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Naxi Phonology

A Flat Phonemic Statement of the Longquan Dialect

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0. Introduction

The Naxi language is widely recognized to be Tibeto-Burman of the Burmic sub-branch, but that is where agreement ends. The Chinese have listed Naxi in the Loloish (or Yi) branch, but some Western scholars (e.g. Bradley 1975, DeLancy 1990) place Naxi by itself extra-Lolo-Burmese. Naxi is primarily spoken in northwest Yunnan province of southwest China. It, like many languages in China, has many dialects. The specific sub-dialect dealt with here is that spoken in the Longquan villages of Baisha. Baisha is a township located about 10 kilometers north of Lijiang City in the Lijiang plain. Longquan is a group of six villages with a total of 600 households comprising approximately 3,590 people.

Jiang (1985) says that there are three dialects comprising the western dialect group of Naxi. One of these three is called the Dayanzhen dialect. This dialect is spoken in Lijiang City (Dayanzhen) and the surrounding area. Within this dialect there are several sub-dialects, of which the Longquan sub-dialect is one. We have found that many characteristics shared by the Longquan sub-dialect and the greater Baisha sub-dialect are distinct from the Lijiang City (Dayanzhen) sub-dialect. Whether there are any differences between the Longquan sub-dialect and greater Baisha sub-dialect we have not had opportunity to investigate. Our language consultants tell us there are a few small differences. For readability, we refer to this sub-dialect as the Longquan dialect.

This paper is based on fieldwork from September 1995 through January 1997. It was during this time that we studied spoken Naxi at the Lijiang Area Education College, while collecting data from speakers of the Longquan dialect.

We are grateful to both the Education College and to Mr. Li Mingzhong who worked with us as we struggled to learn his language. We also want to express our appreciation to Wang Meifang of Longquan's Renli Village who patiently provided us with data from the Longquan dialect, which comprise the main corpus of our data. We also thank Li Weixian, Zhang Yanying and Zhang Lianyue for confirming our Longquan data. All four of these ladies are in their late teens or twenties and unmarried. We also want to recognize the work of modern scholars that proved very helpful and insightful at times. These include Professors He Jiren and Jiang Zhuyi's "Naxi-yu Jianzhi" (1985), articles written by Professor Jiang and articles written by Professor Yang Huandian.

We are also grateful for the SIL computer program CECIL, which was an invaluable aid in the acoustical analysis of our data where we felt the skill of our own

ears was deficient. Though we are indebted to the work of others, we accept full responsibility for the following analysis and any errors contained within.

1. Phonemes

1.1. Consonants / Initials

Phonemically there are 32 Naxi consonants. Naxi stops and affricates exhibit a three-way contrast in voiced onset timing. For example, within the bilabial stops there is an aspirated voiceless stop /p^h/, an unaspirated voiceless stop /p/ and a fully voiced unaspirated stop /b/. There are three phonemic nasal stops, /m, n, ŋ/. There are three approximants: one lateral and two semi-vowels. There are five phonemic points of articulation: labial, alveolar, retroflexed, alveolo-palatal and velar. There is also a glottal stop.¹

Longquan consonant inventory:

p ^h	p	b				f		m		w
t ^h	t	d	ts ^h	ts	dz	s	z	n	l	
			tʂ ^h	tʂ	dʒ	ʂ	ʐ			
			tɕ ^h	tɕ	dʑ	ɕ				j
k ^h	k	g				x/h ?		ŋ		ʔ

Phonetic detail

Jiang (1985) claims that the Lijiang Plain dialect displays a four-way contrast in voiced onset timing. For example the bilabial stops would include the three above and a fourth, a prenasalized voiced stop /mb/. She also says that in the Dayanzhen dialect this distinction does not exist. We have found that though the fully voiced set of stops and affricates are sometimes clearly articulated with a lengthened onset, i.e. [mb], in the Longquan sub-dialect this does not contrast with a shorter onset, i.e. [b], and cannot be predicted. Thus, for the Longquan dialect, at least, we claim that voiced stops and affricates, e.g. [b], can be articulated as prenasalized, viz. [mb], and often are.

The pronunciation of Naxi /l/ includes the phase of bunching the tongue from laminal to lateral configuration.²

¹ In a non-linear approach, the glottal stop and semi-vowels would not be considered phonemic.

² In languages like English the bunching process counts as preparatory transition, not as part of the segment itself.

1.2. Vowels / Finals

The Longquan dialect of Naxi has eleven phonemic vowels, which includes syllabic /ɥ/. Generally, the non-low vowels contrast in rounding, whereas the non-high vowels and syllabic /ɥ/ do not.

Longquan vowel inventory:

i	ɣ		ɯ	u		ɥ
e	ø	ə				
		ə̣				
	a		ɑ			

Phonetic detail

The Longquan dialect of Naxi displays a tendency to lower the vowels which produces an accent common in Yunnan (viz. that of a retracted tongue root). For example, local Yunnanese exhibits a similar phenomenon. This seems to affect all but the high front vowels /i, ɣ/. Therefore, the phonetic values are as follows:

Mid front /e/ is pronounced almost as low as [ɛ].

Mid front /ø/ is sometimes pronounced as low as [œ].

Low front /a/ is quite low [a̠].

High back /ɯ/ varies from [ɨ] to [ɯ] to [ɤ].

High back /u/ is pronounced more like [u] and sometimes as low as [o].

Central mid /ə/ is not lowered as much as it is backed slightly [ə̠],
sometimes it is slightly rounded too.

Low back /ɑ/ is slightly lowered [ɑ̠].

Rhoticized /ə̣/ is seemingly unaffected, except when preceded by an alveolar affricate or fricative, then it is tense [ə̣̰].

1.3. Tones

Naxi has four phonemic tones, three level and one rising. The pitch of these four tones is /55/ for the high-level, /33/ for the mid-level, /11/ for the low level and /13/ for the rising. The phonetic shape of these four tones actually varies quite a bit. The high tone is sometimes articulated as [454], the mid tone sounds like [42], and the low tone most often is articulated with a slight fall [21] or [31]. The actual contour seems to depend on if the word is said in isolation, utterance initially, or pre-pausally.

Syllables with the mid-level tone occur at a much higher frequency than any of the other three. From a list of over 800 Naxi words³ the mid-level tone occurred at a rate of over 2:1 to the next most frequent tone. The second most common tone based on this count was the low-level, which occurred about 30% of the time more than the

³ This list consisted of polysyllabic as well as monosyllabic words, but did not include Chinese borrowed words.

high-level tone. The rising tone is extremely rare in Naxi words, being almost exclusively reserved for Chinese borrowed words. The few words that do carry this tone are some possessive pronouns (i.e. t^hɑ¹³ *his*) and unlikely borrowings (i.e. xø¹³ *correct*).⁴

2. Phonemic Contrasts and Syllable Structure

2.1. Syllable Structure

Like many Tibeto-Burman languages, the basic syllable in Naxi is CV, though there are some diphthongs, which give a C₁C₂V structure.⁵ Any consonant may occur in the onset of the CV syllable. The C₂ position may only be occupied by the semi-vowels /w, j/ and these with only certain consonants in the C₁ slot (viz. velar obstruents may co-occur with either; alveolar stops and bilabials with /j/; alveolar affricates and fricatives with /w/).

CV		C₁C₂V	
pə ⁵⁵	<i>write</i>	dzwɑ ⁵⁵	<i>hit (by falling obj.)</i>
tʂl ³³	<i>dirt</i>	k ^h jə ⁵⁵	<i>stick on (a bandage)</i>

The C₁C₂V syllable structure is limited in another way. Only certain vocoids may occupy the V slot, namely /ɑ/, /ə/, and /ə̃/. These then produce /wɑ/, /jɑ/, /jə̃/, and /jə̃/ when considered with the possible diphthongs. Consider the following:

k ^h wɑ ⁵⁵	<i>bowl</i>	tswɑ ³³	<i>bed</i>
ka ³³ tja ⁵⁵	<i>clean</i>	ts ^h ø ³³ pja ³³	<i>soap</i>
mjə ²¹	<i>eyes</i>	k ^h jə ⁵⁵	<i>to glue</i>
k ^h jə̃ ³³	<i>to break</i>	gjə̃ ⁵⁵	<i>to roast; dry</i>

2.2. Consonants

The following list is presented to show phonemic contrasts in the consonants (or initials) of Naxi.

/p ^h / : /p/			
/p ^h ə̃ ²¹ /	<i>white</i>	/pə̃ ⁵⁵ /	<i>write</i>
/p ^h i ⁵⁵ /	<i>spit</i>	/pi ²¹ /	<i>hot (spicy)</i>
/p ^h u ³³ /	<i>open</i>	/pu ⁵⁵ /	<i>bring, carry</i>
/p ^h v ⁵⁵ /	<i>undress</i>	/pv ⁵⁵ /	<i>send</i>

⁴ This very unequal distribution can be explained quite easily in a non-linear approach.

⁵ In autosegmental phonology it is not necessary to posit anything but a basic CV syllable.

/p/ : /b/			
/pə ⁵⁵ /	write	/bə ³³ /	guest
/pi ²¹ /	hot (spicy)	/bi ²¹ /	to fly
/pu ⁵⁵ /	bring, carry	/bu ²¹ /	swine, pig
/pɤ ⁵⁵ /	send	/bɤ ³³ /	thick (dia.)
/t^h/ : /t/			
/t ^h a ⁵⁵ /	OK	/ta ²¹ /	roast
/t ^h ø ³³ /	lean on	/tø ³³ /	board (wood)
/t ^h ɤ ³³ /	arrive	/tɤ ²¹ /	to plant, sow
/t ^h a ³³ /	wear (a hat)	/ta ²¹ /	pull
/t/ : /d/			
/ta ²¹ /	roast	/da ⁵⁵ /	cut down (with axe)
/tø ³³ /	board (wood)	/dø ⁵⁵ /	fall (down)
/tɤ ²¹ /	to plant, sow	/dɤ ³³ /	dig
/ta ²¹ /	pull	/da ³³ /	scald (veg. to eat)
/k^h/ : /k/			
/k ^h u ³³ /	dog	/ku ⁵⁵ /	put on (pants)
/k ^h a ⁵⁵ /	shoot (an arrow)	/ka ³³ /	front
/k ^h a ³³ /	bitter	/ka ²¹ /	tired
/k ^h i ⁵⁵ /	cold	/ki ⁵⁵ /	little
/k/ : /g/			
/ku ⁵⁵ /	put on (pants)	/gu ³³ /	true, real
/ka ³³ /	front	/ga ²¹ /	cut (with scissors)
/ka ²¹ /	tired	/ga ³³ /	win
/ki ⁵⁵ /	little	/gi ⁵⁵ /	bake (a potato)
/ts^h/ : /ts/			
/ts ^h a ⁵⁵ /	to bite	/tsa ²¹ /	happy
/ts ^h e ³³ /	salt	/tse ²¹ /	use
/ts ^h ø ²¹ /	elephant	/tsø ²¹ /	to pack
/ts ^h u ³³ /	stir-fry	/tsu ⁵⁵ /	awl
/ts/ : /dz/			
/tsa ²¹ /	happy	/dza ³³ /	skinny
/tse ²¹ /	use	/dze ³³ /	wheat
/tsø ²¹ /	to pack	/dzø ²¹ /	bridge
/tsu ⁵⁵ /	awl	/dzu ²¹ /	to drop
/tʂ^h/ : /tʂ/			
/tʂ ^h ɿ ³³ /	this	/tʂɿ ³³ /	dirt
/tʂ ^h ə ³³ /	wash	/tʂə ⁵⁵ /	joint
/tʂ/ : /dz/			
/tʂɿ ³³ /	dirt	/dzɿ ³³ /	beautiful
/tʂə ⁵⁵ /	joint	/dzə ³³ /	dew

The following examples of the alveolo-palatal affricates and fricatives are very limited. In the Lijiang Town sub-dialect the velars followed by a high front vowel are all pronounced with alveolo-palatals, but the following words (of the Longquan sub-dialect) are all pronounced as alveolars (i.e. s, z, ts^h, ts, dz) in the Lijiang Town variety.

<i>/tɕ^h/ : /tɕ/ : /dʒ/ : /ɕ/ : /ʒ/</i>			
<i>/tɕ^hi⁵⁵/</i>	<i>goat</i>	<i>/tɕi³³/</i>	<i>to tie up (a bundle)</i>
<i>/dʒi³³/</i>	<i>eat</i>	<i>/ʒi³³/</i>	<i>grass</i>
<i>/ɕi³³/</i>	<i>to know</i>		

There are other examples like these, though they are not abundant. This difference allows Naxi speakers from other areas to identify speakers of the Longquan dialect.

<i>/k^h ; k ; g/ : /t ; tɕ ; dʒ/</i>			
<i>/k^hi⁵⁵/</i>	<i>cold</i>	<i>/tɕ^hi⁵⁵/</i>	<i>goat</i>
<i>/ki³³/</i>	<i>to put, place</i>	<i>/tɕi³³/</i>	<i>to tie up (a bundle)</i>
<i>/gi³³/</i>	<i>walk</i>	<i>/dʒi³³/</i>	<i>eat</i>
<i>/p^h/ : /k^h/</i>			
<i>/p^hu⁵⁵/</i>	<i>capable</i>	<i>/k^hu³³/</i>	<i>dog</i>
<i>/p^hi⁵⁵/</i>	<i>spit</i>	<i>/k^hi⁵⁵/</i>	<i>cold</i>
<i>/p^hu³³/</i>	<i>open</i>	<i>/k^hu³³/</i>	<i>door</i>
<i>/p^ha³³/</i>	<i>face</i>	<i>/k^ha³³/</i>	<i>bitter</i>
<i>/k^h/ : /t^h/</i>			
<i>/k^hu³³/</i>	<i>dog</i>	<i>/t^hu²¹/</i>	<i>to drink</i>
<i>/k^ha⁵⁵/</i>	<i>shoot (an arrow)</i>	<i>/t^ha³³/</i>	<i>wear (a hat)</i>
<i>/k^ha³³/</i>	<i>bitter</i>	<i>/t^ha⁵⁵/</i>	<i>OK</i>
<i>/k^hi⁵⁵/</i>	<i>cold</i>	<i>/t^hi⁵⁵/</i>	<i>buttermilk cheese</i>
<i>/tɕ^h/ : /ts^h/</i>			
<i>/tɕ^hɿ³³/</i>	<i>this</i>	<i>/ts^hɿ³³/</i>	<i>kick</i>
<i>/tɕ^hɿ³³/</i>	<i>wash</i>	<i>/ts^hɿ³³/</i>	<i>hot</i>
<i>/tɕ^hɿ⁵⁵/</i>	<i>damaged</i>	<i>/ts^hɿ⁵⁵/</i>	<i>kneel (in worship)</i>
<i>/m/ : /n/</i>			
<i>/mɑ²¹/</i>	<i>grease</i>	<i>/nɑ²¹/</i>	<i>black</i>
<i>/ma⁵⁵/</i>	<i>behind</i>	<i>/na³³/</i>	<i>hide</i>
<i>/me⁵⁵/</i>	<i>teach</i>	<i>/ne²¹/</i>	<i>dynamic aspect</i>
<i>/mi³³/</i>	<i>fire</i>	<i>/ni³³/</i>	<i>fish</i>
<i>/ŋ/ : /n/</i>			
<i>/ŋɑ¹³/</i>	<i>ours</i>	<i>/nɑ²¹/</i>	<i>black</i>
<i>/ŋy⁵⁵/</i>	<i>you (hon.)</i>	<i>/ny³³/</i>	<i>bury</i>
<i>/ŋɑ²¹/</i>	<i>endure</i>	<i>/na³³/</i>	<i>hide</i>

<i>/n/ : /l/</i>			
<i>/nɑ²¹/</i>	<i>black</i>	<i>/lɑ²¹/</i>	<i>hand</i>
<i>/nø³³/</i>	<i>know</i>	<i>/lø⁵⁵/</i>	<i>step, stride</i>
<i>/nʏ³³/</i>	<i>bury</i>	<i>/lʏ²¹/</i>	<i>dragon</i>
<i>/bæ³³ nə³³/</i>	<i>soft, supple</i>	<i>/bæ³³ lə⁵⁵/</i>	<i>fly; flies</i>
<i>/l/ : /d/</i>			
<i>/lɑ²¹/</i>	<i>hand</i>	<i>/dɑ²¹/</i>	<i>float (in the air)</i>
<i>/lø⁵⁵/</i>	<i>step, stride</i>	<i>/dø⁵⁵/</i>	<i>ascend</i>
<i>/lʏ²¹/</i>	<i>dragon</i>	<i>/dʏ²¹/</i>	<i>suck, hold in mouth</i>
<i>/lʏ²¹/</i>	<i>look</i>	<i>/dʏ²¹/</i>	<i>a stick, cudgel</i>
<i>/s/ : /z/</i>			
<i>/sa³³/</i>	<i>blood</i>	<i>/za²¹/</i>	<i>smile</i>
<i>/sa³³/</i>	<i>hemp</i>	<i>/zɑ³³/</i>	<i>shoes</i>
<i>/swɑ²¹/</i>	<i>tall</i>	<i>/zwa³³/</i>	<i>horse</i>
<i>/sɿ²¹/</i>	<i>three</i>	<i>/zɿ²¹/</i>	<i>hatred</i>
<i>/ʃ/ : /z_/</i>			
<i>/ʃɿ²¹/</i>	<i>yellow</i>	<i>/zɿ²¹/</i>	<i>snake</i>
<i>/ʃæ³³/</i>	<i>seven</i>	<i>/zæ³³/</i>	<i>afraid</i>
<i>/s/ : /ʃ/</i>			
<i>/sæ³³/</i>	<i>like (to do)</i>	<i>/ʃæ³³/</i>	<i>seven</i>
<i>/sɿ²¹/</i>	<i>three</i>	<i>/ʃɿ²¹/</i>	<i>yellow</i>
<i>/z/ : /z_/</i>			
<i>/zæ³³ t^he³³/</i>	<i>knife</i>	<i>/zæ³³/</i>	<i>afraid</i>
<i>/zɿ²¹/</i>	<i>hatred</i>	<i>/zɿ²¹/</i>	<i>snake</i>
<i>/p^h/ : /f/</i>			
<i>/p^hʏ⁵⁵/</i>	<i>undress</i>	<i>/fʏ⁵⁵/</i>	<i>rat</i>
<i>/p^hɑ³³/</i>	<i>face</i>	<i>/tɑ³³ fa¹³/</i>	<i>(a girl) to marry</i>
<i>/p^hɑ⁵⁵/</i>	<i>look for</i>	<i>/fa³³/</i>	<i>go (command)</i>
	<i>(by spreading around)</i>		
<i>/f/ : /x/</i>			
<i>/tɑ³³ fa¹³/</i>	<i>(a girl) to marry</i>	<i>/xɑ³³/</i>	<i>rice (cooked)</i>
<i>/fa³³/</i>	<i>go (command)</i>	<i>/xa³³/</i>	<i>put on (a necklace)</i>

The following pair does contrast but is very restricted. In the Lijiang City sub-dialect, words like ‘sand’ are pronounced [sə²¹] and words like ‘to rest’ are pronounced [çə²¹]. It seems to be any alveolar that is followed by schwa is pronounced as with the diphthong [jə]. For example the Lijiang City pronunciation of ‘to trouble’ /tə³³tə²¹/ is realized as [tjə³³tjə²¹]. There is obviously some kind of shift taking place, but whether it is the Longquan dialect that shows traces of an older

phonological system or whether it is the Longquan dialect that is shifting must be left for further investigation.⁶

/x/ : /ɕ/			
/xjə ²¹ /	<i>to rest</i>	/ɕə ²¹ /	<i>sand</i>
/xi ³³ /	<i>person</i>	/ɕi ³³ /	<i>to know</i>
/ʔ/ : /x/			
/ʔa ²¹ /	<i>chicken</i>	/xa ²¹ /	<i>buy</i>
/ʔa ⁵⁵ /	<i>duck</i>	/xa ⁵⁵ /	<i>left over</i>
/ʔə ³³ /	<i>brass</i>	/xə ⁵⁵ /	<i>cut, slice</i>
/ʔø ³³ /	<i>stem, trunk</i>	/xø ²¹ /	<i>slow</i>
/j/ : null or /ʔ/			
/bjə ²¹ /	<i>topple, fall down</i>	/bə ³³ /	<i>Pumi nationality</i>
/ja ²¹ /	<i>good (to eat)</i>	/ʔa ²¹ /	<i>chicken</i>
/ja ³³ /	<i>to pass out (in rage?)</i>	/ʔa ⁵⁵ /	<i>duck</i>
/w/ : null or /ʔ/			
/k ^h wa ⁵⁵ /	<i>bowl</i>	/k ^h a ³³ /	<i>bitter</i>
/dzwa ⁵⁵ /	<i>hit (by falling obj.)</i>	/dza ³³ /	<i>skinny</i>
/wa ³³ /	<i>left (side)</i>	/ʔa ²¹ /	<i>chicken</i>
/wa ²¹ /	<i>to be</i>	/ʔa ⁵⁵ /	<i>duck</i>

2.3. Vowels

The following list is to display the phonemic contrasts of the vowels (or finals) of Naxi.

/i/ : /y/			
/di ³³ /	<i>tight</i>	/dy ²¹ /	<i>a stick, cudgel</i>
/xi ³³ /	<i>person</i>	/xy ⁵⁵ /	<i>stand</i>
/mi ³³ /	<i>fire</i>	/my ⁵⁵ /	<i>push</i>
/p ^h i ⁵⁵ /	<i>spit</i>	/p ^h y ⁵⁵ /	<i>vomit</i>
/e/ : /ø/			
/le ³³ /	<i>pants</i>	/lø ⁵⁵ /	<i>step, stride</i>
/dze ³³ /	<i>wheat</i>	/dzø ²¹ /	<i>bridge</i>
/xe ³³ /	<i>month</i>	/xø ³³ /	<i>soup</i>
/p ^h e ⁵⁵ /	<i>MW for fields</i>	/p ^h ø ⁵⁵ /	<i>pithy (i.e. radishes)</i>

⁶ Jiang (1985) reports that in the Lijiang Plain dialect group, which she says has had less exposure to Chinese, always says [xi] and [xy] never [ɕi] and [ɕy]. This might lend support to the shift having occurred in the Lijiang City sub-dialect. It is indisputably very Sincized.

<i>/u/ : /u/</i>			
<i>/lu³³/</i>	come [present]	<i>/lu³³/</i>	come [command]
<i>/mu³³/</i>	sky	<i>/mu⁵⁵/</i>	old (person)
<i>/ku³³/</i>	smart	<i>/ku⁵⁵/</i>	throw
<i>/xu²¹/</i>	easy	<i>/xu⁵⁵/</i>	stomach
<i>/a/ : /a/</i>			
<i>/ʔa²¹/</i>	chicken	<i>/ʔa⁵⁵/</i>	duck
<i>/ma³³/</i>	attain	<i>/ma²¹/</i>	grease
<i>/ga²¹/</i>	cut (with scissors)	<i>/ga³³/</i>	triumph
<i>/dza³³/</i>	ride	<i>/dza³³/</i>	skinny
<i>/i/ : /u/</i>			
<i>/ki⁵⁵/</i>	little	<i>/ku³³/</i>	smart
<i>/mi³³/</i>	fire	<i>/mu³³/</i>	sky
<i>/p^hi⁵⁵/</i>	spit	<i>/p^hu⁵⁵/</i>	capable
<i>/gi²¹/</i>	water	<i>/gu²¹/</i>	real, true
<i>/y/ : /u/</i>			
<i>/my⁵⁵/</i>	push	<i>/mu⁵⁵/</i>	old (person)
<i>/ly²¹/</i>	look	<i>/lu³³/</i>	come [command]
<i>/ky²¹/</i>	pitfall	<i>/ku²¹/</i>	ginger
<i>/by³³/</i>	to share	<i>/bu²¹/</i>	pig
<i>/y/ : /ø/</i>			
<i>/ly²¹/</i>	look	<i>/lø⁵⁵/</i>	step, stride
<i>/dy²¹/</i>	a stick, cudgel	<i>/dø⁵⁵/</i>	ascend
<i>/p^hy⁵⁵/</i>	vomit	<i>/p^hø⁵⁵/</i>	pithy (i.e. radishes)
<i>/ky²¹/</i>	pitfall	<i>/kø²¹/</i>	needle
<i>/i/ : /e/</i>			
<i>/mi⁵⁵/</i>	female	<i>/me⁵⁵/</i>	teach
<i>/p^hi⁵⁵/</i>	spit	<i>/p^he⁵⁵/</i>	winnow, sift
<i>/xi³³/</i>	person	<i>/xe³³/</i>	month
<i>/t^hø³³li²¹/</i>	pigeon	<i>/t^hø³³le³³/</i>	rabbit
<i>/u/ : /v/</i>			
<i>/ku²¹/</i>	ginger	<i>/k^v⁵⁵/</i>	know how to
<i>/k^hu³³/</i>	door	<i>/k^h^v³³/</i>	to steal
<i>/lu³³/</i>	four	<i>/l^v²¹/</i>	dragon
<i>/bu²¹/</i>	pig	<i>/b^v³³/</i>	intestine

The following examples of /ø/ are very limited, though enough evidence for positing /ø/ as a phoneme. In the Lijiang City sub-dialect /ø/ is much more abundant. Much of the time /a/, in the Longquan dialect, is equivalent to /ø/, in Lijiang City.

<i>/ø/ : /æ/</i>			
<i>/mø³³/</i>	not	<i>/mæ⁵⁵/</i>	close (one's eyes)
<i>/xø³³/</i>	pluralizer	<i>/xæ⁵⁵/</i>	cut, slice

<i>/ə/ : /a/</i>			
<i>/kə⁵⁵/</i>	<i>a harrow</i>	<i>/ka⁵⁵/</i>	<i>to cover</i>
<i>/mə³³/</i>	<i>not</i>	<i>/ma²¹/</i>	<i>grease</i>
<i>/ŋə²¹/</i>	<i>I, me</i>	<i>/ŋa¹³/</i>	<i>we; our</i>
<i>/wə²¹/</i>	<i>hawk</i>	<i>/wa²¹/</i>	<i>to be</i>
<i>/ə/ : /u/</i>			
<i>/kə⁵⁵/</i>	<i>a harrow</i>	<i>/ku³³/</i>	<i>smart</i>
<i>/mə³³/</i>	<i>not</i>	<i>/mu³³/</i>	<i>sky</i>
<i>/xə³³/</i>	<i>pluralizer</i>	<i>/xu³³/</i>	<i>went [haven't returned]</i>

2.4. Tones

Naxi's four tones can be seen in the following examples:

<i>t^ha⁵⁵</i>	<i>can, OK</i>	<i>xø⁵⁵</i>	<i>eight</i>
<i>t^ha³³</i>	<i>model, pattern</i>	<i>xø³³</i>	<i>soup</i>
<i>t^ha²¹</i>	<i>bottle</i>	<i>xø²¹</i>	<i>slow</i>
<i>t^ha¹³</i>	<i>his</i>	<i>xø¹³</i>	<i>correct</i>
<i>na⁵⁵</i>	<i>but</i>		
<i>na³³</i>	<i>hide</i>		
<i>na²¹</i>	<i>black</i>		
<i>na¹³</i>	<i>yours</i>		

3. Distribution of allophones

3.1. Consonants with vowels

Of the set of phonemes in the Longquan dialect, not all may co-occur. Only a subset of the consonants may co-occur with most of the vocoids, including the syllabic labial-dental fricative /ɣ/. The lateral /l/ and the bilabial stops /p^h, p, b/ can co-occur with all the vocoids except the mid central /ə/⁷. The velar stops may co-occur with all but the mid front unrounded /e/ and the rhoticized /ə̃/⁸. The bilabial nasal /m/ and the voiceless velar fricative /x/ may co-occur with any vocoid except /ɣ/. The alveolar stops may co-occur with any vocoid except the high back rounded /u/ and mid central /ə/. The alveolar nasal /n/ may co-occur with any vocoid but the following: /ɣ, ə, u/. The alveolar, retroflex and alveolo-palatal affricates and fricatives, the voiceless labial-dental fricative /f/, and the velar nasal /ŋ/ may only co-occur with a small set of vocoids.

Some of the restrictions on co-occurrence are probably motivated by difficulty of articulation or phonological rules, whereas others are simply holes in the paradigm. Some of these holes have been filled by Chinese borrowings (cf. section 4.).

⁷ There is one exception to this [le³³ bə²¹] 'to go'.

⁸ Actually, when the velar stops co-occur with /ə̃/, its phonemic value might be /jə̃/ because the stops are articulated as palatals (see discussion below).

3.2. Segmental Changes

Alveolar retroflexion

He and Jiang (1985:7) point out that the alveolars /t^h, t, d, n, l/ all are pronounced with retroflexion [t^h, ṭ, ḍ, ɳ, ḷ] before the high back vowels /u, ʊ/ and the rhoticized vowel /ɤ̃/. This is true of the Longquan dialect.

When the rhoticized vowel /ɤ̃/ is pronounced with the alveolar affricates and fricatives the resulting word is said with quite a tense mouth caused by a retracted tongue root. Yang (1991) posited tense as a vowel feature of Naxi. He claims that it contrasts with lax, basically calling /ɤ̃/ a tense form of the apical vowels. For the Longquan dialect it does not appear to be a contrast primarily of tense - lax, but between the apical vowels and the rhoticized vowel. Dai (1993) also claims that this is not a matter of tense - lax contrast. We propose that the tenseness is probably the result of saying a retroflexed vowel, which has the feature [-ATR], with an alveolar obstruent.

t ^h ʊ ²¹	<i>to drink</i>	t ^h ɤ̃ ⁵⁵	<i>to gnaw</i>
ji ⁵⁵ tʊ ³³	<i>morning</i>	tɤ̃ ²¹	<i>devil</i>
dʊ ²¹	<i>big</i>	dɤ̃ ³³	<i>short (not long)</i>
ɳʊ ³³	<i>few</i>	bɤ̃ ³³ ɳɤ̃ ³³	<i>soft, supple</i>
lʊ ³³	<i>to come [present]</i>	bɤ̃ ³³ ɤ̃ ⁵⁵	<i>housefly</i>

The alveolar stops and nasal seldom are pronounced with the high back rounded /u/. When they are, they are retroflexed.

t ^h u ²¹ t ^h u ²¹	<i>[the sound of knocking]</i>
du ²¹	<i>to sit in meditation</i>
l ^h u ³³	<i>four</i>

Palatalization of velars

In the Longquan dialect whenever a velar stop [k^h, k, g] or the voiceless velar fricative [x] is followed by a high front vowel [i, y] it is pronounced as a palatal stop or fricative, respectively [c^h, c, ṭ, ṭ̣].

c ^h i ⁵⁵	<i>cold</i>	c ^h y ²¹	<i>agreeable, compliant</i>
ci ²¹	<i>cloud</i>	cy ³³ cy ²¹	<i>to comfort a baby</i>
ji ²¹	<i>house</i>	ṭy ³³	<i>to have [inanimate]</i>
çi ³³	<i>person</i>	ṭy ²¹	<i>red</i>

Glottal stop and fortis glides

When a syllable is glottal stop plus a vowel, the glottal stop can be articulated several different ways depending on the vowel.⁹ With the high vowels [i, y, u, ɯ] there is fortification to a glide /j, ɥ, ɰ, w/. For the high front and high back unrounded [i, ɯ] fortification can sometimes be exaggerated to a fricative /ʃ, ʁ/. Fortis glides are common in Yunnan, even in the local Chinese. This can be seen in words like ‘one’ /ji³³/ 壹 and ‘five’ /vu⁵⁵/ 五.

ji ⁵⁵	<--->	ʒi ⁵⁵	<i>to sleep</i>
ɥy ²¹	<i>sheep</i>		
ɰw ³³	<--->	ɣw ³³	<i>cow, bovine</i>
wu ³³	<i>you</i>		

Where a syllable is glottal stop and a non-high vowel [e, ø, a, ə, ə̃, ɑ], it is articulated simply as glottal stop plus vowel.¹⁰

ʔe ⁵⁵	<i>hey</i> [interjection]	ʔø ³³	<i>stem, trunk</i>
ʔa ²¹	<i>chicken</i>	ʔɑ ⁵⁵	<i>duck</i>
ʔə ³³ tsɿ ³³	<i>what</i> ¹¹	ʔə̃ ³³	<i>brass</i>

Is it /x/ or /h/?

What has been called a voiceless velar fricative /x/ in the literature shows evidence that it is not a velar fricative but a voiceless glottal fricative /h/. This argument is based on the fact that it does not pattern with the other velar consonants. Consider the distribution of this consonant with vowels. This fricative /x/ can be pronounced with any vowel, but only with the high front vowels is it pronounced as a palatal /ç/. In the Lijiang City sub-dialect it will be pronounced as an alveolo-palatal voiceless fricative /ç/. Based on this it would seem to follow the same pattern as the velar stops. The velar stops, as seen above, are articulated as palatals and as alveolo-palatal affricates in the Lijiang City sub-dialect, [tʃ^{hi}, tʃi, dʒi].

Now consider that the only time the velar stops can be articulated with the rhoticized vowel /ə̃/ is when there is a high front glide preceding the vowel, which palatalizes the velar stops (viz. /k^hjə̃, kjə̃, gjə̃/ --> [ç^hə̃, çə̃, ʒə̃]). If the fricative was also velar, one would expect it to follow the same pattern, as it did above. In fact, it doesn't. It is articulated without the glide (viz. ‘green’ [xə̃²¹] but

⁹ As mentioned above, in an autosegmental approach, the glottal stop would not be phonemic. Therefore, there would be no rule changing a glottal stop to a glide. Instead, it could be claimed these syllables are phonemically a single vowel. The high vowels spread left to fill the C slot. Where spreading doesn't occur, a default (non-phonemic) glottal stop fills the C slot maintaining the strict CV syllable structure. This would also explain the syllable with the bare /ɥ/. The syllabic labio-dental fricative would occupy both the C and V slots.

¹⁰ We have found one exception to this fortis rule, [ɣø²¹] ‘drag for, dredge up’.

¹¹ This is actually the Lijiang City pronunciation. In Longquan it is said [ʔɑ³³tsɿ³³].

never [çə²¹]). This would be difficult to explain if the fricative was velar, but is easily understood if the fricative is a voiceless glottal fricative /h/. Therefore, we claim this segment is /h/, but for the sake of consistency we will continue to write it as /x/.

Nasalization of syllabic /ɥ/

He and Jiang (1985:7) point out that when the syllabic labio-dental fricative /ɥ/ follows velar nasal /ŋ/ it is articulated as a syllabic labio-dental nasal [ŋɥ]. We have also found that when syllabic /ɥ/ follows a alveolar nasal /n/ it is also pronounced as a labio-dental nasal [nɥ]. We have not found any verifiable examples of bilabial nasal /m/ occurring with syllabic /ɥ/ (i.e. */mɥ/ or */mɥ/).

ŋɥ ⁵⁵		you [honorific]
çi ³³ nɥ ³³		crazy person

Vowel harmony

There appears to be some vowel harmony in Naxi. It is not abundant and is not obligatory. Most people are aware of these changes, and will give both forms when asked for the pronunciation of a given word. Consider the following examples from He and Jiang (1985:11), which our language consultants confirmed:

kɥ ³³ mu ²¹	<-->	ku ³³ mu ²¹	<i>hat, cap</i>
gɥ ³³ mu ³³	<-->	gu ³³ mu ³³	<i>body</i>

Also consider the following from our language consultants:

bɥ ³³ hu ⁵⁵	<-->	bu ³³ hu ⁵⁵	<i>internal digestive organs</i>
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Another example of vowel harmony is from Chen (1987).¹²

bu ²¹ xɑ ³³	<-->	bɑ ²¹ xɑ ³³	<i>pig food</i>
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Apical vowels

He and Jiang (1985) take the high back unrounded vowel /ɯ/ as the phonemic form of the apical vowels [ɿ, ʅ]. If one considers distribution these vowels are also seen to be in complementary distribution with the high front unrounded /i/ as they are with /ɯ/. For Mandarin, it is claimed the apical vowels are allophones of the high front unrounded /i/, as seen in the pinyin spelling of apical vowels. But Jiang (1985) gives examples of words from the Lijiang Plain dialect group in which the high back unrounded /ɯ/ is said in place of the apical vowels. Consider the following from Jiang 1985:

<u>Lijiang City</u>	<u>Lijiang Plain</u>	
ndzɿ ³³	ndzɯ ³³	to eat
ŋdzɿ ²¹	dzɯ ²¹	time

¹² There are several examples from both He and Jiang (1985) and Chen (1987), which our language consultants were unable to verify.

Based on data like these, it might be best to posit /ʉ/ as the phonemic form of the apical vowels¹³. At this time we need further information to make a conclusive argument about this.

3.3. Tonal Changes

Although Naxi has some tone sandhi, it is very limited. It only occurs within words, not across word boundaries and doesn't seem to be iterative at all. He and Jiang (1985:12) give examples which indicate it only applies at word formation (i.e. noun-adjective, verb reduplication, etc.) and not lexically. There are some violations of the sandhi which all seem to be lexical. This includes some Chinese borrowings. The numerals '1, 2, 3, 4, and 5' all have tones that can change depending on the environment. He and Jiang (1985:14-15) also give two examples, which we verified, of a seemingly floating tone. And then Jiang (1981) gives some interesting examples of reduplication patterns that affect the tones in several ways. Finally, there is the Naxi prefix /ɑ-/ which has some tonal variations, which might be lexical or sandhi.

The most common sandhi in Naxi seems to be when two low tones come together in word formation; the tone on the left will become a mid tone. Consider the following examples from He and Jiang (1985:12,14):

/21 + 21/	-->	[33 + 21]
k ^h w ²¹ + p ^h ɤ ²¹	-->	k ^h w ³³ p ^h ɤ ²¹
thread white		<i>white thread</i>
mɑ ²¹ + p ^h ɤ ²¹	-->	mɑ ³³ p ^h ɤ ²¹
oil white		<i>Yak butter</i>
ci ²¹ + ɕy ²¹	-->	ci ³³ ɕy ²¹
cloud red		<i>rosy clouds</i>
ts ^h e ²¹ + k ^h w ²¹	-->	ts ^h e ³³ k ^h w ²¹
ten MW		<i>ten-MW(threads)</i>
ts ^h e ²¹ + s ₁ ²¹	-->	ts ^h e ³³ s ₁ ²¹
ten three		<i>thirteen</i>
s ₁ ²¹ + k ^h w ²¹	-->	s ₁ ³³ k ^h w ²¹
three MW		<i>three-MW(threads)</i>

The following are similar to the above, though not identical.¹⁴

¹³ It is significant that the Longquan dialect pronunciation of 'to eat' is /dʒi³³/. This would seem to suggest that it isn't as straightforward as Jiang would suggest.

¹⁴ In an autosegmental framework, these examples could be explained with the previous as a low-low tone dissimilation. It would be claimed that Naxi has an upper and lower register and when two low tones of either register come together in word formation dissimilation of the tone occurs.

/33 + 21/ --> [55 + 21]
 tʂl³³ + p^{hə}²¹ --> tʂl⁵⁵ p^{hə}²¹
 soil white *white dirt*
 tʂl³³ + ɕy²¹ --> tʂl⁵⁵ ɕy²¹
 soil red *red dirt*

We have also found that when a low tone word is reduplicated, tone sandhi will occur. Consider the following:

/21 + 21/ --> [33 + 21]
 a³³ ze²¹ + ze²¹ --> a³³ ze³³ ze²¹
 slowly redup. *slowly*
 ʂə²¹ + ʂə²¹ --> ʂə³³ ʂə²¹
 lead redup. *to lead (by the hand)*
 le³³ dø²¹ + dø²¹ --> le³³ dø³³ dø²¹
 again.see redup. *see (you) later*
 ky²¹ + ky²¹ --> ky³³ ky²¹
 comfort redup. *to comfort (a crying baby)*

This type of sandhi will not occur across word boundaries.

ly²¹ dø²¹ se²¹
 look see ASP
saw (it)
 t^hl³³ ɳw³³ ɳə²¹ ly²¹ ne²¹
 he PART me see ASP
He is watching me.

As we said, there are some words that might be lexically two low tones, and therefore sandhi is not triggered. For example:

la²¹ ʂə²¹ *thief, pickpocket*
 miu²¹ dø²¹ *daybreak*
 ma²¹ bi²¹ *to drift, wave, flutter*

The numerals ‘1’ and ‘2’ when said in isolation or in counting are usually pronounced with a low tone, but when said with a measure word of any tone it will be articulated with a mid tone.

dɯ²¹ dɯ³³ p^he⁵⁵
 one one-MW(section)
 ɳi²¹ ɳi³³ ly³³
 two two-MW(things)

The numerals ‘3, 4, 5’ when pronounced with a high or mid tone measure word will be articulated as high tone and the measure word will always be said with a mid tone, regardless of its original tone. The numeral three is only said with a low tone in

isolation. As can be seen above when it is said with a low tone measure word it follows the two low tone sandhi pattern.

s _l ²¹ + k _v ⁵⁵	-->	s _l ⁵⁵ k _v ³³
three MW		<i>three-MW(people)</i>
s _l ²¹ + me ³³	-->	s _l ⁵⁵ me ³³
three MW		<i>three-MW(animals)</i>
[u ³³ + k _v ⁵⁵	-->	[u ⁵⁵ k _v ³³
four MW		<i>four-MW(people)</i>
[u ³³ + me ³³	-->	[u ⁵⁵ me ³³
four MW		<i>four-MW(animals)</i>
wa ³³ + k _v ⁵⁵	-->	wa ⁵⁵ k _v ³³
five MW		<i>five-MW(people)</i>
wa ³³ + me ³³	-->	wa ⁵⁵ me ³³
five MW		<i>five-MW(animals)</i>

These changes do not occur with any other mid tone or low tone numerals, for example ‘seven’ /sə³³/, ‘nine’ /gɣ³³/ or ‘ten’ /ts^he²¹/. The other high tone numerals, ‘six’ /ts^hwa⁵⁵/ and ‘eight’ /xø⁵⁵/, when said with a high tone measure word, causes the measure word’s tone to become a mid tone, as in the examples above.

ts ^h wa ⁵⁵ + k _v ⁵⁵	-->	ts ^h wa ⁵⁵ k _v ³³
six MW		<i>six-MW(people)</i>
xø ⁵⁵ + p ^h e ⁵⁵	-->	xø ⁵⁵ p ^h e ³³
eight MW		<i>eight-MW(sections)</i>

In He and Jiang (1985:14-15) there are two examples that seem to display what has been called in autosegmental phonology a floating tone. Our language consultants agreed with the data, but to date we have no further examples. Consider He and Jiang’s (1985) examples, which we have written according to the Longquan pronunciation:

- a) dɯ³³ n̩i³³ tɑ⁵⁵ gɣ³³ se²¹.
one day only have ASP
- b) dɯ³³ n̩i¹³ gɣ³³ se²¹.
one day have ASP
There is only one day.

Notice that the word ‘only’ /tɑ⁵⁵/ has been omitted in the (b) example and the tone of ‘day’ has changed, although the meaning has remained unchanged. This is true with the second example, but the word ‘then’ /se⁵⁵/ is omitted and the tone of ‘go’ is changed.

a) wu³³ tʂh³³ ɲi³³ dzɿ³³ lø²¹ mə³³ bu³³ se⁵⁵,
you today town in not go then

ɲa¹³ kø²¹ ɕjə²¹ lu³³ ka³³ mu³³.
my home rest come please

b) wu³³ tʂh³³ ɲi³³ dzɿ³³ lø²¹ mə³³ bu¹³,
you today town in not go

ɲa¹³ kø²¹ ɕjə²¹ lu³³ ka³³ mu³³.
my home rest come please
*If you don't go to town today, then please come
to my house for a visit.*

We have one more example that our language consultants gave us. Consider the following:

a) wu³³ ha²¹ tʂh²¹.
you buy came
You came to buy.

b) wu³³ ha²¹ pu⁵⁵ tʂh²¹.
you buy COMP came
You bought and came back.

c) wu³³ ha¹³ tʂh²¹.
you buy came
You bought and came back.

This type of example is somewhat limited in number. Notice that the deleted word is in every case a high tone word. Moreover, the tonally affected word in the first examples are both mid tone words, and in the last example a low tone. The question that remains is what are the range of possible environments in which this type of change can occur.¹⁵

Jiang (1981) discusses word formation in Naxi. Some of the methods she discusses are quite interesting in that they are various patterns of reduplication. In these examples we can see some tone sandhi. Our language consultants verified these data.

Jiang (1981) examines several patterns; we only consider three of them. The first is where a disyllabic word is reduplicated in its entirety, namely ABAB.

¹⁵ In a non-linear framework this would be called a floating tone. The floated tone would be high which would attach to the low or mid tone word to the left creating a rising tone. We hope to discuss this in detail in a paper to appear.

$x\emptyset^{33}l\emptyset^{55}$	-->	$x\emptyset^{33}l\emptyset^{55}x\emptyset^{33}l\emptyset^{55}$
smooth		<i>very smooth</i>
$na^{55}x\emptyset^{33}$	-->	$na^{33}x\emptyset^{33}na^{55}x\emptyset^{33}$
flourishing		<i>really flourishing</i>

Notice that in the second example the first syllable is pronounced with a mid tone when reduplicated. It is possible that in this pattern the first syllable is always said with a mid tone. The answer awaits further data.

The second pattern is where the syllables of a disyllabic word are reduplicated individually, namely AABB.

$q\omega^{21}ki^{55}$	-->	$q\omega^{33}q\omega^{21}ki^{55}ki^{33}$
size		<i>all sizes</i>
$g\emptyset^{33}m\emptyset^{21}$	-->	$g\emptyset^{33}g\emptyset^{21}m\emptyset^{33}m\emptyset^{21}$
above-below		<i>all around (above and below)</i>
$ka^{33}ma^{55}$	-->	$ka^{33}ka^{33}ma^{55}ma^{33}$
front-back		<i>all around (front and back)</i>

Notice there are two types of sandhi occurring in these examples; both of which we have seen above. The first is two low tones together, /21 + 21/, changing the left low tone to a mid tone [33 + 21]. The second type of sandhi is two high tones, /55 + 55/, triggering the right tone to lower to mid [55 + 33].

We have one more example of sandhi, which is similar, but not identical, to the above examples with 'dirt'. This is where a mid tone and low tone cause the mid tone to become high, /33 + 21/ -> [55 + 21].

In the following example we see two mid tones triggering the left one to become high, /33 + 33/ -> [55 + 33].¹⁶

$f\check{y}^{33}na^{55}$	-->	$f\check{y}^{55}f\check{y}^{33}na^{55}na^{33}$
sew-mend		<i>sewing and mending</i>

The final reduplication pattern has a set tonal pattern and is prefixed with a mid tone /a³³-. The first syllable of the reduplicated word carries a high tone. The second syllable carries a low-rising tone, viz. /a³³A⁵⁵A¹³/.

ki^{55}	-->	$a^{33}ki^{55}ki^{13}$
small		<i>extremely small</i>
be^{33}	-->	$a^{33}be^{55}be^{13}$
thin		<i>extremely thin (flat)</i>

¹⁶ In an autosegmental framework, these and the other low-low dissimilation can be explained with one dissimilation rule. The high-high dissimilation might have to be handled with a separate rule.

$\zeta\gamma^{21}$ --> $\alpha^{33}\zeta\gamma^{55}\zeta\gamma^{13}$
 short *extremely short (height)*

The last question we consider is with the familial prefix / α -/. What is this prefix's phonemic tone, or is it phonemically toneless? Consider the following:

$\alpha^{55}t\phi i^{33}$ *elder sister (borrowed)*
 $\alpha^{55}l\emptyset^{33}$ *paternal grandfather*
 $\alpha^{55}na^{33}$ *paternal grandmother*
 $\alpha^{55}ku^{33}$ *maternal grandfather*

 $\alpha^{33}ba^{33}$ *father*
 $\alpha^{33}me^{33}$ *mother*
 $\alpha^{33}k\emptyset^{33}$ *elder brother (borrowed)*
 $\alpha^{33}n_a^{33}$ *auntie (borrowed)*

Based on these examples one might think that the phonemic tone of / α -/ is mid /33/. The examples of where it is high would follow from the sandhi rule as seen above with 'sew-mend'. But then we have the following:

$\alpha^{33}bv^{21}$ *elder brother*
 $\alpha^{33}s_l^{13}$ *uncle (father's younger brother)*

These examples make it difficult to give a simple explanation. A single dissimilation rule accounting for earlier examples doesn't explain these last two examples. We will examine these further in another paper.

4. Chinese loans

In the Dayanzhen dialect, which includes the Longquan sub-dialect, there have been abundant borrowings from Chinese. These include very recent words (e.g. Communist Party), modern but not as recent words (e.g. train, doctor, potato, etc.), and older loans of words that Naxi may or may not have had (e.g. older sister, older brother, candle, a grave, etc.). As one would expect, the older the loans the more complete is its phonemicization. In this section we look at the segments, syllable structure and tones of Chinese loan words.

In this part of China, standard Mandarin, as spoken in North China, is usually not spoken. But it cannot not be said that it is never spoken here. There are many Mandarin influences including local TV. It can be said that what is spoken by most of the people is some version of Yunnanese, a southern dialect of Mandarin¹⁷. It is from this dialect that the majority of words have been borrowed. Pinson and Pinson (1996) described the Kunming dialect: both the segments and tones. We have not done a systematic study of the Lijiang version of Yunnanese, but our basic impression is that

¹⁷ In recent years there has also been a significant influx of people from Sichuan province. The dialects spoken there, though similar to Yunnanese, are not completely uniform with the Yunnanese dialects.

it does not vary much from what is spoken in Kunming. Based on the borrowed segments and tones it is clear that modern loan words are not from pure Yunnanese, but this is still the greatest influence. Therefore, we will assume what is described in Pinson and Pinson (1996) as our starting point, recognizing that this is not entirely accurate.

Initials

A list of consonants of the Chinese loan words looks basically like the list for Naxi above. The differences are not so much with additional segments, although there is one, /v/, but with segments that are lacking in the Chinese loans. Specifically, the fully voiced stops and affricates, the velar nasal and the retroflexed set are all lacking in the Chinese borrowed inventory.

Chinese borrowed consonant inventory:

p ^h	p			f	v	m		w
t ^h	t	ts ^h	ts	s	z	n	l	
		(tʂ ^h)	(tʂ)	(ʂ)				
		tʂ ^h	tʂ	ʂ				j
k ^h	k			h				ʔ

The contrast between the Longquan inventory and the Chinese borrowed inventory is understandable when the Chinese source is considered. Yunnanese, like Mandarin, has no voiced stops or affricates, nor an initial velar nasal. The lack of the retroflexed set is not surprising since Mandarin syllables with these segments are pronounced as alveolars in Yunnanese, which is also the case in Naxi.¹⁸

Yunnanese	Naxi	English	Chinese
xaw ³¹² tsaw ³¹²	xɑ ⁵⁵ tsa ⁵⁵	<i>to call</i>	号召
kom ³¹² ts ^h a ⁵⁵ tsu ⁵⁵ ji ³¹²	ku ⁵⁵ ts ^h a ³³ tsu ³³ ji ⁵⁵	<i>Communism</i>	共产主义
zə ⁴² min ⁴²	ze ²¹ mi ²¹	<i>the People</i>	人民
mo ³¹² swi ⁵⁵	mə ¹³ swe ³³	<i>ink</i>	墨水

The one addition that the Chinese borrowings make in Naxi is the labio-dental voiced fricative /v/. Consider the following:

¹⁸ Our language consultant gave us a few examples with the retroflexed affricates and the voiceless retroflexed fricative. The examples were very few with the number of examples of alveolar segments outnumbering the retroflexed, where retroflexion occurs in Mandarin. The inclusion of these in our language consultant's inventory probably reflects her familiarity with standard Mandarin.

Yunnanese	Naxi	English	Chinese
və ⁴² xwɑ ³¹²	ve ²¹ xwɑ ⁵⁵	<i>culture</i>	文化
və ⁴² tsã ³¹²	ve ³³ tsa ⁵⁵	<i>mosquito net</i>	蚊帐

Finals

In our study of Chinese borrowed words we have found only one difference between the borrowed inventory and the standard Naxi inventory, namely the lack of the high back unrounded vocoid, /ɯ/, in the borrowed set.

Chinese borrowed vowel inventory:

i	y		u	ɯ
e	ø	ə		
		ɚ	ɑ	
	a			

At first this appears odd since Chinese has a similar vowel in the mid back unrounded /ɚ/. But in Yunnanese, syllables which are pronounced with this vocoid in Mandarin and have a velar consonant are said as a mid back rounded vowel, /o/. There are also words with non-velar consonants and this vowel in Mandarin, that are also pronounced as a mid back rounded /o/ in Yunnanese. Therefore the source language could be seen as not having this vocoid at all. In Naxi there are no Chinese loan words with this vocoid. These loans can have one of three vocoids, depending on the environment. Words with velars tend to be said with the mid front rounded vocoid /ø/. Alveolars are pronounced with mid front unrounded /e/. And a word like ‘car’, which tends to be said as an alveolar, but sometimes as an alveolo-palatal, can be said with the mid central unrounded /ə/. Consider the following examples:

Yunnanese	Naxi	English	Chinese
ko ³³ ko ³³	kø ³³ kø ³³	<i>elder brother</i>	哥哥
xo ⁴² tso ³¹²	xø ²¹ tsø ¹³	<i>cooperate</i>	合作
ʔɣ ⁴²	ʔø ²¹	<i>goose</i>	鹅
tɣ ⁴² ko ⁴²	te ³³ kø ¹³	<i>Germany</i>	德国
ts ^h ɣ ³¹² sø ⁵⁵	ts ^h e ²¹ sø ³³	<i>toilet</i>	厕所
tɕ ^h ɿ ³¹² ts ^h ɣ ³³	kh ⁵⁵ tɕ ^h ə ³³	<i>car</i>	汽车

Other than these, borrowings are fairly straightforward. Basically, closed or nasal syllables are borrowed as open, non-nasal syllables. Triphthongs are simplified to diphthongs. And diphthongs tend to be simplified to monophthongs.

Open Yunnanese syllables with high front vowels are pronounced as high front vowels. Closed or nasal Yunnanese syllables with high front vowels are pronounced as open, non-nasal high front vowels.

Yunnanese	Naxi	English	Chinese
ji ⁴² tɿ ³¹²	ji ²¹ ti ⁵⁵	<i>certainly</i>	一定
tɕjaw ³¹² y ³¹²	tɕja ⁵⁵ ɥ ¹³	<i>education</i>	教育
tɕi ³⁵ tɕi ³¹²	ki ³³ tɕi ⁵⁵	<i>economics</i>	经济
y ³¹² tom ³¹²	ɥ ⁵⁵ tø ⁵⁵	<i>movement</i>	运动

There are several Yunnanese syllables where the vowels reduce to a simple low back vocoid, /ɑ/, with the exception of /ja/ or /jaw/ going to /ja/. These include any open syllable with /a/ or /aw/ as a final.

Yunnanese	Naxi	English	Chinese
la ³¹² tsu ⁴²	la ¹³	<i>candle</i>	蜡烛
ja ⁵⁵ pa ³³	ja ³³ pa ³³	<i>a mute</i>	哑巴
ko ⁴² tɕja ³³	kø ¹³ kja ³³	<i>country</i>	国家
mja ⁴² xwa ³³	mja ²¹ xwa ³³	<i>cotton</i>	棉花
xaw ³¹² tsaw ³¹²	xɑ ⁵⁵ tsɑ ⁵⁵	<i>to call, appeal</i>	号召
tɕjaw ³¹² y ³¹²	tɕja ⁵⁵ ɥ ¹³	<i>education</i>	教育

There are many Yunnanese loans in Naxi that reduce to the final /ɑ/. This includes all the nasals /ã/, with or without an onset glide, and the syllables with a final /æ̃/.

Yunnanese	Naxi	English	Chinese
t ^h ja ³⁵ lã ⁴²	t ^h ja ³³ la ²¹	<i>sky blue</i>	天蓝
kom ³¹² tɿ ³⁵ t ^h wã ⁴²	ku ⁵⁵ tɕ ^h i ³³ t ^h wa ²¹	<i>Youth League</i>	共青团
ɕjã ³¹² tsã ³³	ɕja ⁵⁵ tsa ³³	<i>county governor</i>	县长
ljã ⁴² k ^h wæ ³¹²	lja ³³ k ^h wa ⁵⁵	<i>cool</i>	凉快
kwã ³⁵ zom ⁴²	kwa ³³ zu ²¹	<i>glorious</i>	光荣
t ^h æ̃ ³¹² tu ³¹²	t ^h a ⁵⁵ ty ⁵⁵	<i>attitude</i>	态度

As we said, Naxi tends to simplify the phonology of Chinese in loan words. There are several Yunnanese syllables which reduce to basically mid front unrounded /e/. These include the diphthong /ej/, with or without an onset glide /w/, and nasal schwa /ẽ/.¹⁹

Yunnanese	Naxi	English	Chinese
wi ⁵⁵ ta ³¹²	we ³³ ta ⁵⁵	<i>great</i>	伟大

¹⁹ The diphthong /ej/ is often pronounced as lower mid front unrounded vocoid without a glide /ɛ/. The triphthong /wej/ in Yunnanese is often pronounced simply as a diphthong with a high front unrounded /wi/, but this is still borrowed as a mid front unrounded /we/.

fɛ ³³ tɕi ³³	fɛ ³³ ki ³³	<i>airplane</i>	飞机
fã ⁵⁵ twi ³¹²	fa ³³ twe ⁵⁵	<i>oppose</i>	反对
fẽ ⁴²	fɛ ²¹	<i>grave</i>	坟
ts ^h wẽ ⁴²	ts ^h we ⁵⁵	<i>inch</i>	寸
tsẽ ³¹² fu ³³	tse ⁵⁵ fy ³³	<i>government</i>	政府

The Yunnanese finals, /om/ and /jom/, are borrowed into Naxi as /u/ or /ø/ and /jə/. Consider the following examples:

Yunnanese	Naxi	English	Chinese
kom ³⁵ ts ^h ã ³³	ku ³³ ts ^h a ³³	<i>factory</i>	工厂
yn ³¹² tom ³¹²	ɥy ⁵⁵ tø ⁵⁵	<i>movement</i>	运动
ji ³⁵ ɕjom ⁴²	ji ³³ ɕjə ²¹	<i>hero</i>	英雄

The rest of the borrowings must be handled one by one. Most of the remaining can have one of several possible phonetic realizations in Naxi. We suspect this has to do with the age of the loan word. The longer its use in Naxi, the more it is phonemicized.

The Yunnanese final /jɛ/ has three possible phonetic forms in Naxi, namely /i/, /jɛ/, and an unusual /ŋjɛ/.

Yunnanese	Naxi	English	Chinese
t ^h jɛ ⁵⁵ lu ³¹²	t ^h i ²¹ lu ⁵⁵	<i>railroad</i>	铁路
pjɛ ⁴² zẽ ⁴²	pje ¹³ ɕi ³³	<i>other people</i>	别人
nom ⁴² jɛ ³¹²	nø ²¹ ŋjɛ ¹³	<i>agriculture</i>	农业

The Yunnanese high back rounded /u/ also has three possible pronunciations, namely /u/, /v/ and an apical /ɥ/.

Yunnanese	Naxi	English	Chinese
tɕ ^h i ³¹² ts ^h ɣ ³⁵ lu ³¹²	k ^h i ⁵⁵ tɕ ^h ɛ ³³ lu ⁵⁵	<i>highway</i>	汽车路
mu ⁵⁵	mu ³³	<i>mu, 1/6 acre</i>	亩
t ^h æ ³¹² tu ³¹²	t ^h a ⁵⁵ ty ⁵⁵	<i>attitude</i>	态度
tsẽ ³¹² fu ³³	tse ⁵⁵ fy ³³	<i>government</i>	政府
tɕi ³¹² su ³¹²	ki ⁵⁵ sɿ ¹³	<i>skill</i>	技术
la ³¹² tsu ⁴²	la ¹³ tsɿ ¹³	<i>candle</i>	蜡烛

The Yunnanese words with the final /əw/ are similar to the above /u/ syllables. They are borrowed as /ə/ or /v/.

Yunnanese	Naxi	English	Chinese
lo ³¹² xəw ³¹²	lø ²¹ xə ⁵⁵	<i>underdeveloped</i>	落后
tsɿ ³¹² jəw ⁴²	tsɿ ⁵⁵ jə ²¹	<i>freedom</i>	自由
ɣ ³¹² t ^h əw ³³	ɥ ⁵⁵ t ^h ɿ ³³	<i>taro</i>	芋头

The Yunnanese syllables with the final /wo/ (or more typically /o/) are usually borrowed as /ø/, but sometimes are said as /ə/.

Yunnanese	Naxi	English	Chinese
lo ³¹² xəw ³¹²	lø ²¹ xə ⁵⁵	<i>underdeveloped</i>	落后
ts ^h o ³¹² wu ³¹²	ts ^h ø ⁵⁵ wu ⁵⁵	<i>mistake</i>	错误
mo ³¹² swi ⁵⁵	mə ¹³ swe ³³	<i>ink</i>	墨水

Yunnanese words with schwa /ə/ as the vowel are articulated in Naxi as /ə/ or /e/.

Yunnanese	Naxi	English	Chinese
tɕjē ³¹² sə ³¹²	kja ³³ sə ¹³	<i>construct</i>	建设
tsē ³¹² ts ^h ə ³¹²	tse ³³ ts ^h e ¹³	<i>policy</i>	政策

The syllables, which in Yunnanese are pronounced with either an open /yɛ/ or a nasalized /yẽ/, are borrowed into Naxi as /ya/ or /ye/, with at least one exception, /wa/.

Yunnanese	Naxi	English	Chinese
ɕyɛ ⁴² ɕjaw ³¹²	ɕye ²¹ ɕja ⁵⁵	<i>school</i>	学校
tom ³¹² yẽ ⁴²	tø ⁵⁵ ya ²¹	<i>mobilize</i>	动员
tɕyɛ ³⁵ tjẽ ⁵⁵	k ^h ya ¹³ tja ³³	<i>defect</i>	缺点
ɕyẽ ³⁵ ts ^h wā ⁵⁵	swa ³³ ts ^h wa ²¹	<i>propagate</i>	宣传

Though this might not be an exhaustive list, we feel that it certainly covers most of the loan words. From an analytical perspective, we haven't proposed much. From the perspective of a language learner, though, we have provided some helpful information. Certainly, as Naxi is exposed more to modern Mandarin the loans will take on a more Mandarin pronunciation. We think this can already be seen in that the Kunming dialect of Yunnanese does not have high front rounded vowels, only unrounded, but our speakers of Naxi pronounced all of these words with a rounded vowel.

The syllable

The basic syllable structure of Naxi, as we have analyzed it in this paper, does not need to change to accommodate the Chinese loan words. Triphthongs are always simplified to at most diphthongs. Therefore, the syllable structure of loans is CV or

C₁C₂V. The significant difference with the loans is what is able to occur in combination in the C₁C₂V syllable structure. There are several additions to the Naxi inventory when loan words are included. The additional combinations include: /Cja/, /Cwa/, /Cwe/, /Cya/ or /Cye/. Counting the last two as one, there are four loan patterns. The most significant are those loans that have a high front rounded glide /y/. We have only found one example in Naxi of anything resembling this segment as a glide. Consider the following examples of each type of borrowed patterns:

Yunnanese	Naxi	English	Chinese
t ^h jā ³⁵ lā ⁴²	t ^h ja ³³ la ²¹	<i>sky blue</i>	天蓝
kom ³¹² tɕ ^h ɿ ³⁵ t ^h wā ⁴²	ku ⁵⁵ tɕ ^h i ³³ t ^h wa ²¹	<i>Youth League</i>	共青团
fā ⁵⁵ twi ³¹²	fa ³³ twe ⁵⁵	<i>oppose</i>	反对
tɕyɛ ³⁵ tjɛ ⁵⁵	k ^h ye ¹³ tja ³³	<i>defect</i>	缺点
ɕyɛ ⁴² ɕjaw ³¹²	ɕye ²¹ ɕja ⁵⁵	<i>school</i>	学校

Tones

For the language learner the tones of borrowed Chinese words can be summarized in a fairly clear, general manner, but for one interested in analysis it is not quite so neat. There are many exceptions. As mentioned earlier, the exceptions most likely reflect some historicity rather than complex rules.

When we discuss Chinese loans we will call them by their tonal category as put forth in the Chinese pinyin system (viz. tones: 1, 2, 3, and 4). Tone 1 in Mandarin is a /55/ high level pitch, but a /33/ or /35/ in Yunnanese. We continue to assume Yunnanese as our source language, but this is not entirely true.

Chinese syllables with Tone 1 are most likely said with a /33/ mid level pitch in Naxi. Chinese syllables with Tone 2 are usually said as a /21/ low or low falling pitch in Naxi. Tone 3 syllables are pronounced most often as /33/ mid level. Tone 4 syllables are borrowed as a /55/ high level pitch. Chinese neutral tone syllables most frequently carry a /33/ mid level pitch in Naxi.

The most common exception to these rules can be stated as following: If the usual tone is not used, then pronounce with a low rising /13/ pitch. As it turns out there are some exceptions to even this rule, but this will cover the vast majority of Chinese loan words in Naxi.

Consider first the following examples of the most frequent pitch contours:

Tone 1:

Yunnanese	Naxi	English	Chinese
t ^h jā ³⁵ lā ⁴²	t ^h ja ³³ la ²¹	<i>sky blue</i>	天蓝
ɕjā ³⁵ tɕi ³¹²	ɕja ³³ tɕi ⁵⁵	<i>advanced</i>	先进
fɛ ³³ tɕi ³³	fɛ ³³ ki ³³	<i>airplane</i>	飞机

Tone 2:

nom ⁴² je ³¹²	nø ²¹ ŋje ¹³	<i>agriculture</i>	农业
tø ^h ju ⁴²	k ^h jø ²¹	<i>ball</i>	球
ji ⁴² tĩ ³¹²	ji ²¹ ti ⁵⁵	<i>certainly</i>	一定

Tone 3:

øjã ³¹² tsã ³³	çja ⁵⁵ tσα ³³	<i>county governor</i>	县长
tø ^h ye ³⁵ tjẽ ⁵⁵	k ^h ya ¹³ tja ³³	<i>defect</i>	缺点
wi ⁵⁵ ta ³¹²	we ³³ ta ⁵⁵	<i>great</i>	伟大

Tone 4:

ts ^h wẽ ⁴²	ts ^h we ⁵⁵	<i>inch</i>	寸
k ^h æ ³⁵ xwi ³¹²	k ^h a ³³ xwe ⁵⁵	<i>have a meeting</i>	开会
ts ^h o ³¹² vu ³¹²	ts ^h ø ⁵⁵ wu ⁵⁵	<i>mistake</i>	错误

Now consider the following examples in which our rule of exception is displayed:

Tone 1:

Yunnanese	Naxi	English	Chinese
swa ³³ tsl̩ ³³	swa ¹³ tsø ²¹	<i>brush</i>	刷子
tø ^h ye ³⁵ tjẽ ⁵⁵	k ^h ya ¹³ tja ³³	<i>defect</i>	缺点
fa ³⁵ tsã ³³	fa ¹³ tσα ³³	<i>develop</i>	发展

Tone 2:

tʂu ⁵⁵ øi ⁴²	tʂu ³³ øi ¹³	<i>chairman</i>	主席
ko ⁴² tøja ³³	kø ¹³ kja ³³	<i>country</i>	国家
mĩ ⁴² tsu ⁴²	mi ³³ tsu ¹³	<i>nationality</i>	民族

Tone 3:

swi ⁵⁵ pi ⁵⁵	swe ³³ pi ¹³	<i>fountain pen</i>	水笔
pã ³¹² fa ⁵⁵	pa ⁵⁵ fa ¹³	<i>method, means</i>	办法

Tone 4:

nom ⁴² je ³¹²	nø ²¹ ŋje ¹³	<i>agriculture</i>	农业
la ³¹² tsu ⁴²	la ¹³	<i>candle</i>	蜡烛
xo ⁴² tso ³¹²	xø ²¹ tsø ¹³	<i>cooperate</i>	合作

In an earlier section on tones, we mentioned that the low rising tone, /13/, is seldom used. In fact, it almost exclusively used in borrowed words, but even borrowed words show a tendency to avoid this tone contour.

There are a fair number of other possible realizations for the tones of Chinese loan words. For example, Chinese Tone 2 is said as a mid level on a few words.

$\text{jĩ}^{42}\text{xã}^{42}$ $\text{ji}^{33}\text{xã}^{21}$ *bank* 银行

Tone 3 is said as a high level /55/ on a least one word.

$\text{mĩ}^{42}\text{tsɿ}^{33}$ $\text{mi}^{21}\text{tsɿ}^{55}$ *name* 名字

Finally, Tone 4 carries a low /21/ on a least one word.

$\text{lo}^{312}\text{xəw}^{312}$ $\text{lø}^{21}\text{xə}^{55}$ *underdeveloped* 落后

In summary, the loan words from Chinese have made a distinct mark upon the phonology of Naxi. The biggest changes are the increase in possible segmental combinations in the syllable inventory and the increase in overall number of syllables with the low rising tone /13/.

5. Stress and Intonation

Naxi appears to be what is called a syllable-timed language. As such, Naxi word stress is fairly basic. Within a polysyllabic word the stress seems to be equally weighted not lending itself to a primary-secondary stress contrast. This is different than Mandarin Chinese which has words with primary stress, giving rise to neutral syllables. Naxi doesn't appear to have neutral syllables. Our study of stress has been limited and needs further investigation.

Naxi intonation in basic speech tends to vary from a flat pattern to a slight down-drift. For example, in a sentence with all mid tones the down drift is apparent. The utterance final syllable will have a lower pitch value than those earlier in the utterance. But when the same syllable is used in a non-final position its pitch value resembles that of other mid tone syllables. This is true of questions, too. Consider the following sentence:

$\text{ze}^{13}\text{ky}^{21}$ bu^{33} le^{33} ?
 where go QW
Where are (you) going?

The final syllable / le^{33} /, which is added to emphasize the utterance is a question, has the same or slightly lower pitch than the preceding word 'go' / bu^{33} /. Unlike Chinese, which has a slightly rising intonation with questions, Naxi displays a level or slight down-drift.

6. References

- Bradley, David. 1975. Naxi and Proto-Burmese-Lolo. *Linguistics of the Tibeto-Burman Area*, 2.1: 93-150.
- Chen Jiaying 陈嘉瑛。1987. 纳西语 [The Naxi Language]. 《中国少数民族语言》，compiled by 中央民族学院少数民族语言研究所。成都：四川民族出版社：86-93.
- DeLancey, Scott. 1990. Sino-Tibetan languages. In *The major languages of East and South-East Asia*, ed. Bernard Comrie 69-82. London: Routledge.
- Dai Qingxia 戴庆厦。1993. 关于纳西语的松紧元音问题 [On the problem of tense and lax vowels of Naxi]. *民族语文 Minzu Yuwen* 1: 27-31, 36.
- He Jiren and Jiang Zhuyi 和即仁与姜竹仪。1985. 纳西语简志 [A concise record of the Naxi language]. Beijing: 民族出版社 *Minzu Chubanshe*.
- Jiang Zhuyi 姜竹仪。1985. 纳西语西部方言音位系统中的几个问题- 兼答杨焕典同志 [Several questions on the phonemic system of the western Naxi dialect - concurrently responding to Comrade Yang Huandian]. *民族语文 Minzu Yuwen* 2: 28-30, 40.
- Pinson, Thomas M. and Jacqueline S. Pinson. 1996. 昆明华概况 An introduction to Kunming Hua. Unpublished ms.
- Yang Huandian 杨焕典。1991. 从纳西语的紧松元音对立看汉藏系语音发展轨迹 [Looking at the Sino-Tibetan language phylum's locus of pronunciation development from Naxi's contrast of tense - lax vowels]. *民族语文 Minzu Yuwen* 1: ?-?.