other means of coding content questions is through the use of various nouns together with the content interrogative marker *rà*.

The tense and aspectual system in content questions is reduced, in that no reduplicated form of the verb can be used in content questions.

6.19 Comment clause

Wandala has grammaticalized a type of dependent clause here called ‘comment clause’. The syntactic environments of the comment clause, i.e. the categories that precede the comment-clause marker *wá*, do not have much in common. This indicates that the presence of the comment-clause marker *wá* is not triggered by the properties of the phrases or clauses that precede it. In all cases, the marker *wá* is followed by a clause, hence the evidence that it is some type of clause marker. But not all clauses, even those in complex sentences, are preceded by the comment-clause marker *wá*. The fact that the presence of the marker *wá* cannot be predicted from the material that precedes it or that follows it is the evidence that it is an independent coding means, a property shared by complementizers in other languages (Frajzyngier 1996).

The form *wá* marks the following clause as being a comment on what precedes it. It is also a part of the preceding clause or phrase. The marker *wá* indicates to the listener that something else follows in the utterance and that this something else is a comment on the immediately preceding material.

6.20 Topicalization

The main means of coding topicalization is the fronting of the topicalized element with a subsequent separation of the topicalized noun phrase from the comment clause, which may be marked by the marker *wá*. This separation may be marked by a pause, by the root + *a* form, or by a determiner that follows the topicalized element. The determiners indicate that the listener should identify the topicalized element as being previously mentioned in the discourse.

The grammatical relations of the topicalized noun phrase are coded through subject and object pronouns. The grammatical relation ‘object’ is coded through the third-person object pronoun *n* suffixed to the verb. Adjuncts are coded through the markers of adjuncts preceding the noun phrase. The absence of the object pronoun on the verb, and the absence of any markers of adjuncts, indicate that the topicalized noun phrase is the subject.

6.21 Focus

There are two focus constructions in Wandala. One uses the particle *bà* preceding the element in focus. The focused element, which can be any component of the utterance, remains in situ. Any constituent of the clause can be in the scope of the focus.

The other focus construction, contrastive focus, uses the form *kínì*, which follows the element in focus. Contrastive focus on nominal subjects often involves placing the subject in the clause-initial position. Such subjects are followed by the particle *kínì*.

6.22 Reference system

The major subdomains within the domain of reference in Wandala are deixis, deixis with previous mention, previous mention (without deixis); deduced reference; indefiniteness; and switch reference. The coding means involved in the coding of these subdomains are deictic markers and anaphoric markers; overt use of nouns; pronouns and determiners; word order, and the use of an existential verb to code indefiniteness.

6.23 Paratactic constructions

Like most Chadic languages (Frajzyngier 1996), Wandala does not have a coordinated clausal conjunction whose role would be to instruct the listener to interpret two or more clauses in connection with each other. Instead, clauses are marked for a specific semantic relation with either a preceding or a following clause, and some markers indicate a connection with both the preceding and the following material.

The specific semantic relations of a clause include: temporal simultaneity, coded by asyndetic parataxis; counter-expectation, marked mainly by the borrowed marker *à(m)má*; exclusive clauses, coded by the marker *mtú* 'or'; temporal apodosis clauses, coded by the form *nábà*; and temporal protasis clauses coded by the form *dà*. The scope of any of these overt markers may be a sentence or a discourse, which is the case when the marker occurs in a sentence consisting of a single clause.

6.24 Complementation

The coding means within the domain of complementation include complementizers, the nominalized form of the complement clause, and, to a lesser extent, the clausal order.

The most frequent clausal order is matrix clause-complement clause. Content-interrogative complements of verbs of saying may precede the matrix clause.

Direct speech may be preceded by the complementizer *gàní* or the complementizer *dàgìyá* 'behold', or it may be marked by a pause preceding it.

The comment-clause marker *wá* precedes the complement clause of a variety of verbs when some other material, such as a nominal subject, occurs between the verb and the complement clause. The complement clause preced-

ed by the comment marker *wá* may be direct or indirect speech, and may have indicative or deontic modality.

Matrix coding of the subject of the complement clause marks direct perception. The absence of matrix coding marks indirect perception.

6.25 Conditional and temporal clauses

Conditional and temporal clauses share the property of having both protasis and apodosis clauses. While apodosis clauses of the two types of sentences share many similarities, the protasis clauses are quite different. The conditional protasis is coded by the hypothetical marker *má*. The temporal protasis clause can code the time simultaneous with the time of the apodosis clause, the time before the time of the apodosis clause, and the time after the time of the apodosis clause. These different time relations are coded by the use of prepositions. The time before that of the protasis clause may also be marked through the backgrounding aspect, i.e. the form R1ProR2.

6.26 Adjunct clauses

Adjunct clauses follow the matrix clause. They are marked by the subordinators *wàrà* and *mbàtə̀*, by the predicator *á*, and by the destinative preposition *gə̀*. The use of the altrilocality constructions with the auxiliary verbs *s* ‘come’ and *d* ‘go’ implies that the clause that follows the auxiliaries is a purpose clause.

6.27 The relative clause

The head always precedes the relative clause. There is a fundamental difference in Wandala between the relativization of the subject and the relativization of other grammatical relations. The relativization of the subject involves placing the nominal subject in the clause-initial position, and additional coding of the subject through the subject pronoun.

The relativization of the object involves placing the nominal object in the clause-initial position and the pronominal subject before the verb and a nominal or pronominal subject after the verb. The remaining grammatical and semantic relations are coded by prepositions.

6.28 Discourse characteristics

Most of the questions concerning discourse structure in Wandala remain to be explored. I have no information regarding conversations between men and women, between children and adults, and conversations involving multiple participants.

7. The sources and the nature of the data

The data analyzed in the present grammar were gathered at various times since 1980, with the bulk of the data being gathered starting in 2004. The data consist of texts in natural use and elicited sentences. Elicited sentences are used to provide the evidence for hypotheses regarding the underlying forms and their phonetic realizations. Elicited utterances also serve to assess whether gaps in the natural-language data are due to the fact that a given form happens not to occur in the texts gathered or whether the gap is systematic, i.e., whether the grammatical system does not include a given form and/or function. Hypotheses about the function of a linguistic form are supported with a combination of natural language data and elicited utterances to check for ungrammaticality. The elicited utterances bear the hallmarks of the way they were obtained: they are short and non-idiomatic, their subject matter is quite artificial, and they usually are complete sentences. In citations of Wandala, the elicited sentences should not be used to illustrate a function.

The following were the principal language assistants over the course of the years:

Seini Adjil Alhadji, born in February 1971 in Mora, son of a Wandala father and a Kanuri mother. The family spoke Wandala at home. He was raised and educated in Mora, where he completed secondary school (*lycée*). During the time of the data-gathering he was a teacher in an Islamic elementary school. In addition to Wandala, he speaks Fula, French, and Kanuri. For several years, he served as co-host of a Wandala-language program at the radio station in Maroua.

Hamidou Zake Umar, born around 1967, was at one time a student at the University of Yaoundé.

Oumaté Mahamat was born in 1974 in Mora to Wandala parents. He graduated from a *lycée* in Mora and spent one year in N'Djamena. His other education included one year of management and information technology. Ali Mahamat, about 40 years old at the time of the data-gathering, is the brother of Oumaté Mahamat and has two years of education at the University of Yaoundé.

Ramadan Abba was born in 1953 in the Antale neighborhood of Mora. His father and mother were Wandala, his spouse is Wandala, and Wandala is the language spoken at home. In addition to French, he has some knowledge of Fula and Hausa.

In addition to the above assistants, other speakers of Wandala helped over shorter time periods (one or two days). All language assistants displayed great patience and understanding, for which I am most thankful.

The identification of plants mentioned in the grammar was done either directly, when I happened to know the name (very few cases), or indirectly, through the name of the plant in Fula. I used Tourneaux and Daïrou 1998 to

identify the plants whose names I obtained in Fula. The identification of birds was done with the help of Serle and Morel 1993. For the identification of mammals I used Halternoth and Diller 1985, and for insects I used Boorman 1981. The identification of Kanuri borrowings was done with the help of Hutchison 1981, Jarett 2007, and the electronic form of his Kanuri dictionary kindly provided by Norbert Cyffer. For Arabic borrowings, I relied on de Pommerol 1999, and for Fula borrowings I consulted Noye 1989 and Tourneaux and Daïrou 1998.

Chapter 2

Phonology

1. The aim of the chapter

The aim of the present chapter is to propose an underlying segmental and tonal system for Wandala and rules for the realization of morphemes within an utterance and in isolation. The fundamental rules that determine the phonological structure of the utterance in Wandala, viz. vowel alternations and vowel epenthesis, operate within phonological phrases rather than within a word. The phonological form of a morpheme in isolation is quite different from its form within an utterance. The phonological rules of word-final vowel deletion and vowel retention are a means to code phrasal boundaries. The rules of vowel insertion are determined by syllabic structure within the phrase rather than within a word. The phonotactics of consonants and vowels is determined by the constraints on syllabic structure, again within a phrase rather than within a word. The chapter is organized as follows: It begins with a description of the consonantal system, including evidence for the underlying consonants and their phonotactics, followed by a description of the vocalic system and the phonotactics of vowels. This is followed by the description of syllables and syllabic constraints. The chapter concludes with the discussion of tone.

2. Consonantal system

2.1 The inventory of underlying consonants

Wandala has a rather rich consonantal system, both in the underlying and in the phonetic inventory. There are over forty underlying consonantal segments (Table 2.1). Glides are underlyingly consonants, as demonstrated further in this chapter.

The phonetic consonants include all of the segments in Table 2.1 plus the velar continuant *x*, palatal nasal *ɲ*, palatalized stops, palatalized fricatives and lateral continuants, glottalized consonants, and liquids, represented as *b'*, *d'*, *g'*, *k'*, *f'*, *l'*, *ʃ'* and *l'*, *ɸ'*, and *d'*. The palatalized variants occur before the palatal glide *y*. The palatalization of consonants, being fully predictable, is not further marked throughout this grammar. The palatal underlying segments are represented as *py*, *dy*, *dʲy*, *ky*, *gy*, and *ʃy*.

There are two tests of mono-segmental rather than cluster status of complex consonants. One is provided by the rules of epenthesis. The epenthetic vowel is inserted between segments. Therefore, if an epenthetic vowel cannot be inserted between the perceptually initial and final components of a sound, that sound represents a complex single segment. If an epenthetic vowel can occur there, the sound represents a cluster of underlying segments.

Table 2.1 Underlying consonants and glides

	Lab.	Alv.	Pal.	Pal-Vel	Velar	Lab-Vel	Glottal
Stops							
Voiceless	p	t	py	ky	k	kp	
Voiced	b	d	dy	gy	g		
Prenasalized		mb	nd			ŋg	
Glottalized	ʔ	dʔ	yʔ	ɣy		ɣw	
Affricates							
		ts	c				
		dz	j				
Continuants							
Voiceless	f	s	ʃ				h
Voiced	v	z		ʒ			
Nasals	m	n		ɲ	ŋ		
Liquids							
		r		ry			
		l					
Lateral continuants							
Voiceless		ɬ					
Voiced		ɮ					
Glides	w		y				

Another test of segmental structure is provided by the formation of the plural form of verbs through the insertion of the vowel *a* after the first consonant of the root. In the case of prenasalized stops, this vowel is inserted after the stop component rather than after the nasal component. Thus the verb *mbdʔ* ‘fall (about objects in initial vertical position, single event)’ has the plural *mbàdʔ* ‘fall (plural event)’ rather than **màbdʔ* or **màbàdʔ*.

2.2 Evidence for the underlying status of consonants and their phonetic realization

The evidence for the underlying status of consonants is provided by contrast with other segments having the same place or the same manner of articulation.

In the examples below, verbs are represented in the imperative form ending in the vowel *a*. This representation is intended to facilitate reading and

does not represent the underlying forms. No examples of phrase-final consonants are given, because no consonant can occur in this position.

Labials

- p** The voiceless labial stop, like all other voiceless stops, is unaspirated. *pát'è* 'short, brief', *pàfà* 'milk (V)', *áp/əpfà* 'grill (meat, peanuts)', *pàcàkálè* 'pubic apron', *pàtəri* 'skirt'.
- b** *bá* 'say', *bìdàlà* 'adolescence (of donkeys and horses only)'. There are no instances of [b] in intervocalic position within a morpheme. In intervocalic position across morphemes and with no pause in between, the underlying *b* is realized as a geminated voiced continuant [vv]:

tà bú kùrd-á → [táv^vúkùrdá]
 3PL two all-GEN
 'Both of them . . .'

Borrowed words that have voiced bilabial stops in their original languages are realized with voiceless bilabial stops in Wandala, e.g. *tàpìskè* 'a variety of bread', cf. Chadian Arabic *tabuska* 'large beignets made from guinea corn'. Some phonetic instantiations of [b] represent the realization of the underlying *v* before a voiced continuant *z*.

- 6** *ḃákà* 'NEG.EX'. Glottalized consonants are voiceless.
- f** *fà* 'put', *wáf^kè* 'face', *fě* 'field', *fúŋwà* 'blow the nose'. Before voiceless continuants and affricates, the labial continuant becomes a labial stop: *f* → *p* / __ C[-voice, +continuant]. The verb *fìsà* [ptsà] 'return' has the plural form *fàtsà* 'return many times', not **pàtsà*.
- v** *và* 'give', *vràndé* 'brown' (about persons only). The voiced labial continuant *v* becomes a stop when preceding the continuants *l*, *ʒ*, *z*, *s*, and *f*. The feature [voice] of the bilabial stop is determined by the feature [voice] of the continuant, hence the rule *v* → bilabial stop [αvoice] / __ C[αvoice, +continuant]. The evidence for the existence of this rule is provided by the behavior of the applicative extension, which is realized as [v] before voiced consonants and in intervocalic position and as [p] before voiceless continuants. Compare the two forms of the verb *ly* 'mature'. In the first the applicative extension is word-final, realized as *vá*, and in the second, it is word-internal preceding the consonant *l*, and realized as [p]: *tà-vá* vs. *lyá-p-tyè*. The evidence that the continuant becomes a voiced bilabial stop in front of a voiced continuant is provided by the alternations of the verb /vzà/

‘jump’. The citation form of this verb is *bzà*. The plural form of this verb is *vàzà*, not **bàzà*. Similarly the plural of the verb *ábǵyà* ‘throw’ is *váǵyà* ‘throw many things’.

- mb** *mbdā* ‘fall’. The evidence that the sequence *mb* represents a single segment is provided by the imperative form for the singular addressee of the simple verb, which is derived through gemination of the first consonant of the verb. In *mbá-mbàdā* ‘fall!’, the sequence *mb* is geminated, with an epenthetic vowel inserted after the first instantiation of *mb*.

Alveolars

- t** *mtù* ‘or’, *t* ‘target extension’. *t* becomes voiced when preceded by a vowel and followed by a sonorant:

- (1a) *mbà-t-mbà* *kàrà* → [mbà**d**mbà kàrà]
lit-T-lit:PB fire
‘the fire lit up’

- d** *d* ‘go’, *dàgzà* ‘flow (as a liquid) and make noise at the same time’. The consonant *d* does occur in the intervocalic position within a morpheme. The voiced stop *d* becomes voiceless in front of a voiceless obstruent:

- (1b) *à d kàtà gyálè* → [àtxà**t**ègyaalè]
3SG SEQ want girl
‘He wanted to marry a girl . . .’

- dy** The evidence that *dy* is a single segment is provided by the imperative form of the verb *dy* ‘know’. The imperative for a single addressee is coded through gemination of the first consonant. For the verb *dy* ‘know’ such gemination involves insertion of an epenthetic vowel (*i*, in this case, because of the palatal consonant):

- (2) *dyídyì púwá léyà*
know pour writing
‘know how to write!’

Compare a verb with a simple initial underlying segment *z*:

- (3) *ázzà hìy-á-ŋà*
eat corn-GEN-2SG
‘eat your corn!’

- d *hùdē* ‘belly’, *rdě* ‘fart’
- ɖy *ɖyéké* ‘fat one (about a person)’
- nd *ndrá* ‘braided hair’. The evidence for the existence of this prenasalized stop is provided by the fact that gemination of the initial consonant has the sequence *nd* rather than just *n* in its scope. The obligative form of the verb *ndr* ‘build’ is *ndàndār brè* ‘one has to build a house’. The imperative form of this verb does not involve gemination, so gemination cannot be used as a test: *àndār brè* ‘build a house!’.
- ts Voiceless alveolar affricate. *dàtsé* ‘cut with knife, machete’.
- c Voiceless palatal affricate. *ycá* ‘cut one thing with a knife, machete’.
- dz Voiced alveolar affricate, *dzrà* ‘select’, *gdzà* ‘small’. The speaker from Pulka produced a voiced fricative, *ágzàrà* ‘children’, rather than the affricate, as attested in Mora: *ágdzàrà* ‘children’.
- s *sà* ‘come’, *bàṅgúsà* ‘papaya’. The alveolar *s* is palatalized before a high-front vowel *i* and becomes *ʃ*. There are no instances of the voiceless alveolar fricative [s] in front of a high front vowel [i].
- z *zà* ‘locative marker for [+human] nouns’. The voiced alveolar fricative is palatalized before a high front vowel. The noun *žílé* ‘man, husband’ may well have the underlying *z* rather than *ž*, cf. *zálà* ‘men’.

Palatals

- c *ìcìcá* ‘cut!’ (imperative form with initial epenthetic vowel)
- j *jà* ‘hit’, *njà* ‘sit’
- ʃ *foyà* ‘story’, *ʃkw* ‘buy’
- ž *žàrà* ‘see’, *žàgàdè* ‘run’

The palatals *ʃ* and *ž* contrast with clusters consisting of an alveolar consonant and the palatal glide. In addition, they are in contrast with a palatal consonant followed by the palatal glide, of the type *ʃyi*, although these are realized phonetically as long vowels: [ʃiili] ‘sand’. Therefore, the segments *ʃ* and *ž* are phonemic.

Velars

- k** *klà* ‘run (about liquids without making noise)’. The voiceless velar stop becomes voiced when followed by a voiced stop or a nasal consonant:

- (4a) *yá nà-k-ná* → [yá nà-**g**-ná]
 1SG look-2SG-look
 ‘I am looking at you’

The voiceless velar stop becomes voiceless continuant after a voiceless stop or before a vowel:

- (4b) *à d kàtà gyálè* → [àtxàtègyáalè]
 3SG SEQ want girl
 ‘He wanted to marry a girl . . .’

- ky** *kyàbà* ‘disperse, scatter’ (a plural verb); *kyéɲnè* ‘dark red, blood color’.

- g** *gè* preposition ‘to, for’, *gà* ‘contract a marriage’. Unlike *b* and *d*, *g* can occur in intervocalic position within a morpheme: *màgà* ‘make’.

The velar voiced stop becomes the velar nasal before the voiceless velar stop:

- (5) *á màg-k péd-á-rà* → [á màŋ-k pédǎrà]
 3SG make-NEG use-GEN-3SG
 ‘it does not make a force’ i.e. ‘has no validity’

- gy** *gyà* ‘cook’. The evidence for the monosegmental nature of *gy* (*y* is just a graphemic representation of palatalization) is provided by the fact that when the verb *gy* ‘cook’ receives the suffix *a*, the vowel *a* is not raised, e.g. *àgygyá* and *ìgygyá* both variants recorded for the imperative form. If there were a palatal glide in the underlying structure, the imperative form would have had only the first consonant *g* geminated. As it is, the first consonant is reduplicated together with its palatal feature.

- gɣ** *gɣirè* (1) ‘beans (generic term)’ (2) ‘smoke’, *gɣìnà* ‘peanuts’, *gɣàwè* ‘playing pebbles’, *gɣímè* ‘soap tree’ (*Balanites aegyptiaca* (L.)), *gɣá* ‘leave, expel from body, defecate’; *gwàgɣé* ‘lower back of head’ compare with *gwàyè* ‘male baby’. The glottalized velar has been recorded only when palatalized or followed by the palatal glide. At-

tempts to discover the non-palatalized glottalized velar followed by the vowels *u* and *a* gave negative results. The phonemic status of the glottalized velar is established because of the contrast obtained between the palatal voiced velar, as in *gyà* 'cook', and the glottalized velar, as in *qyà* 'defecate, expel other bodily substances'.

- gw *gwà* ‘seasonal river’, *gwè* ‘elephant’, *gwè* ‘to help somebody in a fight’.
- kp The labial velar *kp* has been recorded in the verb *ùkpádà* ‘have a pulsating pain’, as in a toothache, abscess, etc. The imperative of the verb *ùkpádà* is formed through the reduplication of the *kp*: *ùkpùkpádà* ‘crunch (peanuts, cola nuts)’. The labial velar *kp* is a heavy segment, as it requires vowel epenthesis before or after *kp* in word-initial and in word-medial positions, and does not allow vowel epenthesis between its velar and labial components.

Glottal continuant

- he ‘punctual marker’, *hè* interrogative marker, *hánghè* ‘pale red’, *hàrè* ‘night, 24-hour period’. The glottal continuant is realized as a velar continuant [x] before high-central vowels and before round vowels, *xàdā* ‘hide’, *xùdē* ‘belly’, *xàdōrā* ‘funeral’, [èxóngyàdà] ‘clean a cavity’. For some speakers only, the glottal continuant is also realized as a velar continuant before the vowel *a*.

The glottal continuant is realized as a velar continuant when followed by another glottal continuant: h → x/ ___h. The imperative of the simple form of the verb is derived through the gemination of the first consonant. Consequently, the verb *hàlà* ‘gather’ should have the imperative *hhàlà*. An epenthetic vowel is added at the beginning of the word, resulting in the form [ə̀xhála].

The glottal continuant *h* becomes a voiced velar continuant when preceded by a vowel and followed by a voiced velar stop: *h* → *gh/V* *g*:

- (6) *àná bumtsàgh gè dàdà*
 à nábà mtsà-hè gè dàdà
 3SG then die-PNCT TO father
 ‘The father died.’

Some phonetic realizations of the glottal continuant are the product of continuant epenthesis in phrase-initial and intervocalic position, by the rules: $\emptyset \rightarrow h/__\text{a}$ and $\emptyset \rightarrow h/\text{a}__\text{V}$. The epenthetic glottal continuant, unlike the underlying glottal continuant, does not

occur after labial and alveolar stops. The verb ‘sleep’ is *p*. The noun *àrè* ‘night’ has no glottal continuant when following a consonant:

- (7) *ká dǎ pàráma hùnà*
ká dǎ p-àr á-m á hùnà
 2SG FUT sleep-night PRED-IN PRED here
 ‘where will you sleep here?’ (i.e. there is no space here)

The noun *àrè* ‘night’ has a glottal continuant inserted after a pause:

- (8) *pà-w-pǎ àrè* → [pò-pǎ hǎrè]
 sleep-IMPER.PL-sleep night
 ‘sleep!’

The locative predicator *á* in phrase-initial position is realized as [há]:

- (9a) *á-m nj-á dúní-nà* → [há m já dúnínà]
 PRED-IN life-GEN world-DEM
 ‘In this life . . .’

The demonstrative *únà* ‘that’ becomes [húnà] when preceded by the locative predicator *á*:

- (9b) *á únà* → [á húnà]
 PRED that
 ‘here’

The citation form of the verb ‘to speak’ is *ndàhà*. In the phrase-internal position, the verb occurs without the final vowel and the glottal continuant *h* does not occur:

- (10) [yándǎlvà wándǎlà]
yá ndà lvà Wandala
 1SG speak language Wandala
 ‘I am speaking the Wandala language’

When the suffix *a* is added to a verb ending in the vowel *a*, the glottal continuant is inserted. Consider the verb *jǎ* ‘get together’. Its nominalized form is derived through the addition of the suffix *a*. This suffix triggers the insertion of the glottal continuant, lest the morphological coding be lost: *jǎ + a* → [jàhà]:

- (11) *tá jàhá-mmè*
 3PL unite-COL
 ‘They get together.’

When the suffix to the verb is consonantal rather than vocalic, there is no trace of *h*. If the glottal continuant *h* were the underlying consonant, an epenthetic vowel would have been required before the consonantal suffix. No such phenomenon has been recorded, and attempts to produce such a form were roundly rejected by speakers:

- (12) *tà já-mmè*
 3PL unite-COL
 ‘they met (on the road)’
- *tà jàh-á-mmè*
 3PL unite-EP COL
 ‘they met (on the road)’

Nasals

n *án* ‘associative preposition’.

m *m* ‘spatial specifier ‘IN’, *mákè* ‘week’.

ɲ *ɲàmlàkè* ‘dirty’, *ɲáɲà* ‘put in order’. The consonant *ɲ* is produced without a palatal glide. After the initial contact of the tongue with the palatal region, the tongue remains at the bottom of the mouth.

ŋ *ɲàné* ‘3SG’. In some dialects, this phoneme is pronounced as a velar nasal, e.g. [ŋér] ‘1EXCL’. In other dialects, it is pronounced as a velar nasal followed by a velar voiced stop [ŋgór]. A velar nasal occurs in the morpheme-initial position, both word-initial and word-medial, but there are no cases of the velar nasal in the morpheme-internal position.

Lateral continuants

ɬ *àklá* ‘cow’, *àklyà* ‘to get better’. This consonant is slightly palatalized before front vowels: *lèlè* ‘bone’, *pàlè* ‘confection made from ground millet mixed with sugar’.

ɮ *ɮáɮà* ‘go!’, *ɮàbè* ‘yet’. The voiced lateral fricative has a considerable narrowing just before the release, producing an impression of ending in a stop. In the voiceless lateral fricative, this characteristic is much

less pronounced, and in some dialects it does not have this characteristic at all. The voiced lateral fricative is reduced to [l] before an obstruent. The underlying sequence *ɭv* is realized phonetically as [lv]:

- (13a) *à kkàl-v-á zàdè*
 3SG break-APPL-GO stick
 ‘he broke a stick’

Cf.:

- (13b) *à kkàɭ-yà-n-vé*
 3SG break-1SG-3SG-APPL
 ‘he broke it for me’

Liquids

r *rà* ‘any’, *re* ‘nominalizing suffix’.

ry The segment *ry* is postulated to be a unitary segment because it behaves like one segment with respect to reduplication. The formation of plural forms of adjectives involves reduplication of the first three segments. However, in adjectives in which the third segment is the rhotic *r* followed by the palatal glide, both the rhotic and the glide undergo reduplication: *zàryá* ‘beautiful, nice (about things, people)’, plural form *zàrizàryá*. The derivation of this form has the following steps: *zàry-zàryá* → *zàryi zàryá*, followed by high vowel epenthesis and glide deletion: → *zàrizàryá*.

l *liipà* ‘an animal not slaughtered according to Moslem laws, hence forbidden to eat’, ‘carcass’; *úmlè* ‘another’; *háɣkàlè* ‘spirit, ideas, memory, thoughts’ (borrowed, most probably from Hausa *hankali* ‘wisdom’, potentially from Arabic). The liquid *l* is deleted before the voiced lateral continuant. The verb *ɣàlá* ‘walk’ occurs without the last vowel in the first reduplicated part (R1), which results in the cluster *lɣ*. Subsequently, this cluster is reduced to *ɣ*:

- (14) *ɣà-ɣàlá*
 walk-walk
 ‘they walked’

The liquid *l* is also deleted before the rhotic when it is part of a three-consonant cluster:

- (15) *ɣàl-r-ɣàlá* → [ɣàɾɣàlá]
 walk-3-walk
 ‘they walked’

The epenthetic vowel after the liquids *r* and *l* is *e* rather than schwa, as is the case with majority of other consonants.

Glides

w *w* (*wà* phrase-final) ‘ventive extension’, *wá* ‘complementizer’.

y *yà* ‘first-person singular subject’. The palatal glide is deleted in intervocalic position, thus resulting in a sequence of two vowels.

An underlying glide in word-initial position followed by a consonant is realized as a corresponding back or front vowel. The following are the possible intermediate states: GC → GEC → EC, where G stands for the glide, C for the consonant, and E for the epenthetic vowel. Thus, the noun *wrà* ‘person’ is realized as [ùrà] ‘person’. When a glide occurs between consonants it requires insertion of an epenthetic vowel. The epenthetic vowel after the labial glide must be *u*, by the rules of epenthesis. The labial glide is subsequently deleted between the consonant and the vowel *u*. The sequence of rules is as follows:

$$\emptyset \rightarrow u/Cw_C$$

$$w \rightarrow \emptyset/C_uC$$

The first-person singular possessive pronoun *rwà*, e.g. *rv-á-rwà* ‘my hand’, is reduced to *rw* in phrase-internal position. If the next word begins with a consonant, an epenthetic vowel must be inserted after the labial glide to break up the sequence CCC. The epenthetic vowel must be *u*. Subsequently, the labial glide is deleted, and the vowel *u* is the only trace of the underlying labial glide:

- (16) *áyáwálvá* ***rùbákà***
 á *yà-wá* *álvà-á-rwà* *bákà*
 well 1SG-COM word-GEN-1SG NEG.EX
 ‘Well, I have no words.’

The ventive marker *w'* is realized as *u* after a consonant:

- (17) *tádâ-n-ú-tádâ* *tápá*
 pull-1SG-VENT-pull tobacco
 ‘I smoked tobacco’ (finished the package of cigarettes)

If the glide is followed by a front vowel, it remains a glide:

- (18) \dot{a} *z-w-ížè* → [à zwížè]
 3SG eat-VENT-salt
 'he ate salt'

The ventive marker *w* is realized as *u* in word-final position when preceding a nominal object:

- (19) *kwánjárà-há-ŋrè* *ŋà* *fâfâ-n-n-ú*
 hook-1PL:GEN-1EXCL 1EXCL put:PL-3SG-3SG-VENT
líwà
 meat
 'We put the meat on our hooks.'

Similar rules apply to the palatal glide. The epenthetic vowel after the palatal glide must be [i]. The palatal glide is deleted before the front vowel, and the vowel *i* is the only trace of the underlying palatal glide. Consider the following example, where the first-person object pronoun *y* is followed by the target extension *t*. The verbal complex is followed by the object *úkkùlá* 'chicken'. The palatal glide of the pronoun is reduced in the phrase-internal position, and consequently the sequence *v-y-t* produces the phonetic result [vit]:

- (20) \dot{a} *v-y-t* *úkkùlá* → \dot{a} *v-yì-t-úkkùlá* → [à vitúkkùlá]
 3SG give-1SG-T chicken
 'he gave me a chicken'

The palatal glide can be deleted in the intervocalic position G[+pal] → Ø/V[-back ____ V2]:

- (21) *fóì* *ŋáŋŋà* *yè* *cínné-yà* → [fóì ŋáŋŋà yè cinnéà]
 story DEF 1SG listen-1SG
 'the story that I heard'

The palatal glide is often deleted after a palatal consonant and before the epenthetic *i*. Thus, the verb whose underlying structure is /yc/ 'cut' is [yicá] (infinitival form), and when reduplicated it becomes [yicícà].

- y' The glottalized palatal glide has been recorded in several nouns: *ŋy'á* 'morning'; *ŋyé* 'become a sorcerer, a monster'; *y'é* 'back of the neck'.

3. Phonotactics of consonants

3.1 Introduction

The rules of phonotactics of underlying consonants differ from the rules of phonotactics for phonetic realizations. Wandala allows any two consonants in the underlying structures in word-initial position, including geminated consonants. In the phonetic structures, no geminated consonants may occur in word-initial position, and only some clusters are allowed in that position. In word-final position, some consonants may occur in the underlying structure, but there are no word-final consonants in the phonetic structure unless they form syllabic onsets with the next vowel or a sonorant. The phonotactics of the underlying structures does not take into consideration larger structures, such as the phrase, which must be taken into consideration in the phonotactics of phonetic realizations.

The structure of consonant clusters depends on whether the cluster is in word-initial or word-internal position. There are no consonant clusters in word-final position. There are no single consonants in pre-pausal position, e.g. in citation forms, in clause-final position, or before pauses in sentence-internal position. A cluster of consonants may emerge across word boundaries, when the word-final vowel is deleted and the next word begins with a consonant. If the resulting cluster is disallowed, an epenthetic vowel is inserted.

There are no word-initial geminate consonants in phonetic structures. The underlying geminate consonants are preceded by an epenthetic vowel in phonetic realizations. Thus, the noun *úkkùlà* ‘chicken’ most probably has an initial geminated *k*. The noun is inserted into larger structures together with its epenthetic vowel:

- (22) *yà* *và-n-t-úkkùlà*
 1SG give-3SG-T-chicken
 ‘I gave him a chicken’

3.2 Clusters in word-initial position

Clusters of a sonorant and a stop or a stop and a sonorant are common in word-initial position:

br	<i>brè</i> ‘single house in a compound’
pw	<i>pwà fiya</i> ‘to fart’ (lit. ‘pour air’ (a polite form)):
rd	<i>pàfà rdě</i> ‘to fart’ (a vulgar term) (<i>rdě</i> ‘fart’; the only other attested meaning for the verb <i>pàfà</i> is ‘milk’)
gm	<i>gmà</i> ‘loan’

Nasals do not have to be homorganic with the following consonant: *mtù* ‘or’, *mdè* ‘people’.

There are certain restrictions on clusters of stops or fricatives followed by a sonorant. A continuant followed by a stop and a sonorant is allowed: *fwà* ‘buy’. A stop followed by an affricate and the rhotic *r* is not allowed and requires initial-vowel epenthesis:

- (23) *ágdzrè* ‘son, child’

Any stop or fricative can be followed by the palatal glide. The verb *vy* ‘forget’ has such a cluster in the initial position. In forms that require gemination of the first consonant, only the first component of the cluster is geminated:

- (24) *àvvyá* ‘forget!’

The cluster involving a stop followed by a lateral continuant is not allowed in word-initial position. Any such underlying sequence requires schwa epenthesis in the phonetic realization: *àklà* ‘cow’.

3.3 Clusters in word-medial position

In word-medial position, a much larger number of clusters are allowed. Three-consonant clusters have at least one sonorant, e.g. *nth*:

- (25) *yà* *và-n-t-hè*
1SG give-3SG-T-PNCT
‘I gave him [something]’

The clusters *ph* and *rl* have been attested only at morpheme boundaries:

- (26) *àp-hàré*
sleep-day
‘sleep!’

- (27) *ìr-tyà*
head-calm
‘grave’

The sequence *bd* has been recorded in word-medial position only in the proper name *nábdà*, a borrowing of Arabic *Abdul*, most probably via Fula.

The underlying cluster *mn* is reduced to *m* by the rule $n \rightarrow \emptyset / m_$:

- (28) *yòò, kínnàná ám jínà*
yòò, kìn ṣánà á-m njí nà
 well now DEF PRED-IN sitting DEM
 ‘Well, while sitting here . . .’

The labial nasal is deleted after the alveolar nasal by the rule $m \rightarrow \emptyset / n __$. Consider the verb *mbà* ‘learn to do something’ (*bà* in Mirt 1971: 5). In the reduplicated form, the first-person subject is coded by the alveolar nasal *n*. When the alveolar nasal precedes the labial nasal, the labial nasal is deleted:

- (29) *mbà-n-mbà* → [mbà-n-bà]
 learn-1SG-learn
 ‘I learned’

The lateral liquid *l* is deleted before the sonorants *r*, and *n*, the stop *k*, and the lateral continuant *ɬ*: $l \rightarrow \emptyset / __ r/n/k/\mathfrak{ɬ}$:

- (30) *ɬàl-r-ɬálà* → [ɬà-r-ɬálà]
 walk-3PL-walk
 ‘they having gone’

The epenthetic vowel after a palatal consonant is *e* rather than the high central vowel. This is illustrated after the cluster *ff*:

- (31) *àffèn-và-ffē lùwà*
 grill-APPL-grill meat
 ‘he grilled meat’

The rhotic *r* is subject to metathesis with the preceding vowel, thus creating consonant clusters in which the consonant precedes the metathesized vowel. The underlying sequence *mù-rwà* ‘my mother’ may be heard as [mrùwà]:

- (32) *ṣàzàn bàṣrántàmrùwà*
ṣà z-à-n bà ṣr ántà
 1EXCL eat-GO-3SG FOC 1EXCL ASSC:PL
mù-rwà
 mother-1SG
 ‘We will eat it, me and my mother.’

When the rhotic consonant *r* is preceded in the underlying structure by the high round vowel, the high round vowel may follow the rhotic in the phonetic realization. The high round vowel may then be realized as a labial glide:

- (33) *álvà ɲánnà yè sàndkrwà̀yà nà*
álvà ɲánnà yè sà-ndà-kùrà̀-ya nà
 story DEF 1SG come-speak-3SG-1SG DEM
 ‘The story I came to tell you (pl) . . .’

One of the ways of avoiding a cluster of two stops is through metathesis. The recorded case involves the sequence *á-m ktà* ‘PRED-IN under’ when it is followed by the noun *drà* ‘bed’. In this underlying sequence, *k* is moved to the end of the word, with the final vowel *a* occurring in between the consonants:

- (34) *à fɓ̀-ì-vá á-m ták drà*
 3SG hide-1SG-APPL PRED-IN under bed
 ‘she hid me under the bed’

In other examples the epenthesis does not take place and the relevant sequence is realized as *ámàktà*.

3.4 The parameter [voice] in clusters

A voiceless consonant becomes voiced before another voiced consonant:

- (35) *ɓ̀àl-g-ɓ̀á́lá wà̀yà*
ɓ̀àl-k-ɓ̀á́lá á wà̀yà
 walk-2SG-walk PRED yesterday
 ‘you walked yesterday’
- (36) *yá nà-k-ná [yá nà-g-ná]*
 1SG look-2SG-look
 ‘I am looking at you’

The voicing rule is blocked when the voiceless consonant is a product of the reduction of a voiceless consonant cluster. The verb ‘break’ has the initial geminated consonant [kkɓ̀], which is reduced to [kɓ̀]. The rule of assimilation of voiceless stops to voiced stops is blocked when the voiceless stop is geminated:

- (37) *kɓ̀-ì-yà-n-tá-kɓ̀ zàdè*
 break-EP-1SG-3SG-T-breakstick
 ‘bend a stick for me!’

3.4 Geminates

The sequence *bb* has been recorded only in the noun *dábbà* ‘animal’, a borrowing from Hausa, possibly via Fula. There is no phonetic geminate [mm]. The sequence *mm*, resulting from the contact of two morphemes, is reduced to [m]:

- (38) *á-m-múra* → [á múrà]
 PRED-IN-Mora
 ‘in Mora’

The sequence of two voiced velars, *gg*, has been recorded only as a product of gemination deriving imperatives. The verb *gà* ‘marry’ has the imperative form *àggá* ‘marry!’

The sequence of two voiceless velars, *kk*, is reduced to a single consonant in intervocalic position (periods in phonetic transcription indicate syllabic boundary):

- (39) *yà lrdàk-ká-hè* → [yà lɾ̥.dà.ká.hè]
 1SG slip- 2SG-PNCT
 ‘I removed leaves for you’

Most interesting, from the phonological and phonetic point of view, is the gemination of heavy consonants, such as labial velar stops. The gemination process involves both components of the consonant. The gemination of such consonants requires vowel epenthesis in between the geminated segments as illustrated above for the verb *ùkpádǎ* ‘crack (about nuts), have pulsating pain’. The imperative is formed through the gemination of the first consonant and the resulting addition of an epenthetic vowel viz. *ùkpùkpádǎ*.

The gemination of the voiceless affricate can have two realizations. One consists of producing a stop followed by the affricate. For the verb *tsè* ‘rise’, the imperative is *éttsè* ‘get up!’; for the verb *dzè* ‘measure dry goods (corn, peanuts, beans, with a recipient)’, ‘measure length’, ‘make incisions on the body’, the imperative is *àddzé* ‘fetch it’. The other realization is the gemination of the affricate, e.g. *àdzdzé*.

Gemination is different from reduplication. In reduplication, the epenthetic vowel is inserted after rather than before the first geminate: *tsǎ-tsè* ‘rise!’.

4. Vowel system

The analysis and the description of the vowel system is organized as follows: (1) description of the phonetic vowels; (2) underlying vowels, evidence for

their phonological status and a description of their phonetic realizations; (3) vowel epenthesis; and (4) an explanation of vowel alternations.

4.1 Phonetic vowels

The phonetic vowels of Wandala (broad transcription) include:

i	ə	u
e		o
		a

There are also instances of the nasal vowel ð. Vowel length is not distinctive. The occasional long vowels result from speaker's hesitation or are a by-product of some rules involved in discourse functions. Thus, the demonstrative *únà* has its first vowel lengthened when it functions as the background for the following proposition:

- (40) *úunà àtsá dàdà*
úunà à ts-á dàdà
 DEF 3SG get up-GO father
 'Now, it is up to the father.'

Some instances of phonetic [e] occur in borrowed words, e.g. *lèkè* 'sugar cane', which possibly comes from the Fula *reke*.

The phonetic vowels include also products of the fusion of underlying vowels, of the glides becoming vowels, and of vowel epenthesis. Some phonetic instances of [i] and [u] represent epenthetic vowels, and others represent products of palatal and labial glides becoming vowels after a consonant, as described in the section on consonants.

The high-central vowel [ɪ] is represented in the present work by ə in order to better distinguish it from the graphically similar representation of the high-front vowel *i*, especially when tones are marked. The high central vowel, very frequent in the data, is a product of vowel insertion motivated by syllable structure constraints in the word-initial, word-medial, and word-final position. For some morphemes, it is the only vowel in the phonetic realization.

4.2 Underlying vowels: evidence and phonetic realization

Mirt 1969 postulates only two underlying vowels: low, represented by the vowel *a*, and high, represented by schwa. The remaining phonetic vowels, viz. [i], [u], [e], [o] and the long vowels [ii] and [uu], are said to be allophones of the two underlying vowels occurring in various phonetic environments, such

as before a pause or next to various consonants. Thus the high-front vowel *i* is said to be a variant of schwa occurring in the environment of palatal consonants. This analysis, attractive in its reductionism, does not, however, account for all phonetic realizations of vowels. For example, there are instantiations of the high front vowel in non-palatal environments: *irè* ‘iron’, *kinì* ‘also’, ‘contrastive focus’. The variation in the word-final and phrase-final position is limited to [a] and [e], so although there is the form *brà* ‘find’ (phrase-internal *brà*) and the form *brè* ‘house’, there is no **bri*, **bru*, or **bro*. Although there is *gwà* ‘river’ and *gwé* ‘elephant’, there is no **gwi*, **gwo*, **gwu*. No lexical item or grammatical morpheme ends in a high central or mid central vowel in isolation, thus there is no **gwə* or **brə* in isolation.

Mirt 1969 states that the vowel [e] is a predictable variant of *a* between alveolar nasals and in palatal environments and of schwa before a pause. The present study demonstrates that the vowel *e* in pre-pausal position is not the realization of schwa, as schwa is not an underlying vowel, and that it is not always an epenthetic vowel. It may have two sources, one of which is an epenthetic vowel and the other is the historic high front vowel. The high central vowel (‘schwa’) is an epenthetic vowel in all of its instantiations. Since there are instantiations of the vowel [e] in interconsonantal position, e.g. between lateral continuants: *lèlè* ‘bone’, in contrast with *làlà* ‘that’s enough, it finished’, one cannot say that *e* is a variant of *a*. The mid vowels *e* and *o* are accounted for in the present analysis by the fusion of the vowels *a* with *i* and *u* respectively, by vowel raising and fronting, and by rules of epenthesis.

In the present analysis, there are three underlying vowels, viz. *a*, *i*, and *u*:

<i>i</i>	<i>u</i>
<i>a</i>	

Not every instantiation of phonetic [i] or [u] represents the corresponding underlying vowel. Every phonetic [a] represents the underlying *a*. The vowels *i*, *u*, and *a* contrast in word-initial position, which is sufficient evidence for their underlying status. Here is the specific evidence for each vowel together with the description of its phonetic realization in various environments.

5. Underlying *a*

The vowel *a* with various tones is the third-person singular subject pronoun. With high tone, the vowel *á* is a locative predicator; when used as a suffix, it is a genitive marker. The unmarked pronunciation of the vowel is [+low] and [+back] in most environments: *tàtà* ‘place’, *mbà* ‘compound, home’, *wándàlà* ‘Wandala’, *nàrwàndzà* ‘story’.

The underlying *a* becomes the mid front [e] when preceding the palatal glide, and optionally when following the palatal glide *y*: *a* → *e*/ *y*. Thus the first-person singular subject pronoun *ya* is realized as [ye] or [ya]. The third-person subject pronoun *a* is often realized as [e] before a palatal glide:

- (41) *à ycà* → [è-ycà]
 3SG slaughter
 ‘he slaughtered’

Following the sequence *Cy*, the vowel *a* remains low: [myà] ‘first-person plural inclusive’ and *fyàrà* ‘put on me’:

- (42) *yó álv wándàl ñánnà à fyàrà málrùwà* [error]
yó álv wándàl ñánnà à f-y-àr-à
 well speech Wandala DEF 3SG put-1SG-ON-PB
mál-rùwà
 older brother-1SG
 ‘This Wandala speech is requested from me by my older brother.’

The vowel *a* followed by the labial glide *w* followed by a consonant becomes [o], i.e. *a* + *w* → *o*/___C. In the following example the verb *sà* ‘come’ is followed by the ventive extension *w*. The sequence *sa* + *w* results in the form [só] before a following consonant:

- (43) *táláwà kùrsómbàrskè*
táláwà kùr sà-w mbàr skè
 please 2PL come-VENT altogether like (POL)
 ‘Please, come along.’
- (44) *tà sà-w ǵàmá* → [tà s-ò ǵàmá]
 3PL come-VENT assembly
 ‘the assembly came’

When *w* is followed by a vowel it does not cause rounding of the preceding *a*. The ventive suffix ends in *a* before a nominal subject, and the verb and the ventive suffix are not reduced to [sò]:

- (45) *tàsàwàm dá žilé táksà gyálè*
tà sà-wà md-á žilé
 3PL come-VENT people-GEN husband
tà ksà gyálè
 3PL take girl
 ‘The people of the groom come and take the girl.’

The velar nasal is transparent with respect to the feature [round]. Consequently, a low vowel preceding the velar nasal becomes round when the velar nasal is followed by the labial glide in the syllable-final position, e.g., the noun *úksòŋwà* ‘idiot’.

6. Underlying *i*

The vowel *i* occurs in word-initial position in nouns and pronouns: *ítàrè* ‘third-person plural independent pronoun’, *ížè* ‘salt’, *ìrà* ‘nominal *írè* ‘iron (metal)’’, *yìrè* ‘head’. The vowel *i* occurs in word-medial position:

- (46a) *yà ná-n-ír-á-rà*
 1SG see-3SG-iron-GEN-3SG
 ‘I saw his iron’

- (46b) *yà án ír-á-rà* → [yánírárà]
 1SG ASSC iron-GEN-3SG
 ‘I have his iron (metal)’

When a word-initial *yi* follows a word ending in *a*, the vowel *a* is not raised and the palatal glide is realized without the epenthetic vowel [i], as in (47a). In (47b), where *yi* is not word-initial, the preceding *a* is raised to [e]:

- (47a) *yà ná yíʒbè* → [yà náyʒíbè]
 1SG see five
 ‘I saw five [of them]’

- (47b) *yà nè-yr-á-rà*
 1SG see-head-GEN-3SG
 ‘I saw him in person’

The vowel *i* also occurs in interconsonantal position after velar stops and alveolar nasals: *kíni* ‘contrastive focus marker, ‘also’.

The vowel *i* occurs seldom in word-final position: *gèni* ‘complementizer’, *ní* ‘intensifier’, *bí* ‘then’. The word-final *i* may be a product of the reduction of the word-final sequence *y* + epenthetic high vowel. An argument for such a possibility is provided by the possessive construction in which nouns with final phonetic [i] are followed by the genitive marker *á*. The product of such a sequence is the palatal glide followed by the vowel *a*:

- (48) *nyári-á-tàré* → [nyáry-á-tàré]
 bad behavior-GEN-3PL
 ‘their bad behavior’

If the word *nyári* had an underlying word-final *i*, it would have been deleted before the genitive suffix, and there would have been no trace of it as a palatal glide or in any other form.

The vowel *i* also occurs in word-final position in borrowed words, e.g. *Fáadî* (from Fula *Fadimatu*), *Háfîmî*, and *Nálî* (from Arabic *Ali*), all of which are proper names. Apart from these words, the vowel *i* does not occur in phrase-final position. Therefore, the following rule seems to have operated at some point in Wandala:

i → e/___## (## designates phrase-final position)

6.1 Glide formation

When a high-front vowel (found mainly in borrowed words) is followed by another vowel, the palatal glide is inserted between the two vowels, as per the rule:

Ø → y/V[+high, +front] ___V

- (49) *háfîmî* *án* *júŋgù* → [háfîmî yán júŋgù]
 Hashimi ASSC money
 ‘Hashimi has money’ (*júŋgù* most likely from Fula *suŋku* ‘money’).

7. Underlying u

Mirt claims that the vowel [u] is an allophone of schwa occurring in the environment of velar and sometimes bilabial consonants. Given that schwa is not considered an underlying vowel in the present work, a different approach is required. The vowel *u* can occur between consonants that do not cause rounding, e.g.: *húdê* ‘belly’, *dúksá* ‘thing’, *júlà* ‘travel’. In this position, the vowel *u* is in contrast with the vowels *a* and *i*. As it is in contrastive distribution, it must be postulated to be underlying. The vowel *u* also occurs, albeit rarely, in word-final position: *ɲázù* ‘that which’. The vowel *u* occurs in word-initial position, where it contrasts with both *i* and *a*: *úzà* ‘hoe’, *únà* ‘demonstrative’, *wrà* ‘person’, *úyà* ‘chat’:

- (50) *tà vyá ùz'-àhà-á-tàrè* → [tà vyózá-tàrè]
 3PL forget hoe-PL-GEN-3PL
 'they (1) forgot their (1) hoes'

Some word-initial phonetic instantiations of *u* derive from the underlying labial glide *w*; others derive from the underlying *u* in the word-initial position. The glide in word-initial position must be followed by an epenthetic vowel. Upon the insertion of the epenthetic vowel the glide is deleted, and the phonetic form of the word does not differ from a word with an underlying initial vowel:

Underlying vowel	Underlying glide
<i>ùgjè</i> 'knee'	<i>wrà</i> [ùrà] 'person'
<i>úgjè</i> 'hair'	

The difference between the two underlying structures is manifested in their interaction with a preceding vowel *a*. The underlying glide is realized as such because there is no motivation for the insertion of the epenthetic vowel, as the glide forms the coda of the preceding word:

- (51) *bàdàcí málǎrà nǎzù à hàynáwrà*
bà dàcí málǎrà nǎzù à hàyná wrà
 FOC then rest what 3SG want-3SG person
 'And for the rest, what a person wants . . .'

The underlying round vowel fuses with the preceding low vowel to produce the form *o* (the example is nonsensical, but it illustrates the phonological characteristics being described):

- (52) *nǎzù à hàyná úgjè/ùgjè* [nǎzù à hàynóǵjè]
 what 3SG want-3SG hair/knee
 'the thing that the hair/knee wants' (the tonal difference between the two nouns has been neutralized because of the preceding high tone)

The underlying vowel becomes the syllabic peak if the preceding morpheme ends in a consonant:

- (52) *yà n-úgj-á-rà*
 1SG see-hair-GEN-3SG
 'I saw his hair'

The high-round vowel *u* becomes a labial glide when followed by the low vowel *a*:

- (53) *fúŋgù-á* *rwà* [fúŋgwárwà]
 money-GEN 1SG
 ‘my money’

The vowel *u* has been preserved in borrowed words, e.g. *làríusà* ‘marriage, bride, wedding’ (*làrúsà* in Manga Kanuri (Jarret 2007), *arus* in Shua Arabic (de Pommerol 1999)) and *gùsà* ‘game, musical performance’ from Fula.

Given the contrast between vowels *u*, *a*, and *i* in word-initial position and in interconsonantal position, there is no other choice but to accept the vowel *u* as underlying, along with the vowels *a* and *i*.

8. The status of the vowel *e*

The phonetic vowel [e] occurs in only two environments: in pre-pausal position clause-medially and in clause-final position. In a few items, the vowel *e* occurs in interconsonantal position. Two hypotheses can account for the presence of *e*: (1) *e* is an epenthetic vowel satisfying the constraint that no morpheme can end in a consonant in isolation, and (2) *e* is a product of high front vowel lowering before a pause: *i* → *e*/___##. In pre-pausal position the vowel *e* contrasts only with the vowel *a* and can occur after all consonants: *mákè* ‘week’, *wáfkè* ‘face’, *gwè* ‘elephant’, cf. *gwà* ‘seasonal river’, *gyálè* ‘girl’, *tskádè* ‘silence’, *zàdè* ‘stick’.

The evidence that certain phonetic [e]s are historically products of neutralization of [i] in word-final position is provided by comparative data:

Wandala	Hdi	Gloss
<i>gwè</i>	<i>gùyáy</i>	‘elephant’
<i>krè</i>	<i>kri</i>	‘dog’
<i>kàlfě</i>	<i>kliپی</i>	‘fish’

A number of nouns end in the vowel *i*, but they all appear to be recent borrowings and do not contradict the hypothesis of the word-final *i* → *e* change. All verbs whose citation form ends in *e* share a common semantic characteristic, that of separation of the subject or object from a source (see chapter 5). That may indicate that they end in a morpheme indicating such a separation. A related Central Chadic language, Hdi, has a verbal extension *i* coding just such a function. It is possible that the question words *wè* ‘what’, *wàrè* ‘who’, and *mè* ‘where’ also end in what historically might have been the

vowel *i*, as this vowel is a frequent marker of content questions in other Central Chadic languages.

Given the constraint that no word in Wandala can end in an obstruent or a glide in pre-pausal position, the vowel *e* could be epenthetic. The third-person plural independent and possessive pronoun is *tàr* in phrase-internal position, but *tàrè* in phrase-final position and in isolation:

- (54) *tà nábà ks-t-á bàrá-m-á-tàr ṇánnà*
 3PL then take-T-GO road-GEN-3PL DEF
 ‘They took their road.’

Pre-pausal, before a modifier:

- (55) *má ún ká tá màgá ágdzàrà sàwàri-*
 HYP DEF NEG 3PL make small reunion
yáhà-tàrè cùkcùkwà á tà bàrá-mà
 PL-3PL small PRED T road
 ‘If it is not that, they arrange small meetings at the road.’

In the following example, the first-person plural exclusive pronoun *ṇr* occurs twice, once in the middle of the sentence and once at the end of the sentence, each time ending in the vowel [e]. The instantiation in the middle of the sentence signals the pre-pausal position, the position before the adjunct phrase. The vowel *e* on the pronoun also signals the end of the sentence:

- (56) *tàlvángèlèksè dègíyà nó nó nó názùṇàcìnáṇrè*
tà lv-á-n gè lèksè dègíyà nó nó nó
 3PL say-GO-3SG TO chief COMP PRES X3
ṇàzú ṇà cìn-á-ṇrè
 what 1EXCL hear-GO-1EXCL
á-m hùd-á f-á-ṇrè
 PRED-IN belly-GEN field-GEN-1EXCL
 ‘They said to the Sultan, “Here is what we heard in our field.”’

The position before adjunct clauses marked by prepositions is pre-pausal, and morphemes in that position accordingly end in the vowel [e]. This vowel does not fuse with the following vowel:

- (57) *tàbànjátàrè ánhéerànkłàpírè*
 tà bà nj-á-tàrè án héer-àn-klàpí-rè
 3PL FOC stay-GO-3PL ASSC peace-ASSC-health-NOM
 ‘They lived together in peace and good health.’⁴

Here is an example of the alternation between *e* in pre-pausal position and the epenthetic high-central vowel in clause-internal position. The verb *td* ‘pull’ in phrase-internal position before an object ends in the high central vowel:

- (58) *tádā-n-ú-tādē*
 pull-1SG-VENT-pull
 ‘I smoked’
- tádā-n-ú-tādā wáyé*
 pull-1SG-VENT-pull oil
 ‘give him some oil’

Some instantiations of the phonetic *e* in word-final position may be products of vowel raising under the influence of the preceding high front vowel or the palatal glide: *dyékè* ‘fat one (about a person)’, *irè* ‘head’. Some instantiations of the phonetic *e* are products of vowel insertion after the liquid consonants *r* and *l*. Thus, when other lexical items end in a consonant or the epenthetic schwa, words with the final consonant *r* end in *e*: *ágdzrè bà* ‘child FOC’.

The vowel *e* affects the quality of the preceding epenthetic vowel, which becomes high and front: *lídē* ‘property, place that one has’. Compare the same lexical item without the final *e*: *lādā-nà* ‘the property, the place’.

4 The expression *héer-àn-klàpí-rè* is most probably a compound of *héerè* ‘peace’ (Arabic *hayra*), the associative preposition *án*, *klapi* ‘good health’ (from Kanuri, which in turn borrowed it from Hausa *lafía*, originally from Arabic), and the nominalizing suffix *re*. The evidence that the form is a lexical compound rather than a noun phrase followed by an associative phrase is provided by the fact that the internal associative preposition has low rather than high tone. Below, this expression is glossed as ‘peace-ASSC-health-NOM’.

9. Syllable structure

9.1 Types of syllables

Syllabic onsets and codas have been extracted through the examination of clause-initial and clause-final structures. Syllabic boundaries were established through the examination of speech fragments where the speakers were asked to divide a fragment of speech in any way they want. This method does not always guarantee a division of a natural speech fragment into syllables, because sometimes speakers produce what resemble underlying forms of morphemes rather than the phonetic syllables existing in the fragment. Nevertheless, this method sometimes yields natural-discourse syllables and information about potential syllabic onsets and codas.

Different types of syllabic structures are allowed in word-initial position and in word-internal position. Those differences are duly noted below. The following are allowed syllabic structures:

V *a* ‘third-person singular subject pronoun’, *á* ‘locative predicator’

N A nasal consonant can constitute a syllable. The syllabic status of the velar nasal is confirmed by the fact that it is a tone-bearing unit, and by the lento pronunciation, which gives the syllabic division as indicated: *m.digwá* ‘old’.

nr ‘first-person plural exclusive pronoun’, in word-medial position

GV (G = glide): *wà* ‘ventive extension’, *ya* ‘first-person subject pronoun’

CV *sá* ‘come’, *bà* ‘focus marker’

VC *á-m* ‘predicator-IN’

Cr [yá ɬr.dà.ké]
 ‘I am slipping down’

CVC [kəl.fě] ‘fish’

Several constraints apply to the type of consonants that can occupy the syllabic coda position. There is no syllable-final affricate *j*, but there is the syllable-final, clause-internal affricate *ts*: *wàts* ‘FUT’:

- (59) *wàts ɲá zá*
 FUT 1PL:EXCL eat
 ‘we will eat’

CGVC *kwànjár* ‘hook’, *cùkwá* ‘small’, *ndàɲglá* ‘cheek’

CCV(X) *knì* ‘also’ (recorded only as a second morpheme of a word)

CrCV Numerous syllables whose onset is composed of the third-person plural object pronoun *tr* and the first consonant of the verb:

- (60) *á fà-tr-fà*
 3SG find-3PL-find
 ‘he finds them’

No syllable can have consonant clusters in the coda, i.e. no *(C)VCC. This constraint is responsible for the central vowel insertion in word-final position: *dàrvà* ‘pond’ (phrase-internal position).

The clusters stop-fricative and stop-affricate are disallowed in syllable-initial position. Consequently, an epenthetic vowel is inserted before or after the first consonant of the disallowed sequence.

The cluster affricate-sonorant is allowed in syllable-initial position, as evidenced by the verb *dzrà* ‘select’.

The cluster of underlying phonemes *by* is disallowed in phonetic realization in word-initial position, as evidenced by the insertion of an epenthetic vowel between *b* and *y*. The epenthetic vowel is *i* before the palatal glide. Example: the verb *b* ‘say, tell’ followed by the first-person singular object *y*:

- (61) *à b-iy-án-bà*
 3SG say-1SG-3SG-say
 ‘he talked to me’

The rhotic *r* can constitute the syllabic peak, as evidenced by the syllable division and tonal structure of the verb *tr.dà.ká* ‘slip’:

- (62) *yà tr'.dà.kà*
 1SG slip
 ‘I slipped down’ [past, non-punctual, completed]
- yà tr'.dák-hè*
 1SG slip-PNCT
 ‘I slipped down’ [past, punctual]

There are no syllables of the structure stop-continuant[-sonorant]-stop.

9.2 Syllabification

As already noted by Mirt 1969, the underlying structure of many free morphemes does not include a vowel, e.g. *ndz* 'PAST (tense)'. Such morphemes are syllabified through the addition of an epenthetic vowel or with the initial vowel of the next morpheme:

- (63) *ndzə* *yám* *níyá-rwà* *á* *nín-ngì-nà*
ndzə *y-ám* *níy-á-rwà* *án* *íngì-nà*
 R.PAST 1SG-IN ready-GEN-1SG ASSC morning-DEM
 'I was ready this morning'

A number of monoconsonantal verbs that are phonetically realized with a central vowel have no vowel in the underlying structure. This is the case with the auxiliary *də* coding the sequential clause, and with a number of prepositions. The representation of so many morphemes with tones but without vowels constitutes a hindrance in reading. Therefore, morphemes with no vowel in the underlying structure are often represented through their phonetic representation in some form, e.g. with the central vowel, represented by schwa, in the place where it actually occurs.

Syllabification applies to morphemes already in their linear arrangement in the utterance, after final vowel deletion, if applicable, and after the augmentation of the root by the vowel *a*. Final vowel deletion constitutes an additional motivation for vowel insertion.

The syllabification proceeds from the beginning of the utterance and involves screening for allowed onsets. A vowel is inserted in the first disallowed place encountered. Consider a clause that includes the verb *jə* 'hit' and the noun *krè* 'dog' (citation forms for both morphemes). Both of these morphemes occur without their final vowels in phrase-internal position. The verb ends in a consonant when followed by the object. This results in a disallowed sequence [jkr]. Consequently, a central vowel is inserted between *j* and *k*:

- (64) *à* *jə* *kr* *án* *zàdè* → [à.jə.krán.zà.dè]
 3SG hit dog ASSC stick
 'he hit a dog with a stick'

The sequence *s/C* is disallowed. When the verb *sl* 'roast' is followed by a consonant, an epenthetic vowel is inserted. When the verb is followed by a vowel, an allowed syllabic structure *s/V* is created:

- (65) *sàlà-n-tá-slà* *lùwà*
 fry:3SG-3SG-T-fry meat
 ‘he fried the meat’

Morpheme-internal consonant clusters may result in ambisyllabicity, i.e. cases where one segment serves as the coda of the preceding syllable and the onset of the next syllable. This is the case with the noun *ndànglá* ‘cheek’, which is syllabified as [ndəŋ.ŋlá].

Syllabification rules provide an argument for the treatment of the phonetic sequences *gy*, *dy*, and *py* as one segment rather than as a consonantal cluster. The proposed segments *g*, *d*, and *p* cannot be separated from the palatal glide by an epenthetic vowel. The numeral *kígyé* ‘three’ is syllabified as [kí.ɡyé], and not as *[kíɡ.yé] or *[kíɡl.yé].

There exist syllabification preferences. Although the syllabic onset *rv* is allowed in natural discourse, the initial rhotic is attached to the preceding syllable if such a possibility exists. Thus, the rhotic onset of the noun *rvòndè* ‘heart’ is attached to the preceding syllable in natural discourse:

- (66) *à* *hárábàdzàr* *vòndè* *bàkín* *kínì*
à *háré* *á* *bàdzà* *rvòndè* *bà* *kín* *kínì*
 3SG spend the night PRED spoil heart FOC now
 ‘He spent all night vomiting, even now [he is vomiting].’

10. Vowel epenthesis

10.1 The patterns of vowel epenthesis

Given the constraints on word structure, syllable structure, and consonant clusters, the main means to prevent disallowed structures from occurring is vowel epenthesis. Consonant reduction is a rare phenomenon, possibly because it may prevent the identification of the morphemes. A vowel is epenthetic if its presence and its quality can be predicted from constraints on phonological structures, from the rules coding syntactic organization of the clause and from the comparison of the morpheme in question in various environments. The tones on epenthetic vowels depend on the lexical category and on other morphemes included in the word. Often, the tones on initial epenthetic vowels are polar. The rules of tone assignment on epenthetic vowels are discussed in section 12.3.

Vowel epenthesis applies to four positions in Wandala: word-initial, phrase-initial, interconsonantal, and pre-pausal. The term ‘interconsonantal’ includes both the word-internal and phrase-internal positions, i.e. between

Ø → V[+high] [-front, -back] / C[-palatal, -back, -round] ____

10.2 Epenthetic high-central vowel

The epenthetic vowel in non-pausal position is high central if the preceding consonants are neither round nor palatal:

- (67) *dà-nǎ-m-d-á-rà* *á* *dǎ-m* *hùd-á* *yàwè*
 go-3SG-IN-go-GEN-3SG PRED go-IN belly-GEN water
á *tàttàyà* *tàttàyà* *tàttàyà*
 3SG search search search
 ‘having brought it into the water, he is looking, is looking, is looking’

Vowel epenthesis operates across word boundaries. If a disallowed consonant cluster occurs at the boundary between two words, an epenthetic vowel is inserted. The sequence [nks] is disallowed and the epenthetic vowel must be inserted in the first disallowed syllable onset, i.e. after the consonant *n*:

- (68) *án* *ksá* *kàlfè* [ánǎksá kàlfè]
 ASSC take fish
 ‘the fish is caught’

The sequence *nst* is treated similarly. In addition, the consonant *t* is reduced:

- (69) *séi bà méycícùkùmù* *mgànǎsàrà*
séi *bà* *má* *yìc-lic* *kùmù* *má* *màgà-n* *ǎstà-rà*
 then, FOC 1INCL cut-cut if not 1INCL do-3SG how-Q
 ‘“We have to cross [the river], otherwise, what will we do?”’ [stà reduced to sà]

In word-medial position, a vowel is inserted in the first disallowed consonant junction, counting from left to right. The sequence of consonants *rks* is disallowed, even in word-internal position, and the epenthetic central vowel is inserted between *r* and *k*:

- (70a) *è,* *má* *ks-à-rǎ-ksá* *gdzà* *gyálè*
 eh HYP take-GO-ON-take young girl
 ‘Then, if the young girl accepts . . .’
- (70b) *è,* *má* *ks-à-rà-rǎ-ksá* *mdè*
 eh HYP take-GO-ON-take people
 ‘then, if people accept’

- (73b) *yà bə̀gfyà tsántse*
yà bə̀gfy-à tsè-án-tse
 1SG find-PB rise-ASSC-rise
 ‘I found him standing’

Pronouns that have a vowel as part of their underlying structure retain this vowel in the reduplicated form:

- (74) *tsà-nə̀/kə̀/yrə̀/mì/kùr-tse*
 ‘I/you/we(excl)/we(incl)/you(pl) stood/got up’

10.3 Epenthetic *i*

The epenthetic vowel before and after the palatal consonant is [i], as per the rule:

$\emptyset \rightarrow i/C[\text{palatal}]$ in environments requiring vowel epenthesis

The first-person singular object pronoun *y* follows the verbal root directly (i.e. without the preceding vowel *a*). The epenthetic vowel is inserted between the last consonant of the verb and the glide coding the first-person object pronoun:

- (75a) *kɛ-ì-yà-n-tə́-kɛ̀* *zàdè*
 break-EP-1SG-3SG-T-break stick
 ‘bend a stick for me!’
- (75b) *à f-y-ú nàrwàndzà* \rightarrow [àʃiyú nàrwàndzà]
 3SG tell-1SG-VENT story
 ‘he told me a short story’

The palatal glide is deleted after the nasal consonant and before a high-front vowel:

- (76) *ycà-n-ycà* \rightarrow *yicà-n-yicà* \rightarrow [ìcà-ní-cà]
 cut-1SG:EP-cut
 ‘I cut indeed’

yìcìcà is the citation form of the reduplicated verb ‘to cut’

In the following example, the sequence that requires vowel insertion is *nnj*. Although geminated alveolar consonants are allowed, the three-consonant sequence *nnj* is not. One of the options would be a reduction of one of the

geminated consonants. That would result in the loss of identity of a morpheme (cf. Blevins 2004), either of the first-person singular subject or of the verb-initial consonant of the verb ‘to sit’. Therefore, an epenthetic vowel is inserted after the first *n*. The epenthetic vowel *i* is conditioned by the palatal affricate *j* in the following sequence:

- (77) *njà-n-njà* → [njà-n-í-njà]
 sit-1SG-sit sit-1SG-EP-sit
 ‘I am sitting’ ‘I sat down’

If a word ends in a palatal consonant and the next word begins with a palatal glide, the epenthetic vowel is also *i*:

- (78) *májàrà mmùjìyá tàrè*
má já-rà-mm-ú-j yà-á tàrè
 HYP unite-3PL-RECIPR-VENT-unite voice-GEN 3PL
 ‘If they unite their voices . . .’ (if they agree)

For the underlying word-initial cluster */ʃb/*, the epenthetic vowel is inserted not before, but rather after, the first consonant, e.g. *ʃìbè* ‘hide’. Since there is a palatal consonant in the environment, the epenthetic vowel is realized as [i]. The evidence for the proposed analysis is provided by the forms of the verb that do not require vowel epenthesis. The sequence */ʃb/* is then realized without the epenthetic vowel:

- (79a) *à ʃb-í-yèn-vè*
 3SG hide-1SG-3SG-APPL
 ‘she hid for me the thing’

There are no instances of the word-initial cluster *ʃC* preceded by an epenthetic vowel, so the condition for this rule appears to be the palatal nature of the first consonant of the cluster.

The epenthetic vowel is [i] if the place of epenthesis is phrase-final position and the next word begins with the vowel *i*. In the following example, the definite marker *ɣánnà* occurs in phrase-final but clause-internal position. Its final vowel is deleted and replaced by an epenthetic vowel identical with the vowel of the following word:

- (79b) *álàlá tàrɣánnì ítàrkìní*
á làl-á-tàr ɣánnà ítàr kìnì
 PRED borough-GEN-3PL DEF 3PL C.FOC
 ‘In their neighborhood, they [people of the neighborhood]’