A PHONOLOGY OF STAU

by

A. CHANTEL VANDERVEEN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

Master of Arts in Linguistics, Analytic Stream

We accept this thesis as conforming to the required standard

.....

Dr. Roderic F. Casali, PhD; Thesis Supervisor

.....

Dr. Keith L. Snider, Ph.D.; Second Reader

.....

Dr. Jamin R. Pelkey, Ph.D.; External Examiner

TRINITY WESTERN UNIVERSITY

May 2015

A phonology of Stau

A. Chantel Vanderveen

Trinity Western University

ABSTRACT

This thesis is a description of the phonology of Stau, a Rgyalrongic language of the Tibeto-Burman family, based on original field research. Stau is spoken by approximately 23,000 people in the west of Sichuan province, China. It is an almost unstudied language. Apart from a sketch of the phonology and grammar by Huang (1991), which provides a phonetic (rather than phonemic) analysis of Stau sounds, lists attested onsets and rhymes, and discusses tone, there has been virtually no systematic study of the phonology of language. This thesis provides a more extensive study of Stau phonology, covering segmental phonology, acoustic analysis of stops and of vowels, syllable structure, phonotactics, phonological processes, and pitch phenomena.

Of particular interest in this phonology are Stau's large phonemic inventory of forty-two consonants and eight vowels, its large syllable canon which allows onset clusters of up to three consonants and single coda consonants, phonotactic constraints among its consonant clusters, and vowel changes in reduplication.

ACKNOWLEDGEMENTS

I am indebted to many people who helped and supported me over the course of researching and writing this thesis. First, I want to thank all those who advised me academically and linguistically. Jesse Gates' kindness and his enthusiasm for Stau first inspired me to ask him to mentor me in a fieldwork practicum (which doubled as thesis research). He gave me much help and encouragement over the last several years during the long process of research, analysis, and writing. One example of such help is that he commented on my draft, saving me from publishing more than one glaring error. I am grateful to my thesis advisor, Dr. Rod Casali, who led me through the process of writing a phonology, answering all my questions (such as, "What exactly should be in a phonology besides a phonemic inventory?"). Through his patience and equanimity I always came away from his office calmer and with renewed motivation. Without Rod's comments on my drafts, this thesis would be very much inferior. My second and third readers, Dr. Keith Snider and Dr. Jamin Pelkey, also gave their time to read and comment on this thesis. Their constructive criticism helped me improve and polish my work. Jamin deserves further gratitude for being my fieldwork practicum supervisor when I went to China. Katylin Wonnell, a fellow student of Stau, also commented on my draft, and spent I-don't-know-how-much time correcting my verbs to be consistently in third person.

Our IT guys at CanIL, Doug Rintoul and Larry Hayashi, helped me prepare the equipment and software I needed to do research and assisted me with all my computer problems. I am also grateful to Andy Black, whom I've never met, but who has always been so prompt and helpful to solve the problems I encountered using his wonderful XLingPaper (xlingpaper.org). Thank you so much for this program! It has made formatting hassle-free.

No more worrying about example numbering or tabs going out of whack (looking at you, Microsoft Word)!

Many friends encouraged me and prayed for me, more than I can name. My cousin Heidi encouraged me throughout the thesis-writing process. She helped motivate me by getting me to talk about my work and by entering into my excitement when I made new discoveries. My friends and former roommates Rachael and Giselle were there at the very beginning of this process, when I tried to arrange a fieldwork trip in 2011 but it fell through (which, looking back, was a blessing in disguise), and they were there for me via Skype and email as I analyzed and wrote. I am thankful for my friends Ania and Brooke, who gave this thesis a final proofread. Ania, my memorization buddy, helped keep me sane as I wrote through our regular Skype calls.

Second most importantly, I thank my family: Dad & Mom, Jeff & Mandie, Hannah, Reuben & Megan, Jared & Katrina, and Caleb. I am so grateful for my parents' support and love. They encouraged me to do the practicum in China to see if I liked field linguistics, even though it meant going halfway around the world. Their unwavering support, despite my taking longer than I planned or expected, gave me confidence to press on. At the same time, they were there to give me a well-timed, gentle kick-in-the-butt to get this thesis finished.

I thank my Opa for lending me *In Search of the Source* when I was in first-year at University of Manitoba, which started me on the track that led me to TWU and to CanIL.

My greatest thanks go to my heavenly Father. I have learned over and over: "Unless the Lord writes the paper, the student labours in vain" (Psalm 127:1, Revised Vanderveen Version). SDG.

PREFACE

1	=	first person
2	=	second person
3	=	third person
APRFX	=	adjectival prefix
CONST	=	constative
COP	=	copula
DEM	=	demonstrative
DIM	=	diminutive
DIR_{down}	=	directional prefix; downward
DIR_{in}	=	directional prefix; inward
DIR_{neut}	=	directional prefix; neutral
DIR_{out}	=	directional prefix; outward
DIR_{up}	=	directional prefix; upward
GEN	=	genitive
INS	=	instrumental
NEG	=	negation, negative
NMLZ	=	nominalizer/nominalization
NUM1	=	numeral prefix for 1
NUM2	=	numeral prefix for 2
NUM3	=	numeral prefix for 3
PERS	=	suffix for person
PL	=	plural
PRF	=	perfect

RED = reduplication

Chapter 1

Introduction

The primary goal of this thesis is to describe the phonology of Stau, a Rgyalrongic language of the Tibeto-Burman language family. Stau phonology has a number of interesting features. Its consonants are one of its most interesting features: Stau has an unusually large consonant inventory of 42 consonants. This size comes from having three voicing distinctions in stops and affricates and two in fricatives. Stops, nasals, and fricatives, in addition to being found at the usual labial, alveolar, and velar places of articulation, are also found at palatal and uvular places of articulation. Finally, Stau also has two lateral fricatives.

Stau has a complex syllable canon that allows final consonants and onset clusters of up to three consonants. Stau retains its syllabic complexity from Proto-Tibeto-Burman, which also had a complex syllable canon, unlike other current-day Tibeto-Burman languages which have "vastly simpler syllables" (Matisoff 1991:140). A large consonant inventory combined with a complex syllable canon means that Stau has a large number of licit consonant clusters. The phonotactic constraints that come into play within the clusters are a further interesting feature of Stau.

Stau vowels show some phonotactic constraints as well. Before codas, the front tense vowels /i/ and /e/ are prohibited; in this context their lax counterparts [ɪ] and /ɛ/ appear instead. Vowels play a role in reduplication: In some reduplications, the vowel of the base changes when it is reduplicated. If the base has /æ/ or /ɛ/ as its nucleus, the vowel will change to /ə/ in the reduplicant; in bases with /ə/ or /o/, the vowel changes to /ɛ/.

This phonological description is significant because it adds to the body of research and analysis on Rgyalrongic languages. As will be made clear in §2.3, the study of Rgyalrongic languages is still young. Many questions are unsettled, such as how many languages the subgroup comprises and how these languages are related to each other. I hope that this description will contribute to the growth of Rgyalrongic studies and to an accurate understanding of this subgroup.

The youth of Rgyalrongic studies also means that the relationship of Rgyalrongic to Tibeto-Burman is as yet undetermined. An understanding of the Rgyalrongic subgroup will in turn contribute to understanding the Tibeto-Burman family. I do not plan in this thesis to use my findings to directly address these questions, but I hope that the data in this description could be used in comparison to that of other Rgyalrongic lects for historical reconstruction.

Another reason that this phonological description is an important contribution is that few in-depth descriptions of Rgyalrongic languages exist in English. Much of the literature on the subgroup is in Chinese or (less frequently) in French. A fair number of articles are available but, as for in-depth descriptions like theses and dissertations, most of these are in Chinese or French (e.g. Mansier 1983, Huang 1991, Duo'erji 1998, Jacques 2004, Lai 2013). One exception is the dissertation of Prins (2011), and her work is on a lect from Rgyalrong proper. This thesis is the first description of Western Rgyalrongic phonology available in English.

In some ways, the present description reiterates what is described in Huang (1991)'s description of Gexi Stau. However, that was not known at the outset of data collection. So one outcome of this work is that it confirms that the varieties of Stau spoken in Gexi and Mazi are the same or very similar. However, this thesis also adds to what Huang's work established. For instance, the segmental phonology here provides a phonemic inventory of Stau, whereas in Huang's inventory of sounds she does not differentiate between phoneme

and allophone. Where she does describe variation it is not framed as allophony, and the contexts of variation are not always given. Huang's description is more concerned with accurate phonetic transcription. Knowing which Stau sounds are phonemic and which are allophonic will be helpful if an orthography is developed. This work also adds to that of Huang an acoustic analysis of the vowels and analysis of phonotactics and phonological processes.

1.1 Overview

The rest of this thesis is as follows: Chapter 2 provides background information. I will first introduce the Stau people (§2.1) and linguistic context (§2.2). The latter section will particularly focus on understanding of Stau's immediate genetic affiliations (§2.2.2) and its relationship to Tibeto-Burman (§2.2.3). In §2.3 I will review the previous scholarship on Stau that has been available to me. Section 2.4 provides a description of my fieldwork practices. Finally, I outline what I expect to find in my analysis of Stau phonology based on previous work on the language and its relatives (§2.5).

Chapter 3 presents Stau's segmental phonology, beginning with a summary of the phonemic inventory (§3.1). The next two sections give evidence of contrast for each of the consonants (§3.2) and vowels (§3.3) introduced in the summary. In addition to evidence of contrast, allophony and variation in pronunciation are discussed. Section 3.4 discusses similarities and differences between the segmental phonologies of this thesis and Huang (1991).

Chapter 4 provides acoustic analysis of voicing in stops and of vowels. Section 4.1 uses acoustic analysis to answer the puzzle of whether stops have two or three contrasts in voicing. The vowels are also analyzed acoustically in order to determine their qualities as defined by their first and second formants (§4.2).

In chapter 5, Stau syllable structure is described. First, §5.1 presents the syllable types that Stau uses, and then §5.2 moves on to discuss syllabification in Stau. Chapter 6

deals with phonotactic restrictions in Stau. Section 6.1 looks at phonotactic constraints in syllable onsets, focusing particularly on restrictions within consonant clusters, and §6.2 at constraints within the rhyme.

Chapter 7 considers phonological processes. It begins with an excursus on the relationship between the vowels /ɛ/ and /æ/ (§7.1), which plays a part in several phonological processes. From there, I move into a discussion of voice assimilation and nasalization of /v/ (§7.2). Then, §7.3 presents several cases of vowel assimilation in Stau. Finally, vowel changes that occur in reduplication are discussed in §7.4.

Chapter 8 is the final chapter of analysis, and it looks at pitch phenomena. Background information on how pitch phenomena have been analyzed in related languages is given in §8.1. In the next section, I describe the pitch patterns that I observed in Stau on words in isolation (§8.2). Then in §8.3, I interpret the data, tentatively proposing that Stau has a fixed stress system.

Finally, Chapter 9 summarizes all that came before and concludes the thesis.

Chapter 2

Background information

Chapter 2 provides background information to set the stage for the descriptive part of this thesis. We start by looking at the Stau people and culture in §2.1. In the following section, there will be an introduction to the linguistic context in which Stau exists: how Stau figures into the Tibeto-Burman language family and into its own subgroup. Section 2.3 looks at previous work that has been done on Stau, while §2.4 describes the details of the fieldwork on which this thesis is based. Finally, §2.5 lays out my expectations for Stau phonology based on previous scholarship.

2.1 The Stau people

The Stau live west of the Sichuan provincial capital, Chengdu, in the People's Republic of China (PRC), in Daofu/rTau and Luhuo Counties of Ganzi/dKar-mdzes Prefecture. Most Stau live along the Xianshui River valley in Daofu County. The focal point of the Stau area is Daofu Xian, the county seat.

Daofu County belongs to an area of Sichuan Province known as the "Ethnic Corridor." The Ethnic Corridor is a region characterized by mountainous topography and by ethnic diversity. It divides the Tibetan Plateau from the Sichuan Basin, stretching north-south from "southern Gansu and eastern Qinghai down through western Sichuan and southeastern Tibet to western Yunnan and the northern Burmese and Indian frontiers" (Sun 1990:1). The extremity of the Corridor's high peaks and steep river valleys discouraged travel and resulted in the isolation of communities, which in turn led to increased ethnic and linguistic diversity. Stau is one of the languages that developed in this linguistic hothouse. The map

below shows the higher-order ethnolinguistic groups that live in the Ethnic Corridor (Stau is within "Western Jiarongic").

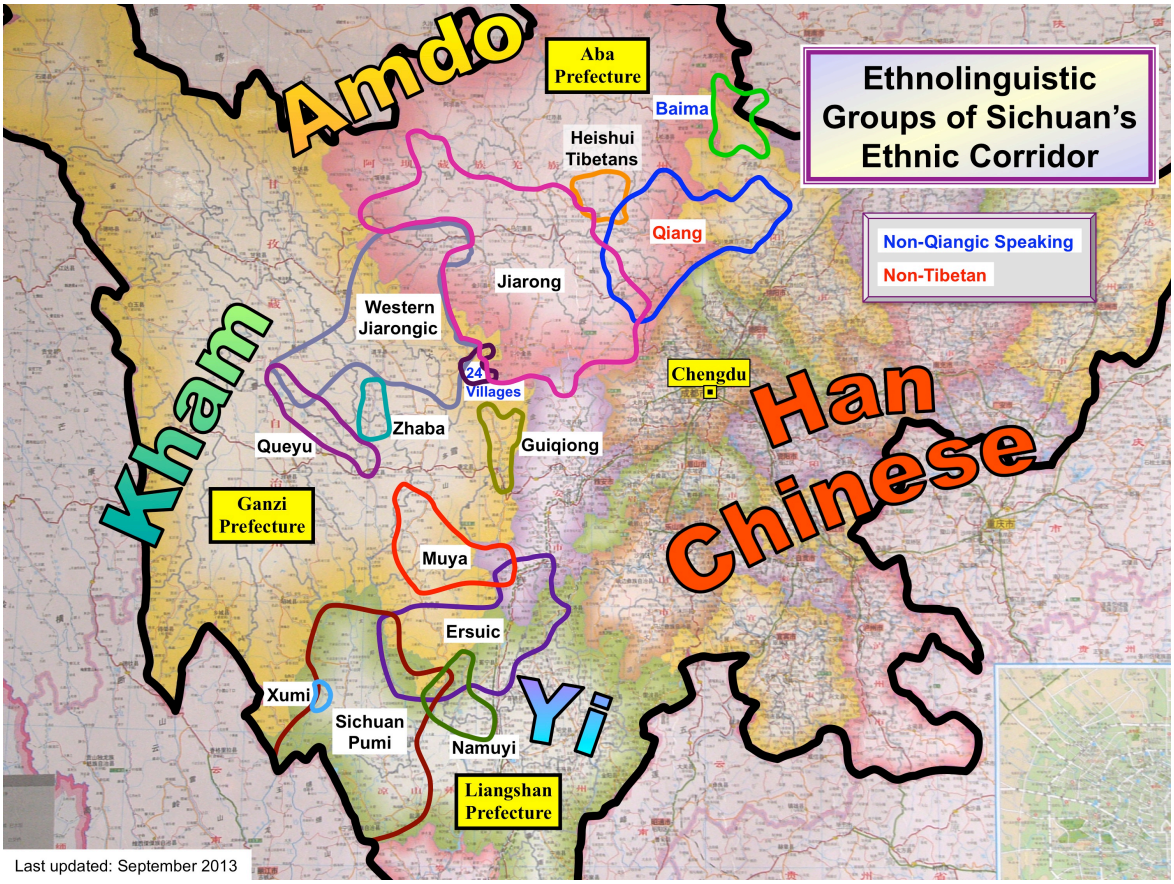

Figure 1. Map of the Sichuan Ethnic Corridor (from Gatehouse 2014)

The Ethnic Corridor has for a long time been under Tibetan cultural and religious influence, and the Stau area is no exception to the rule. Thus, in 1950s, when the new PRC government undertook to classify all the ethnic minorities (*minzu*) and confer minority nationality status on them, the Stau were included under the Tibetan *minzu*. This decision is understandable, since the Stau are very much part of the Tibetan world. In regard to religion, they are Tibetan Buddhist, which involves them in that sphere, where religion and culture are so closely tied, in myriad ways. Most Stau women wear the traditional Tibetan chupa, a long robe-like dress that wraps around the body and is cinched by a sash; if they

are married, they will also wear a colourful striped apron. Men used to wear the chupa, but now most wear Western clothing. However, when the weather gets cold, men will put on their warm, yak fur lined chupas. The Stau eat tsampa, a staple food all over the Tibetan Buddhist world that is made by mixing barley flour with yak butter tea and kneading it into dumplings. The religious influence of Tibetan Buddhism is seen in the way the Stau area is marked by stupas (religious monuments that house sacred relics) and prayer flags, which emblazon hills and rooftops. Many Stau have prayer wheels in their homes, and sometimes a large prayer mill can be seen along the road, kept perpetually turning by the power of a waterwheel. Stau often wear prayer beads with which they count the mantras they recite. The Stau not only practice culture in a way that makes it easy to call them Tibetan, they themselves identify as Tibetan, and do not want to be thought of as non-Tibetan (Jesse Gates, p.c.).

Despite a close identification with the Tibetan world, the Stau also have a strong identity as a people; Stau people take pride in being from Daofu. They even have a folk story that their language is an ancient version of Tibetan (Jesse Gates, p.c.). Sometimes this multiplicity of identifications can frustrate scholars who would prefer neat and discrete anthropological categories for people groups. Pelkey (2011) notices a similar phenomenon of multiple identities among the Phula of Yunnan Province and Vietnam. One of the Phula groups he researched has six "embedded ethnic identities" (2011:7). At first Pelkey tended to see this as an unjust obscuration of diversity, but over time he learned that "this condensed status actually represents the continuation of an ancient tradition of ethnic agglomeration in the region" (2011:7). Rather than expecting people to identify solely with one ethnic group, Gates (2014:3) suggests that a more helpful model to understand cultural identity in the Ethnic Corridor is that of the Russian matryoshka doll. As with the matryoshka dolls that nest one inside the next, multiple ethnic identities exist together as one identity nests within another identity. For the Stau, the local village would form the first level of a person's

identity, over which is layered Stau, then Western Rgyalrongic, Rgyalrongic (the latter two may be ethnolinguistic layers of which members are less consciously aware), and finally Tibetan.

One aspect of Stau culture that is distinctive from other Tibetans is their architecture. They build large houses out of wood logged from local forests. Massive timbers are used as columns in the frame of the house. In the style typical of Tibetan architecture, Stau houses have a pleasing geometrical frieze under the eaves. This frieze is formed by the ends of the secondary beams (which support the floors and roof) that are painted white to contrast with the reddish brown of the other timbers, which produces a decorative, chequer-like pattern at the terminus of each floor.

Figure 2. Stau house

Stau houses differ from those of the Rgyalrong, a related ethnolinguistic group who live north and east of the Stau, in that Stau houses are larger and use more wood in their construction. Rgyalrong houses are often constructed completely from stone; Stau houses, like the one pictured above, usually have a stone base while the rest of the structure is made with wood.

The Stau rely primarily for their livelihood on agriculture, both farming crops and raising livestock. The majority of the Stau are settled agriculturalists and live in the valleys. Some are pastoralists; these typically live at higher elevations, up the mountainside. Unlike the Amdo Tibetans, Stau herders are not nomadic. Those who are farmers grow barley, wheat, buckwheat, and corn (the latter mostly as pig feed). Lately, they have also started growing canola as a cash crop. Other crops they grow include bok choy, tomatoes, peppers, *hua jiao* (Sichuan numbing pepper), apples, and walnuts. The Stau raise cows, *mdzo* (a yak-cow hybrid), pigs, sheep, and horses. In addition to agriculture, Daofu County also hosts lumber and gold mining industries, though jobs in these industries are primarily filled by Han Chinese workers (Marshall & Cooke 1997). Because farming is often insufficient as a livelihood and alternative jobs are in short supply, many of the young people leave the area and migrate to Chengdu to find work. Another strategy that many Stau use to make ends meet is to supplement their income by hand-collecting and selling *cordyceps sinensis* or caterpillar fungus in the spring. *Cordyceps sinensis* is a fungus found on the Tibetan Plateau that parasitizes root-boring caterpillars (Winkler 2008:294). The fungus is used in both traditional Chinese and Tibetan medicine. Because of its scarcity, it fetches a very high price and contributes substantial cash income (Winkler 2008).

In terms of language vitality, Stau is not in immediate danger. Of the approximately 23,000 Stau (Lewis et al. 2013), the great majority use their mother tongue. Parents still pass on the language to their children, and the language is used in many domains. The Ethnologue gives Stau a 6a (Vigorous) status on EGIDS (Lewis et al. 2013),[1] meaning that Stau is sustainable. However, Mandarin Chinese has jurisdiction in the domains of goverment and education, where its use is mandatory, and has de facto control in some areas of business. No studies are available on Stau language vitality, but the closely related Rgyalrong was included in such a study (Huang X. 2000, cited in Zhou 2003:30). Although the

[1] Expanded Graded Intergenerational Disruption Scale

findings on Rgyalrong cannot be applied to Stau indiscriminately, they do provide an indication of what the situation might be like in Daofu (though the latter will probably be worse since Rgyalrong has a larger population). Huang X. (2000)'s study measures the ethnolinguistic vitality of 60 minority languages in ten domains. Rgyalrong is used minimally in the domains of adminstration, legislature, judiciary, religion, and economics; not at all in education, publication, media, literature and the arts, or IT. Out of the highest possible score of 40 (the level assigned to Mandarin Chinese), the following were Rgyalrong's scores:

Domain	**Score**
Administration	3.33
Legislature	5.00
Judiciary	3.33
Religion	2.00
Economics	1.25

As Chinese is used in more domains, knowledge of the language has become important for economic success. Although minorities like the Stau may bemoan Chinese's encroachment, pragmatism stops them from preventing their children from learning it. More and more people, especially the younger generations who are receiving more schooling, are bilingual in Chinese. This exerts pressure on Stau, and could cause its EGIDS level to drop to 6b (Threatened) in the future. It is relevant to note that Stau has no writing system, which might provide ballast against language attrition.

2.2 Stau's linguistic context

The study of Stau is young, as will become clear in §2.3 on previous work. For this reason, very little can be said with certainty or without qualification about it. It is generally accepted, at least as a working hypothesis (by, e.g., J. Sun 2000a, whom I will follow in this regard), that there is a Rgyalrongic subgroup of which Stau is a member. However, the existence of the subgroup has been contested on not unreasonable grounds. Consequently

Stau's immediate sibling relations are not known with certainty. Neither have scholars come to a consensus on the larger issue of the classification of Stau within Tibeto-Burman (TB), or the smaller issue of the dialect ramifications of Stau. I will address the question of the immediate sister and daughter affiliations of Stau in §2.2.2 and the classification of Stau within Tibeto-Burman in §2.2.3. But first, in §2.2.1, I disgress briefly. The intersection of languages—English, Chinese, Tibetan, Stau—has caused a profusion of names for Stau within the literature. To avoid confusion, a discussion of nomenclature is warranted.

(Please note that the discussion of classification issues throughout this chapter is quite detailed; readers who are not interested in classification should skip ahead.)

2.2.1 Nomenclature

Nomenclature is often an issue for Tibeto-Burman languages. As Matisoff (1996:ix) notes, "[r]ampant polynymy prevails in the TB family. Rare is the language that is not known by more than one name." Stau is no different. In the first place, Stau has many allograms, which can be confusing to the novice. The allogram *rTau* uses the Wylie transliteration of Tibetan script. Because the pronunciation of the *r* in Written Tibetan (WT) is misleading to newcomers, other scholars changed this preinitial to the more phonetic *s*. Other allograms include *Daofu* (Chinese pinyin), *Dawu* (Tibetan pinyin), and *Taofu* (Wade-Giles romanization).

Capitalization is also an issue among Rgyalrongic languages because some, like Stau, have Tibetan names. In Tibetan, it is conventional to capitalize the root letter; if the first letter it is a prefix, it is written in lowercase. Thus, one gets *sTau*, *rGyalrong*, etc. In order to avoid confusion, I will follow the Western convention of capitalizing the first letter.

Another issue is that Stau belongs to a group of lects, generally believed to include Geshiza (of Danba County) and Shangzhai (of the southern corner Rangthang County), that have no general autonym. As J. Sun (2000a) explains, early Western explorers used a variety of names for the language that they briefly recorded. Hodgson (1874) used Hórpa.

Other paleonyms that were used include Pawang (Rosthorn 1897), Gešits'a (Laufer 1916), Bawang Rong-Ke (Edgar 1933-4), and Taofu (Migot 1957).[2] Following Ma Changshou (1944), Sun Hongkai uses Ergong as the higher order name for the language (or language cluster) spoken in "Danba, Daofu, Luhuo, and Xinlong Counties of the Ganzi Autonomous Prefecture of the Tibetan Nationality, and at some localities around the Guanyinqiao area of Jinchuan County of the Aba Autonomous Prefecture of the Tibetan Nationality" (1990:12-3). However, this name is a Chinese exonym and has since been retired as offensive. Huang (1991) uses "Daofu" for both the larger group and the particular dialect of the Stau area. To add another complexity, since the 1990s, the definition of the language cluster has shrunk. Nyagrong-Minyag, the lect found in Xinlong County, and Khroskyabs (also called Guanyinqiao) are no longer considered part of the cluster. J. Sun (2000b, 2000b) has used "Horpa-Shangzhai" for the reduced cluster, but now uses the shortened "Horpa" (2005:3) to be consistent with other linguists, such as Jacques & Michaud (2011). Gates (2012:4) suggests "Western Rgyalrongic" as an appropriate term.

In 2013, Guillaume Jacques initiated a discussion on the Rgyalrongic listserv among linguists who work on Rgyalrongic languages and any available Rgyalrongic speakers in order to come to a consensus on an acceptable name for this language group, as well as a name for the lect until now called Lavrung.[3] With the input of several native speakers, a consensus was reached to call Lavrung "Khroskyabs" (pronounced [tʂʰoscæ] or [tʂʰoscæv]). However, I do not think one was reached on a name for the language group Stau belongs to, so I have decided to adopt Gates' term Western Rgyalrongic.

[2] All of these are cited in J. Sun 2000a.

[3] This discussion is not available online. However, one can subscribe to the listserv at http://www.lsoft.com/scripts/wl.exe?SL1=RGYALRONG&H=LISTSERV.LINGUISTLIST.ORG.

2.2.2 Stau's immediate family

Western Rgyalrongic is usually considered to be sister to a number of lects situated nearby in western Sichuan: Rgyalrong with its several varieties (e.g. Sidaba, Chabao, and Situ); and Khroskyabs. Together these lects are called Rgyalrongic. The following map shows where each Rgyalrongic (= Jiarongic) lect is spoken. A note for map-readers: Lavrung = Khroskyabs, Daofu = Stau, Xinlong-Muya = Nyagrong-Minyak (no longer considered a Rgyalrongic language by many scholars).

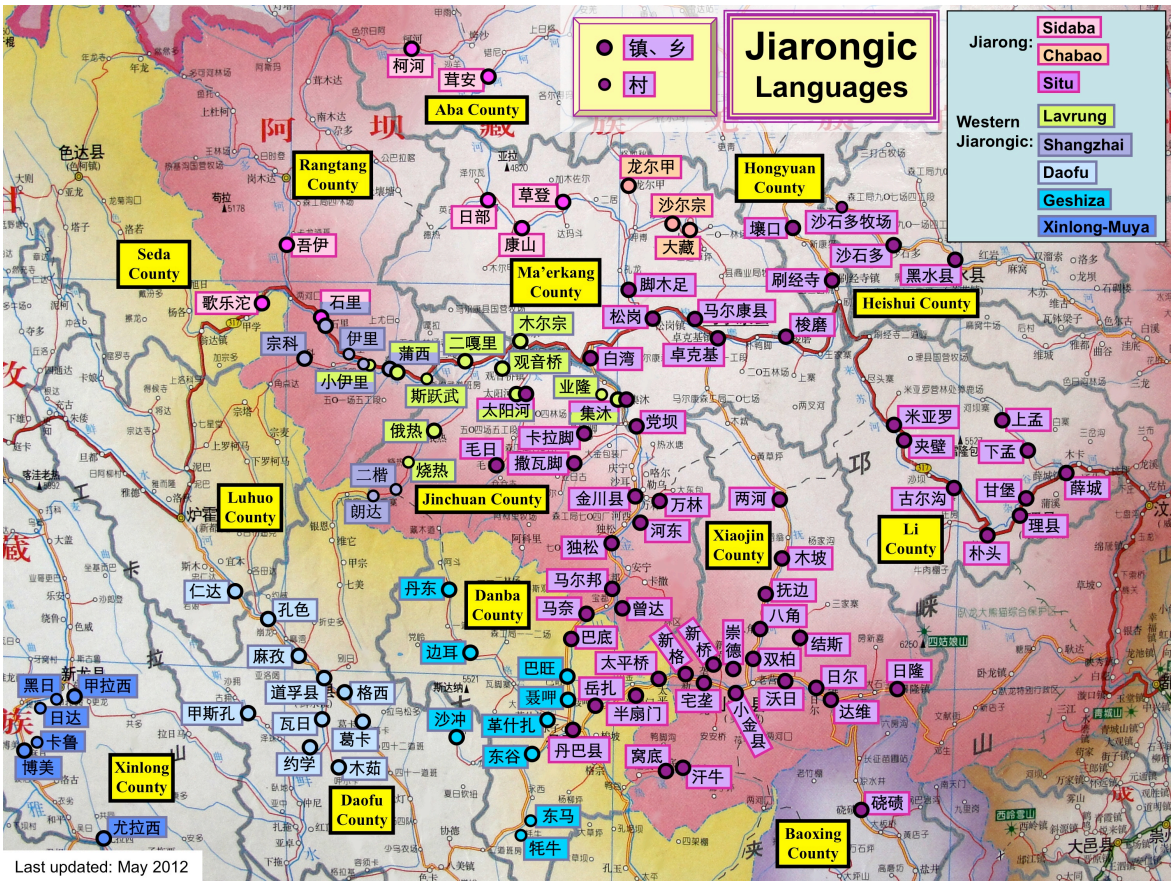

Figure 3. Map of Rgyalrongic languages (from Gatehouse 2014)

Within the literature on Rgyalrongic, various subclassifications of these lects have been proposed. I have chosen four of the major proposals to compare and contrast: those of J. Sun (2000a), a leading Rgyalrongic linguist, Jacques & Michaud (2011), Qu (1990)

and Lin (1993), and Huang (1991).[4] The classification I follow mostly closely and use as point of comparison is that of J. Sun. The proposals can be seen in Figure 4 below.[5] The chart sets the four subgroupings side-by-side in order to show how they correspond to and differ from each other, including in terms of nomenclature. Languages that are in cells along the same row are essentially equivalent even if they are called by different names, though undoubtedly there are differences in the way that each linguist defines them.

ISO code	J. Sun (2000a)		Jacques & Michaud (2011)		Qu (1990) & Lin (1998)		Huang (1991)	
jya	rGyalrong (proper)	Sidaba	Rgyalrongish	Zbu	Northern	Caodeng	rGyalrong (proper)	West
				Tsho-dbun				
		Chabao		Japhug		Dazang		North
		Situ		Situ	Eastern (Situ)			East
ero	Horpa-Shangzhai	Horpa	Horpa	Rtau	Western	Danba (Horpa)	Daofu (extended sense)	Daofu
								Geshiza
jih		Shangzhai		Stodsde		Shangzhai		
jiq	Lavrung		Lavrung	Thurjechenmo		Zhongzhai (Guanyinqiao)		Guanyinqiao
				Ndzorogs				

Figure 4. Comparison of four subgroupings of Rgyalrongic

Qu (1990) & Lin X. (1993) and Huang (1991) represent two classifications from the early years of Rgyalrongic scholarship. Qu and Lin considered all the Rgyalrongic lects to be dialects of one Rgyalrong language. They subdivided it into three dialects: Northern, Eastern (both included in J. Sun's "Rgyalrong proper"), and Western (Stau, Shangzhai, and Khroskyabs). Huang is one of the scholars mentioned in the introduction to this section who do not (or did not) assume a Rgyalrongic subgroup. Although Huang has since changed her mind, in her 1991 classification, she classified Rgyalrong and Daofu (in an extended sense) as direct daughter languages of the Qiangic branch, not more closely related to each other than to all the other Qiangic languages (see §2.2.3 below for a description of the putative Qiangic branch of TB).

[4] The latter three as cited in J. Sun 2000a.

[5] The reader may be confused to see an ISO 693-3 code referring to a language family—*jya* referring to the Rgyalrong family—when the codes are supposed to refer to a single language. The reason for this deviation is that Rgyalrong used to be considered a single language. Now this and the other ISO codes for Rgyalrongic are out-of-date but new codes have not yet been approved. Gates (2012) begins to rectify this situation, providing evidence that Rgyalrong lects are separate languages.

However, over the ensuing years, further research has changed the proposed classifications. J. Sun proposes a Rgyalrongic that forms its own diachronic subgroup distinct from Qiangic, and that comprises at least three synchronic languages—Rgyalrong proper, Horpa-Shangzhai, and Khroskyabs (Lavrung). He gives evidence for this hypothesis in two articles: J. Sun (2000a, b). J. Sun (2000a) shows, contra Huang (1991), that Khroskyabs is a Rgyalrongic language, giving evidence that it shares with Sidaba Rgyalrong three instances of unusual inflexional verb morphology that are not borrowed from a non-Rgyalrongic source. Further evidence of verb-stem alternations shared by Rgyalrong, Horpa-Shangzhai, and Khroskyabs demonstrates that these three languages form a stammbaum (i.e. a group of languages descending from one common ancestor; J. Sun 2000b). Both Huang (2003:60) and Sun (2004:313) have accepted J. Sun's hypothesis.[6]

However, the hypothesis undoubtedly will not last in its current form. Many lects are insufficiently studied, leaving Rgyalrongic classification still subject to change. One notable question that needs to be answered is that of where Khroskyabs fits into Rgyalrongic—is it more closely affiliated with Rgyalrong or with Western Rgyalrongic?

Another area under debate is that of the internal ramifications of Western Rgyalrongic. Western Rgyalrongic varieties are spread through Daofu, Danba, Luhuo, and Rangthang counties. However, as J. Sun (2007:212) remarks, "[d]ialect differentiation within Horpa [i.e. Western Rgyalrongic] is still quite unclear." J. Sun has shown that Stau (Daofu Country) and Shangzhai (Rangthang County) are closely related. In addition to sharing core lexical items, both use the unusual morphological phenomenon of marking tense-aspect through asperation inversion (2000b:230). He proposes that they comprise two dialects of one synchronic language, Horpa-Shangzhai (2000a:166). In response to this proposal, Gates (2012:17) objects that Stau and Shangzhai share low intelligibility, have many phonological and morphosyntactic differences, and they do not share an ethnic identity at a lower

[6] As cited in J. Sun 2005:3.

level of embedding. He suggests instead that the morphological similarities J. Sun identifies may be "reflexes from a common meso-level proto-language that broke from Proto-Rgyalrongic" (2012:18). If this were so, Horpa-Shangzhai would be "a diachronic clade within Rgyalrongic, consisting of several synchronic languages," which Gates calls "Western Rgyalrongic" (2012:18).

In regard to the other varieties of Western Rgyalrongic, progress is being made to classify them into synchronic dialect groups. Jesse Gates has been undertaking sociolinguistic survey in the area, using recorded text tests (RTTs) as well as informal interviews. The task of defining languages and dialects is not cut and dried, as Gates (2012) acknowledges. It relies on more than simply identifying mutual intelligibility (2012:30). He says, citing Pelkey (2011:37), that language boundaries are affected by other factors in addition to linguistic ones, making the boundaries complex and gradient. For this reason, language definition should involve knowledge from outside the linguist's purview. Pelkey himself writes: "Since any given lect constitutes a dynamic phenomenon with underpinnings that are linked to contact, intelligibility, socio-history, geopolitics, culture, cognition and structure alike, the dialectologist should simply require that a given language or dialect definition attempt to be equally complex in its application" (2011:37). Gates takes this approach to identifying the languages and dialects of Western Rgyalrongic. Based on the evidence of RTTs he has conducted throughout Daofu and and Danba Counties, Gates (2013) argues that what scholars have been calling one language, Horpa = Daofu = Stau, is actually three "dialect groups" that form a continuum: Stau, Geshiza, and an as-yet unnamed group provisionally called Bawang-Niega. Gates sees the term "dialect group," which he adopts from Tournadre (2008), as more truly representative of the actual linguistic situation than "language," which gives the impression of definite, unambiguous boundaries between varieties.

Gates hypothesizes that the Stau dialect group extends along the Xianshui River from Renda Township (reported to have speakers), through Kongse, Jiasekong, Mazi, Daofu

Town, Gexi, Wari, Yuexue, Geqia (= Geka), to Muru.[7] One village just west of Bian'er, Dangling, is also part of the Stau dialect group. Bian'er and Dandong, on the other hand, form the transition zone between Stau and the Geshiza dialect groups; these two could be classified with Stau or with Geshiza. Within the Geshiza dialect group fall Shazhong, Geshiza, and two villages of Donggu, Dongma and Maoniu. The third dialect group that differs distinctly from Geshiza and Stau is found in Niega (= Jiaju) and Bawang.

2.2.3 Stau within Tibeto-Burman

Early in Rgyalrongic studies when Rgyalrong proper was the only language under study, linguists assumed Rgyalrong was closely related to Tibetan and belonged to the Bodic branch of TB (e.g. Wolfenden 1936, Chang & Chang 1974). As more languages, such as Stau, were discovered, linguists began to see past the surface lexical similarities between Rgyalrongic languages and Tibetan. Today, two competing hypotheses about the classification of Rgyalrongic within Tibeto-Burman are debated. Some scholars place Rgyalrongic in a Qiangic branch of TB; others make it a daughter of a branch called Rung. The Qiangic hypothesis enjoys more currency, and most literature assumes a version of this classification. Rung as a branch of TB and as antecedent of Rgyalrongic is a newer and less well-known classification.

The Qiangic hypothesis proposes that the languages of the peoples of the Ethnic Corridor form one subgroup. As Chirkova (2012) points out, the Orientalist F.W. Thomas (1948) was the first to suggest this hypothesis. However, it did not become widespread until it was propounded by the highly respected Chinese linguist Sun Hongkai. Sun (1962, as cited in Chirkova 2012:136) proposed Qiangic as a subgroup for the Qiang, Rgyalrong, and Pumi languages. Then, on field trips taken between 1978 and 1982 in Sichuan, Yunnan, and southern Gansu, Sun identified seven previously undocumented languages—Muya

[7] These places are townships (*xiàn*) unless otherwise noted.

(Minyak), Shixing, Ersu, Namuyi, Guiqiong, Ergong (= Stau), and Zhaba (1987:120). These languages were also subsumed into the subgroup (Sun 1983, trans. 1990).

Though the Qiangic hypothesis has become the default classification for many Tibeto-Burmanists, it has not gone unchallenged. Chirkova (2012) calls into question the validity of the subgroup, arguing that the evidence for it is not probative. Qiangic is based on the evidence of shared vocabulary and shared typological features, such as a large number of consonant clusters, large consonant and vowel inventories, and directional prefixes (the latter considered particularly characteristic of Qiangic) (2012:138). However, Chirkova raises the objection that typological features can be shared through areal diffusion, not only genetic inheritance. Because the Tibetan borderland that the putative Qiangic languages inhabit is such a melting pot of multilingualism, this explanation is plausible. Corroborating evidence is found in the fact that the shared features demonstrate a "conspicuous absence of cognateness" (2012:137). In addition, the evidence offered by shared vocabulary becomes less significant when one considers that a portion of the already low 20-25% lexical similarity consists of Sino-Tibetan cognates and cultural borrowings from Tibetan (2012:137, 141). Finally, Qiangic as a subgroup has not been substantiated by truly probative evidence, namely that of shared innovations, or rather I would add, following Nichols (1996) and LaPolla (2013), *paradigmatic* or *idiosyncratic* shared innovations.

It is on this type of evidence that the Rung subgroup is based. Thurgood (1985) and Ebert (1990) were first to propose the Rung hypothesis; it was expanded and improved upon by LaPolla (2003, 2006), as Thurgood (2003:14) himself acknowledges. In LaPolla's proposal, Rung comprises "Rgyalrong, T'rung (Dulong), Rawang, Kiranti, Kham, and Western Himalayan" (2003:30), a set of languages not intuitively grouped together, as they are separated by a great geographical distance and the Himalayas. LaPolla maintains an association between the "Qiangic" languages and Rgyalrong. He speculates that the "Rung languages most likely split off from an even higher-level grouping with the Qiangic languages, then

Rgyalrong split off from the group as migrations moved south, then Western Himalayan split off from Kiranti and Rawang, and then these two groups split" (2006:394). The tree in Figure 5 illustrates LaPolla's proposed subgrouping:

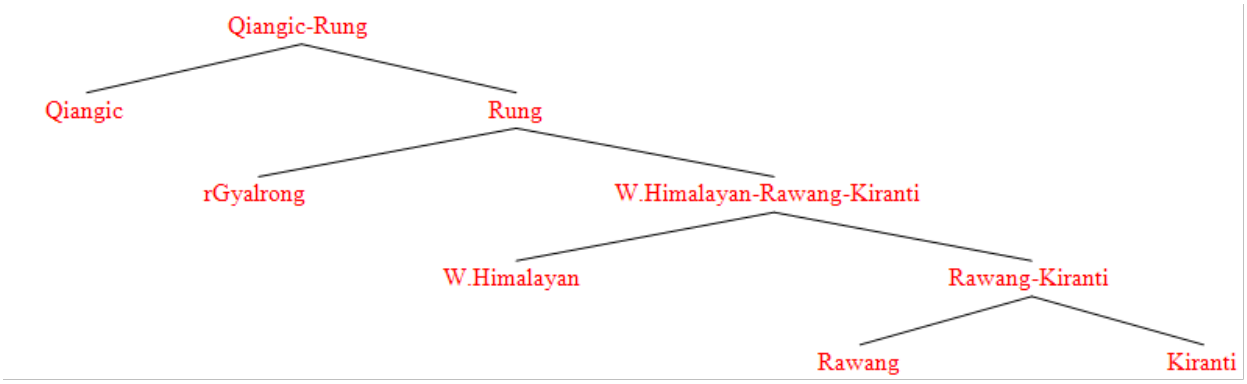

Figure 5. Qiangic-Rung subgrouping

LaPolla bases Rung, in contrast to Qiangic, on "paradigm-like sets" of shared innovations (2013:464). He argues that the evidence for Rung is methodologically superior to that for Qiangic, making Rung a better hypothesis, despite its lack of immediate intuitiveness. LaPolla is very concerned about sound methodology within Tibeto-Burman historical linguistics. In a 2013 article he warns against basing subgroupings on geography or other inadmissible evidence (such as that used to back up Qiangic). LaPolla recommends following the comparative methodology outlined in Nichols (1996).

To summarize briefly, Nichols (1996:48) calls for claims of genetic relatedness to be based on what she terms "individual-identifying evidence." Individual-identifying evidence contrasts with "type-identifying evidence," namely shared features, such as the presence of a grammatical category like ergativity or possessing a large consonant inventory. Such features can be easily spread among unrelated languages in an area; they can identify a "type" of language but not an individual proto-language. The kind of evidence needed to establish a stammbaum is not to "individual items but whole systems or subsystems with a good deal of internal paradigmaticity, ideally multiple paradigmaticity." In addition, these

paradigmatic systems must show cognancy (1996:48).[8] Only this type of evidence can rule out the possibility that features have been shared by chance or by diffusion, and qualifies as individual-identifying.

It is this kind of evidence that gives weight and credence to the Rung hypothesis. In the same 2013 article, LaPolla goes through the evidence for Rung, as a demonstration of how Nichols' method works. He shows that the languages of Rgyalrong, Dulong-Rawang, Kiranti, and Western Himalayan not only share the feature of a person-marking system, but also—crucially—that these systems are cognate (2013:468, 471):

(1)

	1sg	**1**pl	**2**pl	dual
Proto-Rgyalrong	*-ŋ	*-i	*-ñ	*-tsh
Proto-Dulong-Rawang	*-ŋ	*-i	*-n	*-si
Proto-Kiranti	*-ŋ	*-i	*-ni	*-ci
Proto-W. Himalayan	*-g/ŋ	*-ni	*-ni	*-si

One may have noticed that LaPolla refers to "Rgyalrong," not "Rgyalrongic." He is one of the scholars mentioned in the introduction to this chapter who questions whether Stau is a sister language of Rgyalrong. LaPolla (2003) splits up the putative Rgyalrongic subgroup, leaving Ergong and Daofu[9] in the Qiangic subgroup and seconding Rgyalrong to Rung. He has said subsequently that, based on J. Sun & Tian (2013), it appears that Stau has most of the Rung person-marking system. However, some of the set is not accounted for in the data given by Sun & Tian. This could be because the data was not relevant to their thesis, rather than because it does not exist, in which case Stau could yet be incorporated into Rung (LaPolla, p.c.).

[8] LaPolla (2013) points out that TB's monosyllabicity and dearth of morphology make applying Nichols' criterion of paradigmaticity to this context difficult. However, the standard can be met within TB if the criterion is tweaked to include "paradigm-like sets of words and grammatical forms" (2013:465).

[9] It is unclear what distinction LaPolla is making with the two language names, which most Rgyalrongic linguists use interchangeably.

To sum up, no definite conclusion has been reached concerning the classification of Stau within Tibeto-Burman, except that it belongs to the conglomerate of languages that originate in the Ethnic Corridor.

2.3 Previous work

Little previous work has been done on Stau or on Western Rgyalrongic, to which it provisionally belongs. What work has been done has for the most part been written in Chinese, which I cannot read fluently, and is often unobtainable for me in Canada. Some of the earliest documentation of Stau was collected by the early Western explorers mentioned in §2.2.1. Some of them took down short wordlists in the Daofu area (e.g. Hodgson 1853), but they were not professional linguists and made little attempt to systematically study the language. The first linguistic work done on Stau was an article by Wang (1970) about the consonant clusters of Tibetan loanwords in Stau. Later, Sun (1983) wrote a paper containing brief and broad sketches of seven recently discovered languages of the Sichuan Ethnic Corridor, one of these being "Ergong" as spoken in the Dasang District of Danba County (1990:12-4). An English version of this paper translated by J. Sun was published in 1990.

The first substantial descriptive work on a Western Rgyalrongic lect appeared in 1990—an article on phonology and verb conjugation in Gexi Daofu by Huang. Huang (1991) also contributed a chapter on Daofu to the collection *Zangmianyu Shiwuzhong [Fifteen Tibeto-Burman languages]*. Both Huang (1990) and (1991) are written in Chinese.[10]

Another linguist who has made significant contributions to the study of Western Rgyalrongic is Duo'erji. He studied his mother tongue, a variety of Western Rgyalrongic spoken in Geshiza (Danba County). In 1995, Duo'erji published a short phonology on Geshiza, and in 1998 a more comprehensive description of the language that included grammar as well as phonology. Like Huang's work, these sources are written in Chinese.[11]

[10] I have a copy and English translation of the latter, but not the former.
[11] I have a copy of the later work, though not the earlier one.

Sources that deal with varieties of Western Rgyalrongic and are available in English only discuss the languages in relation to particular classificatory or grammatical issues; none are thorough descriptions. J. Sun (2000a), (2000b), and (2007) are examples of this type of work. All three articles compare data from representative Rgyalrongic lects, focusing on particular grammatical features, in order to prove their status as a related subgroup and to provide some indication of their internal subgrouping.[12]

In the last year or two, as more academics have been joining and uploading their research to the academic social networking site, Academia.edu, resources—especially unpublished working papers—have become available faster. The site provided a platform for Jacques et al. (2013) to upload an unpublished article on verb inflection in Stau.

Four works on the Wobzi dialect of Lavrung (= Khroskyabs), a Rgyalrongic language sometimes proposed to be more closely related to Western Rgyalrongic than to Rgyalrong proper, have also been made available on Academia.edu by the author Lai. Three are articles on person agreement, morphology, and consonant clusters, (2013b), (2013c), and (2013d) respectively, and the fourth is Lai's M.A. thesis (2013a).

Rgyalrong proper is much more thoroughly described than any other Rgyalrongic macrolanguage, and in comparison to Western Rgyalrongic has a wealth of resources. A number of lects within Rgyalrong proper have been studied.[13]Mansier (1983) described the phonology and lexicon of Tsenla (= bTsan-lha, = Xiaojin) Rgyalrong. Nagano (2003) has written on Cogtse, a variety of Situ Rgyalrong. Prins (2011) for her doctoral dissertation wrote a grammar on another Situ dialect, Jiaomuzu. Caodeng, a Sidaba variety, is described in a number of articles by J. Sun, notably (2003). Jacques (2004) wrote his doctoral dissertation on the phonology and morphology of Japhug (a lect of the Chabao variety). Chinese linguists also have published more on Rgyalrong proper than any other Rgyalrongic language; representative works include Lin X. (1993) and Qu (1984).

[12] See §2.2 for a discussion of J. Sun's conclusions concerning the genetic affiliation and subgrouping of Rgyalrongic, and of Stau's genetic classification.

[13] See §2.2.2 for more on how these lects are related to Stau.

A couple of sources that deal with the Rgyalrongic subgroup generally were published recently, Gates (2012, 2013) and Nagano & Prins (2013). Gates' (2012) thesis deals with Rgyalrongic dialectology and the question of how many synchronic Rgyalrongic languages or dialect groups there are.[14] He demonstrates that Situ Rgyalrong[15] is not just a dialect of Rgyalrong proper but is a language, according to the criteria defined by the ISO (International Organization for Standardization), and hypothesizes that Rgyalrong actually comprises five synchronic dialect groups. Gates (2013), a presentation at the 3rd Workshop on Sino-Tibetan Languages of Sichuan, continues the work of Rgyalrongic dialectology by arguing from recorded text tests (RTTs) that the dialects of Western Rgyalrongic form a dialect continuum with three dialect groups (see §2.2.2 for more specifics). Nagano & Prins (2013) is an online database presenting wordlist and sentence data from 81 lects—primarily Rgyalrongic ones but also a few non-Rgyalrongic, such as Nyagrong-Minyag and Queyu. The same 425- or 1200-item wordlist and 200 sentences were used for elicitation at each location. The database allows several ways of interacting with the data. An interactive map allows the user to click on a data point, and on the same page search for and listen to a particular word in the chosen lect. From the map one can also access a PDF of the wordlist collected at each data point. From another page, one can chose an English gloss and browse all the forms collected for that item of the wordlist. On a third page one can browse by language the 200 sentences.

2.4 Fieldwork background

I conducted the fieldwork for this thesis in Sichuan Province, China, between late June and early August 2012. The bulk of this time I spent in Chengdu, Sichuan's capital city. While in Chengdu I worked with a female speaker of Stau in her early 30s named Tsomo.[16] She grew up in Mazi Township of Daofu County, Ganzi Prefecture, and moved

[14] Gates uses the terms "languages" and "synchronic languages" throughout his thesis, but now prefers the term "dialect group(s)" to more accurately represent of the linguistic situation (Gates, p.c.).

[15] Refer back to Figures 3 and 4 in §2.2.2 to recall where Situ is situated within Western Rgyalrongic.

[16] Tsomo has given me permission to cite her by name.

with some of her family to Chengdu some years ago. Tsomo speaks Stau in the home with her family. She speaks some Sichuanese Mandarin, though she is not fluent. Interestingly, Tsomo's family is part of the Stau population that intermingles and intermarries with the nomadic Amdo Tibetans. For this reason, Tsomo speaks Daofu-style Amdo Tibetan and has closer ties to the Tibetan-speaking world than other Stau people might. Because she runs a business in Chengdu that caters to Tibetan customers, she has also learned to communicate with Tibetans of nearly all dialects.

For one week of the two months spent in Sichuan, I went on a trip to the Stau language area, accompanying a couple of other linguists who were doing sociolinguistic survey. For my part, the purpose of the trip was to meet Stau people, to see how they live in their own milieu, and to experience the culture of which their language is a part. Secondarily, I hoped to gather wordlist data from other Stau speakers in order to compare it to Tsomo's idiolect as represented by the data I had collected with her. With data from other speakers, more firm conclusions could be drawn about what is part of the language and what is distinctive of my language consultant's idiolect. In addition, data from multiple speakers might provide some clues to the variation that exists within the Mazi Stau dialect.

I gathered parts of the wordlist I had collected with Tsomo with two speakers, a male in his late 20s or early 30s and a female speaker in her 30s. However, I did not have enough time to collect sufficient data to make any certain or definite claims about dialect-internal variation. Only 195 words were gathered with the male language consultant, and 95 with the female speaker. Because wordlists of such small size are insufficient to base claims on, I have not incorporated them into the thesis.

In my main work with Tsomo, the work went through several stages. The first stage was initial data collection, during which Tsomo and I worked in her home. In the morning, my colleague Jesse Gates accompanied me and would translate between Mandarin and English for me. In the afternoon I would return by myself and variously use my limited

Mandarin, gesture and actions (e.g. pointing to body parts), and images from Google to elicit words on my list. If Tsomo and I could not negotiate to mutual understanding over a particular word, I skipped it, to return to it with Jesse the next morning when we could have more nuanced communication.

The wordlist I used was a pared-down, 425-word version of one created by Yasuhiko Nagano for the Nagano Rgyalrongic Language Survey Project, given to me by Gates. It proved very useful, since it includes not only an English gloss column, but also columns for the Chinese gloss written with characters, the Chinese gloss written in *pīnyīn*, and the Written Tibetan gloss. Because I do not read Tibetan, the latter was not of much use, but the Chinese glosses were very helpful to me with my limited Chinese vocabulary. Using the *pīnyīn*, I could ask Tsomo for the Stau equivalent of a Chinese word I had never before encountered. If I had used a wordlist with English glosses I could have looked up the Chinese equivalents, but I would have no assurance that the Chinese word had the semantic connotation I intended, whereas the Chinese glosses in the modified Nagano wordlist had been chosen by linguists with a high degree of fluency in Chinese. Another perk of the wordlist was that the version Gates gave me had been filled out by his colleague Tshe-dbang sGron-ma with a dialect of Stau from Kongse (= Khang gsar). If attempts at communication in Chinese or through gesture failed, I could try pronounce the Kongse word, which sometimes succeeded in sparking understanding.

While working from Tsomo's home, I recorded our sessions in full on a *Roland R-09 Edirol* portable recorder, while simultaneously marking down what I heard in a data notebook. However, these recordings were not of high enough quality to use for acoustic analysis. So after we had elicited as many of the wordlist items as possible, we moved to the second stage of the work: making high-quality recordings of the wordlist. I borrowed a colleague's quiet, muffled apartment and some of their equipment. I used a *Shure SM58* cardioid microphone on a stand, which plugged into a *CEntrance MicPort Pro* USB microphone pre-amplifier, which recorded directly into *Adobe Audition 1.5*. As we went through

the wordlist I would prompt Tsomo with the Stau word as best as I could pronounce it. She would repeat the word into the recording microphone three times, and then put it in the context of a sentence, which she also said three times. At first, Tsomo would construct these frame sentences on the spot and they would vary. Over time, a couple sentences became standard:

(2) a. *tʰɛ* __ *ŋə-rə*
DEM __ COP-CONST
'This is __'

b. *tʰi* __ *kaji* *ŋə-rə*
DEM __ pretty COP-CONST
'This __ is pretty'

2.5 Expectations

Looking at Stau data from other researchers and the phonologies of related languages, some expectations of what Mazi Stau might look like can be formed. The first expectation is that Stau will have a large consonant inventory. The second is that the language will have a large number of unusual consonant clusters. These are both typological features of Qiangic (Chirkova 2012:137), and features found in many Rgyalrongic varieties.

Consonants I expect to find include a series of affricates at three places of articulation: dental or alveolar, alveolo-palatal or palatal, and retroflex; each having three voicing distinctions: tenuis (voiceless unaspirated), voiceless aspirated, and voiced. Many available phonologies of Rgyalrongic languages describe this series of affricates, including the Zhuokeji variety of Situ (Lin Y.J. 2003), Caodeng Sidaba (J. Sun 1994), Japhug Chabao (Jacques 2004), Wobzi Khroskyabs (Lai 2013d), Puxi Shangzhai (J. Sun 2000b), and Gexi Stau (Huang 1991). All these languages, as well as Jiaomuzu Situ (Prins 2011) and Cogtse Situ (Nagano 2003), also have three voicing distinctions in their stops, of which they have at least four places of articulation: labial, dental or alveolar, palatal, and velar.

Six of these—Caodeng, Japhug, Khroskyabs, Shangzhai, Gexi, Stau (Wang 1970)—also use voiceless unaspirated and voiceless aspirated uvular stops, and voiced and voiceless uvular fricatives. Other less common consonants I expect based on their frequent use in the inventories of the above mentioned nine lects include the lateral fricative (voiceless and possibly voiced versions) and likely both voiced and voiceless velar fricatives.

Based on the vowel inventories of related lects, I expect Mazi Stau to have over a vowel inventory of slightly above-average size with seven or eight vowel qualities (Maddieson 2013d). The various Rgyalrong phonologies describe between six (Jiaomuzu) and nine (Caodeng) vowels in their inventories. The available descriptions of Western Rgyalrongic lects have seven and nine vowels, as shown in the following vowel charts.

(3) Rtau-Kongse vowel inventory (Jacques et al. 2013)[17]

i			u
e	ə		o
		ɞ	
	a		

(4) Gexi Stau vowel inventory (Huang 1991)

i					u
e			ə	ə̆	o
	ɛ				
		a			ɑ

[17] The vowels in this chart were gleaned from the language data in Jacques et al. 2013. The article did not have a vowel chart.

(5) sTau vowel inventory (unknown variety) (Wang 1970)

i		ɯ	u
e		ə	o
	ɛ		ɔ
		a	

Although the vowel charts in (3)-(5) all represent varieties of Stau, there are significant differences among their vowel inventories, which make predictions for Mazi less certain. The lack of consistency may be due to differing transcription judgments on the part of the linguists. It is worth noting that none of the vowel inventories here is based on an acoustic plot like that in §4.2.

Another factor that might cause discrepancy is the distance between Gexi and Kongse (WT = Khang gsar) villages. Unfortunately, where exactly Wang's language consultants were from is unknown, which makes his data less helpful. His language consultants, whom Wang worked with in Kathmandu, Nepal, came from different villages at a significant distance from each other: the first consultant's "original home was a distance of three hours by walking east of Stau, while [the second consultant]'s was two days on horseback south of Stau" (1970:633). Considering the variety and number of languages that are being discovered within short distances in the Ethnic Corridor, treating significantly distant lects as the same language without prior investigation would not be considered good practice by contemporary linguists, and calls the reliability of the data into question. However, I include Wang's analysis here for thoroughness and for potential comparison. The analyses being what they are, the charts in (3)-(5) show some consistency. Based on the vowel inventories, I expect also to find /i/, /e/, /u/, /o/, and /a/ in Mazi.

A common feature of languages of the Ethnic Corridor that Mazi is likely to share is a large number of consonant clusters. Many of these are likely to be unusual. Matisoff writes that the Qiangic languages (as which he categorizes Stau) are "characterized by initial

consonant clusters comparable in complexity to those of Written Tibetan" (1991:482). Various Rgyalrongic dialects have been described with this phenomenon. Lai (2013d) reports this phenomenon in Wobzi Khroskyabs, Prins (2011) in Jiaomuzu Rgyalrong, and Duanmu (2008:224-36) notes the same for several other Rgyalrong lects.

In terms of consonant codas, I do not expect Mazi to have many. In the first place, a lack of them is a characteristic of the putative Qiangic languages (Chirkova 2012:137). Second, J. Sun (2000b:213) contrasts the way Gexi and Geshiza Stau have lost codas with the coda-conservative Puxi Shangzhai. However, the lack of final consonants of which J. Sun speaks may only be in comparison to Puxi. Matisoff (2004:328) notes that in comparison with other Qiangic languages Rgyalrong and Ergong (= Stau) do better at preserving codas.

A feature Mazi Stau probably does not have is tone. J. Sun remarks that "most sources on Horpa agree on its lack of lexical tone or contrastive accent" (2000b:222). He does, however, note in a footnote that Liu (1989) "reports as many as four tones in one variety of Horpa distributed in Xianshui Township of Daofu County" (2000b:222). Many related Rgyalrongic varieties are also described as having tonal systems, usually restricted tone or "pitch accent" systems; Caodeng, Zhuokeji, and Showu (=Zbu) Rgyalrong, Wobzi and Thugschen Khroskyabs, and Puxi Shangzhai being among them.[18] These languages use tone more frequently to mark grammatical distinctions than lexical ones. For example, Caodeng, Zhuokeji, Showu, and Puxi all use tone on the verb stem to mark tense-aspect. Other Rgyalrongic lects do not use tone: Japhug of Chabao Rgyalrong (Jacques 2004:74), and Njorogs Khroskyabs (=Yelong; Lai 2013a:31).

[18] Described or mentioned in, respectively, J. Sun 2008, Lin Y.J. 2003, J. Sun 2004, Lai 2013a (both Wobzi and Thugschen), and J. Sun 2000b.

Chapter 3

Segmental phonology

In this chapter, I briefly introduce the phonemes of Stau in §3.1. Section 3.2 will give further detail on the consonants, specifically any allophony and evidence of the contrasts posited in §3.1. Similarly, in §3.3, I will elaborate on the vowel inventory. For both consonants and vowels, each allophone will be described at the beginning of the section dealing with its parent phoneme or phonemic category. After discussion of allophony, for each phoneme I give evidence of its phonemic status in the form of a list of example words in which the phoneme occurs. A representative variety of contexts will be provided. Presenting lists of examples was chosen over minimal pairs in order to provide more data for fellow researchers to peruse, so that they could compare Stau to their own language of study or find evidence for a hypothesis on which they are working. If a reader would prefer to see minimal pairs as evidence of contrast, I list minimal and near-minimal pairs in Appendix A. Finally, §3.4 will compare my findings on the phonemic inventory with those of Huang (1991).[1]

3.1 Inventory of phonemes

Stau has 42 consonant phonemes, as the table below illustrates. The consonants in brackets are phones that occur in Stau but are not full phonemes. The reader might expect based on the tendency toward phonological symmetry that these sounds would be phonemes

[1] A couple notes on the data used as evidence: The verbs given as evidence are as much as possible in third person form. I heartily thank Katylin Wonnell for going through my examples and correcting the verbs to be consistently third person. It is also relevant to note that, though there are vowel alternations at work in the verbal morphophonemics of Stau, I still use vowels from verbs as evidence to demonstrate segmental phonology.

in Stau. Thus I include the consonants in the inventory to assure the reader that these gaps in the symmetry of the consonant inventory are not the result of an oversight.

Stau consonants

	labial	**alveolar**	**retroflex**	**palatal**	**velar**	**uvular**
vl unaspirated stop	p	t		c	k	q
vl aspirated stop	pʰ	tʰ		cʰ	kʰ	qʰ
vd stop	b	d		ɟ	g	(ɢ)
vl unaspirated affricate		ts	tʂ	tɕ		
vl aspirated affricate		tsʰ	tʂʰ	tɕʰ		
vd affricate		dz	dʐ	dʑ		
vl fricative	(f)	s	(ʂ)	ɕ	x	χ
vd fricative	v	z	ɾ	ʑ	ɣ	ʁ
nasal	m	n		ɲ	ŋ	(ɴ)
vl lateral fricative		ɬ				
vd lateral fricative		ɮ				
approximant	w	l		j		

A 42-consonant inventory is typologically remarkable in cross-linguistic comparison. According to the World Atlas of Language Structures, a consonant inventory with 34 or more consonants is categorized as large, in comparison to the average of 19-25 phonemes (Maddieson 2013a). Although the size of the inventory is unusual cross-linguistically, areally it is not; a large consonant inventory is a feature of languages of the Sichuan Ethnic Corridor (as noted in §2.2.3, the possession of a large consonant inventory has been cited as a characteristic of the putative Qiangic subgroup, the extent of which largely coincides with that of the Ethnic Corridor).

The consonant inventory could even be expanded to 58 consonants, depending on one's analysis. There are sixteen stops and affricates preceded by homorganic nasals that could be analyzed either as sequences of two consonants or as one segment—i.e., as consonant clusters or as an additional "prenasalized" manner of articulation. I have decided to analyze these as consonant clusters. To see a discussion of my reasons for this decision, see §6.1.2.

Stau's vowel inventory is a more typical size, consisting of eight vowels:

Stau vowels		
	front	**back**
high	i	u
	e	o
	ɛ	ə
low	æ	ɑ

Though the vowel inventory seems tame next to the overflowing consonant inventory, it is considered on the large side in comparison to the average five- or six-vowel inventory that 51% of the world languages have (Maddieson 2013d). Again, this size of vowel inventory is typical of Corridor languages. Fellow Rgyalrongic languages Japhug Rgyalrong and Puxi Shangzhai have eight and nine vowels, respectively (Jacques 2004, J. Sun 2000b). Qiang has vowels at eight positions, with additional phonemic contrast provided by vowel length at seven of these positions (LaPolla & Huang 1996:25).

3.2 Consonants

In this section, evidence of contrast for the consonant phonemes proposed in §3.1 is given for each phoneme. Allophony and any particularities of articulation are discussed at the beginning of each subsection. The subsections are ordered according to manner of articulation and then by place of articulation.

3.2.1 Stops

Stau has five stop series at bilabial, alveolar, palatal, velar, and uvular places of articulation. Each of these distinguish between three types of voicing: voiceless aspirated, voiceless unaspirated, and voiced.

Readers may notice in the lists of examples of voiced stops that there are very few or even no examples of word-initial voiced stops. This may cause some doubt on the score

of their phonemic status. Please refer to §4.1 for acoustic evidence that voiced stops are indeed separate phonemes from voiceless unaspirated stops.

3.2.1.1 Bilabial stops /pʰ, p, b/

Stau makes a three-way distinction between the voiceless aspirated bilabial stop /pʰ/, the voiceless unaspirated bilabial stop /p/, and the voiced bilabial stop /b/. The bilabial stops have no allophonic variation.

The voiceless unaspirated bilabial stop is involved in neutralization. In rapid speech, [p] sometimes appears as a coda in Stau, e.g. *[ɣməlɛp]* 'fire'. However, in more careful speech the bilabial consonant can also be pronounced as [v], as (6) illustrates:

(6) *[ɣməlɛv]* 'fire'

/p/ is not a contrastive phoneme in coda position; in this context, the contrast between /p/ and /v/ is neutralized. (Thus the phonological transcription of 'fire' is *ɣməlɛv*.) See §§3.2.3.1 and 6.2 for further discussion of the neutralization.

The following examples show each of the bilabial stops in a variety of environments, representative of their distribution.

(7) /pʰ/

a.	*pʰi*	*[pʰi]*	'to run away'
b.	*pʰe*	*[pʰe]*	'to vomit'
c.	*pʰɛ*	*[pʰɛ]*	'to throw out'
d.	*pʰœ*	*[pʰœ]*	'half'
e.	*pʰəru*	*[pʰəʐu]*	'basket carried on back'
f.	*pʰupʰa*	*[pʰupʰa]*	'male pig'
g.	*pʰjɛr*	*[pʰjɛʂ]*	'to open, unfurl'
h.	*pʰjəsu*	*[pʰjəsu]*	'outside'
i.	*pʰrupʰru*	*[pʰʂupʰʂu]*	'white'
j.	*rœpʰi*	*[ʐœpʰi]*	'mahjong'
k.	*nə-pʰœ*	*[nəpʰœ]*	'split' (DIR$_{down}$-split; adj)
l.	*tə-pʰɛ*	*[təpʰɛ]*	'to lose' (DIR$_{neut}$-lose)

m. *ləpʰu* *[ləpʰu]* ‘tree’
n. *mpʰrivæ* *[m̥pʰʂivæ]* ‘prayer beads’
o. *xpʰə* *[xpʰə]* ‘butt’
p. *mpʰi* *[m̥pʰi]* ‘to card’

(8) /p/
a. *pi* *[pi]* ‘ball of tsampa’
b. *pɛrspo* *[pɛrspo]* ‘to walk’
c. *pæbə* *[pæbə]* ‘insect’
d. *pəpə* *[pəpə]* ‘shallow’
e. *pubœ* *[pubœ]* ‘Tibetan’
f. *pjɛno* *[pjɛno]* ‘meat’
g. *plɛ* *[plɛ]* ‘thigh’
h. *prilærə* *[pʐilærə]* ‘to whinny’
i. *xopi* *[xopi]* ‘table’
j. *tə-pɛ* *[təpɛ]* ‘to take out’ (DIR$_{neut}$-take.out)
k. *æpæ* *[æpæ]* ‘father’
l. *tɕʰəpæ* *[tɕʰəpæ]* ‘clothing’
m. *rtɛpu* *[ʂtɛpu]* ‘stallion’
n. *scərpə* *[scəʂpə]* ‘soy sauce’
o. *spo* *[spo]* ‘grassland’
p. *xpoŋ* *[xpõ]* ‘shoulder’
q. *ɲtɕʰaχpa* *[n̥tɕʰaχpa]* ‘to fold’

(9) /b/
a. *bəti* *[bəti]* ‘cheek’
b. *bjɛrgə* *[bjɛrgə]* ‘pheasant’
c. *bæɴɢe* *[bæɴɢe]* ‘spider, fly’
d. *æ-bɛr* *[æbɛʂ]* ‘one step’ (NUM1-step)
e. *pubœ* *[pubœ]* ‘Tibetan’
f. *ɲɟaba* *[ɲɟaba]* ‘mud’
g. *rʁəbə* *[ʐʁəbə]* ‘thin’
h. *rŋəbo* *[ʐŋəbo]* ‘roasted barley’
i. *mobrɛ* *[mobʐɛ]* ‘tears’
j. *bjo* *[bjo]* ‘to fly’
k. *mbjɛmə* *[mbjɛmə]* ‘deaf person’
l. *stoŋbœ* *[stoŋbœ]* ‘empty’
m. *mbo* *[mbo]* ‘box for grain’
n. *zbəqe* *[zbəqe]* ‘to urge’
o. *rbu* *[ʐbu]* ‘bee’

3.2.1.2 Alveolar stops /tʰ, t, d/

Three alveolar stops are distinguished in Stau, the voiceless aspirated alveolar /tʰ/, the voiceless unaspirated /t/, and the voiced aspirated /d/.

(10) /tʰ/

a.	*tʰi-ɲi*	*[tʰiɲi]*	‘third person plural pronoun’ (3-PL)
b.	*tʰævkæ*	*[tʰæfkæ]*	‘stove’
c.	*tʰadzi*	*[tʰadzi]*	‘far’
d.	*tʰəvæ*	*[tʰəvæ]*	‘hammer’
e.	*tʰətʰə*	*[tʰətʰə]*	‘sweet’
f.	*tʰutu*	*[tʰutu]*	‘mixed together’
g.	*ntʰvæ*	*[n̥tʰfæ]*	‘to tread on it’
h.	*ɣə-vtʰi*	*[ɣəftʰi]*	‘to drink’ (DIR_{in}-drink)
i.	*metʰɛv*	*[metʰɛv]*	‘stove’
j.	*vtʰɛ*	*[ftʰɛ]*	‘to take off clothes’
k.	*tsəntʰɛv*	*[tsəntʰɛv]*	‘scissors’
l.	*kɛ-mtʰu*	*[kɛmtʰu]*	‘high’ (APRFX-high)
m.	*ntʰævæ*	*[n̥tʰævæ]*	‘decorative apron’
n.	*tʰi*	*[tʰi]*	‘to hang’
o.	*stʰjæ*	*[stʰjæ]*	‘to support, prop up’
p.	*rʰærtʰə*	*[ʂtʰæʂtʰə]*	‘right’
q.	*xtʰo*	*[xtʰo]*	‘ground, plain’

(11) /t/

a.	*tæmbə*	*[tæmbə]*	‘bottle’
b.	*tadzu*	*[tadzu]*	‘silk’
c.	*tətkɛr*	*[tətkɛʂ]*	‘sesame’
d.	*tə-vævtʰi*	*[təvæftʰi]*	‘to smoke’ (DIR_{neut}-smoke)
e.	*təvdəze*	*[təvdəze]*	‘boy, son’
f.	*tutu*	*[tutu]*	‘basket carried on back’
g.	*æti*	*[æti]*	‘older brother’
h.	*bəti*	*[bəti]*	‘cheek’
i.	*vɛtɛm*	*[vɛtɛm]*	‘peanuts’
j.	*kʰətæ*	*[kʰətæ]*	‘dog’
k.	*rata*	*[ʐata]*	‘mill’
l.	*və*	*[və]*	‘to make’
m.	*mito*	*[mito]*	‘flower’
n.	*rtɛvrtɛv*	*[ʂtɛfʂtɛv]*	‘fine’
o.	*ŋosti*	*[ŋosti]*	‘front’

p. *xɕɛt* *[xɕɛt̚]* ‘to whip’
q. *patmamɛto* *[patmamɛto]* ‘type of flower’
r. *wut* *[wut̚]* ‘light’ (n.)

(12) /d/
a. *doləmæ* *[doləmæ]* ‘eggplant’
b. *doŋbə* *[doŋbə]* ‘stem’
c. *dordʑe* *[dordʑe]* ‘religious object monks hold while chanting’
d. *kɛdi* *[kɛdi]* ‘child’
e. *kɛ-de* *[kede]* ‘small’ (APRFX-small)
f. *kʰɛdɛʂ* *[kʰɛdɛʂ]* ‘scarf’
g. *adɛ* *[adɛ]* ‘this’
h. *ædæ* *[ædæ]* ‘older sister’
i. *vədæ* *[vədæ]* ‘wife’
j. *tɕedə* *[tɕedə]* ‘time’
k. *ɣdæmbæ* *[ɣdæmbæ]* ‘because’
l. *mdæ* *[mdæ]* ‘arrow’
m. *ndjɛv* *[ndjɛv]* ‘to sleep’
n. *rdə* *[ɻdə]* ‘lower leg’
o. *ʁdu* *[ʁdu]* ‘wood pail’
p. *xavdu* *[havdu]* ‘now’
q. *zdi* *[zdi]* ‘stone wall’

3.2.1.3 Palatal stops /cʰ, c, ɟ/

Stau distinguishes among three palatal stops: the voiceless aspirated /cʰ/, voiceless unaspirated /c/, and voiced /ɟ/. It is good to be aware when comparing Stau with related languages that many Chinese linguists transcribe these sounds with the symbols <cçh>, <cç>, and <ɟj>, respectively.

The voiceless aspirated palatal stop /cʰ/ can be difficult to distinguish from the voiceless aspirated alveolo-palatal affricate /tɕʰ/. The palatal stop is often heavily aspirated, and its aspiration can sound like frication of the fricative portion of /tɕʰ/. Likewise the difference between /ɟ/ and /dʑ/ is sometimes difficult to recognize. The production of a voiced stop at the palatal place of articulation creates a somewhat sticky sound, not unlike a voiced fricative, leading to confusion between /ɟ/ and /dʑ/.

Below are examples of each of the three palatal stops.

(13) /cʰ/

a.	*cʰəpʰɛv*	*[cʰəpʰɛv]*	‘stick on millstone’
b.	*cʰu-rə*	*[cʰuʐə]*	‘hot (of weather)’ (hot-CONST)
c.	*wocʰi*	*[wocʰi]*	‘lower abdomen’
d.	*kɛ-cʰɛ*	*[kɛcʰɛ]*	‘big’ (APRFX-big)
e.	*mə-cʰɛcʰɛ*	*[məcʰɛcʰɛ]*	‘busy’ (NEG-idle)
f.	*necʰa*	*[necʰa]*	‘good morning’
g.	*loŋcʰə*	*[lõcʰə]*	‘to plow (in the eighth month)’
h.	*xæcʰo*	*[hæcʰo]*	‘sneeze’
i.	*vcʰə*	*[fcʰə]*	‘to weigh’
j.	*ɲcʰə*	*[n̥cʰə]*	‘to hit, beat; thresh’
k.	*ɲcʰæræ*	*[n̥cʰæræ]*	‘to play, have fun’
l.	*kə-ɲcʰɛr*	*[kəɲcʰɛr]*	‘to hide’
m.	*rcʰɛ*	*[ʂcʰɛ]*	‘to bite’
n.	*xcʰi*	*[xcʰi]*	‘to puncture’

(14) /c/

a.	*coŋ*	*[coŋ]*	‘clay wall’
b.	*scici*	*[scici]*	‘to look at, see’
c.	*pəcæ*	*[pəcæ]*	‘stick of wood’
d.	*wocæ*	*[wocæ]*	‘navel’
e.	*ɲcʰəcə*	*[n̥cʰəcə]*	‘to fight’
f.	*gaca*	*[g̊aca]*	‘goodbye (evening)’
g.	*scʰɛco*	*[scʰɛco]*	‘to chase’
h.	*vcə*	*[fcə]*	‘rat, mouse’
i.	*rcuqu*	*[ʂcuqu]*	‘between’
j.	*sciskɛr*	*[sciskɛʂ]*	‘birthday’
k.	*ɕərʁɛscɛ*	*[ɕərʁɛscɛ]*	‘toothbrush’
l.	*scævæ*	*[scævæ]*	‘paddle’ (n.)
m.	*tɕəsco*	*[tɕəsco]*	‘to paddle’

(15) /ɻ/

a.	*ɻirə*	*[ɻiʐə]*	‘in’
b.	*ɻɛurœ*	*[ɻɛurœ]*	‘facial hair’
c.	*ɻɛzo*	*[ɻɛzo]*	‘potato’
d.	*zœʁɻœ*	*[zœʁɻœ]*	‘lame person’
e.	*sɲəɣɻi*	*[sɲəɣɻi]*	‘afternoon’
f.	*mɻo-rə*	*[mɻoʐə]*	‘fast’ (fast-APRFX)
g.	*ɲɻɛm*	*[ɲɻɛm]*	‘wall’
h.	*ɲɻərœ*	*[ɲɻərœ]*	‘to run’
i.	*ɲuɲɻu*	*[ɲuɲɻu]*	‘left’
j.	*ŋarɻɛr*	*[ŋarɻɛʂ]*	‘roar’ (n.)
k.	*pərɻə*	*[pərɻə]*	‘grandchild’
l.	*rɻœ*	*[ʐɻœ]*	‘Chinese’
m.	*rɻœmœ*	*[rɻœmœ]*	‘scale’
n.	*ʁɻi*	*[ʁɻi]*	‘hole’
o.	*vɻə*	*[vɻə]*	‘saliva’

3.2.1.4 Velar stops /k^{h}, k, g/

There are three stop phonemes at the velar place of articulation: the voiceless aspirated velear stop /k^{h}/, the voiceless unaspirated velar stop /k/, and the voiced velar stop /g/. In my dataset, the voiced /g/ never appears word-initially. However, the contrast between /g/ and /k/ is present word-medially. See §4.1 for more evidence of the contrast between voiced and voiceless unaspirated stops.

(16) /k^{h}/

a.	*kʰɛgɛ*	*[kʰɛgɛ]*	‘after’
b.	*kʰœɛjœ*	*[kʰœɛjœ]*	‘lips’
c.	*kʰambo*	*[kʰambo]*	‘bag’
d.	*kʰətœ*	*[kʰətœ]*	‘dog’
e.	*kʰətsʰi*	*[kʰətsʰi]*	‘water channel’
f.	*kʰri*	*[kʰʂi]*	‘chair’
g.	*tsʰukʰœ*	*[tsʰukʰœ]*	‘colour’
h.	*ækʰə*	*[ækʰə]*	‘paternal uncle’
i.	*zɛkʰoŋ*	*[zɛkʰõ]*	‘restaurant’
j.	*pukʰu*	*[pukʰu]*	‘mosquito’
k.	*mkʰə*	*[m̥kʰə]*	‘smoke’
l.	*ɣrərkʰu*	*[ɣʐəʂkʰu]*	‘cold’

m. *ŋkʰvo* *[ŋkʰfo]* ‘key’
n. *skʰro* *[skʰʂo]* ‘ant’

(17) /k/

a. *kindækindæ* *[kindækindæ]* ‘dripping’
b. *kɛ-de* *[kede]* ‘small’ (APRFX-small)
c. *kɛ-dzi* *[kɛdzi]* ‘long’ (APRFX-long)
d. *kɛ-skvɛ* *[kɛskvɛ]* ‘sharp’ (APRFX-sharp)
e. *kæɛcæ* *[kæɛcæ]* ‘morning’
f. *kapəla* *[kapəla]* ‘forehead’
g. *kə-xæ* *[kəxæ]* ‘to come out’ (DIR_{out}-come.out)
h. *kəχo* *[kəχo]* ‘bark’
i. *koŋ-kɛcʰɛ* *[koŋkɛcʰɛ]* ‘expensive’ (price-big)
j. *ku-rə* *[kuʐə]* ‘to understand’ (understand-CONST)
k. *krə* *[kʐə]* ‘boat’
l. *ɮɛki* *[ɮɛki]* ‘bracelet’
m. *tsʰeke* *[tsʰeke]* ‘hot’
n. *rekɛ* *[ʐekɛ]* ‘and’
o. *tɛʰəkəv* *[tɛʰəkəv]* ‘watermelon’
p. *vɛko* *[vɛko]* ‘pigsty’
q. *ʁnɛkuku* *[ʁnɛkuku]* ‘dark’
r. *rekwe* *[ʐekwe]* ‘foal’
s. *tɛʰəvka* *[tɛʰəfka]* ‘tap’ (n.)
t. *skɛ* *[skɛ]* ‘language’
u. *tə-skrə-sə* *[təskrəsə]* ‘late’ (DIR_{neut}-late-PRF)

(18) /g/

a. *kʰɛgɛ* *[kʰɛgɛ]* ‘after’
b. *ægəjo* *[ægəjo]* ‘to grow up’
c. *tsəgə* *[tsəgə]* ‘clothing’
d. *ʑigə* *[ʑigə]* ‘around’
e. *mə-gu-rə* *[məguʐə]* ‘not understand’ (NEG-understand-CONST)
f. *vzu* *[vzu]* ‘to take’
g. *ŋgə* *[ŋgə]* ‘9’
h. *kɛ-rgi* *[kɛrgi]* ‘hard’ (APRFX-hard)
i. *rgəmɛ* *[ʐgəmɛ]* ‘stone (for building house)’
j. *dzo-vge* *[dzovge]* ‘to cross bridge’ (bridge-cross)
k. *vgə* *[vgə]* ‘to clothe’
l. *zgri* *[zgʐi]* ‘star’
m. *mgrə* *[mgʐə]* ‘wall (that one dries barley against)’

3.2.1.5 Uvular stops /qʰ, q, (ɢ)/

Unlike the preceding stop series, the uvular series has two definite voicing distinctions, between the voiceless aspirated /qʰ/ and the voiceless unaspirated /q/. The voiced uvular stop /ɢ/ is a doubtful phoneme. It only occurs following the uvular nasal ɴ in my data. All of its occurrences are listed below in (21). Examples of the two demonstrable phonemes are given in (19) and (20).

(19) /qʰ/

a.	*qʰegəɻirə*	*[qʰegəɻizˌə]*	‘raining’
b.	*qʰəsji*	*[qʰəsji]*	‘tomorrow’
c.	*qʰəzi*	*[qʰəzi]*	‘bowl’
d.	*qʰœ*	*[qʰœ]*	‘to laugh’
e.	*qʰœsłon-rə*	*[qʰœsłõdzə]*	‘happy’ (happy-CONST)
f.	*qʰosto*	*[qʰosto]*	‘back’
g.	*qʰrœqʰrœ*	*[qʰʂœqʰʂœ]*	‘coarse’
h.	*qʰre*	*[qʰʂe]*	‘to pull down’
i.	*rqʰwa*	*[ʂqʰwa]*	‘Adam’s apple’
j.	*məqʰi*	*[məqʰi]*	‘rain’
k.	*zuqʰi*	*[zuqʰi]*	‘ugly’
l.	*ŋaŋeqʰo*	*[ŋaŋeqʰo]*	‘myself’
m.	*sqʰi*	*[sqʰi]*	‘younger sister’
n.	*nəsqʰa*	*[nəsqʰa]*	‘20’
o.	*sqʰə*	*[sqʰə]*	‘to extinguish’

(20) /q/

a.	*qoqo*	*[qoqo]*	‘indent’
b.	*qavla*	*[qavla]*	‘branch’
c.	*qur*	*[quʂ]*	‘to snore’
d.	*qrə*	*[qzˌə]*	‘female yak’
e.	*vqe*	*[fqe]*	‘to throw’
f.	*səqə*	*[səqə]*	‘small piece of machinery’
g.	*rdəqu*	*[ʐdəqu]*	‘mortar bowl’
h.	*tærqœ*	*[tæʂqœ]*	‘ladle’
i.	*rqo*	*[ʂqo]*	‘(tree) trunk’
j.	*rqwa*	*[ʂqwa]*	‘Adam’s apple’
k.	*jæɴqjo*	*[jæɴqjo]*	‘palate’

(21) /ɢ/
a. *ɴgwɛ* *[ɴgwɛ]* ‘5’
b. *ʁaɴgwɛ* *[ʁaɴgwɛ]* ‘15’
c. *ɴgwi* *[ɴgwi]* ‘hoe’
d. *bæɴge* *[bæɴge]* ‘spider, fly’

3.2.1.6 Glottal stop [ʔ]

The glottal stop is not a phoneme in Stau, only occurring before word-initial onset-less V syllables.

3.2.2 Affricates

Stau has three series of affricates: alveolar, retroflex, and alveolo-palatal. The three-way voicing contrast found in the stops is also present in the three affricate series. Another similarity between affricates and stops is that, like voiced stops, voiced affricates also occur infrequently word-initially.

3.2.2.1 Alveolar affricates /tsʰ, ts, dz/

Stau distinguishes three alveolar affricates, the voiceless aspirated avleolar /tsʰ/, the voiceless unaspirated /ts/, and the voiced aspirated /dz/. Examples of each phoneme follow below.

(22) /tsʰ/
a. *tsʰeke* *[tsʰeke]* ‘hot’
b. *tsʰɛko* *[tsʰɛko]* ‘sheepfold’
c. *tsʰædəm* *[tsʰædəm]* ‘pitcher, thermos’
d. *tsʰə* *[tsʰə]* ‘salt’
e. *tsʰosusu* *[tsʰosusu]* ‘idle’
f. *vtsʰu* *[ftsʰu]* ‘to milk (cow)’
g. *ætsʰe* *[ætsʰe]* ‘a little’
h. *kʰətsʰi* *[kʰətsʰi]* ‘water channel’
i. *bətsʰɛl* *[bətsʰɛl]* ‘water spinach’
j. *xotsʰɛv* *[xotsʰɛv]* ‘pepper (vegetable)’

k. *rgɛrtsʰo* *[ʐgɛʈsʰo]* ‘spine’
l. *mtsʰu* *[m̥tsʰu]* ‘lake’
m. *ntsʰɛm* *[n̥tsʰɛm]* ‘between, around’
n. *rtsʰe* *[ʂtsʰe]* ‘lung’
o. *rtsʰə* *[ʂtsʰə]* ‘cough’
p. *rtsʰu* *[ʂtsʰu]* ‘to kick’
q. *xtsʰə* *[xtsʰə]* ‘earth, soil’
r. *vtsʰu* *[ftsʰu]* ‘to take out (of water)’

(23) /ts/
a. *tsi* *[tsi]* ‘grass’
b. *tsəgə* *[tsəgə]* ‘clothing’
c. *tsələ* *[tsələ]* ‘cat’
d. *tsəntʰɛv* *[tsəntʰɛv]* ‘scissors’
e. *tsoŋ* *[tsoŋ]* ‘scallion’
f. *atsawatsa* *[atsawatsa]* ‘locust’
g. *tə-tsə-sə* *[tətsəsə]* ‘rotten’ (DIR$_{neut}$-rot-PRF)
h. *nətso* *[nətso]* ‘sun’
i. *tɕʰatsoŋ* *[tɕʰatsoŋ]* ‘all’
j. *rə-rŋutsu* *[ʐəʐŋutsu]* ‘to kneel’ (DIR$_{up}$-kneel)
k. *rtsɛ* *[ʂtsɛ]* ‘deer’
l. *rtsæmbræ* *[ʂtsæmbræ]* ‘bowl that catches milled tsampa’
m. *rtso* *[ʂtso]* ‘floor’
n. *rtsudzu* *[ʂtsudzu]* ‘number’
o. *xtsoŋma* *[xtsoŋma]* ‘clean’

(24) /dz/
a. *dzəvə* *[dzəvə]* ‘husband’
b. *dzo* *[dzo]* ‘bridge’
c. *rdzulu* *[ʐdzulu]* ‘to crawl’
d. *mdzemdze* *[mdzɛmdze]* ‘polite’
e. *ndzə* *[ndzə]* ‘to hide it’
f. *ndzæ* *[ndzæ]* ‘third floor room’
g. *ndzu* *[ndzu]* ‘to sit down’
h. *mtɕʰurdzæ* *[mtɕʰurdzæ]* ‘teapot’
i. *rdzærə* *[ʐdzæʐə]* ‘peak of mountain’
j. *wərdzə* *[wərdzə]* ‘yak tail’
k. *vdzi* *[vdzi]* ‘human’

3.2.2.2 Retroflex affricates /tʂʰ, tʂ, dʐ/

Although retroflex affricates are attested in Stau, they are fairly infrequent and mainly occur in borrowings from either Tibetan or Chinese. All retroflex affricates that appear in my dataset are included in the examples below. If an example is a known loanword, a word proving its loanword status will be included underneath it.

Please note, with reference to the borrowings from Tibetan, that I am not proposing that the varieties mentioned below are the precise donor languages from which Stau has borrowed. The Tibetan form that Stau most closely resembles was chosen from the STEDT database in order to clearly demonstrate loanword status. However, one could note that the Tibetan varieties which the Stau loanwords resemble most closely chiefly belong to Amdo, a dialect spoken in Daofu County.

Here follow all occurrences of the retroflex affricates /tʂʰ/, /tʂ/, and /dʐ/ in my dataset:

(25) /tʂʰ/

a.	*tʂʰeɕaŋ*	*[tʂʰeɕaŋ]*	‘wagon’
b.	*tʂʰatʂoŋ*	*[tʂʰatʂõ]*	‘tea cup’
	Chinese:	*<chā zhong>*	‘tea cup’

(26) /tʂ/

a.	*tʂəma*	*[tʂəma]*	‘dirty’
	Batang Tibetan:	*tʂɪ* ^{13}*maʔ*^{53}	‘dirt, filth’
b.	*tʂœ*	*[tʂœ]*	‘to cut with scissors’
	Alike Tibetan:	*ndʐak*	‘to cut, sever’
c.	*tʂərvə*	*[tʂəˑvə]*	‘bell’
	Alike Tibetan:	*tʂər wə*	‘bell’
d.	*tʂʰatʂoŋ*	*[tʂʰatʂõ]*	‘tea cup’
	Chinese:	*<chá zhǎn>*	‘tea cup’

(27) /dʐ/

a.	*ndʐændʐæ*	*[ndʐændʐæ]*	‘same’
	Alike Tibetan:	*ndʐa*	‘look like, resemble’
b.	*ndʐə*	*[ndʐə]*	‘time’
c.	*æ-ndʐə*	*[ændʐə]*	‘first time’ (NUM1-time)
d.	*su-ndʐə*	*[sundʐə]*	‘third time’ (NUM3-time)
e.	*vdʐər*	*[vdʐəˠ]*	‘to roll up’
	Batang Tibetan:	*dʐi*[55]	‘roll up (cloth)’
f.	*mdʐu*	*[mdʐu]*	‘dragon’
	Zeku Amdo Tibetan:	*mdʐək*	‘dragon’
g.	*mdʐu*	*[mdʐu]*	‘thunder’
	Zeku Amdo Tibetan:	*mdʐək*	‘thunder’
h.	*mdʐu*	*[mdʐu]*	‘wild yak’
i.	*ʁdʐu*	*[ʁdʐu]*	‘to mill’
j.	*ʁdʐu*	*[ʁdʐu]*	‘tsampa’
k.	*tadʐu*	*[tadʐu]*	‘silk’
	Zeku Amdo Tibetan:	*tʂhu tsə*	‘silk’

3.2.2.3 Alveolo-palatal affricates /tɕʰ, tɕ, dʑ/

Three alveolo-palatal affricates are phonemic in Stau, the voiceless aspirated /tɕʰ/, the voiceless unaspirated /tɕ/, and the voiced /dʑ/. Below are examples to demonstrate the contrast between the three phonemes.

(28) /tɕʰ/

a.	*tɕʰɛʁloŋ*	*[tɕʰɛʁlõ]*	‘bull’
b.	*tɕʰœ*	*[tɕʰœ]*	‘on’
c.	*tɕʰœɣwə*	*[tɕʰœɣwə]*	‘millstone’
d.	*ɲtɕʰaχpa*	*[ɲ̊tɕʰaχpa]*	‘to fold’
e.	*tɕʰətɕʰə*	*[tɕ̊ʰətɕʰə]*	‘salty’
f.	*tɕʰutsʰu*	*[tɕʰutsʰu]*	‘watch’
g.	*ætɕʰə*	*[ætɕʰə]*	‘with’
h.	*ʧətɕʰu rgəmɛ*	*[ʧətɕʰu ʐgəmɛ]*	‘stones’
i.	*lutɕʰoŋ*	*[lutɕʰõ]*	‘young’
j.	*noptɕʰo*	*[noptɕʰo]*	‘side’
k.	*mtɕʰutɕu*	*[m̥tɕʰutɕu]*	‘tassel’
l.	*mtɕʰurtin*	*[m̥tɕʰuʂtɪn]*	‘tower’
m.	*kɛntɕʰi-rə*	*[kɛntɕʰizə]*	‘good to look at’ (good.looking-CONST)
n.	*noŋtɕʰə*	*[nõtɕʰə]*	‘guts’
o.	*rtɕʰœmbəqolu*	*[ʂtɕʰœmbəqolu]*	‘bubble’

p.	*rtɕʰu*	*[ʂtɕʰu]*	‘bottle for making wine’
q.	*ʁavtɕʰo*	*[ʁaftɕʰo]*	‘16’
r.	*xtɕʰo*	*[xtɕʰo]*	‘6’

(29) /tɕ/

a.	*tɕi*	*[tɕi]*	‘hat’
b.	*tɕitɕæ*	*[tɕitɕæ]*	‘rind’
c.	*tɕeʁoŋ*	*[tɕeʁõ]*	‘kitchen’
d.	*tɕɛ*	*[tɕɛ]*	‘road’
e.	*tɕæ*	*[tɕæ]*	‘tea’
f.	*tɕæmtsʰæ*	*[tɕæmtsʰæ]*	‘tea strainer’
g.	*tɕaχpa*	*[tɕaχpa]*	‘to steal’
h.	*tɕədə*	*[tɕədə]*	‘book’
i.	*tɕo*	*[tɕo]*	‘waist’
j.	*tɕonzɛr*	*[tɕonzɛʐ]*	‘nail’
k.	*tɕutɕæ*	*[tɕutɕæ]*	‘metal’
l.	*ætɕɛ*	*[ætɕɛ]*	‘together’
m.	*rə-tɕe*	*[ʐə-tɕe]*	‘to come up’ (DIR_{up}-come.up)
n.	*zamasotɕi*	*[zamasotɕi]*	‘strainer’
o.	*rŋərŋæsətɕe*	*[rŋərŋæsətɕe]*	‘flipper’
p.	*ŋkʰratɕa*	*[ŋ̊kʰʂatɕa]*	‘to shiver’
q.	*tsʰɛtɕə*	*[ts̊ʰɛtɕə]*	‘cleaver’
r.	*pətɕo*	*[pətɕo]*	‘to wreck, tear’
s.	*mtɕʰutɕu*	*[m̥tɕʰutɕu]*	‘tassel’
t.	*ʁəptɕæ*	*[ʁəptɕæ]*	‘hair on head’
u.	*zɣartɕa*	*[zɣaʂtɕa]*	‘celery’
v.	*vtɕækʰæ-zŋo-re*	*[ftɕækʰæzŋore]*	‘rack for hanging things on’ (?-hang-NMLZ)
w.	*xtɕərscɛ*	*[xtɕərscɛ]*	‘clip, pin’

(30) /dʑ/

a.	*dʑuæ*	*[dʑuæ]*	‘to swim’
b.	*dʑə*	*[dʑə]*	‘to meet, run into’
c.	*ædzæpædzæ*	*[ædzæpædzæ]*	‘sandals’
d.	*kɛ-dzi*	*[kɛdzi]*	‘long’ (APRFX-long)
e.	*ndzə*	*[ndzə]*	‘to pull’
f.	*ɣədzelə*	*[ɣədzelə]*	‘after’
g.	*kɛ-dzɛdzi*	*[kɛdzɛdzi]*	‘far’ (APRFX-far)
h.	*xakon-rə*	*[xakõdzə]*	‘to know’ (know-CONST)
i.	*kɛ-dzoŋ*	*[kɛdzoŋ]*	‘straight’ (APRFX-straight)
j.	*ʑɛdzuntɕʰɛm*	*[ʑɛdzuntɕʰɛm]*	‘to dance’
k.	*ɕandzu*	*[ɕãdzu]*	‘worm’

l.	*mdzəsnœ*	*[mdzəsnœ]*	‘seed’
m.	*kɛ-ndzɛm*	*[kɛndzɛm]*	‘soft’ (APRFX-soft)
n.	*landzə*	*[landzə]*	‘railing’
o.	*snopdzə*	*[snopdzə]*	‘hanging (n.)’
p.	*vdzəvdzə*	*[vdzəvdzə]*	‘friend’

3.2.3 Fricatives

Stau has voiced and voiceless pairs of fricatives for the same five places of articulation at which the stops are found. There is one exception: at the labial place of articulation, the voiceless fricative is allophonic.

Some linguists find a third contrasting, voiceless aspirated fricative in the alveolar and palatal series. Huang (1991) includes /sʰ/, /ɕʰ/, and /ɬʰ/ in her consonant inventory of Daofu (=Stau), although she puts /s/ in brackets, possibly indicating that it is a marginal phoneme. J. Sun (2000b) finds /sʰ/, /ʃʰ/, and /çʰ/ (contrasting respectively with /s/, /ʃ/, and /ç/) in the related Puxi Shangzhai. In this article, he notes the way aspirated and unaspirated consonants are inverted in verb stems to mark tense-aspect. In the same article, he shows that Huang’s Daofu also uses the same aspiration inversion as tense-aspect marking. In my own data I did not find the presence of aspirated fricatives in the lexicon, except perhaps in the lateral fricatives (see §3.2.6.2 for more on this). However, I did not make a study of tense-aspect; aspirated fricatives may yet be found at work in that grammatical function.

3.2.3.1 Labial fricative /v/

The labial fricative, as just mentioned, has no phonemic voiceless counterpart. The voiceless labial fricative [f] is an allophone of /v/. The voiced labial fricative becomes [f] next to voiceless consonants, e.g. (31f) and (31u). One exception to this rule seems to be (31q), in which the /v/ remains fairly voiced.

In coda position, contrast between /v/ and the voiceless unaspirated labial stop /p/ is neutralized in favour of /v/. Phonetically, [v], [f], and [p] are variously pronounced in

this position. The fricatives appear in more careful speech, and the stop in faster speech (Katylin Wonnell, p.c.). See (31x-31z) for examples of the labial fricative in syllable-final position.

(31) /v/

a.	*vivəx*	*[vivəx]*	‘pressure cooker’
b.	*vɛko*	*[vɛko]*	‘pigsky’
c.	*væ*	*[væ]*	‘pig’
d.	*vəvæ*	*[vəvæ]*	‘to repair, build’
e.	*vo*	*[vo]*	‘stomach’
f.	*vc^{h}ə*	*[fc^{h}ə]*	‘to weigh’
g.	*vɛi*	*[fɛi]*	‘to need’
h.	*vdzi*	*[vdzi]*	‘person’
i.	*vɟə*	*[vɟə]*	‘saliva’
j.	*vlɛ*	*[vlɛ]*	‘to put something’
k.	*vqo*	*[fqo]*	‘sky’
l.	*vsɛ*	*[fsɛ]*	‘to kill’
m.	*rɛvræ*	*[ʐɛvʐæ]*	‘to thresh’
n.	*vzɛvzə*	*[vzɛvzə]*	‘to scratch’
o.	*vʑo*	*[vʑo]*	‘to plane’
p.	*spəvji*	*[spəvji]*	‘sores’
q.	*st^{h}væ*	*[st^{h}væ]*	‘to press down’
r.	*ʑɛrvæ*	*[ʑɛrvæ]*	‘blind’
s.	*me-skvɛ-rə*	*[meskvɛʐə]*	‘blunt’ (NEG-sharp-CONST)
t.	*ɣvə*	*[ɣvə]*	‘oats’
u.	*svo*	*[sfo]*	‘bright’
v.	*nt^{h}væ*	*[nt^{h}fæ]*	‘to tread on it’
w.	*ŋk^{h}vo*	*[ŋk^{h}fo]*	‘key’
x.	*ʑəzɛv*	*[ʑəzɛv]*	‘turtle’
y.	*ɣməlɛv*	*[ɣməlɛp]*	‘fire’
z.	*łɛvsə*	*[łɛpsə]*	‘lightning’

3.2.3.2 Alveolar fricatives /s, z/

Stau has two alveolar fricatives, voiceless /s/ and voiced /z/. The following examples show each phoneme in a variety of environments, representative of their distribution.

(32) /s/

a.	*si*	*[si]*	‘liver’
b.	*sɛpʰjo*	*[sɛpʰjo]*	‘direction’
c.	*səli*	*[səli]*	‘to roll’
d.	*səm*	*[səm]*	‘mood, seat of emotions’
e.	*su-ndʐə*	*[sundʐə]*	‘third time’ (NUM3-time)
f.	*skɛ*	*[skɛ]*	‘voice, language’
g.	*smi-ze*	*[smeze]*	‘daughter, girl’ (woman-DIM)
h.	*sni*	*[sni]*	‘nose’
i.	*sɲu*	*[sɲu]*	‘beans (for pig feed)’
j.	*sŋuscœ*	*[sŋuscœ]*	‘blue’
k.	*spə*	*[spə]*	‘pus’
l.	*sxɛsxo*	*[sxɛsxo]*	‘to shake’
m.	*æsɛ*	*[æsɛ]*	‘full’
n.	*zamasotɛi*	*[zamasotɛi]*	‘pot’
o.	*tsʰosusu*	*[tsʰosusu]*	‘idle’
p.	*qʰosto*	*[qʰosto]*	‘back’
q.	*qʰəsji*	*[qʰəsji]*	‘tomorrow’
r.	*xsər*	*[xsəʂ]*	‘to stir-fry’

(33) /z/

a.	*zivœ*	*[zivœ]*	‘mane’
b.	*zɛkʰoŋ*	*[zɛkʰõ]*	‘restaurant’
c.	*zæntɕʰœ*	*[zæntɕʰœ]*	‘to feel itchy’
d.	*zama*	*[zama]*	‘everything’
e.	*zəli*	*[zəli]*	‘to fall’
f.	*zondo*	*[zondo]*	‘horn’
g.	*v-zu*	*[vzu]*	‘to sew’
h.	*zdo*	*[zdo]*	‘cloud’
i.	*zgəŋœ*	*[zgəŋœ]*	‘egg’
j.	*zgri*	*[zgʐi]*	‘star’
k.	*zjɛ*	*[zjɛ]*	‘to rake’
l.	*zɮœ*	*[zɮœ]*	‘to chant’
m.	*zɲe*	*[zɲe]*	‘7’
n.	*zʁa*	*[zʁa]*	‘10’
o.	*ʁja-ze*	*[jaze]*	‘calf’
p.	*ʑəzɛv*	*[ʑəzɛv]*	‘turtle’
q.	*ɣzi*	*[ɣzi]*	‘shoe’
r.	*rzelo*	*[ʐzelo]*	‘to lift skirts’
s.	*ʁzaʁzav*	*[ʁzaʁzav]*	‘thank you’
t.	*vzɛvzə*	*[vzɛvzə]*	‘to scratch’

3.2.3.3 Alveolo-palatal fricatives /ɕ, ʑ/

Two fricatives are found at alveolo-palatal place of articulation, /ɕ/ and /ʑ/. As Jacques (2004:19) notes, many Rgyalrongic linguists use the postalveolar symbols <ʃ> and <ʒ> for these sounds. However, I will follow Jacques (2004) and Huang (1991) and use the more accurate alveolo-palatal <ɕ> and <ʑ>.

(34) /ɕ/

a.	*ɕi*	*[ɕi]*	‘highland barley’
b.	*ɕɛr*	*[ɕɛʂ]*	‘glass’
c.	*ɕækɛcʰɛ*	*[ɕækɛcʰɛ]*	‘fat’
d.	*ɕaɣrə*	*[ɕaɣʐə]*	‘small sickle’
e.	*ɕə*	*[ɕə]*	‘teeth’
f.	*ɕovə-rgɛm*	*[ɕovəʐgɛm]*	‘cardboard box’ (paper-box)
g.	*ɕu*	*[ɕu]*	‘strength’
h.	*ɕwæ*	*[ɕwæ]*	‘night’
i.	*vɕjæ*	*[fɕjæ]*	‘to seek something’
j.	*æɕəm*	*[æɕəm]*	‘corn’
k.	*ɕəɕæ*	*[ɕəɕæ]*	‘to wipe’
l.	*tʂʰeɕaŋ*	*[tʂʰeɕaŋ]*	‘wagon’
m.	*laɕəv*	*[laɕəv]*	‘rubber gloves’
n.	*ɕuɕu*	*[ɕuɕu]*	‘behind’
o.	*vɕoxpæ*	*[fɕoxpæ]*	‘wing’
p.	*xɕi*	*[xɕi]*	‘sweat’

(35) /ʑ/

a.	*ʑigə*	*[ʑigə]*	‘around’
b.	*ʑele*	*[ʑele]*	‘turnip’
c.	*ʑɛrvæ*	*[ʑɛrvæ]*	‘blind’
d.	*ʑæ*	*[ʑæ]*	‘to limp’
e.	*ʑæʁɻæ*	*[ʑæʁɻæ]*	‘lame person’
f.	*ʑəvə*	*[ʑəvə]*	‘village’
g.	*ʑoŋər*	*[ʑoŋə˞]*	‘sweet potato’
h.	*ʑu*	*[ʑu]*	‘yogurt’
i.	*æʑu*	*[æʑu]*	‘maternal uncle’
j.	*xeʑi*	*[heʑi]*	‘how many’
k.	*tə-ʑə*	*[təʑə]*	‘to melt’ (DIR$_{neut}$-melt)
l.	*jɛʑoŋbu*	*[jɛʑoŋbu]*	‘often, always’
m.	*zʁəʑjæ*	*[zʁəʑjæ]*	‘comb’

n. *vzo* *[vzo]* ‘to plane’
o. *ɣzi* *[ɣzi]* ‘to teach’
p. *ʁzə* *[ʁzə]* ‘bow’

3.2.3.4 Velar fricatives /x, ɣ/

Stau distinguishes between two velar fricatives /x/ and /ɣ/. The voiceless /x/ word-initially before vowels has two allophones, [x] and [h], and they are in free variation, as evidenced in the following examples.

(36) a. *xævzi* ‘yet, still’
hævzi ‘yet, still’
b. *xaji* ‘also’
haji ‘also’

In some cases preinitial /ɣ/ is disappearing word-initially. In words such as *ɣdæmbœ* ‘because’ and *ɣmɛɛu* ‘scar’, the voiced velar fricative is not clearly heard in isolation, but appears more distinctly in sentence context.

Examples (37) and (38) provide a representative set of the occurrences of /x/ and /ɣ/ that demonstrates their phonemic status.

(37) /x/
a. *xændze* *[xændze]* ‘scarf’
b. *xaji* *[xaji]~[haji]* ‘also’
c. *xə* *[xə]* ‘bull-yak crossbreed (Chinese: pian niu)’
d. *xovɛxovɛ* *[xovɛxovɛ]* ‘a minute ago’
e. *xp^{h}ə* *[xp^{h}ə]* ‘butt’
f. *xsærpœ* *[xsærpœ]* ‘new’
g. *xt^{h}əxt^{h}ə* *[xt^{h}əxt^{h}ə]* ‘behind’
h. *xts^{h}ə* *[xts^{h}ə]* ‘earth, soil’
i. *maxe* *[maxe]* ‘water buffalo’
j. *tə-xœ* *[təxœ]* ‘to come out’ (DIR$_{neut}$-come.out)
k. *moxkɛr* *[moxkɛʂ]* ‘white fungus’
l. *rcaxpa* *[ʂcaxpa]* ‘excrement’
m. *sxɛsxo* *[sxɛsxo]* ‘to shake’
n. *vivəx* *[vivəx]* ‘pressure cooker’

(38) /ɣ/

a.	*ɣə-pʰʂi*	*[ɣəpʰʂi]*	‘to untie (unvolitional)’ (DIR$_{in}$-untie)
b.	*ɣərœ*	*[ɣəʐœ]*	‘chicken’
c.	*ɣəzə*	*[ɣəzə]*	‘bird’
d.	*ɣmɛ*	*[ɣmɛ]*	‘wound’
e.	*ɣrəkɛnəv*	*[ɣʐəkɛnəv]*	‘flood’
f.	*ɣzi*	*[ɣzi]*	‘shoe’
g.	*ɣwœ*	*[ɣwœ]*	‘to hug’
h.	*ɣzəɣzə*	*[ɣzəɣzə]*	‘some’
i.	*ɣe*	*[ɣe]*	‘to touch’
j.	*maɣər*	*[maɣəˑ]*	‘type of tree’
k.	*kɛ-ɣji*	*[kɛɣji]*	‘light’ (APRFX-light)
l.	*ʂnəɣʲi*	*[ʂnəɣʲi]*	‘afternoon’
m.	*słəɣnə*	*[słəɣnə]*	‘moon’
n.	*ɣro*	*[ɣro]*	‘to wither’
o.	*rɣi-ru-re*	*[ʐɣiʐuʐe]*	‘stable’ (horse-pen.in-NMLZ)
p.	*zɣartɛa*	*[zɣaʂtɛa]*	‘whip’
q.	*moroɣ*	*[moʐoɣ]*	‘black fungus’

3.2.3.5 Uvular fricatives /χ, ʁ/

Two uvular fricatives occur in Stau, the voiceless /χ/ and voiced /ʁ/.

Like the voiced velar fricative, /ʁ/ is also deteriorating word-initially before consonants. For example, the word ‘pretty’ is pronounced *[ajerə]* in isolation. In sentence context, *ajerə* no longer has a word-initial vowel, as one would expect. Instead it has a word-initial uvular fricative.

(39) **ŋa ʔaje-rə*
ŋa ʁje-rə
I pretty-CONST
‘I am pretty.’

Other examples include *ʁcʰi* ‘hole’ and *ʁnɛmju* ‘roof’.

/ʁ/ is found much more frequently in Stau than /χ/. /χ/ occurs 13 times in my dataset, all of which are included in (40), whereas /ʁ/ occurs 79 times.

(40) /χ/

a.	*χodzu-pare*	*[χodzupare]*	‘cloth worn on head’ (?-cloth)
b.	*χjə*	*[χjə]*	‘to destroy’
c.	*æχe*	*[æχe]*	‘a little’
d.	*læχape*	*[læχape]*	‘cabbage’
e.	*kəχo*	*[kəχo]*	‘bark’
f.	*ɲtɛʰaχpa*	*[ɲtɛʰaχpa]*	‘to fold’
g.	*tɛaχpa*	*[t̥ɛaχpa]*	‘to steal’
h.	*χtɛ*	*[χtɛ]*	‘to return (something to someone)’
i.	*χtsa*	*[χtsa]*	‘to cut oneself’
j.	*tærtʰaχ*	*[tæʂtʰaχ]*	‘prayer flags’
k.	*toχtoχ*	*[toχtoχ]*	‘narrow’
l.	*tsʰæsnəχ*	*[tsʰæsnəχ]*	‘spinach’

(41) /ʁ/

a.	*ʁa*	*[ʁa]*	‘door’
b.	*ʁalo*	*[ʁalo]*	‘chest’
c.	*ʁərja*	*[ʁərja]*	‘bone’
d.	*ʁəvdæ*	*[ʁəvdæ]*	‘to nod’
e.	*ʁo*	*[ʁo]*	‘to help’
f.	*ʁdu*	*[ʁdu]*	‘pail’
g.	*ʁja*	*[ʁja]*	‘male yak’
h.	*ʁjə*	*[ʁjə]*	‘fish’
i.	*ʁlə-və*	*[ʁləvə]*	‘to sing’ (song-make)
j.	*ʁtæʁtæ*	*[ʁtæʁtæ]*	‘low’
k.	*jəʁo*	*[jəʁo]*	‘upstairs’
l.	*sɲiʁə*	*[sɲiʁə]*	‘pen’
m.	*ɲəʁzɛn*	*[ɲəʁzɛn]*	‘wool’
n.	*mbre-zʁe-jo*	*[mbrezʁejo]*	‘rice cooker’ (rice-boil-container)
o.	*rʁa-mə*	*[ʐʁamə]*	‘crazy person’ (crazy-PERS)

3.2.4 Rhotic

The rhotic /r/ has four allophones in Stau: the trill [r], the voiced and voiceless retroflex fricatives [ʂ] and [ʐ], and rhotacization on the vowel. They largely occur in complementary distribution.

The rhotic is realized as the voiceless retroflex fricative [ʂ] when it occurs as a preinitial before voiceless consonants, as a medial after voiceless aspirated consonants, and often it occurs as a coda. For example:

(42) *rcaxpa* *[ʂcaxpa]* 'excrement'
kʰri *[kʰʂi]* 'chair'
spəɲcʰɛr *[spəɲcʰɛʂ]* 'frog'

The voiced [ʐ] has the most widespread distribution. It occurs as a simple initial, in preinitial position with voiced consonants, and as a medial with voiced and voiceless unaspirated consonants. For example:

(43) *rekwe* *[ʐekwe]* 'foal'
rdzærə *[ʐdzæʐə]* 'peak of mountain'
ɣrəɲcʰɛr *[ɣʐəɲcʰɛʐ]* 'puddle'
prilæ *[pʐilæ]* 'to whinny'

The occurrence of the trill [r] is not completely predictable. It overlaps in distribution with [ʂ] and especially [ʐ], occurring in place of these in longer utterances. For instance, the /r/ in the word 'wine' is [ʐ] in isolation, but becomes [r] in the compound 'cigarette and wine shop':

(44) *ara* *[aʐa]* 'wine'
təvæ-ara-zjəre *[təvæarazjəre]* 'cigarette and wine shop' (tobacco-wine-shop)

Often this change happens between words in isolation and in context: ‘to call, shout’ is [skəʐi] in isolation and [skəri] in context.

Trill allophone [r] also alternates with [ʂ] but not in all contexts as with [ʐ]. In voiceless consonant clusters [ʂ] always occurs whether in isolation or context, but in context word-final [ʂ] does become [r]. For instance, *[pɛʂ]* ‘photo’ is realized as *[pɛr]* when a vowel follows it in a sentence.

The trill allophone also occurs word-medially after a vowel and before a consonant, e.g.,

(45) *sərʁə [sərʁə]* ‘rotary paddle’

The final allophone of /r/ to be mentioned is rhotacization on a preceding vowel. Most frequently rhotacization happens word-finally, as in (46), but also occurs word-medially before the lateral approximant, as in (47).

(46) *musɛr [musɛ˞]* ‘young woman’

(47) *barlu [baɬu]* ‘leaf’

Rhotacization is attested on the vowels /ɛ/, /ə/, /u/, and /ɑ/. Word-finally, [ʂ] is also an attested realization of /r/ after all these vowels (except /ɑ/ as it never occurs in a word-final syllable before /r/), and there seems to be no rule dictating which allophone is used. In fact, rhotacization can alternate with a voiceless fricative realization, as (48) demonstrates:

(48) *[ɣmu˞]* ~ [ɣmuʂ] ‘mouth, beak’

The rhotic, like /ɣ/ and /ʁ/, in word-initial preinitial position often appears only as voicing or is not articulated at all. The only way to tell an /r/ exists is to hear the word in a sentence. There the /r/ betrays itself as [r], [ʐ], or rhotacization. For instance, *rɟætɕæ*

'looseleaf tea' in isolation shows a voicing bar but no other indication of a word-initial /r/. In a sentence, the /r/ becomes apparent, being heard as a trill:

(49) *tʰɛ rɻætɕæ ŋə-rə*
this looseleaf.tea COP-CONST
'This is looseleaf tea.'

Below follows a representative set of examples of the occurrence of /r/, which includes all its four allophones:

(50) /r/

a.	*rekwe*	*[ʐekwe]*	'foal'
b.	*rɛmɛ*	*[ʐɛmɛ]*	'mare'
c.	*ræpʰi*	*[ʐæpʰi]*	'mahjong'
d.	*rata*	*[ʐata]*	'mill'
e.	*rərɮɛv*	*[ʐəʐɮɛv]*	'wave'
f.	*ro*	*[ʐo]*	'1'
g.	*rcaxpa*	*[ʂcaxpa]*	'excrement'
h.	*rdzærə*	*[ʐdzæʐə]*	'peak of mountain'
i.	*rɣi-ru-re*	*[ʐɣiʐuʐe]*	'stable' (horse-pen.in-NMLZ)
j.	*rjɛ*	*[ʐjɛ]*	'8'
k.	*rko*	*[ʂko]*	'ankle'
l.	*rŋæ*	*[ʐŋæ]*	'face'
m.	*rtsʰe*	*[ʂtsʰe]*	'lung'
n.	*rʁa-mə*	*[ʐʁamə]*	'crazy person' (crazy-PERS)
o.	*rwo*	*[ʐwo]*	'ice'
p.	*skəri*	*[skəʐi]*	'to call, shout'
q.	*ɣərɑ*	*[ɣəʐɑ]*	'chicken'
r.	*ara*	*[aʐa]*	'wine'
s.	*ɮo-rə*	*[ɮoʐə]*	'tasty' (tasty-CONST)
t.	*ɣrə-ɲcʰɛr*	*[ɣʐəɲcʰɛʐ]*	'puddle' (water-?)
u.	*kʰri*	*[kʰʂi]*	'chair'
v.	*mbre*	*[mbʐe]*	'rice'
w.	*prilæ*	*[pʐilæ]*	'to whinny'
x.	*ŋkʰurlu*	*[ŋkʰʊ̥ɻu]*	'wheel'
y.	*mormi*	*[mormi]*	'eyebrow'
z.	*tærqæ*	*[tæʂqæ]*	'ladle'
aa.	*pʰusɛr*	*[pʰusɛ̝]*	'young man'
ab.	*pətɛr*	*[pətɛʂ]*	'rash'
ac.	*spəɲcʰɛr*	*[spəɲcʰɛʂ]*	'frog'

ad.	*ɲɛr*	*[ɲɛz]*	‘to taste’
ae.	*ʁərʁər*	*[ʁərʁər]*	‘round’

3.2.5 Nasals

Stau has nasals at all places of articulation that stops and fricatives are found at. The one exception is that the uvular nasal [ɴ], like the voiced uvular stop, is not a full phoneme.

Word-initially before voiceless aspirated consonants, nasals are voiceless, only articulated as a closing of the lips together before the stop, sometimes with airflow through the nasal cavity. Several examples of voiceless nasals are provided in (51):

(51)

mkʰərjɛ	*[m̥kʰərjɛ]*	‘pipe’
mpʰi	*[m̥pʰi]*	‘to card’
ntsʰɛm	*[n̥tsʰɛm]*	‘between, around’
ɲcʰə	*[ɲ̊cʰə]*	‘to hit, beat; thresh’

3.2.5.1 Bilabial nasal /m/

The bilabial nasal /m/ occurs most frequently in my data—188 times (followed closely by /n/ which occurs 172 times). One of the reasons for its frequency of occurrence may be that it has the widest distribution of all the nasals. In addition to appearing as a simple initial and as a preinitial in homorganic consonant clusters, it occurs as a preinitial before alveolar, palatal, and velar consonants.[2]

Below is a sample of the occurrences of /m/ in my dataset.

[2] See Table 4 for a chart that shows the co-occurrence of preinitial nasals with consonants in consonant clusters.

(52) /m/

a.	*mi*	*[mi]*	‘mole’
b.	*met^{h}ɛv*	*[met^{h}ɛv]*	‘stove’
c.	*mɛji*	*[mɛji]*	‘butter’
d.	*mæmæ*	*[mæmæ]*	‘grandmother’
e.	*marna*	*[marna]*	‘oil’
f.	*mə*	*[mə]*	‘younger brother’
g.	*mo*	*[mo]*	‘eye’
h.	*mup^{h}a*	*[mup^{h}a]*	‘sow’
i.	*mbjɛ-mə*	*[mbjɛmə]*	‘deaf person’ (deaf-PERS)
j.	*mk^{h}ə-rjɛ*	*[m̥k^{h}ərjɛ]*	‘pipe’ (smoke-ceramic)
k.	*mɲə*	*[mɲə]*	‘can, able to’
l.	*ŋəmɛ*	*[ŋəmɛ]*	‘cow’
m.	*æmə*	*[æmə]*	‘mother’
n.	*rŋæma*	*[ɻŋæma]*	‘horse tail’
o.	*ʁnɛmju*	*[ʁnɛmju]*	‘roof’
p.	*ʁəmɬe*	*[ʁəmɬe]*	‘braid’
q.	*tɕæmts^{h}æ*	*[tɕæmts^{h}æ]*	‘tea strainer’
r.	*ɣmɛɕu*	*[ɣmɛɕu]*	‘scar’
s.	*smi*	*[smi]*	‘woman’
t.	*ʁmɛʑi*	*[ʁmɛʑi]*	‘pot without handles’
u.	*ɲəlɛm*	*[ɲəlɛm]*	‘dream (n.)’
v.	*sənəm*	*[sənəm]*	‘farming’
w.	*səmnɛ*	*[səmnɛ]*	‘worry’

3.2.5.2 Alveolar nasal /n/

Like most languages, Stau has an alveolar nasal /n/. In (53), examples demonstrating the phonemic status of this sound are provided.

(53) /n/

a.	*nə-ndʑə*	*[nəndʑə]*	‘second time’ (NUM2-time)
b.	*nene*	*[nene]*	‘breast’
c.	*nɛmɛ*	*[nɛmɛ]*	‘toe’
d.	*na*	*[na]*	‘post (for building house)’
e.	*nə*	*[nə]*	‘to rest’
f.	*noptɛ^{h}o*	*[noptɛ^{h}o]*	‘side’
g.	*ndjindji*	*[ndjindji]*	‘red’
h.	*æne*	*[æne]*	‘paternal aunt’
i.	*kɛ-nəv*	*[kɛnəv]*	‘deep’ (APRFX-deep)

j. *pjɛno* *[pjɛno]* ‘meat’
k. *ɕɛmnu* *[ɕɛmnu]* ‘glasses’
l. *kɛ-nɮə* *[kɛnɮə]* ‘heavy’ (APRFX-heavy)
m. *ɕontʰo* *[ɕõntʰo]* ‘fruit’
n. *kæntɕʰæ* *[kæntɕʰæ]* ‘rolling pin’
o. *tʰi-ɣne* *[tʰiɣne]* ‘they (dual)’ (3-two)
p. *rni* *[ʐni]* ‘to mix’
q. *ʁnɛʁnɛ* *[ʁnɛʁnɛ]* ‘dark’
r. *tə-ji-n* *[təjɪn]* ‘to say’ (DIR_{neut}-say-2)
s. *ʁɮəstɛn* *[ʁɮəstɛn]* ‘sleeping mat’
t. *rgɛrgən* *[rgɛrgən]* ‘teacher’
u. *səŋun* *[səŋun]* ‘who’

3.2.5.3 Palatal nasal /ɲ/

In addition to the typical bilabial and alveolar nasals included in the consonant inventories of most languages, Stau also has the palatal nasal /ɲ/, examples of which follow below:

(54) /ɲ/
a. *ɲi* *[ɲi]* ‘you (sg)’
b. *ɲɛr* *[ɲɛʐ]* ‘to taste’
c. *ɲæ* *[ɲæ]* ‘fish’
d. *ɲæɲæ* *[ɲæɲæ]* ‘black’
e. *ɲəmæ-mɛto* *[ɲəmæmɛto]* ‘sunflower’ (?-flower)
f. *ɲoŋpæ* *[ɲoŋpæ]* ‘old’
g. *ɲcʰæræ* *[ɲcʰæræ]* ‘to play’
h. *ɲcʰə* *[ɲ̊cʰi]* ‘to hit, beat; to thresh’
i. *ɲɻɛrdo* *[ɲ̊ɻɛrdo]* ‘change’
j. *tʰiɲi* *[tʰiɲi]* ‘they’
k. *lɛɲu* *[lɛɲu]* ‘evening’
l. *kovɲu* *[kofɲu]* ‘garlic shoot’
m. *mɲærə* *[mɲæʐə]* ‘not’
n. *mtsʰərɲi* *[mtsʰərɲi]* ‘to pull’
o. *sɲæsɲæ* *[sɲæsɲæ]* ‘bitter’
p. *ʁazɲe* *[ʁazɲe]* ‘17’
q. *ʁɲæ* *[ʁɲæ]* ‘cow dung’

3.2.5.4 Velar nasal /ŋ/

Stau has a phonemic velar nasal /ŋ/. Most languages with a phonemic /ŋ/ restrict its distribution to initial, medial, or final position, or a combination these (Anderson 2013). In contrast, Stau /ŋ/ has quite an unrestricted distribution. It appears as a simple initial, word-medially before vowels, word-initially and -medially as a preinitial, and as a coda, as the examples in (55) demonstrate.

The velar nasal has one allophone, nasalization. If the sound preceding a /ŋ/ is a vowel, particularly if the nasal is word-final, it will be realized as nasalization on the vowel, e.g. (55p).

(55) /ŋ/

a.	*ŋe-rə*	*[ŋeʐə]*	‘to be okay’ (be.okay-CONST)
b.	*ŋæ*	*[ŋæ]*	‘I’
c.	*ŋarɟɛr*	*[ŋarɟɛʂ]*	‘roar’ (n.)
d.	*ŋəzu*	*[ŋəzu]*	‘to howl’
e.	*ŋorə*	*[ŋoʐə]*	‘illness’
f.	*ŋgəja*	*[ŋgəja]*	‘ring’
g.	*ŋkʰrɛ*	*[ŋkʰʂɛ]*	‘to shake something’
h.	*æŋæze*	*[æŋæze]*	‘baby’
i.	*tʰoŋbe*	*[tʰoŋbe]*	‘pot’
j.	*tʰoŋkæ*	*[tʰoŋkæ]*	‘thangka’
k.	*toŋskə*	*[toŋskə]*	‘thread’
l.	*rŋarʁe-pare*	*[rŋarʁepare]*	‘cloth for washing’ (wash-cloth)
m.	*rŋe*	*[ʐŋe]*	‘to hear’
n.	*sŋuscæ*	*[sŋuscæ]*	‘blue’
o.	*zŋo*	*[zŋo]*	‘to hang’
p.	*coŋ*	*[cõ]*	‘clay wall’
q.	*ɣrətoŋ*	*[ɣʐətõ]*	‘well (n.)’

3.2.5.5 Uvular nasal [ɴ]

Unlike the aforementioned four nasals, the uvular nasal [ɴ] does not have a wide distribution. It only appears together with the uvular consonants /q/ and /ɢ/. All the examples of [ɴ] available in my data are included below:

(56) /ɴ/

a.	*bæɴge*	*[bæɴge]*	‘spider, fly’
b.	*ɴgwi*	*[ɴgwi]*	‘hoe’
c.	*ɴgwɛ*	*[ɴgwɛ]*	‘5’
d.	*ʁaɴgwɛ*	*[ʁaɴgwɛ]*	‘15’
e.	*jæɴqjo*	*[jæɴqjo]*	‘palate’

3.2.6 Laterals

Stau has three lateral consonants: the approximant /l/, and the voiceless and voiced fricatives /ɬ/ and /ɮ/. Examples of each are given in the subsections §3.2.6.1 and §3.2.6.2.

3.2.6.1 Lateral approximant /l/

The lateral approximant /l/ appears as an onset in word-initial and -medial position, as a medial in consonant clusters, and as a coda, as the following examples show:

(57) /l/

a.	*leskæ*	*[leskæ]*	‘work’
b.	*lɛpu-rɲərɲə*	*[lɛpurɲərɲə]*	‘carrot’ (radish-yellow)
c.	*lærɲə*	*[lærɲə]*	‘asparagus lettuce’
d.	*landʑə*	*[landʑə]*	‘railing’
e.	*ləpʰu*	*[ləpʰu]*	‘tree’
f.	*loŋbutɕe*	*[lõbutɕe]*	‘elephant’
g.	*lu*	*[lu]*	‘pole of tool’
h.	*kʰœlɛv*	*[kʰœlɛv]*	‘lid’
i.	*prilærə*	*[pʐilærə]*	‘to whinny’
j.	*jələ*	*[jələ]*	‘saying, expression’
k.	*qavla*	*[qavla]*	‘branch’
l.	*plɛ*	*[plɛ]*	‘thigh’
m.	*v-lɛ*	*[vlɛ]*	‘to put, leave something’
n.	*ʁlə-və*	*[ʁləvə]*	‘to sing’ (song-make)
o.	*snəmtsʰɛl*	*[snəmtsʰɛl]*	‘cole’
p.	*tsoŋrəl*	*[tsõʐəl]*	‘onion’

3.2.6.2 Lateral fricatives /ɬ, ɮ/

Stau has two lateral fricatives, /ɬ/ and /ɮ/. These lateral fricatives only occur as initials, both as simple initials and in clusters with preinitials. The voiceless /ɬ/ occurs with voiceless preinitials and the voiced /ɮ/ with voiced preinitials.

Although lateral fricatives are cross-linguistically infrequent, occurring in nine percent of the world's languages (Maddieson 2013b), they are not infrequent areally. Most Rgyalrongic languages have the voiceless lateral fricative. A few inventories include it as a marginal phoneme. The voiced counterpart is not as prevalent. Of Rgyalrongic languages other than Stau, the voiced lateral fricative only occurs in Puxi Shangzhai. Apart from Rgyalrongic, Ethnic Corridor languages (such as Qiang and Ersu) and Southeastern Ngwi languages (e.g. Phola and Azha) also have lateral fricatives.

The reader may recall from §3.2.3 that aspirated fricatives have been found in some languages related to Stau, but that in my data I did not find any except possibly among the lateral fricatives. Lateral fricatives in Stau have an unusual phonetic articulation. They have a stop release, almost as if they were reverse affricates. The voiced /ɮ/ release sounds like a [d], and the voiceless /ɬ/ sounds like an aspirated [tʰ]. In addition, one initial voiceless lateral fricative and all the voiceless lateral fricatives in consonant clusters have a release that sounds like an unaspirated [t].

If we compare spectrograms of the two word-initial voiceless lateral fricatives, one from *ɬɛɬə* 'to get wet' with a [tʰ]-like release (Figure 6) and one from *ɬɛvsə* 'lightning' with a [t]-like release (Figure 7), we can see the difference in the length of VOT and in the amount of aspiration.

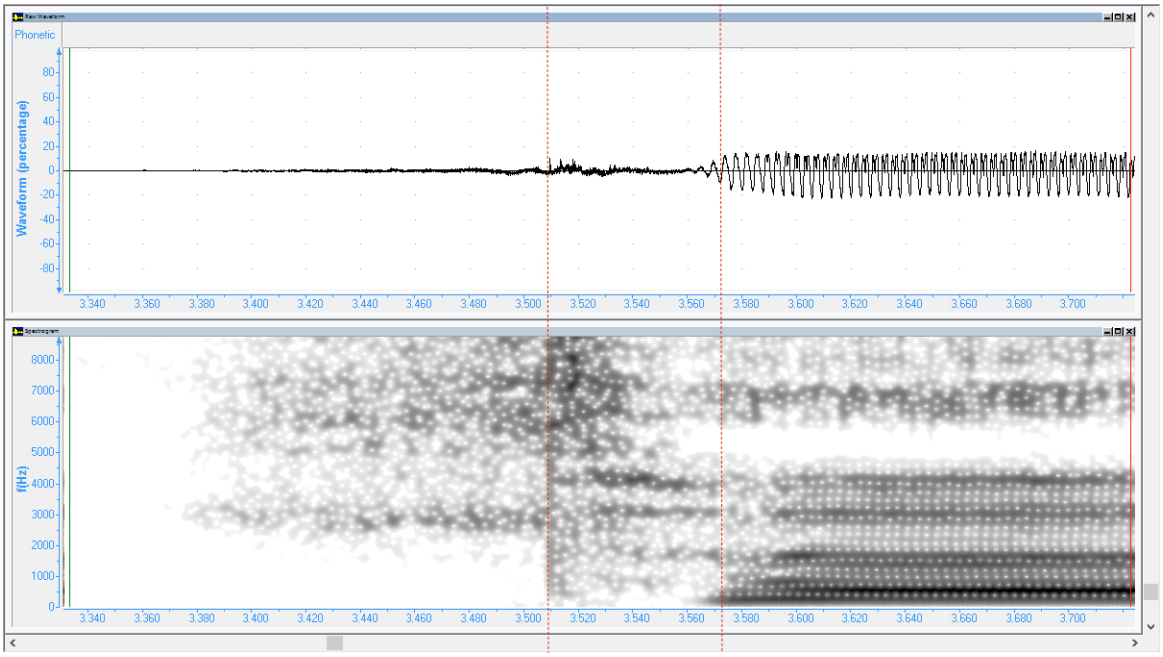

Figure 6. Spectrogram of /ɬ/ with [tʰ]-like release; aspiration from release burst to onset of voicing shown between vertical lines

In Figure 6 above, we can see on the left the expected frication of a lateral fricative, and in the center between vertical lines a long section of aspiration. This aspiration, from release burst to onset of voicing, lasts 60 ms, and is what gives this /ɬ/ a [tʰ]-like sound. In Figure 7 below, we see a similar section of frication on the left. Then at the vertical line there is a release burst (the [t]-like release), after which the vowel follows immediately without any aspiration.

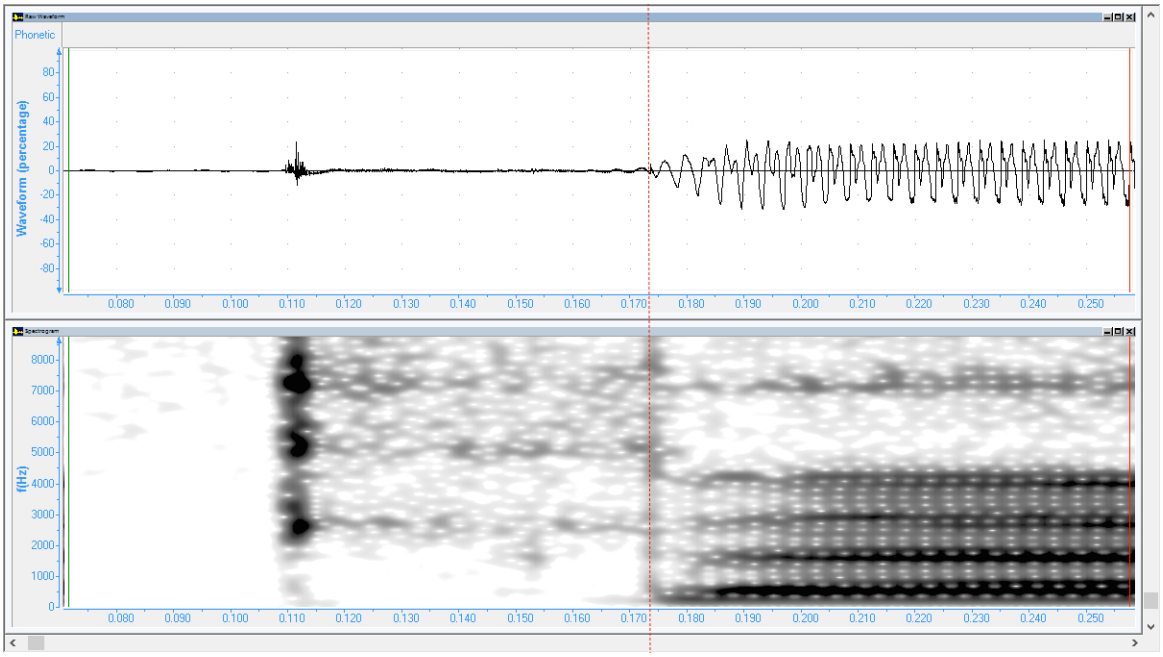

Figure 7. Spectrogram of /ɬ/ with [t]-like release; dotted line on release burst, displays no aspiration

The two spectrograms show a clear phonetic difference between the two fricatives. If the lateral fricatives with [tʰ] release are phonemically different from those with a [t] release, then we would have /ɬʰ/ and /ɬ/. However, since I only have one example of [t]-release /ɬ/ as a simple initial and no longer have access to a Stau speaker to consult native speaker intuition on these sounds, there is not enough evidence to claim the existence of a phonemic aspirated lateral fricative.

Examples of /ɬ/ and /ɮ/ in a variety of contexts are found below:

(58) /ɬ/

a.	*ɬɛɬə*	*[ɬɛɬə]*	‘wet’
b.	*ɬɛvsə*	*[ɬɛpsə]*	‘lightning’
c.	*ɬæ*	*[ɬæ]*	‘god’
d.	*ɬækoŋ*	*[ɬækõ]*	‘lama’s house’
e.	*ɬə*	*[ɬə]*	‘cow’s milk’
f.	*ɬokəv*	*[ɬokəv]*	‘pumpkin’
g.	*æ-mpʰæɬinə-re*	*[æmpʰæɬinəʐe]*	‘inside out’ (NUM1-inside.out-NMLZ)
h.	*nə-mpʰæɬinə-re*	*[nəmpʰæɬinəʐe]*	‘inside out’ (NUM2-inside.out-NMLZ)

i.	*mɬe*	*[mɬe]*	‘to braid’
j.	*ʁəmɬe*	*[ʁəmɬe]*	‘braid’
k.	*rɬə*	*[ʂɬə]*	‘wheat flour’
l.	*sɬə*	*[sɬə]*	‘stairs’
m.	*sɬəkʰro*	*[sɬəkʰʂo]*	‘step (n.)’
n.	*æ-sɬə*	*[æ-sɬə]*	‘one month’ (NUM1-month)
o.	*qʰætəsɬoŋ*	*[qʰætəsɬõ]*	‘glad’
p.	*sɬopræ*	*[sɬopræ]*	‘university’
q.	*vɬɛ*	*[fɬɛ]*	‘ashes’

(59) /ʮ/

a.	*ʮi*	*[ʮi]*	‘wheat’
b.	*ʮɛ*	*[ʮɛ]*	‘to come, return’
c.	*ʮɛvʮi*	*[ʮɛvʮi]*	‘wristbone’
d.	*ʮæ*	*[ʮæ]*	‘hand’
e.	*ʮæbjænoŋ*	*[ʮæbjænõ]*	‘palm (of hand)’
f.	*ʮə*	*[ʮə]*	‘field’
g.	*ʮəʮæ*	*[ʮəʮæ]*	‘to plow’
h.	*ʮərji*	*[ʮərji]*	‘to mix’
i.	*ʮo-rə*	*[ʮozə]*	‘tasty’ (tasty-CONST)
j.	*ɣʮə*	*[ɣʮə]*	‘4’
k.	*ɣʮəli*	*[ɣʮəli]*	‘pestle’
l.	*ʁʮi*	*[ʁʮi]*	‘to roll’
m.	*ʁʮərko*	*[ʁʮəʂko]*	‘bamboo shoot’
n.	*vʮi*	*[vʮi]*	‘neck’
o.	*vʮɛ*	*[vʮɛ]*	‘tongue’
p.	*vʮæzæ*	*[vʮæzæ]*	‘sleeve’
q.	*zʮæræ*	*[zʮæræ]*	‘to winnow’

3.2.7 Glides

Stau has two glides, the palatal /j/ and labio-velar /w/. Both glides have similar distribution, appearing as simple onsets, word-initially and word-medially, and as medials in consonant clusters.

(60) /j/

a.	*jɛləgə*	*[jɛləgə]*	‘so-called’
b.	*jæ*	*[jæ]*	‘mouth’
c.	*jæ-kʰæ ɲcʰɛɲcə*	*[jækʰæ ɲcʰɛɲcə]*	‘to argue’ (mouth-INS to.fight)
d.	*jəʁo*	*[jəʁo]*	‘upstairs’
e.	*jo*	*[jo]*	‘house’
f.	*jovə*	*[jovə]*	‘wife’
g.	*kɛ-ji*	*[kaji]*	‘pretty’ (APRFX-pretty)
h.	*ŋæji*	*[ŋæji]*	‘we’
i.	*jə*	*[jə]*	‘to say’
j.	*kɛ-jɛ*	*[kɛjɛ]*	‘easy’ (APRFX-easy)
k.	*æjæ*	*[æjæ]*	‘maternal aunt’
l.	*ŋgəja*	*[ŋgəja]*	‘ring’
m.	*mojo*	*[mojo]*	‘eyelid’
n.	*bjolæ*	*[bjolæ]*	‘to float’
o.	*ɕjæ*	*[ɕjæ]*	‘to seek something’
p.	*ndjɛvji*	*[ndjɛvji]*	‘to doze’
q.	*ɣræmjæ*	*[ɣʐæmjæ]*	‘shadow’
r.	*s-bjæ*	*[spjæ]*	‘to split’
s.	*kɛrjɛ*	*[kɛrjɛ]*	‘ceramic’
t.	*qʰəsji*	*[qʰəsji]*	‘tomorrow’
u.	*zʁəʑjæ*	*[zʁəʑjæ]*	‘comb’
v.	*zjəre*	*[zjəre]*	‘shop (n.)’

(61) /w/

a.	*weqe*	*[weqe]*	‘rabbit’
b.	*wɛrtsʰi*	*[wɛʂtsʰi]*	‘lard’
c.	*wərdzə*	*[wərdzə]*	‘yak tail’
d.	*wo*	*[wo]*	‘again’
e.	*wocʰi*	*[wocʰi]*	‘lower abdomen’
f.	*wocæ*	*[wocæ]*	‘navel’
g.	*wur*	*[wuʂ]*	‘pillow’
h.	*wut*	*[wut̚]*	‘light’
i.	*kʰawa*	*[kʰawa]*	‘snow’
j.	*atsawatsa*	*[atsawatsa]*	‘locust’
k.	*ɕwæ*	*[ɕwæ]*	‘night’
l.	*ɴgwi*	*[ɴgwi]*	‘hoe (n.)’
m.	*rekwe*	*[ʐekwe]*	‘foal’
n.	*ɣwæ*	*[ɣwæ]*	‘to hug’
o.	*rqwa*	*[ʂqwa]*	‘Adam’s apple’
p.	*rwo*	*[ʐwo]*	‘ice’

3.3 Vowels

As introduced in §3.1, Stau has eight vowels, evidence for which is given in the following subsections, beginning with the front vowels from high to low, and ending with the back vowels from low to high.[3] Stau vowels at times exhibit secondary qualities, specifically nasalization and rhotacization. However, these are not phonemic, but are allophonic realizations of the consonants /ŋ/ and /r/. Refer to §§3.2.5.4 and 3.2.4, respectively, for more information.

In the next chapter, an acoustic analysis of Stau vowels is provided to give a better sense of their qualities. Please see §4.2 for this.

3.3.1 High front vowel /i/

Stau has one high front vowel /i/. /i/ has two allophones, [i] and [ɪ]. The high front lax [ɪ] occurs when /i/ is followed word-finally by a coda consonant. The examples in (62) are all that appear in my data. The latter two verbs are in second-person conjugation.

(62)

mtɕʰurtin	*[mtɕʰuʂtɪn]*	‘tower’
rtin	*[ʂtɪn]*	‘to stop’
nə-pʰiv	*[nəpʰɪv]*	‘to close’ (DIR_{down}-close)
tə-ji-n	*[təjɪn]*	‘to say’ (DIR_{neut}-say-2)

The following examples demonstrate /i/ in a cross-section of contexts:

[3] Verbs as evidence: The reader will remember from the introduction to §3 that, though there are vowel alternations at work in the verbal morphophonemics of Stau, I still use vowels from verbs as evidence to demonstrate segmental phonology.

(63) /i/

a.	*ki-lu*	*[kilu]*	‘each, some’
b.	*zivæ*	*[zivæ]*	‘mane’
c.	*ndjindji*	*[ndjindji]*	‘red’
d.	*rɣirɣi*	*[ʐɣiʐɣi]*	‘short’
e.	*scici*	*[scici]*	‘to look at, see’
f.	*rə-rmi-sə*	*[ʐəʐmisə]*	‘to sprout’ (DIR$_{up}$-sprout-PRF)
g.	*səm-sci-rə*	*[səmsciʐə]*	‘happy’ (mood.spirit-have-CONST)
h.	*tsəgə-t^{h}i-re*	*[tsəgət^{h}ire]*	‘clothesline’ (clothes-hang-NMLZ)
i.	*mi*	*[mi]*	‘mole’
j.	*p^{h}i*	*[p^{h}i]*	‘to run away’
k.	*tɛi*	*[tɛi]*	‘hat’
l.	*kɛdi*	*[kɛdi]*	‘child’
m.	*k^{h}ri*	*[k^{h}ʂi]*	‘chair for lamas’ (honorific form)
n.	*t^{h}ani*	*[t^{h}ani]*	‘near’
o.	*t^{h}adzi*	*[t^{h}adzi]*	‘far’
p.	*məq^{h}i*	*[məq^{h}i]*	‘rain’
q.	*pərzi*	*[pərzi]*	‘knife’
r.	*vɛi*	*[fɛi]*	‘to want’
s.	*vdzi*	*[vdzi]*	‘human’
t.	*vɛrvi*	*[vɛrvi]*	‘slowly’
u.	*zəli*	*[zəli]*	‘to fall’
v.	*xævzi*	*[hævzi]~[xævzi]*	‘yet, still’

3.3.2 Mid front tense vowel /e/

After /i/, /e/ is the next highest front in the Stau vowel inventory. Examples follow below:

(64) /e/

a.	*kɛ-de*	*[kede]*	‘small’ (APRFX-small)
b.	*nene*	*[nene]*	‘mother’s milk’
c.	*ŋe-rə*	*[ŋeʐə]*	‘to be okay’ (be.okay-CONST)
d.	*ts^{h}eke*	*[ts^{h}eke]*	‘hot’
e.	*væ-ze*	*[veze]*	‘piglet’ (pig-DIM)
f.	*xseskə*	*[xseskə]*	‘buddha’
g.	*zele*	*[zele]*	‘turnip’
h.	*ɣədzelə*	*[ɣədzelə]*	‘after’
i.	*mɬe*	*[mɬe]*	‘to braid’
j.	*tə-ŋe-sə*	*[təŋesə]*	‘correct’ (DIR$_{neut}$-correct-PRF)

k. *zɲe* *[zɲe]* ‘7’
l. *pʰe* *[pʰe]* ‘to vomit’
m. *ækʰe* *[ækʰe]* ‘paternal uncle’
n. *pəqe* *[pəqe]* ‘cow’
o. *qʰre* *[qʰʂe]* ‘to pull down’
p. *ʁə-vəvœ-re* *[ʁəvəvœʐe]* ‘hair salon’ (head-do-NMLZ)
q. *rə-tɕe* *[ʐətɕe]* ‘to come up’ (DIR_{up}-come.up)
r. *nə-vəve* *[nəvəve]* ‘to do’ (DIR_{down}-do)
s. *maxe* *[maxe]* ‘water buffalo’

3.3.3 Mid front lax vowel /ɛ/

In addition to the mid front tense /e/, Stau also has the lax counterpart of that vowel, /ɛ/:

(65) /ɛ/
a. *nɛrdzə* *[nɛʐdzə]* ‘fingernail’
b. *ɟɛuræ* *[ɟɛuræ]* ‘facial hair’
c. *tə-vsɛ-sə* *[təfsɛsə]* ‘to be killed’ (DIR_{neut}-be.killed-PRF)
d. *pɛrspo* *[pɛrspo]* ‘to walk’
e. *sxɛsxo* *[sxɛsxo]* ‘to shake’
f. *kɛ-ndzɛm* *[kɛndzɛm]* ‘soft’ (APRFX-soft)
g. *ɣmɛɕu* *[ɣmɛɕu]* ‘scar’
h. *cʰɛ-rə* *[cʰɛʐə]* ‘idle’ (idle-CONST)
i. *mɛji* *[mɛji]* ‘butter’
j. *pɛrvə* *[pɛrvə]* ‘container’
k. *ɣməlɛv* *[ɣməlɛp]* ‘fire’
l. *ɲəlɛm* *[ɲəlɛm]* ‘dream (n.)’
m. *pʰɛ* *[pʰɛ]* ‘to throw out’
n. *rjɛ* *[ʐjɛ]* ‘8’
o. *adɛ* *[adɛ]* ‘this’
p. *mobrɛ* *[mobʐɛ]* ‘tears’
q. *tɛitɕæ-ɣzɛ* *[tɛitɕæɣzɛ]* ‘to peel’ (rind-peel)
r. *tɛazjɛ* *[tɛazjɛ]* ‘rake’
s. *ɕu-kɛcʰɛ* *[ɕukɛcʰɛ]* ‘strong’ (strength-big)
t. *kɛ-skvɛ* *[kɛskvɛ]* ‘sharp’ (APRFX-sharp)
u. *mə-cʰɛcʰɛ* *[məcʰɛcʰɛ]* ‘busy’ (NEG-busy)
v. *ʁə-rʁɛ-scɛ* *[ʁərʁɛscɛ]* ‘shampoo’ (head-wash-tool.instrument)

3.3.4 Low front vowel /æ/

Stau has a low front vowel /æ/, of which here are examples:

(66) /æ/

a.	*æ-bɛr*	*[æbɛʂ]*	‘first step’ (NUM1-step)
b.	*æ-ndʐə*	*[ændʐə]*	‘first time’ (NUM1-time)
c.	*æ-sɲi*	*[æsɲi]*	‘day’ (NUM1-day)
d.	*æk^{h}ə*	*[æk^{h}ə]*	‘paternal uncle’
e.	*æŋæze*	*[æŋæze]*	‘baby’
f.	*mæŋgɛ*	*[mæŋgɛ]*	‘chin’
g.	*xæc^{h}o*	*[hæc^{h}o]*	‘sneeze’
h.	*spæ-rə*	*[spæʐə]*	‘thirsty’ (thirsty-CONST)
i.	*læʁju*	*[læ^{ɣ}ju]*	‘wave’
j.	*xsærpæ*	*[xsærpæ]*	‘new’
k.	*rkærə*	*[ʂkæʐə]*	‘beautiful’
l.	*scævæ*	*[scævæ]*	‘paddle (n.)’
m.	*zætər*	*[zætəʂ]*	‘chopsticks’
n.	*rŋæ-rʁɛ-scɛ*	*[ʐŋærʁɛscɛ]*	‘face wash’ (face-wash-instrument.tool)
o.	*q^{h}ʂæq^{h}ʂæ*	*[q^{h}ʂæq^{h}ʂæ]*	‘coarse’
p.	*nə-ndjælæ*	*[nəndjælæ]*	‘to lick’ (DIR$_{down}$-lick)
q.	*leskæ-və*	*[leskævə]*	‘to work’ (work-do)
r.	*kæɛæ*	*[kæɛæ]*	‘morning’
s.	*ɮæ*	*[ɮæ]*	‘hand’
t.	*zʁoræ*	*[zʁozʐæ]*	‘yawn’
u.	*ɲɟəræ*	*[ɲɟəræ]*	‘to run’
v.	*pəŋæ*	*[pəŋæ]*	‘man’
w.	*pubæ*	*[pubæ]*	‘Tibetan’

3.3.5 Low central vowel /ɑ/

Stau has a second low vowel, the central /ɑ/. The phonetic difference between /ɑ/ and the low front /æ/ is not large. However, as you can see in the vowel formant chart in Figure 20 of §4.2, the two vowels have distinct formant distributions, though they are nearby each other.

(67) /ɑ/

a.	*atsawatsa*	*[atsawatsa]*	‘locust’
b.	*adɛ*	*[adɛ]*	‘this’
c.	*ara*	*[aʐa]*	‘wine’
d.	*ʁzaʁzav*	*[ʁzaʁzav]*	‘thank you’
e.	*ʁav*	*[ʁav]*	‘needle’
f.	*maɣər*	*[maɣə˞]*	‘type of tree’
g.	*barlu*	*[baɬu]*	‘leaf’
h.	*kaɣɮœ*	*[kaɣɮœ]*	‘thin, flat’
i.	*pʰjamdə*	*[pʰjamdə]*	‘necklace’
j.	*kʰambo*	*[kʰambo]*	‘bag’
k.	*pʰajo*	*[pʰajo]*	‘together’
l.	*rata*	*[ʐata]*	‘mill’
m.	*ɲtɛʰaχpa*	*[ɲ̊tɛʰaχpa]*	‘to fold’
n.	*tʰavtɛa*	*[tʰaftɛa]*	‘bad’
o.	*kʰawa*	*[kʰawa]*	‘snow’
p.	*qavla*	*[qavla]*	‘branch’
q.	*lœχape*	*[lœχape]*	‘cabbage’
r.	*ʁa*	*[ʁa]*	‘window’
s.	*zʁa*	*[zʁa]*	‘10’
t.	*rʁa*	*[rʁa]*	‘to become crazy’
u.	*ʁərja*	*[ʁərja]*	‘bone’

3.3.6 Mid central unrounded lax vowel /ə/

The mid central unrounded lax vowel /ə/ occurs by far the most often in Stau. It appears in 541 words in my database; the next closest are /æ/ at 289 and /ɛ/ at 261. One reason for this inordinate frequency of use is that sometimes other vowels lose their character in unstressed syllables and become centralized. For instance, on two occasions I recorded the word ‘cover, lid’; once it was pronounced *kʰœlɛv* and another time *kʰœləv*.

Below are provided representative examples of /ə/.

(68) /ə/

a.	*mə-gu-rə*	*[məguʐə]*	‘to not understand’ (NEG-understand-CONST)
b.	*tsə*	*[tsə]*	‘to rot’
c.	*rŋə*	*[ʐŋə]*	‘to become green’
d.	*tə-skrə-sə*	*[təskrəsə]*	‘late’ (DIR_{neut}-late-PRF)
e.	*bjæ*	*[bjæ]*	‘to split (by itself)’
f.	*tʰəɣə*	*[tʰəɣə]*	‘rope’
g.	*dzəvə*	*[dzəvə]*	‘husband’
h.	*pəsɲi*	*[pəsɲi]*	‘today’
i.	*ndərjæ*	*[ndərjæ]*	‘to sweep’
j.	*ndʑəv*	*[ndʑəp]*	‘to suck’
k.	*ʁəvdæ*	*[ʁəvdæ]*	‘to nod’
l.	*kɛdərə*	*[kɛdəʐə]*	‘early’
m.	*ævəsɲi*	*[ævəsɲi]*	‘yesterday’
n.	*mə*	*[mə]*	‘younger brother’
o.	*ɲə*	*[ɲə]*	‘ear’
p.	*ɕə*	*[ɕə]*	‘teeth’
q.	*mospə*	*[mospə]*	‘eyelashes’
r.	*sqevcə*	*[sqɐfcə]*	‘squirrel’
s.	*mdɛrə*	*[mdɛʐə]*	‘drum’
t.	*pʰrə*	*[pʰʂə]*	‘tangled’
u.	*tæmbə*	*[tæmbə]*	‘bottle’

3.3.7 Mid back rounded vowel /o/

Stau has two round vowels, one being the mid back rounded vowel /o/, as demonstrated by the following examples:

(69) /o/

a.	*ɣroɣro*	*[ɣʐoɣʐo]*	‘dry’
b.	*zondo*	*[zondo]*	‘horn’
c.	*tɕoji*	*[tɕoji]*	‘spoon’
d.	*xoscæ*	*[xoscæ]*	‘hot pepper sauce’
e.	*joskə*	*[joskə]*	‘garlic’
f.	*xopi*	*[xopi]*	‘table’
g.	*ʁoɲu*	*[ʁoɲu]*	‘back’
h.	*vɕoxpæ*	*[fɕoxpæ]*	‘wing’
i.	*zdomə*	*[zdomə]*	‘fog’
j.	*mojo*	*[mojo]*	‘eyelid’
k.	*mɟo-rə*	*[mɟoʐə]*	‘fast’ (fast-CONST)

l. *ro* *[ʐo]* ‘to swell’
m. *toχtoχ* *[toχtoχ]* ‘narrow’
n. *ʁavro* *[ʁavʐo]* ‘11’
o. *rko* *[ʂko]* ‘ankle’
p. *no* *[no]* ‘to smell’
q. *ɕont^{h}o* *[ɕõnt^{h}o]* ‘fruit’
r. *mbjo* *[mbjo]* ‘cutting edge’
s. *kəχo* *[kəχo]* ‘bark’
t. *jəʁo* *[jəʁo]* ‘upstairs’
u. *vɛko* *[vɛko]* ‘pigsty’
v. *ɻɛzo* *[ɻɛzo]* ‘potato’
w. *rwo* *[ʐwo]* ‘ice’
x. *spo* *[spo]* ‘grassland’

3.3.8 High back rounded vowel /u/

The second round vowel is the high back rounded vowel /u/, shown in the examples below:

(70) /u/
a. *mdʑu-rə* *[mdʑuʐə]* ‘hungry’ (hungry-CONST)
b. *ŋk^{h}urlu* *[ŋ̊k^{h}ɯɭu]* ‘wheel’
c. *tur-u* *[tuʐu]* ‘can, able to’ (can-1)
d. *puk^{h}u* *[puk^{h}u]* ‘mosquito’
e. *kudʑən* *[kudʑən]* ‘satin’
f. *p^{h}usɛr* *[p^{h}usɛ̝]* ‘young man’
g. *mup^{h}a* *[mup^{h}a]* ‘hoof’
h. *sprurə* *[spʐuʐə]* ‘butter churn’
i. *rkurɻɛv* *[ʂkurɻɛv]* ‘foot stamp’
j. *p^{h}u* *[p^{h}u]* ‘to cover’
k. *səŋun* *[səŋun]* ‘who’
l. *vku* *[fku]* ‘to bend something’
m. *kedi-zu-rə* *[kedizuʐə]* ‘to be pregnant’ (child-hold.carry-CONST)
n. *ɣrərk^{h}u* *[ɣʐəʂk^{h}u]* ‘cold’
o. *xavdu* *[havdu]* ‘now’
p. *mdʐu* *[mdʐu]* ‘dragon’
q. *mk^{h}u* *[ŋ̊k^{h}u]* ‘cowshed’
r. *ndzu* *[ndzu]* ‘to sit down’
s. *ŋəzu* *[ŋəzu]* ‘to howl’
t. *ʁnɛmju* *[ʁnɛmju]* ‘roof’

u. *rtu* *[ʂtu]* ‘to cut hair’
v. *rbu* *[ʐbu]* ‘bee’
w. *rwu* *[ʐwu]* ‘breath’
x. *spu* *[spu]* ‘incense stick’

3.4 Comparison with Huang (1991)

My findings coincide largely with those of Huang (1991). As regards the vowel inventory, we are in agreement, both analyzing Stau as an eight-vowel language. When it comes to the consonant inventory, we differ somewhat. Huang includes more phones than I do. In addition to the phonemes listed in §3.2, Huang has <sh>, <ɬh>, <ç>, <ɕh>, and <ɦ>. As well, <ʂ>, <f>, and <h> are also included in her inventory of consonants, but no mention is made of their status as allophones of /r/, /v/, and /x/. Perhaps the reason for the difference is that Huang’s concern was to be phonetically accurate, rather than phonologically precise. At any rate, despite these differences, we agree in essentials concerning the phonemic inventory of Stau.

Chapter 4

Acoustic analysis

This chapter provides acoustic analysis of voicing contrasts in stops in §4.1 and acoustic analysis of vowel qualities in §4.2.

4.1 Acoustic analysis of voicing in stops

As I mentioned above in §3.2.1 and §3.2.2, voiced stops and affricates occur much less frequently than voiceless ones in Stau. Word-initially they are rare, and word-medially they often follow a voiced continuant such as a nasal or fricative. This throws suspicion on the phonemic status of voiced stops and on the validity of a contrast between voiced and voiceless unaspirated (or "tenuis") stops and affricates. In order to investigate the voicing contrasts, I measured the voice onset time (VOT) of voiceless aspirated, voiced, and tenuis stops[1] in word-initial and intervocalic positions, both in isolation and in sentence context. The acoustic measurements showed a three-way phonemic distinction in onset of voicing in Stau stops. In the following sections this evidence will be presented, first for word-initial stops (§4.1.1) and then word-medial intervocalic stops (§4.1.2).

First, a word on methodology. For acoustic analysis of stops I used the program *Speech Analyzer 3.1*. To make VOT duration measurements, I used the waveform-spectrogram display. Word-initial stops were measured from the beginning of the waveform (from the stop burst from voiceless stops, and from the beginning of prevoicing for voiced stops) until after the first full sine wave signalling the onset of the vowel. Word-medial stops were

[1] Only stops, and no affricates, were measured because my dataset doesn't include enough affricates to make a reliable sampling. I hypothesized that if a three-way contrast can be found in the stops, the contrast will also appear with the same acoustic correlates in the affricates. Although I did not systematically measure all the affricates, I informally checked to see if they follow the same pattern as the stops, and they do.

measured from (and including) the last full sine wave of the preceding vowel, up to and including the first full wave of the following vowel.

In my analysis I measured stops both in words in isolation and words in context. The sentence context used, as mentioned above in §2.4, varied somewhat, but was usually one of the following two sentences:

(71) a. *tʰɛ* __ *ŋə-rə*
DEM __ COP-CONST
'This is __'

b. *tʰi* __ *kaji* *ŋə-rə*
DEM __ pretty COP-CONST
'This __ is pretty'

4.1.1 Voicing in word-initial stops

Word-initial voiceless aspirated stops in Stau evince the acoustic characteristics typical to their voicing class, the principal of which is the delay of the onset of voicing. There are 72 tokens of word-initial voiceless aspirated stops in the dataset. They all show long lag before the onset of voicing, with an average VOT of 91 ms in citation form. Figure 8 below shows a typical example of an aspirated alveolar stop.

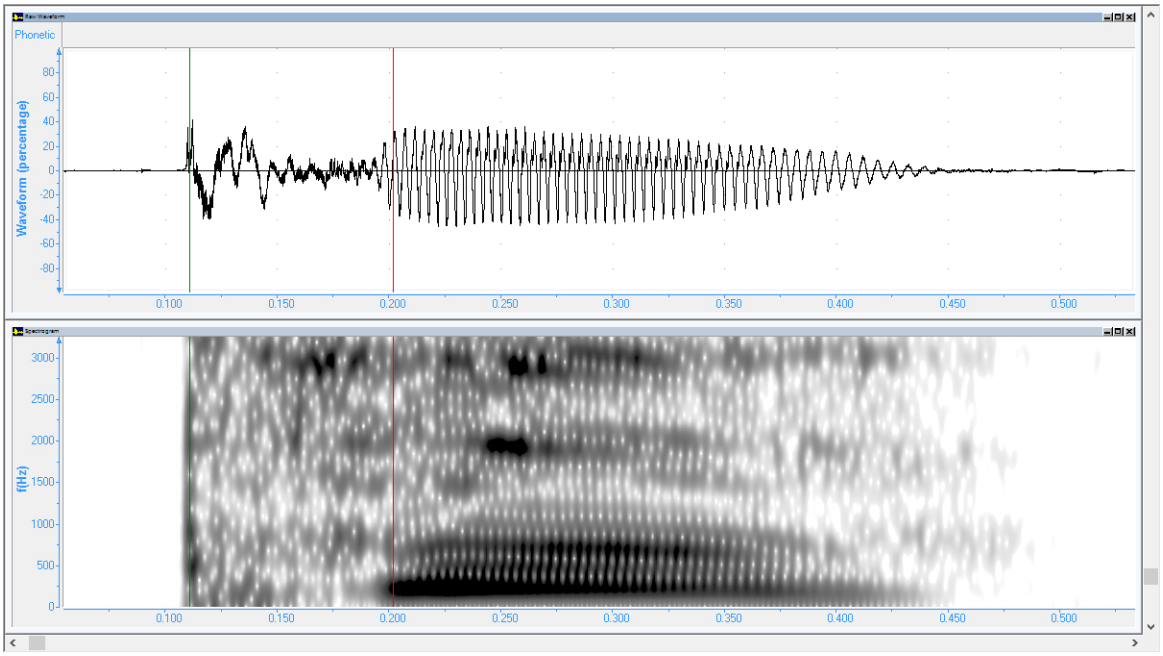

Figure 8. Spectrogram of *tʰɛ* 'to take off (clothes)' demonstrating the articulation of a voiceless aspirated /tʰ/ with 90 ms VOT

In sentence context, word-initial voiceless aspirated stops look very much similar. They have a long stop closure, followed by a release burst, and then long lag before the onset of voicing. They have an average VOT of 63 ms, which is 28 ms shorter than that of word-initial aspirated stops in words in isolation, but it is still substantial. Figure 9 shows an example of word-initial /tʰ/ in sentence context.

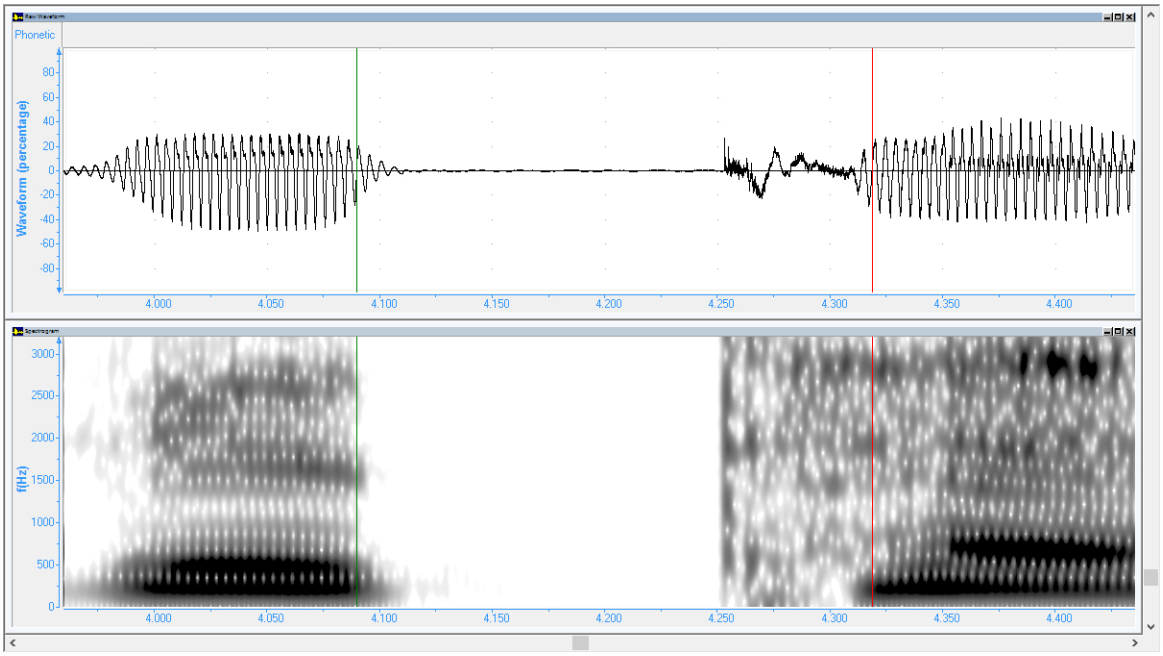

Figure 9. Spectrogram of *tʰɛ* 'to take off (clothes)' in sentence context

Since the acoustic realization of voiceless aspirated stops is very straightforward, I will not go into further detail.

Tenuis stops also show acoustic correlates typical of their category. They have shorter VOTs than voiceless aspirated stops. On average, voicing starts 30 ms after the stop release burst when the word is said in isolation, and 35 ms after the release burst when in context. Figure 10 demonstrates an unaspirated bilabial stop with a 25 ms VOT.

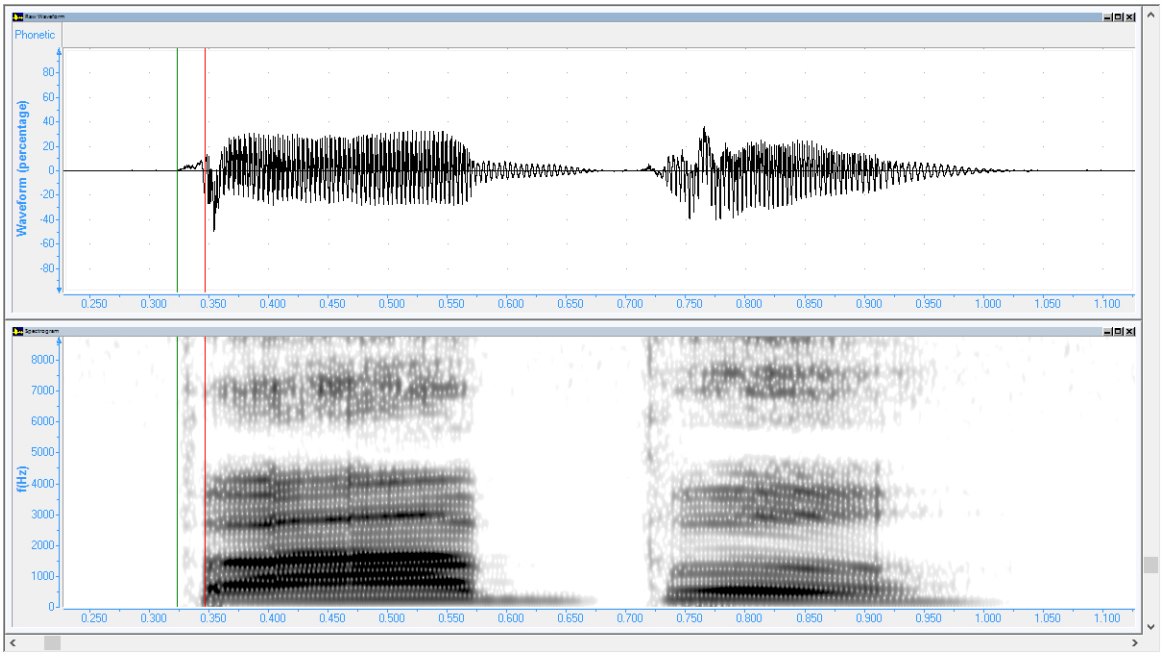

Figure 10. Spectrogram of *pæbə* ‘insect’ demonstrating the articulation of a voiceless unaspirated /p/ with 25 ms VOT

Identifying acoustic correlates of voiced stops is more puzzling. In words in citation form, some word-initial voiced stops show negative VOT while others demonstrate lag comparable to that of a tenuis stop. One might suggest that the latter *are* tenuis stops, but it is clear that the two acoustic manifestations are both possible for phonologically voiced stops, because some voiced stops in my dataset are produced in one token with voicing during the stop closure and in another with short lag.

A good example of this in my dataset is the word *bæŋɢe*. I recorded it on two separate occasions, once glossed as ‘fly’ and another time as ‘spider’. The stop in ‘fly’ was produced with 10 ms VOT:

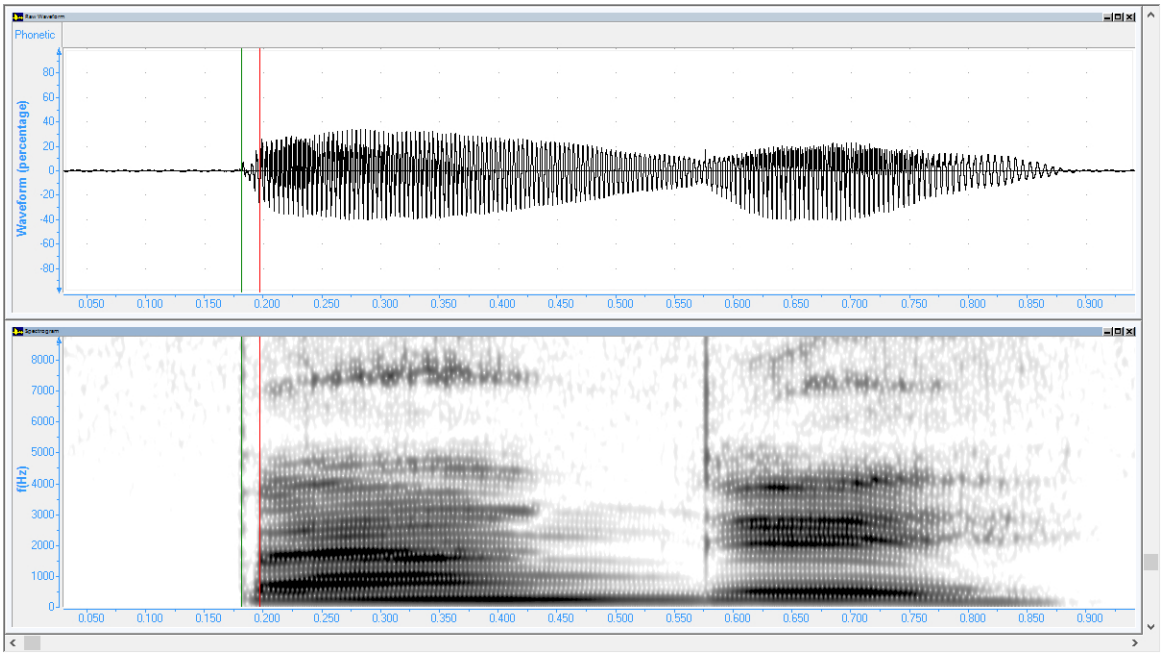

Figure 11. Spectrogram of *bæŋge* demonstrating the articulation of a voiced /b/ with 10 ms VOT

The same word on another occasion (when I recorded it glossed as 'spider') had voicing during the stop closure, as seen in the waveform and spectrogram of Figure 12 before the release burst. The reader will notice that voicing shuts off during the closure before the stop is released; this does not call into question the stop's voicedness. It is simply that voicing is difficult to maintain.

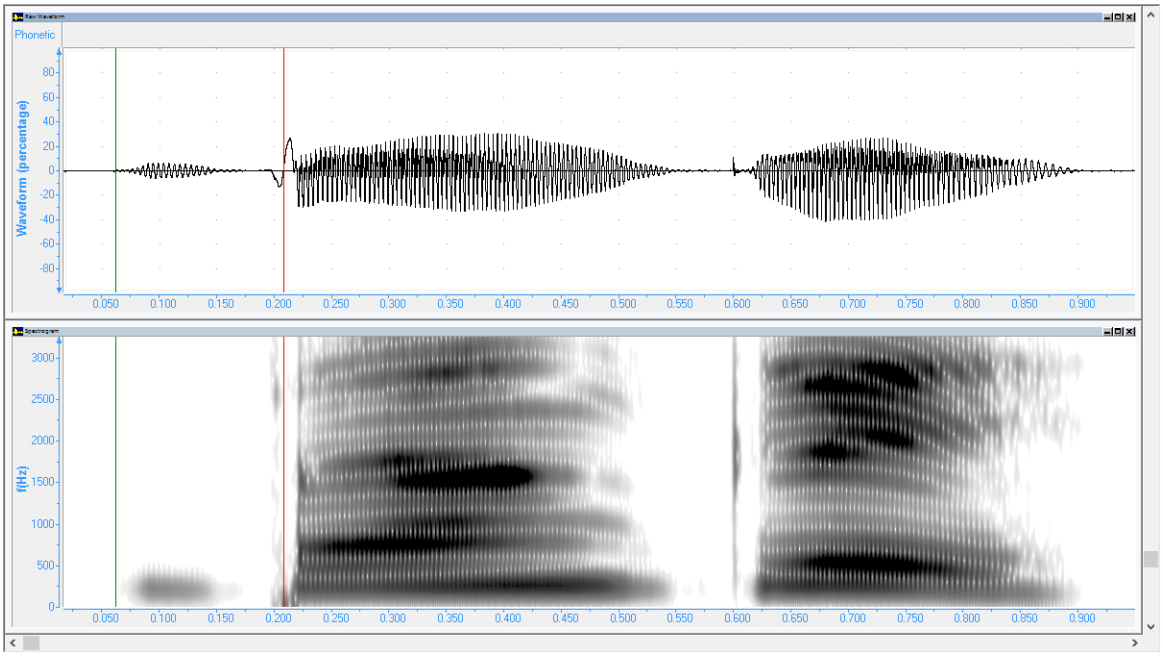

Figure 12. Spectrogram of *bæŋge* demonstrating the articulation of a voiced /b/ with -120 ms VOT

However, unlike /b/ in *bæŋge*, some word-initial stops with short VOT lag that I take to be underlyingly voiced never occur in citation-form words in my data with closure-internal voicing. Because it is not always possible to tell the voicing of a word-initial stop when no words precede it, another method of differentiating phonologically voiced stops with short lag from true voiceless unaspirated stops is needed. The solution to this problem is to look at the voicing of these stops sentence-medially, particularly in intervocalic position, where they show closure-internal voicing, whether complete or partial.

For instance, when *ɟirə* 'in' is spoken in isolation its word-initial stop has a positive VOT of 35 ms, as the spectrogram below demonstrates:

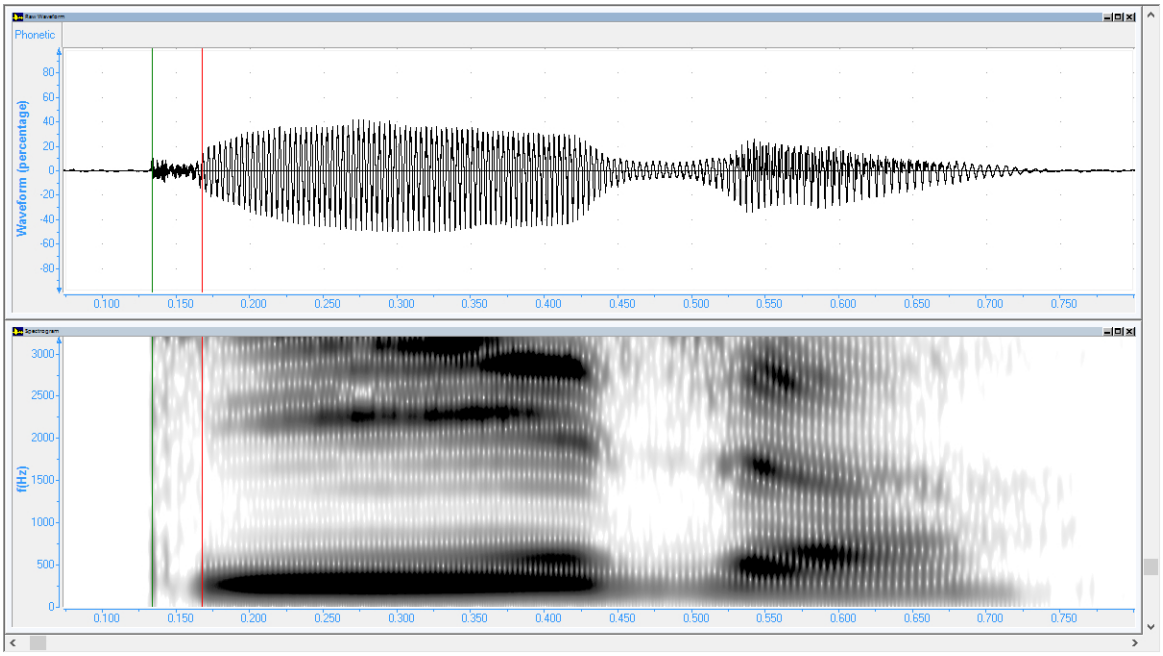

Figure 13. Spectrogram of *ɟirə* 'in' in isolation; /ɟ/ shows a VOT of 35 ms

In a sentence, though, the phonologically voiced /ɟ/ is also phonetically voiced. However, the voicing is not sustained throughout the full closure. I call this "partial negative VOT": when the voicing of a voiced stop cuts out partway through a stop's closure. Figure 14 shows *ɟirə* in sentence context, following a word that ends in a vowel. You can see in the spectrogram that the voicing bar of /ɟ/ cuts out after 60 ms.

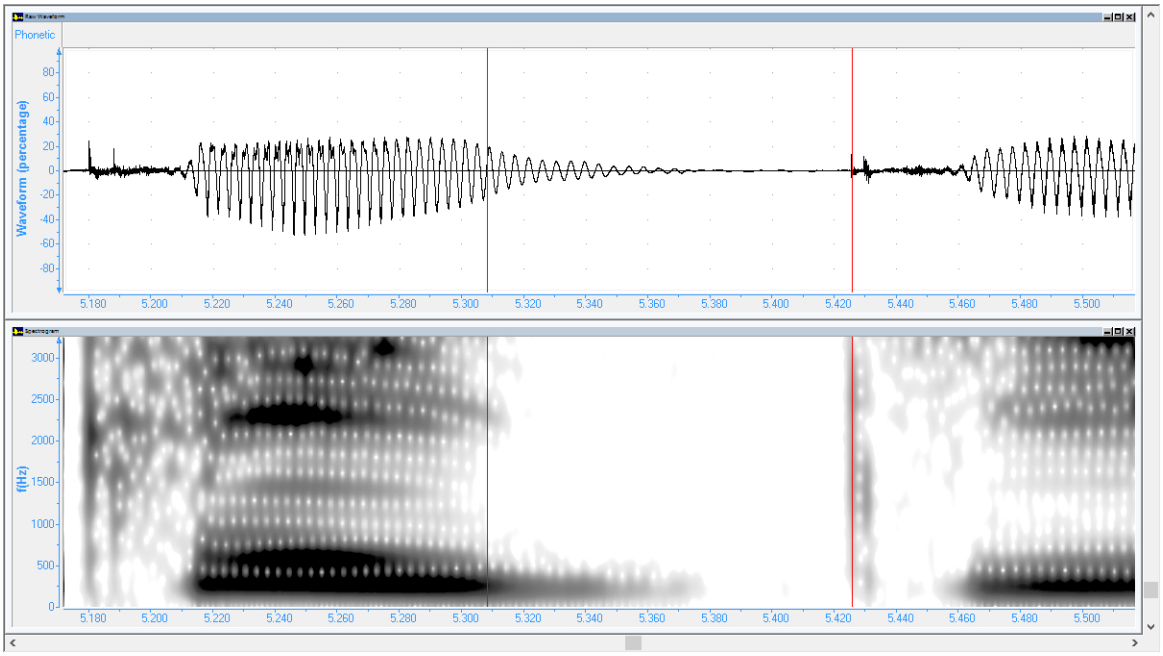

Figure 14. Spectrogram of *ɟirə* 'in' in sentence context; /ɟ/ shows closure-internal voicing.

A large portion of the voiced stops of the Stau speaker I worked with has only partial voicing word- and sentence-medially. This type of voicing is still considered negative VOT, and is still measured from the stop burst leftward to the end of the preceding segment. Incomplete voicing is noted in (72) below with an asterisk (*), and the length of the partial voicing bar is also given. On average, voiced stops with short lag which are produced at the beginning of an isolated word have a positive VOT of 21 ms; if a negative VOT, one of -149 ms. In sentence context they have an average -122 ms VOT.

(72) **Voice onset times of word-initial voiced stops**

	Word	Gloss	VOT isolation (ms)	VOT context (ms)	Partial voicing bar (ms)
b	bæɴɢe	'fly (n.)'	10	-120	
	bæɴɢe	'spider'	-120	-105*	80
	bəɬa	'leaf'	-240	-110	
	bəɬu	'leaf'	-60	-115	
	bəlætəsɲi	'every day'	-155	-120	
	bətsʰɛl	'water spinach'	15	-165*	135
	bəti	'cheek'	-200		
d	doləmæ	'?'	-170	-150	
	doŋbə	'stem'	20	-90	
	dordʑe	'?'	-130	-110	
ɟ	ɟɛuræ	'facial hair'	-140	-125	
	ɟɛzo	'potato'	-130	-145	
	ɟɛzoftəpɛ	'to harvest potatoes'	25	-115	
	ɟirə	'in'	35	-120*	60
Average			21; -149	-122	

4.1.2 Voicing in intervocalic stops

As for word-medial intervocalic voiced stops, the problem was less determining that two types of voicing were allowed for one phoneme, and more determining what is a salient length of voicing bar to indicate the presence of a voiced stop. Voiceless unaspirated stops usually do have a short voicing bar that persists into the stop closure after the vowel formants disappear. This is exemplified in Figure 15, where word-medial /t/ has a voicing bar that continues 45 ms into its stop closure.

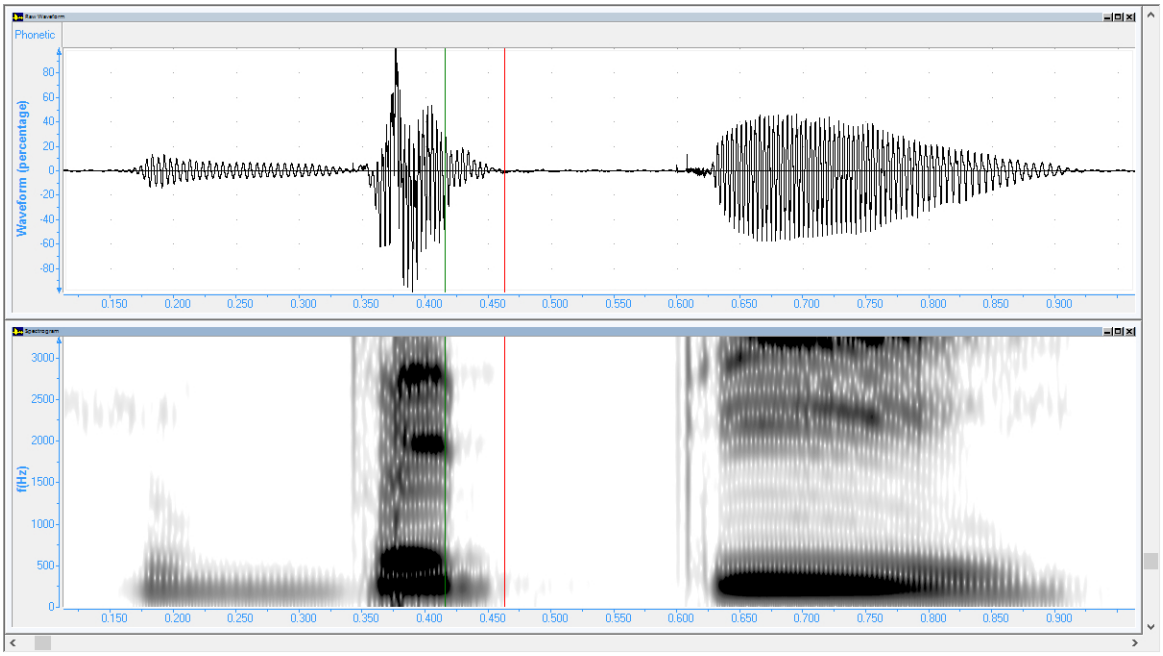

Figure 15. Spectrogram of word-medial voiceless unaspirated /t/ in *bəti* 'cheek'

When one looks at the word-medial unaspirated alveolar stop in *bəti* in sentence context, one sees that the length of the voicing bar does not change or go much beyond 40 ms. The voicing bar of /t/ in context is still 40 ms:

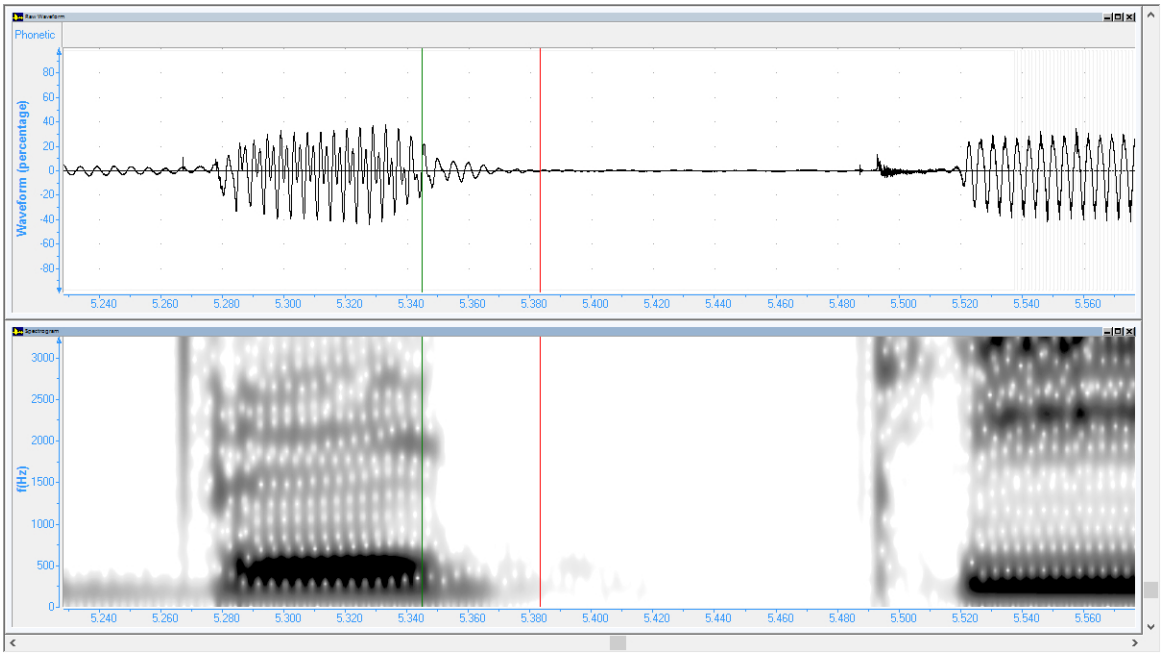

Figure 16. Spectrogram of word-medial voiceless unaspirated /t/ in *bəti* 'cheek' in context

On the other hand, although a phonologically voiced word-medial stop may have a short bar of closure-internal voicing in a citation-form word that makes the interpretation of whether or not it is voiced ambiguous, in context it will have clear negative VOT. For instance, the bilabial stop in *ŋaba* 'mud' has a partial voicing bar of only 40 ms out of a negative VOT of -175, as seen in Figure 17, but in sentence context it is fully voiced, as Figure 18 displays.

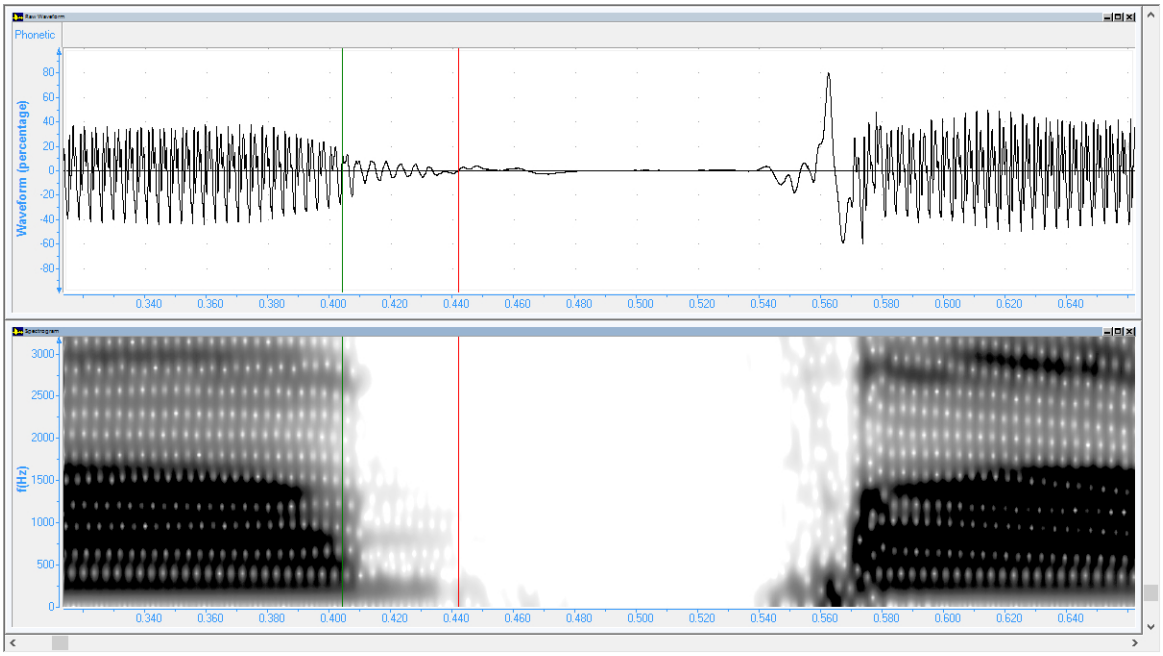

Figure 17. Spectrogram of word-medial voiced /b/ in *ŋaba* 'mud' in isolation

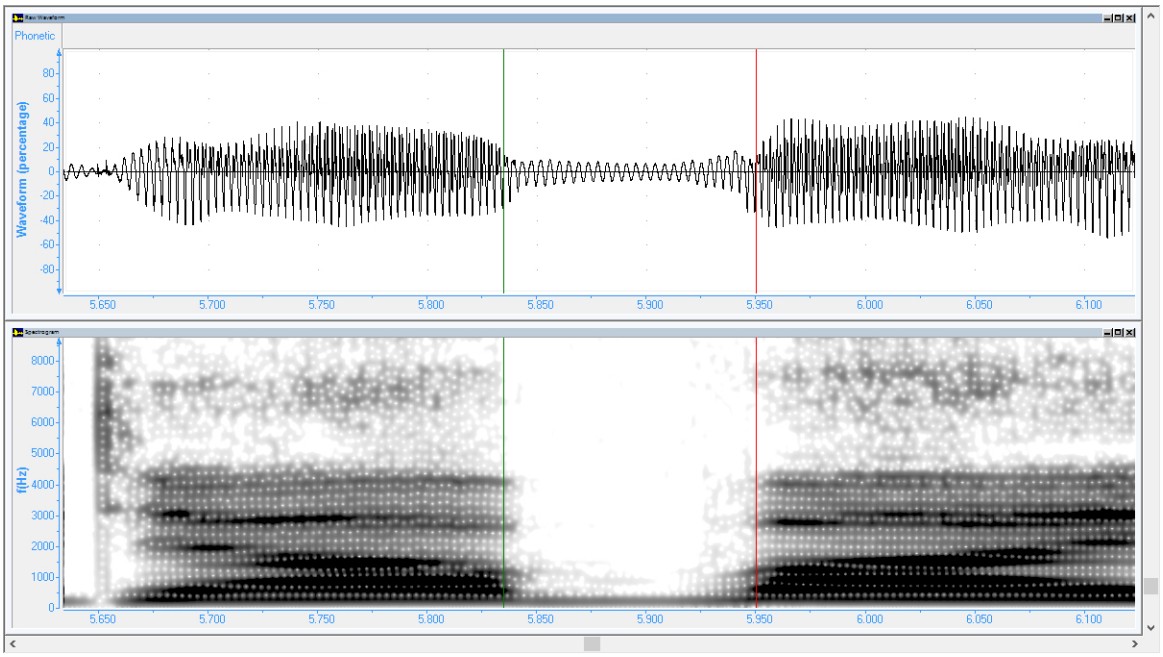

Figure 18. Spectrogram of word-medial voiced /b/ in *ŋaba* 'mud' in context

In general a word-medial voiced stop can be identified by a voicing bar of at least 45 ms, and more frequently of 60-100 ms. As with word-initial voiced stops, voicing becomes more obvious (i.e. less frequently partially voiced) when in the context of a sentence. This might be surprising and unexpected since the immediate surrounding context remains the same. It is not clear why putting words with word-medial voiced stops in a sentence would trigger this type of change. One idea why this difference in phonetic voicing exists between stops in isolated words and those in context is that in a sentence the faster rate of speech allows less time for voicing to cut out. It is worth noting that this effect is very robust; it happens in virtually all cases. I have ample examples, surprising though it may be.

Table (73) below lists all the words with intervocalic voiced stops, and gives the VOTs of each voiced stop in isolation and in sentence context. If the stop is partially voiced either in isolation or context, it is marked with an asterix and the length of the voicing bar is given in the next column to the right. On average, word-medial voiced stops have a VOT of -142 ms in isolation and -103 ms in context.

(73) **Voice onset times of word-medial voiced stops**

	Word	**Gloss**	**VOT isola-tion (ms)**	**Partial voicing bar (ms)**	**VOT con-text (ms)**	**Partial voicing bar (ms)**
b	æbɛr	‘one step’	-140*	100	-140	
	kʰæbɛrəɲcʰəre	‘phone shop’	-175*	70	-110	
	nəbɛr	‘second step’	-155*	100	-120	
	ŋaba	‘mud’	-175*	40	-95	
	pæbə	‘insect’	-145*	105	-105	
	pæbəle	‘butterfly’	-115		-90	
	pæbəsnærŋæ	‘insects’	-160*	50	-115	
	pubæ	‘Tibetan’	-125*	80	-100	
	rŋəbo	‘roasted barley’	-180*	100	-115	
	rʁəbə	‘thin’	-250*	50	-105	

d	adɛ	‘this’	-160*	140	-120	
	ædæ	‘older sister’	-135		-90*	65
	æk^{h}ivədæ	‘paternal uncle’	-140*	75	-100	
	æʑuvədæ	‘maternal uncle’	-115*	60	-105*	80
	ɕukede	‘weak’	-125		-90	
	kede	‘small’	-160*	50	-100*	80
	kedizurə	‘to be pregnant’	-130		-95	
	kɛdərə	‘early’	-100		-100	
	kɛdi	‘child’	-135*	55	-75	
	k^{h}ɛdɛr	‘scarf’	-205*	120	-100	
	koŋkede	‘cheap’	-135*	105	-100	
	ludɛ	‘which’	-120		-115*	95
	q^{h}əzikede	‘small bowl’	-145*	120	-100	
	sqədi	‘to ring’	-165*	130	-125	
	tɕedə	‘time’	-110		-75	
	tɕədə	‘book’	-165*	70	-90*	70
	ts^{h}ædəm	‘pitcher, thermos’	-155*	50	-90*	45
	vədæ	‘wife’	-130*	115	-70	
ɟ	naɟɛc^{h}ɛrə	‘many trees’	-170*	50	-160*	70
	smənvəgəɟi	‘to make medicine’	-170*	70	-140*	55
	ʑækɻæ	‘lame person’	-170*	60	-125	
g	ægəjo	‘to grow up’	-100		-105	
	kəgəmæ	‘naked’	-75*	45	-60*	40
	k^{h}ɛgɛ	‘after’	-125		-75	
	məgondʑə	‘not understand’	-95*	40	-80*	35
	mugurə	‘not understand’	-110*	50		
	tɕəgə	‘something’	-100*	50	-70	
	tsəgə	‘clothing’	-135*	85	-85*	75
	rəgi	‘to clothe’	-145*	65	-160*	70
	ʑigə	‘around’	-125*	65	-90	
	zugu	‘to take’	-135*	85	-135*	60

Average	-142	77	-103	65

4.2 Acoustic analysis of the vowels

Because vowels, even those transcribed with the same symbol, can vary so much in their pronunciation from language to language, in this section I analyze the vowels acoustically to provide a more scientific description of them. Ladefoged (2003) recommends as best practice for an accurate and representative vowel plot that 4-10 speakers of both sexes and a variety of ages should be recorded, each articulating 5-10 tokens of each vowel. Unfortunately, since my fieldwork was limited by time and location, the acoustic descriptions here are based on only one speaker. Thus, my analysis of the vowel identities should be treated as an approximation, and not a representative picture of the vowel production of the whole speech community.

F_1 and F_2 measurements were made on recordings sampled at a rate of 48 kHz. Vowels were measured in word-final position to minimize consonant interference. In accordance with Ladefoged (2003)'s recommendations, vowels with nasals preceding them were excluded from the sample. I made measurements manually in Speech Analyzer 3.1, using the waveform-spectrogram-spectrum screen configuration, avoiding consonant transitions and with an eye to steady formant states. Then the formant values were run through the software program FPlot,[2] in order to produce vowel formant plots.

The measurements produced the following F_1 and F_2 averages:

Average formant values

	F_1	F_2	Tokens
i	336	2267	38
e	475	2151	30
ɛ	537	1957	40
æ	804	1737	40
ɑ	859	1444	35

[2] Available at casali.canil.ca.

Average formant values

	F_1	F_2	Tokens
ə	556	1501	40
o	471	1048	39
u	336	1181	41

Plotting the average formant values produces the following representation of the vowel characters and relationships. F_1 is plotted on the y-axis against F_2 on the x-axis.

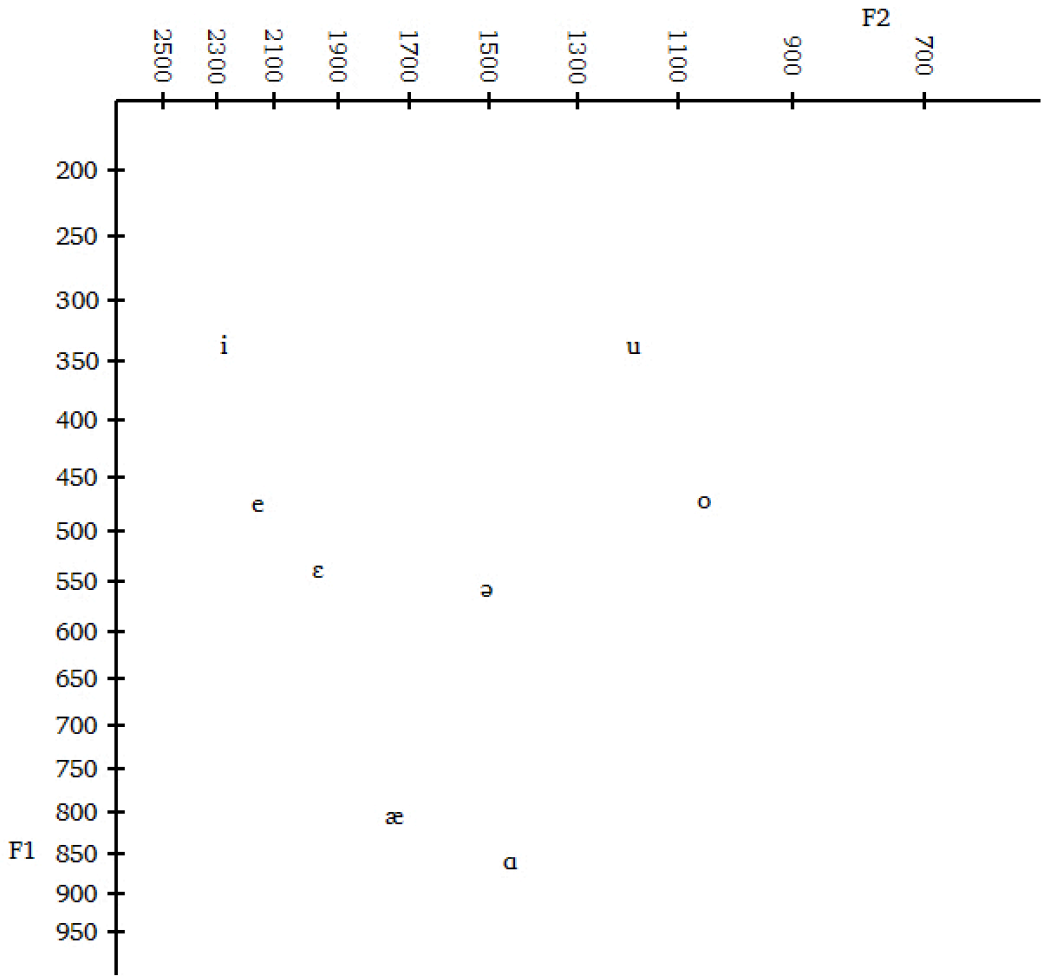

Figure 19. Average vowel formant plot

The vowel chart below plots all the individual tokens that were measured, and shows the variation within the F_1 and F_2 of each vowel.

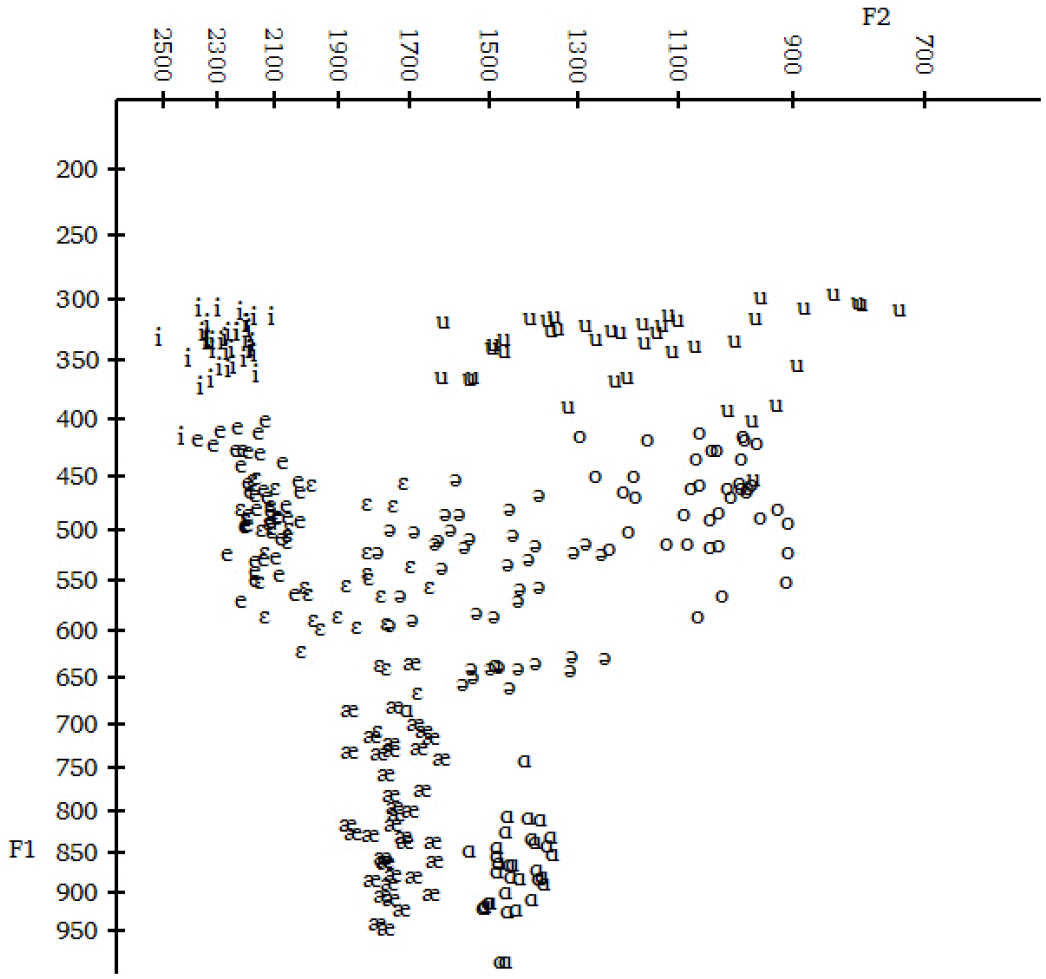

Figure 20. Formant plot of all tokens

Most of the vowels show consistency in their formant values. /i/, /æ/, and /ɑ/ in particular are quite distinct in their distribution. /e/ and /ɛ/, whose contrast one might be suspicious of, do overlap, but /ɛ/ does have a wider distribution into lower F_2 and higher F_1 values.

/u/ varies widely in terms of its F_2, moving into F_2 territory that is considered more typical of central vowels. However, most of /u/ tokens do not vary significantly in their aural quality. There is only one vowel (not included in the analysis as it is not word-final) whose quality I am uncertain about, and that is the back vowel in the word ***lu****dɛ* 'which'. It

has an F_1 of 523Hz and an F_2 of 1449Hz. Aurally it sounds like [ʊ], something between /u/ and /o/. However, since it is the only such vowel in my corpus, I am making no conclusions about it and have transcribed it with the high back vowel /u/.

Chapter 5

Syllable structure

This chapter presents the syllable types that Stau uses (§5.1), and then moves on to syllabification in Stau (§5.2).

5.1 Syllable canon

Maddieson (2013c) points out that a "significant though not strong" correlation exists "between small consonant inventories and simple syllable structure and large consonant inventories and complex syllable structures." Maddieson can count Stau as another language to bolster the validity of this typological tendency: in addition to having a 42-consonant inventory, the language has a complex syllable canon. The Stau syllable consists of: an initial consonant (C_i), which can be preceded by a preinitial consonant (C_p) and followed by a medial consonant (C_m); an obligatory vowel nucleus; and an optional final consonant (C_f). The syllable canon can be represented as follows:

Table 1. Stau syllable canon

(C_p)	C_i	(C_m)	V	(C_f)

Permit me a brief aside to discuss terminology: the terms *initial*, *preinitial*, *medial*, and *final* may be familiar to some readers but new to others. In Sino-Tibetan linguistics, particularly in the field of historical phonology, these terms are used to refer to the various slots in a syllable. The reason specific terms are used rather than C_1, C_2, etc., is that different syllable positions license specific sets of consonants. Initial position licenses the largest number of consonants; in fact, it allows most of the phonemes in the consonant inventory.

Preinitial, medial, and final position each license a restricted subset of the consonants allowed in initial position. In English, for instance, all consonant phonemes except *ŋ* are allowed in initial position, while medial position licenses the liquids *r* and *l* and preinitial position only *s*. Although Stau allows much freer combination of consonant phonemes, the types of phonemes the respective positions license are similar: in Stau, medial position licenses only liquids and glides, while one main phonemic class allowed in preinitial position is that of fricative. Much more can be said on Stau phonotactic restrictions, and we will return to these in §6. Still, the descriptive utility of these terms for cross-linguistic typology is evident in the way that Stau's restrictions mirror and expand on those of English. Now let us return to the syllable canon.

5.1.1 Syllable canon in genetic and areal context

That Stau has a complex syllable canon is not surprising when we consider its areal context and genetic inheritance. Proto-Tibeto-Burman (PTB) also had a large syllable canon. Below is the PTB syllable canon as reconstructed by Matisoff (2003:12):

Table 2. Proto-Tibeto-Burman syllable canon

				[T]		
(P_2)	(P_1)	C_i	(G)	V	(C_f)	(s)

We can see strong similarities between this syllable canon and the Stau syllable canon in Table 1. The PTB syllable obligatorily has an initial consonant (C_i) and vowel (V), just as Stau does. As in Stau, the initial consonant can be preceded by consonantal "prefixes" ($P_{1,2}$; nearly equivalent to "preinitials") and can be followed by a liquid or glide (G) (namely, a medial), and the nucleus can be followed by a final consonant (C_f) (Matisoff 2003:11).

There are differences between the two syllable canons. The PTB syllable is more complex: It allows two prefixes before the initial consonant, whereas Stau permits only preinitial. PTB allows a second suffix, *-*s*; Stau allows only one final consonant. PTB may also have had tone (whether or not it did is still an open question) (Matisoff 2003:11). Despite these differences, the similarity between the parent and daughter language can be clearly seen.

The complexity of Stau's syllable canon can also be seen as part of an areal phenomenon. It is an areal tendency of East and Southeast Asian languages to have "bulging monosyllables," as Matisoff (1990) writes. He explains that SE Asian languages are "overwhelmingly" monosyllabic, and tend to have complex syllable canons (1990:543). Matisoff (1990:547) argues that bulging monosyllabicity is a persistent diachronic tendency because, over the course of time, SE Asian languages "oscillate cyclically" through a set of syllable structures—complex monosyllables, (consonantally) simple monosyllables, disyllabic compounds, and sesquisyllables—a cycle that always returns to monosyllabicity.

In our present ignorance of Rgyalrongic historical phonology, we cannot be sure how Stau came to be in its current syllabic state—whether it essentially conserves PTB's complex monosyllabicity or is cycling back to this type of syllable structure. I would speculate the former is true. One reason I favour this hypothesis is that Shangzhai, a language closely related to Stau, retains an old PTB causative prefix *s- as a semi-productive morpheme (J. Sun 2007, Matisoff 2003:89). There is some evidence that Stau retains the same prefix, as (74) and (75) show. In (74), we see that when the prefix *s-* is added to the verb *ŋkʰərvæ* 'to turn, circle', the verb becomes causativized. Instead of the verb's subject doing the turning as in *ŋkʰərvæ*, the subject is causing an object to turn.

(74) *ŋkʰərvæ* 'to turn, circle'
s-kərvæ 'to turn (prayer wheel)'

Example (75) demonstrates the same causativization. The verb *pjæ* 'to split' has the sense that what is splitting is doing so by itself, but when *s-* is prefixed to it, its meaning changes to include an agent who is causing the splitting (as when a person is chopping wood).

(75) *pjæ* 'to split (by itself)'
s-pjæ 'to split (wood)'

There are other verbs in the database that begin with *s* and might be examples of causativized verbs, but no corresponding prefix-less verbs were found to provide proof.[1]

J. Sun (2007) presents an analysis that opposes my theory. Sun notes that it is characteristic of Rgyalrongic languages to make causatives with the prefix *s(ə)-*. In Shangzhai, the causative prefix appears "consistently" as the non-syllabic *s-*, while Caodeng Rgyalrong and Guanyinqiao Lavrung (Khroskyabs) use "both syllabic (*sə-*) and non-syllabic allomorphs (*s-*)" (2007:226). Based on these languages (Sun does not mention including any other Rgyalrongic varieties in his sampling), he hypothesizes that Proto-Rgyalrongic had a syllabic causative prefix **sə-*. If his analysis is correct, it is likely that Stau has not inherited the complexity of its syllable canon from PTB, but is returning to monosyllabicity from sesquisyllabicity. The causative prefix would have expanded in the timescale between PTB and Proto-Rgyalrongic from **s-* to **sə-*, and then contracted again to a non-syllabic prefix in contemporary Stau and Shangzhai.

My interpretation of the synchronic data differs. In his hypothesis, Sun does not make reference to PTB and its causative prefix **s-*, which is clearly the source from which Proto-Rgyalrongic derives its morphological causative. When one takes PTB into account, my analysis becomes more probable: Proto-Rgyalrongic retained PTB's non-syllabic prefix and passed it on to its daughter languages. Some Rgyalrongic daughter languages, such

[1] E.g. *st^{h}væ* 'to press down', *st^{h}i* 'to hang', *scor* 'to support, prop up'.

as Caodeng and Guanyinqiao, began inserting a schwa after the prefix to avoid undesirable consonant clusters, creating a second allomorph of the causative morpheme in these varieties. This interpretation of the data suggests that Stau is not cycling back to the monosyllable but has retained PTB's monosyllabicity.

Having considered the Stau syllable canon in areal and genetic context, let us now look at the specific syllable types comprised within the syllable canon.

5.1.2 Syllable types

The syllable canon in Table 1 licenses six syllable types: CV, CCV, CCCV, CVC, CCVC, and CCCVC. These six types can be generalized into two primary syllable shapes. The first three can be characterized as syllables formed by an onset and nucleus, the latter three as onset and nucleus followed by a coda. Examples of each are provided below:

(76) CV
- a. *tsʰə* 'salt'
- b. *he.ʑi* 'how many'
- c. *ʑə.lə.ze* 'son, boy'

(77) CCV
- a. *sqʰi* 'sister'
- b. *mdzu.dzu* 'late afternoon'
- c. *spə.spœ* 'body hair'

(78) CCCV
- a. *ɴɢwɛ* 'five'
- b. *ndji.ndji* 'red'
- c. *spru.rə* 'butter churn'

(79) CVC
a. *ʁav* ‘needle’
b. *ɬɛv.sə* ‘lightning’
c. *tɕʰə.kəv* ‘watermelon’

(80) CCVC
a. *ɲɟɛm* ‘wall’
b. *zjær.kʰu* ‘to hurt emotionally’
c. *snəm.rʁɛ.scɛ* ‘dish detergent’

(81) CCCVC
a. *ndjɛv* ‘to sleep’
b. *spjoŋ.kʰə* ‘wolf’

The six syllable types above appear in Stau roots. In affixes, an additional syllable type is allowed—a bare nucleus, as (82) demonstrates.

(82) V
a. *æ.pæ* ‘father’
b. *a.dɛ* ‘this’
c. *a.tsa.wa.tsa* ‘locust’

Unlike the previous six syllable types, the V syllable does not occur in roots, it only appears in prefixes. The syllable type is further restricted in that it only licenses low vowels, either /æ/ or /ɑ/. In addition, V syllables are relatively rare. The vowel /ɑ/ only occurs as a V syllable three times in my dataset, and one instance, (83a), is a Tibetan loanword:

(83) a. *a.ra* ‘wine’
b. *a.dɛ* ‘this’
c. *a.tsa.wa.tsa* ‘locust’

Most of the words in which /æ/ occurs as a V syllable fall into three identifiable categories: kinship terms, quantifier nouns and classifiers, and quantifiers and grammatical

words. Based on this and other evidence discussed below, it is possible to hypothesize that all V syllables are historically prefixes.

Several examples of kinship terms beginning with /æ/ are shown in (84):

(84) Kinship terms
- a. *æ.mə* 'mother'
- b. *æ.ti* 'older brother'
- c. *æ.dæ* 'older sister'
- d. *æ.ŋæ.ze* 'baby'

When we look at the literature, we find a historical reason for the plethora of kinship terms that start with /æ/. Matisoff (2003:104-5) reveals that PTB had a prefix **a-*, one semantic function of which is to mark kinship terms. Chirkova (2012:143) mentions that the use of *a-* as a kinship prefix is one of the putative characteristics of the Qiangic subgroup, and that, for the languages of the Ethnic Corridor, the *a-* prefix marks older kin (example (84d) being an exception here; perhaps because it has the diminutive suffix *-ze*).

The æ- that occurs with quantifier nouns and classifiers is a numeral prefix for 'one'. In Stau, numbers used for counting (*ro* 'one', *ɣne* 'two') cannot be used with nouns; instead numeral prefixes must be affixed to the nouns.[2]

(85) Quantifier nouns and classifiers
- a. *æ-bɛr* 'a step; first step'
- b. *æ-ndʐə* 'a time/instance; first time/instance'
- c. *æ-słə* 'one month'
- d. *æ-sŋi* 'one day'

æ- can also be prefixed to some action words as a classifier, as in (86). For instance, when æ- is prefixed to the verb *ndə* 'to stab', the resulting word means 'a stab'.

---

[2] I am beholden to Jacques (2014) for making clear to me what was going on here, as he notes the same requirement in Japhug Rgyalrong.

Two other numeral prefixes that occur in my data are *nə-* 'two' and *su-* 'three'.

(86) a. *æ-ndə* ‘a stab’
b. *æ-xtɕæ* ‘a cut’

The words in (87) I have tentatively grouped together as being of similar character, quantifiers and grammatical words. If these words do belong to one class, the function or origin of the prefix they begin with is not clear.

(87) Quantifiers and grammatical words
a. *æ.sɛ* ‘full’
b. *æ.tɕɛ* ‘together’
c. *æ.tɕʰə* ‘what’
d. *æ.tɕʰə* ‘with’
e. *æ.tsʰe* ‘a little’
f. *æ.χe* ‘a little’

The three words beginning with a V syllable that don’t fit into any pattern of the above patterns comprise one verb (88a) and two nouns (88b-c).

(88) a. *æ.gə.jo* ‘to grow up’
b. *æ.ɕəm* ‘corn’
c. *æ.dʑæ.pæ.dʑæ* ‘sandals’

Moving on from licit syllable types, VV sequences seem to be illicit in Stau. Yet, two such words do occur in the data I gathered:

(89) a. *ɟɛ.u.ræ* ‘beard’
b. *dʑu.æ* ‘to swim’

Perhaps these exceptions are borrowings, or perhaps they are morphologically complex, since VV sequences are permitted in phrases, as the possessive noun phrases below demonstrate.

(90) a. *æjæ-i-dzəvə*
maternal.aunt-GEN-husband
'aunt's husband'

b. *æʑu-i-vədæ*
maternal.uncle-GEN-wife
'uncle's wife'

5.2 Syllabification

As for syllabification, Stau follows the principle that consonants and consonant clusters attested at word edges are allowed word-medially. In many cases this means that the Sonority Sequencing Principle (SSP) is violated (Clements 1990). For instance, according to the SSP, the word *təskrəsə* 'late' should be syllabified as it is in (91a).

(91) a. **təs.krə.sə*
b. *tə.skrə.sə*

However, (91b) demonstrates the best syllabification, despite the fact that it violates the SSP, because it follows the principle of attested word-edge clusters. The cluster *skr* is attested at the beginning of the word *skʰro* 'ant' (discounting the minor difference of aspiration on the velar stop in 'ant'), while /s/ is never found as a word-edge coda in Stau. Based on this evidence, (91b) is its correct syllabification.

On the other hand, where a word-edge onset consonant cluster and a word-edge coda are both attested, the SSP comes in to decide between the two possible syllabifications. For example, *ɕovərgɛm* 'cardboard box' is a compound of *ɕovə* 'paper' and *rgɛm* 'box'. Despite the morpheme break, the word is syllabified as *ɕo.vər.gɛm*, because *ər* is an attested word-edge rhyme, e.g. *ʁərʁər* 'round, circular'.

Chapter 6

Phonotactics

In this chapter, I discuss phonotactic restrictions in Stau. The chapter is divided into two sections, beginning with §6.1 which looks at phonotactic constraints in syllable onsets. Section 6.1 focuses particularly on restrictions within consonant clusters. Section 6.2 deals with phonotactic constraints within the rhyme, i.e. both the nucleus and coda.

6.1 Onsets

Because of its large consonant inventory and large number of consonant clusters, Stau consequently has a large number of permissible onsets. This section deals with the phonotactic restrictions that apply to onsets. In §6.1.1, I will describe and list the type of consonants each position of the Stau onset allows. In §§6.1.2-6.1.5, we will look in detail at the consonant cluster *combinations* that are licit in Stau, beginning with NC_i, then moving to other C_pC_i, C_iC_m, and finally $C_pC_iC_m$ clusters.

6.1.1 Positional restrictions

All Stau consonantal phonemes are permissible as initials, apart from /N/ and /G/ which only occur together in a cluster. When consonants combine into clusters, the sounds permissible in onsets are curtailed. Initial position in clusters remains the most unrestricted position in the syllable, followed by preinitial position. Medial position is the most restricted position in the onset. Let us look at the phonotactics of each type of consonant cluster individually, starting with C_pC_i, followed by C_iC_m, and then $C_pC_iC_m$.

C_pC_i clusters are the most common consonant clusters in Stau. The C_i position licenses voiced and voiceless stops, fricatives, affricates, and nasals. In preinitial position, fricatives, the rhotic, and nasals are allowed.

In C_iC_m clusters, initial consonants can be stops, fricatives, the rhotic, and /m/. In medial position, the glides and rhotic are most common, but /v/ and /l/ are also attested.

Within $C_pC_iC_m$ clusters, each position is more restricted than it is in two-consonant clusters. Initial position only licenses stops, and this does not include palatal stops. Preinitial position allows the rhotic and nasals, as the C_pC_i preinitial position does. However, from among the fricatives only alveolar fricatives are allowed, whereas in C_pC_i clusters fricatives from all five places of articulation are licensed. In medial position, most of the same consonants are attested as are in C_iC_m clusters—glides, rhotic, labial fricative. The lateral approximant is not attested, but this could be an accidental gap. Lateral approximants are relatively uncommon in medial position of C_iC_m clusters, and three-consonant clusters are also fairly uncommon. The absence of the lateral approximant in this context could be a statistical effect.

Table 3 details the specific phonemes that occur in each position of these clusters.

Table 3. Licit consonants by position and cluster type

Cluster type	Position	Attested consonants
C_pC_i	C_p	v s z x ɣ ʁ r m n ŋ ɴ
	C_i	p^h p d t^h t d c^h c ɟ k^h k g q^h q ts^h ts dz $tɕ^h$ tɕ dʑ dʐ
		v s z ɬ ɮ ɕ ʑ x ɣ ʁ r m n ɲ ŋ
C_iC_m	C_i	p^h p b t^h k^h k q^h q v s z ɕ ʑ ɣ χ ʁ r m
	C_m	v l r j w
C_pC_i C_m	C_p	s z r m n ŋ ɴ
	C_i	p^h p b t^h d k^h k g q ɢ
	C_m	v r j w

These are the sounds attested in each position of the three cluster types, but not all the combinatorial possibilities of these sounds are permitted in Stau.

In the subsections that follow, I will describe the particular restrictions that govern the combination of the phonemes listed for each cluster type in Table 3. I will list with examples the attested consonant co-occurrences, and in addition discuss the restrictions that they display.

6.1.2 [Nasal + initial] clusters

The chart below gives all the [nasal + initial] combinations found in Stau. The five nasals are listed on the vertical axis, and initial consonants on the horizontal. At the intersection of the row and column that represents an attested [nasal + initial] combination is entered the number of words in the database in which said cluster occurs.

Table 4. Nasal + consonant co-occurrence chart

	pʰ	**b**	**tʰ**	**d**	**tsʰ**	**dz**	**dʐ**	**tɕʰ**	**dʑ**	**cʰ**	**ɟ**	**kʰ**	**g**	**qʰ**	**q**	**ɢ**
m	8	21	1	6	4	1	3	5	7		1	5	1			
n			5	16	3	7	7	5	16							
ɲ										8	6					
ŋ												17	13	1		
ɴ															1	5

Table 4 reveals a number of things. First, preinitial nasals are only found in clusters with stops and affricates. Second, the stops and affricates are either voiced or voiceless aspirated,[1] which is consistent with cross-linguistic tendencies. Obstruents tend to be voiced following nasals in languages across the world (Hayes & Stivers 2000:1). Languages that against the grain have NÇ clusters must "preserve the [voicing] contrast [between the nasal and obstruent] in spite of the pressure to obliterate it" (Hayes & Stivers 2000:31). Stau preserves the contrast by aspirating the voiceless consonant, thus making the contrast between [nasal + voiced obstruent] and [nasal + voiceless obstruent] perceptually clearer. In addition

[1] This pattern does not hold in Huang (1991)'s description of Gexi Stau. She finds several voiceless unaspirated stops and affricates in NC clusters: <nt>, <nts>, <ntɕ>, <ncç> (i.e. /ɲc/), and <nq> (i.e. /ɴq/).

to the perceptual benefits of aspirating the voiceless consonant, there is a possible articulatory reason that voiceless stops tend to be aspirated after nasal consonants: Stops naturally tend to voice in the post-nasal environment, and abduction of the vocal folds (i.e. moving them apart) is a primary mechanism of "cessation of voicing" (Hayes & Stivers 2000:3). At the same time, vocal fold abduction is also a primary mechanism of aspiration. Thus, the abduction deployed to prevent a post-nasal consonant from becoming voiced might also naturally lead to aspiration.

A third thing to notice is that, whereas many languages that allow [nasal + initial] clusters stipulate that the nasal must be homorganic with the initial (i.e. having the same place of articulation), Stau allows other combinations than homorganic ones, at least for clusters in which /m/ is the preinitial. Alveolar, palatal, velar, and uvular nasal preinitials all only occur in clusters with consonants from the same place of articulation.

Below, (92) demonstrates each of the [m + initial] clusters with an example from the database.

(92) Attested [m + initial] clusters

Cluster	**Example**	**Gloss**
mpʰ	*mpʰi*	to card (wool)
mb	*mbɛr*	cushion
mtʰ	*kɛmtʰu*	high
md	*mdɛrə*	drum
mtsʰ	*mtsʰu*	lake
mdz	*mdzɛmdze*	polite
mdzˌ	*mdzˌu*	dragon
mtɕʰ	*mtɕʰurdzæ*	teapot
mdzˬ	*mdzˬəsnæ*	seed
mȷ	*mȷo-rə*	fast
mkʰ	*mkʰərjɛ*	pipe
mg	*mgrə*	wall (that one dries barley against)

As I just mentioned, apart from /m/, the nasals only occur preinitially with homorganic stops and affricates. Some phonologists would for this reason analyze the homorganic clusters as prenasalized consonants. For instance, Jacques (2004) and J. Sun (2004) interpret homorganic nasal clusters in Japhug and Showu Rgyalrong (respectively) as single prenasalized segments rather than as sequences. In Jacques and Sun's analyses, the prenasalized series forms its own natural class in the segmental inventory. The principle of Ockham's razor has been cited to support this type of interpretation. Analyzing these sounds as a single manner of articulation rather than many clusters could be considered simpler and more elegant.

However, Ockham's razor can also be used to argue against the prenasalization analysis. While the analysis eliminates some consonant clusters, it does not simplify the syllable canon. The presence of non-homorganic [m + initial] clusters requires that we still recognize the [nasal + initial] onset type. In addition, the analysis adds sixteen extra consonants to an already full consonant inventory. For these reasons, I have decided to treat the sounds as phonological sequences.

The table in (93) provides an example of each of the attested [n + initial] clusters.

(93) Attested [n + initial] clusters

Cluster	**Example**	**Gloss**
nt^{h}	*nt^{h}ətœ*	to grind
nd	*ndərci*	girdle for coat
nts^{h}	*nts^{h}ɛm*	between, around
ndz	*ndzə*	to hide something
ndz̨	*ndz̨œndz̨œ*	same
ntɕ^{h}	*zœntɕ^{h}œ*	to feel itchy
ndz̥	*ndzœtsə*	woollen cloth

As a preinitial /ɲ/ occurs before voiceless aspirated and voiced palatal stops:

(94) Attested [ɲ + initial] clusters

Cluster	Example	Gloss
ɲcʰ	*ɲcʰə*	to hit
ɲɟ	*ɲɟaba*	mud

The velar nasal appears as a preinital before voiceless aspirated and voiced velar stops, as the examples in (95) demonstrate.

(95) Attested [ŋ + initial] clusters

Cluster	Example	Gloss
ŋkʰ	*ŋkʰurlu*	wheel
ŋg	*ŋgələ*	food stuff

The uvular nasal is attested in one C_pC_i cluster, before the voiced uvular stop, as (96) shows.

(96) Attested [ɴ + initial] clusters

Cluster	Example	Gloss
ɴɢ	*bæɴɢe*	fly, spider

6.1.3 Other [preinitial + initial] clusters

Unlike NC_i clusters, other C_pC_i co-occurrences show less systematicity concerning which preinitials will co-occur with which initials. For this reason I have decided not to include a C_pC_i co-occurrence chart like the NC_i one provided by Table 4—such a chart would lack the pattern that Table 4 shows, making it harder to read and interpret. In addition, so many initials are involved in C_pC_i clusters that a co-occurrence chart would be unreadably wide.

In total (excluding NC_i clusters), 101 C_pC_i cluster combinations are attested in the data: twenty-three with /v/ as preinitial, thirteen with /s/, eight with /z/, eleven with /x/, seven with /ɣ/, three with /χ/, nine with /ʁ/, and twenty-seven with /r/.

One phonotactic restriction that applies to almost all C_pC_i clusters is that the two consonants must sharing the same voicing. For most preinitials this means they do not co-occur with initials of different voicing: e.g. /x/ only occurs with voiceless consonants, /ɣ/ only with voiced. For /v/ and /r/, which do not have voiceless phonemic counterparts, this means that when they precede a voiceless consonant, they assimilate in voicing and are realized respectively as [f] and [ʂ]. There is an exception to this rule: /s/ can be a preinitial before nasals without assimilating in voicing.

The labiodental fricative /v/ can occur preinitially before aspirated, tenuis, and voiced stops and affricates, and alveolar, lateral, and palatal fricatives:

(97) Attested [v + initial] clusters

Cluster	**Example**	**Gloss**
vtʰ	*vtʰi [ftʰi]*	to smoke (a cigarette)
vt	*vtəpɛ [ftəpɛ]*	to harvest
vd	*ʁəvdœ*	to nod
vcʰ	*vcʰə [fcʰə]*	to weigh
vc	*vcə [fcə]*	rat, mouse
vʄ	*vʄə*	saliva
vk	*vkə [fkə]*	to eat one's fill
vg	*vge*	to cross (a bridge)
vq	*vqo [fqo]*	sky
vtsʰ	*vtsʰu [ftsʰu]*	to take out of water
vts	*nə-vtso [nəftso]*	to cut
vdz	*vdzi*	human
vdʐ	*vdʐər*	to roll up
vtɕʰ	*ʁavtɕʰo [ʁaftɕʰo]*	sixteen
vtɕ	*vtɕœkʰœzŋore [ftɕœkʰœzŋore]*	rack for hanging things on
vdʑ	*vdʑəvdʑə*	friend
vs	*vsu [fsu]*	to spin (wool)
vz	*vzɛvzə*	to scratch
vɬ	*vɬɛ [flɛ]*	ashes

vʒ	*vʒæzæ*	sleeve
vɕ	*vɕoxpæ [fɕoxpæ]*	wing
vʑ	*vʑo*	to plane

Example (97) shows twenty-two clusters. There is one additional cluster, [fɲ], that occurs in two words, both compounds created with the stem *ɲu* 'shoot, sprout':

(98) a. *kov-ɲu [kofɲu]* 'garlic shoot' (garlic-shoot)
b. *tɕɛlɛv-ɲu [tɕɛləfɲu]* 'bean sprout' (bean-shoot)

The cluster does not follow the rule that [f] only occurs before voiceless consonants. Its departure from the rule may lead one to suspect that the voicing difference between the two sounds is only perceptual, but the labiodental fricative is indeed voiceless in spectrograms. I am not sure how to account for the appearance of the voiceless [f] here. In Stau phonology /v/ is phonemic and [f] is its allophone (restricted to preceding a voiceless consonant), and in (98a) and (98b) the labial fricative precedes a voiced nasal. Based on these premises, we would expect the labial fricative to be realized as [v].

In another compound (99), which uses *tɕɛlɛv* 'bean' as a stem like (98b) does, the labial fricative is realized as [v] when followed by the voiced palato-alveolar affricate *dʑ*:

(99) *tɕɛlɛv-dʑoŋ [tɕɛlɛvdʑõ]* 'mung bean sprout' (bean-?)

One possible explanation for the difference between the labial fricatives in (98) and (99) is that nasals do not cause voice assimilation. A supporting piece of evidence is that nasals occur after the voiceless alveolar fricative /s/ without causing it to assimilate for voicing (see (100) below for examples). However, this would presuppose that the words for 'garlic' and 'bean' end with an underlyingly voiceless labial fricative, which contradicts Stau phonology. Perhaps these words are Tibetan borrowings; if not, I currently have no satisfactory explanation for their departure from Stau phonological rules.

In her more extensive database on Gexi Stau, Huang (1991:4) finds three additional clusters that were not in my data: <fkh>, <fx>, and <fqh> (which I would write phonemically as /vkʰ/, /vx/, and /vqʰ/). She does not find any clusters with the palatal nasal, neither <vɲ> or <fɲ>.

The alveolar fricative /s/ occurs before voiceless stops, aspirated and tenuis at all places of articulation, and before nasals and the voiceless lateral fricative.

(100) Attested [s + initial] clusters

Cluster	Example	Gloss
sp	*spəvji*	sores
stʰ	*stʰi*	to hang
st	*sta*	tiger
scʰ	*scʰɛco*	to chase
sc	*sco*	scoop for water
sk	*skəri*	to call, shout
sqʰ	*sqʰi*	younger sister
sq	*sqədi*	to ring
sm	*smənzjəre*	pharmacy
sn	*sneʁdoŋ*	bridge of nose
sɲ	*sɲurbu*	green pea
sŋ	*sŋuscæ*	blue
sɬ	*sɬopræ*	university

Two clusters which are licit according to the phonotactic rules governing [s + stop] sequences, /spʰ/ and /skʰ/, are missing in my data. Likely this can be attributed to a lack of data, especially since Huang (1991:4) finds them both in her data, as well as <sɬh>, <stɕ>, and <stɕh>.

The voiced alveolar fricative /z/ occurs preinitially before voiced consonants, palatal and velar nasals, and voiced lateral, velar, and uvular fricatives.

(101) Attested [z + initial] clusters

Cluster	Example	Gloss
zb	*zbəqe*	to urge
zd	*zdɛrmoŋ*	claw
zg	*zgozgo*	sour
zɲ	*zɲe*	seven
zŋ	*zŋo*	to hang
zʒ	*zʒærœ*	to winnow
zɣ	*zɣartɕa*	whip
zʁ	*zʁorœ*	to yawn

The same /z/ clusters are attested in Gexi Stau, and additionally <zm> and <zɟ> (Huang 1991:4).

Co-occurring with preinitial /x/ we find voiceless stops at all but uvular place of articulation, and voiceless alveolar and palatal affricates and fricatives.

(102) Attested [x + initial] clusters

Cluster	Example	Gloss
xpʰ	*xpʰə*	butt
xp	*xpurju*	wind
xtʰ	*xtʰəxtʰə*	behind
xcʰ	*xcʰi*	to puncture
xk	*kəxkɛr*	white gourd
xtsʰ	*xtsʰoxtsʰo*	thin (like thread)
xts	*xtsoŋma*	clean
xtɕʰ	*xtɕʰo*	six
xtɕ	*xtɕərscɛ*	clip, pin
xs	*xsu*	three
xɕ	*xɕɛr*	to float

Two clusters, /xt/ and /xc/, are phonotactically possible but do not appear in the data. Not unexpectedly, they are attested in Huang's data (1991:4). She also finds <xɬ>.

The voiced velar fricative /ɣ/ occurs before voiced alveolar and palatal stops, labial and alveolar nasals, and alveolar, lateral, and palatal fricatives.

(103) Attested [ɣ + initial] clusters

Cluster	Example	Gloss
ɣd	*ɣdæmæ*	because
ɣȷ	*sɲəɣȷi*	afternoon
ɣm	*ɣmɛ*	to blow
ɣn	*ɣne*	two
ɣz	*ɣzi*	shoe
ɣʃ	*ɣʃəli*	pestle
ɣʑ	*ɣʑi*	to teach

Huang (1991:4-5) additionally finds /ɣ/ with the voiced labial stop and with voiced alveolar and alveolo-palatal affricates.

The voiceless uvular fricative is found preceding the voiceless stops /p/ and /t/, and the affricate /ts/. The /χp/ cluster only occurs word-medially in my data.

(104) Attested [χ + initial] clusters

Cluster	Example	Gloss
χp	*ɲtɕʰaχpa*	to fold
χt	*χtɛ*	to return (something to someone)
χts	*χtsa*	to cut oneself

None of the [χ + initial] clusters Huang finds in Gexi overlap with those in my Mazi Stau data. She finds <χs>, <χth>, and <χɕ> (1991:5).

The voiced uvular fricative appears as a preinitial in nine clusters following voiced alveolar and palatal stops, nasals, the voiced retroflex affricate, and several voiced fricatives.

(105) Attested [ʁ + initial] clusters

Cluster	Example	Gloss
ʁd	*ʁdu*	pail
ʁɟ	*ʁɟi*	hole
ʁm	*ʁmœʁmœ*	low
ʁn	*ʁnɛʁnɛ*	dark
ʁɲ	*ʁɲœ*	cow dung
ʁdz̨	*ʁdz̨u*	tsampa
ʁz	*ʁzɛn*	lama's clothes
ʁʒ	*ʁʒəstɛn*	sleeping mat
ʁʑ	*ʁʑə*	bow

The cluster /ʁŋ/ occurs once in the data as well, in the word *ʁŋənərkuwu*, but unfortunately I did not get its definition. I find a greater number of [ʁ + initial] combinations than Huang, who does not have /ʁɟ/, /ʁʑ/, or /ʁdz̨/.

The rhotic is the most common preinitial in Stau, occurring before stops of all three voicing types and all five places of articulation, before nasals, affricates, and fricatives. (The reader is reminded that when /r/ precedes a voiceless consonant it assimilates to the latter's voicelessness and is realized as [ʂ].)

(106) Attested [r + initial] clusters

Cluster	Example	Gloss
rp	*xsærpæ [xsæʂpæ]*	new
rb	*rbu*	bee
rtʰ	*rtʰærtʰə [ʂtʰæʂtʰə]*	right
rt	*rtɛpu [ʂtɛpu]*	stallion
rd	*rdəqu*	mortar bowl
rcʰ	*rcʰɛ [ʂcʰɛ]*	to bite
rc	*rcaxpa [ʂcaxpa]*	excrement
rɟ	*rɟæmæ*	scale
rkʰ	*ɣrərkʰu [ɣrəʂkʰu]*	cold
rk	*rkombjo [ʂkombjo]*	sock
rg	*rgɛvʑə*	old man
rq	*rqo [ʂqo]*	trunk
rm	*rmə*	name
rn	*rni*	to mix
rɲ	*rɲi*	to wait
rŋ	*rŋæ*	face
rtsʰ	*rtsʰæmbræ [ʂtsʰæmbræ]*	bowl that catches tsampa (at mill)
rts	*rtsɛ [ʂtsɛ]*	deer
rdz	*rdzulu*	to crawl
rtɕʰ	*rtɕʰæmbəqolu [ʂtɕʰæmbəqolu]*	bubble
rtɕ	*rtɕarta [ʂtɕaʂta]*	bike
rz	*rzelo*	with lifted skirts
rɬ	*rɬə [ʂɬə]*	wheat flour
rʐ	*rərʐɛv*	wave
rɣ	*rɣirɣi*	short
rʁ	*rʁa*	to be crazy

In Gexi, Huang (1991:4) finds several more [r + initial] clusters: <rl>, <rʑ>, <rdʑ>, <rɢ>, <ʂph>, <ʂqh>, <ʂs>, and <ʂl>. She does not find several that are attested in Mazi Stau, namely /rtʰ/, /rq/, /rtɕʰ/, /rtɕ/, and /rɬ/.

6.1.4 [Initial + medial] clusters

In total, twenty-nine C_iC_m cluster combinations are attested in my database: two with /v/ as medial, nine with /r/, four with /l/, thirteen with /j/, and five with /w/. In this subsection, we will look at each of these medials one at a time, in the order just given.

The labiodental fricative /v/ is found as a medial in cluster with two initials: /s/, and /ɣ/. (107) provides an example of each cluster. Like C_pC_i clusters, consonants in [initial + v] clusters always share the same type of voicing. If the initial of a cluster is voiceless, /v/ will assimilate in voicing and be realized as [f]. For instance, *svo* is pronounced as *[sfo]*.

(107) Attested [initial + v] clusters

Cluster	Example	Gloss
sv	*svo [sfo]*	bright
ɣv	*ɣvə*	oats

In her phonology of Gexi Stau, Huang (1991:5) finds several more clusters than I do, namely: <dv>, <kv>, <khv>, <qv>, and <qhv>. She also finds <ʑv>, <zv>, <lv>, and<rv>, but analyzes them as C_pC_i clusters.

The rhotic is medial in nine clusters following stops of all three voicing types, and labiodental and velar voiced fricatives.

(108) Attested [initial + r] clusters

Cluster	Example	Gloss
pʰr	*pʰrə [pʰʐə]*	tangled
pr	*prilæ [pʐilæ]*	to whinny
br	*mobrɛ [mobʐɛ]*	tears
kʰr	*ɲɛkʰri [ɲɛkʰʂi]*	bed
kr	*krəmbə [kʐəmbə]*	horn
qʰr	*qʰrœqʰrœ [qʰʂœqʰʂœ]*	coarse
qr	*qrə [qʐə]*	female yak
vr	*vrə [vʐə]*	to pour
ɣr	*ɣroɣro [ɣʐoɣʐo]*	dry

Similar to medial /v/, medial /r/ assimilates in voicing to the consonant it follows—not, however, whenever the initial is voiceless, but only when it is voiceless and aspirated. So,

while *pʰrə* ‘tangled’ is pronounced *[pʰʂə]*, *prilæ* ‘to whinny’ is pronounced *[pʐilæ]* with a voiced /r/.

Huang in her work found the same clusters with a rhotic medial, and /gr/ in addition. While the latter sequence does appear in my data, it is in a three-consonant cluster: *zgri* ‘star’. If my dataset were larger, it is likely an example of the cluster /gr/ would be found.

The alveolar lateral approximant is found following the stop /p/ and fricatives /v/ and /ʁ/:

(109) Attested [initial + l] clusters

Cluster	**Example**	**Gloss**
pl	*plɛ*	thigh
vl	*vlɛ*	to put, leave something
ʁl	*ʁləvə*	to sing

/ɣl/ is attested as well, but the only word in which it occurs, *ɣlo*, is one for which I don’t have a definition. Huang finds the basically same four [initial + l] clusters plus <sl>, though she analyzes the [fricative + l] clusters as C_pC_i clusters. She also finds <bl> rather than /pl/.

Clusters with medial /l/ are not restricted by any constraint concerning uniformity of voicing. The same applies to clusters with medial /j/ or /w/.

The palatal glide is the most common medial in Stau, occurring after stops, fricatives, /r/, and /m/:

(110) Attested [initial + j] clusters

Cluster	Example	Gloss
pʰj	*pʰjɛsu*	outside
pj	*pjɛno*	meat
bj	*bjɛrgə*	pheasant
mj	*mjɛmmjɛm*	smooth
vj	*spəvji*	sores
sj	*ntsʰəsji*	to think
zj	*zjær*	heart
ɕj	*ɕjæ*	to seek
ʑj	*ʑʁæʑjæ*	comb
ɣj	*kɛɣji*	light
χj	*χjə*	to destroy
ʁj	*ʁjerə*	pretty
rj	*rji*	horse

In my data I only find labial stops occurring with a medial palatal glide. Huang (1991:5) finds <thj> and <kj> as well.

Finally, the labio-velar glide is attested with an eclectic set of initials: /k/, /ɕ/, /ɣ/, and /r/.

(111) Attested [initial + w] clusters

Cluster	Example	Gloss
kw	*rekwe*	foal
ɕw	*ɕwæ*	night
ɣw	*ɣwæ*	to hug
rw	*rwu*	breath

The cluster /qʰw/ occurs once in the data as well, in the word *qʰwa*, but I do not know its definition.

Huang (1991) does not find /w/ as a medial, but she does find clusters with /v/ that look suspiciously like those in (111) which I transcribe with /w/, e.g. *re kve* ‘pony’, *ɕva* ‘night, at’ and *ɣva* ‘hug, embrace’ (Huang 1992).

6.1.5 Three-consonant clusters

As was described in §6.1.1, when a cluster has three consonants the phonemes that can fill each position are especially limited. To recap: preinitial position allows alveolar fricatives, nasals, and the rhotic; initial position allows stops, though no palatal stops; and medial position allows glides, /r/, and /v/. Table 5 shows the combinations of these phonemes that are attested in my dataset. Preinitials are on the vertical, medials on the horizontal. To represent attested three-consonant clusters in the chart, the initials are written at the intersection of preinitial and medials that they are found in a cluster with. For instance, the preinitial /s/ and the medial /v/ are found with the initials /tʰ/ and /k/, i.e. the clusters /stʰv/ and /skv/ are attested in Stau.

Table 5. $C_pC_iC_m$ co-occurrence chart

	v	**r**	**j**	**w**
s	tʰ k	p kʰ k q	p tʰ	
z		b g	b	
m		pʰ b g	b	
n			d	
ŋ	kʰ	kʰ g		
ɴ			q	ɢ
r				q

Below, (112) demonstrates each of attested [s + initial + medial] cluster with an example from the database.

(112) Attested [s + initial + medial] clusters

Cluster	Example	Gloss
spj	*spjoŋkʰə*	wolf
stʰj	*stʰjæ*	to support, prop up
spr	*spru*	to churn
skʰr	*skʰro*	ant
skr	*təskrəsə*	late
sqr	*zəsqræ*	broom
stʰv	*stʰvæ*	to press down
skv	*kɛskvɛ*	sharp

Preinitial /s/ can be found with voiceless stops of aspirated and unaspirated persuasion from all places of articulation that occur in three-consonant clusters. Though far from all the [s + initial + medial] combinatorial possibilities are attested here, there are no obvious phonotactic restrictions concerning which medials can occur with which initials. Huang (1991:5) attests to the existence of another of the combinatorial possibilities /sphr/ in Gexi Stau. She also finds /l/ as a medial in three-consonant clusters, listing <skl> and <skhl> as confirmed clusters.

Attested three-consonant clusters with preinitial /z/ are much more restricted than those with /s/. The two in (113) are confirmed, and a third is attested in Stau, /zbj/. Unfortunately I do not know the meaning of the only word in which it occurs, *zbji*.

(113) Attested [z + initial + medial] clusters

Cluster	Example	Gloss
zbr	*zbræ*	tent
zgr	*zgri*	star

Although examples are limited, it is clear that preinitial /z/ only occurs with voiced initials. Possibly it is restricted in three-consonant clusters to occurring with labial and velar stop initials. Huang (1991:5) records the same three clusters, as well as a fourth <zgv>.

Like in C_pC_i clusters, in three-consonant clusters preinitial /m/ can precede initials other than only homorganic ones. In this case, the only attested non-homorganic initial is /g/ in /mgr/; nevertheless, this is a consistency for all /m/ preinitials.

(114) Attested [m + initial + medial] clusters

Cluster	**Example**	**Gloss**
mbj	*mbjo*	cutting edge
mp^{h}r	*mp^{h}ri*	snake
mbr	*mbre*	rice
mgr	*mgrə*	wall (that one dries barley against)

Huang's findings confirm my own: she additionally finds <mphj> and <mbl>, but only finds clusters in which /m/ precedes labial stops and the voiced velar stop.

More consistencies can be noticed in nasal initials between two- and three-consonant clusters: First, nearly all nasal initials in three-consonant clusters (see (114) and (115)) are found preceding voiced and voiceless aspirated stops. This corresponds to the way tenuis stops were excluded as initials from [nasal + initial] clusters. There is a three-consonant exception to this rule: /ɴqj/.

Second, just as in two-consonant clusters non-labial nasals are only found with homorganic initials, the same rule is at work among three-consonant clusters, as (115) demonstrates.

(115) Attested [n/ŋ/ɴ + initial + medial] clusters

Cluster	Example	Gloss
ndj	*ndjindji*	red
ŋkʰr	*ŋkʰrɛ*	to shake something
ŋgr	*ŋgraji*	area, region
ŋkʰv	*ŋkʰvo*	key
ɴqj	*jæɴqjo*	palate
ɴGW	*ɴGwi*	hoe

Finally, we look at [r + initial + medial] clusters, of which there is only one attested in my data:

(116) Attested [r + initial + medial] clusters

Cluster	Example	Gloss
rqw	*rqwarzo [ʂqwarzo]*	necklace

The scarcity of /r/-preinitial clusters is surprising considering the large number of two-consonant clusters in which /r/ was a preinitial (see (106) in §6.1.3). However, my findings are confirmed by those of Huang, who only finds <ʂqv> and <ʂqhv> (1991:5, 12):

(117) *ʂqva* '(house) dilapidated'
nə-ʂqhva 'have torn'

The former cluster is essentially the same as the one I cite in (116), if one recalls that /r/ is realized as [ʂ] before voiceless consonants, and that Huang often transcribes as medial <v> what I transcribe as <w>.

6.2 Rhymes

Stau rhymes are much less complex than onsets. For one, the number of licit codas is much more restricted. As the syllable canon in §5.1 shows, only singletons and no consonant clusters are allowed in coda position. In addition, final position licenses a small

subset of the consonants licit in initial position. It is a fairly eclectic array of consonants: /t/, /v/, /x/, /ɣ/, /χ/, /m/, /n/, /ŋ/, /r/, and /l/. An example of each is provided below:

(118)

Coda	Example	Gloss
t	*wut*	light
v	*ʁav*	needle
x	*vivəx*	pressure cooker
ɣ	*moroɣ [mozoɣ]*	black fungus
χ	*tsʰœsnəχ*	spinach
m	*ɣrərgɛm [ɣzəzgɛm]*	sink
n	*kudzən*	satin
ŋ	*tsoŋ*	scallion
r	*kʰɛsɛr [kʰɛsɛʂ]*	cloth
l	*snəmtsʰɛl*	cole

Codas occur infrequently in the data. Word-finally, they only occur in 71 words of a 1155-word database. In fact, only /v/, /n/, /ŋ/, and /r/ are native Stau codas. All words ending with /t/, /x/, /ɣ/, /χ/, /m/, and /l/ are Tibetan loanwords (Katylin Wonnell, p.c.). This is partially confirmed by Huang (1991), who does not find /t/ or any of the fricatives in her Gexi Stau data (possibly Huang was more familiar with Tibetan and was able to exclude loanwords from her data).

There is a case of neutralization in coda position, as is typologically common because of the position's lack of prominence. In Stau, the contrast between /v/ and /p/ is neutralized. Phonetically, both do occur as finals but as variant pronunciations in the same word; the phonemic contrast between the two phones is not upheld, as (119) demonstrates. The fricative appears in more careful speech, and the stop in faster speech (Katylin Wonnell, p.c.).

(119) *ɣməlɛv [ɣməlɛv ~ ɣməlɛp]* 'fire'
kʰœlɛv [kʰœləv ~ kʰœləp] 'cover, lid'

As for the vowels, few restrictions constrain their distribution.

One area where the distribution of vowels is constrained is in vowel and coda co-occurrences. The table below counts all the vowel and coda co-occurrences in the database.[2]

Table 6. [Vowel + coda] co-occurrences

	t	**v**	**x**	**ɣ**	**χ**	**m**	**n**	**ŋ**	**r**	**l**
i		1					3			
e										
ɛ	1	17				8	7		3	4
æ										
ɑ		2			1			7		
ə		10	1		1	4	4		10	1
o			1	1	1			33	1	
u	1								6	

The table brings to light several patterns and rules. There are a few co-occurrence restrictions: /æ/ never occurs before codas; the dorsal fricatives only occur after non-high vowels; /ŋ/ only appears after /o/ and /ɑ/; and /l/ only occurs following /ə/ and /ɛ/.

An obvious pattern that Table 7 shows is the absence of /e/ pre-coda. The reason /e/ never occurs before a coda is that, in this context, the contrast between /e/ and /ɛ/ neutralizes in favour of the latter vowel. We can see the process at work in (120):

(120) *[mdzɛmdze] mdzemdze* ‘polite’

mdzemdze is a reduplication. As we will see later in §7.4, the second part of a reduplicated word is the base, the first part is the reduplicant. With this knowledge, we can eliminate the possibility that /ɛ/ is the base vowel and has changed to /e/ word-finally. Instead, what is happening in this word is when *mdze* reduplicates, the /m/ of the base

[2] Notes on Table 6: In closed rhymes, /i/ appears as its allophone [ɪ]. Appearances of /ŋ/ as coda include allophonic nasalization on the vowel. Appearances of /r/ as coda include all allophones of /r/: [ɻ], [ʂ], and rhotacization on the vowel.

resyllabifies to become a coda on the first syllable. With a coda consonant next to it, the /e/ of the reduplicant is realized as [ɛ], the contrast between the two vowels neutralizing.

Something similar is going on with the vowel /i/. Despite the fact that the table says that it does occur before codas, the high front tense vowel never occurs phonetically before a coda. Instead, in this context, /i/ is realized as its lax allophone [ɪ]. No examples of pre-coda [i] appear in the data, while all the examples of [ɪ] that appear are all before codas, as seen below:[3]

(121) *mtɕʰurtin [mtɕʰuʂtɪn]* 'tower'
nə-pʰiv [nəpʰɪv] 'to close'
rti-n [ʂtɪn] 'to stop'
tə-ji-n [təjɪn] 'to say'

A pattern is apparent here: both front non-low tense vowels /i/ and /e/ are prohibited from occurring before codas, and their lax counterparts occur in their place.

Finally, let us look at the co-occurrence of vowels ignoring intervening consonants. Table 7 gives the number of words in which vowels co-occur.

Table 7. Vowel co-occurrence chart

	i	**e**	**ɛ**	**ə**	**æ**	**ɑ**	**o**	**u**
i	9	5	2	23	12	3	1	5
e	6	17	3	15	2	4	5	2
ɛ	22	7	42	36	7	2	27	15
ə	58	39	53	98	68	19	33	24
æ	16	18	17	49	56	5	12	11
ɑ	7	5	8	32	4	3	14	13
o	7	5	8	32	14	3	14	13
u	3	7	9	31	13	6	2	30

[3] Note that the /n/ in the latter two examples is the second-person suffix.

Although some vowels do not co-occur very often, each Stau vowel does occur with all other vowels. Vowels are not constrained in their phonotactic distribution with reference to other vowels.

Chapter 7

Phonological processes

This chapter deals with phonological processes. Since the length of my fieldwork was limited and since my focus was primarily on static generalizations and phonological structure, the amount of attention to phonological processes was somewhat limited. However, several phonological processes could be observed within the data I did collect. Section 7.2 deals with voice assimilation and nasalization of /v/. Next, §7.3 presents several cases of vowel assimilation in Stau. Finally, vowel changes that occur in reduplication will be discussed in §7.4. First, it is necessary to digress in §7.1 to the relationship between the vowels /ɛ/ and /æ/, which affects several phonological processes. Explaining it in advance will simplify the description of these processes.

7.1 Excursus: Vowel shift /ɛ/ > /æ/

I hypothesize that a diachronic vowel change is in progress in Stau, in which the mid front lax vowel /ɛ/ is lowering and becoming /æ/ in some cases. The hypothesis is speculative but not without evidence. The vowel shift can be seen when one compares the data Huang gathered in the early ’90s with my own. A few times, where she transcribes /ɛ/, I transcribed /æ/.

(122)

Mazi Stau	Daofu (Huang 1992)	Gloss
rŋæmoŋ	*rŋɛmu*	'camel'
qʰæ	*qhɛ*	'to laugh'
ɕəɕæ	*ɕəɕɛ*	'to wipe'

Now these few examples could just be accidents of the varying pronunciation of different speakers or the varying transcription of different linguists. However, further evidence indicates that the difference between my data and Huang's is one affected by the passage of time. This evidence is found in compounds. A number of compounds in my data are formed with the words *væ* 'pig' and *ɮæ* 'hand' as stems. Synchronically these words have /æ/ as a nucleus (obviously); yet as stems in compounds we find them as *vɛ* and *ɮɛ*. Examples (123) and (124) demonstrate this.

(123) *vɛko*
vɛ + *ko*
pig + pen
'pigsty'

(124) *ɮɛvɮi*
ɮɛ + *vɮi*
hand + neck
'wrist bone'

One might try to explain this discrepancy as /æ/ changing to /ɛ/ in response to some context created by the second stem, but any attempt fails. /æ/ occurs in word-initial CV syllables, like /ɛ/ does in (123) and (123). Likewise /ɛ/ occurs in word-final syllables, as /æ/ does in *væ* and *ɮæ*. I found no distributional constraint that could account for the vowel change. Vowel assimilation, the process that would make most sense, has no motivation. The /o/ in (123) and /i/ in (124) are too dissimilar to both cause /æ/ to change to /ɛ/.

Four more examples—one with *vɛ* (125) as a stem,[1] three with *ɮɛ* (126-128)—corroborate this conclusion.

[1] The /ɛ/ of *vɛ* in (125) assimilates to the /e/ of *-ze*, as will be explained in §7.3.

(125) *veze*
vɛ + *ze*
pig + DIM
'piglet'

(126) *ɮɛɲu*
ɮɛ + *ɲu*
hand + back
'back of hand'

(127) *ɮɛrko*
ɮɛ + *rko*
hand + foot
'arm'

(128) *ɮɛki*
ɮɛ + *ki*
hand + ?
'bracelet'

The explanation I propose is that these compounds were formed some time ago (as is likely with fully lexicalized compounds), a time when *væ* and *ɮæ* were still *vɛ* and *ɮɛ*.[2] Since then, the vowels of these words changed and became lower, perhaps because they were more open to vowel shift in their word-final position than their word-medial counterparts.

One compound[3] with 'hand' as a stem looks like a counterexample, as it appears with an /æ/ nucleus:

(129) *ɮæ-bjænoŋ* 'palm (of hand)'

Still, it is only one example, against four in which 'hand' is produced with an /ɛ/. Perhaps it is a more recent compound, coined after the vowel change.

[2] This time was prior to Huang 1992, because 'pig' and 'hand' are *væ* and *ɮæ* in her data as well (though she transcribes the vowel as <a>.

[3] I am not sure what the meaning of the second stem *bjænoŋ* in (129) is. One idea is that it is *pjɛno* 'meat', which would make sense semantically, the palm being the meaty part of the hand. However, I have no explanation for the addition of the velar nasal to the word's end.

Based on this evidence, I think it is reasonable to claim that /ɛ/ shifting to /æ/ in some cases. There is no clear context in which the change is happening, but it occurs most often word-finally.

7.2 Voice assimilation and nasalization of /v/

The phonological processes we will look at first are those in which the phoneme /v/ figures. /v/ is involved in two types of assimilatory processes .

First, /v/ undergoes regressive voice assimilation when it occurs next to a voiceless consonant in instances of derivation.

One type of derivation in which voice assimilation occurs is reduplication. In the reduplicated adjective *rtɛvrtɛv* 'fine' in (130), the labial fricative assimilates in voicing to the following voiceless consonant, which is itself agreeing with the voicing of the consonant that follows it.

(130) *[ʂtɛfʂtɛv]*
rtɛv-rtɛv
RED-fine
'fine'

We can also see voice assimilation in the formation of some of the cardinal numbers between eleven and nineteen. The morpheme for 'ten' is *ʁav-* (a bound morpheme never seen by itself like *-teen* in English; the word for 'ten' is *zʁa*). When it combines with numerals to form the numbers eleven through nineteen the morphemes that begin with a voiceless consonant cause /v/ to devoice. For instance, in the derivation of 'thirteen', the final /v/ of *ʁav-* devoices in assimilation to the voiceless /s/ of *-su* 'three'.[4]

[4] A person familiar with Stau will know that the word for three is not *su* but *xsu*, and that 'two' is *ɣne*, not *ne* (133), and 'six' is *xtɛʰo*, not *tɛʰo* (132). My analysis is that there is a velar fricative prefix on four of the cardinal numbers from one-ten. The other such number is *ɣʁə* 'four'. When it participates in derivation with *ʁav-*, it also drops the prefix: *ʁavʁə* 'fourteen'.

(131) *[ʁafsu]*
ʁav-su
ten-three
'thirteen'

The same process occurs in the derivation of 'sixteen'. The /v/ in *ʁav-* assimilates to the voicelessness of the initial consonant of *tɕʰo*.

(132) *[ʁaftɕʰo]*
ʁav-tɕʰo
ten-six
'sixteen'

In addition to voice assimilation, I would tentatively claim that /v/ also undergoes nasalization in front of a nasal. As established previously, the morpheme for the cardinal 'two' is *-ne*. When *ʁav-*, the morpheme for 'ten', is compounded with *-ne* to become 'twelve', the result is *ʁamne*.

(133) *[ʁamne]*
ʁav-ne
ten-two
'twelve'

As this is the only example in my data of /v/ preceding a nasal, this rule must be tentative.

7.3 Vowel assimilation

Several types of vowel assimilation were observed in my data. Regretfully, there are very few examples of each type of vowel assimilation.

First, we find assimilation of roundness and height in the vowel of the negative prefix *mə-* when the first vowel of the root to which it affixes is the high back round vowel /u/. An example of the process is shown in (134), where *mə-* assimilates to the vowel of *gu* 'to understand'.

(134) *[mu-gu-ʐə]*
mə-gu-rə
NEG-understand-CONST
'not understand'

The next vowel assimilation we will look at happens in the formation of diminutive nouns. Stau has a suffix *-ze*, originally meaning 'son' (Huang 1991:20), that affixes to nouns and derives diminutives. As an aside, it is interesting to note that possessing a diminutive suffix that is derived from the word for 'child' or 'son' is common among the putative Qiangic languages (Chirkova 2012:143). Assimilation happens in diminutive formation when the non-low front vowels /i/ and /ɛ/ preceding the suffix assimilate to its vowel, /e/.

The high vowel /i/ lowers to assimilate with /e/. In (135), *smi* 'woman' becomes *sme-*.

(135) *[sme-ze]*
smi-ze
woman-DIM
'daughter, girl'

The mid lax vowel /ɛ/ assimilates to the tenseness of /e/. In (136), *vɛ-* 'pig'[5] becomes *ve-*.

(136) *[ve-ze]*
vɛ-ze
pig-DIM
'piglet'

The word for 'uvula', shown in (137), looks like a counterexample to this rule. Its root, 'tongue', has /ɛ/ as its nucleus, but this vowel doesn't assimilate to the /e/ of *-ze* in the formation of the diminutive.

[5] As I discussed in §7.1, although synchronically the word for pig is *væ*, historically it was probably *vɛ*. This is the form on which *veze* and other compounds in which 'pig' is a component are based.

(137) *[vɮɛ-ze]*
vɮɛ-ze
tongue-DIM
'uvula'

Despite surface appearances, the nonconformity of *vɮɛze* constitutes a legitimate exception because there is a restriction against *e* after *ɮ*, either specifically in the Mazi dialect, or synchronically in Stau. In Huang (1992)'s data on Daofu, she has ten occurrences of *ɮe*. Where words that coincide with Huang's *ɮe* words exist in my data, the vowel in those words is *i*, as (138) displays.

(138)

Mazi Stau	Daofu (Huang 1992)	Gloss
vɮi	*vɮe*	'neck'
ɮi	*ɮe*	'wheat'

Furthermore, crucially, no *ɮe* sequences occur in my database. Thus, *vɮɛze* is not a counterexample to the rule that /ɛ/ assimilates to the /e/ in the diminutive suffix.

The third vowel assimilation observed in my data is that the assimilation of the mid front vowel /ɛ/ when it precedes the high front vowel *i* that forms the genitive particle. In (139), /ɛ/ of *scɛ* 'tool' takes on the tenseness of the genitive *i* and is realized as /e/.

(139) *[ndərjæ-sce-i-lu]*
ndərjæ-scɛ-i-lu
sweep-tool-GEN-pole
'hoe'

7.4 Reduplication

Reduplication is a common process in Stau among nouns, verbs, and especially adjectives. In verbs, reduplication indexes plurality (Gates, forthcoming). For adjectives, reduplication is a sign of their adjectival status; no particular semantic nuance is conveyed through reduplication in adjectives. Among nouns, the semantic function of reduplication

is less obvious. It may express smallness (‘indent’, ‘button’), endearment (‘friend’), or that a noun consists of many of the same small thing (‘arm hair’, ‘grass’).

Reduplicated words are derived through total reduplication; the whole root is selected as the base for reduplication. In my database, no root except *vdzə* ‘friend’ occurs as an independent word; the others were only found in reduplicated form. Many roots are reduplicated with no change, such as the following:

(140) *sɲæsɲæ* ‘bitter’
ʁərʁər ‘circular, round’
vdzəvdzə ‘friend’
zuzu ‘button’
rgurgu ‘to burp’
ndzəndzə-fɛə ‘to whisper’ (hide-speak)

In other cases, the vowel of the reduplicant changes from the original vowel of the base. For example, the word for ‘grass’ is *rŋərŋæ*. Its base is *rŋæ*. The reduplicant copies this sequence, and then changes its vowel to /ə/ before being prefixed to the base.

rŋərŋæ belongs to a group of reduplicated words that change their reduplicant vowel to /ə/. These words have either /æ/ or /e/ as the original vowel of their base. All the examples in my dataset are listed in (141):

(141) *ɕəɕæ* ‘to wipe’
vəve ‘to do’
vəvæ ‘to repair, build’
ɮəɮæ ‘to plow’
rŋerŋæ ‘to stirfry’
spəspæ ‘arm hair’
rŋərŋæ ‘grass’

The second type of vowel change happens to reduplicated words whose original base vowel is /ə/ or /o/. In the process of reduplication, these vowels change to /ɛ/. For *sxɛsxo* ‘to shake’, the reduplicant copies the base *sxo*, changes the /o/ nucleus for /ɛ/, and

then is prefixed onto the base. Three examples of this type of reduplication occur in the data:

(142) *sxɛsxo* 'to shake'
łɛłə 'wet'
vzɛvzə 'to scratch'

Two reduplicated words occur that could be seen as counterexamples to the reduplicant vowel change rules I proposed. The first potential counterexample is *vrɛvræ* 'to thresh'. Since the vowel of the base is /æ/, the reduplicant vowel should change to /ə/, not /ɛ/ as is the case.

An alternate explanation is that *vrɛvræ* is historically *vrɛvrɛ*, a case of reduplication without changes, like those in (140). The difference between the vowels came about through the vowel shift of /ɛ/ > /æ/ (introduced in §7.1). It fits the tentative pattern that the vowel shift happens most frequently in word-final position. This explanation is further supported by the fact that, in sentence context, the word began to sound like *vrævræ*.

The second potential counterexample is *rtʰærtʰə* 'right' (opposite of 'left'). It also does not fit the proposed rules. With /ə/ as its base vowel, the reduplicant vowel should come out as /ɛ/, not /æ/. Here again the vowel shift presents a possible explanation. If we hypothesize that the first syllable's /æ/ is historically /ɛ/, then the underlying *rtʰɛrtʰə* would fit well into the second type of reduplicated words with vowel change.

Chapter 8

Pitch phenomena

8.1 Pitch in related languages

Among the languages related to Stau, some have no tone system, such as Japhug Rgyalrong (Jacques 2004:203), while others do. In Zhuokeji, Lin Y.J. (2012) finds a two-way contrast between a privative falling tone and toneless. A number of other varieties have been analyzed as having pitch-accent systems, e.g. Caodeng Rgyalrong (J. Sun 2008), Showu Rgyalrong (J. Sun 2004), Puxi Shangzhai (J. Sun 2000b). These languages use tonal alternations to mark tense, aspect, and modality on verbs. In addition, in Puxi, tone is lexically contrastive in some cases. Prins (2011) also describes Jiaomuzu Rgyalrong as having a simple pitch-accent system, in which accent is predictably assigned to the final syllable of a word.

Concerning "pitch-accent" systems, Hyman (2009:219) argues that pitch-accent is not a coherent notion, and that no language should be analyzed in this way. Often, pitch-accent is spoken of as the intermediate on a continuum between stress and tone. Hyman emphasizes that this is not the case. Stress and tone systems do not exist on a continuum; they are separate phenomena that each have a prototype. Systems that have been called pitch-accent should be reanalyzed as mixed systems that pick and choose properties from the tone and stress prototypes (2009:213).

8.2 Pitch patterns in Stau

The pitch patterns found on citation forms of monosyllabic and disyllabic words in Stau fall into several distinct patterns. Pitch patterns on words of three or more syllables do not fall into such clear categories, which is not surprising since all these words are morphologically complex.

On one-syllable words, the most frequent pitch pattern—in 272 of 280 or 97% of the words—is a high-falling pitch, as represented in the pitch track below:

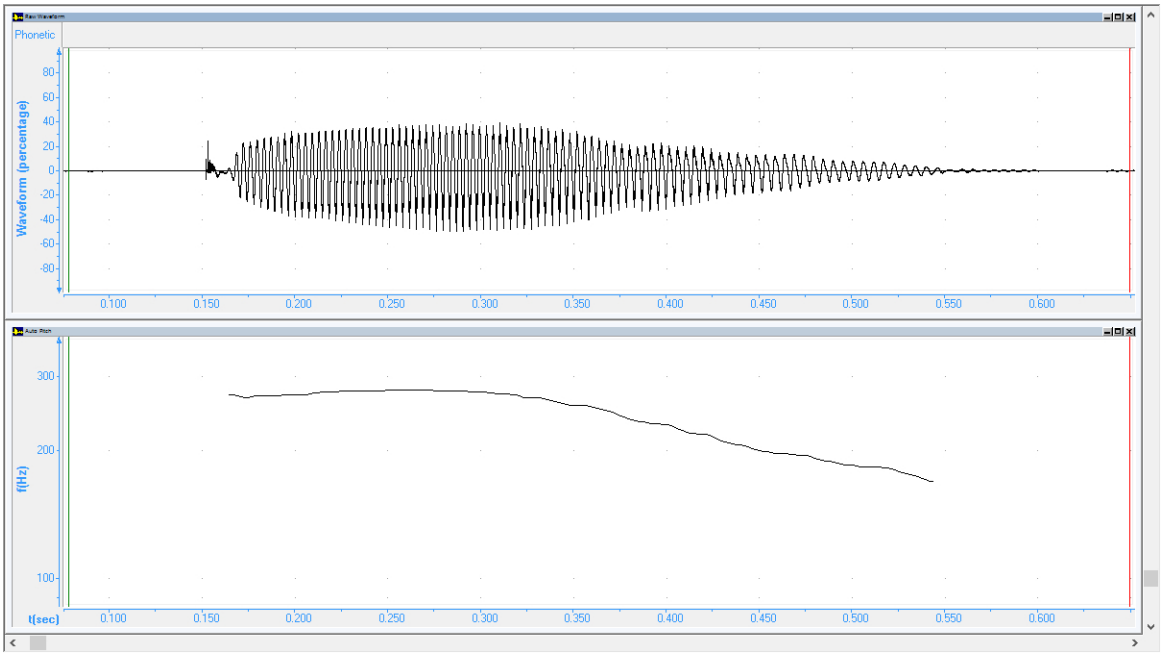

Figure 21. Pitch track for *pi* 'ball of tsampa'

There are eight monosyllabic words that are exceptions, having high level pitch (143).

(143) *ɕwæ* ‘night (after midnight)’
ndzəp ‘to suck’
toŋ ‘hole’
xɕɛt ‘to whip’
ʁa ‘door’
wur ‘pillow’
wut ‘light’
wo ‘again’

Figure 22 shows a pitch track of one of these monosyllabic words, *toŋ* ‘hole’.

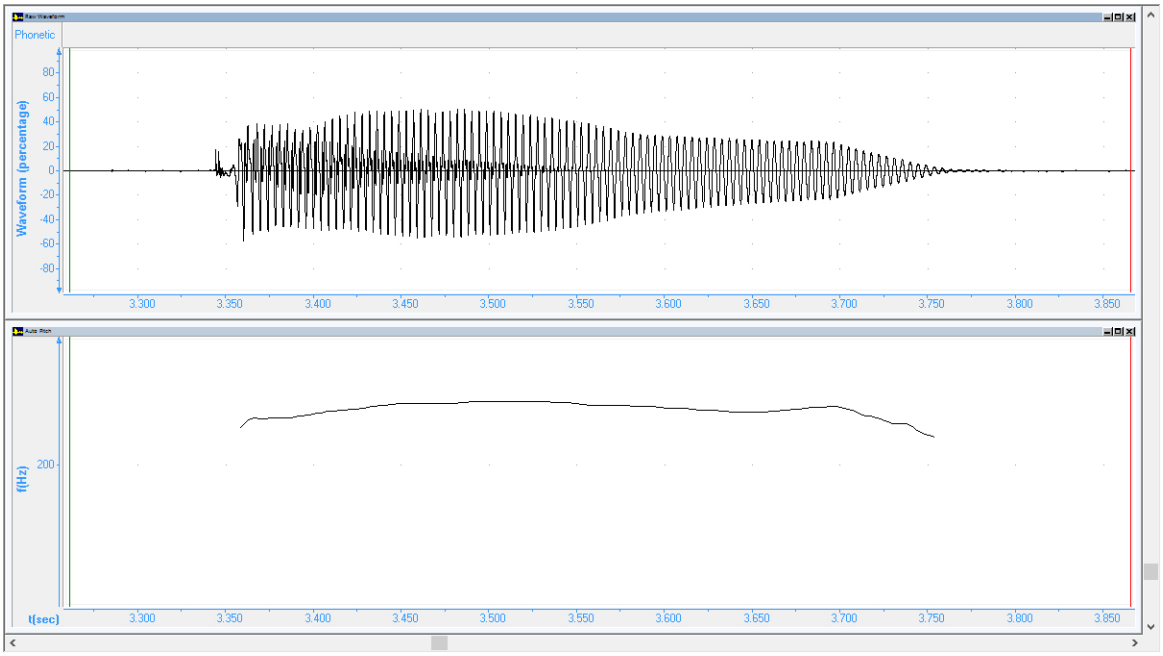

Figure 22. Pitch track for *toŋ* ‘hole’

The latter four words in (143) do not necessarily sound like they have level pitch because their consonant onsets are very sonorant and are able carry pitch. These begin at a low pitch during the consonant segment, and rise to high, as exemplified by Figure 23.

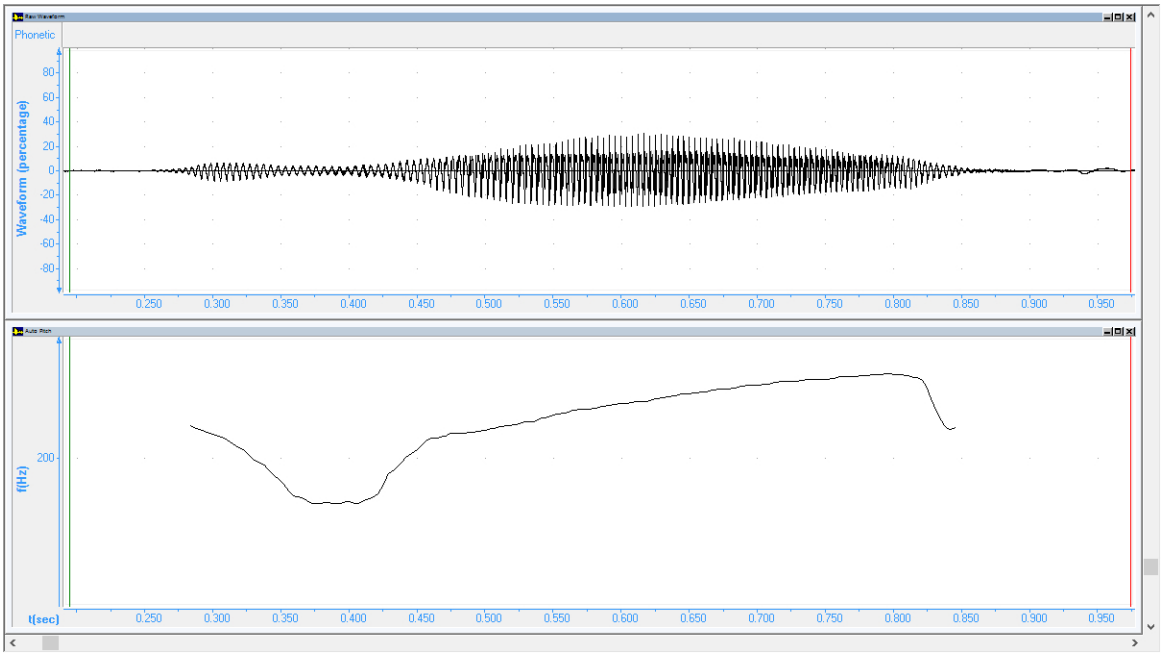

Figure 23. Pitch track for *ʁa* ‘door’

As for disyllabic words, two main pitch patterns emerge: high followed by low pitch (HL), and high followed by high-falling (H-HF). The latter is much more prevalent. 558 out of 627 disyllabic words, or 89%, have a H-HF pattern, as for example, does *ɣɛki* ‘bracelet’, shown in Figure 24.

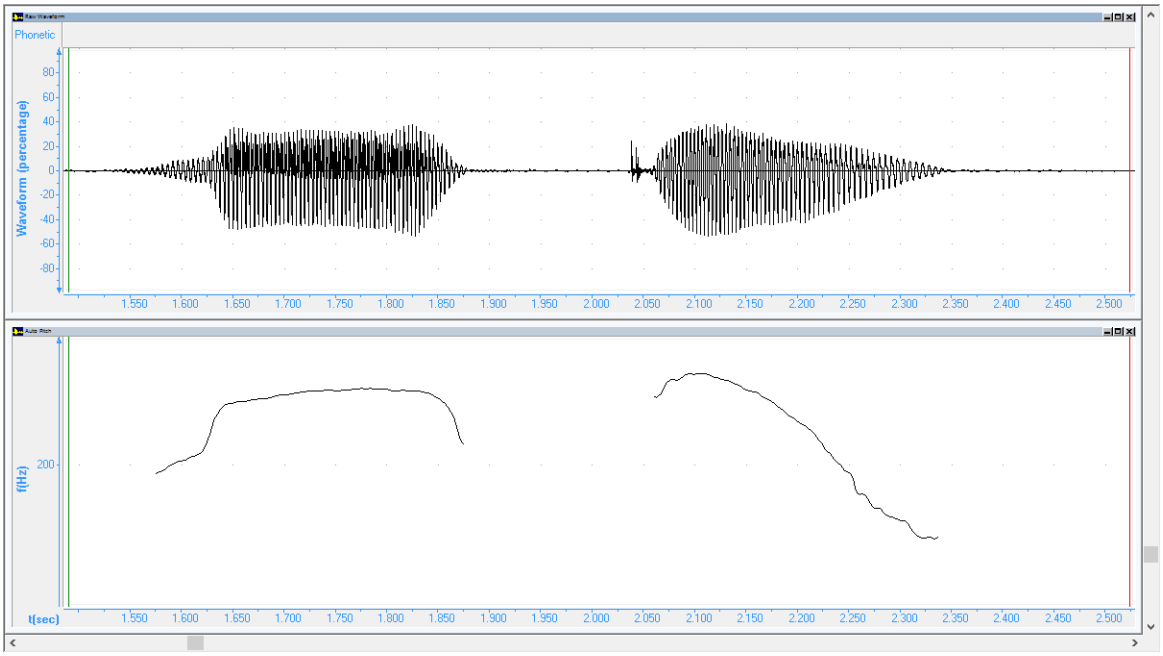

Figure 24. Pitch track for *ɮɛki* ‘bracelet’

The HL pitch pattern is found on 59 disyllabic words in my dataset. A pitch track of the HL pattern is displayed in Figure 25. At first glance, it may look like the second syllable has a falling pitch. It does, but this due to utterance-final falling, a common intonational phenomenon cross-linguistically. More salient is the fact that the pitch contour of the second syllable starts much lower than that of the first syllable.

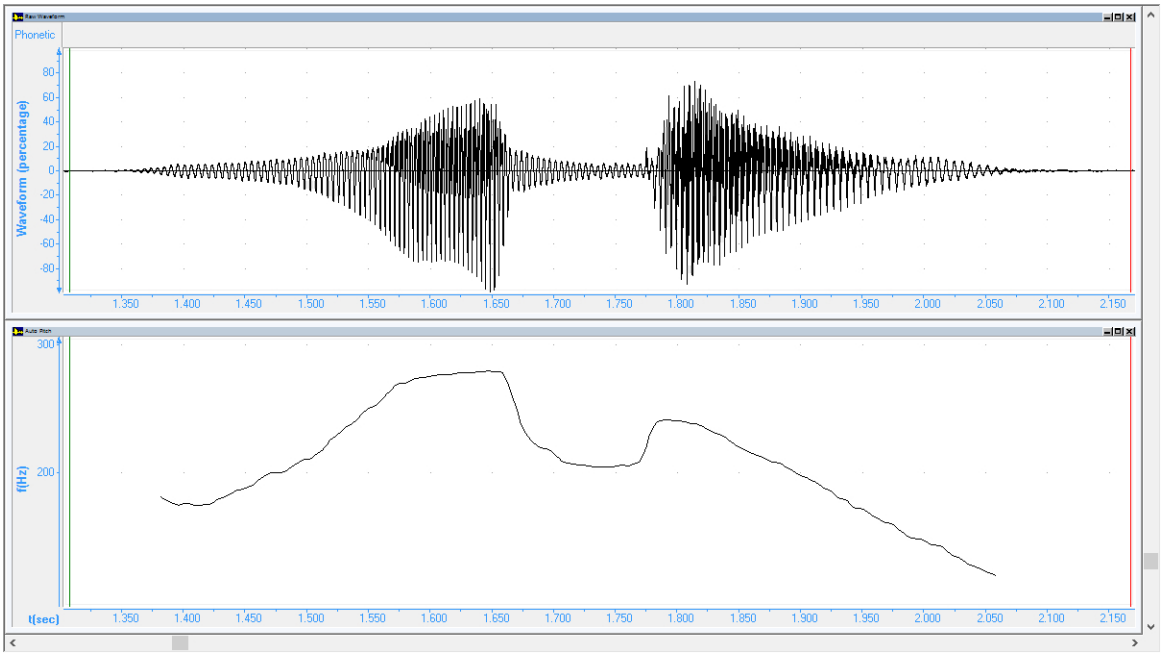

Figure 25. Pitch track for *vədæ* 'wife'

Though not all the contents of the HL category are predictable, some types of words are predictably found with HL pitch. These are: most kinship terms and most two-syllable words in which the second syllable is the constative suffix *-rə*. Kinship terms, both those that begin with the prefix *æ-* and those that have no kinship affix, almost without fail have a HL pitch pattern. The examples in (144) follow this pattern.

(144) *vədæ* 'wife'
dzəvə 'husband'
mæmæ 'grandmother'
æpe 'grandfather'

There are some exceptions to this rule, kinship terms which have the H-HF pattern instead of the HL one. The following words are all that occur in the data:

(145) *lɛjɛ* 'daughter-in-law'
pətʰoŋ 'son-in-law'
pərɟi 'grandchild'

pərjə ‘grandchild’

Interestingly, this pattern even extends to *smi-ze*. That same string of segments has two different meanings depending on what pitch pattern it is pronounced with, one being a kinship term and the other not. When *smi-ze* is pronounced with the HL pattern, it means ‘daughter’; it is said with H-HF pitch, it means ‘girl’. Witness pitch contours of the two side-by-side:

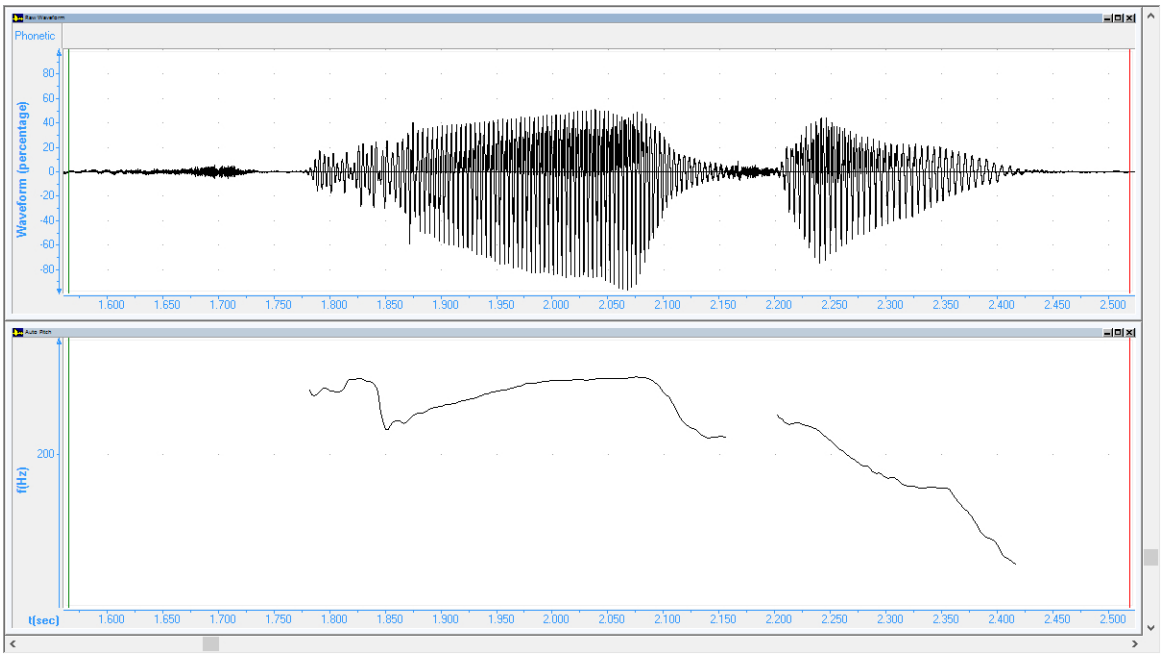

Figure 26. Pitch track for *smi-ze* ‘daughter’ (HL)

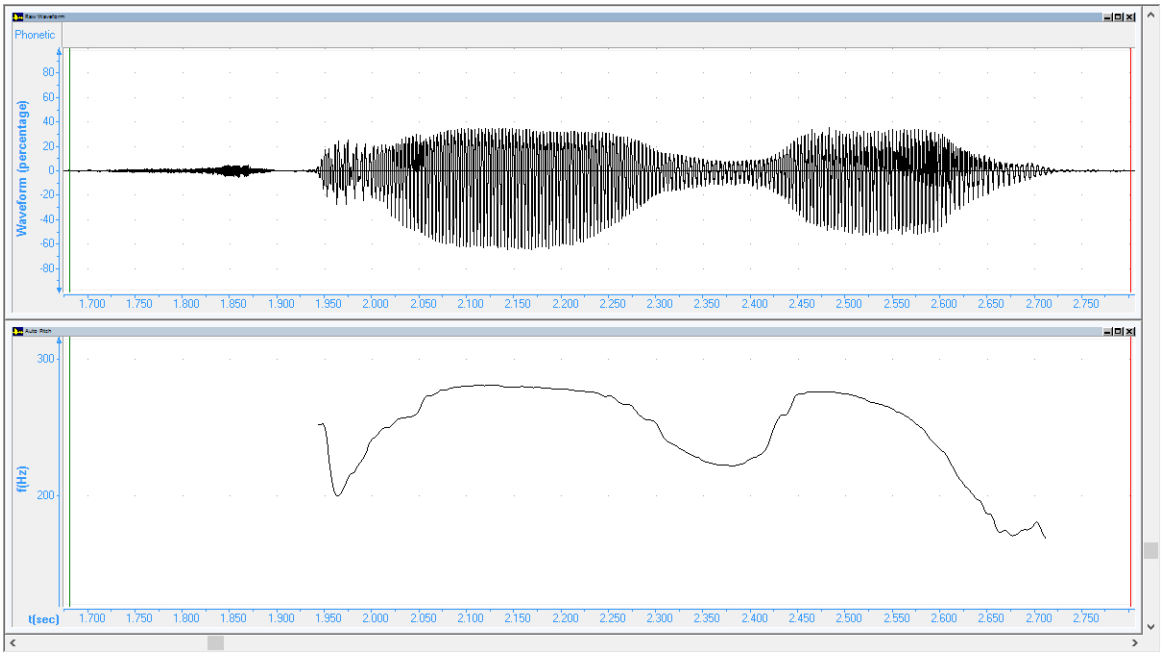

Figure 27. Pitch track for *smi-ze* ‘girl’ (H-HF)

To the casual eye, the two pitch contours may look very similar, but they do show a significant difference. The contours in Figures 26 and 27 are both relatively flat on the first syllable; this is the H pitch they have in common. On the second syllable of Figure 27 the pitch contour starts at the same height as its previous H pitch, and steadily drops, not flattening out until the very end; this represents a HF pitch. The contour of Figure 26’s second syllable starts lower, and flattens out mid-fall; this is its L pitch.

Besides kinship terms, words in which the second and last syllable is *-rə* are also predictably pronounced with HL pitch. A few examples of words with these suffixes follow:

(146) *cʰɛ-rə* ‘idle’
ɣzæ-rə ‘to make a sound’
tʰo-rə ‘slow’
kon-rə ‘to understand’
ʀgan-rə ‘to want’

There are also two exceptional categories within disyllabic words. First, in (147) there are four words with level pitch pattern, in which the two syllables have the same level pitch. The first three measured in the range of 240-250 Hz, the last with higher pitch in a 270-280 Hz range. The first two words are Tibetan loanwords, but this likely has no bearing on their pitch behaviour, since many borrowings take the H-HF pattern.

(147) *tsʰoŋkoŋ* 'shop'
kɛdzoŋ 'straight'
qoqo 'indent'
kæɛæ 'morning'

The last word *kæɛæ* may actually be part of the second exceptional category, that of greetings, leave-takings and times of day. They are a category that behaves very unusually. In my recordings, times of day, greetings, and leave-takings have a particular intonation pattern that is due to their pitch patterns being descending melodic intervals. Greetings and leave-takings are pronounced with a major third and times of day with a minor third (the pitch of a doorbell). Since producing a musical interval necessitates holding one's pitch steady, these words are also characterized by fairly consistent fundamental frequency on each syllable, in contrast to other words that typically fall utterance-finally. The figures below display the pitch tracks, respectively, of a leave-taking and a time of day.

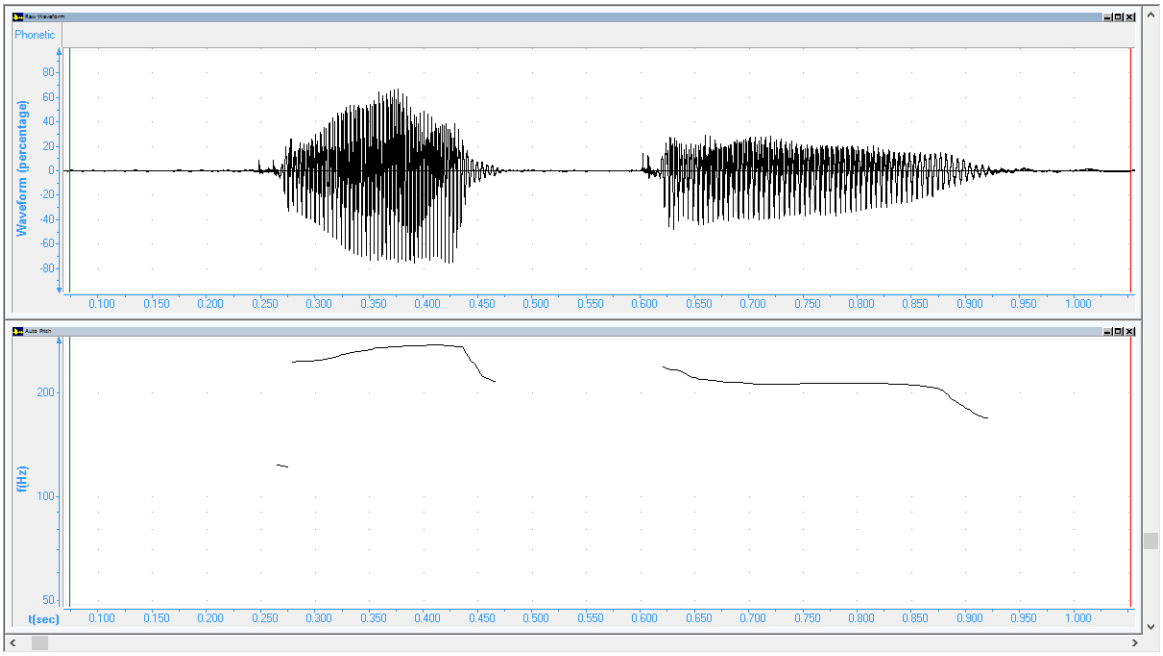

Figure 28. Pitch track for *gaca* ‘goodbye (evening)’; represents a major third

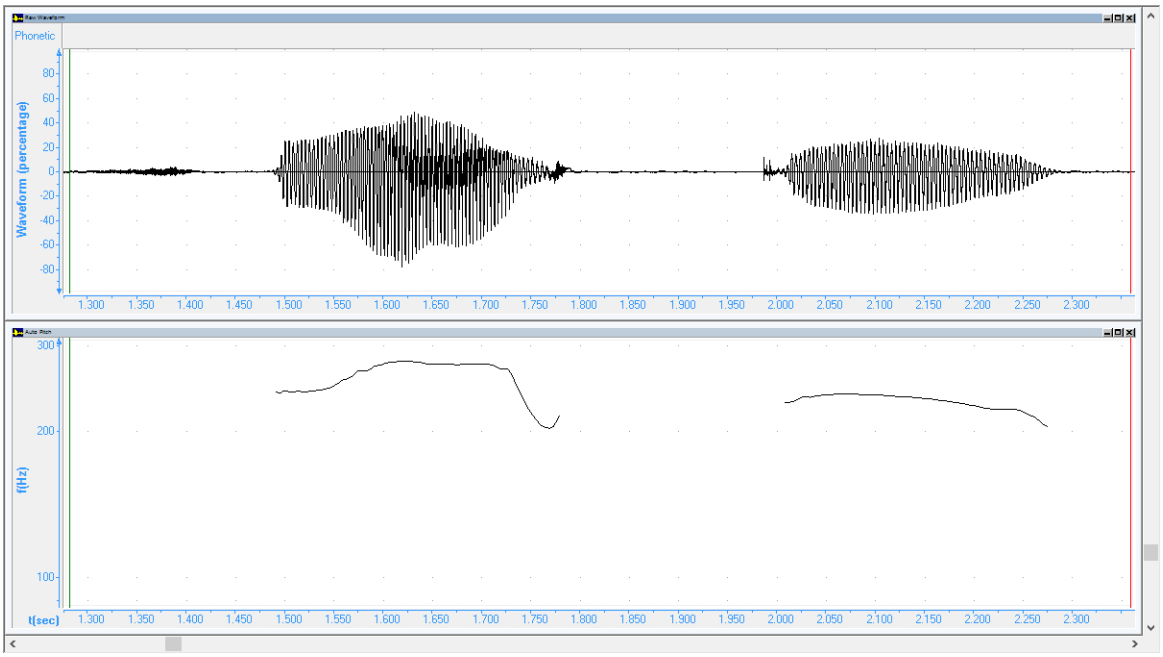

Figure 29. Pitch track for *snəɣɟi* ‘afternoon’; represents a minor third

Although *kæɕæ* ‘morning’ in its citation form does not fit the pattern for times of day, as it has a HH pitch, in sentence context it behaves the same as all other time of day words, giving reason to class it with them.

All time-of-day words were recorded in the same sentence frame: *pəsɲi* ___ *rku-rə* ‘it’s cold this ___’, and the intonation pattern also carries over into these sentences, but the minor third is not produced on the time-of-day word. Instead *rku-rə* receives the interval. The syllables preceding *rku-rə*, including the time-of-day, are all pronounced with the pitch of the first tone of the interval, which falls on *rku*. This can be witnessed in the example below, where *kəzə* ‘night’ is presented in the frame.

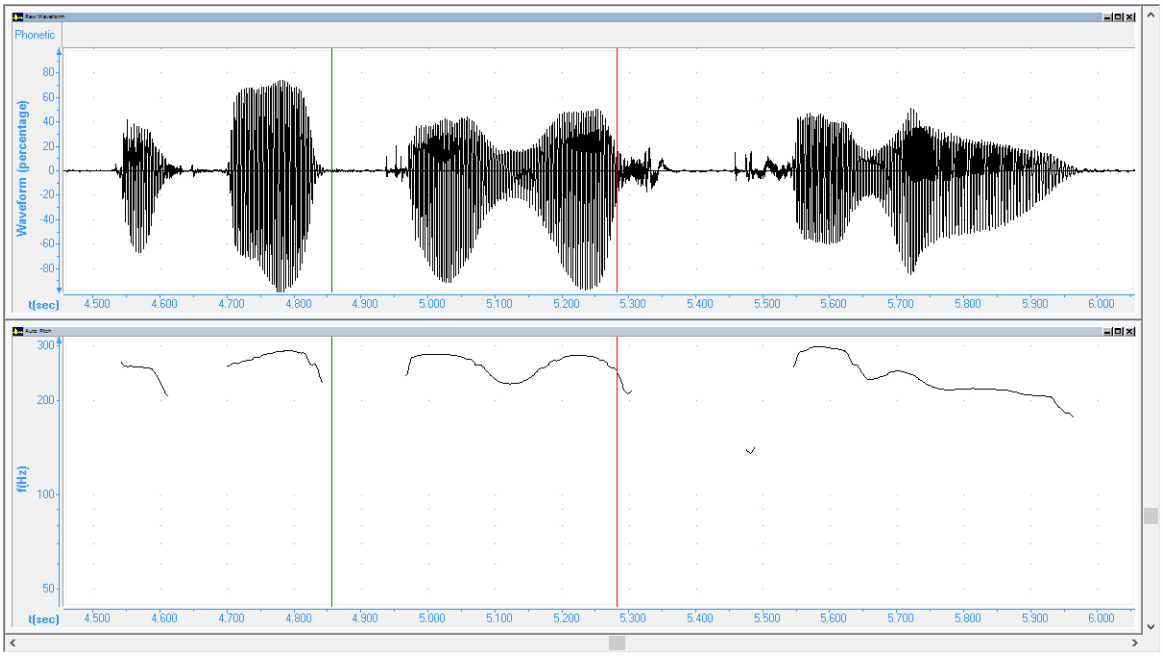

Figure 30. Pitch track of *pəsɲi kəzə rku-rə* ‘it’s cold this night’ (*kəzə* ‘night’ between vertical lines)

In Figure 30, the fundamental frequency of both syllables of *kəzə* is essentially equal to that of *rku*; the pitch tracks are on the same level horizontally. The same goes for *sɲi* in *pəsɲi*. The first syllable of *pəsɲi* has a little lower frequency, which is understandable as it also has less amplitude and length than the other syllables. The final syllable of the

utterance, *-rə*, has a lower pitch than *rku*; three semi-tones lower than it, the two forming together a minor third.

The non-triviality of the minor third pattern is even clearer if we look at another example of a time-of-day word in context. When *mdzudzu* 'late morning' was recorded in the frame sentence, an extra morpheme *tɕʰœ* 'on' was added, so that the sentence became:

(148) *pəsɲi mdzudzu tɕʰœ rku-rə*
today late.morning on cold-CONST
'It's cold this morning'

The addition changed the pitch pattern of the sentence: the intonation pattern persisted; in fact, the minor third was repeated twice. Figure 31 below shows, as in the previous example, *rku-rə* being pronounced with a minor third. The other minor third precedes it, formed by the last syllable of *mdzudzu* and *tɕʰœ* (the syllable following the second vertical line). One can see in Figure 31 that *dzu* is assigned the same pitch as *rku*, and *tɕʰœ* as *-rə*.

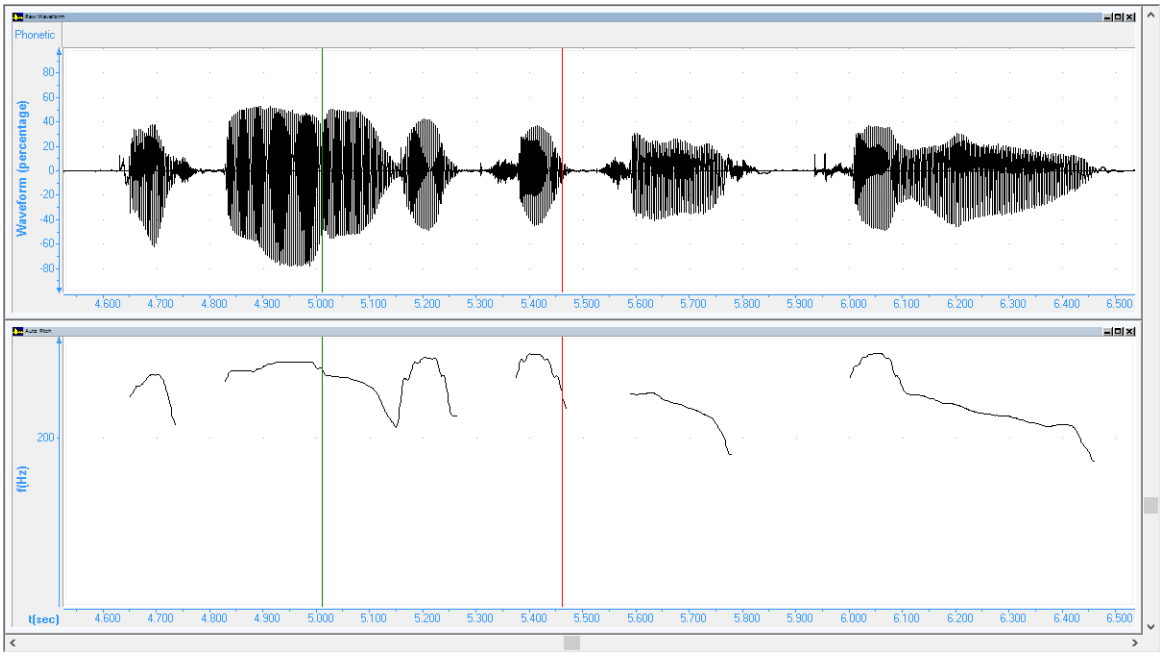

Figure 31. Pitch track of *pəsɲi mdzudzu tɕʰœ rku-rə* 'it's cold this morning' (*mdzudzu* 'late morning' between vertical lines)

This phenomena of using a specific intonation pattern for a particular set of words is not without parallel in English. We English speakers sometimes use minor thirds when we greet or take our leave (e.g. “Morning!” or “See ya!”), or call someone’s name.

8.3 Interpretation of pitch patterns

Stau is not a tone language, based on my observations in §8.2. Monosyllabic words are only found with one pitch pattern; disyllabic words for the most part also occur with one pitch pattern. Huang (1991) also comes to this conclusion. In her study of Daofu, she did not find tonal contrast used to distinguish meaning either, in a database of more than 3000 words. She did find, as I did, that each word has a habitual pitch pronunciation (1991:14). Her findings differ a little from my own, in that on monosyllabic words she finds two common pitch patterns. Falling pitch is one, and occurs frequently on syllables in which the initial consonant or consonant cluster is voiceless. The other pitch pattern is rising, and that occurs mostly on syllables that begin with voiced consonants. As for disyllabic words, Huang finds, as I did, that they usually use what she transcribes as 33-53, and what I call H-HF.

Based on the observations made in §8.2, it is possible to hypothesize that Stau has a fixed stress system. In general, the pitch patterns of Stau words are predictable. Almost all monosyllabic words have the same falling pitch pattern, which is congruous with a stress system. In a tone system, we would expect at least two pitch patterns on monosyllables. By contrast, in a stress system, isolated monosyllables by default receive stress and are pronounced with the same pitch pattern, as we find in Stau.

The pitch patterns on disyllabic words also show evidence of a fixed stress system. Most disyllabic words have H-HF pitch. This could be interpreted as stress on the second syllable. Where disyllabic words do not follow this pattern, the exception is usually justified. Disyllabic words that have HL pitch are complex, formed by attaching affixes

to roots. We would interpret these words as having stress on the first syllable. Greetings, leave-takings, and times-of-day are also predictable exceptions to the rule of second-syllable stress. Although these words do not have second-syllable stress, they obtain their pitch from an utterance-level pitch pattern, which trumps stress applied at the lexical level. Thus, these words do not count as true counterexamples.

Chapter 9

Conclusion

In conclusion, I will briefly summarize my findings and suggest areas for further study.

In this description of the phonology of Stau, I have found that Stau has a large consonant inventory of 42 consonants, and a moderately large vowel inventory of eight vowels. My findings coincide well with those of Huang (1991), who studied Stau before me. She lists more consonants in her inventory, but the discrepancy arises because she is more concerned to describe all the sounds that occur phonetically, while in my inventory I only include those that are phonemic. As to vowels, we both describe the same eight vowels.

Stau has a large syllable canon with six licit syllable types: CV, CCV, CCCV, CVC, CCVC, and CCCVC. An additional syllable type, V, appears in prefixes; only the low vowels /æ/ and /ɑ/ are allowed as single V syllables. In consonant clusters formed with a preinitial consonant followed by an initial consonant, C_i position licenses stops, fricatives, affricates (voiced, voiceless, and if applicable voiceless aspirated of the foregoing), and nasals. C_p licenses fricatives, the rhotic, and nasals. C_iC_m clusters allow stops, fricatives, the rhotic, and /m/ in initial position. In medial position they allow the rhotic, glides, /l/, and /v/. Clusters of three consonants are more restricted than any of the two-consonant clusters. C_i in these clusters licenses only stops; C_p licenses alveolar fricatives, the rhotic, and nasals, while C_m allows glides, /v/, and the rhotic. Final position licenses ten consonants: /p, /t/; /x/, /ɣ/, /χ/; /m/, /n/, /ŋ/; /r/ and /l/.

There are fewer phonotactic constraints on vowels. There are a few [vowel + coda] co-occurrence restrictions: velar and uvular fricative codas only follow non-high vowels;

/ŋ/ only appears after /o/ and /ɑ/; and /l/ only occurs after /ə/ and /ɛ/. In addition, the contrast between /e/ and /ɛ/ is neutralized in favour of the latter before word-final codas. In the same context, the high front vowel /i/ is realized as its allophone [ɪ].

Four phonological processes were identified in Stau: vowel assimilation, voice assimilation, nasalization, and vowel changes in reduplication.

Fairly consistent pitch patterns occur on mono- and disyllabic words in Stau that can be interpreted as a fixed stress system. Monosyllabic words predominantly are pronounced with a HF pitch pattern, which is analyzed as stress. Disyllabic words usually have stress on their second syllable; this is realized as a H-HF pitch pattern. Some complex disyllabic words, such as kinship terms and words ending with *-rə*, are realized with HL pitch; these have stress on the first syllable. Greetings, leave-takings, and times of day are pronounced with an utterance-level intonation pattern; the latter with a minor third interval, and the two former with a major third.

The two topics just mentioned are the ones most in need of further study. Much more time could be given to investigating the phonological processes that arise in the interaction of morphemes in derivation and inflection. Stau has quite complex verb morphology; this is likely to be a promising area of study, as Jacques et al. (2013) has already shown. Additional research is also needed to study the pitch patterns of Stau, particularly of words of three or more syllables and of words as they are placed in the context of utterances.

Appendix A

Minimal pairs

This appendix provides minimal pairs for similar phones as evidence for their phonemic status.

A.1 Consonant minimal pairs

Stops

(149) *pi* 'ball of tsampa' *pʰi* 'to run away'
pubœ 'Tibetan' *pʰupʰa* 'male pig'
xopi 'table' *rœpʰi* 'mahjong'
tɕʰœpœ 'to punish' *nəpʰœ* 'to split'

(150) *popo* 'pocket' *bobo* 'zhaoji'

(151) *toŋbe* 'stem' *tʰoŋbe* 'pot'
tutu 'basket carried on back' *tʰutu* 'mixed together'
bəti 'cheek' *ɣətʰi* 'to drink'
ɣrətoŋ 'well' (n.) *pətʰoŋ* 'son-in-law'

(152) *gaca* 'goodbye (evening)' *necʰa* 'good morning'
vcə 'to harvest' *vcʰə* 'to weigh'

(153) *kœɕœ* 'morning' *kʰœɕjœ* 'lips'
krə 'boat' *kʰrə* 'to shake s.t.'
ʁnɛkuku 'dark' *pukʰu* 'mosquito'

(154) *qoqo* ‘indent’ *qʰosto* ‘back’
qoqo ‘indent’ *ŋaŋeqʰo* ‘myself’

Affricates

(155) *ʈʂœ* ‘to cut with scissors’ *tɕitɕœ* ‘skin’
ʈʂəma ‘body dirt’ *tɕədə* ‘book’

(156) *mdʐu* ‘thunder’ *mdʑudʑu* ‘midday’
ndʐœndʐœ ‘same’ *ndʑœ* ‘rainbow’
ndʐə ‘time, instance’ *ndʑəv* ‘to suck’

(157) *ʈʂʰaʈʂoŋ* ‘mug, cup’ *tɕʰatsoŋ* ‘all’

(158) *tsoŋma* ‘clean’ *tsʰoŋkoŋ* ‘shop’
tsəgə ‘clothing’ *tsʰə* ‘salt’
rtsɛ ‘deer’ *rtsʰe* ‘lung’

(159) *tɕœ* ‘tea’ *tɕʰœ* ‘on’
œtɕɛ ‘together’ *œtɕʰə* ‘what’

Fricatives

(160) *səli* ‘to roll’ *zəli* ‘to fall’
səqə ‘small piece of machinery’ *zəbə* ‘body’
məsi ‘stick of wood’ *qʰəzi* ‘bowl’
pʰjəsu ‘outside’ *zuzu* ‘button’

(161) *ɕu* ‘strength’ *ʑu* ‘yogurt’
ɕə ‘teeth’ *ʑəvə* ‘village’
ɕuɕu ‘behind’ *ʑuʑə* ‘can, able to’
kʰœɕjœ ‘lips’ *zʁœʑjœ* ‘comb’

(162) *xə* ‘yak-bull crossbreed’ *ɣəzə* ‘bird’
maxe ‘water buffalo’ *maɣər* ‘a type of tree’

(163) *χodzupare* ‘cloth worn on head’ *ʁoɲu* ‘back’
χjə ‘to destroy’ *ʁjə* ‘fish’
kəχo ‘bark (of tree)’ *jəʁo* ‘upstairs’

(164) *xotsʰɛv* ‘pepper’ *χodzupare* ‘cloth worn on head’
ʂcaxpa ‘excrement’ *tɕaχpa* ‘to steal’

Nasals

(165) *mə* ‘younger brother’ *ne* ‘to rest’
mdʑu ‘thunder’ *ndʑə* ‘time’
smi ‘young women’ *sni* ‘nose’

(166) *nə* ‘to rest’ *ɲə* ‘ear’
nətso ‘sun’
nɛrdʑə ‘fingernail’ *ɲɛndʑə* ‘sunflower seed’
noŋ ‘inside’ *ɲoŋpœ* ‘old’

(167) *nərbə* ‘treasure’ *ŋəmɛ* ‘cow’
œneze ‘paternal younger aunt’ *œŋœze* ‘baby’

(168) *ɲəlɛm* ‘dream’ (n.) *ŋəmɛ* ‘cow’
ʁoɲu ‘back’ (n.) *səŋun* ‘who’
sɲu ‘beans’ (for pigfeed) *sŋuscœ* ‘blue’

Laterals

(169) *ləpʰu* ‘tree’ *łə* ‘cow’s milk’ *ɮə* ‘field’
lærɲə ‘celtuce’ *łœ* ‘god’ *ɮœ* ‘hand’
lɛvdɛr ‘peeler’ *łɛ* ‘to get wet’ *ɮɛ* ‘to come’
vlɛ ‘to put down’ *vłɛ* ‘ashes’ *vɮɛ* ‘tongue’

Approximants

(170) *vo* ‘stomach’ *wo* ‘again’

A.2 Vowel minimal pairs

(171) *pʰi* ‘to run away’ *pʰe* ‘to vomit’
ʑele ‘turnip’ *zəli* ‘to fall’
qʰre ‘to pull down’ *kʰri* ‘chair’

(172) *pʰe* ‘to vomit’ *pʰɛ* ‘to dig’
mɬe ‘to braid’ *ɬɛ* ‘ashes’
nene ‘breast’ *nɛmɛ* ‘finger’

(173) *ɕwæ* ‘night’ *ʂqwa* ‘Adam’s apple’
mæmæ ‘grandmother’ *tʂəma* ‘body dirt’
nəpʰæ ‘to split’ *mupʰa* ‘sow’

(174) *spu* ‘incense stick’ *spo* ‘grassland’
turu ‘to find it’ *ro* ‘1’
ʂtɕʰu ‘wine bottle’ *xtɕʰo* ‘6’

(175) *ɕi* ‘highland barley’ *ɕə* ‘teeth’
ɻʒi ‘wheat’ *ɻʒə* ‘field’
mi ‘mole’ *mə* ‘younger brother’

(176) *rŋe* ‘to hear’ *rŋə* ‘knee’
ʂtsʰe ‘lung’ *ʂtsʰə* ‘cough’
ɣne ‘2’ *sɬəɣnə* ‘moon’

(177) *skɛ* ‘language’ *skə* ‘chives’
ɣmɛ ‘wound’ *ɣmɛ* ‘fire’
ɻʒɛ ‘to come’ *ɻʒə* ‘field’

(178) *rŋæ* ‘face’ *rŋə* ‘knee’
ɮæ ‘hand’ *ɮə* ‘field’
ɲæ ‘fish’ *ɲə* ‘ear’

(179) *ʁa* ‘door’ *ʁə* ‘head’
ʁja ‘male yak’ *ʁjə* ‘fish’
na ‘post for building house’ *nə* ‘to rest’

(180) *mo* ‘eye’ *mə* ‘younger brother’
spo ‘grassland’ *spə* ‘pus’
ʂko ‘root’ *ʂkə* ‘foot’

(181) *ɕu* ‘strength’ *ɕə* ‘teeth’
ndʑu ‘to sit’ *ndʑə* ‘to hide s.t.’
mkʰu ‘cowshed’ *mkʰə* ‘smoke’

Appendix B

Lexicon

The following lexicon contains much of the Stau data that I used in analysis for this thesis. I hope its inclusion will be helpful to fellow Rgyalrongic scholars.

Num	Lexical	Phonetic	English Gloss	Category
1.	su-ndzʐə	sundzʐə	third time	
2.	vrə	vzʐə	to pour	V
3.	æpæ	æpæ	dad	N
4.	æmə	æmə	mom	N
5.	æti	æti	older brother	N
6.	ædæ	ædæ	older sister	N
7.	mə	mə	younger brother	N
8.	sqʰi	sqʰi	younger sister	N
9.	æpe	æpe	grandfather	N
10.	mæmæ	mæmæ	grandmother	N
11.	ækʰə-kɛcʰɛ	ækʰəkɛcʰɛ	paternal older uncle	N
12.	ækʰə-ze	ækʰəze	paternal younger uncle	N
13.	æne-kɛcʰɛ	ænekɛcʰɛ	paternal older aunt	N
14.	æne-ze	æneze	paternal younger aunt	N
15.	ækʰə	ækʰə	paternal uncle	N
16.	æne	æne	paternal aunt	N
17.	æʑu-kɛcʰɛ	æʑukɛcʰɛ	maternal older uncle	N
18.	æʑu-ze	æʑuze	maternal younger uncle	N
19.	æjæ-kɛcʰɛ	æjækɛcʰɛ	maternal older aunt	N
20.	æjæ-ze	æjæze	maternal younger aunt	N
21.	æjæ	æjæ	maternal aunt	N
22.	məbærmæ	məbærmæ	second younger brother	N
23.	sno	sno	younger sister male speaker	N
24.	kʰædʑu	kʰædʑu	thank you	
25.	ʁzaʁzav	ʁzɑʁzɑv	thank you	
26.	təvdəze	təvdəze	son	N
27.	ʑələze	ʑələze	son	N
28.	smi-ze	smeze	daughter	N

Num	Lexical	Phonetic	English Gloss	Category
29.	dzəvə	dzəvə	husband	N
30.	vədæ	vədæ	wife	N
31.	jovə	jovə	wife	N
32.	kæɕæ	kæɕæ	morning	N
33.	necʰɑ	necʰɑ	hello	
34.	gɑcɑ	gɑcɑ	goodbye	
35.	mdʑudʑu	mdʑudʑu	late morning	N
36.	sɲəɣɟi	sɲəɣɟi	afternoon	N
37.	lɛɲu	lɛɲu	evening	N
38.	ɛwæ	ɛwæ	night (after midnight)	N
39.	kəzə	kəzə	night	N
40.	tə-skrə-sə	təskrəsə	late	ADJ
41.	kɛdərə	kɛdəʐə	early	ADJ
42.	xɑvdu	hɑvdu	now	
43.	ŋəkʰæ	ŋəkʰæ	before	
44.	ɣədʑelə	ɣədʑelə	after	
45.	jɛʑoŋbu	jɛʑoŋbu	often always	
46.	pəsɲi	pəsɲi	today	
47.	ævəsɲi	ævəsɲi	yesterday	
48.	qʰəsji	qʰəsji	tomorrow	N
49.	bəlætəsɲi	bəlætəsɲi	everyday	
50.	æ-sɲi	æsɲi	day	N
51.	ro	ʐo	1	NUM
52.	ɣne	ɣne	2	NUM
53.	xsu	xsu	3	NUM
54.	ɣɮə	ɣɮə	4	NUM
55.	ɴGWɛ	ɴGWɛ	5	NUM
56.	xtɕʰo	xtɕʰo	6	NUM
57.	zɲe	zɲe	7	NUM
58.	rjɛ	ʐjɛ	8	NUM
59.	ŋgə	ŋgə	9	NUM
60.	zʁɑ	zʁɑ	10	NUM
61.	ʁɑvro	ʁɑvʐo	11	NUM
62.	ʁɑmne	ʁɑmne	12	NUM
63.	ʁɑvsu	ʁɑfsu	13	NUM
64.	ʁɑvɮə	ʁɑvɮə	14	NUM
65.	ʁɑɴGWɛ	ʁɑɴGWɛ	15	NUM
66.	ʁɑvtɕʰo	ʁɑftɕʰo	16	NUM
67.	ʁɑzɲe	ʁɑzɲe	17	NUM
68.	ʁɑrjɛ	ʁɑrjɛ	18	NUM
69.	ʁɑŋgə	ʁɑŋgə	19	NUM

Num	Lexical	Phonetic	English Gloss	Category
70.	nə-sqʰɑ	nəsqʰɑ	20	NUM
71.	rtsudʑu	ʂtsudʑu	number	N
72.	ndʐə	ndʐə	time	N
73.	æ-ndʐə	ændʐə	first time	
74.	nə-ndʐə	nəndʐə	second time	
75.	səmbə	səmbə	all	
76.	tɕʰɑtsoŋ	tɕʰɑtsoŋ	all	
77.	kɛ-nɮə	kɛnɮə	heavy	ADJ
78.	kɛ-ɣji	kɛɣji	light	ADJ
79.	kɛ-ɣri	kɛɣʐi	many	
80.	ŋæ	ŋæ	1 sg	
81.	ɲi	ɲi	2 sg	
82.	tʰɛ	tʰɛ	3 sg	
83.	ŋæji	ŋæji	1 pl	
84.	ɲiɲi	ɲiɲi	2 pl	
85.	tʰiɲi	tʰiɲi	3 pl	
86.	vdʑəvdʑə	vdʑəvdʑə	friend	N
87.	ŋɑ-ɣne	ŋɑɣne	1 dual	
88.	ɲi-ɣne	ɲiɣne	2 dual	
89.	tʰi-ɣne	tʰiɣne	3 dual	
90.	ŋɑŋeqʰo	ŋɑŋeqʰo	myself	
91.	ɑdɛ	ɑdɛ	this	
92.	tʰɛ	tʰɛ	that	
93.	sə	sə	who	
94.	ætɕʰə	ætɕʰə	what	
95.	ludɛ	ludɛ	which	
96.	səŋun	səŋun	who	
97.	ʁə	ʁə	head	N
98.	kɑpəlɑ	kɑpəlɑ	forehead	N
99.	mormi	mormi	eyebrow	N
100.	mojo	mojo	eyelid	N
101.	mospə	mospə	eyelashes	N
102.	mo	mo	eye	N
103.	bəti	bəti	cheek	N
104.	sni	sni	nose	
105.	jæ	jæ	mouth	N
106.	ɣmur	ɣmuɾ	mouth	N
107.	ɕə	ɕə	teeth	N
108.	vɮɛ	vɮɛ	tongue	N
109.	mæŋgɛ	mæŋgɛ	chin	N
110.	ɲə	ɲə	ear	N

Num	Lexical	Phonetic	English Gloss	Category
111.	sneˢdoŋ	sneˢdõ	bridge of nose	N
112.	rŋæ	ʐŋæ	face	N
113.	vɮi	vɮi	neck	N
114.	rqwɑ	ʂqwɑ	Adams apple	N
115.	xpoŋ	xpõ	shoulder	N
116.	ɮɛrko	ɮɛʂko	arm	N
117.	ɮæ	ɮæ	hand	N
118.	nɛmɛ	nɛmɛ	finger	N
119.	nɛrdzə	nɛrdzə	fingernail	N
120.	qʰosto	qʰosto	back	N
121.	tɕo	tɕo	lower back	N
122.	noptɕʰo	noptɕʰo	side	N
123.	xpʰə	xpʰə	butt	N
124.	plɛ	plɛ	thigh	N
125.	rŋə	ʐŋə	knee	N
126.	rdə	ʐdə	lower leg	N
127.	rko	ʂko	ankle	N
128.	rkə	ʂkə	foot	N
129.	ʁɑlo	ʁɑlo	chest	N
130.	vo	vo	stomach	N
131.	wocʰi	wocʰi	lower abdomen	N
132.	rtsʰə	ʂtsʰə	cough	V
133.	xæcʰo	hæcʰo	sneeze	V
134.	zʁoræ	zʁoʐæ	yawn	V
135.	zəpə	zəpə	body	N
136.	tɕo	tɕo	waist	N
137.	wocæ	wocæ	navel	N
138.	spəspæ	spəspæ	hair on arm	N
139.	ʁəptɕæ	ʁəptɕæ	hair on head	N
140.	tɕitɕæ	tɕitɕæ	skin	N
141.	xɕi	xɕi	sweat	N
142.	ʑæʁɻæ	ʑæʁɻæ	limp	N
143.	rŋe	ʐŋe	to hear	V
144.	scici	scici	to look at, see	V
145.	no	no	to smell	V
146.	qʰæ	qʰæ	to laugh	V
147.	zjuræ	zjuræ	to cry	V
148.	skəri	skəri	to shout, call	V
149.	tsəgə	tsəgə	clothing	N
150.	rə-gi	ʐə̟gi	to clothe	V
151.	tʰɛ	tʰɛ	to take off clothes	V

Num	Lexical	Phonetic	English Gloss	Category
152.	kəgəmæ	kəgəmæ	naked	ADJ
153.	ʁɑv	ʁɑv	needle	N
154.	reskə	reskə	thread	N
155.	nə-ŋgi	nəŋgi	to eat	V
156.	nə-ndjælæ	nəndjælæ	lick	V
157.	tɕʰɑxtɕə	tɕʰɑxtɕə	chew	V
158.	ɣə-tʰi	ɣətʰi	drink	V
159.	pʰe	pʰe	to vomit	V
160.	mdʑu-rə	mdʑuʐə	hungry	ADJ
161.	spæ-rə	spæʐə	thirsty	ADJ
162.	ɮo-rə	ɮoʐə	tasty	ADJ
163.	jo	jo	house	N
164.	ʁɑ	ʁɑ	door	N
165.	ɲɟɛm	ɲɟɛm	wall	N
166.	ʁnɛmju	ʁnɛmju	roof	N
167.	ɣmə	ɣmə	fire	N
168.	tə-rjɛ	tərjɛ	to stand up	V
169.	mobrɛ	mobʐɛ	tears	N
170.	ʑɛrvæ	ʑɛrvæ	blind	ADJ
171.	mbjɛ-mə	mbjɛmə	deaf person	N
172.	rʁu	ʐʁu	dumb	ADJ
173.	kʰæɕjæ	kʰæɕjæ	lips	N
174.	vɟə	vɟə	saliva	N
175.	rwu	ʐwu	breath	N
176.	skɛ	skɛ	voice	N
177.	ɟɛuræ	ɟɛuræ	facial hair	N
178.	łə	łə	cows milk	N
179.	zjær	zjæʂ	heart	N
180.	noŋtɕʰə	nõtɕʰə	guts	N
181.	si	si	liver	N
182.	spə	spə	pus	N
183.	tʂəmɑ	tʂəmɑ	body dirt	N
184.	ʁərjɑ	ʁərjɑ	bone	N
185.	ɕu	ɕu	strength	N
186.	ŋgələ	ŋgələ	food stuff	N
187.	rłə	ʂłə	wheat flour	N
188.	ndzure	ndzure	to live	V
189.	sciskɛr	sciskɛʂ	to be born	V
190.	ægəjo	ægəjo	to grow up	V
191.	tə-rkæ-sə	təʂkæsə	to get tired	V
192.	ŋo-rə	ŋoʐə	illness	N

Num	Lexical	Phonetic	English Gloss	Category
193.	ɣmɛ	ɣmɛ	to be hurt	V
194.	ŋo-rə	ŋozʲə	to be painful	V
195.	zæntɕʰæ	zæntɕʰæ	to feel itchy	V
196.	vzɛvzə	vzɛvzə	to scratch	V
197.	smənvəgəɟi	smənvəgəɟi	to make medicine	V
198.	vsɛ	fsɛ	to kill	V
199.	tə-sɛ-sə	təsɛsə	to die	V
200.	łæ	łæ	god	N
201.	ɲcʰəcə	ɲcʰəcə	to fight	V
202.	jækʰæ ɲcʰɛɲcə	jækʰæ ɲcʰɛɲcə	to argue	V
203.	pʰi	pʰi	to run away	V
204.	scʰɛco	scʰɛco	to chase	V
205.	skɛ	skɛ	language	N
206.	nene	nene	mother's milk	N
207.	nə-qe	nəqe	to throw out s.t.	V
208.	xsəxsə	xsəxsə	to be alive	V
209.	tə-vsɛ-sə	təfsɛsə	to be killed	V
210.	skɛsnɑ	skɛsnɑ	languages	
211.	ʁlə-və	ʁləvə	to sing	V
212.	ʑɛdʑuntɕʰɛm	ʑɛdʑuntɕʰɛm	to dance	V
213.	χtɛ	χtɛ	to return s.t. to s.o.	V
214.	rɲi	rɲi	to wait	V
215.	pjɛno	pjɛno	meat	N
216.	ɕontʰo	ɕõntʰo	fruit	N
217.	mdʑəsnæ	mdʑəsnæ	seed	N
218.	zgəŋæ	zgəŋæ	egg	N
219.	tsʰə	tsʰə	salt	N
220.	wɛrtsʰi	wɛʂtsʰi	lard	N
221.	ɣrə	ɣzʲə	water	N
222.	zʁe	zʁe	cook by boiling	V
223.	ɣələm-sə	ɣələmsə	ripe	ADJ
224.	ndʑəv	ndʑəp	to suck	V
225.	ɣməlɛv	ɣməlɛp	fire	N
226.	mkʰə	mkʰə	smoke	N
227.	vɬɛ	fɬɛ	ashes	N
228.	nə-sqʰu	nəsqʰu	to extinguish	V
229.	ndzu	ndzu	to sit down	V
230.	kə-xcʰi	kəxcʰi	to open	V
231.	ɣə-vi	ɣəvi	to do	V
232.	zɑmɑsotɕi	zɑmɑsotɕi	pot	N
233.	pərzi	pərzi	knife	N

Num	Lexical	Phonetic	English Gloss	Category
234.	mbjo	mbjo	cutting edge	N
235.	ɕəɕæ	ɕəɕæ	to wipe	V
236.	tʰəɣə	tʰəɣə	rope	N
237.	ɕækɛcʰɛ	ɕækɛcʰɛ	fat	ADJ
238.	rʁəbə	zɻʁəbə	thin	ADJ
239.	xtɕærə	xtɕæzɻə	sword	N
240.	mdæ	mdæ	arrow	N
241.	ʁʑə	ʁʑə	bow	N
242.	leskæ-və	leskævə	to work	V
243.	tɕitɕæɣzɛ	tɕitɕæɣzɛ	to peel	V
244.	ɕɑŋgu	ɕɑŋgu	to go	V
245.	ɮɛ	ɮɛ	to come	V
246.	ŋkʰərvæ	kəŋkʰərvæ	to turn, grind	V
247.	rtin	ʂtɪn	to stop	V
248.	pɛrspo	pɛrspo	to walk	V
249.	ɲɟəræ	ɲɟəræ	to run	V
250.	mɟo-rə	mɟozɻə	fast	ADJ
251.	tʰo-rə	tʰozɻə	slow	ADJ
252.	rdzulu	rdzulu	to crawl	V
253.	tɕɛ	tɕɛ	road	N
254.	dzo	dzo	bridge	N
255.	ŋkʰurlu	ŋkʰuɻu	wheel	N
256.	krə	kzɻə	boat	N
257.	vʑo	vʑo	to plane	V
258.	pʰɛ	pʰɛ	to dig	V
259.	zəli	zəli	to fall	V
260.	łɛłə	łɛłə	wet	V
261.	ɣroɣro	ɣzɻoɣzɻo	to dry	V
262.	tə-rmu-sə	tərmusə	to forget	V
263.	tʰətʰə	tʰətʰə	sweet	ADJ
264.	sɲæsɲæ	sɲæsɲæ	bitter	ADJ
265.	tə-tsə-sə	tətsəsə	rotten	ADJ
266.	vəvɑŋgu	vəvɑŋgu	to build	V
267.	tə-scʰusə	təscʰusə	to burn	V
268.	ndjɛv	ndjɛv	to sleep	V
269.	ɲəlɛm	ɲəlɛm	dream n	N
270.	məsi	məsi	stick of wood	N
271.	vdzi	vdzi	human	N
272.	pəŋæ	pəŋæ	man, male	N
273.	smi	smi	woman, female	N
274.	kɛdi	kɛdi	child	N

Num	Lexical	Phonetic	English Gloss	Category
275.	lutɕʰoŋ	lutɕʰõ	young	ADJ
276.	ʑəvə	ʑəvə	village	N
277.	vqe	fqe	to shoot gun	V
278.	rkəmə	ʂkəmə	to steal (hidden)	V
279.	nə	nə	to rest	V
280.	kə-rjɛn	kərjɛn	to ask	
281.	rmə	ʐmə	name	N
282.	ɲcʰæræ	ɲcʰæræ	to play	V
283.	kə-dʑə-sə	kədʑəsə	to meet, run into	V
284.	ɲcʰə	ɲ̊cʰə	to beat, hit; to thresh	V
285.	rcʰɛ	ʂ̊cʰɛ	to bite	V
286.	vzu	vzu	to take	V
287.	tə-kʰri	təkʰʂi	to seize	V
288.	ɣe	ɣe	to touch	V
289.	nə-xsɛrni	nəxsɛrni	to rub hands	V
290.	læʁju	læʸju	wave	N
291.	tə-rko-sə	təʂkosə	to push	V
292.	rə-ɲɻu-sə	ʐəɲɻusə	to carry on back	V
293.	rtsʰu	ʂtsʰu	to kick	V
294.	ntʰvæ	ɳ̊tʰfæ	to tread on it	V
295.	ndzə	ndzə	to hide it	V
296.	ɕjæ	ɕjæ	to seek it	V
297.	kə-scʰici	kəscʰici	to show it	V
298.	rəle	ʐəle	to put it	V
299.	rə-vlɛ-sə	ʐəvlɛsə	to put it	V
300.	leskæ	leskæ	work	N
301.	nə-vəve	nəvəve	to do	V
302.	χjə	χjə	to destroy it	V
303.	tə-pətɕo-sə	təpətɕosə	to wreck, tear	V
304.	vəvæ	vəvæ	to repair s.t.	V
305.	spjæ	spjæ	to split	V
306.	nəpʰæ	nəpʰæ	to split	ADJ
307.	vku	fku	to bend it	V
308.	ɲtɕʰɑχpɑ	ɲ̊tɕʰɑχpɑ	to fold	V
309.	rʁe	ʐ̊ʁe	to wash it	V
310.	zgozgo	zgozgo	sour	ADJ
311.	tɕʰətɕʰə	tɕʰətɕʰə	salty	ADJ
312.	pəcæ	pəcæ	stick of wood	N
313.	lu	lu	pole of tool	N
314.	ndərjæ-sce-i-lu	ndərjæsceilu	hoe	N
315.	tɕɑzjɛ	tɕɑzjɛ	rake	N

Num	Lexical	Phonetic	English Gloss	Category
316.	tɛɑχpɑ	tɛɑχpɑ	to steal visible	V
317.	noŋ	noŋ	inside	
318.	pʰjəsu	pʰjəsu	outside	
319.	pʰɛ	pʰɛ	to throw out	V
320.	rə-lə-sə	ʐələsə	boiling water	
321.	rəmæləsə	ʐəmæləsə	not boiling	
322.	bjæ	bjæ	to split by itself	V
323.	ʁərʁər	ʁərʁər	circular	ADJ
324.	kə-rtsʰi	kəʂtsʰi	to tie more loosely	V
325.	kə-xsi	kəxsi	to tie tightly	V
326.	ɣə-pʰri	ɣəpʰʂi	to untie, volitional	V
327.	tə-lu-sə	təlusə	to untie, unvolitional	V
328.	nəvi	nəvi	to cover it up	V
329.	kʰælɛv	kʰæləv	cover, lid	N
330.	ro	ʐo	to swell	V
331.	ro	ʐo	swollen spot	N
332.	æ-ndə	ændə	a stab	V
333.	æ-xtɕæ	æxtɕæ	a cut	V
334.	χtsɑ	χtsɑ	to cut oneself	V
335.	nə-vtso	nəftso	to cut	V
336.	ʁərji	ʁərji	to mix	V
337.	rkuvcæ	ʂkufcæ	to carve	V
338.	zdo	zdo	cloud	N
339.	vqo	fqo	sky	N
340.	zdomə	zdomə	fog	N
341.	məqʰi	məqʰi	rain	N
342.	łɛvsə	łɛpsə	lightning	N
343.	mdʐu	mdʐu	thunder	N
344.	ndʑæ	ndʑæ	rainbow	N
345.	kʰɑwɑ	kʰɑwɑ	snow	N
346.	rwo	ʐwo	ice	N
347.	kə-rwo-sə	kərwosə	to freeze	V
348.	tə-ʑə	təʑə	to melt	V
349.	nətso	nətso	sun	N
350.	sləɣnə	sləɣnə	moon	N
351.	zgri	zgʐi̱	star	N
352.	wut	wut̄	light	N
353.	ɣræmjæ	ɣʐæmjæ	shadow	N
354.	xpurju	xpurju	wind	N
355.	ɣmɛ	ɣmɛ	to blow	V
356.	cʰu-rə	cʰuʐə	hot of weather	ADJ

Num	Lexical	Phonetic	English Gloss	Category
357.	tsʰeke	tsʰeke	hot	ADJ
358.	rku-rə	ʂkuʐə	cold for weather	ADJ
359.	ɣrə-rkʰu	ɣʐəʂkʰu	cold	ADJ
360.	rkutsɛzɛndæ	ʂkutsɛzɛndæ	warm	ADJ
361.	ʑiŋgu	ʑiŋgu	mountain	N
362.	loŋbæ	lõbæ	valley	N
363.	nɑ	nɑ	post for building hse	N
364.	zbrə	zbʐə	tree type	N
365.	mɑɣər	mɑɣəˠ	tree type	N
366.	tæsi	tæsi	tree type	N
367.	zjo	zjo	tree type	N
368.	lupʰu	lupʰu	tree type	N
369.	xtʰo	xtʰo	ground (n.)	N
370.	spo	spo	grassland	N
371.	mtsʰu	mtsʰu	lake	N
372.	ɣrə	ɣʐə	river	N
373.	rtɕʰæmbəqolu	ʂtɕʰæmbəqolu	bubble	N
374.	bjolæ	bjolæ	to float	V
375.	kɛdʑɛdʑi	kɛdʑɛdʑi	shore	
376.	rərɮɛv	ʐəʐɮɛv	wave	N
377.	rgəmɛ	ʐgəmɛ	stone for building hse	N
378.	pjəmæ	pjəmæ	sand	N
379.	tsi	tsi	grass	N
380.	ləpʰu	ləpʰu	tree	N
381.	rqo	ʂqo	trunk	N
382.	nɛmɛ	nɛmɛ	toe	N
383.	kəχo	kəχo	bark	N
384.	qɑvlɑ	qɑvlɑ	branch	N
385.	bɑrlu	bɑɬu	leaf	N
386.	doŋbə	doŋbə	stem	N
387.	mito	mito	flower	N
388.	rko	ʂko	roots	N
389.	kɛcʰɛ-xi-rə	kɛcʰɛxiʐə	to grow	V
390.	ɣro	ɣro	to wither	V
391.	rədɑsnærŋæ	ʐədɑsnærŋæ	animal	N
392.	ɣəzə	ɣəzə	bird	N
393.	bjɛrgə	bjɛrgə	pheasant	N
394.	pʰɛ	pʰɛ	to dig	V
395.	zjɛ	zjɛ	to rake	V
396.	roŋqʰuræ	ʐoŋqʰuræ	to hoe	V
397.	rtsʰulæ	ʂtsʰulæ	to move	V

Num	Lexical	Phonetic	English Gloss	Category
398.	ŋkʰərvæ	ŋkʰərvæ	to twirl	V
399.	sxɛsxo	sxɛsxo	to move things	V
400.	ɲuɲɻu	ɲuɲɻu	left	
401.	rtʰærtʰə	ʂtʰæʂtʰə	right	ADJ
402.	tsʰəsji	tsʰəsji	to think	V
403.	bobo	bobo	zhaoji	
404.	xɑkon-rə	xɑkõdʑə	to know	V
405.	popo	popo	pocket	
406.	jə	jə	to say	
407.	scɑn-rə	scɑndʑə	afraid	ADJ
408.	tə-scɑŋ	təscɑ̃	afraid	ADJ
409.	tə-rgɑŋ	tərgɑ̃	to like	V
410.	rgɑ-ndʑə	ʐgɑ̃dʑə	to want	V
411.	qʰætəsɬoŋ	qʰætəsɬõ	glad	ADJ
412.	səm	səm	mood	N
413.	svo	sfo	bright	ADJ
414.	ʁnɛʁnɛ	ʁnɛʁnɛ	dark	ADJ
415.	ʁnɛ-kuku	ʁnɛkuku	dark	ADJ
416.	kɛ-svo	kəsfo	bright	ADJ
417.	ɕoŋsnæ	ɕõsnæ	forest	N
418.	ŋkʰu	ŋkʰu	owl	N
419.	tə-nəv-sə	tənəvsə	to sink	V
420.	xɕɛr	xɕɛʂ	to float, flow	V
421.	xtsʰə	xtsʰə	earth soil	N
422.	tsʰə	tsʰə	salt	N
423.	xeʑi	heʑi	how many	
424.	ɣzəɣzə	ɣzəɣzə	some	
425.	æχe	æχe	a little	
426.	ætsʰe	ætsʰe	a little	
427.	xævʑi	hævʑi	yet still	
428.	xɑji	hɑji	yet still	
429.	mjɛmmjɛm	mjɛmmjɛm	smooth	ADJ
430.	xovɛxovɛ	xovɛxovɛ	a minute ago	
431.	ɲæ	ɲæ	fish	N
432.	ʁjə	ʁjə	fish	N
433.	pæbə	pæbə	insect	N
434.	ɕɑndʑu	ɕɑ̃dʑu	worm	N
435.	kʰətæ	kʰətæ	dog	N
436.	skʰro	skʰʂo	ant	N
437.	pukʰu	pukʰu	mosquito	N
438.	bæɴɢe	bæɴɢe	fly n	N

Num	Lexical	Phonetic	English Gloss	Category
439.	mpʰri	mpʰʂi	snake	N
440.	krəmbə	kʐəmbə	horn	N
441.	zdɛrmoŋ	zdɛrmõ	claw	N
442.	rŋæmɑ	ʐŋæmɑ	tail	N
443.	ɣmur	ɣmuʂ	beak, mouth	N
444.	vɕoxpæ	fɕoxpæ	wing	N
445.	vɕævɟo	fɕævɟo	feather	N
446.	zgəŋæ	zgəŋæ	nest	N
447.	bjo	bjo	to fly	V
448.	dʑuæ	dʑuæ	to swim	V
449.	kɛ-cʰɛ	kɛcʰɛ	big	ADJ
450.	kɛ-de	kede	small	ADJ
451.	kɛ-dʑi	kɛdʑi	long	ADJ
452.	rɣirɣi	ʐɣizɣi	short	ADJ
453.	kɛ-ɣɮæ	kɑɣɮæ	thin, flat	ADJ
454.	xtsʰoxtsʰo	xtsʰoxtsʰo	thin like thread	ADJ
455.	pəpə	pəpə	thin and flat	ADJ
456.	tsʰukʰæ	tsʰukʰæ	colour	N
457.	ndjindji	ndjindji	red	ADJ
458.	rŋərŋə	ʐŋəʐŋə	green	ADJ
459.	rɲərɲə	rɲərɲə	yellow	ADJ
460.	sŋuscæ	sŋuscæ	blue	ADJ
461.	pʰrupʰru	pʰʂupʰʂu	white	ADJ
462.	ɲæɲæ	ɲæɲæ	black	ADJ
463.	ɕu-kɛcʰɛ	ɕukɛcʰɛ	strong	ADJ
464.	ɕu-kede	ɕukede	weak	ADJ
465.	kɛ-ndʑu	kɛndʑu	good	ADJ
466.	tʰɑvtɕɑ	tʰɑftɕɑ	bad	ADJ
467.	kɛ-ndʑɛm	kɛndʑɛm	soft	ADJ
468.	kɛ-rgi	kɛrgi	hard	ADJ
469.	ɲoŋpæ	ɲoŋpæ	old	ADJ
470.	xsærpæ	xsærpæ	new	ADJ
471.	kɛ-ji	kaji	pretty	ADJ
472.	xtsoŋma	xtsoŋma	clean	ADJ
473.	tʂəmɑ	tʂəmɑ	dirty	ADJ
474.	ŋosti	ŋosti	front	
475.	ʁoɲu	ʁoɲu	back	N
476.	rcuqu	ʂcuqu	between	
477.	tɕʰæ	tɕʰæ	on	
478.	kɛdʑɛdʑi	kɛdʑɛdʑi	far	
479.	və	və	under	

Num	Lexical	Phonetic	English Gloss	Category
480.	tʰɑdʑi	tʰɑdʑi	far	
481.	tʰɑni	tʰɑni	near	
482.	kɛ-mtʰu	kɛmtʰu	high	ADJ
483.	ʁmæʁmæ	ʁmæʁmæ	low	ADJ
484.	kɛ-nəv	kɛnəv	deep	ADJ
485.	pəpə	pəpə	shallow	ADJ
486.	rɟækɛcʰɛ	rɟækɛcʰɛ	wide	ADJ
487.	toχtoχ	toχtoχ	narrow	A
488.	ætɕɛ	ætɕɛ	together	
489.	æsɛ	æsɛ	full	ADJ
490.	stoŋbæ	stoŋbæ	empty	ADJ
491.	ɟirə	ɟizə	in	
492.	mɲæ-rə	mɲæzə	not	
493.	ndzændzæ	ndzændzæ	same	ADJ
494.	ʑuʑə	ʑuʑə	can, able to	V
495.	mɲə	mɲə	can, able to	V
496.	tʰɛ	tʰɛ	have	V
497.	ʁərʁər	ʁərʁər	round	ADJ
498.	kɛ-skvɛ	kɛskvɛ	sharp	ADJ
499.	me-skvɛ-rə	meskvɛzə	blunt	ADJ
500.	ʁɟi	ʁɟi	hole	N
501.	toŋ	toŋ	hole	N
502.	qoqo	qoqo	indent	N
503.	kɛdʑoŋ	kɛdʑoŋ	straight	ADJ
504.	nə-norə	nənozə	smell	N
505.	tə-ŋe-sə	təŋesə	correct	
506.	rkæ-rə	ʂkæzə	beautiful	ADJ
507.	ʁje-rə	ajezə	pretty	ADJ
508.	xopi	xopi	table	N
509.	sɛpʰjo	sɛpʰjo	direction	N
510.	rəkɛ	zəkɛ	and	
511.	xɑji	xɑji	also	
512.	xævʑi	xævʑi	also	
513.	ɣdæmbæ	ɣdæmbæ	because	
514.	tɕʰəkɛ	tɕʰəkɛ	but	
515.	kʰɛsɛr	kʰɛsɛʂ	cloth	N
516.	kudʑən	kudʑən	satin	N
517.	toŋskə	toŋskə	thread	N
518.	tɑdzu	tɑdzu	silk	N
519.	ndʑætsə	ndʑætsə	woollen cloth	N
520.	tɕʰəpæ	tɕʰəpæ	clothing	N

Num	Lexical	Phonetic	English Gloss	Category
521.	tsəgə	tsəgə	clothing	N
522.	kʰɛrcoŋ	kʰɛʂcõ	clothing	N
523.	kuvæ	kuvæ	collar	N
524.	vɮæzæ	vɮæzæ	sleeve	N
525.	zuzu	zuzu	button	N
526.	tʰoŋkʰu	tʰoŋkʰu	pants	N
527.	smɛntɕʰɛv	smɛntɕʰɛv	skirt	N
528.	χodzu-pɑre	χodzupɑre	cloth worn on head	N
529.	tɕi	tɕi	hat	N
530.	tʰoŋkʰuskur	tʰoŋkʰuskuʂ	belt for pants	N
531.	ndərci	ndəʂci	girdle for coat	N
532.	ntʰævæ	n̥tʰævæ	decorative apron	N
533.	skoŋskrə	skõskrə	puttee	N
534.	skoŋski	skõski	puttee	N
535.	rkombjo	ʂkombjo	sock	N
536.	ɣzi	ɣzi	shoe	N
537.	ndʑərtæ	ndʑəʂtæ	boot	N
538.	zʁəʑjæ	zʁəʑjæ	comb	N
539.	nərbə	nərbə	treasure	N
540.	pjərə	pjəʐə	coral	N
541.	loŋtʰu	loŋtʰu	earring	N
542.	pʰjɑmdə	pʰjɑmdə	necklace	N
543.	ŋgəjɑ	ŋgəjɑ	ring	N
544.	ɮɛki	ɮɛki	bracelet	N
545.	coɣdən	coˠdən	wool blanket	N
546.	ɲəʁzɛn	ɲəʁzɛn	wool for wearing	N
547.	pʰru	pʰʂu	wool cloth	N
548.	wur	wuʂ	pillow	N
549.	ʁɮəstɛn	ʁɮəstɛn	sleeping mat	N
550.	mbɛr	mbɛʂ	cushion	N
551.	tɕɛʁoŋ	tɕɛʁõ	kitchen	N
552.	rtso	ʂtso	floor	N
553.	jəʁo	jəʁo	upstairs	N
554.	ɲəvə	ɲəvə	downstairs	N
555.	mkʰu	mkʰu	cowshed	N
556.	vɛko	vɛko	pigsty	N
557.	rɣi-ru-re	zɣizu̯ʐe	stable	N
558.	tsʰɛko	tsʰɛko	sheepfold	N
559.	ɣəræ-ru-re	ɣəræzu̯ʐe	chicken pen	N
560.	zdi	zdi	stone wall	N
561.	coŋ	coŋ	clay wall	N

Num	Lexical	Phonetic	English Gloss	Category
562.	rɟæ	zɻæ	Chinese	N
563.	pubæ	pubæ	Tibetan	N
564.	æŋæ-ze	æŋæze	baby	N
565.	rgɛvʑə	zɻgɛvʑə	old man	N
566.	vədæ-rgɛvʑə	vədærgɛvʑə	old woman	N
567.	pəŋæ	pəŋæ	young man	N
568.	smi	smi	young woman	N
569.	pʰusɛr	pʰusɛ˞	young man	N
570.	musɛr	musɛʂ	young woman	N
571.	ʑələze	ʑələze	boy	N
572.	təvdəze	təvdəze	boy	N
573.	smi-ze	smeze	girl	N
574.	lɛjɛ	lɛjɛ	daughter-in-law	N
575.	pətʰoŋ	pətʰõ	son-in-law	N
576.	pərɟi	pərɟi	grandchild	N
577.	pərɟə	pərɟə	grandchild	N
578.	ækʰə-i-vədæ	ækʰəivədæ	paternal uncle’s wife	N
579.	æne-i-dzəvə	æneidzəvə	paternal aunt’s husband	N
580.	æʑu-i-vədæ	æʑuivədæ	maternal uncle’s wife	N
581.	æjæ-i-dzəvə	æjæidzəvə	maternal aunt’s husband	N
582.	pəqe	pəqe	huang niu	N
583.	mɑxe	mɑxe	water buffalo	N
584.	ʁjɑ	ʁjɑ	male yak	N
585.	mdzɻu	mdzɻu	wild yak	N
586.	xə	xə	pian niu	N
587.	ʁjɑ-ze	jɑze	calf	N
588.	tɕʰɛʁloŋ	tɕʰɛʁlõ	bull	N
589.	ŋəmɛ	ŋəmɛ	cow female	N
590.	ʁɲæ	ʁɲæ	cow dung	N
591.	rcɑxpɑ	ʂcɑxpɑ	excrement	N
592.	mupʰɑ	mupʰɑ	hoof	N
593.	rji	rji	horse	N
594.	rekwe	zɻekwe	foal	N
595.	rɛmɛmæzə	zɻɛmɛmæzə	mother and foal	
596.	rtɛpu	ʂtɛpu	stallion	N
597.	rɛmɛ	zɻɛmɛ	mare	N
598.	zivæ	zivæ	mane	N
599.	tom	tom	panda	N
600.	tom-ɲæŋæ	tomŋæŋæ	black bear	N
601.	xsæ	xsæ	snow leopard	N
602.	rŋæma	zɻŋæma	horsetail	N

Num	Lexical	Phonetic	English Gloss	Category
603.	rzo	ʐzo	leopard	N
604.	stɑ	stɑ	tiger	N
605.	ʑəzɛv	ʑəzɛv	turtle	N
606.	rbu	ʐbu	bee	N
607.	pæbəle	pæbəle	butterfly	N
608.	ndzɛʁloŋ	ndzɛˤlõ	earth	N
609.	lærɲə	lærɲə	asparagus lettuce	N
610.	sɲulu	sɲulu	pea	N
611.	tɕʰərtsʰɛl	tɕʰərtsʰɛl	cauliflower	N
612.	ɻɛzo	ɻɛzo	potato	N
613.	læχɑpe	læχɑpe	cabbage	N
614.	rtɕɑtsʰɛl	ʂtɕɑtsʰɛl	celery	N
615.	rdɑŋrgoŋ	ʐdɑ̃ʐgõ	tomato	N
616.	bətsʰɛl	bətsʰɛl	water spinach	N
617.	ʁʅʒərko	ʁʅʒəʂko	bamboo shoot	N
618.	lɛpu-ɾɲərɲə	lɛpurɲərɲə	carrot	N
619.	pɛlrtsʰæ	pɛlʂtsʰæ	lotus root	N
620.	rmo	ʐmo	oyster mushroom	N
621.	tsoŋ	tsoŋ	scallion	N
622.	skə	skə	chives	N
623.	rdokə	ʐdokə	cucumber	N
624.	ndæsɲu	ndæsɲu	asparagus	N
625.	æɕəm	æɕəm	corn	N
626.	tsʰæsnəχ	tsʰæsnəχ	spinach	N
627.	tsʰɑxkɛr-kede	tsʰɑxkɛrkede	small chinese cabbage	N
628.	snəmtsʰɛl	snəmtsʰɛl	cole	N
629.	tsoŋrəl	tsõʐəl	onion	N
630.	joskə	joskə	garlic	N
631.	tɕɛlɛv-dʑoŋ	tɕɛlɛvdʑõ	mung bean sprout	N
632.	tɕɛləv-ɲu	tɕɛləfɲu	bean sprout	N
633.	sɲurbu	sɲuʐbu	green pea	N
634.	moxkɛr	moxkɛʂ	white fungus	N
635.	kov-ɲu	kofɲu	garlic shoot	N
636.	tɕɑzgæ	tɕɑzgæ	ginger	N
637.	ʑəjoŋ	ʑəjõ	yam	N
638.	ʑoŋər	ʑoŋəˑ	sweet potato	N
639.	doləmæ	doləmæ	eggplant	N
640.	łokəv	łokəv	pumpkin	N
641.	kəxkɛr	kəxkɛʂ	white gourd	N
642.	xotsʰɛv-rŋərŋə	xotsɛvʐŋəzʐŋə	green pepper	N
643.	xotsʰɛv-ndindi	xotsʰɛvndindi	chili pepper	N

Num	Lexical	Phonetic	English Gloss	Category
644.	kʰækəv	kʰækəv	bitter gourd	N
645.	ʑele	ʑele	turnip	N
646.	moroɣ	mozo̱ɣ	black fungus	N
647.	ɕi	ɕi	highland barley	N
648.	ʯi	ʯi	wheat	N
649.	mbre	mbze̱	rice	N
650.	ɣvə	ɣvə	oats	N
651.	tətkɛr	tətkɛʂ	sesame	N
652.	vɛtɛm	vɛtɛm	peanuts	N
653.	sɲu	sɲu	beans for pigfeed	N
654.	rɟætɕæ	rɟætɕæ	looseleaf tea	N
655.	ɑrɑ	ɑzɑ	wine	N
656.	ɲəmdʑə	ɲəmdʑə	sunflower seeds	N
657.	kə-məsə	kəməsə	cooked rice	N
658.	ædʑæpædʑæ	ædʑæpædʑæ	sandals	N
659.	rtsʰɛv	ʂtsʰɛv	huajiao	N
660.	xoscæ	xoscæ	hot pepper sauce	N
661.	scərpə	scəʂpə	soy sauce	N
662.	spəvji	spəvji	sores	N
663.	ɣmɛ	ɣmɛ	wound	N
664.	ɣmɛɕu	ɣmɛɕu	scar	N
665.	pətɛr	pətɛʂ	rash measles	N
666.	vʯɛ-ze	vʯɛze	uvula	N
667.	jæɴqjo	jæɴqjo	palate	N
668.	mi	mi	mole	N
669.	rgɛrtsʰo	zge̱tsʰo	spine	N
670.	ʯɛvʯi	ʯɛvʯi	wristbone	N
671.	ʯɛɲu	ʯɛɲu	back of hand	N
672.	ʯæbjænoŋ	ʯæbjænõ	palm	N
673.	rtsʰe	ʂtsʰe	lung	N
674.	nene	nene	breast	N
675.	væ	væ	pig	N
676.	vɛ-ze	veze	piglet	N
677.	ɣəræ	ɣəzæ	chicken	N
678.	pʰuɣər	pʰuɣəˬ	cock	N
679.	muɣər	muɣəʂ	hen	N
680.	ɣəræ-ze	ɣəræze	chick	N
681.	pʰupʰɑ	pʰupʰɑ	male pig	N
682.	mupʰɑ	mupʰɑ	sow	N
683.	mdzu̱	mdzu̱	dragon	N
684.	spjoŋkʰə	spjoŋkʰə	wolf	N

Num	Lexical	Phonetic	English Gloss	Category
685.	rtsɛ	ʂtsɛ	deer	N
686.	rærgo	ʐæʐgo	Tibetan antelope	N
687.	bæɴɢe	bæɴɢe	spider	N
688.	ɑtsɑwɑtsɑ	ɑtsɑwɑtsɑ	locust	N
689.	loŋbutɕe	loŋbutɕe	elephant	N
690.	səŋgi	səŋgi	lion	N
691.	sqevcə	sqefcə	squirrel	N
692.	rŋæmoŋ	ʐŋæmõ	camel	N
693.	spəɲcʰɛr	spəɲcʰɛʂ	frog	N
694.	weqe	weqe	rabbit	N
695.	tsələ	tsələ	cat	N
696.	vcə	fcə	rat mouse	N
697.	ɣzəmdə	ɣzəmdə	monkey	N
698.	tʰoŋkæ	tʰoŋkæ	thangka	N
699.	skərvæ	skərvæ	turn prayer wheel	V
700.	mtɕʰurtin	mtɕʰuʂtɪn	tower	N
701.	ŋkʰurlu	ŋkʰuɬu	prayer wheel	N
702.	toŋkʰur	toŋkʰuʂ	push prayer wheel	V
703.	pʰjarɟɛv	pʰjarɟɛv	prayer position	
704.	zɮæ	zɮæ	to say mantras	V
705.	tærtʰɑχ	tæʂtʰɑχ	prayer flags	N
706.	mdəʁoŋ	mdəʁõ	monastery	N
707.	mkʰɛr	mkʰɛʂ	rGyalrong stone tower	N
708.	ɮəɮæ	ɮəɮæ	to plow	V
709.	loŋcʰə	lõcʰə	to plow	V
710.	zjɛ	zjɛ	to hoe	V
711.	łækoŋ	łækõ	lama’s house	N
712.	ɟɛzo	ɟɛzo	potatoes	
713.	ɣrə	ɣʐə	waterfall	N
714.	rdzærə	ʐdzæʐə	peak of mtn	N
715.	tʂʰeɛɑŋ	tʂʰeɛɑŋ	wagon	N
716.	ɣrəkɛnəv	ɣʐəkɛnəv	flood	N
717.	ʁɑ	ʁɑ	window	N
718.	ʁzəmkʰri	ʁzəmkʰʂi	bed for lamas	N
719.	ɲɛkʰri	ɲɛkʰʂi	bed	N
720.	ŋkʰvo	ŋkʰfo	key	N
721.	rdəqu	ʐdəqu	mortar bowl	N
722.	ɣɮəli	ɣɮəli	pestle	N
723.	ntʰətæ	n̥tʰətæ	to grind	V
724.	ɛɑɣrə	ɛɑɣʐə	small sickle	N
725.	spru-rə	spʐuʐə	butter churn	N

Num	Lexical	Phonetic	English Gloss	Category
726.	spru	spʐu	to churn	V
727.	zəsqræ	zəsqræ	broom	N
728.	ndərjæ	ndərjæ	to sweep	V
729.	rzæqə	ʐzæqə	basket carried on back	N
730.	tutu	tutu	basket carried on back	N
731.	pʰəru	pʰəʐu	baset carried on back	N
732.	pərzi	pərzi	small knife	N
733.	tsʰɛtɕə	tsʰɛtɕə	cleaver	N
734.	kʰɑmbo	kʰɑmbo	bag	N
735.	spu	spu	incense stick	N
736.	koŋ-kɛcʰɛ	koŋkɛcʰɛ	expensive	ADJ
737.	koŋ-kede	koŋkede	cheap	ADJ
738.	zuqʰi	zuqʰi	ugly	ADJ
739.	mi-ʁjerə	miˤjeʐə	ugly	ADJ
740.	kærkæ	kæʂkæ	difficult	ADJ
741.	kɛ-jɛ	kɛjɛ	easy	ADJ
742.	mə-cʰɛcʰɛ	məcʰɛcʰɛ	busy	ADJ
743.	cʰɛ-rə	cʰɛʐə	idle	ADJ
744.	tsʰosusu	tsʰosusu	idle	ADJ
745.	kɛ-ntɕʰi-rə	kɛntɕʰiʐə	good-sounding (haoting)	ADJ
746.	mdzemdze	mdzɛmdze	polite	ADJ
747.	qʰæsło-ndʑə	qʰæsłõdʑə	happy	ADJ
748.	səmsci-rə	səmsciʐə	happy	ADJ
749.	rgɑn-rə	rgɑndʑə	happy	ADJ
750.	me-rgɑn-rə	mezgɑndʑə	sad	ADJ
751.	qʰæ-me-słurə	qʰæmesłuʐə	sad	ADJ
752.	səm-me-scirə	səmmesciʐə	sad	ADJ
753.	stʰvæ	stʰvæ	to press down	V
754.	ʁo	ʁo	to help	V
755.	ɣwæ	ɣwæ	to hug	V
756.	vkə	fkə	to have eaten ones fill	V
757.	mɬe	mɬe	to braid	V
758.	ʁəpræ	ʁəpræ	braid	N
759.	ʁəmɬe	ʁəmɬe	braid	N
760.	tsəntʰɛv	tsəntʰɛv	scissors	N
761.	tʂæ	tʂæ	to cut with scissors	V
762.	təvæ-vtʰi	təvæftʰi	to smoke	V
763.	xɕɛt	xɕɛt̄	to whip	V
764.	zbəcæ	zbəcæ	to hit	V
765.	xcʰi	xcʰi	to puncture	V
766.	zbəqe	zbəqe	to urge	V

Num	Lexical	Phonetic	English Gloss	Category
767.	xtɕəlæ	xtɕəlæ	to twist	V
768.	ʑæ	ʑæ	to limp	V
769.	ndjɛvji	ndjɛvji	to doze	V
770.	xorvæ	horvæ	to snore	V
771.	qur	quʂ	to snore	V
772.	rgurgu	ʐguʐgu	to burp	V
773.	rɲi	rɲi	to wait	V
774.	ʁɲæ	ʁɲæ	to wait	V
775.	ʁəvdæ	ʁəvdæ	to nod	V
776.	zŋo	zŋo	to hang	V
777.	stʰi	stʰi	to hang	V
778.	gon-rə	gõndʑə	to understand	V
779.	mə-gon-rə	məgõndʑə	not understand	
780.	ku-rə	kuʐə	to understand	V
781.	mu-ku-rə	mukuʐə	not understand	
782.	zɮæ	zɮæ	to read	V
783.	vræ	vʐæ	to write	V
784.	sɲiʁə	sɲiʁə	pen	N
785.	χjə	χjə	to snap stick	V
786.	pʰrɛ	pʰʂɛ	to snap thread	V
787.	rkurɟɛv	ʂkurɟɛv	stamp	N
788.	jələ	jələ	saying, expression	N
789.	rə-rŋutsu	ʐəʐŋutsu	to kneel	V
790.	səli	səli	to roll	V
791.	ʁɮi	ʁɮi	to roll	V
792.	vdʐər	vdʐəˠ	to roll up	V
793.	vge	vge	to cross (bridge)	V
794.	tɕəsco	tɕəsco	to paddle	V
795.	scævæ	scævæ	paddle n	N
796.	rə-mu	ʐəmu	to draw	V
797.	kedi-zu-rə	kedizuʐə	to be pregnant	V
798.	æŋæze-zu-rə	æŋæzezuʐə	to be pregnant	V
799.	ɮɛ	ɮɛ	to return	V
800.	ɕə	ɕə	to leave	V
801.	tsʰu	tsʰu	to milk cow	V
802.	qrə	qʐə	female yak	N
803.	zu	zu	female pian niu	N
804.	ɣʑi	ɣʑi	to teach	V
805.	ndʑi	ndʑi	to learn	V
806.	vrə	vʐə	to pour	V
807.	ɣʑæ-rə	ɣʑæʐə	to make sound	V

Num	Lexical	Phonetic	English Gloss	Category
808.	ŋɑrɟɛr	ŋɑrɟɛʂ	to roar	N
809.	ŋəzu	ŋəzu	to howl	V
810.	prilærə	pʐilærə	to whinny	V
811.	mdʑu-rə	mdʑuʐə	to moo	V
812.	metʰɛv	metʰɛv	stove	N
813.	tʰævkæ	tʰæfkæ	stove	N
814.	zoŋroŋ	zõʐõ	basin	N
815.	zdɛr	zdɛʂ	plate	N
816.	qʰəzi	qʰəzi	bowl	N
817.	qʰəzi-kede	qʰəzikede	small bowl	N
818.	tʂʰɑtʂoŋ	tʂʰɑtʂõ	cup, mug	N
819.	ɕɛr-qʰəzi	ɕɛrqʰəzi	glass	N
820.	mkʰə-rjɛ	mkʰərjɛ	pipe	N
821.	zɑmɑsotɕi	zɑmɑsotɕi	strainer	N
822.	tsʰædəm	tsʰædəm	pitcher, thermos	N
823.	tɕæ	tɕæ	tea	N
824.	tɕændɛvlə	tɕændɛvlə	tea leaves	N
825.	zætər-kʰəre	zætəʂkʰəre	container for chopsticks	N
826.	zætər	zætəʂ	chopsticks	N
827.	tɕoji	tɕoji	spoon	N
828.	tærqæ	tæʂqæ	ladle	N
829.	vivəx	vivəx	pressure cooker	N
830.	mbre-zʁejo	mbʐezʁejo	rice cooker	N
831.	lɛvdɛr	lɛvdɛʂ	peeler	N
832.	rnæɲi	rnæɲi	pot w handles	N
833.	ʁmɛʑi	ʁmɛʑi	pot without handles	N
834.	zoŋqo	zõqo	decorated pot	N
835.	tʰoŋbe	tʰoŋbe	pot	N
836.	ɕɛr-tæmbə	ɕɛrtæmbə	glass bottle	N
837.	ɕɛr	ɕɛʂ	glass material	N
838.	tɕutɕæ	tɕutɕæ	metal	N
839.	xtɕər-scɛ	xtɕərscɛ	clip, pin	N
840.	rʁɛrʁæ-scɛ-pɑre	rʁɛrʁæscɛpɑre	cloth for wiping	N
841.	tɕʰəvkɑ	tɕʰəfkɑ	tap	N
842.	kindækindæ	kindækindæ	dripping	V
843.	sco	sco	scoop for water	N
844.	rtɕʰu	ʂtɕʰu	bottle for making wine	N
845.	tæmbə	tæmbə	bottle	N
846.	ndəʁərtse	ndəʁərtse	laundry detergent	N
847.	snəm-rʁɛ-scɛ	snəmrʁɛscɛ	dish detergent	N
848.	kə-xcʰi	kəxcʰi	to turn on	V

Num	Lexical	Phonetic	English Gloss	Category
849.	nə-sqʰi	nəsqʰi	to turn off	V
850.	kæntɕʰæ	kæntɕʰæ	rolling pin	N
851.	ʁɬi	ʁɬi	to roll out	V
852.	tɕæmtsʰæ	tɕæmtsʰæ	tea strainer	N
853.	ʁdu	ʁdu	wood pail	N
854.	ɕədʑutʰoŋtʰoŋ	ɕədʑutʰõtʰõ	pail	N
855.	ɕə-rʁɛ-scɛ	ɕərʁɛscɛ	toothbrush	N
856.	rŋæ-rʁɛ-scɛ	zɻærʁɛscɛ	face wash	N
857.	ʁə-rʁɛ-scɛ	ʁərʁɛscɛ	shampoo	N
858.	lɑɕəv	lɑɕəv	rubber gloves	N
859.	ɕɛtʰipɑku	ɕɛtʰipɑku	large plastic bag	N
860.	xɑjoŋbɛtɕo	xɑjõbɛtɕo	kettle	N
861.	vtɕækʰæ-zŋo-re	ftɕækʰæzŋore	rack hanging things	N
862.	mɑrnɑ	mɑrnɑ	oil	N
863.	ɕovə-rgɛm	ɕovəʐgɛm	cardboard	N
864.	ŋæmbæ	ŋæmbæ	wood block	N
865.	ɣrə-rgɛm	ɣzəʐgɛm	sink	N
866.	tɕʰəkəv	tɕʰəkəv	watermelon	N
867.	ɲəmdʑə	ɲəmdʑə	sunflower seed	N
868.	ɲəmæmɛto	ɲəmæmɛto	sunflowers	N
869.	tɕitɕæ	tɕitɕæ	shell, rind	N
870.	rtu	ʂtu	to cut hair	V
871.	rtɕɑrtɑ	ʂtɕɑʂtɑ	bike	N
872.	ʁzɛn	ʁzɛn	lama’s clothes	N
873.	ɕɛntʰəv	ɕɛntʰəv	other's clothes	N
874.	rŋɑ-rʁe-pɑre	rŋɑrʁepɑre	wash cloth	N
875.	tɕʰutsʰu	tɕʰutsʰu	watch	N
876.	rdirdæ	rdirdæ	garbage	V
877.	vɬɛvɬɛpʰɛre	fɬɛfɬɛpʰɛre	garbage can	N
878.	ɲɟɛrdo	ɲɟɛrdo	change	N
879.	tə-ɲɟɛrə-sə	təɲɟɛrəsə	to change	V
880.	æ-mpʰæɬinə-re	æmpʰæɬinəʐe	insideout	
881.	nə-mpʰæɬinə-re	nəmpʰæɬinəʐe	insideout	
882.	nə-mbre	nəmbʐe	to pull down	V
883.	qʰre	qʰʂe	to pull down	V
884.	ɲɛr	ɲɛʐ	to taste	V
885.	xsɛv	xsɛv	to repay	V
886.	xsər	xsəʂ	to stirfry	V
887.	rɟæmæ	rɟæmæ	scale	N
888.	vcʰə	fcʰə	to weigh	V
889.	stʰjæ	stʰjæ	to support prop up	V

Num	Lexical	Phonetic	English Gloss	Category
890.	scor	scoʂ	to support	V
891.	kə-xæ	kəxæ	to come out	V
892.	tə-xæ	təxæ	to come out	V
893.	ndzəndzə-vɛɛ	ndzəndzəfɛɛ	to whisper	V
894.	vdʑə	vdʑə	friend	N
895.	ŋe-rə	ŋezᶎə	to be okay	V
896.	mɑ-ŋe-rə	mɑŋezᶎə	to not be okay	
897.	ɣrə ndʑədʑə	ɣzᶎə ndʑədʑə	to draw water	V
898.	ɣrətoŋ	ɣzᶎətoŋ	well (n.)	N
899.	zɮæræ	zɮæræ	to winnow	V
900.	mtsʰi	mtsʰi	to lead guide	V
901.	rɛvræ	zᶎɛvzᶎæ	to thresh	V
902.	vtsʰu	ftsʰu	to take out of water	V
903.	rcʰɛ	ʂcʰɛ	to bite	V
904.	tə-rcʰɛ	təʂcʰɛ	to have been bitten	V
905.	tʰəvæ	tʰəvæ	hammer	N
906.	tɕonzɛr	tɕonzɛzᶎ	nail	N
907.	rdæ	rdæ	to hammer	V
908.	tə-pʰo	təpʰo	to lose	V
909.	ŋkʰrɛ	ŋkʰʂɛ	to shake something	V
910.	ŋkʰrɑtɕɑ	ŋkʰʂɑtɕɑ	to shiver	V
911.	zjærkʰu	zjæʂkʰu	to hurt emotionally	V
912.	səmnɛ	səmnɛ	worry	N
913.	tɕʰæpæ	tɕʰæpæ	to punish	V
914.	vsu	fsu	to spin (wool)	V
915.	mpʰi	mpʰi	to card	V
916.	vlɛ	vlɛ	to put s.t.	V
917.	nə-ri	nəzᶎi	to add	V
918.	rʁɑ	rʁɑ	to be crazy	V
919.	rʁɑmə	zᶎʁɑmə	crazy person	N
920.	tsə	tsə	to rot	V
921.	xtʰəxtʰə	xtʰəxtʰə	behind	
922.	ɕuɕu	ɕuɕu	behind	
923.	pʰrə	pʰʂə	tangled	
924.	słə	słə	stairs	N
925.	lɑndʑə	lɑndʑə	railing	N
926.	xtsʰə	xtsʰə	dirt	N
927.	ɲɟɑbɑ	ɲɟɑbɑ	mud	N
928.	ndzure	ndzure	chair	N
929.	tsəgə-tʰi-re	tsəgətʰire	clothesline	N
930.	tɕuʁɑ	tɕuʁɑ	gate	N

Num	Lexical	Phonetic	English Gloss	Category
931.	ŋkʰvu-mɛ	ŋkʰfumɛ	lock	N
932.	ŋkʰvu-cʰi-scɛ	ŋkʰfucʰiscɛ	key	N
933.	ŋkʰvo	ŋkʰfo	lock and key	N
934.	tsʰoŋkoŋ	tsʰõkõ	shop	N
935.	zɛkʰoŋ	zɛkʰõ	restaurant	N
936.	ræpʰi	ʐæpʰi	mahjong	N
937.	tɕækoŋ	tɕækõ	sign	N
938.	smən-zjəre	smənzjəre	pharmacy	N
939.	mɛto-zjəre	mɛtozjəre	flower shop	N
940.	pjozdɛr	pjozdɛʂ	drip outside	
941.	ɣrəɲcʰɛr	ɣzɻɲcʰɛzˌ	puddle	N
942.	ʁə-vəvæ-re	ʁəvəvæʐe	hair salon	N
943.	ʁə-rʁɛ-re	ʁərʁɛre	hair salon	N
944.	słopræ	słopræ	university	N
945.	tɕi-zjəre	tɕizjəre	hat shop	N
946.	słomɑ	słomɑ	student	N
947.	rgɛrgən	rgɛrgən	teacher	N
948.	xseskə-zjəre	xseskəzjəre	buddhist shop	N
949.	xseskə	xseskə	buddha	N
950.	xændʑe	xændʑe	scarf	N
951.	snopdʑə	snopdʑə	hanging	N
952.	mtɕʰutɕu	mtɕʰutɕu	tassel	N
953.	mpʰrivæ	mpʰʂivæ	prayer beads	N
954.	zɣɑrtɕɑ	zɣɑʂtɕɑ	whip	N
955.	tɕədəzjəre	tɕədəzjəre	bookshop	N
956.	tɕədə	tɕədə	book	N
957.	zdɛr	zdɛʂ	drip in house	
958.	mdɛrə	mdɛʐə	drum	N
959.	ɕoɣdu	ɕoᵛdu	umbrella	N
960.	pʰjɛr	pʰjɛʂ	to open unfurl	V
961.	nə-pʰiv	nəpʰɪv	to close	V
962.	ɕɛmnu-zjəre	ɕɛmnuzjəre	glasses shop	
963.	ɕɛmnu	ɕɛmnu	glasses	N
964.	skərjo	skərjo	decorative blanket	N
965.	kʰɛdɛr	kʰɛdɛʂ	scarf	N
966.	spusnəre	spusnəre	incense lighter	
967.	pʰərwæ	pʰərwæ	decorative dagger	N
968.	tʂərvə	tʂəˠvə	bell	N
969.	sqədi	sqədi	to ring	V
970.	ʁzə	ʁzə	bead with religious significance	N
971.	jo	jo	turquoise	N

Num	Lexical	Phonetic	English Gloss	Category
972.	pjərə	pjəzʐə	coral	N
973.	mtɕʰurdzæ	mtɕʰurdzæ	teapot	N
974.	ɣzi-zjəre	ɣzizjəre	shoe shop	N
975.	ʁdu	ʁdu	circular prayer flag	N
976.	rqwarzo	ʂqwarzo	necklace	N
977.	rmævɕædʑo	rmæfɕædʑo	peacock feather	N
978.	zondo	zondo	horn	N
979.	təvæ-ɑrɑ-zjəre	təvæɑrɑzjəre	tobacco and wine shop	N
980.	pɛr	pɛʂ	photo	N
981.	skəpɛr	skəpɛʂ	photo of lama	N
982.	kʰri	kʰʂi	chair	N
983.	rzelo	ʐʑelo	with lifted skirts	ADV?
984.	zbræ	zbʐæ	tent	N
985.	kɛ-rjɛ	kɛrjɛ	ceramic	N
986.	qʰegəɟirə	qʰegəɟizʐə	raining	
987.	słəkʰro	słəkʰʂo	step (n.)	N
988.	æ-bɛr	æbɛʂ	first step	N
989.	nə-bɛr	nəbɛʂ	second step	N
990.	xsə	xsə	to tighten	V
991.	rɑtɑ	ʐɑtɑ	mill	N
992.	mbo	mbo	leather bowl	N
993.	tɕʰæɣwə	tɕʰæɣwə	mill stone	N
994.	vəɣvə	vəɣvə	stationary mill stone	N
995.	səqə	səqə	small piece machinery	N
996.	sərʁə	sərʁə	rotary paddle	N
997.	rtsæmbræ	ʂtsæmbræ	bowl catches tsampa	N
998.	rŋəbo	ʐŋəbo	roasted barley	N
999.	ʁdzu	ʁdzu	tsampa	N
1000.	kʰətsʰi	kʰətsʰi	water channel	N
1001.	xtɕærʁæ	xtɕærʁæ	wood gate at mill	N
1002.	cʰəpʰɛv	cʰəpʰɛv	stick on millstone	N
1003.	wərdzə	wərdzə	yak tail	N
1004.	rtɛvrtɛv	ʂtɛfʂtɛv	fine	ADJ
1005.	qʰræqʰræ	qʰʂæqʰʂæ	coarse	ADJ
1006.	rɑtɑdʑugəcɑŋ	rɑtɑdʑugəcɑŋ	miller	N
1007.	rɟæræ	rɟæræ	first floor	N
1008.	ɕoŋkʰæspusnəre	ɕoŋkʰæspusnəʐe	wood incense box	N
1009.	zoŋkʰæspusnəre	zoŋkʰæspusnəre	copper incense box	N
1010.	rɑkʰæspusnəre	ʐɑkʰæspusnəre	bronze incense box	N
1011.	ɮəɮæ	ɮəɮæ	to plow	V
1012.	zuŋu	zuŋu	at first	

Num	Lexical	Phonetic	English Gloss	Category
1013.	ɮə	ɮə	field	N
1014.	pʰutə	pʰutə	to cover	V
1015.	vɕi	fɕi	to need	V
1016.	vłə-ndəv	fləndəv	to spread seed	V
1017.	wo	wo	again	
1018.	ɕirgə	ɕirgə	to harrow	V
1019.	tsʰərɲi	tsʰərɲi	to pull	V
1020.	sənəm	sənəm	farming	N
1021.	tə-tsʰɛr	tətsʰɛʂ	finished	
1022.	kʰɛgɛ	kʰɛgɛ	after	
1023.	rə-rmi-sə	ʐəʐmisə	sprout	V
1024.	vɛrvi	vɛrvi	slowly	ADJ
1025.	rŋə	ʐŋə	to become green	V
1026.	rə-tɕe	ʐətɕe	to come up	V
1027.	æ-słə	æsłə	one month	N
1028.	nə-słə	nəsłə	two months	N
1029.	ntsʰɛm	n̥tsʰɛm	between, around	
1030.	mbjæ	mbjæ	to hoe	V
1031.	ɴgwi	ɴgwi	hoe	N
1032.	tɕegə	tɕegə	something	
1033.	jɛlə-gə	jɛləgə	so-called	
1034.	kilu	kilu	each, some	
1035.	mbo	mbo	box for grain	N
1036.	rŋərŋæ	ʐŋəʐŋæ	bad grass	
1037.	tʰɛvɕi	tʰɛfɕi	to pull out	V
1038.	vɕi	fɕi	to want	V
1039.	ɣvə	ɣvə	type of weed	N
1040.	ɕɛv	ɕɛv	to pick up	V
1041.	tɕedə	tɕedə	time	N
1042.	rtsʰɛv	ʂtsʰɛv	autumn	N
1043.	vcə	fcə	to harvest	V
1044.	stʰo	stʰo	to leave s.t.	V
1045.	rə-zjæ	ʐəzjæ	to bring up	V
1046.	nə-zjæ	nəzjæ	to bring down	V
1047.	mgrə	mgʐə	wall for drying barley against	N
1048.	ndzæ	ndzæ	third floor room	N
1049.	vlɛ	vlɛ	to put, leave	V
1050.	pʰæ	pʰæ	half	
1051.	ʑigə	ʑigə	around	
1052.	cʰɛgə	cʰɛgə	to thresh by machine	V
1053.	zdæmæ	zdæmæ	tool for threshing by hand	N

Num	Lexical	Phonetic	English Gloss	Category
1054.	zdɑvɮə	zdɑvɮə	flapping part on threshing tool	N
1055.	tʰɛrʁe	tʰɛrʁe	part of hand thresher	N
1056.	ɣzo	ɣzo	big wood storage box barley	N
1057.	ɣroɣro	ɣʐoɣʐo	dry	ADJ
1058.	xtsoŋmɑ	xtsoŋmɑ	clean	ADJ
1059.	vətə	vətə	to make	V
1060.	mbe	mbe	to bring	V
1061.	ʁdʐu	ʁdʐu	to mill	V
1062.	pɛrvə	pɛrvə	container	N
1063.	rəro	ʐəʐo	up	
1064.	tə-pɛ	təpɛ	to take out	V
1065.	mɛji	mɛji	butter	N
1066.	pi	pi	ball of tsampa	N
1067.	ʑu	ʑu	yogurt	N
1068.	pʰɑjo	pʰɑjo	together	
1069.	və	və	to make	V
1070.	rni	ʐni	to mix	V
1071.	tʰutu	tʰutu	mixed together	
1072.	ætɕʰə	ætɕʰə	with	
1073.	rə-zu	ʐəzu	to hold	V
1074.	zu	zu	to sew	V
1075.	pʰɛv	pʰɛv	to close	V
1076.	ɲɟɛr	ɲɟɛʂ	to change	V

References

Anderson, Gregory D.S. 2013. The velar nasal. In Matthew Dryer & Martin Haspelmath*World atlas of language structures online,* , eds. Leipzig: Max Planck Institute of Evolutionary Anthropology. Online: http://wals.info. (Accessed 21 April 2014.) Online: http://wals.info/chapter/9. (Accessed 5 September 2014.)

Chang, Betty Shafts & Kun Chang. 1974. Gyarong historical phonology. *Academia Sinica: Bulletin of the Institute of History and Philology* 46.391-524.

Chirkova, Katia. 2012. The Qiangic subgroup from an areal perspective: A case study of languages of Muli. *Language and Linguistics* 13.133-70.

Clements, George N. 1990. The role of the sonority cycle in core syllabification. *Papers in Laboratory Phonology,* ed. by John Kingston & Mary E. Beckman, 1, 283-333. Cambridge: Cambridge University Press.

Duanmu, San. 2008. *Syllable structure: The limits of variation.* Oxford & New York: Oxford University Press.

Duō'ěrjí. 1995. Chuanxibei zangqu geshizahua yinxi fenxi [An analysis of the sound system of the Geshiza speech in the Tibetan area of northwestern Sichuan]. *Yunnan Minzu Yuwen* 1.34-44.

Duō'ěrjí. 1998. *Daofuyu geshizahua yanjiu [A study on the Geshiza variety of the Daofu language]*. Beijing: Zhongguo Zangxue (China Tibetology) Press.

Ebert, Karen H. 1990. On the evidence for the relationship Kiranti-Rung. *Linguistics of the Tibeto-Burman Area* 13.57-78.

Gatehouse, David. 2014. People and languages of Sichuan's Ethnic Corridor. Online: http://sichuanzoulang.com/en.html. (Accessed 18 February 2014.)

Gates, Jesse P. 2012. Situ in situ: Towards a dialectology of Jiarong (rGyalrong). Langley, BC: Trinity Western University master's thesis.

Gates, Jesse P. 2013. Intelligibility, identity, and structure in Western rGyalrongic. 3rd Workshop on Sino-Tibetan Languages of Sichuan. Paris.

Gates, Jesse P. 2014. Review of Pelkey, Jamin R., Dialectology as Dialectic (2011). *SIL Electronic Book Reviews* 003.1-15. Online: http://tinyurl.com/oe45c47. (Accessed 14 January 2015.)

Hayes, Bruce & Tanya Stivers. 2000. Postnasal voicing. UCLA, ms. Online: http://tinyurl.com/mc2h6te. (Accessed 19 January 2015.)

Hodgson, Brian Houghton. 1853. Sifán and Hórsók vocabularies, with another special exposition in the wide range of Mongolidan affinities and remarks on the lingual and physical characteristics of the family. *Journal of the Asiatic Society of Bengal* 22.121-51. Online: http://tinyurl.com/pybjrxr.

Hodgson, Brian Houghton. 1874. *Essays on the Languages, Literature, and Religion of Nepāl and Tibet: Together with Further Papers on the Geography, Ethnology, and Commerce of Those Countries.* London: Trübner & Company. Online: http://tinyurl.com/nszodlf.

Huang, Bufan. 1990. Daofuyu yuyin he dongci bianhua [Phonology and verb conjugation in Daofu]. *Minzu Yuwen* 5.23-30.

Huang, Bufan. 1991. Daofuyu [The Daofu language]. In Qingxia Dai, Huang Bufan, Fu Ailan, Wangmu Renzeng & Liu Ju*Zangmianyu shiwu zhong [Fifteen Tibeto-Burman languages],* , eds. 1-45. Beijing: Yanshan Press.

Huang, Bufan. 1992. Daofu. In Qingxia Dai, Huang Bufan, Fu Ailan, Wangmu Renzeng & Liu Ju*A Tibeto-Burman lexicon,* , eds. Beijing: Central Institute of Minorities. Online: http://stedt.berkeley.edu/~stedt-cgi/rootcanal.pl/source/TBL. (Accessed 5 August 2014.)

Huang, Bufan. 2003. Lawurongyu [The Lavrung language]. *Minzu Yuwen* 3.60-80.

Huang, Xing. 2000. *Zhongguo shaoshu minzu yuyan huoli yanjiu [Studies on minority language vitality in China].* Beijing: Central University for Nationalities Press.

Hyman, Larry. 2009. How (not) to do phonological typology: the case of pitch-accent. *Language Sciences* 31.213-38.

Jacques, Guillaume. 2004. *Phonologie et morphologie du Japhug (rGyalrong).* University of Paris Ph.D. dissertation. Online: http://tinyurl.com/nszodlf. (Accessed 29 April 2014.)

Jacques, Guillaume. 2014. Denominal affixes as sources of antipassive markers in Japhug Rgyalrong. *Lingua* 138.1-22.

Jacques, Guillaume, Anton Antonov, Yunfan Lai & Lobsang Nima. 2013. Person marking in Rtau. Online: http://tinyurl.com/q8qcx6w. (Accessed 14 January 2014.)

Jacques, Guillaume & Alexis Michaud. 2011. Appendix: Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze. *Diachronica* 28.1-25. Online: http://dx.doi.org/10.1075/dia.28.4.02jac.additional.

Ladefoged, Peter. 2003. *Phonetic data analysis: An introduction to fieldwork and instrumental techniques.* Oxford: Blackwell Publishing.

Lai, Yunfan. 2013a. La morphologie affixale du lavrung wobzi. Paris: Université Sorbonne Nouvelle master's thesis. Online: http://tinyurl.com/q8qcx6w. (Accessed 26 February 2014.)

Lai, Yunfan. 2013b. The person agreement system of Wobzi Lavrung. Online: http://tinyurl.com/nlfo7h3. (Accessed 21 January 2014.)

Lai, Yunfan. 2013c. The templatic morphology of Wobzi Lavrung. Online: http://tinyurl.com/opgmf8w. (Accessed 21 January 2014.)

Lai, Yunfan. 2013d. What lies behind Wobzi consonant clusters? Online: http://tinyurl.com/ld9sfyn. (Accessed 21 January 2014.)

LaPolla, Randy J. 2003. Overview of Sino-Tibetan morphosyntax. In Randy J. LaPolla & Graham Thurgood*The Sino-Tibetan languages,* , eds. 22-42. London & New York: Routledge.

LaPolla, Randy J. 2006. Sino-Tibetan languages. *Encyclopedia of Languages and Linguistics,* ed. by Keith Brown, 393-6. Elsevier. Online: http://tinyurl.com/mpe5ezc. (Accessed 29 April 2014.)

LaPolla, Randy J. 2013. Subgrouping in Tibeto-Burman: Can an individual-identifying standard be developed? How do we factor in the history of migrations and language contact? *Language typology and historical contingency: In honor of Johanna Nichols,* ed. by Balthasar Bickel, Lenore A. Grenoble, David A. Peterson & Alan Timberlake, 465-74. Amsterdam: John Benjamins.

LaPolla, Randy J. & Chenglong Huang. 1996. A grammar of Qiang [pre-pub]. City University of Hong Kong, ms.

Lewis, M. Paul, Gary F. Simons & Charles D. Fennig, eds. 2013. *Ethnologue: Languages of the world.* 17 edn Edition. Dallas, Texas: SIL International. Online: http://www.ethnologue.com. (Accessed 20 March 2014.)

Lin, You-Jing. 2003. Tense and aspect morphology in the Zhuokeji rGyalrong verb. *Cahiers linguistique - Asie orientale* 32.245-86.

Lin, You-Jing. 2012. By no means marginal: Privative tone in Zhuokeji Rgyalrong. *Language and Linguistics* 13.625-62.

Lin, Xiangrong. 1993. *Jiarongyu yanjiu [A grammar of rGyalrong].* Chengdu: Sichuan Nationality Press.

Liu, Huiqiang. 1989. Ergongyu de fufuyin han shengdiao [Tones and consonant clusters in the Ergong language]. *Minzu Luncong* 7.196-201.

Maddieson, Ian. 2013a. Consonant inventories. In Matthew Dryer & Martin Haspelmath*World atlas of language structures online,* , eds. Leipzig: Max Planck Institute of Evolutionary Anthropology. Online: http://wals.info. (Accessed 21 April 2014.) Online: http://wals.info/chapter/1. (Accessed 21 April 2014.)

Maddieson, Ian. 2013b. Lateral consonants. In Matthew Dryer & Martin Haspelmath*World atlas of language structures online,* , eds. Leipzig: Max Planck Institute of Evolutionary Anthropology. Online: http://wals.info. (Accessed 21 April 2014.) Online: http://wals.info/chapter/8. (Accessed 4 August 2014.)

Maddieson, Ian. 2013c. Syllable structure. In Matthew Dryer & Martin Haspelmath*World atlas of language structures online,* , eds. Leipzig: Max Planck Institute of Evolutionary Anthropology. Online: http://wals.info. (Accessed 21 April 2014.) Online: http://wals.info/chapter/12. (Accessed 4 August 2014.)

Maddieson, Ian. 2013d. Vowel quality inventories. In Matthew Dryer & Martin Haspelmath*World atlas of language structures online,* , eds. Leipzig: Max Planck Institute of Evolutionary Anthropology. Online: http://wals.info. (Accessed 21 April 2014.) Online: http://wals.info/chapter/2. (Accessed 21 April 2014.)

Mansier, Patrick. 1983. *Lexique et phonology du Gyarong de Tsenla [A lexicon and phonology of bTsanlha rGyalrong].* Paris: École des Hautes Études en Sciences Sociales Ph.D. dissertation.

Marshall, Steven D. & Suzette Cooke. 1997. Dawu. In Steven D. Marshall & Suzette Cooke*Tibet outisde the TAR,* Hong Kong: Alliance for Research in Tibet. Online: http://tinyurl.com/kfqwlxs. (Accessed 20 March 2014.)

Matisoff, James A. 1990. Bulging monosyllables: Areal tendencies in Southeast Asian diachrony. *Proceedings of the Sixteenth Annual Meeting of the Berkeley Linguistics Society* volume.543-59.

Matisoff, James A. 1991. Sino-Tibetan linguistics: Present state and future prospects. *Annual Review of Anthropology* 20.469-504.

Matisoff, James A. 1996. *Languages and dialects of Tibeto-Burman.* Berkeley: Center for Southeast Asia Studies.

Matisoff, James A. 2003. *Handbook of Proto-Tibeto-Burman: System and philosophy of Sino-Tibetan reconstruction.* Berkeley: University of California Press. Online: https://escholarship.org/uc/item/19d79619#page-1.

Matisoff, James A. 2004. “Brightening” and the place of Xixia (Tangut) in the Qiangic branch of Tibeto-Burman. In Ying-Jin Lin et al.*Studies on Sino-Tibetan languages: Papers in honor of Professor Hwang-cherng Gong on his seventieth birthday,* , eds. Taipei: Institute of Linguistics, Academia Sinica.

Nagano, Yasuhiko. 2003. Cogtse Gyarong. In Randy J. LaPolla & Graham Thurgood*The Sino-Tibetan languages,* , eds. 469-89. London & New York: Routledge.

Nagano, Yasuhiko & Marielle Prins, eds. 2013. rGyalrongic languages database. Online: http://htq.minpaku.ac.jp/databases/rGyalrong/. (Accessed 21 March 2014.)

Nichols, Johanna. 1996. The comparative method as heuristic. *The comparative method reviewed: Regularity and irregularity in language change,* ed. by Mark Durie & Malcolm Ross, 39-71. New York & Oxford: Oxford University Press.

Pelkey, Jamin R. 2011. *Dialectology as dialectic: Interpreting Phula variation.* Berlin & New York: De Gruyter Mouton.

Prins, Marielle. 2011. *A web of relations: A grammar of rGyalrong.* University of Leiden Ph.D. dissertation.

Qu, Aitang. 1984. Jiarongyu gaikuang [Outline of the rGyalrong language]. *Minzu Yuwen* 2.67-80.

Qu, Aitang. 1990. Jiarongyu de fangyan: fangyan huafen he yuyan shibie [rGyalrong dialects: Issues in dialect subclassification and language recognition]. *Minzu Yuwen* 4:1-8, 5.37-44.

Sun, Hongkai. 1962. Qiangyu gaikuang [An outline of the Qiang language]. *Zhongguo Yuwen* 12.561-71.

Sun, Hongkai. 1983. Liujiang liuyu de minzu yuyan ji qi xishu fenlei [Minority languages of the Six River Region and their genetic classification]. *Minzu Xuebao* 3.99-274.

Sun, Hongkai. 1987. A brief account of my research work. *Linguistics of the Tibeto-Burman Area* 10.117-25.

Sun, Hongkai. 1990. Languages of the Ethnic Corridor in Western Sichuan. *Linguistics of the Tibeto-Burman Area* 13.1-31.

Sun, Hongkai. 2004. Jiarongyu zai Zangmianyuzu yuyan zhongde lishi diwei [The position of rGyalrong among languages of the Tibeto-Burman family]. In Ying-Jin Lin et al.*Studies on Sino-Tibetan languages: Papers in honor of Professor Hwang-cherng Gong on his seventieth birthday,* , eds. Taipei: Institute of Linguistics, Academia Sinica.

Sun, Jackson T.-S. 1994. Caodeng rGyalrong phonology: A first look. *Linguistics of the Tibeto-Burman Area* 17.29-47.

Sun, Jackson T.-S. 2000a. Parallelisms in the verb morphology of Sidaba rGyalrong and Lavrung in rGyalrongic. *Language and Linguistics* 1.161-90.

Sun, Jackson T.-S. 2000b. Stem alternations in Puxi verb inflection: Toward validating the rGyalrongic subgroup in Qiangic. *Language and Linguistics* 1.211-32.

Sun, Jackson T.-S. 2003. Caodeng rGyalrong. In Randy J. LaPolla & Graham Thurgood*The Sino-Tibetan languages,* , eds. 490-502. London & New York: Routledge.

Sun, Jackson T.-S. 2004. Verb-stem variations in Showu rGyalrong. *Studies on Sino-Tibetan Languages: Papers in honor of Professor Hwang-cherng Gong on his seventieth birthday,* 269-96.

Sun, Jackson T.-S. 2005. Linguistic coding of generic human arguments in rGyalrongic languages. 11th Himalayan Languages Symposium. Chulalongkorn University, Bangkok, Thailand.

Sun, Jackson T.-S. 2007. Morphological causative formation in Shangzhai Horpa. *Bulletin of Chinese Linguistics* 2.211-31.

Sun, Jackson T.-S. 2008. Tonality in Caodeng rGyalrong. *Chomolangma, Demawend und Kasbek, Festschrift für Roland Bielmeier zu seinem 65. Geburtsag,* ed. by Brigitte Huber, Marianne Volkart & Paul Widmer, 257-80. Halle (Saale): International Institute for Tibetan and Buddhist Studies.

Sun, Jackson T.-S. & Qianzi Tian. 2013. Verb agreement in Gexi Horpa. *Bulletin of Chinese Linguistics* 7.73-113.

Thomas, Frederick William. 1948. *Nam: An ancient language of the Sino-Tibetan borderland.* London: Oxford University Press.

Thurgood, Graham. 1985. The 'Rung' languages: Notes on their proto-morphosyntax and subgrouping. *Acta Orientalia* 46.79-99.

Thurgood, Graham. 2003. A subgrouping of the Sino-Tibetan languages: The interaction between language contact, change and inheritance. In Randy J. LaPolla & Graham Thurgood*The Sino-Tibetan languages,* , eds. 3-21. London & New York: Routledge.

Tournadre, Nicolas. 2008. Arguments against the concept of ‘conjunct’/‘disjunct’ in Tibetan. *Chomolangma, Demawend und Kasbek: Festschrift für Roland Bielmeier zu*

seinem 65 Geburtstag, ed. by Brigitte Huber, Marianne Volkart & Paul Widmer, 281-308. Halle (Saale): International Institute for Tibetan and Buddhist Studies.

Wang, Stephen S. 1970. Consonantal clusters of Tibetan loanwords in sTau. *Monumenta Serica* 29.631-58.

Winkler, Daniel. 2008. Yartsa gunbu (Cordyceps sinensis) and the fungal commodification of Tibet's rural economy. *Economic Botany* 62.291-305.

Wolfenden, Stuart N. 1936. Notes on the Jyarung dialect of Eastern Tibet. *T'oung Pao* 32.167-204.

Zhou, Minglang. 2003. *Multilingualism in China: The politics of writing reforms for minority languages 1949-2002.* Berlin & New York: Mouton de Gruyter.