/qààmîsték ʊúúrsìté/

The Sound Pattern of Aari

Marie Iversdatter Røsok

MA Thesis in Linguistics

Department of Linguistics and Scandinavian Studies

University of Oslo

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Foreword

The title of this thesis /qààmîsték ʊúúrsìté/ means *I hear with my ears* in the Aari language. In this thesis, I present a description of the phonology of Aari. The title is appropriate for two reasons. Firstly, the meaning of the sentence pertains to the act of listening, an important aspect when studying the phonology of a language, and something I got great exercise in while working on this thesis. Secondly, the sentence features in the discussion of tone in this thesis, and is an interesting piece of data in that respect.

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List of abbreviations

1	first person
2	second person
3	third person
ACC	accusative
adj	adjective
adv	adverb
AP	Autosegmental Phonology
COM	commitative
CONT	continuous
COP	copula
BLT	Basic Linguistic Theory
DEF	definite
dem	demonstrative
det	determiner
F	feminine
IMP	imperative
INFV	infinitive
INTR	interrogative
IPA	International Phonetic Alphabet
IPFV	imperfective
H	high tone
L	low tone
LOC	locative
M	masculine
n	noun
neg	negator
num	numeral
OCP	Obligatory Contour Principle
PST	past tense
PL	plural
POSS	possesive
prep	preposition
pron	pronoun
REL	relative
SG	singular
TBU	Tone Bearing Unit
TV	Terminal Vowel
v	verb

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1 Introduction

1.1 Thesis statement

In this thesis, I will present a description of the phonology of the Wubamer dialect of Aari. I view this work as a contribution to the on-going research on Aari, and as a study to build on for future research. The aspects of the phonology of Aari that I will cover in this thesis, are the phoneme inventory of Aari with allophonic variations, syllable structures, phonotactic constraints, phonological processes, and tonology. The data I base my findings on is elicited from one native speaker of Aari. The speaker is specifically a native speaker of the Wubamer dialect of Aari. There are dialectal variations within Aari and certain features of the phonology differ between dialects. Because of this, I can only make claims about the Wubamer dialect of Aari, and the reader should bear in mind that my descriptions pertain to this dialect specifically. I will take past research into consideration, and intend for this thesis to show what aspects of the phonology are likely to be accurate and what areas still need more research.

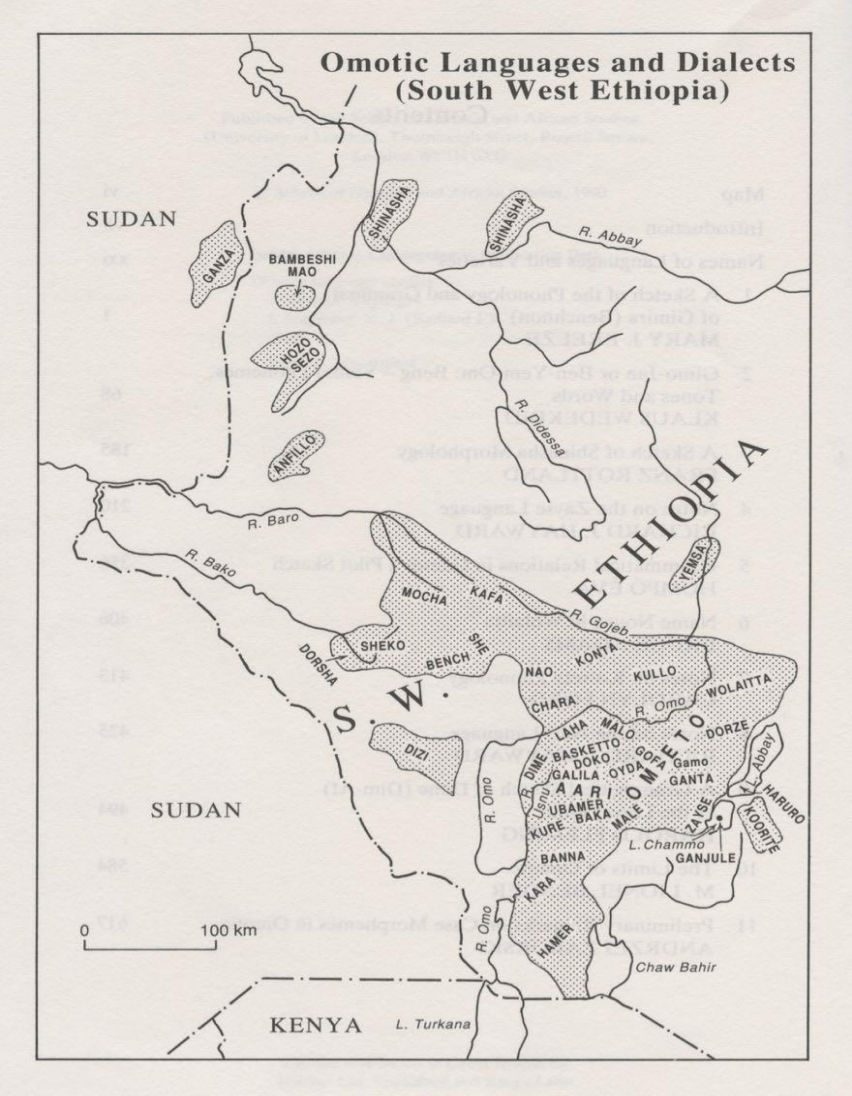
One motivation for working on the Aari language is to contribute more data and insight into what features of its phonology are similar to or different to that of Omotic languages. The classification of Aari is debated and findings presented in this thesis might aid others in investigating the genealogical relationship between Aari and the Omotic languages.

Since I have only worked with one speaker of Aari, there are some limitations on my data. I cannot account for speaker variation and determine what features in my data are the same across all speakers of the Wubamer dialect of Aari, and what features belong to this speaker alone.

1.2 The Aari language and people

Aari is a language spoken Southwest in Ethiopia in the Southern Nations, Nationalities and Peoples Regional State. The Aari people are found in the South Omo zone, the administrative town of which is called Jinka (Melkeneh 2013). The map below (Figure 1.1) shows the area of Ethiopia where Aari is spoken, with the surrounding languages. The map is taken from Hayward (1990: vi).

Figure 1.1 Map of Omotic Languages and Dialects in Southwest Ethiopia



1.2.1 Classification

Aari is classified as an Omotic language, a branch of the Afroasiatic language family (Bender 1976; Fleming 1976; Hayward 1990; Hayward 2005). However, the classification of Aari is somewhat problematic and Omotic as a branch of Afroasiatic has been debated (Bender 1990).

The Omotic languages used to be considered a subgroup of the Cushitic language group and termed West Cushitic (Greenberg 1963). It was later shown that the Omotic languages are too different from the Cushitic languages to be considered a subgroup of that branch (Fleming 1976). The term Omotic was coined to refer to these languages spoken in the area around the Omo river.

The Omotic languages are divided into two subgroups: North Omotic and South Omotic. Aari is classified as belonging to the South Omotic group along with the languages Hamer-Banna, Karo and Dime (Fleming 1976; Hayward 1990; Hayward 2005). (An illustration of the language family tree can be seen in Figure 1.2). However, the discussion around the Omotic languages is on-going. There is some query as to whether the South Omotic languages, Aari included, are indeed Omotic languages at all (Bender 1990). Theil (2012) states that these languages have been classified as such without proper cause. He says that not enough evidence has been found to support neither the claim that these languages are a branch of the Omotic group, nor that the Omotic group is a branch of Afroasiatic. Bender (1990) introduced the term Aroid to refer to the South Omotic languages which has the advantage of being a neutral term that refers to these languages without implying a relationship to the Omotic branch.

Though the classification of Aari has been, and still is, debated, it is not my aim to address this issue in this thesis, neither to confirm nor disprove it. But this thesis will contribute more data and analyses concerning Aari that can help others who wish to investigate this matter.

Figure 1.2 Classification of Aari

Afroasiatic - Berber
Chadic
Cushitic
Egyptian
Semitic
Omotic - North Omotic
- South Omotic - Aari, Hamer-Banna, Dime, Karo

1.2.2 Variation

There is variation within Aari, with 10 reported dialects spoken across the zone (Melkeneh 2013). The main division is between Galila (sometimes Gayl or Gayil) in the north and Wubamer in the east. As well as these, there are also the Bako, Biyo, Layda, Seyki, Shengama, Sido, Zedo and Kure dialects. These 10 variants are considered dialects because there is a high degree of mutual intelligibility between them, despite clear dialectal differences (Melkeneh 2013).

The speaker I have been working with for this thesis is a speaker of the Wubamer dialect. As such, my descriptions in this thesis are of the Wubamer dialect of Aari.

1.2.3 Written Language

Since 2012/2013, Aari has officially been a written language. There have previously been bible translations in Ethiopic script, used by missionaries, but they now have a Latin script, which is the official script. The Latin script is taught in school on primary school level, grade 1-3. (Binyam Sisay Mendisu, (Phd) Associate Professor of Linguistics, Department of Linguistics, Addis Ababa University (email, 2016.10.26).

1.2.4 The Aari people

There are about 285,000 speakers of Aari (2010 UNSD) (Lewis, Simons, Fennig 2016). Most speak Aari as a first language. According to ethnologue.org, there are also 13,300 second language speakers of Aari. 129,000 speakers are monolingual, while many speak a second language in addition to Aari. Usually, Amharic is spoken as a second language, but some also speak Wolaytta. Aari is usually used at home and at local markets (Melkeneh 2013).

The Aari people live spread out over lowland, midland and highland areas of the South Omo region (Yintiso 1995). The Omo region gets its name from the river Omo that runs through it. The Aari people live in permanent settlements, mostly in villages. Their main occupation is agriculture and cultivating different kinds of crops, like cereals, beans and peas, fruits and vegetables, and the two principal cash crops: coffee and cardamom. It is also common to keep livestock. These are usually cattle, sheep, goats, mules, donkeys, horses and poultry (Yintiso 1995: 15-16).

There are various clans of the Aari people (Hayward 1990). Each clan can consist of several villages. Clans are traditionally structured in a way where there is a leader or chieftain called the *babi* as the supreme authority. The *babi* is responsible for judicial, military, administrative, economic and ritual aspects of the community. Below the *babi* we find; the *godmi*, ritual specialists whose job it is to assist the *babi* in ritual matters; the *zis*, leaders of subordinate villages called *gannas*; the *tsoyki*, information agents from the subordinate villages that report to the *babi* on matters of public opinion, deviations from societal rules, performance of village leaders etc. The *godmi*, *zis* and *tsoyki* are all classed on the same level below the *babi*. Lastly, bellow the *godmi*, *zis* and *tsoyki*, we find the commoners called the *keisi*. These are the people living in the various villages within the community of the clan (Yintiso 1995: 16-22).

1.3 Methodology

1.3.1 Linguistic fieldwork

My chosen method in working on the phonology of Aari has been linguistic fieldwork. It was necessary to travel to Ethiopia to collect data that I could build my analysis on. There are some descriptions of the phonology of Aari already in existence, but they are few and incomplete (Hayward 1990; Melkeneh (2013). This made it essential for me to collect my own data.

Dixon (2010), Bowern (2008), and Chellia (2013) all define linguistic fieldwork as going into the community where a language is spoken in order to study it. Linguistic fieldwork is often used in linguistic work where one aims to describe a language, which is why it was natural for me to choose this method of study. Dixon (2010) emphasises the importance of going into the community and observing the language in use, in order to describe it. Chellia (2013: 56) also describe linguistic fieldwork as going into a community to study a language, but add that the heart of linguistic fieldwork is the field sessions with a native speaker. These sessions often involve elicitation of words and phrases to collect data from the native speaker.

As we shall see, my method for data collection does not entirely fit with the descriptions of linguistic fieldwork as described in Dixon (2010), Bowern (2008) and Chellia (2013), but it is still based on elicitation sessions with a native speaker. I will discuss this further below in section 1.3.2.

Dixon (2010), Bowern (2008) and Chellia (2013) all stress the importance of ethical considerations in linguistic fieldwork. It is important to conduct your fieldwork in a way that is appropriate in the community you are taking part in and to consider the wishes of the people of the community. It is also considered good form to give something back to the community and the people you have worked with as a thank you for their collaboration. Related to the topic of ethics is the relationship you have with the speakers you work with and the terminology you use to refer to them. Many use the term ‘informant’, but this term is a contentious one. Some feel that this term implies a relationship where the researcher and the speaker are not of equal status. Others feel the term simply implies a person who gives information (Bowern 2008: 10). The terms ‘collaborator’, ‘consultant’ or ‘participant’ are also often used because they imply a relationship where the linguist and the speakers have worked together (Bowern 2008: 10; Eckert 2013: 13). Others simply refer to them as speakers because they are the speakers of the language

that one is studying.

In my fieldwork, I only worked with one speaker of Aari. Because of this, I worked quite closely with this one person and view the work as collaboration between the two of us. I have chosen to refer to him as a 'speaker' in this thesis. Both because it is a simple term to use when I only have one speaker to refer to, and because I feel it is a straightforward term that illustrates how this is the person with the knowledge of the language without implying something about our status or relationship.

1.3.2 My fieldwork

I travelled to Ethiopia twice to conduct my fieldwork. The first trip was in October 2015 where I stayed two weeks in the capital Addis Ababa. The second trip was in January and February 2016, where I stayed for three weeks, again in Addis Ababa. Unfortunately, my fieldwork was affected by me falling ill on my first trip.

My intention for my first trip was to stay a month in Ethiopia. I planned to first stay a week in Addis Ababa, and then travel to the town of Jinka where Aari is spoken and stay there for two to three weeks. I began by meeting a native speaker of Aari at the University of Addis Ababa for an initial session before heading to Jinka. Unfortunately, after almost a week, I fell ill and did not recover during the following week. I had to consider my health and chose to interrupt my fieldwork and return home. This meant that I collected very little data on my first trip to Ethiopia.

On my second trip I was pressed for time and could not stay longer than three weeks. I therefore decided not to travel to Jinka because the organising of that trip and the travel days would take too much time. Jinka is located about 500km South West of Addis Ababa. To travel there one must first go by bus to the town of Arba Minch, stay overnight, and get a second bus to Jinka. This meant a two day journey both there and back, which would eat up too much time of my three weeks. I therefore decided to stay in Addis Ababa throughout the three weeks and continue to work with the speaker at the university there. I was not able to find any other native

speakers of Aari in Addis Ababa and so I have only collected data from one speaker for this thesis.

My data collection is largely based on elicitation. I elicited both words in isolation and sentences. I used some words from previous works by Hayward (1990) and Melkeneh (2013) to be able to compare findings. I also made sure to elicit some of the same words both in isolation and in sentences to be able to compare tonal patterns and to see what morphophonological effects I might find. Words in isolation can easily get a list intonation which makes them less than ideal data for tone (Chellia 2013: 58). Sentences are also important to be able to say something about intonation patterns (Chellia 2013: 58).

Because I did not go to Jinka, I did not go into the community where the language is spoken to study it. This means that my method of data collection does not fit entirely with the descriptions of linguistic fieldwork, but deviates somewhat in that regard. However, I did travel to Ethiopia and meet with a native speaker of the language to collect data, and my method of data collection (elicitation) is typical of linguistic fieldwork (Chellia 2013: 56). I therefore still see my method as linguistic fieldwork.

Only working with one speaker of Aari has its limitations. I cannot say what aspects of my data are true for all speakers of Aari and what aspects are true only for this speaker. But working closely with only one speaker also has its advantages. After a while the speaker became more aware of what information I was interested in and would offer information without me asking. He would give minimal pairs, different forms of words, explain grammatical features of Aari, and explain differences in pronunciations. He also became quite comfortable with correcting my pronunciations. This information was hugely valuable.

On both my trips, I was lucky enough to be able to borrow an office at the University of Addis Ababa that I could conduct my sessions in. This meant a quiet environment and good working conditions in which I could record my sessions. The speaker was very excited that I was interested in his language, and therefore very eager to help and teach me what he knew. He signed a consent form to show that he gave his consent for me using the data in my thesis, and at

the end of my fieldwork in Ethiopia, I gave the speaker an agreed upon payment of 100 birr[1] per hour for his help and collaboration.

1.3.2.1 Equipment and settings

All my sessions were recorded. All in all, I have 9,5 hours of recordings from sessions with the speaker. The recordings were made using a ZOOM H2 digital recorder. The recorder was set to WAV format as it retains more information than an mp3 file. This way the sound files would not be distorted when I later played them back on my computer (Styler 2015). I also used an external microphone that was plugged into the recorder for all my sessions. I did this to get as clear recordings with as little background noise as possible.

All of my recordings were transferred to my computer where I used the programs Praat, Toolbox (SIL) and Phonology Assistant (SIL) to sort and analyse my data. I used Praat to listen to my recordings and analyse various acoustic features of sounds like sound waves, formants and pitch. My spectrogram settings were set to 6000 Hz as this is sufficient for studying the formants in the spectrogram. The Praat standard setting is 5000, and a setting between 5000 and 6000 is normal (Styler 2015). I chose a window length of 5 ms to view the spectrograms in wideband, not narrowband. I set the pitch setting to show a pitch range between 75 to 400 Hertz to be able to see changes in pitch clearly. The standard Praat setting is a range between 75 and 500 Hertz.

I used Toolbox (SIL) to organise my data, create a lexicon of word entries with their phonetic transcription, part of speech and English translation. The data was then imported into Phonology Assistant (SIL) which I used to analyse distribution patterns, phoneme sequences, syllable structures etc.

[1] 100 birr is approximately 38 NOK or 5 USD

1.4 Theory

This thesis describes aspects of the phonology of the Wubamer dialect of Aari. As this is a descriptive work, I was in need of a theoretical framework for language description. Because the area of language I am describing is phonology, I also needed a work that deals with phonological theory. I therefore turned to the theoretical descriptions put forth by Dixon and Trubetzkoy in *Basic Linguistic Theory* (2010) and *Principles of Phonology* (1969 [1939])[1], respectively, to cover these needs. I also used Goldsmith's *Autosegmental phonology* (1976) as a theoretical framework for the analysis of tone as neither Dixon (2010) nor Trubetzkoy (1969 [1939]) deal with tone to any large extent.

1.4.1 Basic Linguistic Theory

Dixon's work *Basic Linguistic Theory* (2010) presents a theoretical framework for describing languages and writing grammars. Dixon (2010) views linguistics – and at the heart of linguistics, language description – as a natural science that must be approached in the same way as other natural sciences, with observation and descriptions based on those observations (Dixon 2010: 1). The theory, which is, like the book, called Basic Linguistic Theory (BLT), is a guideline for linguists on how to go about describing a language. The basic principle of BLT is that each language is an integrated system and must be treated as such (Dixon 2010: 24).

"Each part relates to the whole; its role can only be understood and appreciated in terms of the overall system to which it belongs." (Dixon 2010: 24)

This thinking is of the structuralist tradition with roots in Sassure (Saussure 2005 [1916])[2].

The aim of the theory is to be an overall theory for the study of language and language description that can be applied to the study and description of any language. Because of this,

[1] English translation by Christiane A. M. Baltaxe (1969) of original German edition *Grundzüge der Phonologie* by N. S. Trubetzkoy [1939].
[2] 2005 edition of English translation by Roy Harris (1983) of original French edition *Cours de linguistique générale* by Ferdinand de Saussure [1916].

BLT can be viewed as a framework for language description, within which new theories of individual languages are formulated.

Dixon (2010: 2) emphasises that through the description of languages, one contributes to the refinement of BLT, and through the refinement of BLT, we get an even better theory for describing new languages. In this thesis, I aim to be in accordance with the principles of BLT by viewing the phonology of Aari as an integrated system and basing my analysis on how each feature relates to the other features in the phonology.

BLT is mostly aimed towards the description of grammatical features, and only briefly covers phonology. But Dixon (2010: 264) writes that any grammar must include a description of the phonology, and that the study of any language must begin with the study of its phonology. In this way, phonological description is very important. Dixon (2010) views the description of phonology in the same way as the description of grammar, as an integrated system. He writes that "the idea of a system is critical" and that "each term in the phonological system is…relative to the other terms in its system" (Dixon 2010: 266).

1.4.2 Principles of Phonology

Because Dixon (2010) only briefly covers the most basic points of phonological theory, I have turned to Trubetzkoy's work *Principles of Phonology* (1969 [1939]) for a more in-depth account of phonological theory. The two theories by Dixon (2010) and Trubetzkoy (1969 [1939]) are compatible in that they both view a grammatical system and a phonological system, respectively, as integrated systems where each element of the system is defined by its place in the system. Indeed Dixon (2010: 85) writes that he himself views *Principles of Phonology* as an important linguistic work in tune with his own views on linguistics:

"If I had to choose one linguistics book for a desert island, [Principles of Phonology] would be it. […][Principles of Phonology] reveals the structural nature of phonology: oppositions, markedness, units, and delimitation." (Dixon 2010:85).

Some basic principles in Trubetzkoy's theory are those of distinctive features, oppositions and phonemes. If an element cannot be distinguished from another, it cannot be recognised as a distinct element. When defining a phoneme, Trubetzkoy (1969 [1939]: 43) refers to de Groot and writes:

"A. W. de Groot defined the phoneme as follows (TCLP, IV, 125): 'The phoneme is thus a phonological symbolic sign which has a self-evident function. The essential function of the phoneme is the following: to make possible or facilitate, if need be, the recognition and identification of words or parts of words that have symbolic value by means of the fact that the phoneme itself is recognizable and identifiable.'" (Trubetzkoy 1969 [1939]: 43)

Trubetzkoy then goes on to write:

"Of course only that which is distinguished from other things of like nature can be recognized at all. […] A phonic element that is not capable of differentiating one sound sequence from another cannot be recognized either. Recognition is thus the primary import but the logical consequence of differentiation." (Trubetzkoy 1969 [1939]: 44)

All elements of the phonology are defined by how they are different from all the other elements. This is the basis for phoneme theory. What is a phoneme and what is a variant (allophone) is decided by whether it is distinguishable from other phonemes. These kinds of concepts show that a phonological system must be studied as a whole. In order to be able to describe the different parts of the phonology, one must describe their relation to all other parts of the phonology, determining how they are, or are not, different.

1.4.3 Autosegmental Phonology

Neither Dixon (2010) nor Trubetzkoy's (1969 [1939]) theories deal with tone in any great detail, but merely mention tone as a feature of phonology (in relation to prosody in general). Aari is a tone language, and it was therefore necessary for me to have a theoretical footing for how to deal with tone specifically. I have used Goldsmith's Autosegmental Phonology (AP) for this purpose. In his work by the same name *Autosegmental Phonology* (1976), Goldsmith proposes a

framework for how we can view the behaviour of tones in tone languages.

AP postulates a many-tiered system where tones exist on a different tier than segments. It says that tones are not features of segments, but associate to syllables (or moras). It is possible for a tone to associate to more than one syllable, and for a syllable to associate to more than one tone. This is called one-to-many and many-to-one associations. The fact that tones exist on a different tier than segments also explains how tones might shift or spread to other syllables, and how they might stay behind even if a segment disappears. Goldsmith (1976) also suggests that other phonological features beside tones, like harmony and nasalisation, may behave in an Autosegmental manner.

AP illustrates quite clearly tonal processes and other phonological process by the use of association lines that show how tones or features might move or spread and in this way generate surface forms from underlying forms. I have used the theoretical principles of a many-tiered system when suggesting analyses of tones and tonal processes in this thesis. I have also made use of the structure of representation formulated in AP when describing tonal processes.

AP is a generative theory that aims to explain and illustrate how surface forms derive from underlying forms. It illustrates the place of tones in a phonological system and is a tool for describing the behaviour of tones. AP is compatible with the holistic approaches of BLT and Trubetzkoy's *Principles of Phonology* (1969 [1939]).

1.5 State of the Art

Some work has been done on the phonology of Aari previously, mainly by Hayward (1990) and Melkeneh (2013)[1]. Hayward's (1990) work is a sketch grammar of Aari called "Notes on the Aari Language" and featured as a chapter in the book *Omotic Language Studies* (1990) edited by Hayward. Melkeneh's (2013) work is a MA Thesis containing a grammatical description of Aari from Addis Ababa University.

[1] The document I have with the MA Thesis on the grammar of Aari by Melkeneh (2013) does not have numbered pages. Therefore I cannot reference specific pages in this source.

The previous descriptions of Aari by Hayward (1990) and Melkeneh (2013), treat the phonology as a smaller part of a larger grammatical description of Aari. (Hayward's (1990) description of the phonology is 10 pages long, while Melkeneh (2013) has 30 pages on the phonology). The two works are also in disagreement about many aspects of the phonology. Since the previous descriptions of the phonology of Aari are limited and in disagreement on certain points, it is necessary to contribute more data and descriptions.

(Melkeneh (2013) refrences other works on Aari phonology, a MA Thesis by Ayalew (1995) and a term paper at Addis Ababa Univeristy by Teketel (2008). I have not been able to get hold of these sources for my work).

1.5.1 Consonants

Hayward (1990: 429) and Melkeneh (2013) list different consonant inventories, as can be seen in Tables 1.1 and 1.2 below. In table 1.1, Hayward's (1990) symbols differ from mine as he does not use standard IPA symbols. I have presented them as Hayward does, but added the IPA symbols in brackets.

Hayward (1990) lists 26 consonant phonemes in Aari, while Melkeneh (2013) lists 31consonant phonemes. Melkeneh (2013) also includes allophones in brackets in his table. The phonemes that Melkeneh (2013) lists, that Hayward (1990) does not, are the alveolar fricative ejective /s'/, the velar stop ejective /k'/, the alveolar stop ejective /t'/, and the voiced and voiceless uvular fricatives /ʁ/ and /χ/. The latter two are described as allophones of /q/ by Hayward (1990).

Table 1.1 Consonant inventory of Aari according to Hayward (1990)

	t	s̀ [ʦ]	č [ʧ]	k	q	
b	d		ǰ [ʤ]	g [g]		
p’ [ɓ]/[ɸ]	d’ [ɗ]	s̀' [ʦ’]	č' [ʧ’]			ʔ
f	s		š [ʃ]			h
	z	r	ž [ʒ]			
m	n					
	l					
	r					
w			y [j]			

(This table is structured in the same way with the same symbols as Hayward’s original table on page 429 in “Notes on the Aari Language” (1990). The symbols in brackets have been added by me to show the corresponding IPA symbols to Hayward’s non-IPA symbols.)

Table 1.2 Consonant inventory of Aari according to Melkeneh (2013)

Place of art. → Manner of art. ↓		Bilabial	Labial	Dental	Alveolar	Palatal	Velar	Uvular	Glottal
Stops	Pulm.	p b			t d		k g	q	ʔ
	Ej.	p’			t’		k’		
	Imp.				ɗ				
Fricatives	Pulm.	[β]	f	[ð]	s z	ʃ ʒ		χ ʁ	h
	Ej.				s’				
Affricates	Pulm.				ts	tʃ dʒ			
	Ej.					tʃ’			
Nasals	Pulm.	m			n		[ŋ]		
Trills	Pulm.				r				
Laterals	Pulm.				l				
Approximants	Pulm.	w				j			

The realisations of the consonants are described differently by the two contributors. Hayward (1990: 429-433) describes /t/ and /d/ as having a dental articulation. /ɗ/ and /p’/ are voiced and

voiceless implosives respectively, /ɗ/ with a post-alveolar place of articulation . The voiceless non-uvular stops and affricates /t, k, ts, tʃ/ are aspirated, the latter two distinguishing them from their ejective counterparts / ts'/ and / tʃ'/. /dʒ/ is rare and occurs only in loan words.

The phoneme /f/ is often realised as the bilabial fricative allophone [ɸ]. /q/ is a uvular stop and realised as a stop preceding consonants, but as either a stop [q] or a fricative [χ] word-initially. /q/ is often realised as a fricative when following a continuant and as a voiced fricative [ʁ] intervocalically. According to Hayward (1990: 430.431), /n/ has several realisations in pre-consonantal position, depending on the place of articulation of the following consonant. It can either be dental, alveolar, palato-alveolar, velar or uvular. Lastly, the realisation of /h/ differs because of the phenomenon of breathy vowels where a word-initial /h/ causes a following vowel to become breathy. (This topic is explained further in section 1.5.2 Vowels). /h/ is often voiced as a result of it assimilating with the vowels, and other times not articulated as a separate segment at all, leaving only the breathy vowel.

According to Melkeneh (2013), /t, d, ɗ/ all have alveolar places of articulation, and / ʃ, ʒ, tʃ dʒ tʃ' j/ are classified as palatal consonants. Melkeneh (2013) also lists several allophones of some of the phonemes in the inventory that Hayward (1990) does not. Melkeneh (2013) states that the voiced bilabial fricative [β], the rounded bilabial stop [bʷ], and the palatalised bilabial stop [bʲ] all are allophones of /b/. They occur intervocalically or post-vocalically, before /u/ and /o/, and before /i/ and /e/ respectively. The voiceless dental fricative [ð], the rounded alveolar stop [dʷ], and the palatalised alveolar stop [dʲ], are all allophones of /d/. They occur before /s/, before /u/ and /o/, and before /i/ and /e/ respectively. The rounded alveolar nasal [nʷ], and the velar nasal [ŋ] are allophones of /n/. They occur before /u/ and /o/, and before velars respectively. None of these, with the exception of [ŋ], are mentioned as allophones by Hayward (1990).

1.5.2 Vowels

Hayward (1990) and Melkeneh (2013) have found different numbers of vowels in Aari. Hayward (1990: 433) writes that there are five vowels in Aari (/i, e, a, o, u/) each with a long counterpart (/ii, ee, aa, oo, uu/). This five-vowel inventory was also described by a third

contributor, Ayalew (Melkeneh 2013).

Melkeneh (2013) claims that there are as much as nine vowel phonemes (/i, e, a, a̰, ɔ, u, o, ə, ɨ/), where seven of those have long counterparts (/ii, ee, aa, a̰a̰, ɔɔ, uu, oo/). Hayward (1990) writes that /a/ is positioned between the cardinal vowels 4 and 5. Both the vowels /e/ and /o/ are closer to a half-open than a half-closed position in the front and back positions respectively. Melkeneh (2013) writes that there is an open central vowel with creaky voice /a̰/. This vowel is not found by Hayward (1990).

Breathy vowels are documented by both Hayward (1990) and Melkeneh (2013). Hayward (1990: 431) writes that this phenomenon is due to the disappearance of the consonant /h/ that is leaving behind a trace in breathy vowels. The breathiness manifests, for the most part, on the front open vowel /a/, but Hayward (1990: 431) writes that breathiness occurs on the front mid vowel /e/ as well, and possibly even the back mid rounded vowel /o/.

Neither Hayward (1990) nor Melkeneh (2013) give any information on diphthongs in Aari. Neither are there any diphthongs in the full list of example words in the case of the first, and only two diphthongs found in the example words in the case of the latter. The two diphthongs found are /oi/ and /əi/ in the words /tɔɪdi/ *younger sister or brother* and /səɪni/ *stone*[1]. However diphthongs are reported for the related language Dime, which shows four phonemic diphthongs /ai, oi, ei, ui/ (Mulugeta 2008: 28).

1.5.3 Syllable structure

The vowel is the nucleus of the syllable in Aari. In addition, the syllable can have an onset, a coda, or both. This means that there are both open and closed syllables. The vowel can be either short or long. The onset can only consist of one consonant, while the coda can have multiple consonants. This is consistent across the finds of Hayward (1990) and Melkeneh (2013). But there is disagreement about what syllable structures occur or how many consonants

[1] In these words, the [i] sound in the diphthong has been transcribed using the symbol [ɪ] rather than /i/ which is used in all other cases. I interpret this to mean that they are to be considered dipthongs, not a sequence of two vowels belonging to two different syllalbes.

the coda can have, (and, by extension, how many consonants are allowed in a sequence).

Melkeneh (2013) writes that one previous work on Aari by Ayalew (1995) showed that the syllable must consist of at least a vowel and a consonant, while another previous work by Teketel (2008) said that syllables consisting of only a short vowel are possible. According to Ayalew, the possible syllable structure are: CV, CVV, CVC, CVVC, CVCC, VC, VVC, and VCC, while Teketel adds the possible syllable V (Melkeneh 2013). Melkeneh (2013) adds another three possible syllables with long vowels (VV, VVCC, and CVVCC), which means four open and eight closed syllables that can be summed up as: (C)-V(V)-(C)(C).

Hayward (1990: 437) writes that Aari is unusual compared with other South Ethiopian languages because it is possible to have three consonants in the coda, and therefore, consonant sequences of four consonants (if the next syllable begins with a consonant). This gives us the possible constructions VCCC and CVCCC in addition to the ones listed by Melkeneh (2013). Hayward (1990) stresses that there are no syllables with two or three consonants in the coda that have a long vowel. Thus the constructions (C)VVCC and (C)VVCCC are not allowed. The first of these is not in accordance with Melkeneh's (2013) finds, who does indeed report a (C)VVCC syllable. Hayward (1990: 437-438) also writes that in codas with two or three consonants, the first is always a sonorant, and in codas with three consonants the final one is always /s/ or /ʃ/.

1.5.4 Accent

Hayward (1990: 439) writes that Aari is an accent language rather than a tone language based on the fact that he has only found one high tone per word. The other syllables of a word have low tones and are left unmarked in Hayward's transcriptions. In nouns, accent has a lexical function, distinguishing different lexical words from one another. In verbs, accent has a grammatical function, and is decided by the verb paradigm. According to Hayward (1990: 439), the high tone usually occurs on the final syllable of trisyllabic nouns, regardless of whether the final sound is vocalic or consonantal. The high tone also occurs on the final syllable of disyllabic nouns if the noun is consonant-final. However, in both of these cases, there are exceptions where the high tone is placed on another syllable of the word. When it comes to

vowel-final disyllabic nouns, the high tone, in most cases, occurs on the final syllable. But although this is true for the majority of the words, there are many words where the high tone occurs on the first syllable.

Melkeneh 2013) does not mention accent or tone at all.

1.5.5 Phonological processes

Melkeneh (2013) describes some phonological processes found in Aari. He includes both phonological processes, and allophonic and morphophonological alternations in his section on phonological processes.

The processes he lists are rounding of consonants before back rounded vowels; devoicing where /d/ becomes /t/ before /t/; spirintisation of /b/ to [β] intervocalically; deletion of /i/ at morpheme boundaries; velarisation of /n/ before velar sounds; palatalisation of non-palatal sounds before /i/ and /e/; gemination of final consonants to express the perfective aspect; nasalisation of vowels preceding nasal consonants and epenthesis of /ɨ/ and /a/ into consonant sequences.

Of these processes, the velarisation of /n/ before velar sounds and the gemination of consonants are also mentioned by Hayward (1990: 431, 434).

2 Consonants

It is known that many African languages have rich consonant inventories (Atkinson 2011; Clements 2005: 123-125). African languages show a great representation of inventories containing ejective and implosive consonants, as well as consonants with uvular or pharyngeal places of articulation (Clements 2005: 125).

I have found that Aari has a moderately large consonant inventory[1] (Maddieson 2013), with 26 consonant phonemes. Many of the phonemes have more than one allophonic realisaton. Among the consonants, three are ejective consonants and one is an implosive consonant, which means that pulmonic, ejective and implosive consonants are all represented in the Aari inventory. Aari also features the uvular consonant /q/. These findings comply with the tendencies described above.

In this chapter I will discuss the consonants of the Wubamer variety of Aari. I will first present the consonant inventory and then describe the different consonant phonemes in turn. I will account for their realisations, allophonic variations and restrictions that might apply to them. (In reference to descriptions of what consonants form sequences in this chapter, it will be helpful to see Table 4.2 Consonant sequences on page 82).

[1] Maddieson categorises the consonant inventories of the world into five categories: small (6-14), moderately small (15-18), average (19-25), moderately large (26-33), and large (34 or more). With 26 consonant, Aari falls within the moderately large category.

Table 2.1: Consonant inventory of Aari

		Labial	Lingual				Glottal
Place of articulation →			Coronal		Dorsal		
Manner of articulation ↓			Alveolar	Postalveolar	Velar	Uvular	
Stop	Pulmonic	p b	t d		k g	q	ʔ
	Glottalic	pʼ	ɗ				
Affricate	Pulmonic		ʦ	ʧ			
	Glottalic		ʦʼ	ʧʼ			
Fricative		f	s z	ʃ ʒ			ɦ
Nasal		m	n				
Trill			r				
Approximant		ʋ	l	j			

Table 2.1 shows the consonant inventory of the Wubamer dialect of Aari. It shows 26 consonant phonemes. Phonemes are listed according to place (horisontal) and manner (vertical) of articulation.

2.1 Obstruents

2.1.1 Stops

I use the term "stop" to describe oral and glottlic stops. Nasal stops will be termed "nasals" and are described in section 2.2.1

2.1.1.1 Pulmonic stops

There are 10 stops in Aari. Eight are articulated with a pulmonic airstream, one is ejective, and one is implosive. Six of the stops can be grouped into three pairs that share the same place and manner of articulation, with one voiced and one voiceless member in each pair (/p b/ /t d/ /k g/). The seventh pulmonic stop /q/ is voiceless and does not have a voiced counterpart. The eighth is a glottal stop /ʔ/.

2.1.1.1.1 /p/

/p/ has three possible realisations. It is either realised as the voiceless bilabial stop [p], the voiceless bilabial fricative [ɸ], or the voiceless bilabial affricate [pɸ]. /p/ can occur word-initially and word-medially, but not word-finally. When preceding a vowel, it has the stop realisation of [p].

When preceding a consonant, /p/ gains a fricative quality and is realised by either the fricative allophone [ɸ] or the affricate allophone [pɸ]. [ɸ] and [pɸ] are not in complementary distribution with one another, but can occur in the same environments. There are instances in my data of words that vary between having a [ɸ] and [pɸ] realisation of /p/ in different repetitions of the word (1-2). Because of this, there does not seem to be any phonological contrast between these allophones and they are in free variation with each other. This is similar to the allophonic realisations of /q/ that will be discussed in section 2.1.1.1.7**.**

1. a) /gùptá/ [gùɸtá] – *n* skin
   b) /gùptá/ [gùpɸtá] – *n* skin
2. a) /déps/ [déɸs] – *n* lion
   b) /déps/ [dépɸs] – *n* lion

In examples (3-10) we see that [p] is in complementary distribution with [ɸ] and [pɸ]. [p] precedes vowels (3-6), while [ɸ] and [pɸ] precede consonants. All three allophones follow a vowel (6-10). The allophone [p] appears most often in word-initial position (3-4), but also appears word-medially when preceding a vowel (5-6). In (5) [p] is the second segment in a consonant sequence. In (6) [p] is intervocalic. The allophones [ɸ] and [pɸ] always occur word-medially (7-10) because they precede consonants and a sequence of two consonants is not allowed word-initially (see section 4.1.1.1).

3. /pàtrí/ [pàtrí] – *n* corn
4. /pùltá/ [pùltá] – *n* door
5. /dààmpá/ [dààmpá] – *n* tobacco
6. /kùpìtá/ [kùpìtá] – *n* bread

7. /déps/ [dépɸs] – *n* lion
8. /àptí/ [àɸtí] – *n* bird
9. /índèpsí/ [índèɸsí] – *n* brother
10. /ʔùpsí/ [ʔùɸsí] – *n* noise

/p/ is a rather infrequent phoneme in Aari. In my data, I have only found it preceding the vowels /a u o/, and the voiceless stops and sibilants /t k s ʃ/. Stops that form consonant sequences in Aari, must agree in their value for voice, and regarding fricatives, voiceless stops can only form sequences with voiceless fricatives. (Voiced stops can form sequences with both voiced and voiceless fricatives). The only phonemes that /p/ follow are the nasal /m/, and the back vowels /u o/.

Hayward (1990: 429) analyses [ɸ] as an allophone of /f/, not of /p/ (since he does not include /p/ in his consonant inventory). Ferguson (1976: 65) writes that /p/ often does not feature as a consonant phoneme in Ethiopian languages, while /f/ is more common. /b/, on the other hand, is common in Ethiopian languages, while /v/ is not. This means that there often is an opposition between the voiceless fricative /f/ and the voiced stop /b/ rather than the voiceless fricative /f/ and voiceless stop /p/. (Hayward's (1990) finds are in accordance with this tendency). This caused me to examine the opposition of /p/ and /f/ more carefully to determine whether they are two different phonemes, or whether they are allophones of the same phoneme. As we shall see, there is a minimal pair between [ɸ] and [f], which means that Hayward's analysis cannot be correct, and the voiceless fricative [ɸ] is an allophone of /p/

I have not found any minimal pairs with the sounds [f] and [p] in my data, but I have found a minimal pair with the sounds [f] and [ɸ], and therefore the phonemes /f/ and /p/ (11-12). The words in the minimal pair are /áftì/ [áftì] *hanging clothes outside* and /àptí/ [àɸtí] *bird*. These words are only distinguished by the sounds [f] and [ɸ] respectively. This shows us that the similar sounding consonants [f] and [ɸ] are contrastive and can occur in identical environments.

11. /áftì/ [áftì] – *v* hanging clothes outside
12. /àptí/ [àɸtí] – *n* bird

In addition there is an overlapping distribution between [f] and [p]. Both precede vowels, in word-initial position and elsewhere. I have found [p] and [f] in similar environments. In the words /fúúlsè/ *blow away* and /púltá/ *door* they both appear initially before a /u/ followed by an /l/. In the words /kùpìtá/ *bread* and /ʦ'ààfíkán/ *to write* they both appear intervocalically before the vowel /i/. This means that [f] and [p] are not in complementary distribution, but rather their distribution overlaps. This, as well as the minimal pair above (11-12), shows that /f/ and /p/ are separate phonemes and not allophones of the same phoneme.

It must be mentioned that I have one word in my data where /p/ precedes a consonant /l/, but this is in the word /àìròplánk/ *airplane*, which is likely to be an Amharic loan word[1], and so I view this as an exception.

I do not have any minimal pairs between the phonemes /p/ and /b/, but in the words below I present words where the two phonemes occur in similar environments. In (13), they both occur in initial position before the vowel /u/ followed by an alveolar consonant. In (14) they both occur in initial position before the vowel /o/ and the ejective affricate /ʧ'/. I do not find any reason to consider these sounds allophones of the same phoneme, and Melkeneh (2013) also lists /p/ and /b/ as different phonemes.

13. a) /pùtá/ [pùtá] – *n* cotton
    b) /bùná/ [bùná] – *n* coffee
14. a) /póʧìntè/ [póʧìntè] – *adj* open
    b) /bòʧ'è/ [bòʧ'è] – *v* bark

[1] I view it as likely that this loan word has come from the Amharic word *āwiropilani* which in turn is a loan of the Italian word *aeroplano*. This would explain why the word is pronounced /airoplank/ where the first vowel is the diphthong /ai/. The English word *aeroplane* /erəplein/ is pronounced with an initial vowel /e/, not the diphthong /ai/. In addition, it is more likely that the word has been borrowed from Italian into Amharic, and then from Amharic into Aari because of the Italian influences in Ethiopia and because Aari has borrowed many words from Ahamric. It is less likely that a language like Aari has borrowed the word directly from English, since there have been more Italian than English influences in Ethiopia, historically.

2.1.1.1.2 /b/

/b/ can occur in all word positions and is either realised as the voiced bilabial stop [b] or as the voiced bilabial fricative [β], but the distributional patterns of the two allophones remains unclear.

Melkeneh (2013) also reports [β] as an allophone of /b/ and writes that [b] and [β] are in complementary distribution, where [β] occurs intervocalically or after a vowel word-finally. There are some tendencies towards complementary distribution between the two allophones in my data, but not complete complementary distribution. Only [b] occurs word-initially (15-18) and after consonants (17), and only [β] occurs word-finally (19-20) and before consonants (21), but both allophones occur intervocalically (18, 22-23). This means that my findings differ from that of Melkeneh (2013).

15. /bùqá/ [bùχá] – *n* knee
16. /bálá/ [bálá] - *n* mountain
17. /bárbàrà/ [bárbàrà] – *n* pepper
18. /bábì/ [báβì] – *n* father
19. /ʔáb/ [ʔáβ] – *det* other
20. /éntsédàb/ [éntsédàβ] – *n* chief
21. /tàbzá/ [tàβzá] – *num* seven
22. /nàbáʊ/ [nàbáʊ] – *v* reading
23. /dáʊdàbá/ [dáʊdàbá] – *n* letter

A possible analysis is that [b] and [β] are in complementary distribution with regards to initial and final word position and with regards to their positioning with other consonants, but that they are in free variation intervocalically. The fact that the stop phoneme /b/ is realised as the fricative allophone [β] before other consonants is similar to the realisations of /p/ where the fricative [ɸ] precede consonants.

It must be mentioned that I do not have many words with the allophone [β] in my data. Therefore, more data is needed in order to say something more certain about the distributional patterns of [β] as an allophone of /b/. My analysis of [β] as an allophone of /b/ is based on my

data as well as the facts that Melkeneh (2013) reports the same for Aari and that this allophonic variation is found in other Ethiopian languages. Theil (2007: 202) writes that /b/ is sporadically realised as [β] intervocalically in Kafa. I interpret this to mean that /b/ can be realised as [β] intervocalically, but is not always. In Borna, /b/ is realised as [b] initially, but as both [b] ad [β] intervocalically (Bergfjord 2013: 27). Bergfjord (2013) writes that two speakers used the fricative realisation [β], while one speaker used the stop realisation [b]. He says that the difference could be due to dialectal differences or speaker variation, but this is uncertain. Thomassen (2015: 50) and Mulugeta (2008: 24) both report that [β] occurs as an allophone of /b/ intervocalically in the languages Gamo and Dime respectively. It is also a feature of Amharic that /b/ gets the fricative realisation [β] intervocalically (Appleyard 1995: 5).

From this we see that [β] is an allophone of /b/ in many Ethiopian languages, and that it occurs intervocalically in all the languages listed above. But there is some variation between a fricative and stop realisation intervocalically in two of the languages (Kafa and Borna) as there is in Aari.

2.1.1.1.3 /t/

/t/ has only one realisation as the voiceless alveolar stop [t]. Its articulation is laminal in all cases and does not vary between a laminal and apical articulation like its voiced counterpart /d/ (see 2.1.1.1.4). This observation is based on hearing the difference in the sound between a laminal and apical articulation of the consonants, as well as articulating them myself and noting how my tongue is placed. For /t/, the blade of the tongue touches the alveolar ridge, and when listening to my recordings I hear that /t/ always has a laminal articulation. For /d/, I hear I difference in the sound between a laminal and apical articulation.

/t/ occurs in all word positions (24-27). It can precede and follow other consonants, and it can occur intervocalically (32). As a voiceless stop, /t/ forms consonant sequences with voiceless obstruents, not voiced obstruents (28-30), but it can form sequences with sonorants (27, 31). I have found /t/ following the consonants /p k f s ʧ ʃ m n r l/ and preceding the consonants /k s m r/. This shows that /t/ most commonly occurs as the second consonant in a sequence.

24. /tàmmà/ [tàmmà] – *num* ten
25. /ʃéntè/ [ʃéntè] – *v* sold
26. /ít/ [ít] - *v* eat
27. /gàlt/ [gàlt] - *n* old man
28. /ìktá/ [ìktá] - *v* built
29. /ááʧtè/ [ááʧtè] - *v* cover
30. /ʦ'ááftá/ [ʦ'ááftá] – *v* wrote
31. /ʃìèrtà/ [ʃìèrtà] - *n* washed material
32. /bótà/ [bótà] – *n* pumpkin

Melkeneh lists [ð] as an allophone of /t/, but I have not found this sound at all.

I do not have any minimal pairs between the two alveolar stops /t/ and /d/, but in the words below (33-34), we see that they occur in the same environments. There is no reason to consider these anything other than two distinct phonemes.

33. a) /pùtá/ [pùtá] – *n* cotton
    b) /mùdá/ [mùɖá] – *det* all
34. a) /dùùtí/ [dùùtí] – *n* foot
    b) /búúdíst/ [búúdíst] – *n* my heart

2.1.1.1.4 /d/

/d/ is realised as a voiced alveolar stop [d]. It occurs in all word positions (35-43). /d/ can both precede and follow other consonants (36, 38-42), and occur intervocalically (43). /d/ forms sequences with other voiced stops (39), but not voiceless stops, due to the restriction that stop sequences must agree in their value for voice. /d/ can form sequences with both voiced and voiceless fricatives (40-42), as well as sonorants (36, 38). /d/ sometimes follows the voiceless stop phoneme /q/, but in all those cases, /q/ is realised as the fricative allophones [χ] or [ʁ] (42). I have found /d/ following the consonants /g q ʃ z ʧ m n r l ʋ/ and preceding the consonants /s ʃ ʒ r/.

35. /dìmèt/ [dìmèt] – *n* cat
36. /ìndí/ [ɨnd̀í] – *n* mother
37. /éέd/ [éέd] – *n* person
38. /gùrdá/ [gùrdá] – *n* fence
39. /zígdìté/ [zígdìté] – *v* I need
40. /ésésdìté/ [ésésdìté] – *v* I know
41. /záázdè/ [záázdè] – *adj* cold
42. /dòqdé/ [dòχdé] – *v* be (locative-existential verb)
43. /mùdá/ [mùɠá] - *det* all

The articulation of /d/ varies. It is mostly pronounced with a laminal articulation, but sometimes with an apical articulation. I first heard a difference in the sound between the two articulations of /d/ during sessions with the speaker. I later tried pronouncing words with /d/ with different degrees of apicality and asked the speaker if any articulation was more correct or if he heard a difference in the sound of the consonant. He said that there was no difference. I have not found any patterns that show that these variations of articulation occur in specific environments. /d/ can have different degrees of apicality in the same environments and even in different repetitions of the same word. It seems no systematic distinction is made between a lamino-alveolar and an apico-alveolar articulation of /d/.

Interestingly, the same is true for the nasal consonant /n/ that shares the same place of articulation as /d/ (see 2.2.1.1). However, as mentioned above (2.1.1.1.3), /t/ always has a laminal articulation. The feature that /d/ and /n/ share, that /t/ does not, is voicing. Bergfjord (2013: 28) found that, in the Ethiopian language Borna, /t/ always has a laminal articulation, while /d/ always has an apical articulation.

2.1.1.1.5 /k/

/k/ has two realisations. Before the back vowels and the open front vowel /u uu o oo a aa/ /k/ is realised as a velar stop [k]. Before the close and mid-close front vowels /i ii e ee/, /k/ is realised as a palatal stop [kʲ].

/k/ occurs in all word positions (44-46). It can precede (49-50) and follow (45, 47-48) other consonants, and occur intervocalically (51). /k/ follows the consonants /p t f s ʦ m n r l/ and precedes the consonants /t s ʃ ʦ m n r/. When the voiceless stop /k/ forms a sequence with another obstruent, that obstruent must be voiceless.

44. /kìʔì/ [kʲìʔì] – *n* husband
45. /jìrká/ [jìrká] – *prep* down
46. /ík/ [ík] – *v* build
47. /kótkìʔís/ [kótkʲìʔís] – *n* her husband
48. /máskòt/ [máskòt] – *n* window
49. /ʊúksàk/ [wúksàk] – *n* jackal
50. /èkná/ [èkná] – *n* cabbage
51. /dákà/ [dákà] – *v* wear (for shoes)

2.1.1.1.6 /g/

/g/ has similar allophonic realisations to /k/. Before the back vowels and the open front vowels /u uu o oo a aa/, /g/ is velar and realised as [g], while before the close and mid-close front vowels /i ii e ee/, as well as the palatal consonant /j/, /g/ gets the palatal realisation [gʲ].

/g/ occurs in word-initial and word-medial position (52-59), but not word-finally. /g/ mostly occurs in initial position (52-54) and intervocalically (54-55) and does not often form sequences with other consonants. The only consonants that precede /g/ are the sonorants /n r l ʊ/ (56-58), and the only consonants that follow /g/ are the sonorants /r j/ and the voiced stop /d/ (57-59).

52. /gèʃĩ/ [gʲèʃĩ] – *n* thigh
53. /gádà/ [gádà] – *adj* stupid
54. /gògí/ [gògí] – *n* road
55. /ʒààgì/ [ʒààgʲì] - *n* thread
56. /àlgá/ [àlgá] – *n* bed
57. /zérgígrànk/ [zérgʲígràŋk] – *n* with wheat
58. /ángjìnʦ/ [áŋgʲjìnʦ] - *n* son

59. /zígdìté/ [zígdìté] – *v* I need

The minimal pair and near minimal pairs in (60-62), show the opposition of the two velar stops /k/ and /g/.

60. a) /kàà/ [kàà] – *v* pour
    b) /gáá/ [gáá] – *v* say
61. a) /kùpìtá/ [kùpìtá] – *n b*read
    b) /gùptá/ [gùpɸtá] – *n* skin
62. a) /kóʊrà/ [kóʊrà] – *v* wear
    b) /góʊà/ [góʊà] – *v* jump

2.1.1.1.7 /q/

/q/ can occur in all word positions and has a series of realisations. In all cases /q/ has a dorsal articulation with the body of the tongue raised up towards the uvula, but it can be realised as the stop [q], the affricate [qχ], the voiceless fricative [χ] or the voiced fricative [ʁ]. Hayward (1990: 430) lists the same realisations of /q/. Melkeneh (2013) lists [χ] and [ʁ] as distinct phonemes from /q/, but does not mention the affricate [qχ]. According to Mulugeta (2008), Ford (1990) also includes [χ ʁ qχ q] in the inventory of Aari. So it is clear that these sounds feature in the phonology of Aari, but there is disagreement about what the phonemic status of the different uvular sounds are. I have not been able to make any conclusions about the status of these uvular consonants.

The different realisations of /q/ overlap in distribution, so there is no clear complementary distribution between the different allophones. But there are some tendencies. /q/ is mostly realised as a stop [q] in initial position when nothing precedes it, as in words uttered in isolation (63-64). /q/ gets an affricate [qχ] or a fricative [χ] realisation word-medially (65-69), and an affricate [qχ] realisation word-finally (70).

I have not found any systematic pattern as to which of the two allophones [qχ] and [χ] can appear in what context word-medially. They seem to be in free variation. Both [qχ] and [χ]

appear intervocalically (65-66), and preceding a consonant (67-68). Only [χ] follows a consonant in medial position (69), but [qχ] follows a consonant in final position in (70). The fricative allophone [χ] sometimes appears in initial position in the context of a sentence where some other word has preceded it (71).

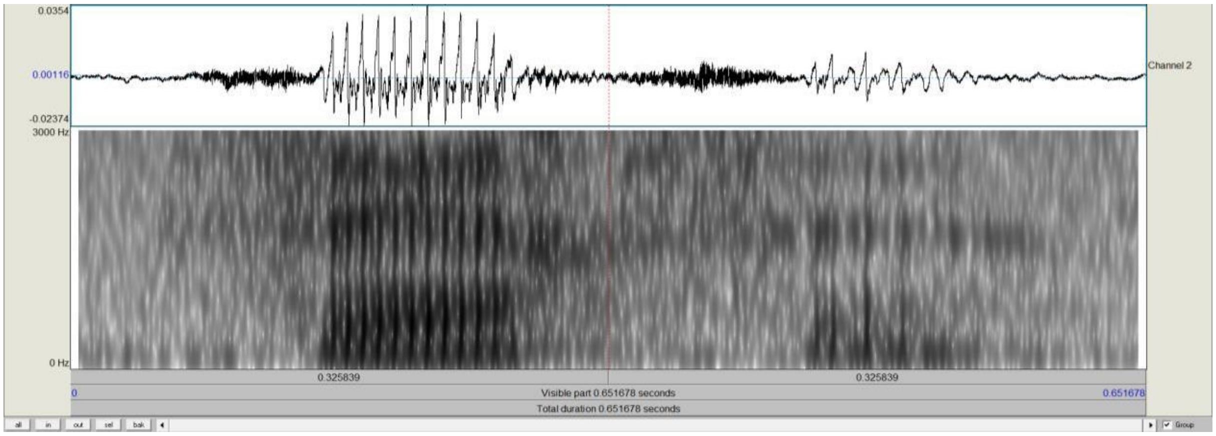
63. /qàdá/ [qàdá] – *n* neck
64. /qélʃĩ/ [qélʃĩ] – *n* help
65. /àqéná/ [àqχéná] – *n* the tree
66. /lòqá/ [lòχá] – *n* water
67. /àqmí/ [àχmí] – *n* false banana
68. /dóqsè/ [dóqχsè] – *v* sit
69. /wòlqán támmèrs/ [wòlχán támmə̀rs] - *num* nine
70. /dónq/ [dóɴqχ] – *num* five
71. /qòlémá/ [χòlə́má] – *n* animal

There are exceptions to the tendencies described above, which show that these patterns are not absolute. Overall, it looks like /q/ is realised as [q] word-initially, as [qχ] or [χ] word-medially, and as [qχ] word-finally. But in (72-74), /q/ is realised as [q] intervocalically, word-medially preceding a consonant, and word-finally. I so not have any minimal pairs in my data between uvular stop and the ubular fricative or affricate that would indicate that would shouw that they are distinct phonemes.

72. /mùqá/ [mùqá] – *n* egg
73. /súnqsè/ [súɴqsè] – *v* kissed
74. /súnq/ [súɴq] – *n* kiss

I have found evidence of /q/ being realised as a voiced fricative [ʁ]. This allophone is rare, but I have found it consistently in certain words (75-76). In Spectrogram 2.1, we see that the fricative sound [ʁ], following the vowel [ee], is voiced with more regular waveforms than the following voiceless fricative [s], which has clearly irregular waveforms.

Spectrogram 2.1 /sééqsè/ – *hurt*



[s ee ʁ s e]

I am not able to explain exactly why /q/ has a voiced fricative realisation in these examples. In (75), /q/ is followed by a voiced consonant, but in (76) it is followed by a voiceless consonant. Additionally, in (67-68), /q/ is followed by the same voiced and voiceless consonants /m/ and /s/, without being realised by a voiced allophone. So the following consonant cannot explain the voiced allophone [ʁ]. Neither can the preceding vowels, as /q/ often appears adjacent to vowels without being realised by a voiced allophone.

75. /sèqmì/ [sèʁmì] – *n* sickness
76. /sééqsè/ [sééʁsè] – *v* hurt

Hayward (1990: 430) also states that a voiced fricative realisation of /q/ is possible in Aari, and says that this allophone occurs intervocalically. This backs up the claim that [ʁ] does indeed occur in Aari as an allophone of /q/. However, I have found that [ʁ] occurs preceding consonants, and that /q/ can be realised by voiceless allophones intervocalically. So the context of the allophone [ʁ] cannot be explained as straight forwardly as Hayward (1990) claims.

It is apparent that more research is needed to say something further about the realisations of /q/. But the tendency for /q/ to be realised as the stop [q] word-initially and as a fricative [χ] or affricate [qχ] word-medially is similar to the allophonic realisations of /p/. However, the

distributional patterns of the allophones of /q/ are not as clear cut as with /p/, and since no complementary distribution can be discerned, my analysis is that the allophones of /q/ are in free variation with one another.

Some of what might explain the variation in realisations of /q/ is its place of articulation. Ashby (2011: 41) writes that stops with a place of articulation further back in the oral cavity are more likely to be pronounced as an affricate or gain a fricative quality because the tongue is more fixed the further back in the oral cavity you get, which allows for very little flexibility and movement.

I also show the opposition between the velar and uvular stops /k/ and /q/ in the minimal pair below (77).

77. a) /mùká/ [mùká] – *v* walk
    b) /mùqá/ [mùχá] – *n* egg

2.1.1.1.8 /ʔ/

/ʔ/ is realised as a glottal stop [ʔ]. It has phonemic status in Aari and can occur in all word-positions.

The phonemic status of /ʔ/ is clearly shown by the minimal pair and near minimal pair in (78-79). There is a distinction between words that do and do not contain /ʔ/, which shows that /ʔ/ is in phonemic opposition to other sounds.

78. a) /láʔ/ [láʔ] - *v* taste
    b) /lá/ [lá] – *num* six
79. a) /zàmmí/ [zàmmí] – *adj* strong
    b) /zùmʔí/ [zùmʔí] – *n* blood

Back vowels cannot occur word-initially in Aari, and must be preceded by a /ʔ/ or another consonant (80-81). Front vowels, on the other hand, can occur word-initially in Aari, and there are examples of words that begin with a front vowel (84-85) and words that begin with a /ʔ/

followed by a front vowel (82-83). This means that /ʔ/ does not always occur word-initially to avoid a word-initial vowel.

80. /ʔùpsí/ [ʔùɸsí] – *n* noise
81. /ʔòqínsìté/ [ʔòqínsìté] – *v* I breathe
82. /ʔílà/ [ʔílà] - *n* flour
83. /ʔàrfén/ [ʔàrfén] – *n* moon
84. /àmí/ [àmí] - *n* breast
85. /índèps/ [índèɸs] - *n* brother

When /ʔ/ occurs word-medially, it is often intervocalic, as in (86), but I have not found /ʔ/ to be obligatory intervocalically to break up a sequence of vowels. (89) shows the word where two vowels belonging to different syllables follow each other without a /ʔ/ breaking up the vowel sequence. (The vowel sequence, in this case, is not a diphthong, as the vowels are clearly pronounced as belonging to two different syllables. This is indicated by the "." in the syllable boundary). I have also found examples where /ʔ/ precedes or follows another consonant to make up a consonant sequence (87-88). I have not found any cases where /ʔ/ appears in sequence with two other consonants in any construction, so as to create a sequence of three consonants.

86. /kìʔì/ [kʲʔì] – *n* husband
87. /gàʔʃĩndà/ [gàʔʃɨ̃ndà] – *adj* deep
88. /qàlʔá/ [qàlʔá] – *n* leaf
89. /qàdáíst/ [qàdá.íst] - *n* my neck

/ʔ/ can appear word-finally (90-91), but is not obligatory in final position following a vowel as a large portion of Aari words end in vowels.

90. /ʃĩʔ/ [ʃĩʔ] – *v* washing
91. /láʔ/ [láʔ] - *v* taste

The data discussed above shows that /ʔ/ has phonemic status and behaves like any other

consonant.

2.1.1.2 Glottalic stops

Aari has two glottalic stop phonemes. One is an ejective stop /p’/, the other is an implosive stop /ɗ/. I have also found the two ejective stops /k’/ and /t’/ in one word each (92-93), but both of these words are Amharic loan words. The Amharic forms of the words are /t’ərəp’p’eza/ *table* and /k’əjj sɨr/ *radish*. Note that /k’əjj sɨr/ means *radish* in Amharic while /k’èìsír/ means *onion* in Aari. It is possible that the speaker translated the word incorrectly, or that the word has been borrowed from Amharic but is used differently in Aari.

92. /t'àrp'éézà/ [t'àrp'éézà] – *n* table
93. /k’èìsír/ [k’èìsír] - *n* onion

These are the only words where I have found the ejectives /k’/ and /t’/. Because Aari has ejectives /p’ ʦ’ ʧ’/, it is possible that they have adopted the /k’/ and /t’/ ejectives when borrowing the words from Amharic. But since these are the only words featuring these ejectives, and they have in common that they are both Amharic loan words, I do not consider this enough evidence to call them phonemes in Aari. However, Melkeneh (2013) states that they are phonemes in Aari.

2.1.1.2.1 /p’/

/p’/ is realised as a voiceless bilabial ejective [p’]. I have found it in all word positions (94-97). /p’/ both precedes (94-95) and follows vowels (97), and follows another consonant (96).
I do not have many recorded instances of /p’/, the four words below (94-97) are the only words I have, and one of these is, as mentioned, an Amharic loan. Therefore, more data needs to be collected to say something more about the distribution and behaviour of the consonant /p’/.

94. /p'àlqínt/ [p'àlχɨnt͡ʃ́] – *n* lightning
95. /p'àʃĩ/ [p'àʃĩ] – *n* fear
96. /t'àrp'éézà/ [t'àrp'éézà] – *n* table

97. /gáp'/ [gáp'] – *v* grow

Hayward describes /p'/ as a voiceless implosive (but uses the same symbol /p'/) and therefore the voiceless counterpart to the voiced implosive /ɗ/. He writes that it occurs, for instance, in the word /p'àlqínt/ *lightning*, so it is clear that we are dealing with the same sound. But I have found that it is an ejective, not an implosive. I base this on how I hear the sound when pronounced and that Melkeneh (2013) also found this sound to be ejective.

The fact that /p'/ occurs word-finally shows that /p'/ behaves differently from the pulmonic stop /p/ in this regard. I do not have any minimal pairs to show the opposition of /p'/ and /p/, but they appear in similar environments (word-initially before the vowel /a/).

2.1.1.2.2 /ɗ/

/ɗ/ is realised as a voiced alveolar implosive [ɗ]. It is the only implosive consonant in Aari and it is in opposition to the voiced alveolar stop /d/. From listening to my recordings, I have found that it does not have the variation between a laminal and apical articulation that /d/ has, but has only an apical articulation. Ferguson (1976: 67) mentions the implosive /ɗ/ as a typical feature of Ethiopian languages.

I have two minimal pairs that show the opposition between the stop /d/ and the implosive /ɗ/ (98-99). I have found /ɗ/ word-initially and word-medially but not word-finally. It mostly occurs adjacent to vowels, but does combine with the consonant /m/ in (102) where /ɗ/ precedes /m/. This is the only word in my data where /ɗ/ combines with another consonant.

98. a) /ʔòìɗĕmà/ [ʔòìɗə̆mà] – *adj* hot
    b) /ʔòìdémá/ [ʔòìdəmá] – *n* man from the area 'oida'
99. a) /ɗăám/ [ɗăám] – *v* stand
    b) /dáám/ [dáám] – *n* fabric used in funeral serimony

100. /ɗìmná/ [ɗɨmn̈á] – *v* push

101. /ʔòìdĩ/ [ʔòìdĩ] – *num* four

102. /àɗ̃mí/ [àɗ̃mí] – *n* tongue

2.1.2 Fricatives

Aari has six fricative phonemes /s z ʃ ʒ f ɦ /. I consider four of the fricatives, the sibilants /s z ʃ ʒ/, to be a natural class, while the remaining two are not included in this class. The sibilants are grouped together because of their distributional patterns and sibilant harmony. The sibilants are the only fricatives that combine with nasals to form consonant sequences, the remaining two fricatives /f / and /ɦ/ never do. The sibilants also participate in voice and place harmony that the other two do not.

2.1.2.1 Sibilants

Sibilants can be defined as coronal groove fricatives. In Aari, a word cannot contain two sibilants with different places of articulation or different values for voice. This means that an alveolar sibilant and a post-alveolar sibilant never occur in the same word. And a voiced sibilant and a voiceless sibilant never occur in the same word. This restriction is also true for the affricates (see section 2.1.3). If a word has two (or more) sibilants underlyingly that do not agree in both these respects, one sibilant will assimilate to the other to produce a surface form where the two sibilants are the same (see section 4.2.2).

I do not have any minimal pairs between the four different sibilant consonants in my data, but the words below (103a-f) show the different sibilants in similar anvironments. /s/ and /ʒ/ appear between /a/ and /mi/ (103a-b). /z/ and /ʃ/ appear between /u/ and /m/ (103c-d). /s/ and /ʃ/ appear between /e/ and /ma/ (103e-f).

103. a) /ázmí/ [ázmí] – *v* run
b) /gààʒmíjè/ [gààʒmjè] – *adj* long
c) /ʔùzmà/ [ʔùzmà] – *adj* straight
d) /ʊùʃmíná/ [wùʃmíná] – *n* smell
e) /ésmà/ [ésmà] – *adj* big

f) /néʃmá/ [néʃmá] – *v* love

2.1.2.1.1 /s/

/s/ is realised as the voiceless lamino-alveolar fricative [s] and can occur in all positions in a word (104-108). /s/ precedes /t d k m r/ and follows /p d k q m n r l/, as well as appearing intervocalically. This means that /s/ can form consonant sequences with both voiced and voiceless obstruents, and sonorants.

104. /sùsá/ [sùsá] – *n* relatives
105. /gámsè/ [gámsè] – *adj* angry
106. /kótkìʔís/ [kótkʲìʔís] – *n* her husband
107. /íst/ [íst] – *pron* my
108. /máskòt/ [máskòt] – *n* window

2.1.2.1.2 /z/

/z/ is realised as the voiced lamino-alveolar fricative [z]. It occurs word-initially and word-medially (109-112), but never word-finally. /z/ only forms sequences with the voiced stops and nasals. /z/ precedes /d/ and /m/, and follows /b/ and /n/. /z/ also occurs intervocalically.

109. /zùmʔí/ [zùmʔí] – *n* blood
110. /ázmí/ [ázmí] – *v* run
111. /kèèzákèèzdìté/ [kʲèèzá kʲèèzdìté] – *v* I say something
112. /tàbzá/ [tàβzá] – *num* seven

2.1.2.1.3 /ʃ/

/ʃ/ is realised as the voiceless post-alveolar fricative [ʃ] with an apical articulation, and can occur in all positions in a word (113-119). /ʃ/ precedes /d/ and /m/ and follows /p k q ʔ m l/. This means that /ʃ/ only precedes voiced obstruents and only follows voiceless obstruents, unlike /s/ which precedes and follows both voiced and voiceless obstruents. /ʃ/ also occurs intervocalically.

113. /ʃèdín/ [ʃèdín] – *v* see
114. /gèèʃá/ [gʲèèʃá] – *adj* old
115. /gìʃ/ [gʲìʃ] – *v* wait
116. /ʃákʃè/ [ʃákʃè] – *adj* bright
117. /áʧìmʃè/ [áʧìmʃè] – *adj* hidden
118. /ʔúʃdìt/ [ʔúʃdìt] – v I cooked
119. /ʋòʃmí/ [wòʃmí] – *n* smell

2.1.2.1.4 /ʒ/

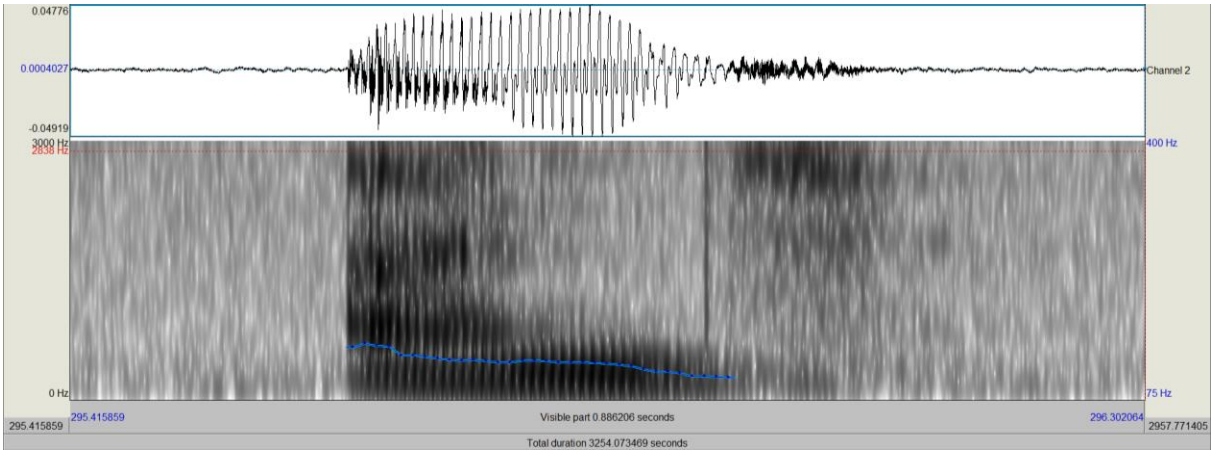
/ʒ/ is realized as the voiced post-alveolar fricative [ʒ] with an apical articulation. It occurs word-initially and word-medially (120-122), not word-finally. This is the same as with the other voiced sibilant /z/. /ʒ/ is the least frequent of the sibilants and occurs in the fewest environments. It only precedes /m/ and only follows /d/. Mostly, /ʒ/ appears intervocalically.

120. /ʒààgì/ [ʒààgì] – *n* thread
121. /jììʒí/ [jììʒí] – *adj* hate
122. /ɦààʒmí/ [ạ̀ạ̀ʒmí] – *n* sickness

I have one word in my data where /ʒ/ combines with /d/ in a sequence of three consonants [ndʒ] (123).

123. /ʔándʒ/ [ʔándʒ] – *n* blessing

Spectrogram 2.2 /ʔándʒ/ *blessing*



[a n d ʒ]

This means a sequence of three consonants in the coda which is not permitted in Aari, and never happens in any other word. A possible analysis is that [dʒ] is an affricate. This would make it the voiced counterpart of /ʦ/ which is an affricate in Aari. Melkeneh (2013) lists /dʒ/ as an affricate phoneme in Aari, however, this is the only word in my data where we find the [dʒ] combination and the articulation of this [dʒ] sequence is longer than the articulations of the other affricates typically are (see section 2.1.3), with a length of approximately 0.162 seconds (Spectrogram 2.2). For these reasons I am hesitant to call this an affricate phoneme in Aari. I suggest instead, that the closure in the sound [d] is a phonetic result of going from the alveolar nasal /n/, which is articulated with a closure in the oral cavity, to the post-alveolar fricative /ʒ/, where the oral closure is released to allow airflow through the oral cavity.

More data must be collected to say something conclusive about whether [dʒ] is a consonant sequence or an affricate allophone in Aari.

2.1.2.1.5 /f/

/f/ is realised as the voiceless labio-dental fricative [f]. It occurs in all word positions (124-127). /f/ most often occurs intervocalically. The only consonant that precedes it is the trill /r/, and the only consonants that follow it are the voiceless stops /t/ and /k/, and again the trill /r/.

124. /fiʧár/ [fiʧár] – *n* ground
125. /lèfí/ [lèfí] – *n* bone
126. /ts'ááfkà/ [ts'ááfkà] – *v* to be written
127. /ʔàrfén/ [ʔàrfén] – *n* moon

2.1.2.1.6 /ɦ/

/ɦ/ is realised as a voiced glottal fricative [ɦ], except for in initial position preceding the vowel /a/. In this position, the /ɦ/ disappears, but causes the /a/ to become breathy (128-131), so that the sequence /ha/ becomes [a̤]. /a/ is the only vowel /ɦ/ precedes in initial position. In all other cases /ɦ/ appears intervocalically (130-131). According to Hayward (1990: 431), /ɦ/ is in a process of

disappearing from the phonology, but is leaving behind a trace of itself in breathy [a̤] word-initially.

128. /ɦàrá/ [a̤rá] – *pron* what
129. /ɦàts'/ [a̤ʦ’] – *v* sweep
130. /ʋáɦà/ [wáɦà] – *n* meat
131. /zìɦón/ [zìɦón] – *n* elephant (Amharic loan)

The speaker informed me that other dialects of Aari would pronounce words with an initial /ɦa/ sequence as [ɦa] where the Wubamer dialect has breathy [a̤]. This means that there is no difference in meaning between the Wubamer words beginning with [a̤], and the same words in other dialects beginning with [ɦa]. They are considered to be the same words and are mutually intelligible. I therefore see the breathy vowel [a̤] as an allophonic realisation of /ha/.

2.1.3 Affricates

Aari has four affricate consonants, two pulmonic and two ejective. All the affricates are composed of a stop and a fricative with the same place of articulation. The two pulmonic and the two ejective affricates correspond in a way where there is one alveolar affricate and one post-alveolar affricate in each pair. That means that the pulmonic and ejective affricate pairs

have the same place and manner of articulation and are only distinguished from one another by their airstream mechanism.

Trubetzkoy (1969 [1939]: 55-60) writes about the principles on which one should base an analysis of complex segments as single phonemes.

"In general one can say that in a given language only those combinations of sound *can* be interpreted as monophonematic whose constituent parts are not distributed over two syllables, and which are, further, produced by a homogeneous articulatory movement. Their duration must not exceed the normal duration of single sounds. A combination of sounds that fulfils these purely phonetic prerequisites is only "potentially monophonematic". However, it will also be interpreted as being *actually* monophonematic, […] if in accordance with the rules of the particular language it is treated as a single phoneme, or if the general structure of the phonemic system of that language calls for such an evaluation." (Trubetzkoy 1969 [1939]: 55-56)

According to Trubetzkoy (1969 [1939]), there are reasons for analysing complex segments as single phonemes, pertaining to phonotactics, quantity and to the phonological system as a whole. In Aari, the affricates behave as one segment with regards to syllable structure. They can form the onset of a syllable, which can only have one consonant in Aari. They also combine with another consonant in the coda of a syllable, which can only have two consonants in Aari. The affricates are somewhat longer in duration than single sounds, but also clearly shorter in duration than other stop-sibilant/fricative sequences. The words /ìʦmí/ *food*, /jìntʂén/ *girl*, and /jíntʃʼè/ *laughed*, have affricates with a length of approximately 0.130, 0.093, and 0.117 seconds respectively. This is longer than the length of for example the fricative sound [χ] in /lòqá/ [lòχá] *water*,which is approximately 0.072 seconds. But the lengths of the affricates are shorter than the stop-sibilant sequences in /ʔútsè/ *near* and /ʔándʒ/ *blessing*, which are approximately 0.236 and 0.162 seconds approximately.

I do not have minimal pairs between affricates and sibilants with the same place of articulation, but I have found that they appear in similar environments (132-139). In (132-136), we see that the alveolar affricates and sibilant appear in the same environments: word-initially before /e/ (132), between /e/ and /i/ (133), between /u/ and /a/ (134), after /l/ (135), and after /n/ (136). The

post-alveolar affricate and sibilant appear: word-initially before /a/ (137), between /n/ and /e/ (138), and word-finally after /i/ (139).

132. a) /ʦ'eedí/ [ʦ'eedí] - *adj* short
b) /sèʦ/ [sèʦ] - *n* day

133. a) /èʦína/ [èʦína] - *n* the man
b) /ésìntì/ [ésìntì] - *v* know

134. a) /ʔúʦ'à/ [ʔúʦ'à] - *adv* near
b) /sùsá/ [sùsá] - *n* relatives

135. a) /gàlʦín/ [gàlʦɨ́n] - *n* old man
b) /lálsè/ [lálsè] - *adj* lost

136. a) /jíntsìná/ [jíntsìná] - *n* the boy
b) /láfínsá/ [láfínsá] - *v* on the bone

137. a) /ʧ'ààʧ'í/ [ʧ'ààʧ'í] - *n* root
b) /ʃámtá/ [ʃámtá] - *v* drank

138. a) /jínʧ'è/ [jínʧ'è] - *v* laughed
b) /ʃénʃè/ [ʃénʃè] - *v* bought

139. a) /dìníʧ / [dìníʧ] - *n* potato
b) /gìʃ/ [gʲìʃ] - *v* wait

The affricates have similar restrictions to the sibilants. The affricates also participate in place harmony, both in relation to each other and in relation to the sibilants. If a word with an affricate also contains another affricate or a sibilant, the affricates, or the affricate and the sibilant, share the same place of articulation. The affricates, like the sibilants, also form sequences with nasals. The nasal /m/ can follow affricates, and therefore appear adjacent to the sibilant segment of the affricate. (Nasals can also precede affricates, but when they do they appear adjacent to the stop segment of the affricate). In these regards, the affricates behave identical to the sibilants, but because of the reasons described above, I view the affricates as single phonemes and not as stop-sibilant sequences.

Another restriction on the affricates is how multiple affricates appearing in the same word must be either pulmonic or ejective. It is not possible to have one pulmonic and one ejective affricate within the same word. The pulmonic and ejective affricates are in distinctive opposition to each other. I illustrate this with the minimal and near minimal pairs below. Example (140) shows a minimal pair between the pulmonic and ejective alveolar affricates. Example (141) shows a near minimal pair between the pulmonic and ejective post-alveolar affricates. In (142), we find a near minimal pair between the post-alveolar ejective and the alveolar ejective affricates, and therefore (because of the example in (140)) also between the post-alveolar ejective and the alveolar pulmonic affricates.

140. a) /ʦátʦí/ [ʦátʦí] - *n* intestines
b) /ʦ'àʦ'í/ [ʦ'àʦ'í] – *n* sun

141. a) /ʧ'ámá/ [ʧ'ámá] - *n* shoes
b) /ʧ'àmmá/ [ʧ'àmmá] - *n* silence

142. a) /ʧ'ààʧ'í/ [ʧ'ààʧ'í] - *n* root
b) /ʦ'àʦ'í/ [ʦ'àʦ'í] – *n* sun
c) /ʦátʦá/ [ʦáʦ] - n intestines

2.1.3.1 Pulmonic affricates

2.1.3.1.1 /ʦ/

/ʦ/ is realised as a voiceless alveolar affricate [ʦ] with a laminal articulation. It occurs in all word positions (143-150). /ʦ/ does not form sequences with many other consonants. It precedes /k/ and /m/ and follows /k/ and /j/. Mostly, /ʦ/ occurs initially or intervocalically.

143. /ʦèká/ [ʦəká] – *prep* up
144. /jètʦí/ [jètʦí] – *v* sing
145. /ángjìnʦ/ [áŋgjìnʦ] – *n* son
146. /gàltʦín/ [gàltʦɨ́n] - *n* old man
147. /sàktʦíkàmdá/ [sàktʦíkàmdə] - *adj* yellow
148. /ìtʦmí/ [ìtʦmí] - *n* food

149. /sètskán/ [sètskán] – *adv* today

150. /jétsjêtsàdòqdàké/ [jétsjêtsàdòχdàkʲé] - *v* they are singing

2.1.3.1.2 /ʧ/

/ʧ/ is realised as a voiceless post-alveolar affricate [ʧ] with a laminal articulation. It occurs in all word positions (151-154). /ʧ/ mostly occurs intervocalically, and almost never adjacent to another consonant. My only recorded word where /ʧ/ appears next to another consonant is the example in (154) where it precedes the voiceless stop /t/.

151. /ʧék'nà/ [ʧék'nà] – *v* hit

152. /fìʧár/ [fìʧár] – *n* ground

153. /dìníʧ/ [dìníʧ] – *n* potato

154. /ááʧtè/ [ááʧtè] – *v* cover

2.1.3.2 Glottalic affricates

2.1.3.2.1 /ʦ'/

/ʦ'/ is realised as a voiceless alveolar ejective affricate [ʦ'] with a laminal articulation. It can occur in all word positions (155-158). It typically occurs adjacent to vowels, either word-initially, or intervocalically. When /ʦ'/ forms sequences with other consonants, those are the nasals /n/ and /m/. /ʦ'/ only follows /n/ (156) and only precedes /m/ (157).

155. /ʦ'òòʦ'í/ [ʦ'òòʦ'í] – *adj* full

156. /bàʧátìnʦ'ì/ [bàʧátìnʦ'ì] – *n* chicken

157. /tèʦ'mí/ [tèʦ'mí] – *n* saliva

158. /háʦ'/ [ǎ̰ʦ'] – *v* sweep

2.1.3.2.2 /ʧ'/

/ʧ'/ is realised as a voiceless post-alveolar ejective affricate [ʧ'] with a laminal articulation. It can occur in all word positions (159-165). As with its pulmonic counterpart /ʧ/, /ʧ'/ appears most frequently intervocalically, but I have more recorded instances of this /ʧ'/ forming sequences

with other consonants. /ɣˀ/ precedes /d/ and /m/ and follows /m n r/.

159. /ɣˀàmmá/ [ɣˀàmmá] – *n* silence
160. /jínɣˀì/ [jínɣˀì] – v laugh
161. /éémɣˀ/ [éémɣˀ] – *n* hug
162. /lìmɣˀmíjè/ [lìmɣˀmíjè] – *adj* wet, soft
163. /bàrɣˀémá/ [bàrɣˀəmá] - *n* chair
164. /vóɣˀòɣˀdìté/ [wóɣˀòɣˀdìté] - *v* I will drink
165. /vóɣˀ/ [wóɣˀ] – v drink

2.1.4 Summary

In section 2.1.1 Stops we saw that Aari has eight pulmonic stop phonemes and two glottalic stop phonemes (one ejective and one implosive). There are similarities between the allophonic realisations of three of the stops /p b q/. They all have fricative realisations in addition to the stop. /p/ and /q/ also have affricate realisations. There is complementary distribution between the allophones of /p/, but the allophones of /b/ and /q/ have overlapping distribution within their respective phonemes.More study is needed regarding the allophonic realisations of these stops. Other than this, we saw that the velar stops /k/ and /g/ have palatal realisations before front vowels and /d/ varies between an apical and laminal articulation.

We have also seen two restrictions regarding the stops. Firstly, two stops forming a sequence must agree in their value for voice. Secondly, regarding combinations of stops and other fricatives, voiceless stops can only combine with other voiceless fricatives, while voiced stops can combine with both voiced and voiceless fricatives.

In section 2.1.2 and 2.1.3 we have seen a description of the fricative and affricate phonemes of Aari. We saw that the sibilants formed a natural class that the remaining two fricatives, /f/ and /ɦ/, are not part of. The sibilants participate in voice and place harmony and are the only fricatives that combine with nasals.

The affricates also participate in place harmony, with other affricates as well as sibilants. When consulting Trubetzkoy (1969 [1939]) we see that there are phonotactic and quantity reasons for considering the affricates single phonemes and not consonant sequences. Affricates within a word must also agree in terms of pulmonic vs. ejective airstream mechanism.

2.2 Sonorants

2.2.1 Nasals

There are two nasal consonant phonemes in Aari: the bilabial nasal /m/ and the alveolar nasal /n/. The examples below (166-167) show two near minimal pairs with /m/ and /n/.

166. a) /zàmmí/ [zàmmí] – *adj* strong
b) /záánì/ [záánì] – *n* rope
167. a) /ámí/ [ámí] – *n* breasts
b) /ʔáánì/ [ʔáánì] - *n* hand

/m/ and /n/ have a relatively wide distribution, though /m/ more so than /n/. They occur in similar environments, but there are some differences in their distribution according to my data. Both nasals can occur in any position in a word, they can be preceded or followed by another consonant, and they appear intervocalically.

2.2.1.1 /n/

/n/ has three different realisations according to the place of articulation of a following stop. If followed by either of the velar stops /k/ or /g/, the nasal takes a velar place of articulation and is realised as the velar nasal [ŋ] (168-169). If /n/ is followed by the uvular stop /q/, it takes on a uvular place of articulation and becomes a uvular nasal [ɴ] (170). In all other positions, /n/ is realised as the alveolar nasal [n] (168-169). But, as with its stop counterpart /d/, [n]'s pronunciation varies between a laminal articulation and an apical articulation. No distinctive opposition is made between these variant articulations, and the same word may be articulated with either a laminal or an apical articulation. Just like with the stop /d/, I tried to articulate /n/

with different degrees of apicality and ask the speaker whether there was a difference. According to the speaker there was not. /n/ can occur in all word-positions (168-172).

168. /mànkáná/ [màŋkáná] – *n* the stars
169. /ángjìnʦ/ [áŋgjìnʦ] – *n* son
170. /bùnqá/ [bùɴqχá] – *n* forearm
171. /néʃmá/ [néʃmá] – *v* love
172. /ʃèdín/ [ʃèdín] – *v* see

/n/ is only preceded by the consonants /k/ and /m/ and therefore rarely follows consonants. /n/ is followed by the consonants /t d k ɡ q ʦ ʧ ʦʼ ʧʼ s z j/. This means that /n/ most commonly features as the first consonant in a sequence.

2.2.1.2 /m/

/m/ has only one realisation as a bilabial nasal [m]. /m/ can occur in all word-positions (173-178).

173. /màtá/ [màtá] – *n* head
174. /ʔúkmì/ [ʔúkmì] – *n* thorn
175. /ɗáám/ [ɗáám] – *v* stand
176. /ʊùʃmíná/ [wùʃmíná] *n* the smell
177. /hààʒmí [ə̀ə̀ʒmí] - *n* sickness
178. /ímsè/ [ímsè] – *v* gave

/m/ is preceded by /t k q ɗ ʦ ʦʼ ʧʼ s z ʃ ʒ r j/ and followed by /p t d k ʔ ʧʼ s ʃ n r/. This clearly shows that /m/ has a wider distribution than /n/ as it frequently features as both the first consonant in a sequence, as well as the second consonant in a sequence, while /n/ mostly features as the second consonant in a sequence.

I only have one word where the two nasals follow each other. In this word (179) /m/ precedes /n/, which is why /m/ is the only one that precedes a nasal, while /n/is the only one that follows

a nasal in my data.

179. /dìmná/ [dɨ̀mǹá] – *v* to push

The sibilant fricatives are the only fricatives that can occur adjacent to either of the nasals. The non-sibilant fricatives never occur with a nasal.

2.2.2 Trill /r/

/r/ is the only trill in the phoneme inventory of Aari. It is realised as a voiced alveolar trill [r] in all environments and does not have any allophonic variants. In fast speech it may become a tap [ɾ], but this is simply due the time only allowing for one touch to the alveolar ridge. It is not related to the specific environment, and if slowed down, the same word would be pronounced with a trill. Therefore I have chosen not to include the tap [ɾ] as an allophone here.

/r/ occurs in all word positions (180-183). It has a wide distribution and can occur intervocalically as well as before or after another consonant. The consonants that precede it are /g, k, d, t, s, m, f/. The consonants that follow it are /k, g, d, t, s, m, f, b, p', q, ʧ/. The fact that /r/ can occur in all positions in a word is an interesting find, as this is not the case in many Omotic languages. The Omotic languages Koorete (Theil 2011), Kafa (Theil 2007), Borna (Bergfjord 2013: 51), Gamo (Thomassen 2015: 65) Sezo (Girma 2014), and Dizin (Beachy 2005) all have the sound /r/, but this sound never occurs word-initially. Koorete, Gamo, and Dizin are languages where there is an opposition between the sounds /r/ and /l/ where /l/ can occur word-initially, but /r/ cannot. In Zeso and Borna, there is an opposition between /r/ and /l/, but in Zeso neither occur word-initially and in Borna /l/ only occurs word-initially in loan words. In Kafa there is no opposition between /r/ and /l/, they are allophones of the same phoneme, and this phoneme never occurs word-initially. It is clear that this is one way in which Aari differs from languages it is classified as being related to.

180. /ríkkà/ [ríkkà] – *n* sky

181. /gùdrí/ [gùdrí] – *n* hyena

182. /gúmèr/ [gúmèr] – *adj* happy

183. /lòqáger̀/ [lòχágʲər̀] – *n* in the water

Many of the languages listed above do not have an opposition between /r/ and /l/, but this opposition exists in Aari. The near minimal pairs below show this opposition.

184. a) /ʃíírì/ [ʃíírì] – *n* knife
b) /ɡˀíílì/ [ɡˀíílì] – *adj* holy

185. a) /rìʋí/ [rìʋí] – *n* wheat
b) /líbí/ [líbí] – *n* heart

2.2.3 Approximants

2.2.3.1 /l/

/l/ is realised as a voiced alveolar lateral approximant [l] with a laminal articulation in all environments. It occurs word-initially and word-medially (186-188), not word-finally. /l/ often occurs intervocalically. It is followed by a wide range of consonants: the dental, velar and uvular stops /d, t, g, k, q/, the voiceless sibilants /s, ʃ/, glottal stop /ʔ/, and the nasal /m/. But /l/ is quite restricted regarding what consonants may precede it. I have only one word where it is preceded by a consonant, which is the allophone [ɸ] of the stop /p/ (188).

186. /lálsè/ [lálsè] – *adj* lost

187. /púltá/ [púltá] – *n* door

188. /àplá/ [àɸlá] – *n* clothes

2.2.3.2 /j/

/j/ is realised as a voiced palatal approximant [j]. /j/ occurs word-initially and word-medially (189-191). /j/ never precedes another consonant, but follows /q ʦ n r/. Mostly, /j/ appears word-initially or intervocalically.

189. /jìmrí/ [jìmrí] – *n* eyebrow
190. /màdèrdérjá/ [màdèrdérjá] – *n* shelf
191. /máánájìnʦ/ [máánájìnʦ] – *n* daughter

2.2.3.3 /ʋ/

/ʋ/ has two possible realisations, both of which are approximant, [ʋ] and [w]. /ʋ/ can occur in all word-positions (192-199). It is followed by a limited number of consonants, namely the two voiced stops /d/ and /g/ and the trill /r/. /ʋ/ is never preceded by a consonant.

192. /dííʋì/ [dííʋì] – *n* thief
193. /góʋà/ [góʋà] – *v* jump
194. /kóʋrà/ [kóʋrà] – *v* to wear
195. /dáʋdàbá/ [dáʋdàbá] – *n* letter
196. /nàbəʋ/ [nàbəʋ] – *v* reading
197. /ʋààkí/ [wààkʲí] – *n* cow
198. /ʋótʃ/ [wótʃ] – *v* drink
199. /ʋúrrà/ [wúrrà] – *n* cat

When we look at the distribution of [ʋ] and [w] we see that the two sounds are in complimentary distribution where [w] only appears in word-initial position, while [ʋ] occurs word-medially and word-finally.

In addition, [w] precedes the back vowels /u/ and /o/ but never the front vowel /i/, while [ʋ] precedes the front vowel /i/ and consonants, never the back vowels. Neither of the allophones precede /e/ in my data, but they both precede the front vowel /a/. This means that it is possible to both say that the distribution of the allophones is dependent on their word position, and that the distribution of the allophones is dependent on the following sound. If the distribution is dependent on the following sound, the two allophones are in complementary distribution regarding the front and back vowels, but overlap in distribution before /a/. Without more data, I cannot conclude whether only one of these possible analyses (and in that case, which one) or

both are true for the distribution of the allophones [ʋ] and [w]. But either way, it is clear that these sounds are in complementary distribution and should be treated as allophones of the same phoneme.

2.2.4 Summary

In section 2.2 we I have presented a description of the sonorant consonant phonemes in Aari. These are the nasals /m/ and /n/, the trill /r/ and the approximants /l j ʋ/. Of the nasals, /n/ is the only one with allophonic variation. /n/ has three allophonic realisations: alveolar, velar and uvular. We also saw that /n/ varies between an apical and laminal articulation, just like the alveolar stop /d/.

The trill /r/ has an interesting distribution in comparison to other Omotic languages as it can occur word-initially. As we saw, in many Omotic languages, /r/ cannot feature in this position, which means that Aari is different to these Omotic languages in this regard. There is also an opposition between /r/ and /l/ in Aari. Lastly, the phoneme [ʋ] has two approximant realisations [ʋ] and [w], but their distribution needs further study.

2.3 Geminate consonants

We find geminate consonants in Aari. The geminate consonants that I have found in my data are /tt dd kk zz ʃʃ nn mm rr ll/. The following minimal pairs contrast words with single and geminate consonants. In examples (200-203), the geminate consonants give a lexical distinction, changing one word with one meaning for another word with another meaning. In example (203), the geminate consonant is part of the verb's inflection and gives grammatical information. The lexeme is the same, but the tense is changed from present to past.

200. a) /ʋúrrà/ [wúrrà] - *n* cat
b) /ʋùrá/ [wùrá] – *v* why are you not listening

201. a) /kílá/ [kʲílá] – *v* to go out
b) /kíllà/ kʲkíllà] – *adj* new

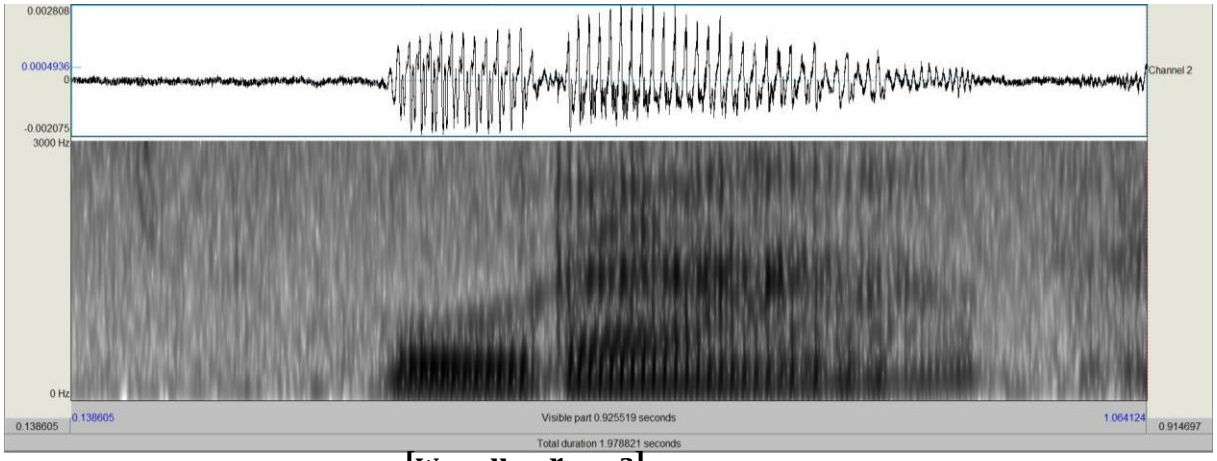
202. a) /gèʃĩ/ [gʲèʃĩ] – *n* thigh

b) /gèʃʃĩ/ [gʲèʃʃĩ] – *v* cheat

203. a) /ʔúʃ/ [ʔúʃ] - *v* cook

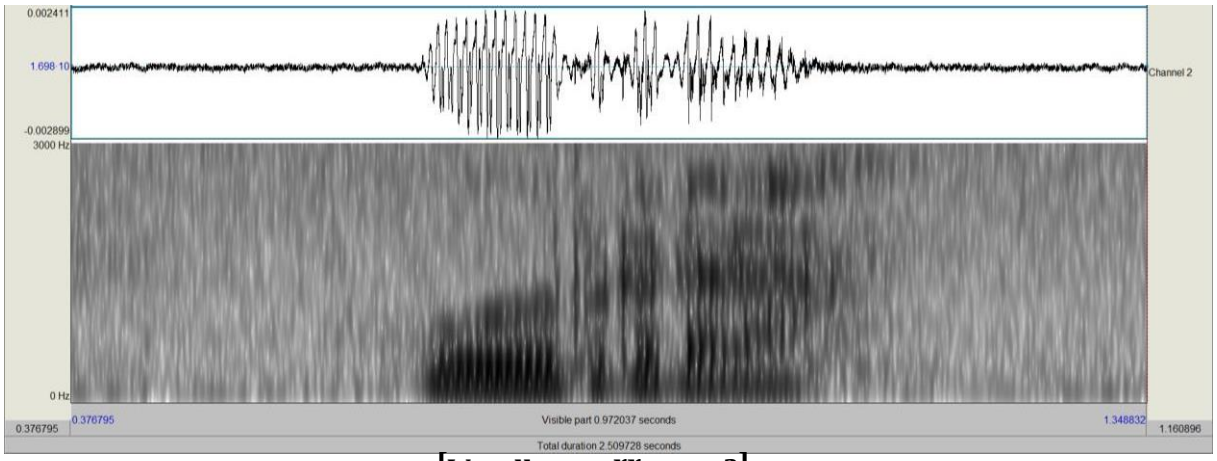
b) /ʔúʃʃ/ [ʔúʃʃ] - *v* cooked

Spectrogram 2.3 /ʊùrá/ *why are you not listening*



[w u r a]

Spectrogram 2.4 /ʊúrrà/*cat*



[w u rr a]

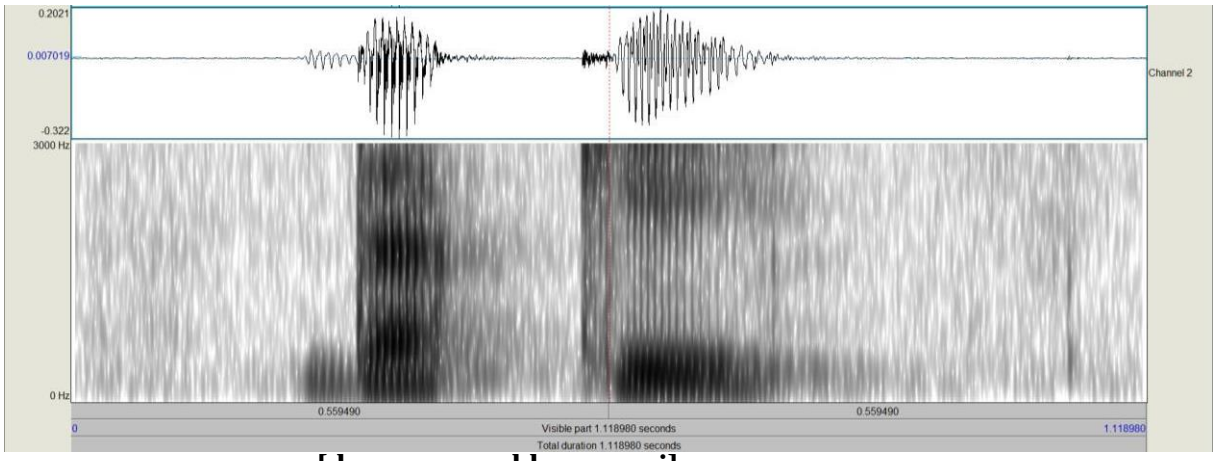
In the spectrograms above, we see that the geminated /r/ in 2.4 is clearly longer than the non-geminated /r/ in 2.2. The non-geminated /r/ is approximately 0.026 seconds long, while the geminated /r/ is approximately 0.105 seconds long with more taps against the alveolar ridge.

(204-207) are further examples of words containing a geminate consonant. I do not have minimal pairs for these words, but the geminate consonants are longer in duration than the corresponding single consonants in other words.

204. /màkkén/ [màkkʲɔ́n] – *num* three
205. /dàkkí/ [dàkkʲí] – *adj* empty
206. /náʃʃè/ [náʃʃè] – *v* loved
207. /ɣ̀àmmá/ [ɣ̀àmmá] – *n* silence

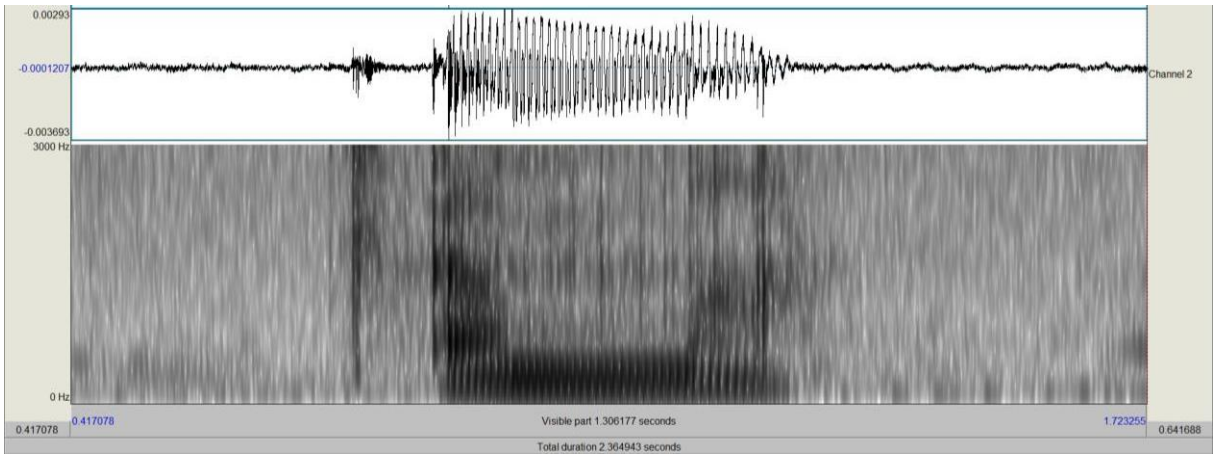
Below, we see spectrograms of the words /dàkkí/ *empty* with a geminated /k/ (Spectrogram 2.5), and /ɣ̀àmmá/ *silence* with a geminated /m/ (Spectrogram 2.6). In Spectrogram 2.5, the closure of the geminate /k/ is approximately 0.173 seconds long. This is longer than non-geminate /k/ in other words, like the word /jìrká/ *down*, where the /k/ is approximately 0.079 seconds long. In Spectrogram 2.6, the geminate /m/ is approximately 0.224 seconds, as opposed to the word /ɣ̀ámá/ *shoes*, where the non-geminate /m/ is approximately 0.144 seconds.

Spectrogram 2.5 /dàkkí/ *empty*



[d a kk i]

Spectrogram 2.6 /ʧ'àmmá/ *silence*



[ʧ' a mm a]

Hayward (1990: 434-435) also writes that geminate consonants can be found in Aari. He claims that most instances of geminate consonants are found in morpheme boundaries where two identical consonants appear adjacent to one another due to suffixation, while morpheme-internal geminate consonants, on the other hand, is far less common. I have found both in my data. Many of the instances of geminate consonants span a morpheme boundary, but I have also found many instances where they do not. Morpheme-internal geminate consonants are well represented in my data, which shows that this is not rare at all. Of the examples above, I see the geminate consonants in (200,-202, 205, 207) as being morpheme-internal and the geminate consonants in (203, 206) as spanning a morpheme boundary. I am uncertain about the geminate consonant in (204).

3 Vowels

The vowel inventory of Aari consists of five vowel phonemes: /i e a u o/, that can be grouped into 3 front and 2 back vowels. A table of the vowel inventory is seen in Table 3.1.

The five-vowel system of Aari is typologically quite common, both in Africa and generally on a world scale (Zsiga 2013: 59; Clements 2005: 134). Clements (2005) writes that a five-vowel system will typically be made up of the five vowels /i e a u o/. If a vowel system has more than five vowels, it is often extended by adding the central vowels [ə] and [ɨ]. We find the central vowels [ə] and [ɨ] in Aari but I claim that they are allophones of /e/ and /i/ respectively.

Table 3.1 Vowel inventory of Aari

	Front	Back
Close	i	u
Mid	e	o
Open	a	

There is a phonemic opposition of long and short vowels in Aari and we find a long counterpart for all the vowels (/ii ee aa uu oo/). But I do not consider the long vowels to be distinct phonemes and therefore do not include them as phonemes in the inventory in Table 3.1. I will discuss long vowels in section 3.3.2

3.1 Vowel phonemes

3.1.1 Front vowels

There are three front vowel phonemes in Aari. The front vowels are more frequent than the back vowels and feature in more word lexemes in my data. In my data, the front vowels can also occur word-initially, unlike the back vowels that never do.

3.1.1.1 /i/

/i/ is a short close front vowel. It is unrounded and occurs in all word positions (1-3).

1. /ìʦmí/ [ìʦmí] – *n* food
2. /bìndíná/ [bìndíná] – *n* the ashes
3. /zàmmí/ [zàmmí] – *adj* strong

/i/ is sometimes realised by the close central vowel allophone [ɨ]. See section 3.2 for a discussion of this allophone.

3.1.1.2 /e/

/e/ is a short close mid front vowel. It is unrounded and occurs in all word positions (4-6).

4. /ésmà/ [ésmà] – *adj* big
5. /ʔàrféná/ [ʔàrféná] – *n* the moon
6. /bòʧʼè/ [bòʧʼè] – *v* bark

/e/ is sometimes realised by the mid central vowel allophone [ə]. See section 3.2 for a discussion of this allophone.

3.1.1.3 /a/

/a/ is a short open front vowel. It is unrounded and occurs in all word positions (7-9).

7. /àtrí/ [àtrí] – *adj* sad
8. /ʦ'àʦ'í/ [ʦ'àʦ'í] – *n* sun
9. /góʊà/ [góʊà] – *v* jump

As we saw previously, in section 2.1.2.1.6, an initial /ɦa-/ construction results in a breathy [a̤] (10-11).

10. /ɦáínt/ [á̤ínt] – *pron* when
11. /ɦàɣˀà/ [a̤ɣˀà] – *v* flow

I claim that breathy [a̤] is an allophonic realisation of an initial /ɦa-/ sequence, and not simply an allophone of the vowel /a/ in the context of following /ɦ/. This is because /a/ and other vowels can follow /ɦ/ in word-medial position without becoming breathy (12-13). (Neither is /a/ breathy in initial position when it is not preceded by /ɦ/ (7)). This means that the realisation of breathy [a̤] is determined both by /a/'s context of following /ɦ/ and by this /ha-/ sequence being word-initial.

12. /ʊáɦà/ [wáɦà] – *n* meat
13. /zìɦón/ [zìɦón] - *n* elephant

3.1.2 Back vowels

There are to back vowel phonemes in Aari. The back vowels are less frequent than the front vowels and their distribution is more restricted. The back vowels cannot occur in word-initial position, but must be preceded by a consonant. /u/ does not occur in word-final position, while /o/ does, but rarely.

3.1.2.1 /u/

/u/ is a short close back vowel. It is rounded and occurs word-medially (14-16).

14. /pùtá/ [pùtá] – *n* cotton

15. /tùrí/ [tùrí] - *n* liver
16. /ʔùzmà/ [ʔùzmà] - *adj* straight

3.1.2.2 /o/

/o/ is a short close mid back vowel. It is rounded and occurs in medial and final word position (17-19). /o/ in final position is rare and I have only one word in my data where /o/ occurs in this position (19).

17. /bònά/ [bònά] – *n* flower
18. /sólèmά/ [sóləmά] – *n* love
19. /nò/ [nò] – *pron* he

3.2 Central vowels

The phonemic status of the central vowels [ɨ] and [ə] is not clear from the existing literature. Melkeneh (2013) lists both [ɨ] and [ə] as phonemes, while Hayward (1990) does not describe them at all. I have found [ɨ] and [ə] in my data, but they are quite infrequent, and because of a lack of data, their phonemic status has not been possible to determine. I have sometimes recorded the same word with a central vowel ([ɨ] and [ə]) at one time and a front vowel ([i] or [e]) at another time. Neither of the central vowels have long counterparts ([ɨ̈] and [əə]), they are always short. The variation between the central vowels and the front vowels is an indicator that [ɨ] and [ə] are "reduced" forms of /i/ and /e/ respectively and should be treated as allophones of these phonemes.

I have not found any minimal or near minimal pairs with [e] and [ə], so I do not have any evidence that would suggest that they are distinct phonemes. Nor have I found that [e] and [ə] occur in different environments and are in complementary distribution. [ə] most commonly occurs in suffixes and in morpheme boundaries (20-21), but I have also found it within a word root (22). In addition, when I asked the speaker whether the pronunciation of a word was correct with [e] or [ə], he would say they sounded the same.

20. /ʔàstén támm-èrs/ [ʔàstén támmərs] - *num* eight
21. /áf-ìst-ék/ [áfɨstək] – *n* with my eye
22. /dèrtí/ [dərtí] - *n* goat

I have one minimal pair with [i] and [ɨ] (25a-b), but the two words have different tonal patterns, and it is possible for segmentally identical words to be distinguished purely by tones in Aari. As with [e] and [ə], I have found several words that have been recorded with the vowels [i] and [ɨ] at different times. Therefore, I do not see this minimal pair as conclusive evidence that the vowels [i] and [ɨ] are distinct phonemes. But unlike the case with [e] and [ə], the speaker would stress a difference between [i] and [ɨ] when I asked about the different sounds.

23. a) /ìmmá/ [ɨmmá] – *v* give
24. b) /bírrì [bɨrfì] – *n* money
25. a) /jíntsìná/ [jíntsɨná̰] – *n* the boy
    b) /jìntsíná / [jìntsíná] - *n* the children

Of the two central vowels, [ɨ] seems most likely to be a phoneme. But because there is no clear indication that either of the central vowels are phonemes, and because of a lack of data on this matter, I propose that [ɨ] and [ə] are reduced forms of /i/ and /e/ respectively. I view them as such in this thesis, but this matter is inconclusive and further study is needed.

3.3 Opposition of vowel phonemes

Below are a series of minimal or near-minimal pairs that demonstrate the phonemic oppositions of the different vowel phonemes. For the opposition of /e/ and /u/, I did not find any minimal or near-minimal pairs, but I have tried to show the opposition through examples where the two vowels appear in similar environments.

Opposition of /i/ and /a/

26. a) /áfì/ - *n* eye
    b) /àfá/ – *n* mouth

Opposition of /i/ and /e/

27. a) /jìnʧĩ/ - *v* laugh

    b) /jínʧʼè/ - *v* laughed

28. a) /jììʒí/ - *n* hatred

    b) /jììʒé/ - *v* hate

Opposition of /i/ and /u/

In (29), we find /i/ and /u/ in a near minimal pair. The word /ʔítsè/ *bite* has the affricate /ʦ/, while the word /ʔútsé/ *near* has the consonant sequence /ts/.

29. a) /ʔítsè/ - *v* bite

    b) /ʔútsé/ - *adv* near

Opposition of /i/ and /o/

30. a) /ní/ - *adv* yesterday

    b) /nò/ - *pron* he

Opposition of /e/ and /a/

31. a) /kètá/ - *pron* they

    b)/kátá/ - v why don't you cut it

Opposition of /e/ and /o/

32. a) /mérá/ - *adj* small

    b)/mòrá/ - *n* neighbour

Opposition of /a/ and /u/

I do not have any minimal pairs with /a/ and /u/, but in the examples below the two vowels appear in similar environments. In (33a-b), /a/ and /u/ both appear between the consonants /p/ and /t/. In (34a-b) /a/ and /u/ both appear between the consonants /g/ and /d/.

33. a) /pàtrí/ - *n* corn
    b) /pùtá/ - *n* cotton
34. a) /gádà/ - *adj* stupid
    b) /gùdrí/ - *n* hyena

Opposition of /a/ and /o/

35. a) /gàsí/ - *n* fence
    b) /gósì/ - *n* barley
36. a) /ná/ - *pron* she
    b) /nò/ - *pron* he

Opposition of /u/ and /o/

37. a) /bùná/ - *n* coffee
    b) /bòná/ - *n* flowers

Opposition of /e/ and /u/

I do not have any minimal pairs with /e/ and /u/ in my data. However, the examples below show the two vowels appearing in similar environments. In (38a-b) /e/ and /u/ appear between a /t/ and an /n/. In (39a-b) the two vowels appear between /t/ and /r/. In (40a-b) the two vowels appear between /s/ and /s/.

38. a) /ʔàstén/ - *num* two
    b) /túní/ - *adj* dumb
39. a) /átèrsè/ - *v* I was sad
    b) /tùrí/ - *n* liver
40. a) /ésésdìté/ - *v I* know
    b) /sùsá/ - *n* relatives

3.3.1 Opposition of /a/ and /e/ neutralised word-finally

Hayward (1990) writes that the opposition of the phonemes /a/ and /e/ is neutralised in word final position. I have found the same in my data. As shown in (31a-b), there is a phonemic opposition between /a/ and /e/, but this opposition is neutralised word-finally. Many words have been recorded with a final /a/ and a final /e/ at different times. Some of these words are shown in the examples below (41-43). In these words, there is no distinction in meaning between the /e/-final and /a/-final variants of the words.

Trubetzkoy (1969 [1939]: 79-82) writes that when an opposition between two distinct phonemes is neutralised, both the phonemes can be represented by an archiphoneme in the environment of the neutralization. The archiphoneme can be represented by a symbol different to both the phonemes in the neutralised opposition, by one of the phonemes, or by both phonemes in different environments (Trubetzkoy 1969 81939]: 79-82). Since the /a/ - /e/ opposition is neutralised in word final position, both these vowels are represented by an archiphoneme in this particular environment, according to Trubetzkoy's principle. I choose to represent the archiphoneme with one of the phonemes in the neutralised opposition, the /a/. In the words below (41-43), I have used the phoneme /a/ in the phonemic transcription, but presented the two realisations in the phonetic transcriptions.

41. /ésmà/ a) [ésmè] - *adj* big
    b) [ésmà] - *adj* big
42. /mérá/ a) [méré] - *adj* small
    b) [mérá] - *adj* small
43. /kíllà/ a) [kíllè] - *adj* new
    b) [kíllà] - *adj* new

Even though I have found this neutralisation of /a/ and /e/, it looks like this mostly takes effect in adjectives and some nouns. I don't see the same variation in verbs. Therefore, it is possible that this neutralisation only takes place in some word classes, not all. I do not have enough data, do determine if this is the case. I have chosen to use the archiphoneme /a/ to represent both

phonemes /a/ and /e/ in words that I have recorded with both /a/ and /e/ word-finally. In the words in my data where I have not registered this variation, I have transcribed the vowel phoneme that was pronounced.

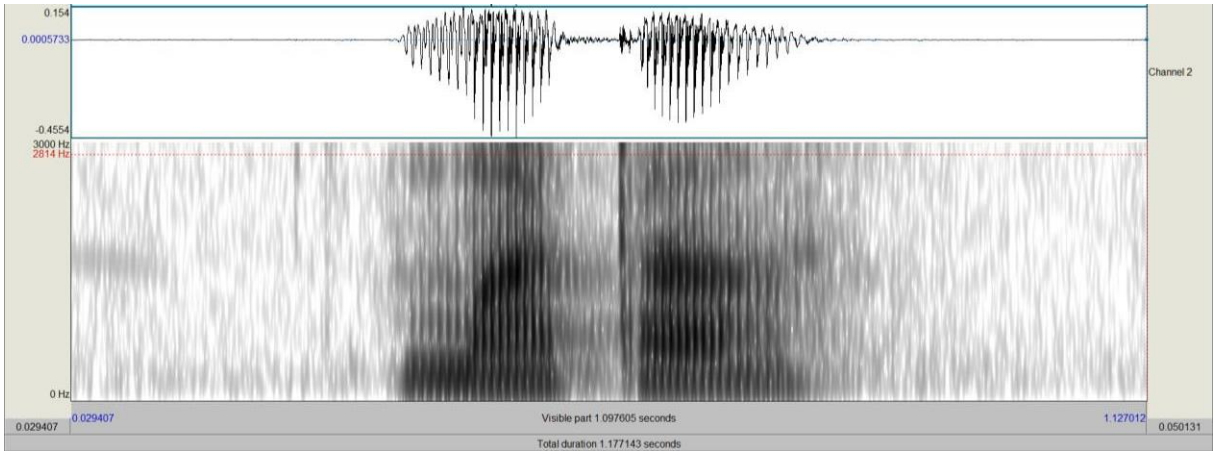
3.3.2 Opposition of short and long vowels

It is clear that vowel length is contrastive in Aari. Both Hayward (1990: 433) and Melkeneh (2013) write that all the five short vowels have long counterparts, but Hayward views them as sequences of two vowels, while Melkeneh views them as long vowels underlyingly. The phonemic opposition of long and short vowels in Aari is clear, but I have not found any reason to view the long vowles as anything other than a sequence of two vowels.

The long vowels are not as frequent as the short vowels, and I have not found any minimal pairs with long and short vowels. However, words with long vowels are consistently recorded with long vowels and there is a clear difference in length between long and short vowels when measured in seconds.

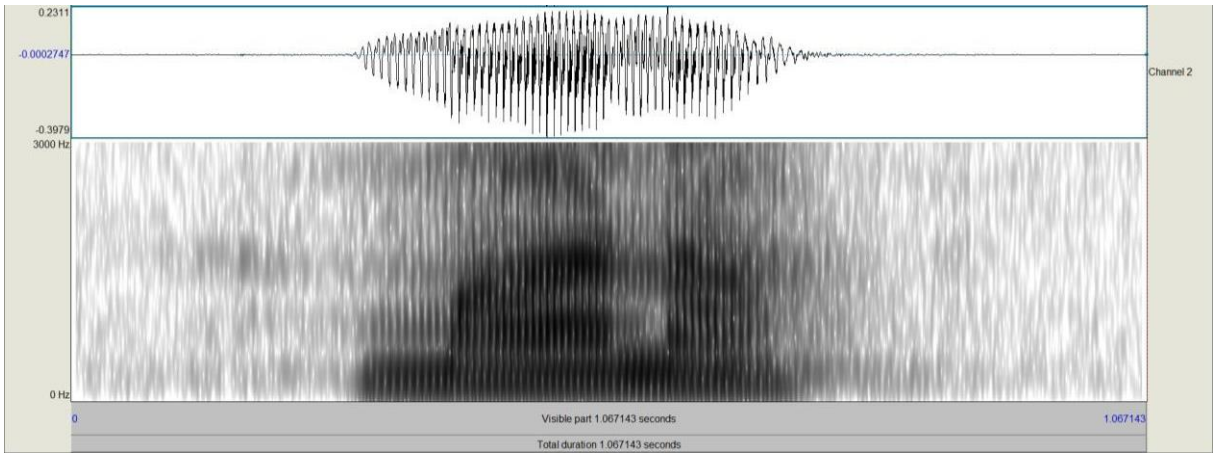
The spectrograms below show the difference between the vowels /a/ and /aa/ in the words /màtá/ *head, hair* (Spectrogram 3.1) and /mááná/ *woman* (Spectrogram 3.2), and the difference between the vowels /u/ and /uu/ in the words /bùqá/ *knee* (Spectrogram 3.3) and /dùùtí/ *foot* (Spectrogram 3.4). In Spectrogram 3.1 the /a/ is approximately 0.088 seconds, while the /aa/ in Spectrogram 3.2 is approximately 0.158 seconds. In Spectrogram 3.3, the /u/ is approximately 0.067 seconds, while in Spectrogram 3.4 the /uu/ is approximately 0.134 seconds.

Spectrogram 3.1 /màtá/ *head, hair*



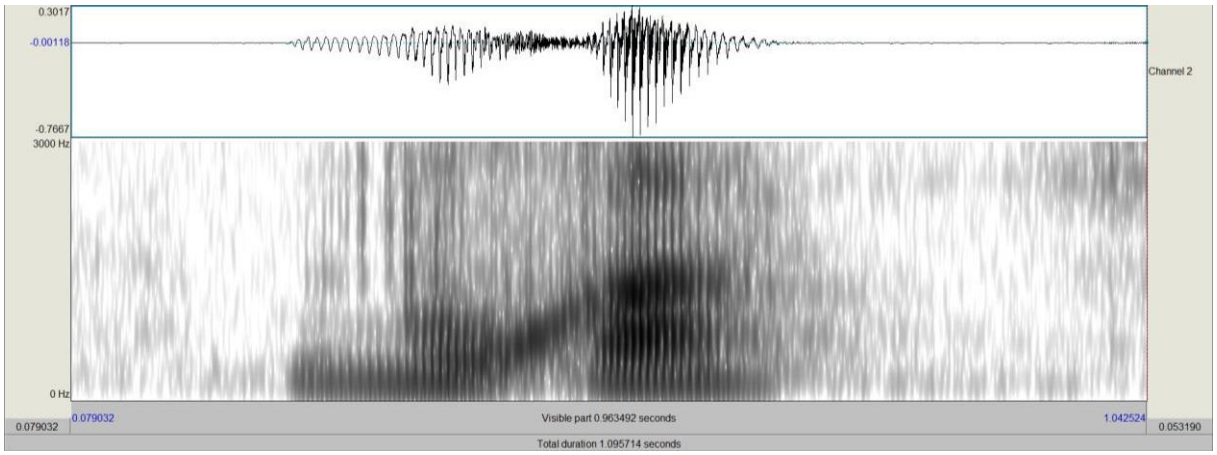
[m a t a]

Spectrogram 3.2 /mááná/ *woman*



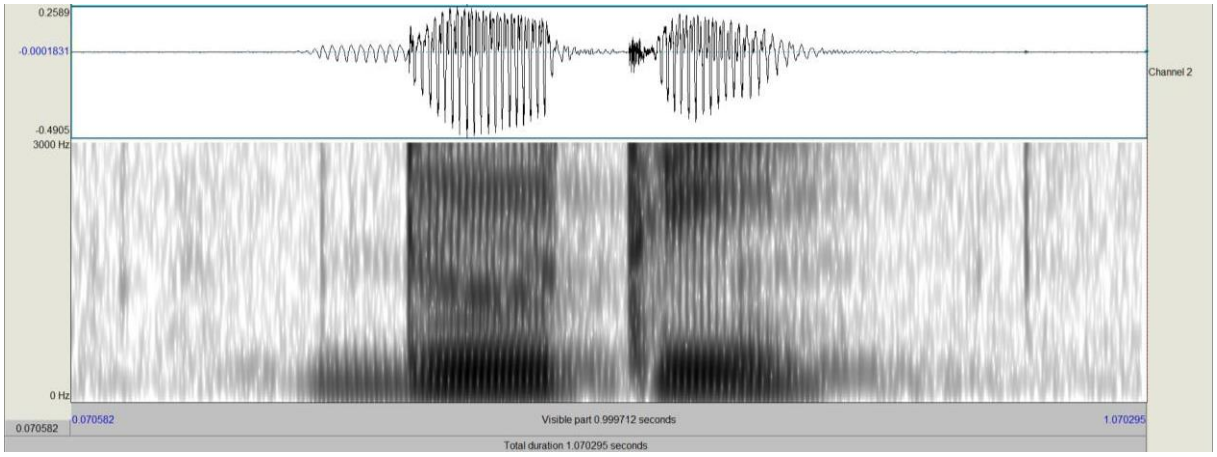
[m aa n a

Spectrogram 3.3 /bùqá/ *knee*



[b u χ a]

Spectrogram 3.4 /dùùtí/ [dùùtí] *foot*



[d uu t i]

Hayward (1990: 435) writes that the opposition of long and short vowels is neutralised word-finally, which means that no distinction is made between words based on the length of the final vowels. My data shows the same. I do not have any minimal pairs with words that are distinguished purely by the length of the final vowels, but I do not have any minimal pairs contrasting long and short vowels in my data at all. However, with regards to the contrast of long and short vowels word-initially and word-medially, short vowels are consistently recorded as short vowels and long vowels are consistently recorded as long vowels. With final vowels, recorded instances are not as consistent. I have recorded many words with a varying length of the final vowel at different times without this causing a change in the meaning of the word. This shows that the opposition of long and short vowels does not apply in this position, and I conclude that no words end in a sequence of two vowels, but all word-final vowels are short phonemically.

3.4 Diphthongs

Diphthongs occur in Aari, but only in constructions where a vowel combines with /i/ in a [V+i] sequence. The vowels that combine with /i/ in my data are the open and mid vowels /e a o/ (44-46). This means that diphthongs in Aari always move from the more open positions of /e a o/ to the close position of /i/. I have also found the diphthong [əi], but because I see [ə] as an

allophone of /e/, the diphthong [əi] would also be an allophone of the diphthong /ei/.

44. /déísì/ - *v* kill
45. /àìtá/ - *adj* broken
46. /sóítí/ - *n* night

Previous descriptions of Aari (Hayward 1990; Melkeneh (2013) transcribe the diphthongs as [V+j] constructions with a vowel and the consonant /j/. There is no phonetic difference between the vowel and consonant sounds [i] and [j] in these constructions, so /i/ is analysed as /j/, and diphthongs are not considered a part of the phonology of Aari at all. Neither Hayward (1990) nor Melkeneh (2013) mention the lack of diphthongs in Aari explicitly.

However, this analysis creates a problem with syllable structures. The highest number of consonants I have found in the coda of a syllable is two, except in words that end in a [V+j+C+C] sequence. In words like (47a-b), a [V+j] analysis results in a triconsonantal coda which never occurs otherwise. An exception would have to be made, saying that triconsonantal codas are possible in Aari, but only if the first consonant in the coda is a /j/. This seems like an even less desirable analysis. I have therefore chosen to analyse the [V+j] construction as [V+i] diphthongs, and claim that diphthongs are possible in Aari, but only in constructions ending with /i/. This way, only diconsonantal codas occur across the data.

47. a) */ɦájnt/ [ą̆jnt] – *pron* when
    b) /ɦáínt/ [ą̆ínt] - *pron* when

As mentioned in section 1.5.2, diphthongs are also found in the language Dime, which is also considered an Aroid language, and therefore related to Aari. Dime has the four diphthongs /ai, oi, ei, ui/, that all end in /i/ (Mulugeta 2008: 28).

3.5 Summary

In this chapter I presented a description of the vowel phonemes of Aari. We saw that Aari has

five vowels and that there is a phonemic contrast between long and short vowels, but the long vowels are a sequence of two vowels. The back vowels are more restricted than the front vowels and none of the back vowels occur word-initially. The close back vowel does not occur word-finally either. The two central vowels [ɨ] and [ə] are analysed as allophones of /i/ and /e/, but this analysis is somewhat uncertain and the issue needs further study.

In section 3.3, we saw that two different oppositions are neutralised in word final position in Aari: the opposition between the vowels /a/ and /e/, and the opposition of long and short vowels. Both of these neutralisations are also described by Hayward (1990). Lastly, diphthongs ending in the vowel [i] must be possible in Aari to avoid triconsonantal codas in Aari.

4 Phonotactics and Phonological Processes

4.1 Phonotactics

4.1.1 Syllables

Syllables in Aari consist of a nucleus, onset and coda combined in different ways to form the different possible syllable structures. Each syllable must have a nucleus, but both onset and coda are both optional. The possible syllable structures can be summarised as: (C)V(V)(C)(C).

4.1.1.1 Onset

The onset can only consist of one consonant phoneme (1-5). The onset is not obligatory, and it is possible for a syllable to begin with the nucleus (5). Affricates can occur in the onset of a syllable (2-3). This is one of the indications that they should be viewed as single phonemes and should be analysed as affricates, not as consonant sequences.

1. /pù.tá/ [pù.tá] – *n* cotton
2. /fì. ʧár/ [fì. ʧár] – *n* ground
3. /ʦ'à. ʦ'í/ [ʦ'à. ʦ'í] - *n* sun
4. /gám.sè/ [gám.sè] – *adj* angry
5. /è.ténk/ [è.téŋk] – *n* woman

All the consonant phonemes in Aari can be found in a syllable onset, but there are some restrictions to what phonemes can occur in what environments. /ʋ/ and /ɗ/ are found as onsets word-initially (6-7) and intervocalically (8-9), but never following another consonant. /p'/ and

/p/ occur as onsets word-initially (10-11) and following another consonant (12-13), but never intervocalically.

6. /ʋá.ɦà/ [wáɦà] – *n* meat
7. /dǎám/ [dǎám] - *v* stand
8. /dò.ʋí/ [dò.ʋí] - *n* rain
9. /òì.dĩ/ [òì.dĩ] - *num* four
10. /p'á.ʃì/ [p'á.ʃì] - *n* fear
11. /pù.tá/ [pù.tá] - *n* cotton
12. /t'àr.p'éé.zá/ [t'àr.p'éé.zá] – *n* table
13. /dààm.pá/ [dààm.pá] - *n* tobacco

4.1.1.2 Coda

The coda is made up of either one or two consonant phonemes (14-18), but never as many as three. Hayward (1990: 437) writes that codas with three consonants are possible, but I have not found any examples of this. Affricates can occur in a coda in combination with another consonant, but again, they are the only complex segments that do, which is another indication that they are single phonemes. The coda, as well as the onset, is optional and open syllables are possible in Aari (18).

14. /ʃèd.ín/ [ʃèd.ín] - *v* see
15. /ín.dèps/ [ín.dèɸs] – *n* my brother
16. /àk.sínt/ [àk.sínt] - *n* the dog
17. /áng.jìnʦ/ [áŋg.jìnʦ] - *n* son
18. /nú.kì/ [nú.kʲì] - *n* nose

All consonant phonemes can be found in the coda, with the exception of /ɦ/ and /j/. The phonemes /ɗʒ l g z/ are only found in codas word-medially, since they do not appear word-finally (19-23), while /p'/ is only found in a coda word-finally (24).

19. /àɗ̰.mí/ [àɗ̰.mí] – *n* tongue
20. /gààʒ.mí/ [gààʒ.mí] – *adj* long
21. /lál.sè/ [lál.sè] – *v* lost
22. /zíg.dì.té/ [zíg.dì.té] - *v* I need
23. /áz.mí/ [áz.mí] – *v* run
24. /gáp'/ [gáp'] - *v* grow

It is clear that two consonant phonemes are allowed in the coda. We see this from words with two final consonants. We also know that a syllable can have one consonant in the onset. Hence, a sequence of three consonants is possible in theory, but this almost never occurs. When a sequence of three consonants does occur, there is always a syllable boundary and a morpheme boundary between the second and the third (25-26). (The "-" is used to symbolise morphem boundaries in the examples below (25-26)).

25. /lìmʧ̰-mí.jè/ [lìmʧ̰-mí.jè] – *adj* I (am) wet
26. /ʊúúrs-dì.té/ [wúúrs-dì.té] - *v* I (can) hear

4.1.1.3 Nucleus

Syllable nuclei are made up of vowels. The nucleus can consist of a short vowel, a long vowel, or a diphthong. Because both onset and coda are optional, it is possible to have a syllable consisting of only the nucleus (31-33). It is also possible to have adjacent syllables where the first has no coda and the second has no onset, which results in two adjacent vowels belonging to two different syllables (30).

27. /díí.bì/ [díí.βì] – *n* thief
28. /dèì.sè/ [dèì.sè] – *v* killed
29. /ʔò/ [ʔò] - *dem* that
30. /séé.nì.áán/ [séé.nì.áán] - *n* the cup
31. /è.sín.tì/ [è.sín.tì] – *v* know
32. /à.mí/ [à.mí] - *n* breasts
33. /éé.rí.jà.tì.té/ [éé.rí.jà.tì.té] – *v* I come home

Syllables with a long vowel in the nucleus tend not to have a coda with two consonants. But I do have two words in my data where this is the case, so it seems that this is possible, although rare. Both the words in (34-35) are made up of only one syllable. In (34) the syllable is made up of a nucleus with a long vowel and a coda with two consonant phonemes, but no onset. In (35) the syllable has an onset with one consonant, a nucleus with a long vowel, and a coda with two consonants.

34. /éémʧˀ/ [éémʧˀ] – *n* hug
35. /wààks/ [wààks] – *n* ox

4.1.2 Sonority

The principle of sonority in syllables says that segments with a higher degree of sonority are found closer to the syllable nucleus, while segments with a lesser degree of sonority are found farther from the syllable nucleus (Zsiga 2013). Following this logic, a rhyme might consist of a vowel followed first by a nasal and then a stop, but not first a stop and then a nasal, as nasals are more sonorous than stops.

In Aari, two consonants are allowed in the coda, and these do adhere to the sonority principle in most cases. The constructions I have found in codas in Aari are shown in Table 4.1 and exemplified in (36-41) below. In the case of (41) where /p/ precedes the sibilant /s/, /p/ is realised as the equally sonorant fricative [ɸ], thus avoiding a violation of the sonority principle.

Table 4.1 Consonant sequences in codas in Aari

Nasal + stop	/nt/	/nq/	/ng/	/nk/	/mʔ/
Trill + stop	/rt/	/rd/			
Approximant + stop	/lt/				
Trill + fricative	/rs/				
Fricative + stop	/st/				
Nasal + affricate	/nʦ/	/mʧˀ/			
Stop + fricative	/ps/				

36. /è.ténk/ [è.téŋk] – *n* woman
37. /ʃùn.kúrt/ [ʃùŋ.kúrt] - *n* onion (Amharic loan)
38. /gàlt/ [gàlt] – *n* old man
39. /ʊúúrs.dì.té/ [wúúrs.dì.té] - *v* I hear
40. /jìntsén/ [jìntsén] – *n* girl
41. /déps/ [déɸs]– *n* lion

4.1.3 Phonotactic Constraints

There are some restrictions on what segments may combine in Aari, and in what environments segments may occur.

4.1.3.1 Vowels

As we saw in section 3.4, only the close vowel /i/ may combine with another vowel to form a diphthong. The vowels /i/ combines with are the mid vowels /e/ (45) and /o/ (46) and the open vowel /a/ (47).

42. /déísì/ – *v* kill
43. /sóítí/ – *n* night
44. /àìtá/ – *adj* broken

We have also seen that the back vowel /o/ cannot occur in word-initial position and the back vowel /u/ cannot occur in neither word-initial, nor word-final position.

4.1.3.2 Consonants

The consonants are also restricted regarding what consonants may combine. In Table 4.2, we see what consonant phonemes combine in a sequence of two. The vertical line indicates the first consonant in the sequence, while the horizontal line indicates the second consonant in the sequence. The “x” marks the combination of consonants.

Table 4.2 Consonant sequences of two consonants in Aari

	p	b	t	d	k	g	q	ʔ	pʼ	dʼ	ʦ	ʧ	ʦʼ	ʧʼ	f	s	z	ʃ	ʒ	ɦ	m	n	r	ʋ	l	j
p			x		x											x		x							x	
b																	x									
t			x		x																x		x			
d				x												x			x				x			
k			x		x						x					x		x			x	x				
g				x																			x			x
q			x	x												x		x			x					
ʔ																		x								
pʼ																										
dʼ																					x					
ʦ					x																x					x
ʧ			x																							
ʦʼ																					x					
ʧʼ				x																	x					
f			x		x																		x			
s			x	x	x																x		x			
z				x													x				x					
ʃ				x														x			x					
ʒ																					x					
ɦ																										
m	x		x	x	x			x						x		x		x			x	x	x			
n			x	x	x	x	x				x	x	x	x		x	x					x				x
r		X	x	x	x	x	x		x					x	x	x					x		x			x
ʋ				x		x																	x			
l			x	x	x	x	x	x			x					x		x			x				x	
j																										

We can see in Table 4.2 that the more sonorant consonants, like the nasals, the trill and approximants, tend to combine easily with other consonants. The sonorants are most frequently the first consonant in the sequence, but also quite frequent as the second consonant. The stops also easily combine with other consonants like sibilants, nasals, the trill, approximants and other stops. The stops are most frequently the second consonant in a sequence.

Two stops in a sequence must agree in their value for voice, so that voiceless stops combine with voiceless stops, and voiced stops combine with voiced stops. (We see in Table 4.2 that the voiceless stop /q/ and the voiced stop /d/ can combine in a sequence, but as mentioned in section 2.1.1.1.4, /q/ is always realised as a fricative in these cases). Regarding other obstruents, voiced

stops can combine with both voiced and voiceless fricatives, while voiceless stops are more restricted and only combine with voiceless fricatives. Table 4.2 also shows that the voiceless stops are the only stops that combine with the non-sibilant fricative /f/, the voiced stops never do, but only combine with the sibilant fricatives. ɦ

The consonants that do not often combine with other consonants are, for the most part, the affricates and the glottalic consonants (ejectives, implosive, glottal stop). The fricatives/f/ and /ʒ/ are also poorly represented. /f/ only precedes the voiceless stops /t/ and /k/, and the trill /r/. The trill is the only consonant /f/ follows. /ʒ/ precedes the consonant /m/ and follows another consonant only once when it follows /d/ in the word /ʔándʒ/ *blessing*. The approximant /j/ never precedes another consonant, but follows /g ʦ n r/. The glottal fricative /ɦ/ never combines with another consonant at all, but only occurs intervocalically and word-initially before /a/ (where it is realised by the allophone [a̤]).

As mentioned, some words have sequences of three consonants. These were not included in Table 4.2. Sequences of three consonants are only found in morpheme boundaries. The words with consonant sequences of three are all shown in the examples below (48-52).

45. /gùrdá-gùrd-sìté/ [gùrdá-gùrd-sìté] – *v* building a fence
46. /wúúrs-dìté/ [wúúrs-dìté] – *v* I hear
47. /límʧ'-míjè/ [límʧ'-míjè] – *adj* I am wet
48. /súnq-sè/ [súɴq-sè] – *v* kissed
49. /áng-jìnʦ/ [áŋg-jìnʦ] – *n* son

4.2 Phonological processes

In this section, I will present analysis of phonological processes that occur in my data. This is not an exhaustive list of phonological processes that occur in Aari, but a presentation of those processes I have evidence for.

4.2.1 Voice assimilation of stops

A voiced and voiceless stop cannot form a sequence in Aari. One stop assimilates to the other so that they share a value for voice. In (53), the word /jéttìtè/ *I begin* is made up of the root /jet-/ and the suffixes /-d/, /-it/ and /-e/. When the first suffix /-d/ is attached to the root, we get a [td] sequence underlyingly. The [d] then assimilates and devoices to become [t] in the surface form.

50. /jét-d-ìt-è/ → /jéttìtè/ – v I begin

4.2.2 Sibilant harmony

As mentioned in section 2.1.2.1, sibilant harmony features in Aari. Sibilants within the same word must agree in both place of articulation and voice. Harmony can be considered a form of long distance assimilation. The sibilant harmony process is made clear in the example (54).

51. /ʋáʃì-s-ìt-é/ → /ʋáʃìʃìté/ – I smell

In this example, the word is morphologically complex and the suffixes /-s/, /-it/ and /-e/ have been added to the verb root. Underlyingly, the initial suffix /-s/ has a different place of articulation to the sibilant in the verb root /ʃ/. The /s/, therefore, assimilates to the same place of articulation as /ʃ/, even though these two sibilants are separated by the vowel /i/, so that the surface form is /ʋáʃìʃìté/.

We know that the sibilant suffix is /s/ underlyingly from words without another sibilant in the root (55-56).

52. /ʔòqín-s-ìt-é/ – I breathe
53. /mùk-s-ìt-é/ – I walk

4.2.3 Deletion of /ʋ/

I have found evidence of deletion of the approximant consonant /ʋ/. In two words (57-58), the consonant /ʋ/ is deleted when following another consonant. In (57) below, the word /ʋóɣˈ/ *drink* reduplicates to /ʋóɣˈʋóɣˈ/. /ʋ/ cannot follow the consonant /ɣˈ/, as /ʋ/ never follows consonants, and is therefore deleted. In (58), the word /ʋóláqá/ *one* is added to the word /mùùzí/ *banana*. The word /ʋóláqá/ *one* behaves in a similar way to suffixes in this example. When it is added to the word /mùùzí/ *banana*, it takes the place of the final vowel, which is segment independent from the noun root (Hayward 1990: 440). (I discuss the morphological structure of nouns in section 5.3.1). Since the final /i/in /mùùzí/ is replaced by /ʋóláqá/, and no longer present in the word, the compound word becomes /mùùz-ʋóláqá/with the consonant sequence [zʋ] in the morpheme boundary. The consonant /ʋ/ cannot follow /z/, and is therefore deleted. This results in the form /mùùzóláqá/.

54. /ʋóɣˈ-ʋóɣˈ-dìté/ → /ʋóɣˈòɣˈdìté/ - *v* I will drink
55. /mùùzí-ʋóláqá/ → /mùùz-ʋóláqá/ → /mùùzóláqá/ - *n* one banana

4.2.4 Epenthesis of /i/

The glottal stop /ʔ/ does not form sequences with other stops. The /ʃĩʔ/ *wash*, below, has a /ʔ/ word finally. When the suffixes /-kan/ (59a) and /-ta/ are added to the verb root, the /ʔ/ and the stops form sequences that is not possible in Aari. The vowel /i/ is inserted to break up the consonant sequences.

56. /ʃĩʔ-kàn/ → /ʃĩʔíkàn/ – *v* to wash
57. /ʃĩʔ-tá/ → /ʃĩʔítá/ – *v* washed.SG

5 Tonology

In this chapter I will put forth my analysis of tone in Aari. I will first discuss the difference between tone languages and accent languages, after which I will argue for Aari being a tone language and show how my analysis differs from that of Hayward (1990). I will discuss the number of tones in Aari, the tone bearing unit, and processes related to tones and intonation.

5.1 Tone and accent

Tone languages and accent languages are both languages where the pitch of a syllable contributes lexical and/or grammatical meaning (Yip 2002; Zsiga 2013: 376). These languages are in contrast to languages where the pitch of a syllable is of no importance to the lexical meaning of the word. It is clear that pitch plays a role in the meaning of words in Aari, and Hayward (1990) has suggested that Aari is an accent language. I, on the other hand, have found that Aari is a proper tone language. Tone languages and accent languages share the trait of contrastive pitch, but there are important differences that distinguish them from one another.

Yip (2002) proposes that the difference between tone languages and accent languages is not clear cut, but rather a continuum. An accentual system is merely an impoverished tonal system, and instead of sorting all languages into either of the two classifications, one can place them on a scale where tone and accent functions as the two extremes. One must consider all the evidence in one's data to determine where on the scale one should place a particular language and which of the two terms, tone and accent, is more applicable.

In accent languages, there is only one tone, and a distinction is made between words where a syllable is marked with this tone (accented words), and words where no syllables are marked

with this tone (unaccented words). The marked tone is usually a high tone (Yip 2002: 25-26). There is only one high tone per word and there is also often a high degree of predictability as to what syllable in the word gets the high tone (Yip 2002: 257). Sometimes, the distinction between accented words and unaccented words only features in a certain class of words (Yip 2002: 260). Accent languages also often have stress, and the accented syllable commonly gravitates toward stressed syllables (Yip 2002: 258). (This is possibly due to the fact that a higher pitch features in the creation of stressed syllables[1] (Ladefoged 2003: 90)).

Tone languages, on the other hand, contrast two or more tones and all syllables are specified for tone. A tone language with two tones differentiates a high and a low tone and all syllables have either a high tone or a low tone (Yip 2002: 25). On what syllables the tones fall, is less predictable than in an accent language. (Yip 2002: 257). The distinction is not between accented words and unaccented words, but rather between what tones occur on what syllables. The tones are "freer" to occur on any syllable, but there may be tendencies for where tones occur or tendencies for the high tone to fall on certain syllables in the word (Yip 2002: 257). In tone languages, no distinction is made regarding what syllable in the word is pronounced with or without stress. But a syllable with a high tone might be perceived as more prominent because of the high pitch that also features in the pronunciation of a stressed syllable (Ladefoged 2003: 90).

5.2 Analysis of tone in Aari

In Hayward's (1990) description of the phonology of Aari, he classifies the language as an accent language. He recognises that there is a contrast in meaning connected to pitch height of syllables, but his claim is that Aari only has one tone, a high tone (Hayward 1990: 439). This analysis is based on the fact that he only finds one high tone per word.

"It is clear from words uttered in isolation that there is one, but one only, high pitched syllable per word." (Hayward 1990: 439).

[1] Ladefoged (2003: 90) defines stress as a combination of lenght, intensity and higher pitch.

According to Hayward (1990), it is also rather predictable where in a word this high tone occurs depending on the number of syllables. Usually the tone occurs on the final syllable in disyllabic and trisyllabic words, like in his examples /aksí/ ‘dog’ and /sungulá/ ‘fly’ (Hayward 1990: 439). However, exceptions to this rule occur as he can list several examples of words where the tone placement does not adhere to this tendency, like in the disyllabic word /wúksak/ ‘jackal’ (Hayward 1990: 439) where the high tone falls on the first syllable, and in the trisyllabic words /dóqsinti/ and /barkóta/ where the high tones fall on the first and second syllable respectively (Hayward 1990: 439).

With the findings that Hayward puts forward, his analysis of Aari as an accent language is a reasonable one. However, my findings are different from Hayward’s and I have chosen to analyse Aari as a tone language. There are two reasons for my analysis that discredit an accent analysis. Firstly, I have found that a word can have more than one high tone. This is grounds for positing two tones, both a high tone and a low tone. In this way, all syllables are specified for tone and have either a high tone, a low tone, or both. No arguments have been found for treating one of the tones as ‘marked’ and the other as ‘unmarked’. Secondly, I have found contour tones in Aari where both a high and low tone assosciate to the same syllable (see 5.2.2). This is impossible within an accent analysis where there is only one tone, and a syllable therefore, necessarily, cannot be marked for two tones.

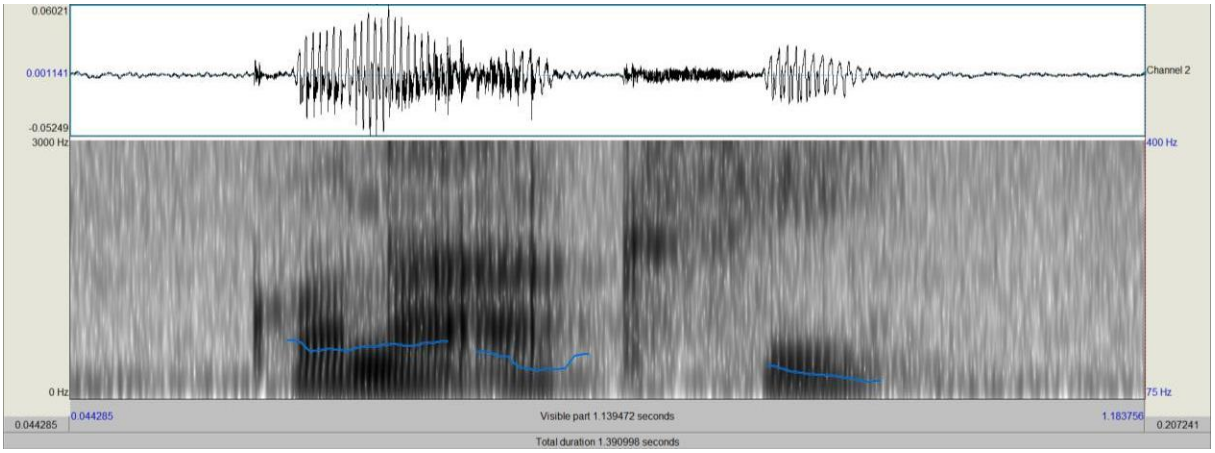
5.2.1 Two tones: H and L

Aari has two tones, one high (H) and one low (L). Both the H and L tones can occur multiple times within the same word and there are no strict patterns for what syllables take what tones. If Aari was an accent language, it should not be possible to find more than one H tone per word, but we see words with multiple H tones in the examples below.

1. /kóná/ - *dem.* this
2. /qìʦéná/ - *n* the bread
3. /jíntsìná/ - *n* the boy
4. /góʋágòʋdé/ - *v* beating

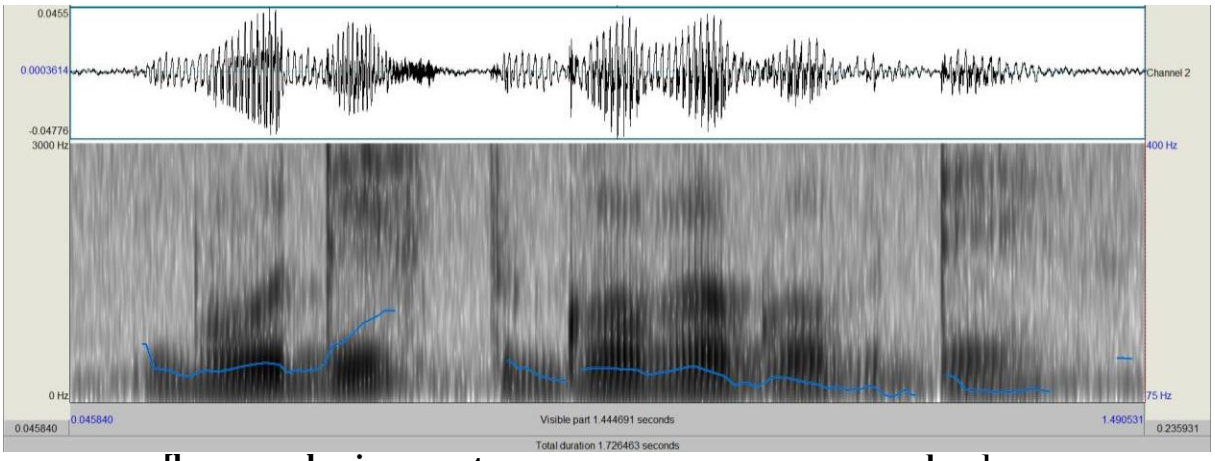
Example (1) is a disyllabic word with a H tone on both syllables. In examples (2-4) the words have both H and L tones in a L-H-H pattern and H-L-H pattern respectively. In (4) we see a H-H-L-H pattern with three H tones. The spectrograms below show the pitch of the phrase /kóná áksì/ *this dog* and the sentence /bùùdíst góʋágòʋdé/ *my heart is beating*. In Spectrogram 5.1, the pitch is high throughout both syllables of the word /kóná/, then drops somewhat on the first syllable of /áksì/ *dog*, and drops further on the second syllable. (The drop in pitch on the first syllable of /áksì/ is due to the intonation falling towards the sentence. /áksì/ is clearly H-L in other repetitions of the word). In comparison to the following syllables of the word /áksì/, it is clear that both syllables of the word /kóná/ have H tones.

Spectrogram 5.1 /kóná áksì/ *this dog*



[k o n a a k s i]

Spectrogram 5.2 /bùùdíst góʋágòʋdé/*my heart is beating*



[b uu d i s t g o ʋ a g o ʋ d e]

In Spectrogram 5.2 the pitch starts low on the first syllable and then rises on the second syllable of the word /bùùdíst/. The pitch rises quite sharply on the second syllable due to a rising intonation. On the second word, /góʋágòʋdé/, the pitch stays approximately on the same level throughout the two first syllables, and is high compared to the third syllable, where it drops to a lower level. The pitch then rises slightly on the last syllable, resulting in a H-H-L-H tonal pattern.

My data contains several minimal pairs that are distinguished only by their pitch (5-8). These clearly show that pitch is contrastive in Aari. The words in the minimal pairs have identical segments and are distinguishable solely by their pitch patterns.

5. a) /ìʦmí/ – *n* food
   b) /íʦmì/ – *v* to be eaten
6. a) /mòrá/ – *n* neighbour
   b) /mórà/ – *n* the fatty part of meat
7. a) /bàbí/ – *n* father
   b) /bábì/ – *n* chief
8. a) /jíntsìná/ – n the boy
   b) /jìntsíná/ – *n* the children

I see it as likely that the words in their respective pairs in examples (5, 7-8) are related to one another given their lexical meanings. But I see no relation between the two words in (6) *neighbour* and *the fatty part of meat*.

From all examples above (1-8), we also see that the two tones are quite free regarding placement. We see that H can occur on initial syllables as well as penultimate and ultimate syllables. This is what my data shows in general, and it is in disagreement with Hayward's (1990) claims. L may also occur on any syllable. We also find patterns where two H or two L tones can follow each other, as well as alternating patterns. There are some tendencies that stand out. In disyllabic words, the L-H pattern is the most common, which is what Hayward (1990: 439) also found. But as mentioned, the exceptions are too many to consider this a rule. This freedom and unpredictability of tone placement also argues in favour of a tone analysis of Aari.

It should also be added to the discussion that surrounding languages are also tone languages, not accent languages. Some languages in the same area as Aari, like Koorete and Gamo, have initially been described as accent languages by Hayward, but shown to be tone languages by other researchers (Theil 2011; Thomassen 2015).

5.2.2 Tone Bearing Unit

So far in the chapter, I have referred to tones as attaching to syllables, but the tone bearing unit (TBU) in a tone language can be either the syllable or the mora. It is of interest in any tone language to find out what the TBU is. How many moras a syllable has is determined by the weight of the syllable. A light syllable has one mora, while a heavy syllable has two moras (Zsiga 2013: 340). To find out whether the syllable or the mora is the TBU in Aari, we must look at the number of tones that may attach to a syllable. If only heavy syllables can have two tones, while light syllables only have one tone, then the mora must necessarily be the TBU. If light syllables, as well as heavy syllables, can have two tones, then the syllable must necessarily be the TBU (Yip 2002: 73). If no syllables, regardless of weight, has two tones, but all syllables

have only one tone, then we assume the syllable is the TBU as there are no grounds for analysing the mora as the TBU (Zsiga 2013: 380).

5.2.2.1 Tone Bearing Unit in Aari

As we saw in chapter four on phonotactics, Aari have both light and heavy syllables. Rhymes can consist of a short vowel, or a long vowel or diphthong, with or without a coda. This means that there are both monomoraic and bimoraic syllables in Aari. As mentioned in section 5.2, we find contour tones in Aari. If only bimoraic syllables have contour tones, while monomoraic syllables never do, then the mora is the TBU in Aari. If both monomoraic and bimoraic syllables can have contour tones, then the syllable is the TBU in Aari.

The examples below (9-11) show words with a contour tone on the final syllable. The contour tones are the result of a L and H tone attaching to the same syllable (an explanation of this analysis is shown in 5.3.2 below). The syllables carrying the contour tones are monomoraic, consisting of only a short vowel in the rhyme. Since a monomoraic syllable can have a contour tone, we see that the syllable is the TBU in Aari.

9. /qàr.mín.dă/ – *adj* sharp.REL
10. /gààʒ.mín.dă/ – *adj* tall.REL
11. /lòqmíndă/ – adj tasty.REL

It is not given that a syllable with a rhyme consisting of a vowel and consonant has two tone bearing moras. It is possible to get languages where only vowels are considered tone bearing moras, while consonants are not. In these languages, only syllables with two vowels can have two tones, while syllables with a vowel and a coda cannot. Kafa is one such language (Theil 2007: 197). This must also be considered, but as we see in (9-11), the syllables with contour tones only have one vowel. Since a syllable with one vowel can have two tones, the TBU cannot be the mora, but must be the syllable.

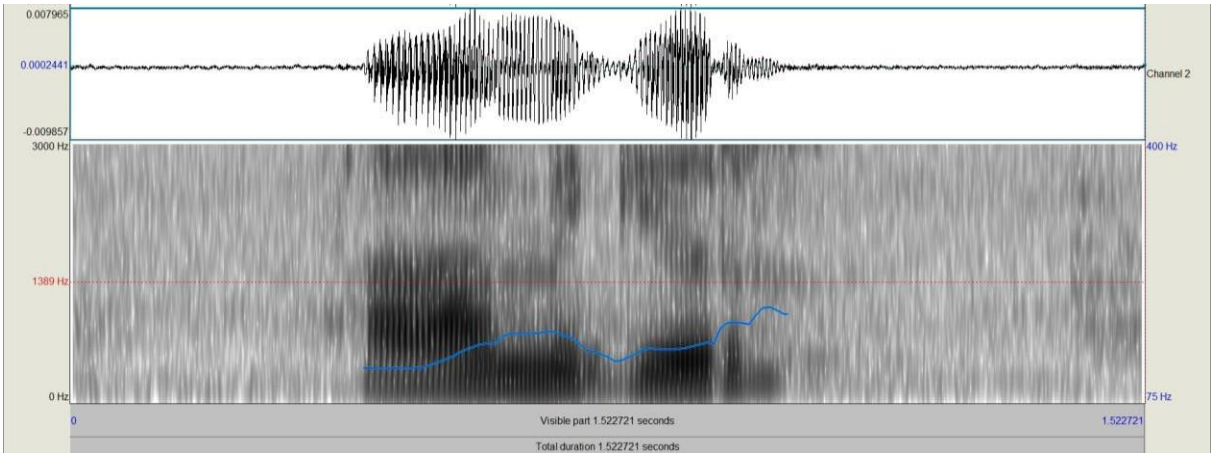
5.2.3 Tone on [ạ̈]

As suggested above and described in detail below (5.3.1), contour tones occur in Aari as the result of two level tones attaching to the same syllable. But contour tones also appear on the word-initial breathy [ạ̈] with a H tone phonemically. The H tone becomes a rising tone on this breathy vowel. This was described by Hayward (1990: 432), and I have also found this effect in my data. The spectrogram (5.3) clearly shows a rising pitch on the first syllable. This effect only occurs on initial breathy [ạ̈] that carries a H tone (12-14). Where breathy [ạ̈] has a L tone, the tone remains a level L tone (15-16).

12. /ɦáná/ [ạ̈ná] - *pron.* you (SG)
13. /ɦásín/ [ạ̈sín] - *pron.* how
14. /ɦámígèr/ [ạ̈mígər] - *n* in the field (LOC)
15. /ɦaqá/ [ạ̀qχá] - *n* tree
16. /ɦará/ [ạ̀rá] - *pron.* what

In Spectrogram 5.3, we see that the pitch rises quite steeply during the pronunciation of the breathy [ạ̈]. The pitch stays high on the second syllable as well, and then drops on the final syllable. (The pitch rises again towards the end, butI suspect the final rise is due to intonation because the speaker takes a break here, before continuing).

Spectrogram 5.3 /hámígèr/ [ạ̈mígər*] in the field*



[ạ̈ m i g ə r]

It is important to distinguish between these contour tones and other cases of contour tones. In some cases, contour tones occur as a result of two level tones attaching to the same syllable (Zsiga 2013: 384). However, in the case of breathy [ạ̈] the contour tone is a phonetic effect and attributed to the phonetic properties of breathy voice. These properties are what cause the pitch to be lowered at the beginning of the vowel, creating a rising tone. Yip (2002: 35) discusses tonogenesis and writes that "Voicing in obstruents is associated with slacker vocal folds, and a lowered larynx. Both these tend to lower pitch, at least at the start of the following vowel." Breathy voice is achieved by slackening the vocal folds to allow more air to pass through (Ladefoged & Maddieson 2008: 48). The breathy [ạ̈] is also voiced throughout its articulation. This explains why the tone is lowered at the beginning of the breathy [ạ̈].

This contour tone is not contrastive to a normal level H tone, but a product of a phonetic effect associated with breathy [ạ̈]. Neither is the contour tone a L and H tone that have attached to the same syllable, but a single H tone phonemically, that has become a rising tone phonetically.

5.3 Tonal processes

I must preface this section by saying that my research into the tonology of Aari is incomplete and many of the points made in this section must be investigated further. Due to the shortage of time conducting my fieldwork, I could not devote as much time as needed to the study of the behaviour of tones in Aari. The data I have show some tendencies of processes involving tone, but without more research and data, I cannot explain all my findings. None the less, I hope that my descriptions here can be a starting point for future research to build on, and that my findings will give a preliminary outline of the tonology.

I will present data concerning key aspects of the tonology below and give possible analyses of what I have found. In cases where parts of the data deviates from a broader tendency, or cases that I am not able to explain, I will present the examples and discuss how they do not comply with other findings.

As stated in the chapter on methodology, all my data has been collected through elicitation sessions with one speaker. I was not able to go to the community where Aari is spoken to observe it in natural speech. Therefore, it must be kept in mind that some findings in my data could be results of the unnatural situation of the elicitation session. The pitch of words and sentences could be affected by the speaker trying to speak clearly, or by list intonation.

5.3.1 Tone on nouns

My data contains a series of sentences where the frame of the sentence is the same, but some of the words are changed. The frame sentences, in English, are "My [bodypart] hurts" and "I [activity] with my [bodypart]". These sentences with comparable data have offered some insight into how the tones behave in Aari. The sentences are listed below (17-27).

17. /dùùtíst séqsè/ – My foot hurts
18. /bùqá.íst séqsè/ – My knee hurts
19. /ʔáánìst séqsè/ – My hand hurts
20. /nòrtíst séqsè/ – My stomach hurts
21. /màtíst gààʒmíjè/ – My hair is long
22. /qààmîsték/ ʋúúrsìté/ – I hear with my ears
23. /áfîsték ʃédʃìtè/ – I see with my eyes
24. /núkîsték ʋáʃìʃìté/ – I smell with my nose
25. /àfístěk ʔòqínsìté/ – I breathe with my mouth
26. /àʦsîsték qááqàmsìté/ – I bite with my teeth
27. /àɗmístěk kéézìté/ – I talk with my tongue

The first word in each sentence is the noun. All the nouns have the possessive suffix /-ist/ meaning 'my', and some also the instrumental case suffix /-ek/ meaning 'with' (Melkeneh 2013). In Table 5.1 below, we see a list of the same nouns (28-38) elicited in isolation in the first column, and then the forms of the nouns from the sentences above (17-27) in the second column.

The nouns in the first column all end in what is called the Terminal Vowel (TV). When nouns in Aari undergo suffixation, they lose the TV, which indicates that the TV can be seen as a separate element from the noun root. The TV was first posited by Hayward (1990: 440). He writes:

"[…] there are, with regards to canonical form, two main types of nouns: those ending in vowels, and those ending in consonants. There is justification for regarding vowel-final nouns as bipartite in structure, and that the terminal vowel (TV) is to a certain extent independent of the root, which comprises everything to its left. Consonant final nouns consist solely of a root." (Hayward 1990: 440).

This means that the TV of nouns can be viewed as a morpheme that is lost and replaced by another morpheme when suffixes are added. A noun never appears in the form of just the root, withouth neither a TV nor another suffix of some kind, but always ends in either the TV or one or more suffixes. Hayward (1990: 440-441) describes the ROOT+TV forms as the "citation form" or "unmarked indefinite" form. Plural number and case are marked on nouns only when the noun is marked as definite (Hayward 1990: 442; Melkeneh (2013). So we can view the ROOT+TV as a singular indefinite nominative morpheme. For the sake of this thesis, I will call the ROOT+TV nouns as unmarked, and the ROOT+POSS(+INST) nouns as marked (reffering to how the nouns are marked suffixes that give specific grammatical information).

Table 5.1 Noun suffixation

	ROOT +TV	ROOT+POSS(+INST)
28.	/dùùtí/ - foot	/dùùtíst/ - my foot
29.	/bùqá/ - knee	/bùqá.ís̀t/ - my knee
30.	/ʔáánì/ - hand	/ʔáánìst/ - my hand
31.	/nòrtí/ - stomach	/nòrtíst/ - my stomach
32.	/màtá/ - head, hair	/màtíst/ - my head, my hair
33.	/qààmí/ - ear	/qààmîsték/ - with my ears
34.	/áfî/ - eyes	/áfîsték/ - with my eyes
35.	/núkì/ - nose	/núkîsték/ - with my nose
36.	/àfá/ - mouth	/àfîstěk/ - with my mouth
37.	/àʦí/ - teeth	/àʦîsték/ - with my teeth
38.	/àɗ̄mí/ - tongue	/àɗ̄místěk/ - with my tongue

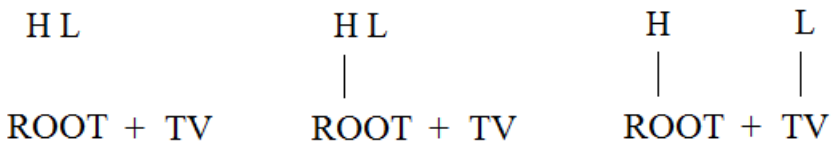
(See section 5.3.1.1 for spectrograms illustrating the pitch movement of four of the suffixed nouns).

When we compare the tones of the unmarked nouns to the tones of the marked nouns, we see that where the tones of the unmarked nouns are L-H, the (first) two tones of the marked nouns are also L-H. Where the tones of the unmarked nouns are H-L, the (first) two tones of the marked nouns are also H-L. This is true for all the words except (35) /núkì/ - /núkîsték/. (I will discuss this example below).

Since the pattern described above occurs in nearly all cases, with only one exception, this is evidence that the first suffix in the marked nouns take the same tone as the TV in the unmarked nouns. From this, we can assume that the two tones belong to the root, and that the first of the two tones associates to the first syllable, while the second tone associates to the second syllable, whether the second syllable is the TV or the suffix /-ist/. (An illustration of this process, with a H-L pattern on the root, can be seen in Figure 5.1). This means that a noun root has either a L-H pattern or a H-L pattern underlyingly, and that this pattern belongs to the root but is realised on two syllables on the surface. This kind of analysis is described by Yip (2002):

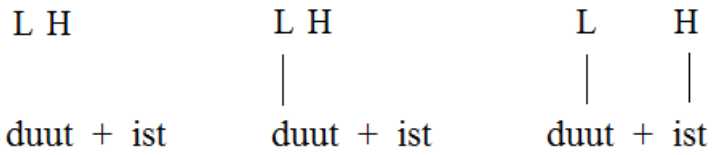
"In underlying representation, tones may not necessarily be associated to specific syllables, because the tones are simply a property of the morpheme, and not of any particular segment or syllable in that morpheme." (Yip 2002: 72).

Figure 5.1 AP representation of tone association on unmarked nouns



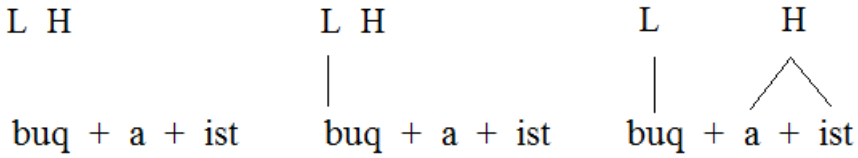
This analysis explains the examples in (28-30, 32-34, 36-48) where the first suffix in the marked nouns have the same tone as the TV in the unmarked nouns. This is illustrated by the word /dùùtíst/ in Figure 5.2.

Figure 5.2 AP representation of /dùùtíst/ *my foot*



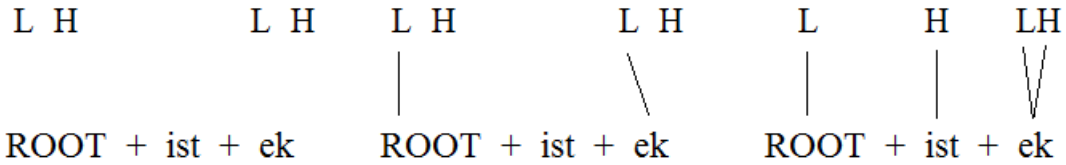
In (29) /bùqá.íst/, the TV has been retained. This happens in a minority of nouns in the data, and when listening to my recordings it is obvious that this is due to the speaker dividing the word up in order to speak clearly. The realisation of tones on this word is still in accordance with the analysis presented. The H tone spreads from the root to the suffix, but in this case the H tone spreads to both the TV and the suffix /-ist/, since they both appear in this word and they are both elements that get their tone from the root (Figure 5.3). (I do not view this [a]+[i] sequence as a diphthong since the two vowels are articulated in a slow and clear manner where the two segments are obviously to be regarded as belonging to two different syllables. I have divided the two vowels with a "." to show this).

Figure 5.3 AP representation of /bùqá.íst/ *my knee*



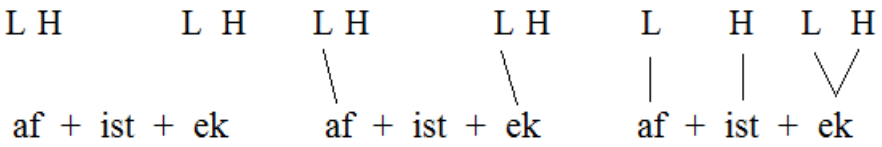
Six of the marked nouns end in the suffix /-ek/. Five of these nouns have a contour tone on either the last or medial syllable. We can explain this by postulating that the suffix /-ek/ has two tones belonging to it underlyingly. In all of the five words that have a contour tone (33, 35-38), the two final tones are L and H, so the two tones belonging to the suffix /-ek/ has to be L and H in that order. If we add this to the analysis already presented, we see that the first suffix /-ist/ gets its tone from the root, which is always monosyllabic, while the second suffix /-ek/ gets a LH contour tone (illustrated in Figure 5.4 with a L-H pattern on the root).

Figure 5.4 AP representation of tone association on marked nouns



If the tones belong to the morphemes as illustrated in Figure 5.4, we expect to find a result where the root and the suffix /-ist/ have one tone each (in either a H-L or L-H pattern depending on the tonal pattern of the root), and the suffix /-ek/ has a LH contour tone. We find exactly this in (36) and (38) (illustrated in Figure 5.5 with the word /àfístěk/).

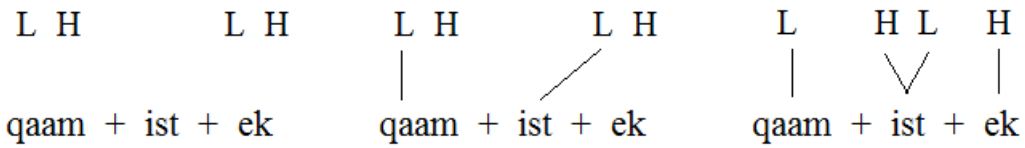
Figure 5.5 AP representation of /àfístěk/ *with my mouth*



However, the words /qààmîstέk/ and /àtsîstέk/ look different. These words have the contour tone on the medial syllable. The same analysis can be used to explain these results, but in these words,

both the H tone of the root and the L tone of the suffix /-ek/ associate to the medial syllable (illustrated in Figure 5.6 by the word /qààmîsték/). I am not able to explain why the L tone of the suffix /-ek/ associates to the last syllable in (36) and (38), but to the medial syllable in (33) and (37). In all the other nouns, association of tones happen left-to-right, but in (33) and (37), association of the L tone of the suffix /-ek/ happens right-to-left.

Figure 5.6 AP representation of /qààmîsték/ *with my ears*

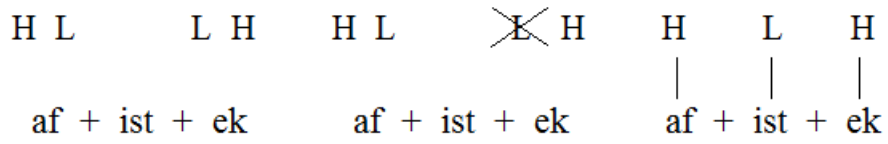


The words /áfîsték/ and /núkîsték/ do not look like we expect according to the analysis illustrated in Figures 5.4-5.6. /áfîsték/ does not have a contour tone even though it has the suffix /-ek/. But it is possible to explain this by the Obligatory Contour Principle (OCP) that says that two identical tones cannot appear adjacent to one another. Goldsmith (1990) writes:

"First formulated as such in Goldsmith (1979), and drawing on insights of Leben (1973), the OCP is a principle […] that prohibits consecutive or adjacent identical segments. Leben had observed that, in more than one African tonal system, there appeared to be an effect in operation whereby, if the morphology produces a concatenation of two adjacent, identical tones, the two fuse into a single tone before the tones are 'mapped onto' their corresponding vowels." (Goldsmith 1990: 309)

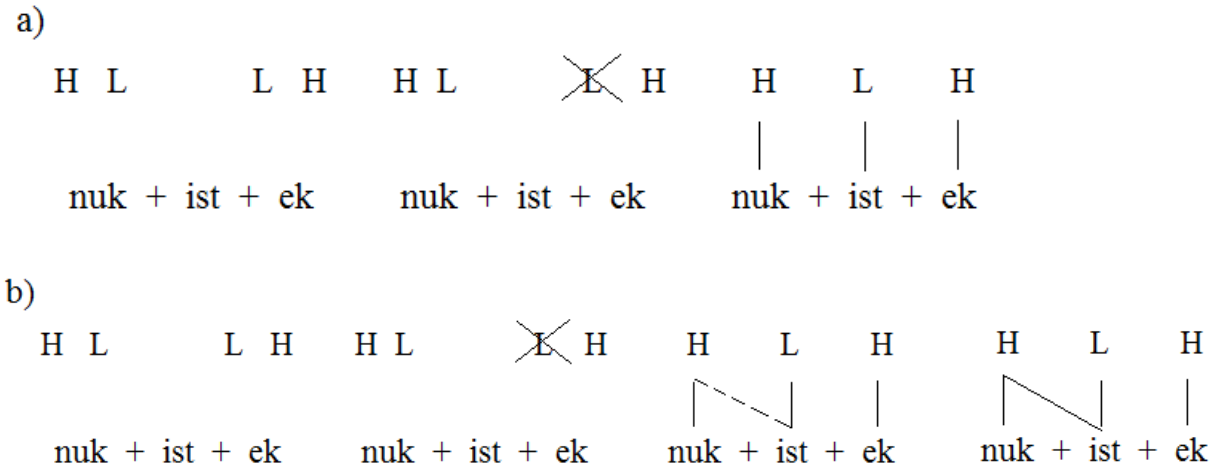
This does not mean that two adjacent syllables cannot have the same tone, but means that if they do, they are seen as sharing one tone rather than several identical tones occurring in a row. In the word /áfîsték/, the root has a H-L pattern and the suffix /-ek/ has a L-H pattern. This becomes a H-L-L-H pattern where the two L tones appear next to each other. The OCP takes effect and the two L tones become one. This results in a realisation of the word where each syllable has only one tone (Figure 5.7).

Figure 5.7 AP representation of /áfîsték/ *with my eyes*



When we include OCP in the analysis, we are also able to explain the word /núkîsték/ to a degree. The unmarked noun has the tonal pattern H-L and /-ek/ has the pattern L-H, so we should expect the same result as in Figure 5.7 (the expected result of the word /núkîsték/ is illustrated in Figure 5.8a). We do find that a L tone has attahched to the medial syllable, and the final syllable has only a H tone (not a LH contour tone). This is in accordance with the analysis illustrated in Figure 5.7. However, the medial syllable also has a H tone, so that both a H and L tone have attached to this syllable, and we get a HL contour tone (and illustrated of the actual result is seen in Figure 5.8b).

Figure 5.8 AP representation of /núkîsték/ *with my nose* (expected result in 5.8a and actual result in 5.8b)



It is not clear where this "extra" association line from the H tone of the root to the suffix /-ist/comes from. I explain this by suggesting that this has a phonetic reason, where the H tone has spread to the second syllable because the tone has been "dragged out". I can find no phonological reason for why a H tone should appear in this place. Kim (1998: 131) discusses phonetic reasons for tone spreading and writes that the F0 peak of a H tone does not necessarily

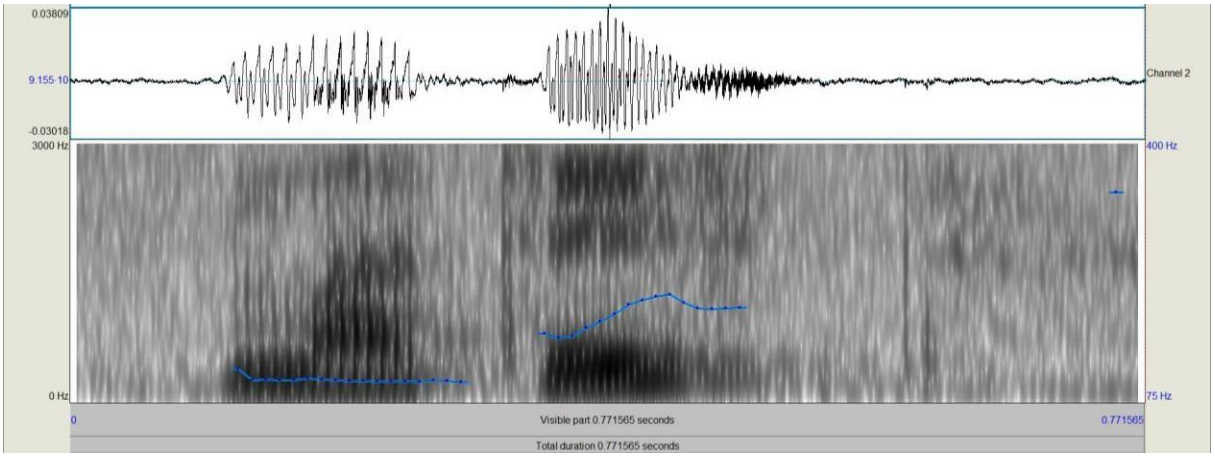
align with the tone bearing syllable but might be delayed, causing the tone to spread over to the subsequent syllable.

If we explain the "extra" association line in this way, the realisation of the tones on this word are in compliance with my analysis. The root has a H-L pattern, while /-ek/ has a L-H pattern. The OCP takes effect and the two L tones become one. The tones are realised as H-L-H on the three syllables of the word. The initial H tone then spreads to the second syllable creating a HL contour tone.

5.3.1.1 Spectrograms of a selection of marked nouns

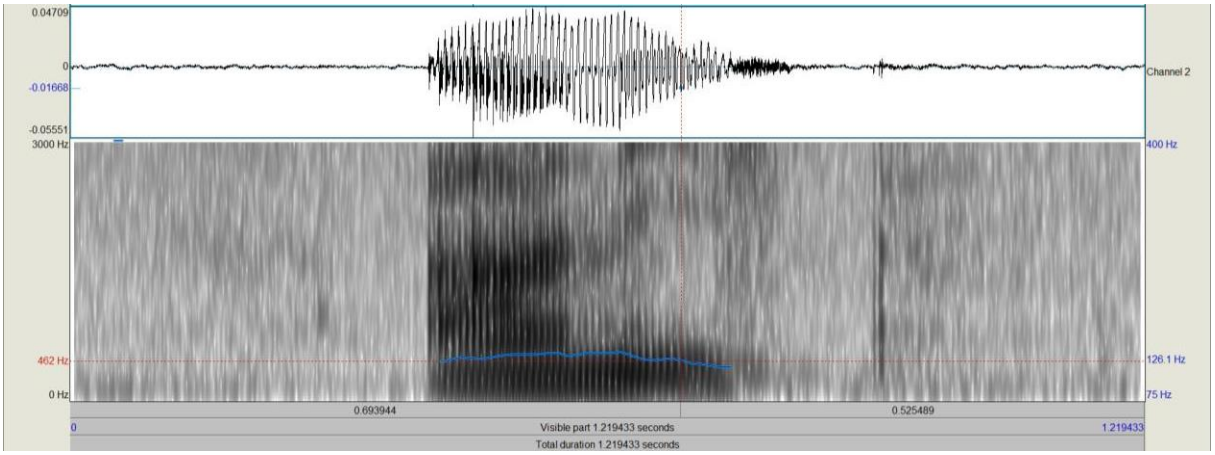
As we have seen, all, but one, of the nouns with only the suffix /-ist/, have two level tones. Spectrograms 5.4 and 5.5 below, show two of these words, /màtíst/ *my head, my hair* and /ʔáánìst/ *my hand.* In Spectrogram 5.4, the pitch clearly starts low and jumps to a higher level on the second syllable. The tone rises during the second syllable, but since the pitch first jumps higher and then rises, rather than starting at the same level as the low tone, I analyse the tone of the second syllable as a level H tone that rises due to intonation. In Spectrogram 5.5a, the pitch movement is not as great as in 5.4, but the pitch starts high, and then falls somewhat, from around 135 Hz to around 120 Hz on the last syllable. in Spectrogram 5.5b we so the umarked noun /áánì / *hand*, where the pitch more clearly falls to a L tone on the second syllable.

Spectrogram 5.4 /màtíst/ *my head, my hair*



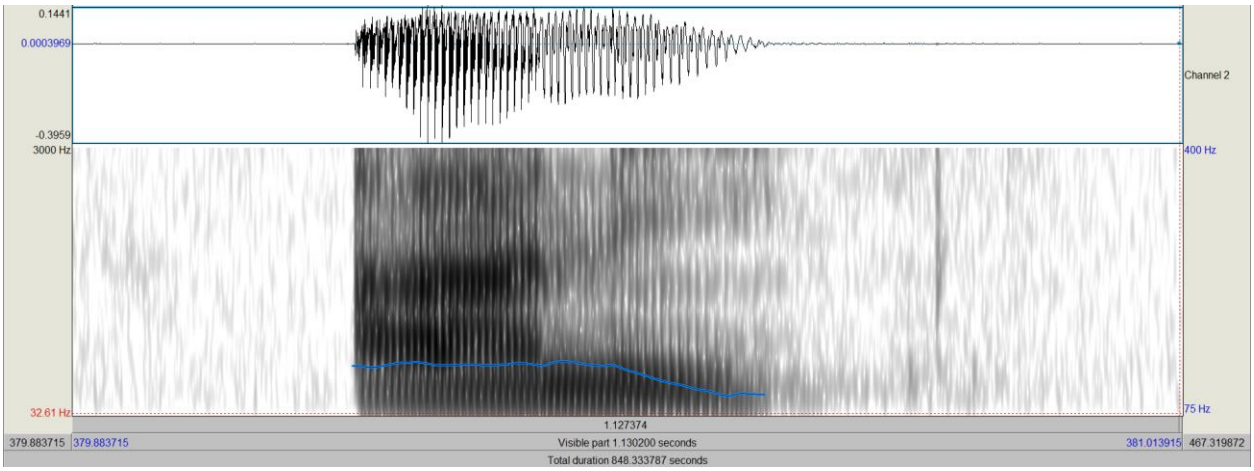
[m a t i s t]

Spectrogram 5.5a) /ʔáánìst/ *my hand*



[ʔ aa n i s t]

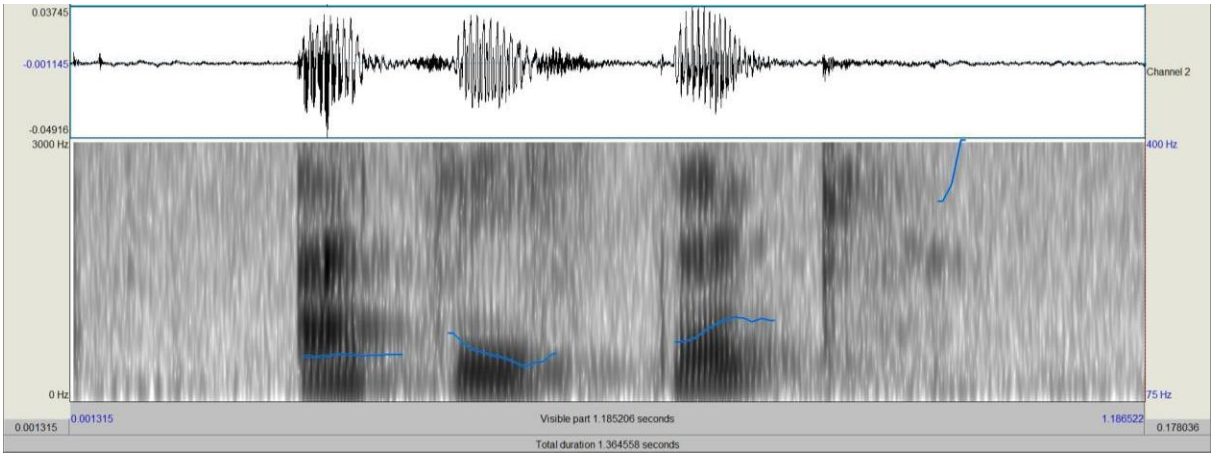
Spectrogram 5.5b) /ʔáánì/ *hand*



[ʔ aa n i]

All but one, of the nouns with both the suffix /-ist/ and /-ek/ have a contour tone. But two words have the contour tone on the last syllable, while three words have a contour tone on the second syllable. In Spectrogram 5.6, we see the pitch of the word /àtsîsték/ *with my teeth*. The pitch starts low on the first syllable, then jumps to a higher level but falls during the second syllable, and then end with a higher pitch on the final syllable.

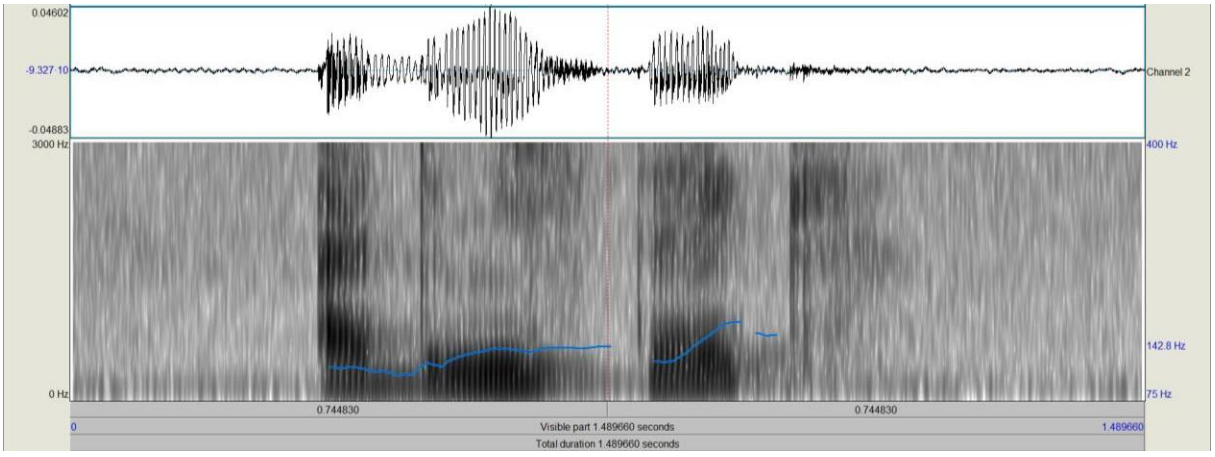
Spectrogram 5.6 /àtsîsték/ *with my teeth*



[a ts i s t e k]

In Spectrogram 5.7, the pitch starts low on the first syllable and rises to a higher level on the second syllable. The pitch stays high throughout the second syllable, then falls to a lower level on the final syllable, where it rises from a low point to a higher point.

Spectrogram 5.7 /àɗmístěk/ *with my tongue*



[a ɗ m i s t e k]

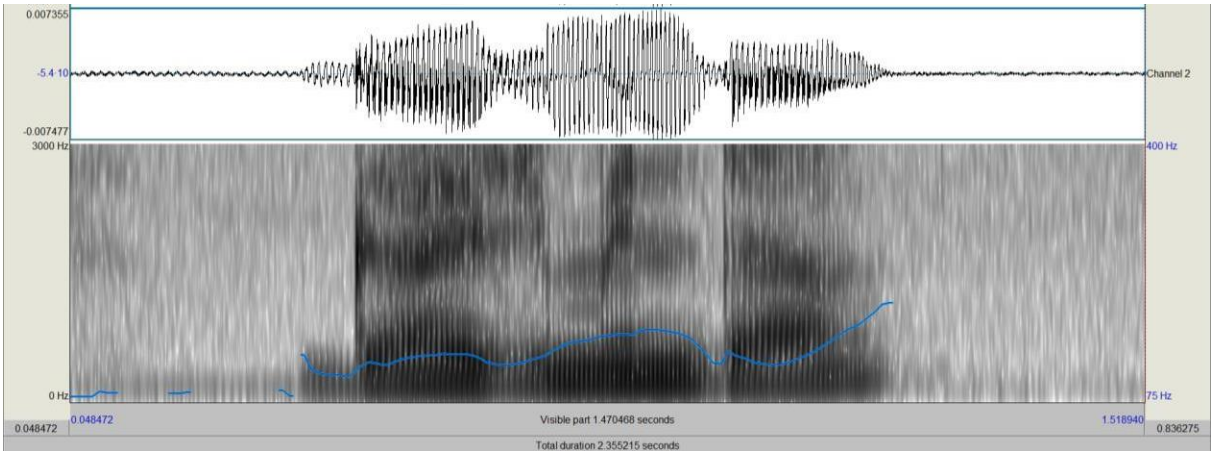
5.3.2 Tones on adjectives with the relative suffix /-inda/

In section 5.2.2.1 we saw examples of words that get a contour tone on the final syllable. These words (39-41) can also be explained by the analysis I presented in 5.3.1.

39. a) /qàrmí/ – *adj* sharp
    b) /qàrmíndă/ – *adj* sharp.REL
40. a) /gààʒmí/ – *adj* tall
    b) /gààʒmíndă/ – *adj* tall.REL
41. a) /lòqá/ – *n* water
    b) /lòqmíndă/ – *adj* tasty.RE

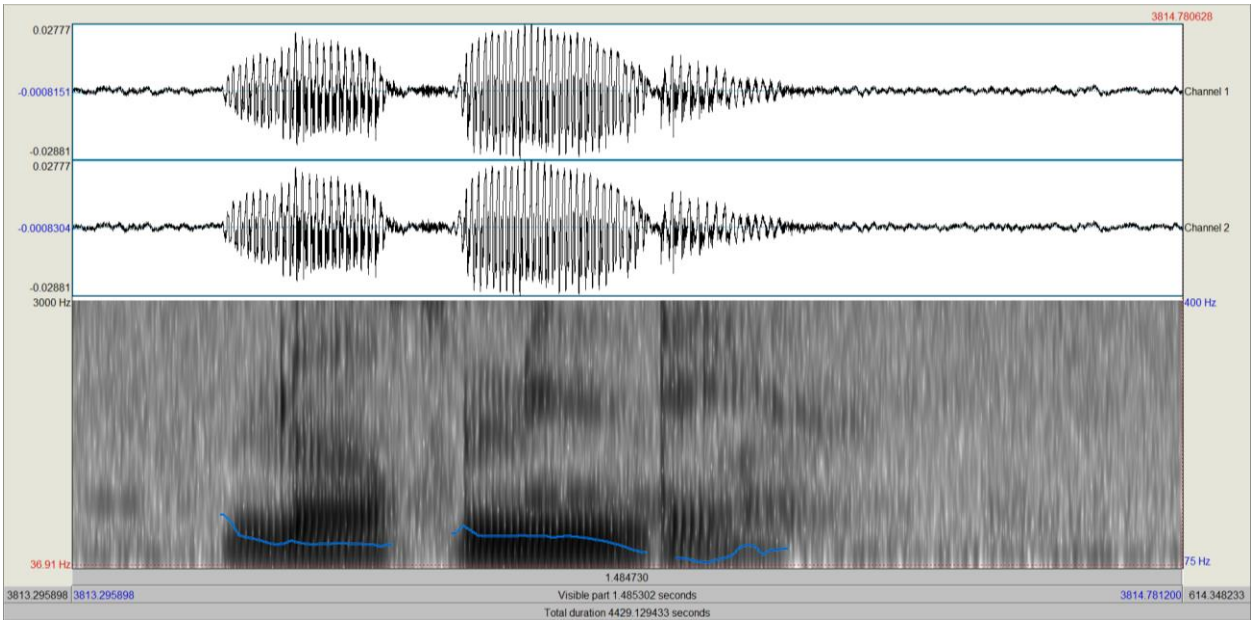
In (39-41), the adjectives have the relative suffix /-inda/ (Hayward 19990: 485). In all three words, the final syllable has a rising tone. We can see the pitch of the words /gààʒmíndă/ and /lòqmíndă/ in Spectrograms 5.8 and 5.9. In both spectrograms, the pitch starts low on the first syllable, rises on the second syllable, then drops to a lower pitch level and rises on the final syllable. I suspect the drastic rise on the final syllable in 5.8 is due to intonation, but in 5.9 we also see the pitch drop low and rise, even without a rising intonation. On the last syllable, the pitch starts low and rises, but still ends at a pitch level that is lower than the previous H tone, which shows that the last tone rises in spite of the overall intonation of the word falling.

Spectrogram 5.8 /gààʒmíndă/ *tall*



[g aa ʒ m i n d a]

Spectrogram 5.9 /lòqmíndă/ *tasty*



[l o χ m i n d a]

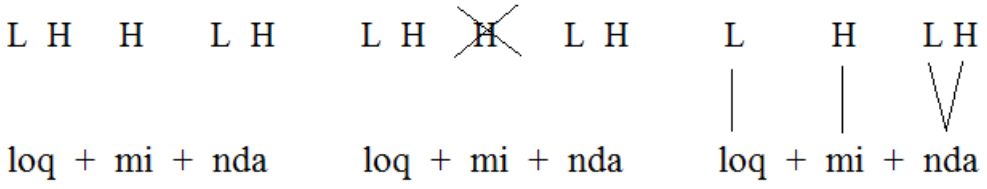
The adjectives in (39-41) are made up of a root, an adjectival suffix /-mi/, and a relative suffix /-inda/ (Hayward 1990: 459, 484)). The adjective /lòqmíndă/ meaning "tasty", is likely to be derived from the noun /lòqá/ meaning "water". The lexical meanings of the words are not too far removed, and it is plausible that the word for "tasty" is derived from the word for "water", as that is something you drink. It is possible that the roots /qàr-/ and /gààʒ-/ in the words /qàrmíndă/ and /gààʒmíndă/ also have noun forms (for instance /qara/ and /gaaʒa/) that the adjectives are derived from, but I do not have these nouns in my data.

We can use a smilar analysis as presented previously to explain the tonal realisations of these adjectives and say that the root has a L-H pattern, the suffix /-mi/ a H tone, and the suffix /-inda/ a L-H pattern, underlyingly. The suffixes /mi+inda/ become [minda], which means a syllable is lost[1]. For the benefit of the AP representation in figure 5.9, I assume the /i/ in /-inda/ is lost, and present the suffix as /-nda/.

[1] This process looks similar to the loss of the TV on nouns, but I do not know if it can be considered an equivalent process as I do not have data to clarify the morphological structure of the adjectives in (42-44).

The L tone of the root associates to the first syllable, the H tone of the root associates to the suffix /-mi/. The suffix /-mi/ has a H tone underlyingly and the OCP takes effect so that the two H tones become one. Both the tones of the suffix /-inda/ are realised on the final syllable in a LH contour tone (Figure 5.9). This analysis is at least true for /lòqmíndă/ which we know has a noun form, but could be true for the other adjectives as well.

Figure 5.9 AP representation of /lòqmíndă/ *tasty*



5.3.3 Tone on verbs

It looks like tones behave differently on nouns and verbs in Aari. As we saw above, the tones of the root associated to the suffixes so that the tones of the suffixes looked different in different nouns. The tones on verbs seem to behave differently in that the tones on the suffixes stay the same in different verb lexemes, but the tones of the verb roots change. Hayward (1990) writes:

"The function of accent location appears to be lexical in nouns, but grammatical in verbs. […] In the case of verbs, accentual placement varies according to the paradigm concerned, and could therefore be regarded as a part exponent of the category (categories) expressed in that paradigm." (Hayward 1990: 439-440).

Since Hayward (1990) sees Aari as an accent language, he is only talking about the placement of one H tone per word. A tonal analysis with the possibility of more than one H tone per word must therefore be different from Hayward's. But still, this indicates that Hayward (1990) has found a distinction between how tones behave on nouns and verbs, which I have also found.

My data contains five verb lexemes that were elicited with different inflections. This has made it possible to compare the tones of the different verb forms, but the picture that emerges is messy. In the lists below, we see five sets of verb lexemes, with the same three inflections for each lexeme. The first verb form in each set is an uninflected form that the speaker simply translated with the present tense English verbs. (He did not say whether these forms are specified for person or number). The second form in each set is an infinitive form with the infinitive suffix /-kan/. The third form in each set is a past singular form with the suffix /-ta/. We see that the suffix /-kan/ has a L tone in all cases, and the suffix /-ta/ has a H tone in all cases.

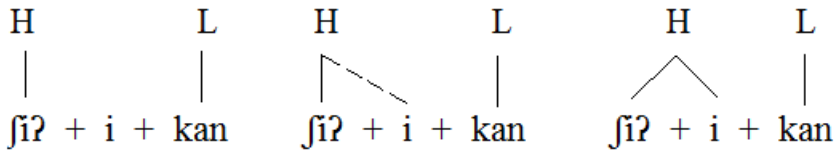
42. a) /àìsí/ [àìsí] – break
    b) /áískàn/ [áískàn] – to break
    c) /áítá/ [áítá] – broke.SG
43. a) /ʦ'ààfǐ/ [ʦ'ààfǐ] – write
    b) /ʦ'ààfǐkàn/ [ʦ'ààfǐkàn] – to write
    c) /ʦ'ááftá/ [ʦ'ááftá] wrote.SG
44. a) /nàbéʊ/ [nàbəʊ] – read
    b) /nàbéʊkàn/ [nàbəʊkàn] – to read
    c) /nàbéʊtá/ [nàbəʊtá] – read.SG
45. a) /ímmá/ [ímmá] – give
    b) /ímmákàn/ [ímmákàn] – to give
    c) /ímmtá/ [ímmté] – gave.SG
46. a) /ʃǐʔ/ [ʃǐʔ] – wash
    b) /ʃǐʔíkàn/ [ʃǐʔíkàn] – to wash
    c) /ʃǐʔítá/ [ʃǐʔítá] – washed.SG

In (44-45), the roots in the inflected forms have the same tones as the roots in the uninflected forms, and the tones in the suffixes are the same as in all cases. For (44), the root tones are L-H. For (45), the root tones are H-H.

In (46), the roots of the inflected forms have the same tone as the root in the uninflected form. But the root in the uninflected form (46a) has only one syllable, while the roots in the inflected

forms (46b-c) has two syllables with an /i/ between the /ʔ/ and /k and /t/. Glottal stop does not combine with other stops, so the vowel [i] is epenthesised to break up the consonant sequence. This added syllable gets the H tone of the root. The H tone can then be said to spread from the first to the second syllable (Figure 5.10).

Figure 5.10 AP representation of /ʃiʔíkàn/ *to wash*

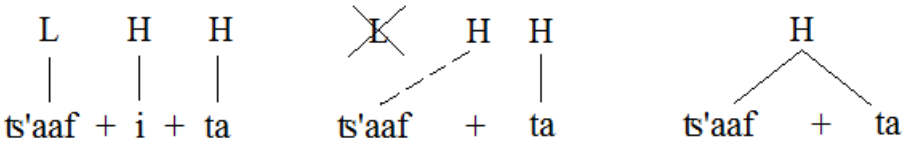


In (42-43), the tones of the verb roots change in the different forms of the verbs. Both verbs have a L-H pattern on the uninflected form. In (52b-c) and (53c) the root loses the final vowel when the suffixes are added[1]. Where the root final vowel disappears, the tones of the root changes. In (52b-c), the initial syllable, which had a L tone in the uninfected form, gets a H tone. The same happens in (53c). In (53b), however, the root final vowel is not lost, and the pattern remains L-H on the root.

A possible analysis is that the second syllable is deleted, and the tone of the disappearing syllable stays behind and associates to the first syllable. The tone of the first syllable deletes, since we do not find a contour tone on this syllable, and the H tone takes its place. We can assume the OCP takes effect, and the two H tones become one H tone (illustrated in Figure 5.11) with the word /ʦ'ááftá/). In this way, the tone of the suffix, which marks the verb form, stays constant in all verbs. However, this means that the tone of the disappearing syllable associates right-to-left, which we have seen less of than left-to-right association.

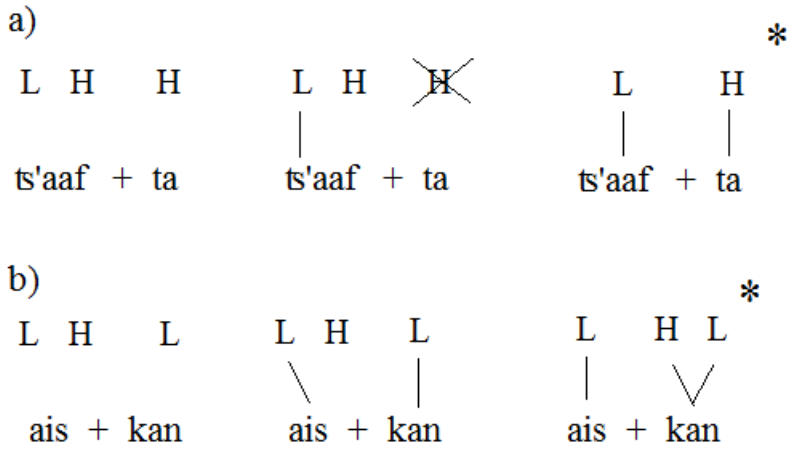
[1] This similar to the loss of the TV in nouns and the loss of vowel in the adjectives presented in 5.3.2. But the loss of vowel in verbs is not consistent, as can bee seen in the sets of verbs (53-57). I do not have data to clarify whether the loss of vowel in verbs is due to their morphological structure, as with nouns, or simply vowel deletion. Either way, the vowel (and therefore syllable) is lost in some cases.

Figure 5.11 AP representation of /ʦ'ááftá/ *wrote* (analysis 1)



If we analyse the tones of the uninflected form as belonging to the root, and the root final syllable as a morpheme that is replaced by the suffix (like with the nouns), we would expect to find that the initial L tone stays on the initial syllable, while the H tone of the verb root and the H tone of the suffix become one according to the OCP (Figure 5.12a). But we do not find this. In addition, in the verb /áiskàn/ ending in the suffix /-kan/ with a L tone, we would expect the H tone of the root and the L tone of the suffix to form a HL contour tone (Figure 5.12b). But instead the initial syllable has a H tone, and the suffix a single L tone.

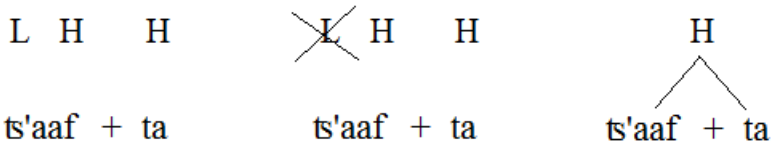
Figure 5.12 AP representation of expected finds of /ʦ'ááftá/ *wrote* and /áiskàn/ *to break* (analysis 2)



It is possible to work with the same premise that the L and H tone of the uninflected forms belong to the root, but we would have to assume an analysis where the initial L tone simply deletes in order to explain the words in (52b-c) and (53c) (illustrated with /ʦ'ááftá/ in figure 5.13). (The OCP then turns the H tones into one). There is no explanation for why the L tone should delete, so this is not a preferred analysis. The words are elicited in isolation, so there is no

OCP effect at work between a preceding L tone and the initial L tone of the verb to explain why this L tone disappears.

Figure 5.13 AP representation of /ʦ'ááftá/ *wrote* (analysis 3)



The root final vowel is also lost in (54c), but in this example the tones of the uninflected form and the inflected form are H-H, so this can simply be explained by all the syllables sharing a H tone. When the root final syllable is delted, the remaining syllables still share the H tone.

5.3.3.1 Additional data on verbs

There is no more directly comparable data on verbs (like the verb lists presented above) in my data. But I add that we find the same tendency for the verb suffixes to consistently have the same tones in different words.

In the sentences in section 5.3.1 above (17-27), many of the verbs have the same suffixes. The verb /séqsè/ *hurts* is repeated four times (17-20), and has the same tonal pattern H-L in each repetition. The verbs in (22-27), all end in the suffixes /-s/, /-it/ and /-e/. In all the examples except one, the syllables of the suffixes /-it/ and /-e/ are L-H. The word /ʃédʃîtè/ *I see* (23) is the only one that deviates from this pattern

The suffixes /-it/ and /-e/ together, have a L-H tonal pattern in the majority of words where they feature in my data (47-50).

47. /ráátìté/ – *v* I lie down
48. /éríjàtìté/ – *v* I come home
49. /ésésdìté/ – *v* I know
50. /zígdìté/ – *v* I need

Another morpheme that attaches to verbs is the verb/dòqdé/, a locative-existential verb, according to Hayward (1990). It is used in words translated with the progressive aspect in English. /dòqdé/ has a L-H pattern in nearly all cases (51-54), and only a minority of words featuring the morpheme /dòqdé/, has a tonal pattern that deviates from this (54).

51. /àzmíázádòqdé/ – *v* is running
52. /lèèqálèèqádòqdé/ – *v* is playing
53. /ʃìádòqdé/ – *v* is washing
54. /kóʊràdóqdè/ – *v* is wearing

5.3.4 Tone and intonation

Intonation in tone languages can be problematic as one needs to distinguish pitch pertaining to tone from pitch pertaining to intonation. The contrastive tones that attach to the syllables of words give lexical distinction between words. The pitch patterns of intonation contribute with pragmatic and interactional information (Zsiga 2013: 392).

There are some clear patterns of intonation in Aari. They adhere to the commonly found typological patterns of intonation. The intonation rises at the end of a phrase or a word where something follows, and falls towards the end of utterances where nothing follows (Zsiga 2013: 392).

5.3.4.1 Rising intonation

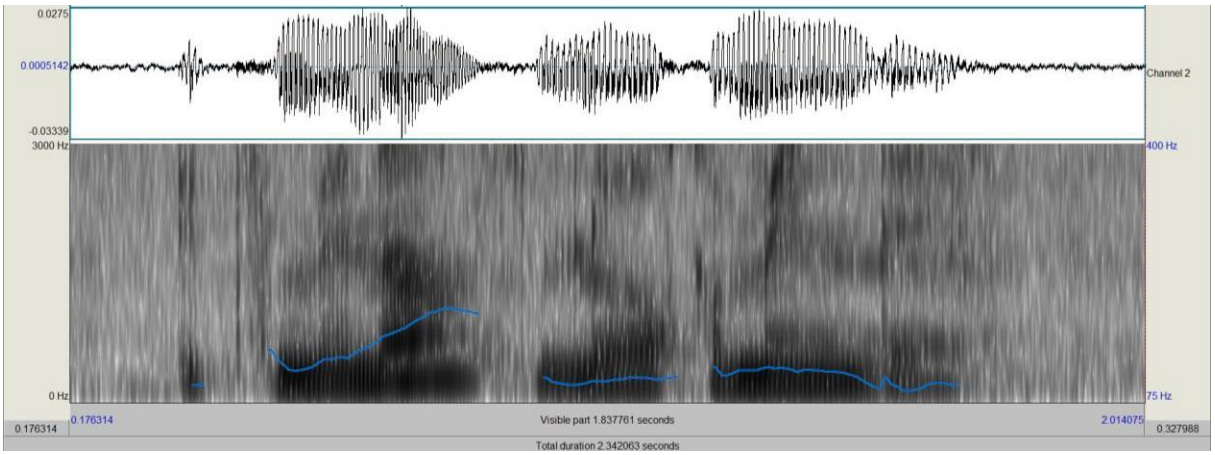
Often, the rising intonation sounds like it could be explained by the fact that the speaker stops and takes a break after a word before continuing, and that this break, where something is meant to follow, causes the rise in intonation. But this is not always the case. I have also found examples where we have a rise in pitch, but something follows immediately.

There are two ways in which the rising intonation manifests. The first kind is where the pitch of the last syllable rises similar to a rising contour tone. We see this in (55-56) and in the Spectrograms 5.10 and 5.11.

55. /ìtsmíná/ – *n* the food

56. /lòqéná/ – *n* the water

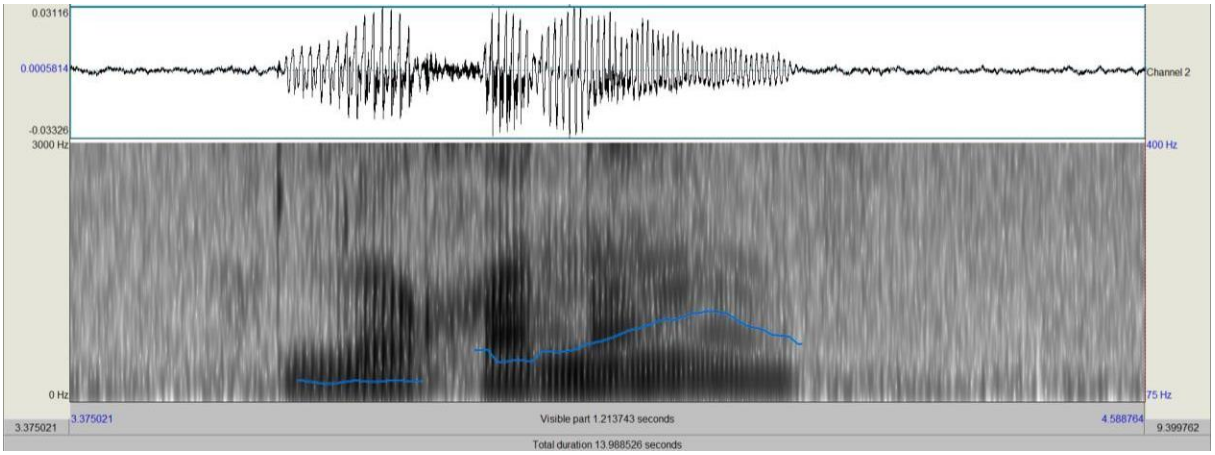
Spectrogram 5.10 /ìtsmíná lòqmíndă/ *the food is tasty*



[i ts m i n a l o χ m i n d e]

In Spectrogram 5.10, the pitch starts low on the first syllableand, then rises throughout the three syllables of the word /ìtsmíná/ *the food.* In Spectrogram 5.11, the pitch starts low on the first syllable, then jumps to a higher pitch level on the second syllable and rises throughout the two last syllables of the word /lòqéná/ *the water*. I do not consider these rising pitches to be contour tones, because they rise gradually throughout the word, instead of first falling to a lower pitch level, and then rising throughout the syllable, like we saw in Spectrogram 5.8.

Spectrogram 5.11 /lòqéná/ *the water*

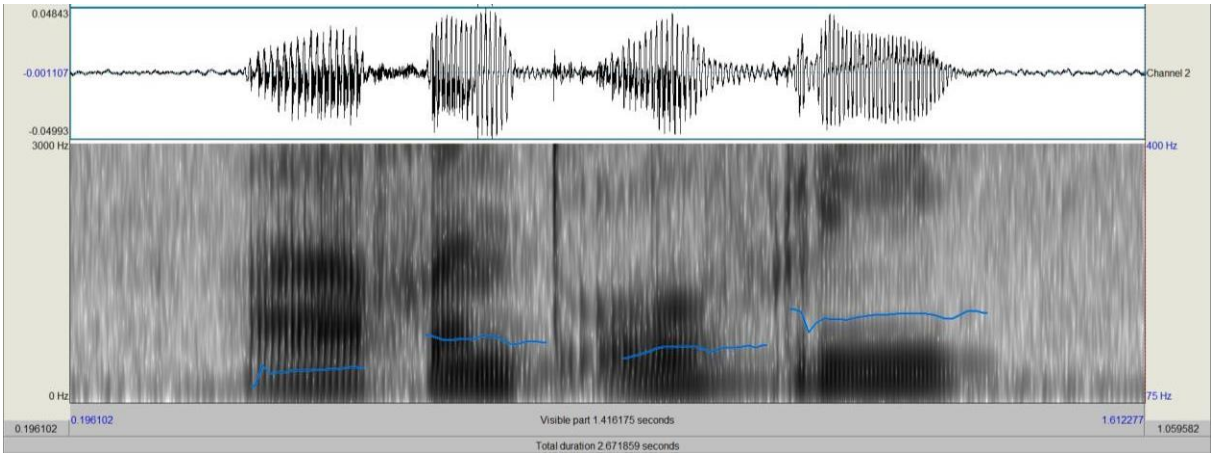


[l o χ e n a]

The other type of rising intonation is a gradual heightening of the pitch of the tones in a step like manner across a phrase. We see this in example (57) and Spectrogram 5.12.

57. /ààqéntòòfrí/ [ààχéntòòfrí] – *n* tree bark

Spectrogram 5.12 /ààqéntòòfrí/ *tree bark*



[aa χ e n t oo f r i]

The pitch is low on the first syllable, higher on the second syllable, falls somewhat on the third syllable, and is higher again on the fourth syllable. The tonal pattern is clearly L-H-L-H, but the second L tone has a higher pitch than the first L tone, and the second H tone has a higher pitch than the first H tone.

5.3.4.2 Falling intonation and declination

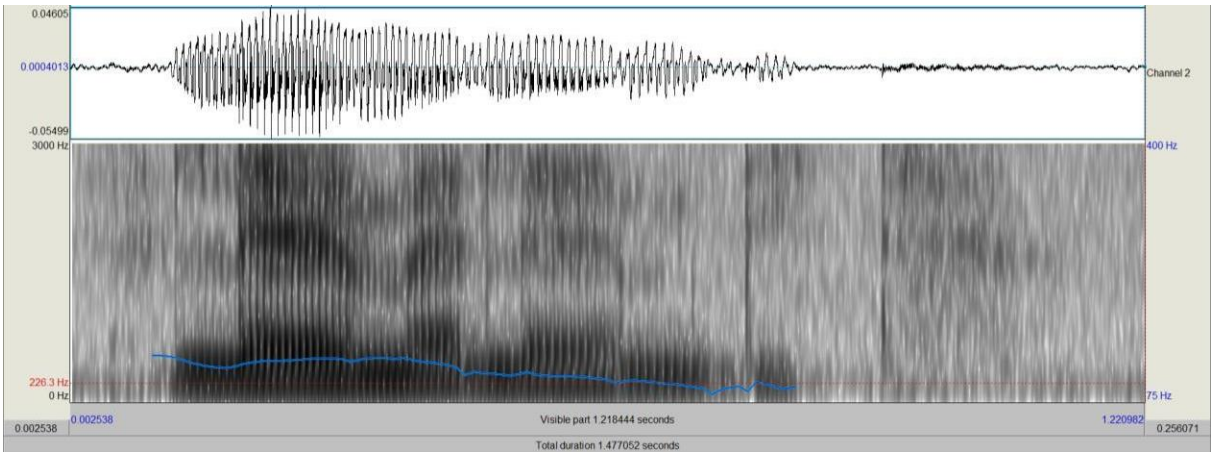
The intonation falls towards the end of an utterance in Aari. But it does not fall sharply on the last syllable of a word, but rather, it falls gradually on each syllable throughout the utterance. In a great number of sentences, this starts to take effect midway through the utterance and the pitch then falls consistently throughout the second half of the utterance.

This gradual fall in intonation is known as declination (Yip 2002: 262). Declination is commonly found in tone languages and is one of the ways in which tone and intonation interact. As the intonation falls, the pitch height of tones fall. This does not mean that the pitch falls, creating

falling contour tones. The tones remain level, but are realised at lower pitch heights. In addition, the range between L tones and H tones narrows, so that they are not as clearly distinguishable in pitch height. This effect is exemplified with (58-59) and shown in Spectrograms 5.13 and 5.14.

58. /léémálèèmdít/ – *v* sleeping
59. /ístèdòqdé/ – *v* I have

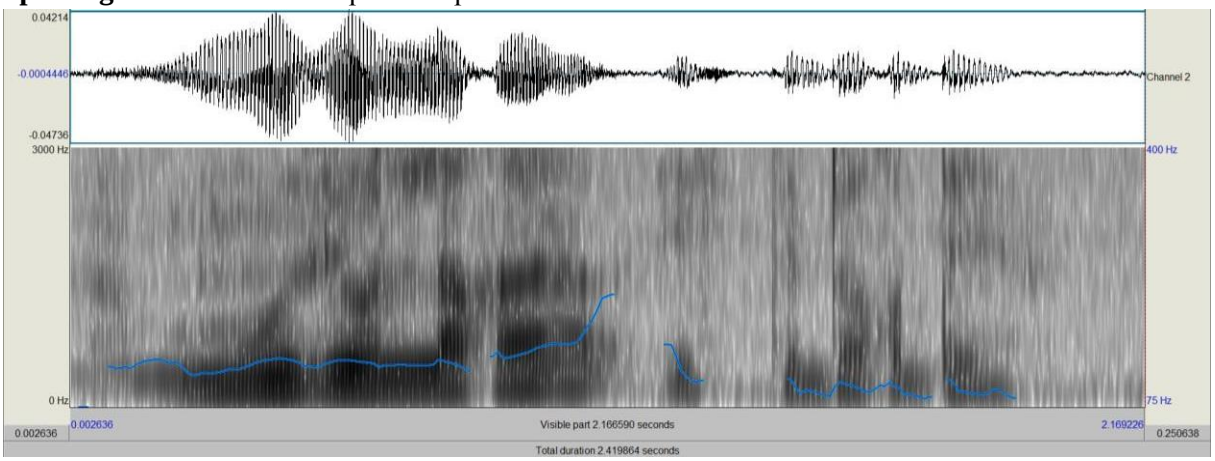
Spectrogram 5.13 /léémálèèmdít/ *sleeping*



[l ee m a l ee m d i t]

In Spectrogram 5.13, we see that the pitch starts at a high level, and remains on this level through most of the first two syllables, but starts to fall slightly on the second syllable. The pitch then falls gradually on the third syllable. The pitch rises slightly on the final syllable, which indicates that this is a H tone. But the pitch of the final H tone is much lower than the pitch of the H tones on the two initial syllables.

Spectrogram 5.14 /múúzólàqá ístèdòqdé/ *I have one banana*



[m uu z o l a χ a i s t ə d o ʁ d e]

In Spectrogram 5.14, the pitch level of the H and L tones are consistently higher during the first word than the second word. In this spectrogram we also see another example of the rising intonation on the final syllable of the first word. The pitch levels of the second word /ístèdòqdé/ are lower. The pitch falls gradually towards the end of the utterance and the difference in pitch height between the H and L tones is narrower, which makes it a typical case of declination.

6 Summary

It was my aim in this thesis to present a description of the phonology of the Wubamer dialect of Aari. I have presented descriptions of the consonant and vowel inventories of Aari, as well as phonotactics and tonology. Throughout this thesis I have made comparisons between my findings and the earlier descriptions of Hayward (1990) and Melkeneh (2013). Where appropriate, I have compared my findings to other literature on African and/or Ethiopian languages.

I have found that the phoneme inventory of Aari consists of 26 consonants and five vowels. The vowel system that I found is identical to the one described by Hayward (1990). Melkeneh (2013) also described the same five vowels, but listed four more vowel phonemes in addition. Among those were the two central vowels that I consider to be allophones of /e/ and /i/ based on the findings in my data. But I stressed that this was inconclusive.

A different find in my thesis from the earlier descriptions (Hayward 1990; Melkeneh 2013) is that diphthongs are possible in Aari. I claim that diphthongs ending in /i/ exist in Aari, and argue for this view by showing that we get a problem with the analysis of syllable structures if we do not analyse the diphthongs as such.

A few things concerning the vowels of Aari have proved to be true in my thesis as well as in the earlier descriptions. I, as Hayward (1990) and Melkeneh (2013), have found that a breathy [a̤] features in the phonology. Our analysis of the breathy [a̤] differs, but I have found that it is an allophonic realisation of an initial /ɦa/ sequence. I also found that the opposition of /e/ and /a/ is neutralised word-finally, and that the opposition of long and short vowels is neutralised word-finally. This is the same as Hayward (1990) found.

My consonant inventory differs from the earlier descriptions. I found 26 consonant phonemes in Aari. Hayward (1990) also reports 26 consonant phonemes, but our inventories are not identical. Melkeneh (2013) reports 31 phonemes. Melkeneh (2013) includes some phonemes in his inventory that I have found to be allophones of other consonants. He also lists /dʒ/ as an affricate phoneme which I did not find evidence for, and [ð] as an allophone of /t/, a sound I did not record at all. Hayward (1990) included a voiceless bilabial implosive in his inventory. I found this to be an ejective (same as Melkeneh (2013)). Hayward did not include /p/ in his inventory, but this phoneme, and its opposition to /f/ and /b/, is attested in my thesis.

There are some similarities between my description of the consonant allophones and those of Hayward (1990) and Melkeneh (2013). Hayward reports that the fricative [ɸ] features in Aari as an allophone of /f/. I have found the same sound but shown that it is an allophone of /p/. Melkeneh (2013) and I both report the fricative [β] as an allophone of /b/ but with somewhat different analyses of their distribution. [β] is also shown to function as an allophone of /b/ in other Omotic languages, so it is likely that the analysis of [β] as an allophone of /b/ is correct, but its distribution remains inconclusive in my data.

The uvular sounds are reported by Hayward (1990), Melkeneh (2013) and myself, but while Melkeneh (2013) lists all of them as phonemes, I have found that there is only one uvular phoneme in Aari /q/, and all uvular sounds are allophones of this phoneme. This is the same claim Hayward (1990) makes. Hayward (1990) offers a description of the distributional patterns of the allophones where they are quite consistent, while my finds indicate that the distributional patterns of the uvular allophones are not as clear cut. I did not find any systematic patterns of distribution.

The allophonic variations of the stops show us a larger, general tendency for stops to, at times, be realised as fricatives or affricates with the same place of articulation as the stop. My data has shown these fricative and affricate allophones to occur in different environments for the different stop phonemes. The allophones of /p/ are in complementary distribution, but it is not possible to say anything conclusive about the distribution of the allophones of /b/ or the allophones of /q/, as the distribution of the allophones overlap within their respective phonemes.

Finally in the consonant chapter, we saw that geminate consonants occur in Aari. This was also reported by Hayward (1990), though Hayward claims that morpheme-internal geminates are rare, while I have found them frequently in my data.

Some phonotactic constraints are clear in my data. There is a restriction on stop sequences that they must agree in their value for voice. In addition, voiceless stops cannot combine with voiced fricatives, only voiceless ones. While voiced stops combine with both voiced and voiceless fricatives, but these fricatives are always sibilants. The voiced stops never combine with /f/.

I have also found that the sibilants and affricates participate in sibilant harmony in Aari. The sibilants and affricates in a word must agree for voice and place. The sibilants also form a natural class as they are the only fricatives to form sequences with nasals. It is shown that the affricates should indeed be analysed as affricates based on phonotactic and quantity reasons. The affricates must also agree in terms of airstream mechanism (pulmonic vs. ejective) within a word.

/r/ can occur in word-initial position. This is untypical of Omotic languages, as many Omotic languages cannot have /r/ in this position. In this way, Aari differs from languages it is classified as being related to. There is also an opposition between /r/ and /l/, which is missing from some Omotic languages.

I have shown, in this thesis, that Aari is a tone language. Hayward (1990) describes Aari as an accent language based on how there is only one high tone per word. I, on the other hand, have shown how it is possible to have more than one high tone per word, and two tones on the same syllable, in Aari. My conclusion is that Aari is a tone language with two tones, one H and one L. This is similar to what other researchers have found when studying languages that Hayward has previously described as accent languages. Thomassen (2015) and Theil (2011) found the Omotic languages Gamo and Koorete, respectively, to be tone languages, which were previously described as accent languages by Hayward.

Though I have shown that Aari must be a tone language, much work remains on the behaviour of the tones in Aari. I have presented possible analyses of what I have found in my data, but I have not been able to explain everything or present a unified description of the behaviour of the tones that covers all of my data.

6.1 Further study

As I wrote in the introduction to this thesis, my fieldwork was affected by me having to interrupt my trip to Ethiopia. I did not have as much time conducting my fieldwork as I intended and I did not collect as much data as I would have liked. This has had the consequence that I have only worked with one speaker, and that my data is lacking in certain areas where I am not able to give a conclusive answer. I include in this summary a series of points that I believe needs more data and further study.

1. The allophonic variations of the stops. Especially /b/ and /q/, where I did not find any consistent patterns of distribution between the allophones. More data is needed to see whether patterns of complimentary distribution emerges or if there is indeed some free variation between the allophones.
2. I recommend a future researcher to collect more data with the ejective /p'/ and the sibilant /ʒ/. My data was lacking examples of these sounds, and it would be helpful to collect more data with these consonants to say something more conclusive about their distribution and restrictions. More data will also clarify whether [dʒ] should be considered an affricate or consonant sequence.
3. The central vowels [ɨ] and [ə] need to be investigated further, and it could be necessary to conduct experiments in order to determine whether there is a phonemic opposition between the central vowels and the front vowels /i/ and /e/, or not.
4. The tones of Aari need to be studied in more detail in order to get a better overview of their behaviour and processes.

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Appendix

List of words in Aari

The words in the list of data below, have been glossed where I know the grammatical information of the word. As I have not done a morphological analysis, many words are not glossed, but translated according to the translation the speaker gave.

English	Part of Speech	Aari
(today?)	adv	sètskán
(place name)	n	ʔòìdá
airplane	n	àìróplánk
all	det	mùdá
angry	adj	gáámì
angry.PL	adj	gààmsàké
angry.PST	v	gámsè
animal	n	qòlémá
arm.1SG.POSS	n	bùqúst
ashes	n	bíndí
ashes.DEF	n	bìndíná
ask	v	góísì
ate	v	ítt
aunt	n	bààkní
axe	n	ʋòkká
banana	n	mùùzí
bark	v	bòʧˈè
barley	n	gósì

barley.COM	n	gòsígrànk
be allowed to leave	v	káíkà
be given to somebody.PL	v	ímkètè
be given to somebody.SG	v	ímkà
be here	v	kónásàké
be here.2SG.COP	adv	kúrájè
be old	adj	gàltérsí
be old	v	dóqténdè
be read. SG	v	nábəʊkà
be read.PL	v	nábəʊkét
be written.PL	v	ʦ'ááfkètè
be written.SG	v	ʦ'ááfkà
be.1SG	v	dóqît
be.1SG	v	dòqdìté
be.2SG	v	dóqêt
be.3SG (locative-existential verb)	v	dòqdé
bean	n	qúmʔlá
beating.IPFV	v	góʊágòʊdé
bed	n	àlgá
beer	n	bìírá
begin	v	jèdí
begin.1SG	v	jéttìtè
begin.IMP	v	jéttè
below	adj	tàmmá
big	adj	ésmà
big	adj	gáʔʃà
big	adj	dèèʦ'mí
bird	n	àptí
bird.DEF	n	àptə́n
birds.DEF	n	àptíná

birds.DEF	n	áptìná
bit	v	ʔítsè
biting.1SG.IPFV	v	gágàdìté
black	adj	ɣʼálèmí
black pepper	n	bárbàrà
black pepper	n	ɣʼòrqá
blessing	n	ʔándʒ
blood	n	zùmʔí
blood.DEF	n	zùmʔíná
blow (for wind)	v	gáʃʃè
blow away	v	fúúlsè
blue	adj	ríkkákàmdà
bone	n	lèfĩ
book	n	màtsáf
born	v	ʔádérì
borrow	v	téí
bought	v	ʃénʃè
boy	n	jíntsɨn
boy.DEF	n	jíntsìná
boy.DEF	n	jíntsìná
bread	n	qìtsʼá
bread	n	kùpìtá
bread.DEF	n	qìtséná
bread.DEF.F	n	qìtsʼákóm
break	v	àìsí
break.INF	v	áískàn
breasts	n	ámí
breathe.1SG	v	ʔòqínsìté
bright	adj	ʃákʃè
broken	adj	àìtá
broken	adj	àìmíjè

broken material	n	àìsmí
brother	n	índèpsí
brother.1SG.POSS	n	índèps
brother.2PL.POSS	n	índèpsíkèt
brother.2SG.POSS	n	ɦándèps
brother.POSS.3SG.F	n	índèpsíkòt
brother.POSS.3SG.M	n	índèpsíkìt
brother2PL.POSS	n	jéndèps
brown	adj	bùnákàmdà
build	v	ík
build a house.1SG	v	íksìté
build.INF	v	íkkàn
building a fence.1SG.IPFV	v	gùrdágùrdsìtè
building.1SG	v	ìkádòqdítè
built	v	ìktá
burn	v	jéd
burned.1SG	v	áʦ'ìté
burning.3SG.IPFV	v	jèdèdóqè
buy/sell	v	ʃén
cabbage	n	èkná
calf	n	ʔòòtá
can hear.1SG	v	wúúrsdìté
can see.1SG	v	ʃéttìtè
car	n	màkná
cat	n	ʊúrrà
cat	n	dìmèt
caught.1SG	v	jèttìtè
chair	n	bàrʧ'émá
cheating	v	gèʃʃĩ
chicken	n	bàʧátìnʦ'ì
chief	n	éntsédàʊ

chief	n	bábì
children	n	jìntsí
children.DEF	n	jìntsíná
church.DEF	n	míksèìná
claw	n	tóóré
claw.F	n	tóórákót
clothes	n	àflá
clothes.DEF	n	àféléná
cloud	n	lìllá
cloud.DEF	n	lìllená
coffee	n	bùná
cold	adj	záázdè
cold	adj	záázmí
cold.3SG.COP	adj	záázmíjè
come back	v	máátá
come home.1SG	v	ééríjàtìté
come.IMP	v	ɦádíntì
coming.1SG.IPFV	v	ɦádájòté
cook	v	ʔúʃâ
cook	v	ʔúʃ
cooked	v	ʔúʃʃ
cooked.1SG	v	ʔùʃádòqdít
cooked.1SG	v	ʔúʃdìt
corn	n	pàtrí
corpse	n	léísì
cotton	n	pùtá
count	v	fàìdá
counted	v	fáídsè
cover.PRS	v	áátʃtè
cow	n	ʋààkí
craftsman	n	mànà

cup.2PL	n	sèèníjéén
cup.2SG	n	sèèníáán
cup.DEF	n	sèníná
dance	v	dánèsè
daughter	n	máánájìnts
day	n	sèts
day (of the week)	n	sàts'à
day.DEF	n	sàtséná
daytime	n	róór
deep	adj	gàʔʃéndà
die	v	dèʔésè
die	v	dèʔí
dig.1SG	v	kòìdítè
do	v	íjà
do.2SG.INTR	v	ɦárájè
dog	n	áksì
dog.DEF	n	áksìnt
donkey	n	àìjà
door	n	púltá
door.DEF	n	pùlténá
down	prep	jìrká
drank	v	ʃámtá
dress	n	ʃìʃĩn
dress.DEF	n	ʃìʃĩná
drink	v	ʋóʧ'
drinkin.1SG.IPFV	v	ʋóʧ'òʧ'dìté
driving.1SG	v	béíàdòqdéí
dry	v	ʋòʧ
dry.3SG	adj	ʋòʧè
dumb	adj	túní
dying.1SG.IPFV	v	dèdèdìté

ear	n	qààmí
ear.POSS.INST	n	qàmîsték
earth	n	èʧá
earth.DEF	n	fiʧèná
eat	v	ít
eat	v	ítsá
eat.1SG	v	ítsédìté
eaten by somebody	v	ítsmì
eating.1SG.IPFV	v	ítsàdòqdíté
egg	n	mùqá
eight	num	ʔàstén támmèrs
elbow	n	qèsí
elephant	n	zìɦón
empty, there is no	neg	dàkkí
empty.COP	adj	dàkkíjé
enter	v	ʊáár
eye	n	ááfì
eye.1SG.INST	n	áfìsték
eyebrow	n	jìmrí
fabric used in funeral serimony	n	dáám
fall.3SG	v	qànádóqè
false banana	n	àqmí
family	n	bètèsáb
far.3SG.COP	adj	gótríjè
farming	v	ìkmí
father	n	bàbí
fear	n	p'áʃì
fence	n	gùrdá
fence	n	gàsí
field.LOC	n	ɦámígèr

fire	n	nóɦà
fire smoke.DEF	n	ɣ̃úʋànáˊ
fire.DEF	n	nòɦénáˊ
fish	n	ʃámtà
five	num	dónq
flour	n	ʔílà
flow	v	ɦàtɣ̃à
flower	n	bònáˊ
fly	v	sùngélá
fly	v	féétà
fly.1SG	v	fèddìté
flying	v	fèètáfèètsˈé
food	n	ìtsmí
food.DEF	n	ìtsmínáˊ
foot	n	dùùtí
foot.1SG.POSS	n	dùùtíst
for the food	n	ìtsmínkǎn
forbidden	adj	ʔààtɣ̃ĩ
forearm	n	búqà
forehead	n	bálà
forest.LOC	n	ʔòtságèr
four	num	ʔòìdĩ
friendly	adj	bèlékè
frog	n	pànqá
full	adj	tsˈóótsˈì
full of water.3SG	adj	lòqátsˈòtsˈíjè
fur	n	tsˈìtsˈá
garbage	n	ɦàtsˈmá
gave	v	ímsè
gave	v	ímtê
girl	n	jìntsén

give	v	ímmá
give	v	ím
give.1SG	v	èmdìté
give.INF	v	ímmákèn
goat	n	dèrtí
going to visit.3PL	v	ʔùngákájèkè
gold	n	wàráqì
good/smart	adj	láqèmtà
grandfather.1SG.POSS	n	ɦàkísà
grandfather.2SG.POSS	n	ɦàk
grandmother.1SG.POSS	n	ɦàkíjà
grandmother.2SG.POSS	n	ɦàkà
grandparent	n	ɦàkì
grass	n	dìirá
grass.DEF	n	dìiréná
grave	n	dùùkí
green	adj	qàlʔákàmdá
ground	n	gòìr̀
ground	n	fiʧár
ground.DEF	n	gòjíntăn
ground.LOC	n	gòjgèr
grow	v	gáp'
hair.1SG.POSS	n	màtíst
hand	n	ʔáánì
hand.POSS	n	ʔáánìst
hang clothes out to dry	v	áftà
hanging clothes out to dry.CONT	v	áftí
happy	adj	gúmèr
happy.PST	v	gúmèrsè
has been	v	ɦàqé

has left	v	qáítè
hate	v	jììʒá
hate	n	jììʒí
hated by somebody	v	jììʒèrtá
have lice.3SG	n	qàsádòqdé
have, is	v	dóqè
he	pron	nò
head, hair	n	màtá
hear	v	ésrí
hear	v	ʊúrsì
hear.1SG	v	ʊúúrsìté
heart	n	búúd
heart	n	líbí
heart.1SG.POSS	n	búúdíst
heavy.3SG.COP	adj	dèètsˈmíjè
help	n	qélʃĩ
her.ACC	pron	kóóm
hidden	adj	átʃìmʃè
hidden	adj	záqsè
him.ACC	pron	kíím
hit	v	ʧék'nà
hold	v	jèd
hole	n	gòrí
holy	adj	ʧˈíílì
home	n	èrí
honey	n	ántsì
horn	n	qòʃmá
horn.F	n	qòʃmákòt
Hot, dry	adj	ʔòìdɛ̌mà
house	n	èìjá
house.LOC	n	èìjàgér

how.INTR	pron	ɦásín
hug	n	éémʧˀ
hungry	adj	dááqì
hungry	adj	dààqí
hurt	v	gàʔàsè
hurt	v	sééqsè
husband	n	kìʔì
husband.1SG.POSS	n	íkìʔís
husband.2SG.POSS	n	ɦàkìʔís
husband.3SG.F.POSS	n	kótkìʔís
hyena	n	gùdrí
I.1SG	pron	ítà
in bed	n	àlgézə̀n
in the chair	n	bàrʧìmézén
in the mountain	n	bàlénzà
in the sky	n	rìkkèsén
intestines	n	ʦátsí
jackal	n	ʋúksàk
jump	v	góʋà
kick	v	gìʔínà
kill	v	déísì
killed	v	déísè
kiss	n	súnq
kissed	v	súnqsè
knee	n	bùqá
knee	n	bùnqá
knee.1SG.POSS	n	bùqáíst
knife	n	ʃĩírì
know	v	èsíntì
knowing.1SG.IPFV	v	ésésdìté
lake	n	ʦ'éérì

laugh	v	jììnʧ'í
laugh	v	jíntʃ́ì
laughed	v	jíntʃ'è
leaf	n	qàlʔá
leaf	n	fiʔàlá
letter	n	dáʋdàbá
lie down.1SG	v	ráátìté
lightning	n	p'àlqínt
lion	n	déps
liver	n	tùrí
long	adj	gààʒmí
long	adj	rótmí
long.3SG.COP	adj	gááʒmíjè
lost	v	lálsè
louse	n	qàsá
love	n	sólèmá
love	v	néʃmá
loved	v	sòlèmsé
loved	v	náʃʃě
made	v	ʔússàrsáqè
made of goat	n	dèrtít
made of liver	n	tùríjè
made with grease	n	ʧ'òòmájèlékè
maize.COMM	n	pàtrígrànk
man	n	ángènà
man	n	éétsìn
man from the area oida	n	òìdémé
man.DEF	n	étsìnán
man.DEF	n	ètsínà
man.DEF.COM	n	étsìnké
many	det	bédí

marriage	n	téímí
married	v	téjèké
meat	n	ʋáɦà
meat.DEF	n	ʋáɦánàn
money	n	bírrí
monkey	n	gáái
moon	n	ʔàrfén
moon.DEF.F	n	ʔàrféná
mother	n	ìndí
mountain	n	géʧà
mountain	n	bálá
mouth	n	àfá
mouth.1SG.INST	n	àfísték
name	n	náámì
name.2SG	n	náámíjànt
near	adv	ʔútsè
neck	n	qàdá
neck.POSS	n	qàdáíst
need.1SG	v	zígdìté
need.2SG (do you need)	v	zígdáíò
neighbour	n	mòrá
neighbours.DEF	n	mòréná
new	adj	kíllà
nice	adj	làqmí
night	n	sóítí
nine	num	ʋòlqán támmèrs
noise	n	ʔùpsí
nose	n	núkì
nose.POSS.INST	n	núkîsték
not	neg	kítè
odour	n	ʋòʃmí

odour	n	málkì
old	adj	gèèʃá
old man	n	gàlt
old man	n	gàltsín
old woman	n	gèʃén
on the bone	n	láfínsá
on the elephant	n	zìɦónzèn
on the road	n	gòògík
one	num	ʋóláq
one banana	n	mùùzíóláqχá
onion	n	k’èìsír
onion (Amharic)	n	ʃùŋkúrt
open	adj	póʧìntè
orange	n	búrtúkàn
other	det	ʔáb
ox	n	ʋààks
path	n	lùùgék
pepper	n	bárbárá
person	n	ééd
picked.3SG	v	qáʃʃè
playing.3PL.IPFV	v	lèèqálèèqádòqdé
potato	n	dìníʧ
pour	v	kàà
pumpkin	n	bótà
push	v	dìmná
rain	n	dòʋí
rat	n	ʔùntín
rat.DEF	n	ʔùntínă
raw	adj	ʧ'álè
raw meat	n	wáɦáʧ'àla
read	v	nàbéʋ

read.INFT	v	nàbévʊkàn
read.PST	v	nàbévʊtá
reading.1SG.IPFV	v	nábèvʊádóqdìt
receive injection.1PL	v	ìkártót
red	adj	zèìmí
red carrot	n	gèìsír
red pepper	n	zèìmí
red pepper	n	bárbàrà
red.3SG	adj	zèìmíjè
relatives	n	sùsá
relatives.POSS	n	sùsáíst
ride.1SG	v	gààlàʊdìté
rising (about the sun)	v	ʔùdáqsè
road	n	gògí
root	n	ʧʼààʧʼí
rope	n	záánì
rotten	adj	ʧʼáfí
round	adj	ʃìrá
round.3SG	adj	ʃìráʃìrdé
run	v	ázmí
running.3SG.IPFV	v	àzmíázádòqdé
sad	adj	átrí
sad.PL	v	átèrsákè
sad.PST	adj	átèrsè
salesman	n	nàʊgàdè
saliva	n	téts'mí
salt	n	ʦóóq
sand	n	ɦàʧá
sand.DEF	n	sèìníná
saw	v	ʃédʃè
saw.1SG	v	ʃèdʃìté

say	v	gáá
see	v	ʃèdín
seed	n	ááfì
seed	n	máʃá
seven	num	tàbzá
sharp	adj	qàrmí
sharp.REL	adj	qàrmíndă
she	pron	nà
shelf	n	màdèrdérjá
shoes	n	ʧámá
shoes.DEF	n	ʧámèná
short	adj	ʦ'èèdí
sick	adj	séqérì
sickness	n	ɦàʒmí
sickness	n	sèqmì
sigarette smoke.DEF	n	sìgárènà
silence	n	ʧ'àmmá
sing	v	jètsí
singing.3PL.IPFV	v	jétsjêtsàdòχdáké
sister	n	ìnàànì
sister.1SG.POSS	n	ínnàn
sister.2PL.POSS	n	jénnàn
sister.2SG.POSS	n	ɦánàn
sister.2SG.POSS	n	ìnáánkèt
sister.3SG.F.POSS	n	ìnáánkót
sister.3SG.M.POSS	n	ìnáánkít
sit	v	dòqéntì
sit	v	dóqsè
sit.1SG	v	dóqdìtè
six	num	láá
skin	n	gùptá

sky	n	ríkká
sleep	v	lèèmá
sleep	v	ráátì
sleep.1PL	v	léémdót
sleep.1SG	v	léémdìt
sleep.2SG	v	léémkà
sleeping.1SG.IPFV	v	léémálèèmdìt
small	adj	mérá
smell	v	ʋóʃʃĩ
smell	n	ʋùʃmíná
smell.POSS.INST	v	ʋáʃìʃìté
smoke	n	ʋùùd
snake	n	gùní
sold	v	ʃéntè
son	n	áŋgjìnts
spear	n	kátsmì
spear.1SG.POSS	n	kàtsmíst
spreading quickly	v	sànnájèddé
stand	v	dãám
stand up.1SG	v	dãámtìté
star	n	mànká
stars.DEF	n	mànkáná
stomach	n	nòrtí
stomach.POSS	n	nòrtíst
stone, sand	n	séíní
stone.DEF	n	sèìníná
stop, be still	v	ʋóʔá
straight	adj	ʔùzmà
strong	adj	zàmmí
strong.3SG.COP	adj	zámmíjè
stupid	adj	èsáíà

stupid	adj	gádà
sun	n	ʦ'àʦ'í
sun.DEF	n	ʦ'àʦ'íná
sweep	v	ɦàʦ'
swim	v	mílá
swimming.1SG	v	mìlámìldìté
table	n	ʧ'àrp'éézá
tail.F	n	gòòlíkòt
talk	v	kéézà
talk.1SG	v	kéézzìté
talking.1SG.IPFV	v	kèèzákèèzdìté
tall	adj	gààʒmíndă
tall.3SG.COP	adj	gááʒmíjè
tasty.3SG.REL	adj	lòqmíndě
tea	n	ʃái
teach	v	ésìsè
tear paper	v	páʃ
teeth.POSS.INST	n	àʦîsték
ten	num	támmá
that	dem	ʔòò
that	dem	kóná
the fatty part of meat	n	mórà
them.ACC	pron	kéém
there is	v	ʋááʧáɦè
they	pron	kètá
thick.3SG.COP	adj	tíʃmíjè
thick.3SG.REL	adj	tíʃmíndà
thief	n	dííʋì
thigh	n	gèʃĩ
thirsty.1SG	adj	ʋòʧ'árdítè
this	dem	kóná

this water.DEF	n	lòqókóm
thorn	n	ʔúkmì
thread	n	kèrrí
thread	n	ʒààgì
three	num	màkkén
throw	v	ʃáqʃè
thunder	n	gùùgín
tie	v	míítʃˀ
taste	v	láʔ
to the girl	n	jìntsénèn
tobacco	n	dààmpá
tongue	n	àdˀmí
tongue.POSS.INST	n	àdˀmísték
tooth	n	átsì
tree	n	áqà
tree.DEF	n	àqéná
treebark	n	àqéntʔòòfrí
two	nr	ʔàstén
uncle	n	gìrkí
up	prep	tsèká
us	pron	ʊóóm
very	adv	àìdím
vomit	n	ts'áá
wait	v	gìʃˀ
walk	v	mùká
walk.1SG	v	mùkèdìté
walk.1SG	v	mùksìté
walk.INFT	v	ákkàn
walked.1SG	v	mùktît
walked.2SG	v	mùktêt
walking.IPFV	v	mùkíntì

war	n	dààmí
was cooking	v	ʔùʃàdàqít
was cooking	v	ʔùʃdàqít
was running.IPFV	v	ázmíàzdáq
was sick	v	séqérsè
wash	v	ʃĩʔ
wash.3SG	v	ʃìʔádòqdé
wash.INFT	v	ʃĩʔíkàn
washed material	n	ʃìjèrtà
washed.3PL	v	ʃĩʔítàke
washed.SG	v	ʃĩʔítà
water	n	lòqá
water.DEF	n	lòqéná
water.LOC	n	lòqágèr
we	pron	ʊóótà
wear	v	kóʊrà
wear (for shoes)	v	dákà
wearing.3SG.IPFV	v	kóʊràdóqdè
wet.3SG	adj	záázmíjè
wet/soft	adj	lìmʧ'míjè
what.INTR	pron	ɦáráìst
what.INTR	pron	ɦàrá
what.INTR	pron.	ɦájè
wheat	n	zérgí
wheat	n	rìʊí
wheat.COMM	n	zérgígrànk
wheel.DEF	n	gòòméná
when.INTR	pron	ɦáínt
when.INTR	pron	ɦáít
white	adj	ʦ'àmmí
white.3SG.COP	adj	ʦ'ámmíjè

who.INTR	pron	ɦáì
why don't you cut it	v	kátá
why are you not listening	v	ʊùrá
wife	n	máín
will bite.1SG	v	qááqèmsìté
will eat.1SG	v	ítsítsèdìté
window	n	máskòt
woman	n	èténk
woman	n	ètén
woman	n	mááná
woman.DEF	n	mánít
work	n	fikʃá
work.3PL	v	ʊónídòqdáké
working.3PL.IPFV	v	ʊòníʊónàdòqdàké
worm	n	kàtsá
write	v	ts'ààfí
write.INF	v	ts'ààfíkàn
writing.1SG.IPFV	v	ts'áfádòqdít
written material	n	ts'ààfèrtá
wrote	v	ts'ááftá
yawn	n	ɦápʃìn
year	n	bón
yellow	adj	sàktsíkàmdá
yes	adv	ììjá
yesterday	adv	ní
you.PL	pron	jètá
you.PL.ACC	pron	jéém
you.SG	pron	ɦáná