CHAPTER 1

INTRODUCTION

1.1. SCOPE AND OBJECTIVES.

This study presents a phonological comparison and reconstruction of the Kra language group, which includes the following six languages and their varieties: Gelao, Lachi, Laha, Paha, Buyang, and Pubiao. The Kra language group constitutes a branch of the Kra-Dai stock, and is related to the other more well-known language groups such as Tai, Kam-Sui, and Hlai. (For discussions of the terms *Kra* and *Kra-Dai*, see 1.4 and 1.5). Figure 1 shows the rough scheme of Kra-Dai family, which should be taken as provisional. Detailed discussions of the subgroupings of Kra-Dai languages as a whole are beyond the scope of this study.

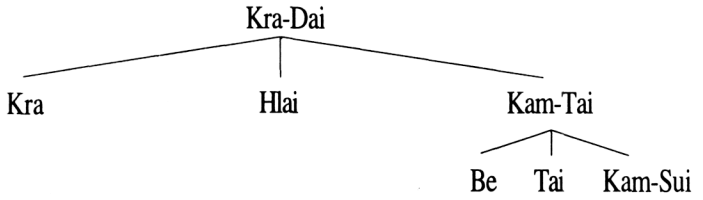

Figure 1: Rough scheme of the Kra-Dai family

Following this Introductory Chapter, we will propose in Chapter 2 the internal subgrouping of the Kra languages, including discussions of their varieties. In Chapter 3, the Proto-Kra tonal system and its reflexes in each daughter language will be laid out, and the relation between this tonal system and that of other Kra-Dai languages will be demonstrated. Chapter 4 to Chapter 6 present the reconstruction of Proto-Kra initials and rimes as well as their development from the proto-stage to modern dialects. Chapter 7 sums up the study and is followed by a selected list of over three hundred Kra etyma. The result of the study is expected to constitute a basis for the historical and comparative studies of Proto Kra-Dai.

1.2. KRA AS KRA-DAI LANGUAGES.

Three Kra languages, Gelao, Lachi and Laqua (=Pubiao), plus the Hlai language of Hainan were grouped together as a linguistic stock called Kadai by Benedict (1942), who proposed them to be related to the Tai language. (The Laha language was later included in Benedict (1975) as a Laqua dialect). Of these, only the Hlai language has been reported in great quantity and with reliable quality (e.g. Wang and Qian 1951, Ouyang and Zheng 1983). Few scholars have doubted the relation of Hlai to Tai, though phonological correspondences between them have yet to be worked out. (According to our present knowledge, however, this Hlai language has to be considered a separate branch from the other three. Cf. also Figure 3 for evidence that Hlai does not belong to our Kra language group) . The relation between Benedict's other Kadai languages and Tai, however, has remained dubious to many students of comparative Tai, partly due to the meager data available on the former languages and to a number of doubtful etyma proposed by Benedict based on limited and low-quality material. Recently, Chinese and Vietnamese scholars have gathered more data on these lesser known languages, including some other related languages hitherto unknown (e.g. Buyang in China). But none has yet presented rigourous evidence than just a random list of a few forms to bind the whole family together.

We are offering in Figure 2 a list of 40 selected Kra-Dai etyma (including seventeen items from the Swadesh 100 basic word-list) to demonstrate that the Kra languages and the other Kra-Dai languages belong to the same linguistic stock. The list is not intended to be exhaustive, yet just browsing through its first fourteen body part etyma will probably leave little doubt as to the genetic relationship among these languages. On the other hand, Figure 2 is not a mere list of raw material or look-alikes, but the inclusion of already well-analysed data. In other word, we consider them as valid cognates provable by their regular phonological correspondences established in the following chapters of this study. Readers will see, for example, that all tones of the Kra languages are indicated according to the proto tone classes (i.e. proto-tones *A, *B, *C and *D), similar to what has been known in such languages as Tai and Kam-Sui. Chapter 3 of this study is referred to for an extensive treatment of the Proto Kra-Dai tonal system. Similarly, the initial and rime correspondences are also considered regular according to the systems proposed from Chapter 4 to Chapter 6 of this study.[1]

---

[1] Irregular reflexes with respect to tones, initials, vowels or finals in any given language will be flagged with the following symbols after the forms: **-t** (irregular tone), **-i** (irregular initial), **-v** (irregular vowel) and **-f** (irregular final).

These selected etyma are also offered as a handlist for determining whether a certain language belongs to the Kra-Dai family. They cover examples of all four possible proto tones, and thus are also intended to serve as a tonal checklist for fieldworkers to figure out the tonal system of a certain Kra language in a historical and comparative context. The problem of tonal correspondence among the Kra languages, and between them and other Kra-Dai languages, is a key factor which has held up progress in this comparative field for several years (cf. Liang 1990: 52, who stated that, "There is no obvious [tonal] correspondence between Ge-Yang (= "Kra") and Kam-Tai. Even within the Geyang group there is no [tonal] correspondence among the languages").

The representative varieties of the languages in Table 1 are as follows: Wanzi (Gelao), Jinchang (Lachi), Nong Lay (Laha), Yanglian (Paha), E-Cun (Buyang), Pufeng (Pubiao), Baoding (Hlai), Sanchong (Sui), and Siamese (Tai). When the related forms are unavailable in the representative dialects, forms from other varieties may be cited. These are indicated by parenthesized abbreviations as follows: (Qs) = Qiaoshang dialect of Gelao, (Lz) = Laozhai dialect of Gelao, (Tm) = Ta Mit dialect of Laha, (Lj) = Langjia dialect of Buyang, (L) = Lao dialect of Tai. Material on Wanzi dialect of Gelao is from He (1983); Nong Lay Laha from Solntseva and Hoang (1986), Ta Mit Laha from Dang et al (1972), Hoang and Vu (1992), and Gregerson and Edmondson (1997); Hlai dialects from Ouyang and Zheng (1983); and Sanchong Sui dialects from Zhang (1982). Material on the rest are from my own fieldwork. The numbers 1 and 2 following proto tones (*A, *B, *C and *D) indicate respectively early voiceless and voiced onsets in the respective languages. (For details, see Chapter 3).

Figure 2: Selected Kra-Dai etyma

	1. blood	*2. bone*	*3. ear*	*4. eye*
Gelao	**plɒ D1**	**taŋ D2**	**zau A2**	**tau A**
Lachi	**pjo D1**	**tfiɟɒ D2**	**lu A2**	**tju A1**
Laha	**plaat D1**	**dak D2**	**khlaa A2**	**taa A1**
Paha	**pɛɛ D1 -f**	—	**kaa A1**	**ʔdaa A1**
Buyang	—	—	**ðaa A2**	**taa A1**

Pubiao	—	ʔdak D1	ɾfiɑɑ A2	tee A1
Hlai	ɬaaʈ D	vuuuk D	(zai A)t	shaa A
Sui	phjaat D1	laak D1	qhaa A1	ndaa A1
Tai	luuat D2	duuk D1	huu A1	taa A1

	5. excrement	*6. fart*	*7. fingernail*	*8. hand*
Gelao	qɒ C1	tæ D1 (Lz)	kle D1	mpau A2
Lachi	kạ C1	tɛ̣ D1	lɛ̣ D1	m̩ A2
Laha	kai C1	—	klɔp D1	maa A2
Paha	qɛɛ B1 -t	ðat D1	ɣap D1	—
Buyang	—	tut D1	lip D2	—
Pubiao	—	tɑt D1	(kan A1)	ɱii B1 -it
Hlai	haai C	thuut D	liip D	meɯ A
Sui	qee C2	tɔt D1	ljap D1	mjaa A1/2
Tai	khii C1/2	tot D1	lep D2	muuɯ A2

	9. intestine	*10. knee*	*11. leg*	*12. liver*
Gelao	sai C1	qo B1 (Lz)	qau A1	tæ D1 (Lz)
Lachi	ɕi C1	kwɛ B1	ku A1	tj̩ạ D1
Laha	si C1	—	kaa A1	tap D1
Paha	ðfiii B1 -t	ʁo B1	ɣaa A1	tap D1
Buyang	—	huu B2	ʔaa A1	tap D1

Pubiao	**sai C1**	**qau B1**	—	**tjap D1**
Hlai	**raai C**	—	**haa A**	—
Sui	**haai C1/2**	**quu B1**	**paa A1**	**tap D1**
Tai	**sai C1**	**khau B1**	**khaa A1**	**tap D1**

	13. navel	*14. shoulder*	*15. bear*	*16. bird*
Gelao	**ʐo A2 (Qs)**	—	**mi A2 (Lz)**	**ntau D2**
Lachi	**tfijo A2**	**pfiu B2**	**mɒ A2**	**njǫ D2**
Laha	**dau A2**	**baa B2**	**mɛ A2**	**nok D2**
Paha	**naau A1**	**maa B1**	**mii A1**	**nfiook D2**
Buyang	**ʔduɔ A1**	**ʔbaa B1**	—	**nuk D2 (Lj)**
Pubiao	**ʔnau A1**	**ɳaa B1**	**mfije A2**	**nok D2**
Hlai	**veɯ A**	**vaa B**	**mui A**	—
Sui	**ʔdwaa A1**	—	**ʔmii A1**	**nok D2**
Tai	**duɯɯ A1**	**baa B1**	**mii A1**	**nok A2**

	17. chicken	*18. dog*	*19. flea*	*20. horn*
Gelao	**qai A1**	**mpau A1**	**mpe D1**	**qa A**
Lachi	**kɛ A1**	**ɳ A1**	**mą D1**	**kwɛ A1**
Laha	**kəi A1**	**maa A1**	—	**kou A1**
Paha	**qai A1**	**maa A2**	**mfiat D2**	**ɣuu A1**
Buyang	**ʔai A1**	—	**mat D1**	**ʔuu A1**

Pubiao	**qai A1**	**ɳaa A1**	**ɳat D1**	**qau A1**
Hlai	**khai A**	**pou A**	**poot D**	**hau A**
Sui	**qaai B1**	**ɳaa A1**	**ɳat D1**	**paau A1**
Tai	**kai B1**	**maa A1**	**mat D1**	**khau A1**

	21.head louse	*22. pig*	*23. Tail*	*24. cogon-grass*
Gelao	**ta A2 -t**	**mpa A1**	**tshan D1**	**qe A1 (Qs)**
Lachi	—	**mje A1**	**sɛ D1**	**ku A1**
Laha	**tou A1**	**məu A1**	**cot D1**	**khaa A2 -it**
Paha	**ðfiuu A1**	**muu A2**	**jɛt D1**	**qaa A1**
Buyang	**tuu A1**	**muu A1**	**çut D2**	**ʔaa A1**
Pubiao	—	**ɳuu A1**	**sɑt D1**	**qaa A1**
Hlai	**fou A**	**pou A**	**tshuɬ D**	**hjaa A**
Sui	**tuu A1**	**ɳuu B1**	**hət D2**	**jaa A1**
Tai	**hau A1**	**muu A1**	—	**khaa A2**

	25. sesame	*26. yam*	*27. field*	*28. fire*
Gelao	**ŋklau A2**	**mbø A2 (Qs)**	---	**pai A1**
Lachi	—	**mfia A2**	**nu A2**	**pje A1**
Laha	—	**mal B2 -t**	**naa A2**	**pəi A1**
Paha	**ŋaa A2**	**man A2**	–	**pui A1**
Buyang	**ŋaa A2**	**man A2**	**naa A2**	**fii A1**
Pubiao	**ŋfiɯɑ A2**	**mfiən A2**	**nfiee A2**	**pei A1**

Hlai	**keɯ A**	**man A**	**taa B -t**	**fei A**
Sui	**ʔŋaa A1**	**man A2**	**—**	**vii A1**
Tai	**ŋaa A2**	**man A2**	**naa A2**	**fai A2**

	29. road	*30. bitter*	*31. deep*	*32. dry*
Gelao	**qen A1**	**qan A**	**laŋ D2**	**xau B1**
Lachi	**khĩ A1**	**kã A1**	**lfijɒ D2**	**ku B1**
Laha	**hon A1**	**kam A1**	**lak D1**	**—**
Paha	**—**	**qam A1**	**lfiak D1**	**qfiaa B1**
Buyang	**hun A1**	**ʔam A1**	**lak D1**	**haa B1**
Pubiao	**qxwan A1**	**(ʔdaai B1)**	**łak D1**	**qɣaa B1**
Hlai	**kuun A**	**hoom A**	**łook D**	**kheɯ B**
Sui	**khwən A1**	**qam A1**	**—**	**—**
Tai	**hon A1**	**khom A1**	**luɯk D2**	**khaɯ B1 (L)**

	33. far	*34. old*	*35. raw*	*36. thick*
Gelao	**lai A2**	**qa B1**	**te D2**	**ntau A2**
Lachi	**lje A2**	**kwɛ B1**	**tfiję D2**	**nju A2**
Laha	**klәi A2**	**kou B1**	**kthop (Tm)**	**naa A2**
Paha	**ðfiii A1**	**quu B1**	**—**	**naa A1**
Buyang	**lii A2**	**ʔuu B1**	**ʔdip D1**	**naa A2**
Pubiao	**qxai A2**	**qau B1**	**ʔdap D1**	**nfiee A2**

Hlai	**lai A**	**khau B**	**viip D**	**naa A**
Sui	**?dii A1**	**qaau B1**	**?djup D1**	**?naa A1**
Tai	**klai A1**	**kau B1**	**dip D1**	**naa A1**

	37. dream	*38. fall*	*39. laugh*	*40. grandmother*
Gelao	**pan A1**	**tau D1**	**sa A1**	**ʑɒ C2**
Lachi	**pã A1**	**tjǫ D1**	**ɕu A1**	**ʑfiu C2**
Laha	**pan A1 (Tm)**	**tok D1**	**sɔ A1**	**jaa B1**
Paha	**van A1**	**tɔɔk D1**	**ðfiuɯɯ A1**	**jfiaa C2**
Buyang	**pan A1**	**tuk D1**	**θoo A1**	**jaa C2**
Pubiao	**pan A1**	—	**θaau A1**	—
Hlai	**fen A**	**thok D**	**raau A**	**tsaɯ 3**
Sui	**vjan A1**	**tok D1**	**kuu A1**	**jaa C2**
Tai	**fan A1**	**tok D1**	**hua A1**	**jaa B2**

1.3. KRA AS A WELL-DEFINED KRA-DAI BRANCH.

In this section, we will demonstrate that the Kra languages constitute a well-defined subgroup separate from the other branches of Kra-Dai. The task here is thus to show that these languages share some features lacking in the other sister languages.

Benedict (1942) noted a score of examples, numerals apart, which were intended to serve to tie his Kadai group together. Most items, however, also have related forms in Tai, thus the basis for defining a distinct group was somewhat shaky. Moreover, his original Kadai stock does not cover the same languages as our Kra here; as we will see from Figure 3, Hlai does not belong to our Kra group.

Liang (1990) has included most of our Kra languages as a group he called Ge-Yang. Refering to the percentages of shared cognates among the languages (based on about 200 words), he claimed that these languages share higher percentages among themselves than each of them does with other members of the family. However, he did not show examples of the proposed cognates, on which he based his statistics, thus provided no evidence for us to evaluate.

We are offering here some qualitative evidence, showing thirty etyma found exclusively in the Kra languages. The list is selected to include only etyma which have reflexes in at least three of the four subgroups (cf. Chapter 2); i.e. one from either Gelao or Lachi (Western-Kra), another from either Laha or Paha (Southern-Kra and Central-Kra), and the other from either Buyang or Pubiao (Eastern-Kra). While there is a possibility that future research may suggest some of these etyma as non-exclusively Kra, we believe that the majority of them will stand as valid subgrouping criteria. Note that the other sister branches do not necessarily have the related forms among themselves for these etyma.

Figure 3: Special Kra etyma

	1. pus	*2. meat/flesh*	*3. deaf*	*4. fat*
Gelao	**ŋka B1**	**ʔɒ C1**	**ŋan C2**	**nan A2**
Lachi	**ŋfiū B2**	**ʔǫ C1**	**ɳfia C2**	**nfija A2**
Laha	—	**ʔəu C1**	**ŋal C2**	**mnal B2 -t**
Paha	**ŋfiuu B1**	**ʔaau C1**	—	**nan A2**
Buyang	**muu B1**	**ʔuɔ C1**	**ŋan C2**	**nɛn A2**
Pubiao	**hau B1**	**ʔjau C1**	**ŋan C2**	**nfiin A2**
Hlai	**gwiu C**	**gom C**	**ɬook D**	**gwei C**
Sui	**sok D2**	**naan C2**	**ʔdak D1**	**pii A2**
Tai	**nɔɔŋ A1**	**nɯa C2**	**nuak D1**	**phii A2**

	5. good	*6. itchy*	*7. ripe*	*8. satiated*
Gelao	ʔɒ A1	tau D2	ŋka B1	tshai B1
Lachi	ʔa A1	—	ŋ̊i B1	sɛ B1
Laha	ʔai A1	dok D2	ŋ̊əu B1 -i	ci B1
Paha	ʔaai A1	dɔɔk D1	muu B1	—
Buyang	—	ʔduk D1	muu B1	θii B1
Pubiao	ʔai A1	—	—	—
Hlai	ɬeŋ̊ A	khom A	fui A1	khuuum A
Sui	ʔdaai A1	ʈit D1	sok D2	tjaŋ B1
Tai	dii A1	khan A2	suk A1	ʔim B1

	9. smelly	*10. white*	*11. wildcat*	*12. hawk*
Gelao	mpa B2	ʔau D1 (Lz)	qa C1	li C2
Lachi	mfiĩ B2	ʔi D1	kwɐ̨ C1	lfii C2
Laha	məu B2	ʔuk D1	—	klaaŋ C2
Paha	mfiuu B2	lɔɔk D1	quu C1	ðaaŋ C2
Buyang	—	ʔɔɔk D1	ʔuu C1	laaŋ C2
Pubiao	mfiuu B2	—	qau C1	laaŋ C2
Hlai	—	khaau A	huui C	ŋaau A
Sui	ŋ̊uu A1	paak D2	peu B1	ŋ̊aau A2
Tai	men A1	khaau A1	—	jiau B2

	13. star	*14. water*	*15. wind*	*16. do*
Gelao	**zoŋ A2 (Qs)**	**ʔəɯ C1**	**ven A2**	**tha A2**
Lachi	**lfiei A2**	**ʔɻ̩ C1**	**—**	**tfije A2**
Laha	**kluŋ A2**	**ʔuŋ C1**	**van A2**	**dəu A2**
Paha	**ðɔɔŋ A2**	**ʔɔɔŋ C1**	**vum A2**	**duu A1**
Buyang	**lɔɔŋ A2**	**ʔɔɔŋ C1**	**vən A2**	**ʔduu A1**
Pubiao	**lfiuuŋ A2**	**ʔɔŋ C1**	**—**	**—**
Hlai	**raau A**	**nom C**	**hwoot D**	**vuuk D**
Sui	**zɔt D1**	**nam C1/2**	**zum A1/2**	**hee C2**
Tai	**daau A1**	**naam C2**	**lom A2**	**tham A2**

	17. forget	*18. give*	*19. go*	*20. hatch*
Gelao	**te D2**	**ni D2**	**vu C2**	**qan C1**
Lachi	**tfiɻ̩ D2**	**—**	**vu C2**	**kɻ̩ C1**
Laha	**dap D2**	**nak D2 -v**	**vaa C2**	**—**
Paha	**dap D1**	**nfiaak D2**	**vaa C2**	**qam C1**
Buyang	**ʔdap D1**	**naak D2**	**vaa C2**	**ʔam C1**
Pubiao	**ʔdjap D1**	**—**	**—**	**qam C1**
Hlai	**luuum B**	**tuuuŋ B**	**hei A**	**phook D**
Sui	**laam A2**	**haai A1**	**paai A1**	**pjam A1**
Tai	**luuum A2**	**hai C1**	**pai A1**	**fak D2**

	21. have	*22. hear*	*23. plant (v.)*	*24. steal*
Gelao	ʔo A1 (Lz)	tsaŋ D2	tan C1	len C2
Lachi	ʔĩ A1	jo̱ D2	tjã̱ C1	lfiĩ C2
Laha	ʔan A1	jak D2	tam C1	—
Paha	ʔan A1	jfiak D2	tam C1	lfiam C2
Buyang	ʔan A1	—	tam C1	luəm C2
Pubiao	ʔan A1	tɕak D2	tap C1	—
Hlai	tsau B	pleɯ A	gwaa A	zok D
Sui	me A2	di C1	mba A1/2	ɭjak D1/2
Tai	mii A2	-yin A2	pluuk D1	lak D2

	25. wear	*26. nest*	*27. sieve*	*28. y brother*
Gelao	lai C2	tsɒ C1	vi A2	tsəɯ B2
Lachi	lfijo C2	to̱ C1	vei A2	ʑfio B2
Laha	lɛ C2	—	—	jau B2
Paha	lfiii C2	ðaau C1	vaaŋ A2	—
Buyang	lee C2	—	vaaŋ A1	juə B2
Pubiao	—	θoo C1	—	—
Hlai	tshat D	ruuk D	doŋ C	guuŋ A
Sui	tan C1	kuŋ A1	doŋ C1	nu C2
Tai	sai B1	raŋ A2	doŋ C1	nɔɔŋ C2

	29. two	*30. four*
Gelao	**su A1**	**pu A1**
Lachi	**su A1**	**pu A1**
Laha	**saa A1**	**paa B1 -t**
Paha	**θaa A1**	**paa A1**
Buyang	**θaa A1**	**paa A1**
Pubiao	**ɕee A1**	**pee A1**
Hlai	**ɬau C**	**tshau C**
Sui	**ɣa A1/2**	**ɕii B1**
Tai	**sɔɔŋ A1**	**sii B1**

1.4. Kra as autonym 'Human Being'.

We have called the language group under study here *Kra*, and we are obliged here to explain our choice. It has already been mentioned in previous sections that the existing term "Kadai" is not proper for our purpose, since it does not refer precisely to the same language group we are working with. Moreover, since its inception in 1942, the term has been elusively used in many different senses both by Benedict himself and by others. It is sometimes used as a cover term to vaguely refer to any languages other than the more well-known groups such as Tai and Kam-Sui. It is also sometimes used to refer to the whole family (in this sense, many lesser known languages are often loosely dubbed as 'Kadai outlier languages' without necessarily implying close affiliation among them).

Our term *Kra* does intend to refer to the well-defined distinct group we have demonstrated in the previous section. In addition, the term is, we are proposing, the reconstructible form used as autonym in a number of Kra languages. This autonym means 'person, human being' in many varieties, and we believe it to be the original meaning of the term.

We will first show that *Kra* is the common form of autonyms used by various Gelao dialects. Three varieties representing different Gelao branches

will be taken as examples here (for subgrouping of Gelao dialects, see Chapter 2). These are Wanzi, Qiaoshang and Laozhai, which respectively represent Central, Northern and Southwestern groups. The autonyms in these varieties are as follows: Wanzi **/klau^{55}/**, Qiaoshang **/ɣe^{45} /**, and Laozhai **/ʔlʏɯ^{33}/**. The Qiaoshang form also means 'human being'.

First, all these forms belong to the same tone class: C1. (See Chapter 3 for details and discussions of the established tone classes).

	Tone class	*Wanzi*	*Qiaoshang*	*Laozhai*
"Kra"	**C1**	**klau 55**	**ɣe 45**	**ʔlʏɯ 33**
Water	**C1**	**ʔəɯ 55**	**ʔau 45**	**ʔɲ 33**
Plant (v.)	**C1**	**tan 55**	**tø 45**	**tã 33**
Excrement	**C1**	**qɒ 55**	**qai 45**	**qæ 33**
Interstine	**C1**	**sai 55**	**sei 45**	**ɕi 33**

Second, all these forms go back to proto rime ***-a**. Since Gelao languages have undergone relatively drastic changes of rimes, and no representative varieties here reflect this proto rime faithfully as **-a**, we are also providing below the Laha forms for comparison. (For details and discussions on the Proto-Gelao rime correspondences, see Chapter 4).

	Proto-rime	*Wanzi*	*Qiaoshang*	*Laozhai*	*Laha*
"Kra"	***-a**	**klau C1**	**ɣe C1**	**ʔlʏɯ C1**	**khlá**
cogon grass	***-a**	**(saŋ B1)**	**qe A1**	**qʏɯ A1**	**khaa A2**
light (a.)	***-a**	**xau C1**	**xe C1**	**qʏɯ C1**	**khaa C1**
snake	***-a**	**ŋkau A2**	**ŋge A2**	**ŋʏɯ A2**	**ŋaa A2**
dry	***-a**	**xau B1**	—	**qʏɯ B1**	**khaa B1**
bran	***-a**	**pau B1**	—	**pʏɯ B1**	**paa B1**

For the complex onset, ***kr-**, Wanzi and Laozhai varieties show modern reflexes of the medial as **-r-** only when followed by shwa. Otherwise their

reflexes have completely merged with those of ***kl-**. In Qiaoshang, the two onsets are generally distinguished: **kw-** for ***kl-** and **ɣ-** for ***kr-**. (See Chapter 4 for details on reconstructing Gelao initials).

		Wanzi	*Qiaoshang*	*Laozhai*
"Kra"	***kr-**	**klau C1**	**ɣe C1**	**ʔlʏɯ C1**
head	***kr-**	**klɒ B1**	**ɣai B1**	**ʔrə B1**
house	***kr-**	**qə˞ A1**	**ɣai A1**	**ʔrə A1**
Contrast with:				
close eye	***kl-**	**kle D1**	**kwa D1**	**ʔlæ D1**
lazy	***kl-**	**kle D1**	**kwĩ D1**	**ʔlæ D1**
grandchild	***kl-**	**klu A1**	**kwai A1**	—

The common ancestor of the Gelao, we have thus demonstrated, called themselves ***kra C**, whose original meaning is 'human being'.

The Laha people of Vietnam often use the autonym **/khlá/** followed by different attributions to designate verieties. For instance, Khlá Phlạo (literally "Dry Laha") refers to the Laha at Nong Lay (Nl) location, which is the representative dialect in this study.

The initial ***kr-**, with **-r-** inducing aspiration, becomes Laha **khl-**, contrasting with ***kl-** which becomes Laha **kl-**.

		Laha (Nl)	*Gelao(Wz)*	*Gelao(Qs)*	*Gelao(Lz)*
"Kra"	***kr-**	**khlá**	**klau C1**	**ɣe C1**	**ʔlʏɯ C1**
grandson	***kl-**	**klaal A1**	**klu A1**	**kwai A1**	—
close eye	***kl-**	**klap D1**	**kle D1**	**kwa D1**	**ʔlæ D1**

The rime correspondence presents no difficulty. Laha **-a** is the straightforward reflex of proto ***-a**. Examples have been already provided in the previous comparative table with those of Gelao dialects. The material available, unfortunately, does not indicate tones for this Laha form **/khlá/** in the system which we may reliably interpret. Another variety of Laha at Ta Mit (Tm) location has the corresponding autonym **/la^{33} ha^{21}/**. The first morpheme **/la-/** is

prefixed to a number of words designating human relations, and is most likely a reduced form of **/laak^{34}/** 'child, offspring'. It is the latter morpheme **/ha^{21}/**, which corresponds to Nong Lay Laha **/khlá/**. The correspondence Nong Lay *khl-* vs. Ta Mit *h-* is regular. For instance, Nong Lay **/khlaa^{2}/** Tamit **/ka^{33} hu^{33}/** 'ear'; Nong Lay **/khlaat^{1}/** Ta Mit **/ko^{212} haat^{34}/** 'crab'. (Ta Mit **/ka-/** is prefixed to a number of body parts, e.g. **ka^{33} ma^{33}** 'hand'; while **/ko-/** is commonly prefixed to many animal forms, e.g. **ko^{212} kap^{23}** 'duck').

Ta Mit tone **/21/** rightly points to the proto tone class ***C**, but, if no tonal change in context may be assumed, appears to indicate initial series 2 rather than series 1 (Tone **C1** is reflexed as Ta Mit **/31/** or **/212/**, the latter variant typically occurs with early voiceless aspirated and fricative initials; see Chapter 3).[2]

In any case, these Laha forms **/khlá/** and **/ha^{21}/** seem to unmistakably represent the common autonym with those of Gelao ***kra-C**.

The Lachi form for 'human being' is **/(ʔa) hu^{33}/**. We suggest that this form, too, is of common origin with those Gelao and Laha autonyms. Both Lachi **/-u/** as a reflex of proto vowel ***-a** and Lachi tone **/33/** as a reflex of tone class **C1** are completely regular.

- Lachi tone **/33/** and proto tone class **C1**

	Tone class	Lachi	Gelao (Wz)	Laha (Nl)
"Kra"	C1	**hu̯ 33**	**klau 55**	**khlá**
water	C1	**ʔi̯ 33**	**əɯ 55**	**ʔuŋ 6**
plant (v.)	C1	**tjã̯ 33**	**tan 55**	**tam 6**
excrement	C1	**ka̯ 33**	**qɒ 55**	**kai 6**

- Lachi rime **/u/** and proto rime ***-a**

		Lachi	Gelao (Wz)	Laha (Nl)
"Kra"	C1	**hu̯ C1**	**klau C1**	**khlá**
eye	A1	**tju A1**	**tau A1**	**taa A1**

---

[2] Ta Mit has shown certain cases of potential tonal change in context. For instance, tone /343/ which is a normal reflex of proto tone A1 often becomes /24/ when preceded by another syllable, e.g. Tamit **/ma^{33} ta^{24}/**, Nong Lay **/ta A1/** 'eye'; Tamit **/ma^{33} sam^{24}/**, Nong Lay **/sɐm A1/** 'hair', but Ta Mit **/tɕɯn^{343}/**, Nong Lay **/col A1/** 'buy'; Ta Mit **/pɯi** ^{343}/, Nong Lay **/pəi A1/** 'fire'.

leg	A1	**ku A1**	**qau A1**	**kaa A**
bran	B1	**pu B1**	**pau B1**	**paa B1**

Lachi **h-**, however, is not a regular reflex found in native etymologies. The normal Lachi reflex of ***kr-** is **/kh-/**.

		Lachi	*Gelao(Wz)*	*Gelao(Lz)*
Head	***kr-**	**khja B1**	**klɒ B1**	**ʔrə B1**
House	***kr-**	**kho A1**	**qə˞ A1**	**ʔrə A1**

In this case, the initial may be assumed to be influenced by the following vowel. Other Lachi dialects in Vietnam from early records show initial **/kh-/** for this word.

	Tone	*Jinchang*	*Bonifacy* (1906)	*Robert* (1913)
Person	**C1**	**hu̱ 33**	**khu**	**k'ou**
Head	**B1**	**khja 45**	**khá**	**kha**
House	**A1**	**kho 55**	—	**k'ò**

The Paha people call themselves **/pa^{44} haa^{44}/**, which also means 'human being'. The first morpheme also appears prefixed to a few other kinship terms indicating 'male', e.g. **/pa^{33} jfiu^{213}/** 'son-in-law', and is most likely of the same etymology as **/paa^{44}/** 'father'. The latter morpheme **/haa^{44}/** should appear to be straightforwardly relatable to the form ***kra**. The correspondences are, however, somewhat irregular. The tone points rather to tonal class B1 (Paha normal reflex of tone C1 is **/45/**), though there are also a few other examples where Paha shows tone B1 for etymologies which regularly belong to the C1 class, e.g. Paha **/ðhii^{44}/** 'intestine' and **/qɛɛ^{44}/** 'excrement'. The initial **/h-/** is not normally found in native words. For the complex initials ***kr-** and ***kl-**, Paha often has **/q-/** as a reflex and there does not seem to be an apparent condition for its variant occurrence as **/h-/** in this etymon.

		Paha	*Laha (Nl)*	*Gelao (Wz)*	*Lachi*
House	***kr-**	**qaan A1**	—	**qə˞ A1**	**kho A1**
Sun	***kl-**	**qaaŋ A1**	**klaaŋ A1**	**klei A1**	—

Despite the irregularities in this last form, we feel that our proposal to use the term *Kra* to designate this group of languages and people has been justified. The fact that other sister languages such as Buyang do not appear to share this common etymon does not necessarily vitiate the proposal.[3] The term is unique and represents a majority of speakers of the language group (including the Gelao who are the most diverse and the most numerous). A similar scenario can be referred to in the Tai branch, where the term "Tai" has well represented the whole group although several varieties have used other names as their autonyms (such as "Yi/Yay" in most Northern Tai varieties or "Nung" in a number of Central Tai varieties).

1.5. KRA AND KRA-DAI

We propose to call the whole language stock, to which Kra and other sister languages belong, *Kra-Dai*. The term follows the popular tradition of juxtaposing two big language members of the family, which sometimes are also linguistically distant enough from each other to give the feel of the whole family (cf. Sino-Tibetan, Tibeto-Burman, Mon-Khmer, etc). Such "dual" names appear to have proved practical; the longer names have seemed to be less successful in competition. For instance, the term "Kam-Tai" which represents the Tai and Kam-Sui branches have quickly taken over the older names such as "Tai-Kam-Sui-Mak" (the last three members belong to the Kam-Sui branch).

The motivation for picking up the "Dai" part of the term is obvious. It is the reconstructed form for autonyms of various Tai groups (variable as either **/tai A2/** or **/thai A2/**, depending on the respective sound changes ***d- > t-** or **th-**). Of all family members, Tai is undoubtedly the most well-known and most numerous, and has achieved the most complex political and cultural entity. Any family term without the Tai included would be just like Sino-Tibetan without the Chinese (Sino-).

---

[3] For Pubiao, Hoang and Vu (1992) recorded a form **/qa gɯa³/** 'people', which might be related. The velar initials often offglide before the open low vowel /-a/ in Pubiao, while tone 3 in their transciptions can be a reflex of either C1 or A2 tone. This may also be a source of the Sino-Vietnamese term *La Qua* used to designate the Pubiao people in some early records, where **/la-/** is probably a reduced form of **/laak/** 'child, offspring' (cf. Laha).

The choice of "Kra" is supported by the fact that this language group includes quite diverse members, which geographically span a vast area second only to Tai (from Guizhou province of China in the north to Son La province of Vietnam in the south). Another equally diverse group is probably Kam-Sui, but we already have quite a good picture of the common ancestor it shares with Tai proper, i.e. Kam-Tai. The Hlai branch is just represented on Hainan island, and includes closely related varieties (especially in term of shared lexicon, though phonologically fairly diverse). The Be group is found in an even more limited area (some counties in the northern part of Hainan island), and includes a few very closely related varieties.

For the Thai people who share two-thirds of the family population, we also propose the Thai term ขาไท **/khaa C1 thai A2/** for this language family. This is most likely the Thai reflex of the term "Kra-Dai" ***/kra C1 dai A2/**. The latter morpheme of course is the autonym of the Thais themselves.

The word ขา **/khaa C1/** in Thai typically means 'slave'.[4] We would like to suggest that the word is etymologically related to "Kra", the autonym which originally means 'human being'. We may imagine that the term started to appear in Tai languages relatively recently, when the Tai expanded to the west and southwest (from Guangxi to Yunnan and further west into Burma and Assam and to the Southwest into Vietnam, Laos and Thailand. This etymon is not found in Li's *Handbook of Comparative Tai*, and may not be reconstructible at the Proto-Tai level). This Tai expansion in effect cut through the area native to their Kra sisters, which used to form the west and southwest borders of the family settlements, and probably involved the subjugation of the Kra's by the Tai's. "Kra" then became known as inferior men, and finally also 'slave' to their sibling conqueror. The Tai later applied this term as a prefix to the names of various Mon-Khmer and Loloish tribes they presided over in the area of present-day Thailand, Laos, Cambodia and Vietnam (Cf. the related form in Black Tai **/saa C1/**, which has been borrowed as Vietnamese **/xá/** to designate various inferior ethnic groups in Vietnam).

We also offer this term ขาไท **/kha thai/** as a substitute for ไท-กะได **/thai kadai/**, which has been transliterated from the term "Tai-Kadai" and introduced into Thai during the last decade. The term /thai kadai/ has often elicited smiles or funny looks from non-linguists (sometimes from linguists as well!) when they first hear it. The author himself has always found it difficult to expect any serious talk about the topic following the introduction of the name, and has felt

---

[4] The word is also used as a first-person pronoun, though it is now considered obsolete and vulgar in Standard Thai. In several dialects, the pronoun may imply humility or inferiority of the speaker toward the hearers, such as the Lao term **/khaC1 nɔɔi C2/** (the latter morpheme means 'small') 'little I/man'.

that the consequence should not be underestimated. What are the sources of such ridicule?

Here may be what has happened. The Thais often add attributions to differentiate various tribes of Tai. Following the Noun + Attribute word order in the language, Thais have terms like *Tai khao* 'Tai + white' = White Tai, *Tai dam* 'Tai + black' = Black Tai (these are mainly based on the colors of the clothes worn by those respective tribes), etc. Now the morpheme กะได **/kadai/** has meaning in Thai: 'ladder'. And the absurd feeling towards the term **/thai kadai/** has stemmed from these combined facts: that syntactically it falls perfectly into the normal pattern, thus **/thai kadai/** = 'Tai + ladder', but semantically it is somewhat nonsensical--what on earth is the 'ladder' doing here?

We are hoping that our proposed term ข้าไท **/khaaC1 thaiA2/** will become the alternative which will prove to be both historically proper and synchronically practical to the Thais.

CHAPTER 2

KRA SUBGROUPS AND VARIETIES

2.1. KRA SUBGROUPINGS.

In this chapter, we will discuss the subgrouping of the Kra languages and their varieties. Liang (1990) has grouped together Gelao and Lachi on the one hand and Pubiao and Buyang on the other. He claimed that the languages within the same branch share a higher percentage of cognates between themselves than each of them does with the other group members. No evidence was provided as to the source of his statistics, though, as we will see below, this grouping of his appears to be partially consonant with ours. In the same work, Paha was mentioned in passing as a variety of Buyang. Some lexical criteria (see 2.4) as well as several unique phonological developments in the language seem to suggest that Paha forms a separate group, however. Liang did not enter the Laha language into his scheme, probably due to his lack of access to material on the language.

There are three main criteria, two phonological and one lexical, that we are offering for subgrouping the Kra languages. The first phonological criterion concerns the reflexes of early implosive initials (2.2), and the second concerns the system of final consonants (2.3). Certain sets of exclusive vocabularies are also found to separate some languages from the others (2.4).

2.2. CRITERION 1: THE BIPARTITIONED REFLEXES OF PROTO IMPLOSIVES.

The reflexes of common Kra implosives, as either early voiced stops (with tone series 2) or early glottalized voiced stops (with tone series 1), bisect the Kra languages into two groups: Gelao, Lachi and Laha on the one hand (tone series 2 reflexes) and Paha, Buyang and Pubiao on the other (tone series 1 reflexes).

As a matter of fact, the reflexes of these sounds in modern languages have developed even further. For instance, in several varieties of Gelao, Lachi and Laha, the voiced stops have already become breathy or devoiced into either aspirated or unaspirated voiceless stops (for details, see sections 2.6 - 2.8). The tonal reflexes in such varieties, however, all belong to series 2 of tones which indicate early voicing of initials. In another group, modern Paha reflexes of these initials are plain voiced stops, but its tonal reflexes belong to series 1 of tones and suggest early glottalized initials.

Examples are provided in Figure 4. Unless indicated, the representative dialects are as follows: Laozhai (Gelao), Jinchang (Lachi), Nong Lay (Laha), Yanglian (Paha), E-Cun (Buyang) and Pufeng (Pubiao).

	Do	*Forget*	*Itchy*	*Bone*
	***ɖ-**	***ɖ-**	***ɖ-**	***ɖ-**
Gelao	**di A2**	**te D2 (Wz)**	**tau D2 (Wz)**	**dæD2**
Lachi	**tfije A2**	**tfiɲa D2**	**—**	**tfiɲo D2**
Laha	**dəu A2**	**dap D2**	**dok D2**	**dak D2**
Paha	**duu A1**	**dap D1**	**dɔɔk D1**	**—**
Buyang	**ʔduu A1**	**ʔdap D1**	**ʔduk D1**	**—**
Pubiao	**(wak D2)**	**ʔdjap D1**	**(ram C2)**	**ʔdaak D1**

Figure 4 Reflexes of proto implosives

The retroflexed initial ***ɖ-** is reconstructible on the basis of the Qiaoshang Gelao reflex **/z-/** instead of **/t-/** (cf. 2.6 and Chapter 4 for details of Proto-Gelao initials). In parallel, the Paha reflex of this retroflexed initial is **/ð-/**, with tone series 1 which suggests an early glottalized **ð-** in the language (cf. 'to crow', Figure 4a). Paha and Pubiao nasal reflexes (cf. 'navel', Figure 4a) are resulted from the influence of an early presyllabic nasal (see Chapter 6 for discussions of Paha and Pubiao initials).

	Raw	*Crow (v.)*	*Navel*
	***ɖ-**	***ɖ-**	***(m-)ɖ-**
Gelao	**dæ D2**	**zã A2 (Qs)**	**zo A2 (Qs)**
Lachi	**tfiɲe D2**	**tfijõ A2**	**tfijo A2**
Laha	**—**	**daŋ A2**	**dau A2**
Paha	**—**	**ðaŋ A1**	**naau A1**

Buyang	**ʔdip D1**	**ʔdaŋ A1**	**ʔduə A1**
Pubiao	**ʔdap D1**	**ʔdaŋ A1**	**nau A1**

Figure 4a Reflexes of proto implosives (continued)

2.3. CRITERION 2: THE LOSS OF LABIAL ENDINGS AND WESTERN-KRA.

Our reconstruction of Gelao and Lachi rimes (Chapter 4) suggests that the system of final consonants at the stage of the common ancestor of these two languages already lacked labial endings. (Their system of finals thus consists of ***-n**, ***-ŋ**, ***-t** and ***-k**). We take this as a development which binds Gelao and Lachi together as the Western-Kra branch.

No modern Gelao and Lachi varieties, in fact, keep this relatively simplified rime system intact. A few Gelao dialects (e.g. Wanzi) keep nasal finals -n and -ŋ, but most have only velar -ŋ, which may further become nasalization of the vowels. Stop endings underwent even more drastic change, yet have still survived in such form as the constriction of the vowel (e.g. in Jinchang Lachi).

Figure 5 provides examples of Proto-Kra rimes ***-əm**, ***-ən**, ***-əŋ** and ***-əp**, ***-ət**, ***-ək**. Both Gelao and Lachi show the same reflexes of rimes ending with labials and alveolars, while distinguish them from those ending with velars. The fact that varieties such as Wanzi Gelao show alveolar nasal ending (**-n**) suggests that the labial endings have merged into alveolars rather than vice versa. The distinctive reflexes of alveolar and velar endings may also surface as contrast of vowel quality (e.g. between **-a** and **-ɒ** in Lachi). But, to project such vowel distinction directly back to common Western-Kra will only prove to create a proto-system with an artificial proliferation of rime contrasts.

	bitter	*hatch*	*dream*	*crow(v.)*	*peach*
	***-əm**	***-əm**	***-ən**	***-əŋ**	***-əŋ**
Gelao	**qan A1**	**qan C1**	**pan A1**	**thaŋ A2**	**plaŋ A1**
Lachi	**kã A1**	**kã̱ C1**	**pã A1**	**tfijõ A2**	**põ A1**
Laha	**kam A1**	**—**	**pan A1(Tm)**	**daŋ A2**	**—**
Paha	**qam A1**	**qam C1**	**van A1**	**ðaŋ A1**	**baŋ A1**

Buyang	?am A1	?am C1	pan A1	?daŋ A1	---
Pubiao	---	qam C1	pan A1	?daŋ A1	paŋ A1

	liver	*forget*	*flea*	*deep*	*bone*
	*-əp	*-əp	*-ət	*-ək	*-ək
Gelao	tæ D1 (Lz)	te D2	mpe D1	laŋ D2	taŋ D2
Lachi	tjạ D1	tfijạ D2	mạ D1	lfijɒ D2	tfijɒ D2
Laha	tap D1	dap D2	mat D1	lak D1	dak D2
Paha	tap D1	dap D1	mfiat D2	lfiak D1	---
Buyang	tap D1	?dap D1	mat D1	lak D1	---
Pubiao	tjap D1	?djap D1	ɱat D1	ɬak D1	?dak D1

Figure 5

2.4. CRITERION 3: LEXICAL INNOVATIONS AND EASTERN-KRA.

There are a set of words where Pubiao and Buyang appear to share related forms between themselves, but separated from those of other Kra languages. We take this as a lexical trace which binds Pubiao and Buyang together as the Eastern-Kra branch. Forms in certain etyma (Figure 6) such as 'buy' may be loaned from Tai separately into Buyang and Pubiao (note the wrong tone category in Buyang, we would expect tone C2). The last example, 'heart', does not show related forms between Buyang and Pubiao. We include it here only to show an instance of independent innovations of Buyang and Pubiao against the retention of Kra roots in the other languages.

	armpit	*blood*	*excrement*	*vegetable*	*nose*
Gelao	tɕi C1 (Lz)	plɒ D1	qɒ C1	luŋ A2	ɳtɕe D1
Lachi	tjạ C1	pjo D1	kạ C1	lfiũ A2	ɳa D1
Laha	tai C1	plaat D1	kai C1	loŋ A1	ŋat D2 -t

Paha	**taai C1**	**pɛɛ D1 -f**	**qɛɛ B1 -t**	**ðuŋ A2**	**ŋhat D1**
Buyang	**lie A2**	**haa C1**	**ʔjak D1**	**ʔup D1**	**tiŋ C1**
Pubiao	**lfiii A2**	**qaa C1**	**ʔjak D1**	**ʔap D1**	**tɑŋ C**
	bite	*ear of grain*	*buy*	*heart*	
Gelao	**zɪ B1(Qs)**	**qan A1**	**sen A1**	**ləɯ C1**	
Lachi	**tja B1**	**kã A1**	**tɕĩ A1**	**lje C1**	
Laha	**tai B1**	**—**	**col A1**	**lul C1**	
Paha	**ðaai B1**	**ɣan A1**	**tɕʏn A1**	**lhin C1**	
Buyang	**ðam C2**	**ðaaŋ A2**	**ɕɯɯɯ A2**	**θam A1**	
Pubiao	**ram C2**	**pfijɑɑŋ A2**	**θɯɯɯ C2**	**ŋən C2**	

Figure 6

2.5. SUBGROUPING HYPOTHESIS.

We are outlining in Figure 7 the picture of Kra subgroups according to the criteria expounded in the previous sections. Numbers 1, 2, and 3 added in the middle of branching lines refer to the three criteria which set up the respective groups.

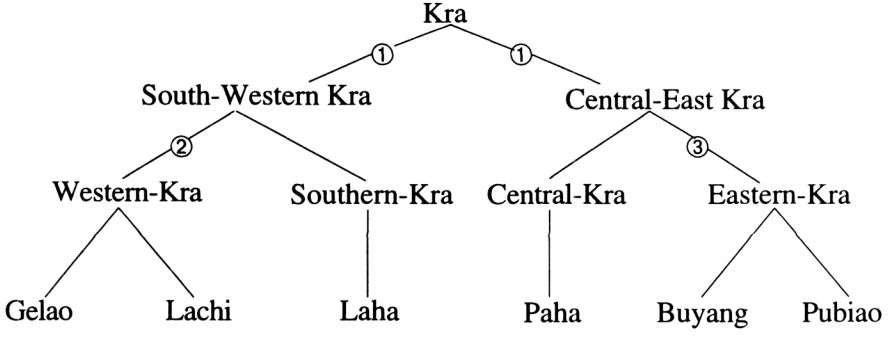

Figure 7 Kra subgroupings

From sections 2.6 to 2.11, we will further discuss the varieties of each of the six languages.

2.6. GELAO VARIETIES.

Gelao varieties are quite diverse and may be divided into three branches: Northern, Central, and Southwestern. In general, Southwestern dialects retain better voicing distinction of initials with fewer tones, while Northern dialects have distinctive spirantal reflexes of what we have reconstructed as the Proto-Gelao retroflex initial series. In Figure 8 and Figure 9, Laozhai, Wanzi and Qiaoshang varieties are taken as representatives of Southwestern, Central and Northern branches respectively. (Laozhai voiced stops and affricates are phonetically accompanied by slight prenasalization, i.e. **/b-/** = **[^{m}b-]**, etc).

		Laozhai	*Wanzi*	*Qiaoshang*
cave	A2	**boŋ 35**	**phu 44**	**poŋ 31**
father	A2	**ba 35**	**phɒ 44**	**pɒ 31**
do	A2	**di 35**	**tha 44**	**tʏu 31**
count	C2	**dau 33**	**ta 31**	**tʏu 33**
bone	D2	**dæ 31**	**taŋ 13**	**tɒ 21**
fall	D2	**dʏu 31**	**ta 13**	**tʏu 21**
chopstick	C2	**dzɑu 33**	**tsəɯ 31**	**tso 33**
louse	A2	**dʐu 35**	**tshen 44**	**tʂø 31**
brother	B2	**ʐu 31**	**tsəɯ 13**	**so 21**
tear (n.)	C2	**ʐi 33**	**tsau 31**	**se 33**

Figure 8 Gelao voiced stops and affricates

		Laozhai	*Wanzi*	*Qiaoshang*	
egg	A1	**to 45**	**tan 33**	**zø 44**	***ʈ-**
eye	A1	**ti 45**	**tau 33**	**ze 44**	***ʈ-**
raw	D2	**dæ 31**	**te 13**	**zɪ̈ 21**	***ɖ-**

crow (v.)	A2	doŋ	thaŋ 44	zɑ̃ 31	*ɖ-
teach	A1	tʂɭ 45	səɯ 33	zɒ 44	*tʂ-
mountain	A2	dʐɭ 35	tsha 44	zʏu 31	*dʐ-
bird	D2	ni 31	ntau 13	zau 21	*ɳ-
snow	A2	ɳi 35	ntai 44	zɪ 31	*ɳ-
near	C2	lʏɯ	lau 31	ze 33	*l

Figure 9 Gelao retroflex consonants

There are more records of Gelao varieties than for any other Kra languages, especially ones studied by Zhang (1993). However, material on several dialects has often been too terse and at times of uncertain quality. To avoid being overwhelmed with details coming from such ambiguous records, we will have to selectively comment on only a few varieties where data are more extensive and better transcribed.

Three languages from Zhang (1993) may be mentioned first: Niupo (Liuzhi county), Dagouchang (Pingba county), and Longli Mulao (Majiang county). According to the criteria for dialect subgrouping outlined above, we may include these varieties in the Southwestern, Central and Northern branches respectively. Examples are given in Figure 10 and Figure 11. (Zhang's transcriptions of tones may be problematical. Our records of a few languages which Zhang has also investigated disagree quite often with his transcription in this respect).

Southwestern Central

		Laozhai	*Niupo*	*Wanzi*	*Dagouchang*
father	A2	ba 35	bɑ 33	phɒ 44	phɒ 55
do	A2	di 35	dɑ 31	tha 44	thɒ 33
chopstick	C2	dzɑu 33	dʑɑɯ 55	tsəɯ 31	tsə 21
louse	A2	dʐu 35	dʑuŋ 31	tshen 44	tshen 55
tear (n.)	C2	ʑi 33	ʑɯ 55	tsau 31	tsɑu 21

Figure 10

		Southwestern	*Central*	*Northern*	
		Laozhai	*Wanzi*	*Qiaoshang*	*Longli*
egg	A1	**to 45**	**tan 33**	**zø 44**	**ʑe 31**
eye	A1	**ti 45**	**tau 33**	**ze 44**	**zo 31**
bird	D2	**ni 31**	**ntau 13**	**zau 21**	**zɑu 53**
fat	A2	**noŋ 35**	**nan 44**	**zø 31**	**ze 31**
thick	A2	**ni 35**	**ntau 44**	**ze 31**	**zo 31**
near	C2	**lvɯ 33**	**lau 31**	**ze 33**	**zɑ 31**
earth	B2	**---**	**la 13**	**zvu 21**	**zɑu 33**

Figure 11

Qiaoshang and Longli also appear to share the further devoicing of what Central dialects show as the voiced spirant **/v-/**. For these etymologies, which are reconstructible as Proto-Gelao ***vj-** and ***vr-**, Southwestern varieties often have spirantal reflexes of medial resonants (e.g. **z-**, **ʑ-** or **ɣ-**):

		Laozhai	Wanzi	Qiaoshang	Longli
tall	A2	**ʑu 35**	**vi 44**	**fy 31**	**fə 53**
wind	A2	**ʑu 35**	**ven 44**	**fy 31**	**fɑi 33**
fly (n.)	A2	**ʐo 35**	**van 44**	**fy 31**	**fe 31**

Figure 12

Zhang (1993) divided the Gelao languages into four groups: Central, North-Central, Southwestern and Western. His Central group partially agrees with ours in including such dialects as Wanzi and Dagouchang (also known as the Gao group). So is his Southwestern group which includes such varieties as Laozhai and Niupo (also known as the Duoluo group). However, he included the Qiaoshang variety in his Central group, and considered Longli Mulao as a

separate language from Gelao. Both these dialects belong to our Northern branch.

Zhang's North-Central group included Yangliu and Banli varieties, both spoken in Renhuai county. (The former is also known as Green Gelao or Hagei and the latter as Red Gelao). Very limited material has been made available on these dialects, so it is difficult to justify their exact positions in relation to others. Another variety he included in this group is Sanchong (Longlin county, Guangxi province), on which a concise corpus was also provided by Edmondson and Thurgood (1992). Scanty data on another Hagei variety at Qinglong were reported by He (1983). Both Sanchong and Qinglong pattern with Southwestern varieties in retaining voiced stops and affricates (variably prenasalized).

		Southwestern	*Hagei*	
		Laozhai	Qinglong	Sanchong
cave	A2	**boŋ 35**	**bu 21**	—
father	A2	**ba 35**	—	**mba 13**
do	A2	**di 35**	**dau 21**	—
bone	D2	**dæ 21**	**daŋ 42**	**ndaŋ 33**
body louse	A2	**dʐu 35**	**dʐɛ 21**	**ndzŋ 31**

Figure 13

It is dubious if we should set up a separate branch for these Hagei varieties. (Remember, however, that data available on these dialects have remained limited). We will temporarily classify them as a Southwestern sub-branch. It is noteworthy that Sanchong and Qinglong appear to share a unique feature hitherto unobserved: they have the same reflexes for proto tone classes B and C (Figure 14). It will be interesting to see whether such tonal merger may be found in other Hagei locations and is thus to be considered as a characteristic of the group.

		Laozhai	*Hagei*	
fire	A1	**pai (Wz)**	**pai 55**	**pai 35**
tree	A1	**ti 45**	**tai 55**	**tai 35**

chicken	A1	qei 45	kai 55	kai 35
cook	B1	to 21	taŋ 42	—
old	B1	qʏu 21	—	kaau 53
water	C1	ʔn̥ 33	ŋ 42	n̥ 53
hatch	C1	qo 33	kaŋ 42	—
excrement	C1	qæ 33	—	ko 53
rain	A2	mʏn 35	məŋ 21	mən 31
snake	A2	ŋʏɯ 35	ŋo 21	ŋo 31
cow	A2	ɳi 35	ɳe 21	ɳai 31
face	B2	lau 13 (Wz)	—	mble 33
hemp	B2	lɒ 13 (Wz)	lie 42	—
horse	C2	ɳi 33	—	ɳo 33
rice	C2	mɑu 33	muŋ 42	—
steal	C2	lã 33	leŋ 42	—

Figure 14

Zhang's Western group included Pudi variety (Dafang county) and Bigong variety (Zhenning county). According to the record, the Pudi variety has prenasalized voiceless stops corresponding to the prenasalized voiced stops of several Southwestern varieties (but the author also noted that the sounds may variably become prenasalized voiced stops in certain environments). This feature is shared by a Duoluo variety at Dingyinshao (Zhenning county) reported by He (1983). It is likely that both these varieties may also belong to the Southwestern branch.

		Pudi	*Laozhai*	*Sanchong*
field	C2	mpɑŋ 55	^{m}bo 33	—
father	A2	mpɑ 33	^{m}ba 35	mba 13
chopstick	C2	ntso 33	^{n}dzɑu 33	—

		Dingyinshao	*Laozhai*	*Sanchong*
cave	A2	**mpau 21**	**^{m}boŋ 35**	—
do	A2	**nta 21**	**^{n}di 35**	—
bone	D2	**nta 35**	**^{n}dæ 21**	**ndaŋ 33**
language	A2	**ntoŋ 21**	**^{n}doŋ 35**	—
body louse	A2	**ntoŋ 21**	**^{n}dʐu 35**	**ndzɿ 31**

Figure 15

The Bigong material provided by Zhang is simply too scanty. But additional data on this location recently reported by Solnit (1999) seem to suggest that this dialect is somewhat close to the Northern varieties. A few unique features observed from the limited data include its spirantal reflex of early retroflexed stops and the development of dorsal initials (**ŋ-/ŋq-**, with tones series 2) from early voiceless labial nasals (Figure 16).

		Northern		*Central*	*Southwestern*
		Bigong	*Qiaoshang*	*Wanzi*	*Laozhai*
eye	A1	**zew 33**	**ze 44**	**tau 33**	**ti 45**
raw	D2	**zɛ 11**	**zɿ̃ 21**	**te 31**	**dæ 21**
dog	A2	**ŋqew 11**	**ŋqwau 31**	**mpau 33 A1**	**ɳ 45 (A1)**
pig	A2	**ŋɔ 11**	**ŋgʏu 31**	**mpa 33 A1**	**hɤ̃ũ 45 (A1)**
flea	D2	**ŋwej 11**	**ŋqwa 21**	**mpe 24 D1**	**ɳæ 21 (A1)**

Figure 16

On the other hand, there are also certain disagreements between Bigong and other Northern varieties. For instance, Bigong simply has nasal **/n-/** for what Qiaoshang and Longli show as the spirant reflex **/z-/**, which would suggest the early retroflexed nasal (Figure 17). Yet, it still seems advisable to include Bigong as a Northern variety.

	Bigong	*Qiaoshang*	*Longli*
thick	**neu 33**	**ze 31**	**zo 31**
bamboo shoot	**neu 55**	**—**	**zen 53**
bird	**nu̱ 11**	**zau 21**	**zɑu 53**

Figure 17

An additional branch called A-Ou was reported by He (1983). A small amount of data on the representative variety of this group at Longjia location (Zhijin county, Guizhou) suggests that it may also belong to our Northern branch. Figure 18 exhibits certain interesting and unique developments in this variety where it shows the voiceless spirantal counterparts of what Longli or Qiaoshang show as voiced spirants. It may also be worth noting that the Longli Mulao calls themselves **/o 53/** or **/ɣo 53/**, which is probably a related form of the name **A-Ou**.

	Longjia	*Longli*	*Qiaoshang*
fire	**fe 33**	**vɑ 31**	**pa 44**
tree	**se 33**	**zɑ 31**	**ti 44**
eye	**sʏu 33**	**zo 31**	**ze 44**
ax	**xei 33**	**xɑ 31**	**ɣai 44**
road	**xeŋ 33**	**xe 24**	**ɣen 44**

Figure 18

We summarize in Figure 19 our discussions of Gelao subgroupings, in comparison to Zhang's and He's proposals. As we have pointed out from time to time, several varieties which were listed in Zhang (1993) and He (1983) may not include supporting material for us to evaluate. It should thus be emphasized that each branch in different proposals does not necessarily cover exactly the same dialects. The varieties listed in the figure are mainly those we have discussed in this section (those we have not are put in parentheses).

There are no extensive linguistic records of Gelao varieties in Vietnam, though anthropological accounts of the groups which included a small amount of linguistic material have been reported since the beginning of the century (e.g. Bonifacy 1905, Lajonquière 1906). Three kinds of Gelao have been recognized in Vietnamese records: White Gelao (Tu Du), Green Gelao (Ho Ki) and Red Gelao (Voa De) (cf. Nguyen 1972 and Hoang 1994 among others). Concise data on a variety of White Gelao at Ban Ma Che (Ha Giang province) was recently reported by Chang and Edmondson (1994), and there is no doubt that this is a similar variety to that spoken at the Laozhai location in China. Material on the other two varieties are very limited and transcriptions uncertain. Still, according to the autonyms used by these groups of people, it is possible that the Green Gelao (Ho Ki) may belong to the Hagei group. And all these varieties most likely belong to the Southwestern branch. (In fact, this appears to be the only Gelao branch whose members have been found outside Guizhou province of China).

Gelao Branches

Ostapirat (1999)	**Zhang (1993)**	**He (1983)**	**Varieties**
Central	Central	Gao	Wanzi, Dagouchang, Xinzai
Northern	Central, Western, Mulao	Ao	Qiaoshang, Bigong, Longli, Longjia
Southwestern	Southwestern	Duoluo	Laozhai, Niupo, (Moji), (Datiezai), (Jianshan), Dingyinshao, Ban Ma Che
	Western	Ao	Pudi
	North-Central	Hagei	Sanchong, Qinglong

Figure 19

2.7. LACHI VARIETIES

The main Lachi variety represented in this study is spoken at Jinchang location (Maguan county, Yunnan). The speakers of this variety are also known as Flowery Lachi. Other locations in China where the Lachi were allegedly found are Nanlao (Bag Lachi), Renhe and Jiahanqing (Han Lachi), and Xiaobazi (Red Lachi); all in Maguan county (Liang 1990). No linguistic material has ever been reported from these latter varieties, however.

In Vietnam, the Lachi people were reported to live in four locations: Ban May, Ban Pang, Ban Phung and Ban Diu (all in Xin Man county, Ha Giang province). Limited linguistic material (with uncertain transcriptions) were made available on the Ban Phung and Man P'ang (= Ban Pang) variety by Robert (1913). A handful of forms (from unspecific locations) were also found in earlier anthropological accounts of these people (cf. Bonifacy 1906 and Lajonquière 1906). Recently, additional material on the Ban Phung and Ban Diu varieties has been provided by Chang and Edmondson (1994) and Edmondson and Loi (1997), while material on the Ban Pang variety studied by Vietnamese scholars has remained largely unavailable in published form.

We may divide the Lachi languages into three groups according to their reflexes of early voiced stops as respectively breathy, aspirated or voiceless unaspirated stops.[5] These are closely related varieties, in fact, and their separation from each other must have not been very long, especially in comparison with the internal complexity of the Gelao subgroups.

Lachi groups	**Locations**	**Also known as**
Northern	Jinchang	Flowery Lachi
Central	Ban Pang	White Lachi
Southern	Ban Phung	Long-haired Lachi
	Ban Diu	Black Lachi

Figure 20

[5] Reports on the Jinchang variety by Liang (1990) and Zhang (1993) transcribe our breathy stops as simply voiceless unaspirated stops. Whether or not this may be the case with the records of such varieties as Ban Pang remains unclear.

The Jinchang forms are from our own fieldwork; the Ban Phung and Ban Pang forms are from Edmondson and Loi (1997), except one marked with (r) which is from Robert (1913). Bonifacy's unspecified variety seems to pattern with the Ban Pang variety in this respect.

	Jinchang	*Ban Phung*	*Ban Pang*	*(Bonifacy)*
shoulder	**pfiu B2**	**phu 31**	**pu 35**	**pù 2**
navel	**tfijo A2**	**thjɔ 52**	—	—
body louse	**tfijā A2**	**tha 31**	**tie 55**	—
tiger	**tfije A2**	**the 33**	**tie 13**	**ti**
raw	**tfijɛ̰ D2S**	**thɛ 52**	—	—
bone	**tfijɒ̰ D2S**	**thɔ 52**	**tiua 33**	—
deer	**tfije D2L**	**the 31**	**tĭ (r)**	—

Figure 21

2.8. LAHA VARIETIES

The Laha languages are only found in Vietnam, mainly in a few villages of Lao Cay and Son La provinces. We may divide the languages into two groups: Northern, represented by the Ta Mit variety in Lao Cai, and Southern, represented by the Nong Lay variety in Son La. The only extensive material on the languages is the report on the latter variety presented by Solntseva and Hoang (1986). On the former variety, limited linguistic data may be found in some early work by Vietnamese scholars (e.g. Dang et al 1972), recently complemented by Gregerson and Edmondson (1997).

Similar to the case of Lachi, a characteristic which defines the Northern and Southern Laha varieties is the distinctive reflexes of early voiced stop initials. The sounds remain voiced in the latter variety but have become voiceless aspirated in the former variety. Forms followed by (**v**) are gleaned from various unpublished Vietnamese sources. (For 'raw', cf. Laozhai Gelao **dæ D2**).

		Nong Lay	*Ta Mit*	*Early Laha*
navel	A2	**dau 2**	**thau 33**	***d-**
body louse	A2	**mdal 1 (v)**	**than 33**	***d-**
boat	A2	**—**	**tha 33**	***d-**
thunder	A2	**daŋ 2**	**than 33 -f**	***d-**
swallow (v.)	C2	**dəl 3**	**ma than 5 (v)**	***d-**
forget	D2	**dap 1**	**ka thap 5 (v)**	***d-**
raw	D2	**—**	**k t'óp (v)**	***d-**
bone	D2	**dak 1**	**thak 32**	***d-**

Figure 22

Ta Mit, on the other hand, has newly developed modern voiced stops from different sources, including early voiceless nasals (Figure 23) and a velar cluster ***kl-** (Figure 24). Pubiao forms are also provided for comparison in Figures 23 and 23a.

		Nong Lay	*Ta Mit*	*Pubiao*
dog	A1	**maa 3**	**ba 343**	**ŋaa 42**
pig	A1	**məu 3**	**bu 343**	**ŋuu 4**
flea	D1	**mat 1 (v)**	**bat 32**	**ŋat 33**
six	A1	**—**	**dam 343**	**ŋam 42**

Figure 23

Contrast with:

		Nong Lay	*Ta Mit*	*Pubiao*
new	A2	**maal 2**	**man 33**	**—**
wet field	A2	**naa 2**	**na 33**	**nfiee 33**

salt	A2	ŋɔɔ 2	ŋɔ 33	ŋɦiuu 33
snake	A2	ŋaa 2	ŋa 33	ŋɦiuɑ 33

Figure 23a

		Nong Lay	*Ta Mit*	*Early Laha*
grandchild	A1	klaal 3	daan 24	*kl-
grass/leaf	A1	klau 3	dau 343	*kl-
flow	*A1*	*kləi 3*	*dəi 1 (v)*	*kl-
close eye	D1	klap 4	dap 32	*kl-
sun/bright	A1	klaaŋ 3	dang 1 (v)	*kl-

Figure 24

Contrast with:

		Nong Lay	*Ta Mit*	*Early Laha*
far	A2	kləi 2	ka33 luɯi 33	*k-l-
star	A2	kluŋ 2	ma33 luŋ 33	*k-l-
child	D2	laak 1	laak 34	*l-

Figure 24a

2.9. BUYANG VARIETIES

The Buyang languages are spoken in eight villages of the Gula township, Wenshan prefecture, Yunnan. Among these, the speech used at the Langjia location is considered by the Buyang speakers as most different from the others. Yet, linguistically speaking, the Langjia dialect is still very close to those at the other locations, with differences between them falling mainly in their modern pitch reflexes. Material on the representative variety in this study is collected from the E-Cun location.

Another related language called Yalhong was reported to be spoken in Napo county, Guangxi (Liang 1990, Li 1996). While the language is unmistakably a variety of Buyang, it has adopted a number of phonological innovations to the degree that we may set it up as a subgroup (Southern Buyang) separated from Buyang proper (Northern Buyang).

A few Yalhong innovations include the further devoicing of the fricative z- (**> ɬ-**), which in turn came from early **/r-/** (Figure 25). The main differences between Southern and Northern varieties fall in the area of their rime reflexes, however. Yalhong modern vowel reflexes have wandered greatly from the originals, while those of Buyang proper normally remain relatively unchanged. (Note, for instance, that while the rime ***-oo** has become Yalhong **-aau**, the rime **-uu** has merged with ***-ii** and become **-aai**! Cf. Figure 26). Also velar endings often got lost after long vowels in Yalhong (or, for original stop **-k,** was at times weakened into -ʔ. Cf. Figure 26a).

		Yalhong	*E-Cun*	*Pubiao*
ear	A2	**ɬou 31**	**ðaa 44**	**ɾfiɑɑ 33**
bee	A2	**ɬaa 53**	**ðee 44**	**ɾfiɑɑi 33**
sick	C2	**ɬaai 12**	**ðii 213**	**ɾai 45**
wet	D2	**ɬak 31**	**ðak 53**	**ɾak 45**

Figure 25

		Yalhong	*E-Cun*	*Early Buyang*
eye	A1	**tau 53**	**taa 24**	***-aa**
two	A1	**θau 53**	**θaa 24**	***-aa**
rat	A1	**tsaai 53**	**θii 24**	***-ii**
short	C2	**taai 12**	**tii 213**	***-ii**
horn	A1	**kaai 53**	**ʔuu 24**	***-uu**
three	A1	**taai 53**	**tuu 24**	***-uu**
neck	A2	**ʑaau 31**	**joo 44**	***-oo**

salt	A2	**ŋaau 31**	**ŋoo 44**	***-oo**
body	A2	**vaa 31**	**vaai 44**	***-aai**
love	B/A1	**maa 33**	**maai 24**	***-aai**

Figure 26

		Yalhong	*E-Cun*	*Early Buyang*
leaf	A1	**ʔdja 53**	**ʔdiaŋ 24**	***-iiŋ**
tooth	A1	**tsuə 53**	**θɔɔŋ 24**	***-uuŋ**
water	C1	**uə 12**	**ʔɔɔŋ 42**	***-uuŋ**
root	A1	**tsja 53**	**ɕaaŋ 54**	***-aaŋ**
mosquito	A2	**ʑiə 31**	**jaaŋ 44**	***-aaŋ**
hand	D2L	**ŋiə 31**	**ŋiak 53**	***-iik**
mad	D2L	**pɛɛ 33**	**paak 53**	***-aak**
excrement	D1L	**iəʔ 53**	**ʔiak 45**	***-iik**
dry in sun	D1L	**tɛʔ 53**	**taak 45**	***-aak**
white	D1L	**uəʔ 53**	**ʔɔɔk 45**	***-uuk**

Figure 26a

The most interesting feature of Yalhong, however, is its alveolar stop ending **/-t/** in a set of words where Buyang and most other Kra languages show alveolar nasal **/-n/**. We have found that Southern Laha varieties usually have final **-l** for this set of words, and thus Yalhong **-t** in such words can be considered as an evidence of its retention of the distinction between early endings ***-n** and ***-l**.

		Yalhong	*Buyang*	*Laha*
new	A2	**maat 31**	**maan 44**	**maal 2**
fat	A2	**nɔt 31**	**nɛn 44**	**mnal 1 -t**

body louse	A2	**ʔdɔt 53**	**tɛn 44**	**mdal 1 (v)**
slippery	A1	**tɔt 31**	**—**	**tal 3**
deaf[6]	C2	**iit 53**	**ŋan 213**	**ŋal 3**
yellow	C2	**ŋaat 31**	**ŋaan 213**	**ŋil 3**

Figure 27

Contrast with:

		Yalhong	*Buyang*	*Laha*	
ten	D1	**pɔt 33**	**put 45**	**pʏt 23 (Tm)**	***-t**
tail	D1	**tsɔt 31**	**ɕut 53**	**cot 4**	***-t**
road	A1	**qhon 53**	**hun 24**	**hon 5**	***-n**
wind	A2	**van 31**	**vən 44**	**van 2**	***-n**

Figure 27a

2.10. SUMMARY

The Paha and Pubiao languages do not appear to have internal subgroups. Paha is only found spoken in a few villages in Guangnan county of Yunnnan. The Paha speech used in this study is from Yanglian location.

Likewise, Pubiao communities are found in only a few villages in Malipo county of Yunnan on the Sino-Vietnam border. Just across from that settlement in China, the Pubiao people are reported to live mainly in a few villages of Dong Van, Yen Minh and Meo Vac districts in Vietnam. Recordings of the Pubiao language at Pho La commune, Dong Van district in Vietnam (Hoang and Vu 1992) reveal that it is very much the same variety as that we have collected at Pufeng hamlet of Malipo in China.

Figure 28 summarizes the picture of the Kra languages and varieties we have discussed. Abbreviations are read as follows: n = Northern branch, c = Central branch, s = Southern branch, and sw = Southwestern branch of any given language. Numbers in parentheses refer readers to the list of languages and varieties representing those respective branches which follow the figure.

---

[6] For another example of Yalhong ŋ- > ø-, note Yalhong **/iiə 53/** Buyang **/ŋaai 24/** 'maggot'.

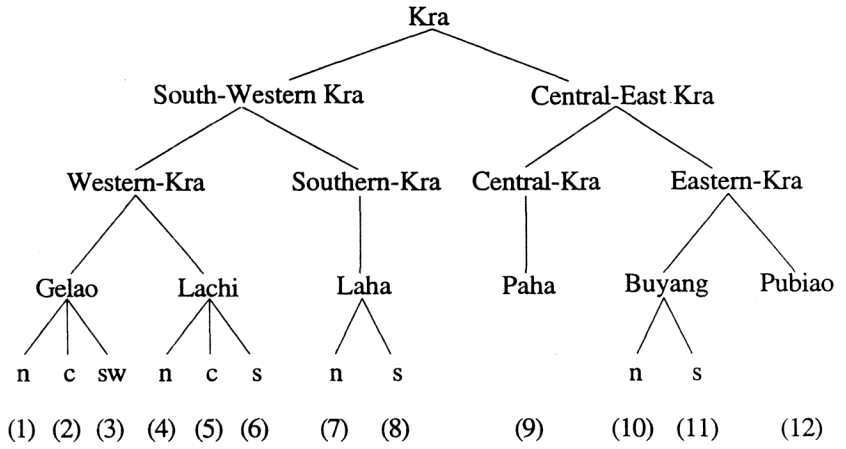

Figure 28

1. Northern Gelao. Qiaoshang (Zhijin), Longli (Majiang)
2. Central Gelao. Wanzi (Anshun), Dagouchang (Pingba)
3. Southwestern Gelao. Laozhai (Malipo), Niupo (Liuzhi)
4. Northern Lachi. Jinchang (Maguan)
5. Central Lachi. Man Pang (Ha Giang)
6. Southern Lachi. Ban Phung, Ban Diu (Ha Giang)
7. Northern Laha. Ta Mit (Lao Cai)
8. Southern Laha. Nong Lay, Ban Bung (Son La)
9. Paha. Yanglian (Guangnan)
10. Northern Buyang. E-cun, Langjia (Funing)
11. Southern Buyang. Yalhong (Napo)
12. Pubiao. Pufeng (Malipo), Pho Bang (Dong Van)

(The varieties with underlined names are the main sources for this study.)

Map 1: Gelao varieties

Legend of Map 1

Branches	*Varieties*	*Locations (Counties, Provinces)*
Central	1. Wanzi	Anshun, Guizhou
	2. Dagouchang	Pingba, Guizhou
	3. Xinzai	Puding, Guizhou
Northern	4. Qiaoshang	Zhijin, Guizhou
	5. Bigong	Zhenning, Guizhou
	6. Longli	Majiang, Guizhou
	7. Longjia	Zhijin, Guizhou
Southwestern	8. Laozhai	Malipo, Yunnan
	9. Ban Ma Che	Dong Van, Ha Giang
	10. Moji	Longlin, Guangxi
	11. Niupo	Liuzhi, Guizhou
	12. Datiezai	Shuicheng, Guizhou
	13. Dingyinshao	Zhenning, Guizhou
	14. Pudi	Dafang, Guizhou
	15. Jianshan	Zunyi, Guizhou
	16. Qinglong	Zunyi, Guizhou
	17. Sanchong	Longlin, Guangxi

(All locations are in China, except location 9 which is in Vietnam.)

Map 2: Other Kra languages

Legend of Map 2

Languages	*Varieties*	*Locations (Counties, Provinces)*
Lachi (n)	1. Jinchang	Maguan, Yunnan
Lachi (c)	2. Ban Pang	Xin Man, Ha Giang
Lachi (s)	3. Ban Phung	Xin Man, Ha Giang
Laha (n)	4. Ta Mit	Than Uyen, Lao Cai
Laha (s)	5. Nong Lay	Thuan Chau, Son La
Paha	6. Yanglian	Guangnan, Yunnan
Buyang (n)	7. E-Cun	Funing, Yunnan
	8. Langjia	Funing, Yunnan
Buyang (s) (Yalhong)	9. Rongtun	Napo, Guangxi
Pubiao	10. Pufeng	Malipo, Yunnan
	11. Pho La	Dong Van, Ha Giang

(Locations 1 and 6-10 are in China. The rest are in Vietnam.)

CHAPTER 3

KRA-DAI TONES

3.1. INTRODUCTION

All Kra languages are tonal. The number of tones in modern varieties ranges from three to six, some of which may be accompanied by breathy or creaky phonation types in addition to pitches. These modern tones of the Kra languages are discovered to go back to the same proto system of three-plus-one tones (three in non-ckecked syllables and one in checked syllables), which could then split in several ways, conditioned by the mutation of initial consonants and by the influence of vowel length in each language and dialect.

Such a tonal system and the mechanisms which underlie its split are found to be similar to what has been established already for Tai and Kam-Sui. It is our purpose in this chapter to offer the background and overall picture of the Kra-Dai tones, and put the Kra tonal system in this comparative context. We are also partly obliged to demonstrate such a connection of tonal systems among the various languages of the Kra-Dai branches in order to justify and substantiate the proposed cognates and correspondences we have presented in the first chapter to bind these languages into the same stock.

It is needless to say, however, that we will not be able to discuss in detail the several innovations or exceptions later applied within a given branch or sub-branch. More emphasis will be put on Kra tones, whose established systems will serve as reference points in the following chapters on the reconstructions of Proto-Kra consonants and vowels.

3.2. THE A-B-C TONAL CLASSES

The traditional Thai grammar divides syllables into two types: *Kham Pen* 'live syllables' (syllables ending with a vowel or a nasal); and *Kham Taai* 'dead syllables' (syllables ending with a stop). 'Live syllables' may further belong to one of the three tonal categories: ***săaman*** 'basic', ***?êek*** 'primary', or ***thoo*** 'secondary'. These three tones were respectively represented in the earliest inscription (13th century) as: no mark, |, and + (the latter two are now written / ˊ / and / ˇ / over a vowel). These syllable divisions may be summarized as in Figure 29:

Syllable types	/Kham Pen/ 'Live Syllables'			/Kham Taai/ 'Dead Syllables'
Tonal categories	/săaman/ 'basic'	/l̂êek/ 'primary'	/thoo/ 'secondary'	
Symbols	no mark	ˊ	ˇ	no mark

Figure 29

Similar syllable and tonal structure has long been recognized in traditional Chinese philology. In the earliest Rhyme Book (7th century), syllables were divided into four tonal categories: *Píng* 'level', *Shăng* 'rising', *Qù* 'departing', and *Rù* 'entering'. The last category only occurs in syllables ending with a stop (equivalent to Thai 'Dead syllables'), thus leaving three categories in syllables ending with a vowel or a nasal (equivalent to Thai 'Live syllables'). Wulff (1934) has noticed that these Chinese tonal categories correspond sytematically with those of Thai, which may be summarized as in Figure 30:

Chinese	*Píng*	*Shăng*	*Qù*	*Rù*
Thai	/săaman/ 'basic'	/thoo/ 'secondary'	/l̂êek/ 'primary'	
	'Live Syllables'			'Dead Syllables'

Figure 30

In his *Handbook of Comparative Tai*, Li (1977), following the traditional Thai tone order, assigned symbols A, B, and C for the Proto-Tai tonal categories which correspond to Thai tones 'basic', 'primary', and 'secondary' respectively. The 'dead syllables' were then assigned as the D tone class, because it is impossible to identify it with any of the other tones which have been set up for the other syllable type (p.25). In historical Chinese study, these A, B, C, and D symbols have been sometimes used as well, but there the symbols follow the Chinese traditional tone order, i.e. they represent respectively Píng, Shǎng, Qù, and Rù tonal categories. This results in an inverse order of the use of symbols B and C between Chinese and Tai with respect to their corresponding tonal categories.

Chinese	*Píng* A	*Shǎng* B	*Qù* C	*Rù* D
Thai	*Basic* A	*Secondary* C	*Primary* B	 D
	'Live Syllables'			'Dead Syllables'

Figure 31

This three-plus-one system of proto-tones can also be reconstructed for Hmong-Mien languages (cf. Haudricourt 1961, Downer 1963, Chang 1973). For Vietnamese, Haudricourt (1954) has shown that the six Vietnamese tones may be grouped into three classes *ngāng/huyền*, *sắc/nạng*, and *hỏi/ngã*, which correspond to Early Middle Chinese tonal categories Píng, Shǎng, and Qù respectively. Thus, in Vietnamese too, the three 'Live Syllable' tonal categories can be assumed. Vietnamese syllables ending with a stop (i.e. the 'Dead Syllables') always belong to the *sắc/nạng* tonal category, so the D tone class has not been separately set up.

3.3. THE 1-2 VOICING SERIES AND THE PROTO-TAI TONE SPLIT.

3.3.1.

One or more of the Proto-Tai three (plus one) tonal categories have been known to further split in all modern dialects conditioned by voicing or other laryngeal properties of initial consonants such as aspiration and glottalization. As a result, all modern dialects now have more than three tones.

Traditional Thai grammar divides consonants into three classes: High, Mid, and Low. The early Thai grammarians recognized that these three initial classes may influence each of the original three (plus one) tones differently. For example, syllables with the 'basic' (A) tone may be pronounced with either a low rising pitch /24/ or a mid-level pitch /33/ depending on whether they belong to the High or the Mid/Low initial classes respectively. These three consonant classes in traditional Thai grammar are thus sophisticated representations of the groups of initial consonants which share similar phonetic properties with respect to their influence on tonal development.

Traditional series	*Early initials*
High	voiceless fricative and sonorants, aspirated stops
Mid	unaspirated stops, glottalized sounds
Low	voiced sounds

3.3.2.

The middle of the 20th century saw a good deal of quality field work done on various Tai dialects, both in Thailand and other countries (see, among others, Brown 1965 for dialects in Thailand; Anonymous 1959 and Li 1940, 1956 for dialects in China and Gedney 1964, 1965, 1970 for dialects in Thailand, Laos, and Vietnam). Comparative material accumulated over the decades has enabled students of Comparative Tai to refine and improve their understanding of the tones and initial classes of Tai languages. For instance, it was found that it is sometimes necessary to further separate the glottalized sounds from the other Mid class initials, since certain dialects develop a special tonal reflex exclusively for syllables with those initials in certain tonal categories (cf. also Li 1943 for discussions on the possible influence of glottalized initial on tones based on a Po-ai dialect). In 'Dead Syllables', it also appears that vowel length may influence the development of the tones. The D tone class thus can be further divided into DS(hort) and DL(ong) depending on whether those checked syllables have short or long vowels respectively. An integrated scheme of this

complex interaction between tones and segments in Tai languages, built on the foundation laid by traditional Thai philology, is provided in Figure 32 (this scheme is sometimes known as *Gedney's tone box*, so called after its developer, William Gedney):

Initials at the time of tone splits	Proto-Tai tones				
	A	B	C	DS	DL
1 *aspirated and voiceless fricative sounds					
2 *voiceless unaspirated stops					
3 *glottalized sounds					
4 *voiced sounds					

Figure 32

Figure 33 lists examples of Proto-Tai tones *A and *D and initial classes depicted above to illustrate how the scheme may facilitate the comparative study of Tai dialects. From the figure, we see that Lungchow only splits proto-tones based on the early voicing opposition, and that vowel length does not affect the D tone. The Siamese tonal split in tone A is conditioned by the voiceless fricative and aspirated initials, while the Po-ai split in the same tone is conditioned by glottalized initials. (Tonal splits are indicated for each language by horizontal lines).

		Siamese	*Lungchow*	*Po-ai*	
A					
1	white	**khaau 24**	**khaau 33**	**haau 24**	***x-**
1	rain	**fon 24**	**phun 33**	**hun 24**	***f-**

2	year	**pii 33**	**pii 33**	**pii 24**	***p-**
2	eat	**kin 33**	**kin 33**	**kɯn 24**	***k-**
3	fly(n.)	**bin 33**	**bin 33**	**min 31**	***ʔb-**
3	take	**ʔau 33**	**ʔau 33**	**ʔau 31**	***ʔ-**
4	wet field	**naa 33**	**naa 31**	**naa 55**	***n-**
4	thatch grass	**khaa 33**	**kaa 31**	**haa 55**	***ɣ-**

DS

1	heavy	**nak 22**	**nak 55**	**nak 55**	***hn-**
1	vegetable	**phak 22**	**phjak 55**	**pjak 55**	***phl/r-**
2	fall	**tok 22**	**tɯk 55**	**tɔk 55**	***t-**
2	duck	**pet 22**	**pit 55**	**pit 55**	***p-**
3	raw	**dip 22**	**dip 55**	**nip 44**	***ʔdl/r-**
3	chest	**ʔok 22**	**ʔɯk 55**	**ʔak 44**	***ʔ-**
4	ant	**mot 55**	**mɯt 31**	**mɔt 44**	***m-**
4	wash	**sak 55**	**ɬak 31**	**ɬak 44**	***z-**

DL

1	taro	**phɯak 22**	**phɯɯk 55**	**piik 22**	***p-**
1	carry	**haap 22**	**haap 55**	**laap 22**	***thr-**
2	mouth	**aak 22**	**paak 55**	**paak 22**	***p-**
2	custard	**kaat 22**	**kaat 55**	**kaat 22**	***k-**
3	hot	**dɯat 22**	**dɯɯt 55**	**naat 22**	***ʔd-**
3	go out	**ʔɔɔk 22**	**ʔook 55**	**ʔook 22**	***ʔ-**
4	root	**raak 41**	**laak 31**	**laak 31**	***dr-**
4	rope	**čhɯak 41**	**čɯɯk 31**	**šaak 31**	***ǰ-**

Figure 33

3.3.3.

The tonal split by loss of a voicing opposition has also operated in other languages of the area, including Chinese, Hmong-Mien, and Vietnamese. The split by aspiration of initials is less widespread, but is also known to occur, for example, in some Hmong-Mien and Karen languages (cf. Haudricourt 1961). The split by glottalized initials is even rarer. There is thus often a tacit agreement among scholars that the tonal split by voicing opposition is most basic and the other kind of splits are somehow more recent or secondary. Li (1977) therefore only refers to Proto-Tai tonal classes as A1, A2, B1, B2, and so on, where the number 2 represents proto voiced initials and the number 1 represents all proto non-voiced initials. Gedney and his students, on the other hand, often refer to proto tonal classes as A1, A2, A3, A4, and so on. And thus their A2, for instance, does not refer to the early voiced initial class, but to the unaspirated stop initial class (cf. especially Chamberlain 1975 for this practice).

In this study, we will follow Li in designating the basic bipartition of proto tones as series 1 and series 2. This choice is partly pragmatically motivated, since Li's Proto-Tai has been most widely cited and his practice has already been adopted in the comparison of Tai and other related languages such as Kam-Sui. When necessary, I will distinguish the three non-voiced initial classes by adding the apostrophe /'/ and raised zero /^{0}/ to the series 1 tones to indicate aspirated and glottalized classes respectively. For example:

Tonal classes	*Initial classes*
A1'	voiceless fricative or aspirated sounds
A1	unaspirated stops
A1^0	glottalized sounds
A2	voiced sounds

3.4. KAM-SUI TONES

For decades, we have owed our knowledge of the languages of the Kam-Sui group to the work of Li Fang-Kuei, who has published material on the Mak (1948a), Sui (1948b, 1965), and Then (1968) languages. Chinese scholars have worked on various Kam-Sui languages since the 1950s, but most publications only became accessible to the outside world in the 1980s. These include the material on the Kam, Mulam, and Maonan languages, the latter two

of which had heretofore been undescribed. Li (1965) suggests that these languages may be divided into two main groups: Kam and Sui, and that Mak, Sui, and Then may belong to the latter group. Thurgood (1988) has added Mulam and Maonan languages into the picture as shown in Figure 34.

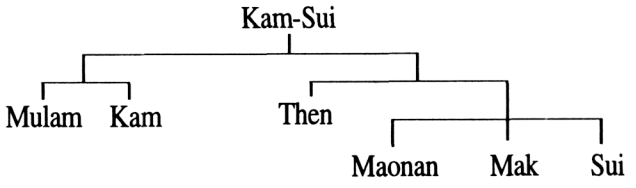

Figure 34

Li (1965) has shown that the tones of the Kam-Sui languages correspond systematically to those of Tai according to the A-B-C tonal classes. Examples of tonal class alternation between these two language groups are marginal; some of them, nevertheless, can serve to distinguish one group from another and thus can be useful for sub-grouping purposes. For example, the words 'pig' and 'rat' both have tone A1 in Tai, but all Kam-Sui languages uniquely show tones B1 and C1 respectively.

Kam-Sui languages, however, differ from Tai in a number of forms with respect to the 1-2 tonal series, indicating that Proto-Kam-Sui initials must differ significantly from Proto-Tai's. This issue will have to be postponed for later discussions on the complex issues concerning proto-initials. The mechanisms involved in Kam-Sui tonal splits are nonetheless the same as in Tai. Sui, Mulam and Then have a basic tonal split based on voicing opposition of initials, while Kam and Mak show an additional tonal split by aspiration (for Mak this only affects tone A). Maonan preglottalized stops agree with voiced initials in taking series 2 tones, but the glottal stop and glottalized nasals take series 1 tones (this fact unfortunately cannot be shown neatly in the chart below. Figure 35 illustrates Kam-Sui tones according to the A-B-C tonal classes; examples of these tonal correspondences are then given in Figure 36.

Tones	*Kam*	*Mulam*	*Then*	*Maonan*	*Sui*	*Mak*
A1'	35	42	13	42	11	13
A1	55	42	13	42	11	24
A2	11	121	35	231	31	31
B1'	453	44	44	44	35	35
B1	53	44	44	44	35	35
B2	33	11	53	213	55	24
C1'	13	53	22	51	44	44
C1	323	53	22	51	44	44
C2	31	24	31	24	52	51
D1S'	35	55	35	55	35	35
D1S	55	55	35	55	35	35
D2S	21	12	31	23	52	31
D1L'	13	42	22	44	35	44
D1L	24	42	22	44	35	44
D2L	31	11	31	24	52	31

Figure 35

3.5. BE TONES.

Haudricourt (1965) was the first to make available substantial material on the Be language of Hainan island based on Savina's records. In that monograph, he noted that Be has a basic bipartition of tones and that its four 'live syllable' tones correspond systematically to Tai tones A1, A2, C1, and C2. Two tones in 'dead syllables' also correspond well to Tai tones D1 and D2. For tone B category, Haudricourt cautioned that examples were too few to figure out the correspondence with certainty.

Hashimoto (1980) later published extensive data on a different variety of Be, and that material allows us to see that the B and C tones of Tai have the same reflexes in Be. This fact was also noted by Hansell (1988). (For additional material on Be languages, cf. Zhang 1985).

		Kam	*Mulam*	*Then*	*Maonan*	*Sui*	*Mak*
dog	A1'	ŋwa 35	ŋwa 42	maa 13	ma 42	ŋa 11	maa 13
go	A1	paai 55	paai 42	paai 13	paai 42	pai 11	paai 24
yam	A2	man 11	man 121	man 35	man 231	man 31	man 31
new	B1'	məi 453	ŋai 44	mai 44	mai 44	ŋai 35	mai 35
egg	B1	kəi 53	kɣai	kai 44	kai 44	kai 35	tɕai 35
this	B2	naai 33	naai 11	naai 53	naai 213	nai 55	naai 24
liquor	C1'	khwaau 13	khɣaau 53	laau 22	khaau 51	khau 44	laau 44
wear	C1	tan 323	tan 53	tan 22	tan 51	tan 44	tan 44
tree	C2	məi 31	mai 24	mai 31	mai 24	mai 52	mai 51
flea	D1S'	ŋwat 35	ŋat 55	mat 35	mat 55	ŋat 35	mat 35
liver	D1S	tap 55	tap 55	tap 35	tap 55	tap 35	tap 35
ant	D2S	mət 21	mɣət 12	met 31	mət 23	mət 52	mət 31
blood	D1L'	phaat 13	phɣaat 42	—	phjaat 44	phjaat 35	phjaat 44
forehead	D1	pjaak 24	pɣaak 42	paak 22	pjaak 44	pjak 35	pjaak 44
child	D2	laak 31	laak 11	laak 31	laak 24	lak 52	laak 31

Tai tone classes	*Hashimoto's Be (Limkou)*	*Savina's Be*
A1	13	v̋
A2	55	v̄
B1	33	v (no mark)
B2	21	v̀
C1	33	v (no mark)
C2	21	v̀
D1	33	v̄
D2	55	ɣ

Figure 37

Examples:

	Be	*Tai*	*Proto-Tai initials*
thick	**na 13**	**naa A1**	***hn-**
go	**ɓoi 13**	**pai A1**	***p-**
nose	**loŋ 13**	**daŋ A1**	***?d-**
rice field	**nia 55**	**naa A2**	***n-**
bark (v.)	**sau 33**	**hau B1**	***hr-**
low	**dom 33**	**tam B1**	***t-**
stay	**ʒəu 33**	**juu B1**	***?j-**
soft	**num 21**	**num B2**	***n-**
face	**na 33**	**naa C1**	***hn-**
aunt	**ɓa 33**	**paa C1**	***p-**
obtain	**lai 33**	**dai C1**	***?d-**
water	**nam 21**	**naam C2**	***nl/r-**
flea	**mat 33**	**mat D1S**	***hm-**
mouth	**ɓak 33**	**paak D1L**	***p-**
bird	**nok 55**	**nok D2S**	***nl/r-**
otter	**nak 55**	**naak D2L**	***n-**

Figure 38

There are very few forms where Be shows tonal category discrepancies with Tai. A noteworthy example is 'chicken'; Be **/kai 13/** (= A1), but Tai **/kai/** B1. As we shall see later, Hlai and all Kra languages agree with Be in having tone A1 for this etymon. However, like Kam-Sui, Be differs from Tai in a number of forms with respect to the 1-2 series. Some of these words have also tonal series alternation between Southern-Tai dialects on the one hand (tonal series 1), and Northern-Tai dialects on the other (tonal series 2). This alternation is separated by a slash in examples below; for instance, A1/2 means that the word has tone series 1 in Southern-Tai dialects, but tone series 2 in Northern-Tai dialects. In such cases, Be usually agrees with Northern-Tai in having tone series 2. The following examples are not exhaustive:

Be tonal series 2 = Tai tonal series 1

	Be	*Tai*
hair	**vun 55**	**khon A1**
year	**vəi 55**	**pii A1**
bear	**vui 55**	**mii A1**
dream	**von 55**	**fan A1**
horn	**vau 55**	**khau A1**
bitter	**kam 55**	**khom A1/2**
knee	**kau 21**	**khau B1**
blow	**pau 21**	**vou B1**
excrement	**kai 21**	**khii C1/2**
rice	**ŋau 21**	**khaau C1/2**
bowl	**hui 21**	**thuai C1/2**
fruit	**mak 55**	**maak D1L**
gills	**ŋak 55**	**ŋɯak D1L**

Be tonal series 1 = Tai tonal series 2

	Be	*Tai*
long	**loi 13**	**rii A2**
change	**lak 33**	**lɛɛk D2L**
lightning	**liap 33**	**lɛɛp D2L**

3.6. Hlai tones.

3.6.1.

Ouyang and Zheng (1983) provide the most comprehensive material on nine dialects of Hlai proper. Among these, five dialects have three tones in 'live syllables' plus one tone in 'dead syllables'; thus a similar basic tonal system to that of Proto-Tai may be postulated (see Figure 12 for correspondences of the A-B-C tonal categories between Hlai and Tai). On the other hand, the other four dialects (Yuanmen, Tongshi, Qiandui and Baocheng) show six tones in 'live syllables' plus two tones in 'dead syllables'. The basic 1-2 series tonal split thus may be hypothesized for these latter varieties.

Ouyang and Zheng use numbers 1-8 to represent tones in the glossary. In dialects which split tones, the odd-number tones and even-number tones normally represent series 1 and series 2 of tones respectively (Cf. also Matisoff 1988).

Proto tone classes	*Tonal reflexes in non-split dialects*	*Tonal reflexes in split dialects*
A	1	1
	1	4
B	2	5
	2	2
C	3	3
	3	6

In his proposed system of Proto-Hlai initials, Matisoff (1988) divides initial consonants into three classes: High, Mid, and Low. The four dialects which split tones, Yuanmen, Tongshi, Qiandui and Baocheng, are called criterial dialects. According to him, the Low consonants induced splits in all four criterial dialects; the Mid consonants triggered splits in some, but not all, of the criterial dialects, and the High consonants did not trigger splits in any dialects. The following consonants are those he identifies as Low and Mid consonants:

Low consonants

v			z	ɮ	ɣ	ɣw
	vr	ml		(r)		
mb			ndz	nd	ŋg	

Mid consonants

m		n	ɳ	ŋ	Plain nasals
w	r	l	y		Resonants
hw			hy		Aspirated resonants

There are certain problems with Matisoff's statements concerning the interaction between consonant classes and tonal splits. Some of his Low consonants did not trigger splits in *all* criterial dialects: **/v-/** does not split tones in Baocheng, and **/ɮ-**, **ɣ-**, and **ɣw-/** do not split tones in Yuanmen.

		Yuanmen	*Tongshi*	*Qiandui*	*Baocheng*
bow	*v-	**vat 8**	**fat 8**	**vat 8**	**vat 7**
breach/gap	*v-	**viaŋ 2**	**feeŋ 2**	**eeŋ 2**	**veeŋ 5**
host/master	*v-	**viaŋ 4**	**feeŋ 4**	**veeŋ 4**	**veeŋ 1**
shoulder	*v-	**va 2**	**fua 2**	**va 2**	**va 5**
arrange	*ɮ-	**khai 1**	**gai 4**	**hai 4**	**hai 4**
eight	*ɮ-	**khou 1**	**gou 4**	**hou 4**	**hou 4**
fat (a.)	*ɮ-	***khui 3***	***guui 6***	***huui 6***	***huui 6***
sell	*ɮ-	**khiu 3**	**giu 6**	**hiu 6**	**ziu 6**
ask	*ɣ-	**kham 1**	**gaam 4**	**haam 4**	**haam 4**
gift	*ɣ-	**khim 3**	**giim 6**	**hiim 6**	**ziim 6**
pullet	*ɣ-	**khuui 1**	**gaai 4**	**haai 4**	**haai 4**
sparrowhawk	*ɣ-	**khen 5**	**gen 2**	**hen 2**	—
head	*ɣw-	**vo 3**	**go 6**	**ho 6**	**hɔ 6**

plant (v.)	*ɣw-	**va 1**	**gwa 4**	**va 4**	**hwa 4**
rotten	*ɣw-	**vaau 3**	**gwaau 6**	**vaau 6**	**hwau 6**
negative copula	*ɣw-	**vai 5**	**gwai 2**	**vai 2**	**hwai 2**

It seems that here Matisoff has followed Solnit's (1982) suggestion that in Hlai languages the tonal splits were influenced by nasal (his prenasalized stops) and spirant consonants, and thus he wrongly includes all his reconstructed spirants as Low consonants, despite evidence to the contrary. One may also have the impression that he wants to suggest that consonants which share the same manner (e.g. nasals, resonants, spirants) should have split tones the same way, which unfortunately is not the case. For instance, in addition to the case of the Low consonants mentioned above, he provides the following table summarizing tonal splits in four criterial dialects for his Mid consonants (p.310):

	Yuanmen	*Tongshi*	*Qiandui*	*Baocheng*
Plain Nasals	+	-	+	-
Resonants (w r l y)	+	+	+	-
Aspirated Resonants	+	-	-	-

The summary is somewhat inaccurate concerning the resonants, since only **/w/** and **/y/** split tones in the three dialects indicated. Later in the text, it is clear that he in fact recognizes that **/l/** only split tones in Yuanmen and Qiandui (and thus should actually belong with his Plain nasals), and that **/r/** split tones in all criterial dialects (and thus belongs to his Low consonants). On the other hand, his **/v/**, which is included as a Low consonant above, should belong here with his **/w/** and **/y/**.

It seems that the attempt to explain Hlai tone splits based on different manners of consonants can be misleading. My opinion is that the tonal split in Hlai is mainly a basic bipartition based on voicing opposition. But each Hlai dialect did not necessarily have the same initial inventory at the time of the tone split, nor is it a given that those inventories were the same as that of the Proto-Hlai stage. In comparative Tai, it is often the case that we can project back the consonants reconstructible at the time of the tonal split to Proto-Tai. In other words, the Proto-Tai initial inventory must have been very close to the dialectal inventories at the time of their tonal splits. This may not be the case for Hlai,

whose tonal splits are likely to be fairly recent. Many Hlai dialects have not split tones at all, while the dialects which split tones are found in the periphery of the Hlai settlement area in the East and the North where there is exposure to Chinese and Be languages (which regularly split tones), and they may be subjected to the influence of these languages.

Let us take the case of Proto-Hlai aspirated resonants ***hj-** and ***hw-** as examples. These initials only pattern with Low consonants in Yuanmen, which has nasals **/ɳ̊/** and **/ŋ̊/** as their respective reflexes. The Baisha and Xifang dialects, which I have placed with Yuanmen as the northern-Hlai dialect group, also have nasal reflexes for these proto sounds (cf. Ostapirat 1993). We may thus suggest that at the stage of Proto-Northern Hlai, Proto-Hlai ***hj-** and ***hw-** may have already become plain nasals (cf. also Lao, which has the nasal reflex **/ɳ̊-/** for Proto-Tai ***hj-**), which then induced the series 2 tones in Yuanmen. On the other hand, in other dialects these initials were still voiceless at the time of the tone split, and thus took the series 1 tones. Below, I provide forms with these proto initials from two Northern-Hlai dialects, Baisha and Yuanmen, and two Central-Hlai dialects, Baoding and Tongshi. The former dialects of each pair in general do not split tones, while the latter two may split tones under the proper conditions.

	Baisha	*Yuanmen*	*Baoding*	*Tongshi*
cogon grass	**ɳ̊a 1**	**ɳ̊a 4**	**hja 1**	**za 1**
crow (v.)	**ɳ̊uaŋ 1**	**ɳ̊uun 4**	**hjoon 1**	**zoon 1**
elbow	**ɳ̊uŋ 2**	**ɳ̊uŋ 2**	**hjuuŋ 2**	**zuuŋ 5**
twig tip	**ɳ̊uaŋ 3**	**ɳ̊uun 6**	**hjoon 3**	**zoon 3**
crawl	**ŋ̊um 1**	**ŋ̊om 4**	**hwuuum 1**	**huuum 1**
hair	**ŋ̊oŋ 1**	**ŋ̊ən 4**	**hun 1**	**hun 1**
body	**ŋ̊uŋ 1**	**ŋ̊un 4**	**huun 1**	**huun 1**
thorn	**ŋ̊əŋ 3**	**ŋ̊ən 6**	**hwum 3**	**hum 3**

3.6.2.

We demonstrate below the regular corresponding A-B-C tonal system between Hlai and Tai, since the systematic correspondences of Proto-Hlai and Proto-Tai tonal categories have not been previously carried out. The representative Hlai dialects are Heitu and Tongshi; the former does not split tones while the latter does (Baoding forms (Bd) may be sometimes cited when

related forms in Heitu or Tongshi are lacking). Siamese represents the Tai languages. We will also see that the 1-2 voicing series in these two language groups often do not agree, a fact which demonstrates that their initial consonant inventories differed significantly at the time of the tonal splits.

	Heitu	*Tongshi*	*Tai*
A			
arm	**khiin 1**	**khiin 1**	**khɛɛn A1**
eye	**tsha 1**	**tsha 1**	**taa A1**
gall bladder	**dai 1**	**dai 1**	**dii A1**
body hair	**hun 1**	**hun 1**	**khon A1**
hand	**meɯ 1**	**meɯ 1**	**mɯɯ A2**
leg	—	**ha 1**	**khaa A1**
navel	**reɯ 1**	**feɯ 4**	**dɯɯ A1**
nose/face	**doŋ 1**	**daŋ 1**	**daŋ A1**
saliva	**laai 1**	**ɬaai 1**	**laai A2**
skin	**naŋ 1**	**nooŋ 1**	**naŋ A1**
tooth	**phen 1**	**fan 1**	**fan A2**
bitter	**ham 1**	**hoom 1**	**khom A1/2**
far	**lai 1**	**lai 1**	**klai A1**
thick	**na 1**	**na 1**	**naa A1**
bear	**mui 1**	**mui 1**	**mii A1**
dog	**ma 1**	**pa 4**	**maa A1**
fish	**da 1**	**ɬa 1**	**plaa A1**
head louse	**tshou 1**	**fou 1**	**hau A1**
pig	**mau 1**	**pau 4**	**muu A1**
shellfish	**shei 1**	**tshei 1**	**hɔɔi A1**
bamboo shoots	**nɯɯŋ 1**	**nɯɯŋ 1**	**naaŋ A2**
bran	**rom 1**	**gom 4**	**ram A2**
cogon	**ha 1**	**za 1**	**khaa A2**

ginger	**khɯŋ 1**	**khɯɯŋ 1**	**khiŋ A1**
seed	**phen 1**	**fan 1**	**fan A2**
sesame	**ŋɐɯ 1**	**ŋkeɯ 4**	**ŋaa A2**
yam	–	**man 1**	**man A2**
fire	**pei 1**	**fei 1**	**fai A2**
gold	**khim 1**	–	**kham A2**
house	**rɯɯn 1**	–	**rɯan A2**
thunder/crow (v.)	**raŋ 1**	**rooŋ 4**	**daŋ A1**
moon	**ɳaan 1**	**ɳaan 1**	**duan A1**
rain	**pun 1**	**fun 1**	**fon A1**
ask	**gaam 1**	**gaam 4**	**thaam A1**
crow (v.)	**han 1**	**zoon 1**	**khan A1**
dream	**phen 1**	**fan 1**	**fan A1**
teach	**tuun 1(Bd)**	–	**sɔɔn A1**
walk/go	**pei 1**	**fei 1**	**pai A1**
drum	**laŋ 1**	**laŋ 1**	**klɔɔŋ A1**
road	**kuun 1**	**kuun 1**	**hon A1**
spirit	**hwoon 1(Bd)**	—	**khwan A1**
I	**hou 1(Bd)**	**hou 1**	**kuu A1**
we	**rou 1**	**gau 4**	**rau A2**

B

shoulder	**va 2**	**fɯa 2**	**baa B1**
dry	**kheɯ 2**	**khaɯ 5**	**khai B1**
old	**khau 2**	–	**kau B1**
this	**nei 2**	**ni 5**	**nii B2/C2**

C

excrement	**hai 3**	**haai 3**	**khii C1/2**
head	**rau 3**	**go 6**	**klau C1**
intestine	**raai 3**	**raai 6**	**sai C1**
tongue	**diin 3**	**ɬiin 3**	**lin C2**
hot	**tshau 3**	**fou 3 (Bd)**	**lau C1 (Pa)**
near	**leɯ 3**	**plaɯ 3**	**klaɯ C1**
shallow	**thum 3 (Bd)**	—	**tuɯm C1**
weep	**ŋei 3**	**ŋai 3**	**hai C1**

D

blood	**daat 7**	**ɬaat 7**	**luat D2L**
bone	**ruɯɯ? 7**	**fuɯɯ? 8**	**duuk D1L**
brain	**?uuk 7 (Bd)**	—	**?ukD1S(Pa)**
fart	**thuut 7**	**thuut 7**	**tot D1S**
fingernail	**liip 7**	**liip 7**	**lep D2S**
deep	**dak 7**	**ɬoo? 7**	**luk D2S**
raw	**riip 7**	**fiip 8**	**dip D1S**
bird	**nook 7 (Bd)**	—	**nok D2S**
flea	**mat 7**	**poot 8**	**mat D1S**
wing	**phii? 7**	**phia? 7**	**piik D1L**
mushroom	**dit 9**	**deɬ 7 (Bd)**	**het D1S**
taro	**geek 7(Bd)**	—	**phuak D1L**
bathe	**?aap 5**	**?aap 7**	**?aap D1L**
fall	**thok 7**	**thok 7**	**tok D1S**
pestle	**tshaa? 7**	**tshee? 7**	**saak D1L**
child	**laa? 7**	**ɬee? 7**	**luuk D2L**

Figure 39

3.6.3.

There are a few alternations of tonal classes between Hlai and Tai. Note the following examples:

	Heitu	*Tai*	*Hlai-Tai tones*
chicken	**khai 1**	**kai B1**	**A = B**
field	**na 2**	**naa A2**	**B = A**
black	**dom 3**	**dam A1**	**C = A**
beard	**muuum 3**	**mum B2 (Pa)**	**C = B**
ash	**tou 3**	**thau B2**	**C = B**
father/male	**pha 3 (Bd)**	**phɔɔ B2**	**C = B**
grandmother	**tsaɯ 3 (Bd)**	**jaa B2**	**C = B**
mother	**mei 3**	**mɛɛ B2**	**C = B**

Note that the last three examples are kinship terms; we shall see later that Kra languages normally agree with Hlai in having tone C for these words. As we have already noted, the word 'chicken' regularly has tone A in Be and the Kra languages.

3.7. TONES IN KRA LANGUAGES.

The tonal system of the Kra languages has not been systematically studied before. The following sections on each of the six languages (Pubiao, Buyang, Gelao, Lachi, Laha and Paha) will thus start with a brief description of tonal inventories in each language, followed by a demonstration of their tonal systems and examples of correspondences among the Kra languages or between them and Tai. The study reveals that these Kra languages also have the same basic A-B-C tonal system as in Tai and the other Kra-Dai languages earlier discussed.

3.8. PUBIAO TONES.

3.8.1. Brief descriptions

Pubiao distinguishes four tones: **/42/**, **/33/**, **/213/**, and **/45/**. Breathiness (represented by **/fi/**), which is articulated from initials into the vowels, may be found in a number of words with low-falling-rising **/213/** and mid-level **/33/**

tones. In another set of words, the mid-level **/33/** pitch is accompanied by glottal closure at the end of the syllable (represented by **/ʔ/**). Only two tones, **/33/** and **/45/**, may occur in checked syllables.

3.8.2. The A-B-C tones

The comparison of Pubiao tones with the tonal categories of Proto-Tai reveals the following systematic correspondences (for examples of these tonal correspondences, see 3.8.5):

Proto-Tai	*Pubiao*
A	**/42/** and **/33ɦ/**
B	**/213/** and **/213ɦ/**
C	**/33ʔ/** and **/45/**
D	**/33/** and **/45/**

3.8.3. The 1-2 voicing series

As can be seen from the tonal correspondences above, each Proto-Tai tone corresponds to two Pubiao tones. Each pair of Pubiao tones reveals its complementary co-occurrence with initials: voiceless and glottalized initials usually occur with one set of tones, while voiced and breathy initials occur with another set of tones. This suggests that there is a basic tonal split based on voicing contrast of the initials which we may set up as the system shown in Figure 40. Examples are provided in Figure 41.

	A	*B*	*C*	*D*
Series 1	**42**	**213**	**33ʔ**	**33**
Series 2	**33ɦ**	**213ɦ**	**45**	**45**

Figure 40

		Series 1	*Series 2*	
A	dog	**ɲaa 42**	**five**	**maa 33ɦ**
	six	**ɲam 42**	**field**	**naa 33ɦ**
	house	**ɲiŋ 42**	**snake**	**ŋua 33ɦ**

	skin	ʔbɔŋ 42	flower	pɔŋ 33fi
	black	ʔdam 42	we	tuu 33fi
	stomach	ɬɔŋ 42	star	luuŋ 33fi
	sieve	ʂaŋ 42	bee	rɑɑi 33fi
	medicine	jaa 42	child	juɯə 33fi
B	shoulder	ɲaa 213	cheek/face	mjɑɑ 213fi
	head	ʂoo 213	stink	muu 213fi
	old	qau 213	earth	luu 213fi
	sleep	ʔau 213	swollen	puu 213fi
C	horse	ɬee 33ʔ	hawk	laaŋ 45
	blood	qaa 33ʔ	rice	mii 45
	water	ʔɔɔŋ 33ʔ	deaf	ŋan 45
	intestine	θai 33ʔ	sick	rai 45
D	flea	ɲat 33	sock	maat 45
	monkey	ʂɔɔk 33	wet	rak 45
	ten	pɑt 33	hear	tɕak 45
	raw	ʔdap 33	close eye	nap 45
	tail	θɑt 33	bird	nok 45

Figure 41

3.8.4.

Pubiao reflexes of tone D are the same as those of tone C. It may be possible to assume that tone **/45/,** when corresponding to tone C, used to be accompanied by a glottal closure at the end (cf. also Buyang, where its two tones corresponding to the C tone category are both accompanied by similar glottal closure). This glottal closure had the same influence on tone as the stop finals of D class syllables. There are two internal reasons which motivate this assumption. First, we can then suggest that the merger of tone C and D is phonetically motivated, i.e. that both these tone categories once shared the stop closure at the end of syllables. The other reason is that, as we shall see shortly,

Pubiao breathiness co-occurs with its reflexes of early voiced initials in tones **A2 /33ɦ/** and **B2 /213ɦ/**, but this feature is not found in that of tones **C2 /45/** and **D2 /45/**. Then, we may suggest that the breathiness was cancelled out by the abrupt closure at the end of the syllables, a feature shared by tones C and D. Similar interaction and restriction of laryngeal states at the beginning and the end of syllables may be found in Akha (a Loloish language), where aspirated initials only occur with non-checked syllables and become unaspirated in checked syllables (e.g. ***ph-** > **ph-** in non-checked syllables, but ***ph-** > **p-** in checked syllables).

3.8.5.

Examples of the tonal correspondences between Pubiao and Proto-Tai are provided below (Siamese is used as the representative variety for the Tai language). We can see that while the correspondence of the A-B-C tonal categories between the two languages is mainly regular, Pubiao and Tai disagree in a number of words with respect to the 1-2 tonal series. As in the previous cases of Tai and Kam-Sui or other Kra-Dai languages, such disagreement of tonal series correlates directly with the complex problem of reconstructing the proto-initials of the common language to Tai and other Kra-Dai languages. We will have to defer the issue for later discussions in the proto-initials section.

A = Pubiao /42/

	Pubiao	*Tai*
dog	**ɱaa 42**	**maa A1**
pig	**ɱuu 42**	**muu A1**
laugh	**θaau 42**	**hua A1**
husked rice	**θaan 42**	**saan A1**
teach	**θuan 42**	**sɔɔn A1**
eye	**taa 42**	**taa A1**
die	**tjee 42**	**taai A1**
I	**kau 42**	**kuu A1**
eat	**kən 42**	**kin A1**
hold in mouth	**ʔɑm 42**	**ʔom A1**
crow(v.)	**ʔdaŋ 42**	**daŋ A1** 'loud; thunder'
black	**ʔdam 42**	**dam A1**

medicine	**jaa 42**	**jaa A1**
fire	**pei 42**	**fai A2**
cogon grass	**qaa 42**	**khaa A2**
fishy	**qaau 42**	**khaau A2**
buffalo	**qaai 42**	**khwaai A2**

A = Pubiao /33fi/

	Pubiao	*Tai*
yam	**mɔn 33fi**	**man A2**
you	**mii 33fi**	**muŋ A2**
frost	**mɑɑi 33fi**	**maai A2**
field	**nee 33fi**	**naa A2**
ice	**nei 33fi**	**nai A2**
bamb shoot	**ŋjɔŋ 33fi**	**naaŋ A2**
snake	**ŋuɑ 33fi**	**ŋuu A2**
sesame	**ŋuɑ 33fi**	**ŋaa A2**
copper	**tjuuŋ 33fi**	**thɔɔŋ A2**
fish	**pjɑɑ 33fi**	**plaa A1**
stone/rock	**pjɑɑ 33fi**	**phaa A1**
bear	**mje 33fi**	**mii A1**
thick	**nee 33fi**	**naa A1**
ear	**rɑɑ 33fi**	**huu A1/2**

B = Pubiao /213/

	Pubiao	*Tai*
charcoal	**thaan 213**	**thaan B1**
old (objects)	**qau 213**	**kau B1**
old (people)	**qee 213**	**kɛɛ B1**
warm	**ʔuɑn 213**	**ʔun B1**
knee	**qau 213**	**khau B1**
dry	**qɣaa 213**	**khai B1**

shoulder	**ɲaa 213**	**baa B1**

C = Pubiao /33?/

	Pubiao	*Tai*
intestine	**θai 33?**	**sai C1**
below	**tee 33?**	**taai C1**
seedling	**kjaa 33?**	**klaa C1**

C = Pubiao /45/

	Pubiao	*Tai*
beard	**muum 45**	**mum C2**
buy	**θɯɯɯ 45**	**sɯɯɯ C2**
sick	**rai 45**	**khai C1**

D = Pubiao /33/

	Pubiao	*Tai*
flea	**ɲat 33**	**mat D1**
iron	**ɬat 33**	**lek D1**
shrink	**ɾɑt 33**	**hot D1**
hail	**θap 33**	**hep D1**
chase	**qxjap 33**	**khap D1**
fart	**tɑt 33**	**tot D1**
liver	**tjap 33**	**tap D1**
fall	**tɔɔk 33**	**tok D1**
raw	**?dap 33**	**dip D1**
bone	**?daak 33**	**duuk D1**
brain	**?uak 33**	**?uk D1 (Po-ai)**

D = Pubiao /45/

	Pubiao	*Tai*
bird	**nok 45**	**nok D2**
steal	**lak 45**	**lak D2**
lightning	**liep 45**	**lep D2**

cry out	**riak 45**	**riak D2**
dragon	**ŋɯak 45**	**ŋɯak D2**
do	**wak 45**	**wiak D2**

3.8.6.

There are instances of tonal category disagreement between Pubiao and Tai. The first set includes certain etyma where other Kra languages appear to agree with Pubiao in having the same tonal categories in contrast to those of Tai. This may be considered as a shared characteristic of the Kra languages.

	Pubiao	*Tai*	*Pubiao-Tai tones*
front/before	**quən 42**	**kɔɔn B1**	A1 = B1
chicken	**qai 42**	**kai B1**	A1 = B1
chin	**qaaŋ 33ʔ**	**khaaŋ A2**	C1 = A2
mother	**maai 45**	**mɛɛ B2**	C2 = B2

However, Pubiao alone shows the unexpected tonal category B1 for 'hand' in contrast with tone A2 in other Kra-Dai languages.

	Pubiao	*Tai*	
hand	**ŋii 213**	**mɯɯ A2**	B1 = A2

The other set of words listed below is likely to consist of Tai loans. These words, though reconstructible for Proto-Tai, are hardly found systematically in Kra languages.

Pubiao /213/ = Proto-Tai A1

	Pubiao	*Tai*
saddle	**ʔaan 213**	**ʔaan A1**
plow	**thai 213**	**thai A1**
headwrap	**qxan 213**	**khan A1**
onion	**huam 213**	**hɔɔm A1**

hair	**hwan 213**	**khon A1**

Pubiao /45/ = PT A2

	Pubiao	*Tai*
strength	**rjəŋ 45**	**rɛɛŋ A2**
silver	**ŋən 45**	**ŋum A2**
gold	**ɣəm 45**	**kham A2**
sickle	**koo 45**	**khiau A2**

Pubiao /33/ = PT B1/B2

	Pubiao	*Tai*
goose	**haan 33**	**haan B1**
cut	**ʂan 33**	**han B1**
plain	**tfioŋ 33**	**thuŋ B2**

3.9. BUYANG TONES

3.9.1. Brief descriptions

Buyang possesses six tones: **/24/**, **/44/**, **/45/**, **/53/**, **/42/**, and **/213/**. Tone **/42/** is accompanied by a glottal closure at the end, while tone /213/ is accompanied by creakiness, which starts in the middle of the pitch and continues through its rising part. Two tones, **/45/** and **/53/**, may occur with checked syllables.

3.9.2. The A-B-C tones

The comparison of Buyang and Pubiao tones reveals the following systematic correspondences:

Proto tone classes	*Pubiao tones*	*Buyang tones*
A1	42	24
A2	33ɦ	44
B1	213	45
B2	213ɦ	53
C1	33ʔ	42ʔ
C2	45	213ʔ

D1	33	45
D2	45	53

3.9.2.1.

Buyang reflexes of tone D are identical to those of tone B. Pubiao, however, merges tone D with tone C, a merger which we have suggested may be phonetically motivated by their shared stop closure. Buyang's merging of tone D with tone B reminds us that much is still not understood about the many factors which may be responsible for tonal merger in the languages in this area. (The merger of tone D with either tone C or tone B has been found in many Tai languages). On the other hand, it should be noted that tone D usually associates itself with either tone B or tone C, and rarely with tone A (but see 3.9.5.5).

3.9.3. The 1-2 tonal series

The glottalized initials only occur with series 1 tones (i.e. tones **/24/**, **/45/**, and **/42/**). Other initials may occur with any of the six tones. However, modern voiced sonorant initials which occur with series 1 tones usually correspond to Pubiao voiceless sonorant initials, while those which occur with series 2 tones are voiced in both languages. The basic tonal split by voicing contrast of the initials thus may be assumed for Buyang.

	A	*B*	*C*	*D*
Series 1	**24**	**45**	**42ʔ**	**45**
Series 2	**44**	**53**	**213ʔ**	**53**

Figure 42

3.9.4.

Comparison of Buyang and Pubiao forms arranged according to their corresponding tone classes is provided in Figure 43.

		Buyang	*Pubiao*
pig	A1	**muu 24**	**ɱuu 42**
six	A1	**nam 24**	**ɲam 42**
stomach	A1	**loŋ 24**	**ɬoŋ 42**
hair	A1	**θam 24**	**θam 42**
eye	A1	**taa 24**	**tee 42**
horn	A1	**qau 24**	**ʔuu 42**

skin	A1	**ʔboŋ 24**	**ʔboŋ 42**
pus	B1	**muu 45**	**hau 213**
garlic	B1	**θoi 45**	**θei 213**
father	B1	**paa 45**	**pee 213**
get	B1	**tuə 45**	**tuu 213**
ash	B1	**tuu 45**	**tɑu 213**
old	B1	**qau 45**	**ʔuu 213**
sleep	B1	**ʔuu 45**	**ʔau 213**
warm	B1	**ʔuən 45**	**ʔuɑn 213**
nose	C1	**tiŋ 42ʔ**	**tɑŋ 33ʔ**
wild cat	C1	**qau 42ʔ**	**ʔuu 33ʔ**
side	C1	**ʔbaaŋ 42ʔ**	**ʔbaaŋ 33ʔ**
orphan	C1	**ʔbɔɔŋ 42ʔ**	**ʔbuoŋ 33ʔ**
water	C1	**ʔɔɔŋ 42ʔ**	**ʔɔɔŋ 33ʔ**
flea	D1	**mat 45**	**ɱat 33**
shrink	D1	**ðut 45**	**ɾɑt 33**
deep	D1	**lak 45**	**ɬak 33**
liver	D1	**tap 45**	**tjap 33**
fart	D1	**tut 45**	**tɑt 33**
raw	D1	**ʔdip 45**	**ʔdap 33**
tall	A2	**vaaŋ 44**	**kɑɑŋ 33ɦ**
tongue	A2	**mee 44**	**mjee 33ɦ**
five	A2	**maa 44**	**mɑɑ 33ɦ**
yam	A2	**man 44**	**mən 33ɦ**
field	A2	**naa 44**	**nee 33ɦ**
salt	A2	**ɳoo 44**	**ɳũ 33ɦ**
snake	A2	**ŋaa 44**	**ŋuɑ 33ɦ**
ear	A2	**ðaa 44**	**ɾɑɑ 33ɦ**
eight	A2	**ðuu 44**	**ɾɯɯ 33ɦ**

star	A2	**lɔɔŋ 44**	**luuŋ 33fi**
above	A2	**luu 44**	**luu 33fi**
armpit	A2	**lie 44**	**lii 33fi**
mosquito	A2	**jaaŋ 44**	**jaaŋ 33fi**
steep	B2	**ðaaŋ 53**	**raaŋ 213fi**
charcoal	B2	**laa 53**	**laa 213fi**
earth	B2	**luu 53**	**luu 213fi**
carry on back	C2	**paa 213ʔ**	**pee 45**
sick	C2	**ðii 213ʔ**	**rai 45**
hawk	C2	**laaŋ 213ʔ**	**laaŋ 45**
inside	C2	**lɔŋ 213ʔ**	**loŋ 45**
lick	C2	**lɛɛm 213ʔ**	**liam 45**
beard	C2	**muəm 213ʔ**	**muum 45**
mother	C2	**mii 213ʔ**	**maai 45**
deaf	C2	**ŋan 213ʔ**	**ŋan 45**
thorn	C2	**ɳaan 213ʔ**	**ŋɯən 45**
rest	C2	**jaŋ 213ʔ**	**juŋ 45**
wet	D2	**ðak 53**	**rak 45**
cloud	D2	**mok 53**	**muak 45**
close (eye)	D2	**nap 53**	**nap 45**

Figure 43

3.10. GELAO TONES.

In this section we will describe the tonal systems of three Gelao varieties: Laozhai, Qiaoshang and Wanzi. These varieties represent three Gelao branches and constitute a main basis for the reconstruction of Proto-Gelao in Chapter 4.

3.10.1. Laozhai variety

The Laozhai variety has four tones: **/45/**, **/35/**, **/31/**, and **/33/**.

3.10.1.1. The A-B-C tones

Laozhai tones correspond to those of Pubiao according to the A-B-C tonal categories as follows:

Tonal Classes	*Laozhai*	*Pubiao*
A1	**45**	**42**
A2	**35**	**33ɦ**
B1	**31**	**213**
B2	**31**	**213ɦ**
C1	**33**	**33ʔ**
C2	**33**	**45**
D1	**31**	**33**
D2	**31**	**45**

Examples are listed in Figure 44:

		Laozhai	*Pubiao*
cogon	A1	**qʏɯ 45**	**qaa 42**
seed	A1	**pi 45**	**pan 42**
dog	A1	**ɲɪ 45**	**ɲaa 42**
husked rice	A1	**tɕi 45**	**θaan 42**
teach	A1	**tʂʅ 45**	**θuan 42**
laugh	A1	**so 45**	**θaau 42**
have	A1	**ʔo 45**	**ʔan 42**
liquor	A1	**plʏu 45**	**pau 42**
ear	A2	**ʑi 35**	**rɑɑ 33ɦ**
snake	A2	**ŋʏɯ 35**	**ŋɯɑ 33ɦ**
snow	A2	**nʲi 35**	**nei 33ɦ**
thick	A2	**ni 35**	**nee 33ɦ**

fat	A2	**nõ 35**	**nin 33ɦ**
knee	B1	**qʏu 31**	**qau 213**
dry	B1	**qʏuɯ 31**	**qʏaa 213**
old	B1	**qʏu 31**	**qau 213**
ash	B1	**tʏu 31**	**tau 213**
pus	B1	**ɱ 31**	**hau 213**
silver	B1	**phrə 31**	**phjoo 213**
smelly	B2	**ɱ 31**	**muu 213ɦ**
meat	C1	**ʔɑ 33**	**ʔjau 33ʔ**
intestine	C1	**ɕi 33**	**θai 33ʔ**
boil(n.)	C1	**plɑu 33**	**pau 33ʔ**
water	C1	**ʔɱ 33**	**ʔɔɔŋ 33ʔ**
nest	C1	**tʂɑ 33**	**θoo 33ʔ**
sick	C2	**ʐˌɪ 33**	**rai 45**
deaf	C2	**ŋ̊õ 33**	**ŋan 45**
hawk	C2	**lu 33**	**laaŋ 45**
thorn	C2	**ŋ̊i 33**	**ŋɯən 45**
female	C2	**mi 33**	**mei 45**
fart	D1	**tæ 31**	**tɑt 33**
liver	D1	**tæ 31**	**tjap 33**
fall	D1	**ti 31**	**tɔɔk 33**
flea	D1	**ɱæ 31**	**ɱat 33**
brain	D1	**ʔau 31**	**ʔwak 33**
bird	D2	**ni 31**	**nok 45**

Figure 44

3.10.1.2. The 1-2 tonal series

Laozhai Gelao only splits tone A, based on voicing opposition of initials: tone **/45/** occurs with the voiceless series and tone **/35/** occurs with the voiced series. Contrast, for instance, the following forms:

A1 /45/		A2 /35/	
four	**pu 45**	**cave**	**boŋ 35**
tree	**ti 45**	**do**	**di 35**
dog	**ɲn 45**	**hand**	**mi 35**
door	**hõ 45**	**snake**	**ŋʏɯ 35**
ladder	**ʔli 45**	**far**	**li 35**
house	**ʔrə 45**	**fly(n.)**	**ʐo 35**

3.10.1.3.

When preceded by another syllable, words with tone **/45/** tend to become lower to **[35]**. For example, **/hɲn 45/** 'dog' may be pronounced in compound as **/ʔla33 hɲn35/**. When both syllables of a bisyllabic form have the same original tone **/45/**, they may both become lower to **[35]**.

hair	**la 31**	**so 45/35**	
ear of grain	**la 31**	**qõ 45/35**	
tooth	**di 31**	**pi 45/35**	
pillar	**di 31**	**tɕɯ 45/35**	
dream	**ŋɯ 31**	**pi 45/35**	(**ŋɯ 31** = 'sleep')
peach	**mɑ 31**	**plo 45/35**	(**mɑ 31** = 'fruit')
horn	**pa 31**	**qʏu 45/35**	
black	**tʂæ 31**	**ʔlo 45/35**	
door	**qo 31**	**hõ 45/35**	
chicken	**ʔla 33**	**qei 45/35**	
pig	**ʔla 33**	**hvũ 45/35**	

belly	**do 35**	**ɬoŋ 4535**	
wait	**hvɯ 45/35**	**hvɯ 45/35**	(reduplication)
egg	**to 45/35**	**qei 45/35**	(egg + chicken)
walk	**pi 45/35**	**ɕõ 45/35**	(go/walk + road)

3.10.2. Wanzi and Qiaoshang varieties

The Wanzi variety has six tones: **/33/**, **/44/**, **/24/**, **/31/**, **/55/**, and **/13/**. Syllables with tones **/31/** and **/13/** are accompanied by breathiness. The Qiaoshang variety also has six tones: **/44/**, **/31/**, **/24/**, **/21/**, **/45/**, and **/32/**. Tones in these varieties correspond to those of Malipo dialect according to the A-B-C tonal classes as follows:

Tonal classes	*Laozhai*	*Wanzi*	*Qiaoshang*
A1	**45**	**33**	**44**
A2	**35**	**44**	**31**
B1	**31**	**24**	**24**
B2	**31**	**31ɦ**	**21**
C1	**33**	**55**	**45**
C2	**33**	**13ɦ**	**32**
D1	**31**	**24**	**24**
D2	**31**	**31ɦ**	**21**

Figure 45

3.10.3.

All three Gelao varieties have the same tonal reflexes of tones D and B. Wanzi breathiness occurs with the series 2 tones (B2, C2, and D2), indicating that it arose from early voiced initials. In tone A2, this breathiness became aspiration of stop initials. (The following change may be assumed: ***b-** etc. > **pɦ-** and then **pɦ-** > **ph-** in tone A).

		Laozhai	*Wanzi*	*Qiaoshang*
cave	A2	**boŋ 35**	**phu 44**	**poŋ 31**
father	A2	**ba 35**	**phɒ 44**	**pɒ 31**

do	A2	**di 35**	**tha 44**	**tʏu 31**
louse	A2	**dʐu 35**	**tshen 44**	**tʂø 31**
brother	B2	**ʑu 31**	**tsəɯ 13fi**	**so 21**
count	C2	**dau 33**	**ta 31fi**	**tʏu 33**
chopstick	C2	**dzɑu 33**	**tsəɯ 31fi**	**tso 33**
tear(n.)	C2	**ʑi 33**	**tsau 31fi**	**se 33**
bone	D2	**dæ 31**	**taŋ 13 fi**	**tɒ 21**
fall	D2	**dʏu 31**	**ta 13fi**	**tʏu 21**

Figure 46

Examples of syllables with the series 1 tones are illustrated below:

		Laozhai	*Wanzai*	*Qiaoshang*
four	A1	**pu 45 p**	**u 33**	**pau 44**
tree	A1	**ti 45**	**tai 33**	**ti 44**
get	B1	**pɒ 31**	**pɒ 24**	**pø 24**
ash	B1	**tʏu 31**	**ta 24**	**tʏu 24**
plant (v.)	C1	**to 33**	**tan 55**	**tø 45**
excrement	C1	**qæ 33**	**qɒ 55**	**qai 45**
blood	D1	**plɑ 31**	**plɒ 24**	**ple 24**
close (eye)	D1	**ʔlæ 31**	**kle 24**	**kwa 24**

Figure 47

3.11. LACHI TONES.

3.11.1. Brief description

Jinchang Lachi has six tones: **/55/, /35/, /45/, /24/, /33/**, and **/21/**. The two lower rising tones **/35/** and **/24/** are frequently accompanied by breathiness. This feature is also found with a number of words with tones **/33/** and **/21/**. A

number of syllables with tone /33/ and tone /21/ may also have a glottal closure at the end (which usually constricts the vowels. This is shown as y below). These complex features of Lachi tones may be illustrated as follows:

pitch	*breathiness*	*glottal constriction*
55	ø	ø
45	ø	ø
33	ø	y
21	ø	y
21	fi	y
33	fi	v
24	fi	ø
35	fi	ø

3.11.2. The A-B-C tones

Lachi tones correspond to the Gelao tones according to early tonal classes as follows:

Tone classes	*Lachi*	*Gelao (Wanzi)*
A1	55	33
A2	35fi	44
B1	45	24
B2	24fi	31
C1	33	55
C2	33fi	13
D1	21, 45	24
D2	21fi, 24fi	31

For examples of correspondences of tone D, see 3.11.3; for tone series 2, see 3.11.4; and for tone series 1, see 3.11.7.

3.11.3. Early short and long checked syllables

Lachi variant reflexes of the D tones are conditioned by vowel length. Tone **/21/** is the reflex of early syllables with short vowels (DS); the glottal constriction which usually occurs with this tone can be assumed to be a residue of the early stop endings (this constriction was often obscured by the strong breathiness accompanying the stop initials in D2S syllables). The two DL tones **/45/** and **/24fi/** do not show glottal constriction, the fact which suggests that original stop endings have been lost early after long vowels. The reflexes of syllables with DL tones merge with those of the B tones.

Buyang forms are provided for comparison below, since this language has a vowel length distinction and still keeps stop endings intact. Laha (Lh) forms are sometimes cited when corresponding Buyang forms are lacking (Laha tones 4 and 1 are the normal reflexes of D1 and D2 tonal classes respectively; see 3.12). Forms from Gelao (Wanzi) are provided in the last column to illustrate the tonal correspondences between Lachi and Gelao as summarized above, and especially to confirm the proper 1-2 tonal series when Buyang differs from Lachi in this respect. Laozhai Gelao (Lz) forms fill in some gaps when corresponding forms in the Wanzi variety are lacking.

		Lachi	*Buyang*	*Gelao (Wz)*
ten	D1S	**pɛ 21**	**put 45**	**pe 24**
fart	D1S	**tɛ 21**	**tut 45**	**tæ 31 (Lz)**
fall	D1S	**tjɒ 21**	**tuk 45**	**tau 24**
liver	D1S	**tją 21**	**tap 45**	**tæ 31 (Lz)**
tail	D1S	**sɛ 21**	**çut 53 (D2)**	**tshan 24**
fingernail	D1S	**lɛ 21**	**lip 53 (D2)**	**kle 24**
blood	D1L	**pjo 45**	**plaat 4 (Lh)**	**plɒ 24**
duck	D1L	**ko 45**	**aap 45**	**---**
handspan	D1L	**ko 45**	**kaap 45**	**xɒ 24**
soil	D1L	**?o 45**	**?ɔɔt 45**	**---**
white	D1L	**?i 45**	**?ɔɔk 45**	**?au 31 (Lz)**
bone	D2S	**tjɒ 21fi**	**dak 1 (Lh)**	**taŋ 31fi**
raw	D2S	**tjɛ 21fi**	**?dip 45 (D1)**	**te 31fi**
forget	D2S	**tją 21fi**	**?dap 45 (D1)**	**te 31fi**

deep	D2S	**ljo̱ 21fi**	**lak 45 (D1)**	**laŋ 31fi**
carry	D2L	**pi 24fi**	**pjaak 53**	—
fruit	D2L	**mĩ 24fi**	**maak 45 (D1)**	**mei 31fi**
cry	D2L	**ŋ̱o 24fi**	**ŋ̱iet 45 (D1)**	—
take	D2L	**ʑi 24fi**	**haak 1 (Lh)**	—

Figure 48

3.11.4. Breathiness

Breathiness is only found in the reflexes of the series 2 tones, suggesting that it originated from the early voicing of initials (this feature is especially strong with stop initials). Examples below illustrate the tonal correspondences between Gelao (Wanzi) and Lachi as summarized above. Forms from other Gelao varieties are provided when related forms in the Wanzi variety are lacking; these are marked by either (Lz) or (Qs) which indicate respectively Laozhai or Qiaoshang varieties.

		Lachi	*Gelao (Wz)*
crow (v.)	A2	**tjõ 35fi**	**thaŋ 44**
do	A2	**tje 35fi**	**tha 44**
navel	A2	**tjo 35fi**	**zo 31 (Qs)**
louse	A2	**tjã 35fi**	**tshen 44**
yam	A2	**ma 35fi**	**mbø 31 (Qs)**
tongue	A2	**njo 35fi**	**mlõ 35 (Lz)**
fat	A2	**nja 35fi**	**nan A2**
ear	A2	**lu 35fi**	**zau 44**
shoulder	B2	**pu 24fi**	**py 21 (Qs)**
y brother	B2	**ʑo 24fi**	**tsɔɯ 31fi**
love	B2	**mɒ 24fi**	**ŋɒ 31fi**
sleep	B2	**ŋ̱i 24fi**	**ŋka 31fi**
smelly	B2	**mi 24fi**	**mpa 31fi**
tear (n.)	C2	**ŋ̱ũ 33fi**	**tsau 13fi**
deaf	C2	**ŋ̱a 33fi**	**ŋan 13fi**

bamboo shoot	C2	**ni 33fi**	**ntəɯ 13fi**
thorn	C2	**ŋo 33fi**	**ɳu 13fi**
wear	C2	**ljo 33fi**	**lai 13fi**
grandmother	C2	**ʑu 33fi**	**ʑɒ 13fi**
female	C2	**mja 33fi**	**mɒ 13fi**
steal	C2	**lɪ̈ 33fi**	**len 13fi**
bone	D2S	**tjɒ̰ 21fi**	**taŋ 31fi**
deep	D2S	**ljɒ̰ 21fi**	**laŋ 31fi**
raw	D2S	**tjɛ̰ 21fi**	**te 31fi**
fruit	D2L	**mɪ̈ 24fi**	**mei 31fi**

Figure 49

3.11.5. Glottal constriction

In addition to its appearing with DS syllables as a residue of early stop endings, the glottal constriction is also found with tone C syllables (cf. Pubiao and Buyang for this similar feature in tone C). This constriction is sometimes obscured by (early) aspirated or fricative initials.

		Lachi	*Gelao (Wz)*	*Laha (Nl)*
excrement	C1	**kạ 33**	**qɒ 55**	**kai 6**
water	C1	**ʔɻ̣ 33**	**ʔəɯ 55**	**ʔuŋ 6**
plant (v.)	C1	**tjạ̈ 33**	**tan 55**	**tam 6**

3.11.6. Tonal changes

In addition to the normal reflexes above, there are certain words which show tone **/45/** with breathiness. Such words are usually preceded by the prefix **/ʔa-/**. Thus, for example, we have the following trio, where the tone of the second word ('tiger') in Lachi shifts from its original **/35/** to **/45/** but still possesses the breathy trace of the A2 tone class ('do'), in contrast with the non-breathy reflex of B1 syllables ('ash'):

	'do' /A2/	*'tiger' /A2/*	*'ash' /B1/*
Lachi	**tje 35fi**	**ʔa tje 45fi**	**tje 45**
Gelao (Laozhai)	**di 35**	**di 35**	**tvu 31**
Gelao (Wanzi)	**tha 44**	**(qa 55)**	**ta 24**

There also appears to be the following tonal change, where tone **/55/** becomes **/45/** when preceded by syllables with tone **/33/**:

		Lachi	*Gelao (Wz)*	*Pubiao*
tree	A1	**ɲ33 tje45**	**tai 33**	**tai 42**
I	A1	**la33 ki45**	**(ʔi 33)**	**kau 42**

3.11.7.

Examples of correspondences of tones A1, B1, and C1 between Lachi and Gelao (Wanzi) are here provided:

		Lachi	*Gelao (Wz)*
dream	A1	**pã 55**	**pan 33**
four	A1	**pu 55**	**pu 33**
fire	A1	**pje 55**	**pai 33**
egg	A1	**tã 55**	**tan 33**
eye	A1	**tju 55**	**tau 33**
teach	A1	**tɕe 55**	**səɯ 33**
pillar	A1	**tɕi 55**	**sa 33**
leg	A1	**ku 55**	**qau 33**
bitter	A1	**kã 55**	**qan 33**
heavy	A1	**kjã 55**	**xen 33**
horn	A1	**kwɛ 55**	**qa 33**
chicken	A1	**kɛ 55**	**qai 33**
two	A1	**su 55**	**su 33**

dry	B1	**ku 45**	**xau 24**
old	B1	**kwɛ 45**	**qa 24**
sated	B1	**sɛ 45**	**tshai 24**
bran	B1	**pu 45**	**pau 24**
ash	B1	**tje 45**	**ta 24**
excrement	C1	**kạ 33**	**qɒ 55**
meat	C1	**ʔọ 33**	**ʔɒ 55**
wildcat	C1	**kwɛ̣ 33**	**qa 55**
water	C1	**ʔi̯ 33**	**ʔəɯ 55**
ask	C1	**tɕi̯ 33**	**sai 55**
plant (v.)	C1	**tjã̯ 33**	**tan 55**

3.12. LAHA TONES.

3.12.1. Brief description

The Laha language (Nong Lay variety) has six tones, represented by the numbers 1 to 6. Their phonetic pitches are approximated from the descriptions given in Solntseva and Hoang (1986) as follows:

Phonemic tones	1	2	3	4	5	6
Approximate pitches	**55**	**55ʔ**	**53**	**33**	**32**	**24**

3.12.2. The A-B-C tones

Laha often shows competition between two or more tones corresponding to each Proto-Tai tonal class. The complications are most likely due to the many loans from neighboring Tai dialect(s) spoken by the more numerous and dominating Tai population living in the same area. The current geographic settlement of Laha is found farther south than the other Kra languages, and may perhaps mark the southernmost point where these languages are spoken. Since Laha and Tai belong to the same language family, sorting out loans from native words is not an easy task.

To clarify the picture of the basic tonal system of Laha, we propose to consider first the sets of vocabulary items which Laha does not share with Tai. This will prevent the possibility of contamination by recent Tai loans. The

comparisons of these lexical items with Buyang and Pubiao, whose tonal systems have already been demonstrated, reveals systematic correspondences according to the A-B-C tonal classes as follows:

Tone classes	*Laha*	*Buyang*	*Pubiao*
A1	3, 5	24	42
A2	2	44	33ɦ
B1	4	45	213
B2	1	53	213ɦ
C1	6	42ʔ	33ʔ
C2	3	213ʔ	45
D1	4	45	33
D2	1	53	45

3.12.2.1.

Laha shows two reflexes of tone A1: tone 3 and tone 5. The latter only occurs with aspirated and fricative initials, the former elsewhere. Like Buyang (E-Cun) and Gelao dialects (but unlike Pubiao), tone D merges with tone B. Examples of Laha reflexes of the A-B-C tonal classes in selected non-Tai vocabulary are provided below. Lachi (Lc) or Wanzi Gelao (Gl) forms may be sometimes cited when no related forms are found in either Buyang or Pubiao.

		Laha	*Buyang*	*Pubiao*
laugh	A1'	sɔ 5	θoo 24	θaau 42
husband	A1'	sɛ 5	θee 24	ʂje 42
two	A1'	saa 5	θaa 24	ʂee 42
know	A1'	sɔ 5	sa 33 (Gl)	ʂu 55 (Lc)
die	A1'	phən 5	pen 33 (Gl)	phĩ 55 (Lc)
stomach	A1'	loŋ 5	loŋ 24	ɬɔŋ 42
tooth	A1	cuŋ 3	θɔɔŋ 24	θuaŋ 42
skin	A1	taa 3	—	tu 55 (Lc)
good	A1	ʔai 3	—	ʔai 42

buy	A1	**col 3**	**sen 33 (Gl)**	**tɕĩ 55 (Lc)**
have	A1	**ʔan 3**	**ʔan 24**	**ʔan 31**
liquor	A1	**pəu 3**	**pa 33 (Gl)**	**pau 42**
three	A1	**təu 3**	**tuu 24**	**tau 42**
sunlight	A1	**klaaŋ 3**	**klei 33 (Gl)**	**ɬaaŋ 42**
egg	A1	**tam 3**	**tam 24**	**tã 55 (Lc)**
tree	A1	**təi 3**	**tai 44 (Gl)**	**tai 42**
star	A2	**kluŋ 2**	**lɔɔŋ 44**	**luuŋ 33fi**
wind	A2	**van 2**	**vən 44**	**ven 44 (Gl)**
afraid	A2	**blaa 2**	**laa 44**	**lau 44 (Gl)**
tendon	A2	**van 2**	**ven 44 (Gl)**	**võ 35fi (Lc)**
cow	A2	**nəi 2**	**ntai 44 (Gl)**	—
do	A2	**dəu 2**	**ʔduu 24 A1**	**tje 35fi (Lc)**
return	A2	**dɔŋ 2**	**ʔdɔɔŋ 24 A1**	—
gibbon	A2	**mjuu 2**	**luu 44**	—
neck	A2	**juu 2**	**jo 44**	—
new	A2	**maal 2**	**maan 44**	**mu 44 (Gl)**
salt	A2	**ɳɔ 2**	**ɳoo 44**	**ɳũ 33fi**
wing	A2	**vaa 2**	**vu 44 (Gl)**	**lu 35fi (Lc)**
tongue	A2	**maa 2**	**mee 44**	**mje 33fi**
satiated	B1	**ci 4**	**θi 45**	**sɛ 45 (Lc)**
ripe	B1	**ɳəu 4**	**muu 45**	**ɳi 45 (Lc)**
many	B1	**ʔəi 4**	**ʔai 24 (Gl)**	—
bite	B1	**tai 4**	—	**tja 45 (Lc)**
sleep	B1	**ʔou 4**	**ʔuu 45**	**ʔau 213**
bran	B1	**paa 4**	**faa 45**	**pu 45 (Lc)**
bark (v.)	B1	**plau 4**	**plɒ 24 (Gl)**	—
stink	B2	**məu 1**	**mpa 31fi (Gl)**	**muu 213fi**
y brother	B2	**jau 1**	**juə 53**	**ʑo 24fi (Lc)**

d-in-law	B2	**mləi 1**	**lai 31fi (Gl)**	—
flesh	C1	**ʔəu 6**	**ʔuə 42ʔ**	**ʔjau 33ʔ**
armpit	C1	**tai 6**	**–**	**tja̰ 33 (Lc)**
rat	C1	**lai 6**	**lɒ 55 (Gl)**	**lia 33 (Lc)**
iron	C1	**kɛl 6**	**tɕin 55 (Gl)**	**kɐḭ 33 (Lc)**
water	C1	**ʔuŋ 6**	**ʔɔɔŋ 42ʔ**	**ʔɔɔŋ 33ʔ**
plant	C1	**tam 6**	**tam 42ʔ**	—
one	C1	**cam 6**	**tɕa̰ 33ʔ (Lc)**	**tɕjaa 33ʔ**
heart	C1	**lul 6**	**ləɯ 55 (Gl)**	**lie 33 (Lc)**
inside	C1	**kluŋ 6**	**kləɯ 55 (Gl)**	—
ask	C1	**cəi 6**	**sai 55 (Gl)**	**tɕḭ 33 (Lc)**
deaf	C2	**ŋal 3**	**ŋan 213ʔ**	**ŋan 45**
yellow	C2	**ŋil 3**	**ŋaan 213ʔ**	**ŋḭn 45**
goat	C2	**mɛ 3**	—	**mɒ 33fi(Lc)**
hawk	C2	**klaaŋ 3**	**laaŋ 213ʔ**	**laaŋ 45**
go	C2	**vaa 3**	**vaa 213ʔ**	**vṵ 33fi (Lc)**
wear	C2	**lɛ 3**	**lee 213ʔ**	**ljɒ̰ 33fi (Lc)**
rice(cooked)	C2	**mlaa 3**	**mpəɯ 13fi (Gl)**	**mii 45**
white	D1	**ʔuk 4**	**ʔɔɔk 45**	**ʔi 45 (Lc)**
monkey	D1	**hok 4**	**khɒ̰ 21 (Lc)**	**ɽɔɔk 33**
tail	D1	**cot 4**	**ɕut 53 D2**	**sɑt 33**
full	D1	**tik 4**	**tiak 45**	**tek 33**
foot	D1	**kok 4**	**qa 24 (Gl)**	**kɒ̰ 21 (Lc)**
give	D2	**nak 1**	**naak 53**	**ni 31fi (Gl)**
hear	D2	**jak 1**	**jɒ̰ 21fi (Lc)**	**tɕak 45**
forget	D2	**dap 1**	**ʔdap 45 D1**	**ʔdjap 33**
itchy	D2	**dok 1**	**ʔduk 45 D1**	**tau 31fi(Gl)**

Figure 50

(Recall that Buyang and Pubiao on the one hand, and Gelao and Lachi on the other, normally differ in terms of the 1-2 tonal series in lexical items where the former group has reflexes of preglottalized stop initials (?d- etc) while the latter has reflexes of voiced stop initials. Laha agrees with the Gelao-Lachi group in this respect).

3.12.3.

The majority of Tai-related vocabulary items also fit the above A-B-C tonal scheme, although, like other Kra languages, Laha differs from Tai in a number of forms with respect to the 1-2 series. Examples of comparisons between Laha and Tai are provided below. These probably include a number of early Tai-loans which integrated into Laha early enough to have developed like native words.

		Laha	Tai
A	hair	**sam 5**	**phom A1**
	belly	**loŋ 5**	**loŋ A2 (Ks)**
	cooked rice	**saal 5**	**saan A1**
	road	**hon 5**	**hon A1**
	garden	**sun 5**	**suan A1**
	pond	**nɔŋ 5**	**nɔɔŋ A1**
	sun/day	**van 5**	**wan A2/1**
	sky	**thɛn 5**	**thɛɛn A1**
	fragrant	**hɔm 5**	**hɔɔm A1**
	ginger	**khiŋ 5**	**khiŋ A1**
	jar	**hai 5**	**hai A1**
	sheet clf.	**phuun 5**	**phuuun A1**
	yawn	**hɔ 5**	**haau A1**
	of	***khɔŋ 5***	***khɔɔŋ A1***
	fire	**pəi 3**	**fai A2**
	eye	**taa 3**	**taa A1**
	door	**təu 3**	**tuu A1**

cucumber	**tiŋ 3**	**tɛɛŋ A1**
louse	**tou 3**	**hau A1**
snail	**ci 3**	**hɔɔi A1**
leg	**kaa 3**	**khaa A1**
horn	**kou 3**	**khau A1**
bitter	**kam 3**	**khom A1/2**
pig	**məu 3**	**muu A1**
dog	**maa 3**	**maa A1**
spur	**duə 3**	**duaj A1**
rattan	**kwɛ 3**	**waai A1**
grandson	**klaal 3**	**laan A1**
expensive	**phɛŋ 2**	**phɛɛŋ A2**
even	**phiŋ 2**	**phiaŋ A2**
copper	**thoŋ 2**	**thɔɔŋ A2**
lead (n.)	**sun 2**	**chin A2**
person	**khon 2**	**khon A2**
ear	**khlaa 2**	**huu A1**
gold	**kham 2**	**kham A2**
cogon grass	**khaa 2**	**khaa A2**
kill	**phən 2**	**fan A2**
fish	**blaa 2**	**plaa A1**
navel	**dau 2**	**duuu A1**
moon	**daan 2**	**duan A1**
thunder	**daŋ 2**	**daŋ A1**
boat	**daa 2**	**rua A2**
hand	**maa 2**	**muuu A2**
come	**maa 2**	**maa A2/1**
bear	**mɛ 2**	**mii A1**
city	**muŋ 2**	**muaŋ A2**

	rice field	**naa 2**	**naa A2**
	thick	**naa 2**	**naa A1**
	snake	**ŋaa 2**	**ŋuu A2**
	far	**klə̀i 2**	**klai A1**
	fall	**kloŋ 2**	**loŋ A2**
	deer	**kwaaŋ 2**	**kwaaŋ A1**
	flowery	**laai 2**	**laai A2**
	swim	**lɔ̀j 2**	**lɔɔi A2**
	rain	**jal 2**	**fon A1**
	sell	**və̀j 2**	**khaai A1/2**
B	dry	**khaa 4**	**khai B1 (Lao)**
	old	**kou 4**	**kau B1**
	goose	**haan 4**	**haan B1**
	charcoal	**thaan 4**	**thaan B1**
	ash	**thə̀u 4**	**thau B2**
	loom	**ki 4**	**kii B1**
	shake	**sal 4**	**san B1**
	bark(v.)	**plau 4**	**hau B1**
	split	***phaa 4***	***phaa B1***
	release	**plɔ̀i 4**	**plɔɔi B1**
	from	**tɛ 4**	**tɛɛ B1**
	shoulder	**baa 1**	**baa B1**
	onion	**buu 1**	**bua B1**
	field	**thoŋ 1**	**thuŋ B2**
	tired	**muu(ə)i 1**	**muaj B2**
C	heel	**son 6**	**son C1**
	intestine	**si 6**	**sai C1**

	excrement	**kai 6**	**khii C1**
	male	**pau 6**	**phuu C1/2**
	bee	**phlɔŋ 6**	**phuŋ C1**
	smooth	**kliŋ 6**	**kliaŋ C1**
	thick (soup)	**khon 6**	**khon C1**
	cloud	**phaa 6**	**faa C1**
	cave	**tham 6**	**tham C1**
	cotton	**phaai 6**	**faai C1**
	plank	**pɛn 6**	**pɛɛn C1**
	knife	**phlaa 6**	**phraa C2**
	crossbow	**naa 6**	**naa C1**
	trousers	**soŋ 6**	**sooŋ C1 (Lao)**
	insane	**baa 6**	**baa C1**
	rise	**khuun 6**	**khuun C1**
	enter	**khau 6**	**khau C1**
	embrace	**ʔum 6**	**ʔum C1**
	valley	**lɔŋ 3**	**lɔɔŋ C2**
	rib	**khlaaŋ 3**	**khaaŋ C1**
	hammer	**kɔn 3**	**khɔɔn C2**
D	beard	**nut 4**	**nuat D1**
	blood	**plaat 4**	**luat D2**
	liver	**tap 4**	**tap D1**
	lung	**pɔt 4**	**pɔɔt D1**
	male	**thuuk 4**	**thuuk D1/2**
	tail	**cot 4**	**sut D1**
	fingernail	**klɔp 4**	**lep D2**
	catfish	**-duk 4**	**duk D1**
	frog	**khwit 4**	**khiat D1**

leech	**taak 4**	**thaak D2**
moth	**mut 4**	**mɔɔt D2**
deep	**lak 4**	**luk D2**
spicy	**pat 4**	**phet D1**
carry	**haap 4**	**haap D1**
pestle	**caak 4**	**saak D1**
lance	**hɔɔk 4**	**hɔɔk D1**
hat	**muək 4**	**muak D1**
bamboo hat	**klop 4**	**kuup D1**
sheaf	**plɔk 4**	**plɔɔk D1**
sing	**khap 4**	**khap D1**
blind	**bɔt 4**	**bɔɔt D1**
go out	**ʔɔk 4**	**ʔɔɔk D1**
fall down	**tok 4**	**tok D1**
answer	**tɔp 4**	**tɔɔp D1**
child	**laak 1**	**luuk D2**
gum	**hɯk 1**	**nɯak D1**
chest	**ʔək 1**	**ʔok D1**
bone	**dak 1**	**duuk D1**
bird	**nok 1**	**nok D2**
toad	**khlok 1**	**khrok D2**
ant	**mot 1**	**mot D2**
dark	**mɯt 1**	**mɯɯt D2**
curve	**khot 1**	**khot D2**
lightning	**laap 1**	**lɛɛp D2**
fog	**muk 1**	**mɔɔk D1**
taro	**haak 1**	**phɯak D1**
fruit	**maak 1**	**maak D1**
squash	**bɔp 1**	**buap D1**

mat	**phuk 1**	**fuuk D2**
slip	**phlaat 1**	**phlaat D2**
like	**mak 1**	**mak D2**
grow	**ŋɔk 1**	**ŋɔɔk D2**
tie	**mat 1**	**mat D2**
tear	**cik 1**	**chiik D1**
pluck	**bɔt 1**	**bit D1**
drag	**klaak 1**	**laak D2**
fold	**thop 1**	**thop D2**
count	**nap 1**	**nap D2**
exchange	**lɛk 1**	**lɛɛk D2**

Figure 51

3.12.4.

Having set up the normative Laha tonal system, we may now suggest that the following vocabulary items whose tonal reflexes deviate from the scheme are possibly Tai-loans. Most of these words do not have regular corresponding forms in the other Kra languages, a fact which further supports the presumption that they are more recently integrated into the language.

4 = A1

	Laha	*Tai*
waist	**ʔɛw 4**	**ʔeu A1**
coxcomb	**hɔn 4**	**ŋɔɔn A1**
thin	**baaŋ 4**	**baaŋ A1**
ditch	**muŋ 4**	**muaŋ A1**
dam	**phaai 4**	**faai A1**
foot	**tin 4**	**tiin A1**
bridge	**khuu 4**	**khua A1**

steel	**khaaŋ 4**	**khaaŋ A1 (Lao)**
sound	**siŋ 4**	**siaŋ A1**
eggplant	**khuuu 4**	**khua A1/2**
lid	**phaa 4**	**faa A1**
plow	**thai 4**	**thai A1**
bag	**thoŋ 4**	**thuŋ A1**
ring	**vɛn 4**	**wɛɛn A1**
sink	**com 4**	**com A1**
dive	**dam 4**	**dam A1**
lean	**ʔiŋ 4**	**ʔiŋ A1**
hang	**khwɛn 4**	**khwɛɛn A1**

4 = C1

	Laha	*Tai*
face/before	**naa 4**	**naa C1**
wide	**kwaaŋ 4**	**kwaaŋ C1/B1**
pot	**mɔ 4**	**mɔɔ C1**
swim/cross	**khaam 4**	**khaam C1**
carry	**hiu 4**	**hiu C1**
untie	**ki 4**	**kɛɛ C1**

5 = B1

	Laha	*Tai*
muddy	**khun 5**	**khun B1**
grey	**mun 5**	**mon B1**
big	**ɳɔɯ 5**	**jai B1**
young	**num 5**	**num B1**
sow	**vaan 5**	**waan B1**

5 = C1

	Laha	*Tai*
gourd	**tau 5**	**tau C1/B1**
grass	**ŋaa 5**	**jaa C1/A1**

1 = C1

	Laha	*Tai*
throw	**kwaaŋ 1**	**khwaaŋ C1**
flood	**thum 1**	**thuam C1**

4 = A2

	Laha	*Tai*
cat	**mɛu 4**	**mɛɛw A2**
frost	**muɯ 4**	**məi A2** (White Tai)
stand	**juɯn 4**	**juɯɯn A2**

1 = A2

	Laha	*Tai*
hate	**saŋ 1**	**chaŋ A2**
lift	**ŋɔ 1**	**jɔɔ A2**
grope	**cam 1**	**khlam A2**
carry on shoulder	**khɔn 1**	**khɔɔn A2**
salty	**khəm 1**	**khem A2**
steep	**san 1**	**chan A2**
round	**mon 1**	**mon A2**
long	**jaau 1**	**jaaw A2**
peacock	**juŋ 1**	**juuŋ A2**

mud	**phoŋ 1**	**phoŋ A2**
smoke	**khwan 1**	**khwan A2**
fan	**vəi 1**	**wii A2**
pole	**khaan 1**	**khaan A2**

1 = C2

	Laha	*Tai*
morning	**sau 1**	**chaau C2**
lazy	**khlaan 1**	**khlaan C2**
bad	**haai 1**	**raai C2**
drought	**lɛŋ 1**	**lɛɛŋ C2**

3.13. Paha tones.

3.13.1. Brief description

Paha has five tones **/33, 31, 44, 21(3)** and **45/**. Breathiness may be found with voiced initials in all but /31/ tones. The rising part of tone **/213/** is especially prominent in citation, otherwise it is often audible as **/21/**. Only the last two tones occur with checked syllables.

3.13.2. The A-B-C tones

The Paha tones correspond to those of Buyang according to the Kra-Dai tonal categories as follows:

Proto-tone classes	*Paha tones*	*Buyang tones*
A1	33	24
A2	31	44
B1	44	45
B2	21(3)	53
C1	45	42?
C2	21(3)	213?
D1	44	45
D2	21	53

3.13.3. The 1-2 voicing series

In native words, initials with tone series 2 are exclusively sonorants. These sonorants are usually breathy in syllables with tone **/21(3)/**, which is the Paha reflex of proto tones B2, C2, and D2. With tone **/31/**, the reflex of proto tone A2, they remain plain sonorants.

Breathiness is also found in a number of syllables with tone series 1 and with both obstruent and sonorant initials. Comparative evidence suggests that the breathiness in this category has developed from early voiceless fricative or aspirated sounds, which is rightly reflexed by tone series 1.

3.13.4.

Examples of comparison between Paha and Buyang forms according to their tonal correspondences are provided in Figure 52:

		Paha	*Buyang*
A1	leg	**ɣaa 33**	**ʔaa 24**
	tooth	**jɔɔŋ 33**	**θɔɔŋ 24**
	bitter	**qam 33**	**ʔam 24**
	good	**ʔaai 33**	**ʔai 31 (Pb)**
	heavy	**qan 33**	**han 24**
	chicken	**qai 33**	**ʔai 24**
	egg	**ðam 33**	**tam 24**
	cogon	**qaa 33**	**ʔaa 24**
	seed	**pii 33**	**pee 24**
	fire	**pui 33**	**fii 24**
	sun/day	**vhan 33**	**vən 24**
	two	**θaa 33**	**θaa 24**
	three	**tuu 33**	**tuu 24**
	four	**paa 33**	**paa 24**
	buy	**tɕɛn 33**	**tɕĩ 55 (Lc)**
	do	**duu 33**	**ʔduu 24**
	dream	**van 33**	**pan 24**

	have	**ʔan 33**	**ʔan 24**
	laugh	**ðhuuu 33**	**θoo 24**
	pillar	**dʑhuu 33**	**θuu 24**
	pillow	**ɳhii 33**	**ɳee 55**
A2	fat	**nan 31**	**nɛn 44**
	new	**maan 31**	**maan 44**
	bee	**ðii 31**	**rɑɑi 33fi (Pb)**
	mosquito	**jaaŋ 31**	**jaaŋ 44**
	snake	**ŋaa 31**	**ŋaa 44**
	wing	**vaa 31**	**vu 33 (Wz)**
	behind	**lan 31**	**len 35 (Lz)**
	salt	**ɳuuu 31**	**ɳoo 44**
B1	pus	**ŋfiuu 44**	**muu 45**
	dry	**gfiaa 44**	**haa 45**
	old	**quu 44**	**ʔuu 45**
	bran	**bɣaa 44**	**faa 45**
	father	**paa 44**	**paa 45**
	bite	**ðaai 44**	**tja 45 (Lc)**
	ash	**duu 44**	**tuu 45**
B2	rotten	**ðhuŋ 21(3)**	**zuŋ 13fi (Wz)**
	smelly	**mhuu 21(3)**	**muu 213fi (Pb)**
	sleep	**ŋhuu 21(3)**	**ŋka 13fi (Wz)**
C1	*chin/jaw*	**ɢaaŋ 45**	**ʔaaŋ 42?**
	heart	**lhin 45**	**lɒ 55 (Wz)**
	light (a.)	**ghaa 45**	**xau 55 (Wz)**

	wild cat	**quu 45**	**ʔuu 42ʔ**
	water	**ʔɔɔŋ 45**	**ʔɔɔŋ 42ʔ**
	plant (v.)	**tam 45**	**tam 42ʔ**
C2	goat	**mfiii 21(3)**	**mɒ 33fi (Lc)**
	grandmother	**jfiaa 21(3)**	**jaa 21ʔ**
	steal	**lfiam 21(3)**	**luəm 21ʔ**
	mother	**mfiai 21(3)**	**mii 21ʔ**
	male-in-law	**jfiuu 21(3)**	**jau 45 (Pb)**
D1	chest	**tak 45**	**tak 45**
	fart	**ðat 45**	**tut 45**
	foot	**kɔɔk 45**	**kɒ 21 (Lc)**
	liver	**tap 45**	**tap 45**
	nose	**ŋfiat 45**	**ŋ̊tɕe 24 (Wz)**
	deep	**lhak 45**	**lak 45**
	itchy	**dɔɔk 45**	**ʔduk 45**
	crow	**ʔaak 45**	**ʔi 24 (Wz)**
	ten	**vat 45**	**put 45**
	bathe	**ʔaap 45**	**ʔɒ 24 (Wz)**
	fall	**tɔɔk 45**	**tuk 45**
	forget	**dap 45**	**ʔdap 45**
D2	hair	**mfiuut 21**	**mɐ̯ 21fi (Lc)**
	bird	**nfiook 21**	**nok 1 (Lh)**
	crab	**ðfiaat 21**	**khlaat 1 (Lh)**
	cloud	**mfiook 21**	**muok 53**
	child	**lfiaak 21**	**laak 1 (Lh)**
	weep	**ŋ̊fiit 21**	**ŋ̊it 1 (Lh)**

give	**nfiaak 21**	**naak 53**
take	**ðfiaak 21**	**haak 1 (Lh)**
hear	**jfiak 21**	**jak 1 (Lh)**

Figure 52

3.14. SUMMARY OF KRA-DAI TONAL CORRESPONDENCES.

The study shows that the early tonal system of Kra-Dai languages consists of three tones in syllables ending with a resonant or a vowel, plus one tone in syllables ending with a stop. This system, which we may call the A-B-C tonal system, shows excellent correspondences across the Kra-Dai languages (with marginal exceptions). We may thus suggest that this A-B-C tonal system is reconstructible for Proto-Kra-Dai.

The split of these proto tones, basically conditioned by different laryngeal states of initials (namely voicing, aspiration, and glottalization), has operated extensively in most Kra-Dai languages. But there are also a number of languages which have not split tones at all (e.g. some dialects of Hlai). The tonal split is thus a more recent development than the initial differentiation of Proto-Kra-Dai, which each branch of the Kra-Dai languages or sometimes each variety of a subgroup may have undergone at different periods of time. This time differential, combined with the fact that at the time of tonal split in each language the initial inventories may have already become quite different from language to language, is responsible for the often alternating tonal series found among the daughter languages. Such tonal alternations, however, can be very useful for reconstructing the early stage of proto initials. The detailed comparison of Proto-Kra-Dai initials, however, has to be left for future studies.

A summary of the tonal correspondences across the Kra-Dai languages discussed in this chapter is given in Figure 53. The abbreviations in parentheses following some language names indicate particular varieties as follows:

Gelao (Lz)	=	Laozhai Gelao
Gelao (Qs)	=	Qiaoshang Gelao
Gelao (Wz)	=	Wanzi Gelao
Lachi	=	Jinchang Lachi
Laha (Nl)	=	Nong Lay Laha
Laha (Tm)	=	Ta Mit Laha

Paha	=	Yanglian Paha
Buyang (Ec)	=	E-Cun Buyang
Buyang (Lj)	=	Langjia Buyang
Yalhong	=	Yalhong
Pubiao	=	Pufeng Pubiao
Hlai (1)	=	Hlai dialects which do not split tones
Hlai (2)	=	Hlai dialects which split tones
Be	=	Limkou Be (Hashimoto 1980)
Kam-Sui	=	Proto-Kam-Sui
Tai	=	Proto-Tai

Of these, the Laha (Tm), Buyang (Lj), and Yalhong tonal systems have not been discussed in the previous sections. A summary of their systems is included in Figure 53 for reference, since we have sometimes cited forms from these varieties, especially when forms in the main representative dialects were lacking. With certain exceptions, their tonal reflexes appear to fit into our established A-B-C tonal system as summarized here. Nevertheless, we have to warn that data on these languages are somewhat limited, and are not from our own records. In Laha (Tm), transcriptions of checked syllable tones are unfortunately so ambiguous that a systematic analysis could not be carried out. For example, the source (Gregerson and Edmondson 1997) has provided the following contradictory forms: 'bone' **/thak 32/** (p.261) but **/thak 34/** (p.262); 'liver' **/tap 32/** (p.261) but **/tap 23/** (p.262).

Proto-Tones	A1'	A1	A1^0	A2	B1'	B1	B1^0	B2	C1'	C1	C1^0	C2	D1S	D1L	D2S	D2L
Gelao (Lz)	45			35	31				33				31			
Gelao (Qs)	44			31	24			21	45			32	24		21	
Gelao (Wz)	33			44	24			31ɦ	55			13ɦ	24		31ɦ	
Lachi	55			35ɦ	45			24ɦ	33			33ɦ	21	45	21ɦ	24
Laha (Nl)	5	3		2	4			1	6			3	4		1	
Laha (Tm)	343			33	24				212	31		21				
Paha	33			31	44			21(3)	45			21(3)	44		21	
Buyang (Ec)	24			44	45			53	42?			213?	45		53	
Buyang (Lj)	54		31	312	11				24			11	54	11		
Yalhong	53			31	33			12	33			12	33	53	31	
Pubiao	42			33ɦ	213			213ɦ	33?			45	33		45	
Hlai (1)	1				2				3				7			
Hlai (2)	1			4	5			2	3			6	7		8	
Be	13			55	33			21	33			21	33		55	
Kam-Sui	A1			A2	B1			B2	C1			C2	D1		D2	
Tai	A1			A2	B1			B2	C1			C2	D1		D2	

Figure 53

CHAPTER 4

PROTO GELAO

In this chapter we will discuss the reconstruction of Proto-Gelao (PG), based mainly on three representative dialects. Laozhai variety represents the Southwestern branch (Swg), Qiaoshang the Northern branch (Ng) and Wanzi the Central branch (Cg). PG onsets will be discussed first (4.1) followed by PG rimes (4.2).

4.1. PROTO-GELAO INITIALS

For ease of discussion, PG initials will be divided into five groups and presented according to their similar phonetic manners in the following order: stops (4.1.1), sibilants (4.1.2), sonorants (4.1.3), retroflexes (4.1.4) and spirants (4.1.5). Discussions of complex onsets will follow in section 4.1.6.

Some notes may be provided after each set of the reconstructed sounds. These are in general intended to give additional forms from other dialects when relevant, especially when the corresponding forms in the representative varieties are lacking. The numbers in the notes refer to the respective numbers of etyma which precede them.

4.1.1. Stops

4.1.1.1. Voiceless stops ***p-, *t-, *k-, *ʔ-**

The reflexes of PG voiceless stop consonants are straightforward and can be reconstructed without difficulty. PG ***k-** is reflexed as post-velar in several dialects, including all three varieties here, but **k-** is also found (e.g. in Shanbeihou variety, Zhang 1993). Words with these initials have series 1 of tones, indicating their voicelessness in origin.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. four	*p-	A1	pu	pau	pu
2. fire	*p-	A1	—	pa	pai
3. seed	*p-	A1	pi	pa	—
4. male	*p-	C1	pɯ	po	—
5. three	*t-	A1	tʏu	tʏu	ta
6. ash	*t-	B1	tʏu	tʏu	ta
7. plant (v.)	*t-	C1	to	tø	tan
8. fall (v.)	*t-	D1	ti	tau	tau
9. chicken	*k-	A1	qɪ	qai	qai
10. old	*k-	B1	qʏu	qʏu	qa
11. expensive	*k-	B1	qʏɯ	qe	qau
12. excrement	*k-	C1	qæ	qai	qɒ
13. ascend	*ʔ-	A1	ʔi	ʔa	ʔai
14. have	*ʔ-	A1	ʔo	ʔø	ʔan
15. water	*ʔ-	C1	ʔɳ	ʔau	ʔəɯ
16. brain	*ʔ-	D1	ʔau	–	ʔu

Notes
2. For Swg, cf. Moji /pi^{31}/.
16. For Ng, cf. Majiang /ʔu^{55}/.

4.1.1.2. Voiced stops ***b-, *d-, *g-**

PG voiced stops are kept as voiced in Laozhai. In Qiaoshang, they are regularly devoiced into unaspirated voiceless stops, while in Wanzi these sounds become voiceless aspirated in tone A. Words with these initials all have series 2 of tones.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. cave	*b-	A2	boŋ	poŋ	phu
2. father	*b-	A2	bɑ	pɒ	phɒ
3. well	*b-	B2	bo	pau	pɔɯ
4. do	*d-	A2	di	tʏu	tha
5. fall	*d-	B2	dʏu	tʏu	ta
6. count	*d-	C2	dau	tʏu	ta
7. measure	*g-	B2	—	kã	kaŋ

4.1.2. Sibilants

4.1.2.1. Voiceless sibilants ***s-, *ʃ-, *ts-, *tʃ-, *c-**

No dialect has kept all distinctions of these proto-sounds. Laozhai and Qiaoshang have normally separated fricatives from affricates, while merging alveolar and prepalatal sounds (i.e. ***s-** = ***ʃ-** (#1-2 and #5-6) and ***ts-** = ***tʃ-** (#3-4 and #7-8)). Wanzi, on the other hand, has kept the distinction between alveolar and prepalatal articulations, but lost contrast between original fricatives and affricates. The palatal ***c-** has later brought back modern Wanzi affricate ts. In Qiaoshang, it has merged early with the other two fricatives to become **s-**.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. hair	*s-	A1	so	sø	san
2. laugh	*s-	A1	so	sau	sa
3. buy	*ts-	A1	tsen	tsen	sen
4. ask	*ts-	C1	–	tse	sai
5. dry (v.)	*ʃ-	A1	–	sʏu	tsha
6. rope	*ʃ-	D1	sɑ	sɒ	tshei
7. satiated	*tʃ-	B1	tsɿ	tsei	tshai
8. tail	*tʃ-	D1	tsæ	tsen	tshan

9. paddy	*c-	A1	tɕi	se	tsau
10. descend	*c-	C1	—	so	tseɯ

Notes
10. For Swg, cf. Niupo /tsei^{31}/.

4.1.2.2. Voiced sibilants *z-, *ʒ, *dz-, *dʒ-, *ɟ-

All dialects have kept voiced alveolar fricative (*z-) and affricate (*dz-) apart. For pre-palatal sounds, Wanzi again has merged fricative (*ʒ-) and affricate (*dʒ-) together, while Qiaoshang has merged the latter (*dʒ-) with palatal (*ɟ-) instead.

These are the voiced counterparts of those in the preceding set. Words with these initials all show series 2 of tones.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. play	*z-	A2	zɳ	sɒ	zəɯ
2. field	*z-	A2	—	se	zəɯ
3. borrow	*dz-	A2	—	tsø	tshu A1!
4. chopsticks	*dz-	C2	dzɑu	tso	tsəɯ
5. younger brother	*ʒ-	B2	ʑu	so	tsəɯ
6. tear (n.)	*ʒ-	C2	ʑi	se	tsau
7. mosquito	*dʒ-	A2	—	ʑi	tɕhi
8. son-in-law	*dʒ-	C2	—	ʑyu	tsa
9. grandmother	*ɟ-	C2	ʑɑ	ʑo	ʑo

Notes
2. Both Laozhai and Niupo (Swg varieties) use another word: /bo C2/ and /bɑŋ^{55}/ respectively.
7. For Swg, cf. Niupo /ʑu^{55}/.

4.1.3. Sonorants

4.1.3.1. Voiced nasals and liquid ***m-, *n-, *ɳ-, *ŋ-, *l-**

Voiced nasals have usually become Qiaoshang prenasalized stops; velar nasal (***ŋ-**) at times became postvelar (**Nʁ-**) before back vowels (#12-13). Wanzi shows variable reflexes as either plain nasals or prenasalized stops. It is unclear whether these variants might point to an early distinction or are simply due to dialect mixture. Even closely related varieties (such as Wanzi and Dagouchang) do not always agree in this respect. For instance, for #10 'thorn', the Dagouchang form has been recorded as **/ɳtɕu^{21}/**. We will temporarily put them together here until new evidence suggests otherwise.

For the liquid, all varieties have a straightforward reflex **l-**.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. hand	***m-**	**A2**	**mi**	**mbe**	**mpau**
2. smelly	***m-**	**B2**	**m̩**	**mbu**	**mpa**
3. rice	***m-**	**C2**	**mɑu**	**mbo**	**mpəu**
4. rain	***m-**	**A2**	**men**	**mben**	**mei**
5. female	***m-**	**C2**	**mi**	**mbi**	**mɒ**
6. cow	***n-**	**A2**	**nɻi**	**nɻdʑi**	**ntai**
7. this	***n-**	**B2**	**ni**	**nɻdʑi**	**ni**
8. horse	***ɳ-**	**C2**	**nɻi**	**nɻdʑe**	**nɻtɕau**
9. salt	***ɳ-**	**A2**	**nɻu**	**—**	**nɻtɕəu**
10. thorn	***ɳ-**	**C2**	**nɻi**	**nɻdʑai**	**nɻu**
11. snake	***ŋ-**	**A2**	**ŋʏu**	**ŋge**	**ŋkau**
12. sleep	***ŋ-**	**B2**	**ŋu**	**NʁʏU**	**ŋka**
13. deaf	***ŋ-**	**C2**	**nɻõ**	**Nʁã**	**ŋan**
14. steal	***l-**	**C2**	**lɑ̃**	**len**	**len**
15. deep	***l-**	**D2**	**ʑi**	**lɒ**	**laŋ**

Notes

8. For Ng, see Majiang /ɳɐ^{31}/.

12, 14. Laozhai palatal reflexes are secondary. A palatal glide is assumed to have been added between the initials and the following short vowel **-a-** (#13 has rime ***-an**, and #15 ***-ak**), i.e. ***ŋan > ŋjan > ɳan > ɳõ** (#13) and ***lak > ljak > jak** > ji (#15). For another Swg form for #15, cf. Niupo /lei^{35}/.

4.1.3.2. Voiceless nasals and liquid ***hm-, hn-, *hɳ-, *hŋ-, *hl-**

The voiceless nasals have been kept in Laozhai. This dialect interestingly shows two variants, voiceless labial nasal **m̥-** and nasalized glottal fricative **h̃-**, for both early labial and velar sounds (***hm-** and ***hŋ-**). For ***hm-**, the regular reflex is **m̥-**, but the nasal is dropped before high back vowel *-u (through rounding dissimilation, #2) and left as the nasalization of the glottal fricative. For *hŋ-, on the other hand, the regular reflex is nasalized glottal fricative **h̃-**, but the sound has become labial, also, before the high back vowel ***-u** (i.e. ***hŋu > hmu > m̥-**, #6 and #7).

In Wanzi, voiceless nasals have usually become prenasalized stops, except in one case (#4, cf. notes). Qiaoshang has a special development for ***hm-**, showing prenasalized velar (or postvelar before **-w-**) reflexes (#1-3). It also appears from the tonal reflex that the initials of these words have become voiced, probably ***ŋw-**, at the time of tone split in this variety (-w- has lost before ***-u** in #2; when it is kept, it has caused the preceding initial to become postvelar). Extra-Kra evidence reveals that all these roots have a velar pre-initial, which has similarly caused the labial initial to become velar, namely, in some Kam-Sui languages. For instance, the root 'dog' shows the following forms in Sui, Mulam and Lakkja languages respectively: **m̥a A1**, **ŋwa A1** and **khwõ A1**, all supposed to go back to ***x-ma**. The development in Qiaoshang thus may be such that the nasal initial has left its labial articulation in the form of medial **-w-** while exposing its nasality to the velar pre-initial (***xm- > *xᵑ͡w > *ʱŋw-**).

Voiceless lateral ***ɬ-** has been kept in Laozhai and Qiaoshang. (It has become palatalized to **ɕ-** before high vowels in the former). Wanzi shows plain **l-**, but with tone series **1** which indicates its voiceless origin.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. dog	***hm-**	**A1**	**m̥**	**ŋqwau A2**	**mpau**
2. pig	***hm-**	**A1**	**hm̃ũ**	**ŋgʏu A2**	**mpa**
3. flea	***hm-**	**D1**	**m̥æ**	**ŋqwa A2**	**mpe**

4. six	*hn-	A1	—	ndø A2	nan
5. nose	*hɳ-	D1	—	ɳdʑɒ	ɳtɕe
6. ripe	*hŋ-	B1	ŋ	ŋgʏu	ŋka
7. pus	*hŋ-	B1	ŋ	—	ŋka
8. wait	*hŋ-	A1	hɤ̃ũ	ŋge	ŋkau
9. door	*hŋ-	A1	hõ	ŋgau	ŋka
10. stomach	*hl-	A1	ɬoŋ	—	luŋ
11. rat	*hl-	A1	ɕi	ti	lɒ
12. heart	*hl-	C1	ɕu	ɬɒ	ləu

Notes

4. This is the only form in this series where Wanzi shows a plain nasal reflex. Perhaps, this is pointing to ***?n-**, whose glottalized feature may be assumed to have dropped early in Qiaoshang and merged with ***n-** before tonal splits (and thus tone series 2) in this latter variety. For a similar development, cf. #5 under 4.1.4.2, where ***?ɳ-** may be noted.

5. For Swg, cf. Niupo **/ŋɛ^{35}/**, perhaps pointing to ***hŋj-** (cf. 4.1.6.3, #46).

10. For Ng, cf. Majiang **/luŋ^{24}/**. This dialect does not show voiceless lateral as its reflex for this proto sound.

4.1.4. Retroflexes

4.1.4.1. Retroflexed obstruents ***ʈ-, *ɖ-, *tʂ-, *dʐ-**

These sounds in general show the same reflexes as those of the respective stops (***t-** and ***d-**) and affricates (***ts-** and ***dz-**) in Wanzi. The similar merger of retroflexed (***ʈ-** and ***ɖ-**) into alveolar stops (***t-** and ***d-**) also occurred in Laozhai, but the retroflexed affricates (***tʂ-** and ***dʐ-**) have remained retroflexes and are distinct from their alveolar counterparts. But the retroflexed series is reflected mainly in Qiaoshang, whose distinctive spirant reflex (**z-**) has motivated setting up this separate series of PG retroflexes.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. eye	*ʈ-	A1	ti	ze	tau
2. egg	*ʈ-	A1	to	zø	tan

3. dry in sun	*ʈ-	D1	—	zɒ	tei
4. crow (v.)	*ɖ-	A2	dõ	zã	thaŋ
5. raw	*ɖ-	D2	dæ	zĩ	te
6. teach	*tʂ-	A1	tʂʅ	zɒ	səɯ
7. pillar	*tʂ-	A1	tɕɯ	zɪ	sa
8. mountain	*dʐ-	A2	dʐɯ	zʏu	tsha
9. choose	*dʐ-	A2	—	zɐn	tshe

4.1.4.2. Retroflexed sonorants *ɳ-, *ɭ-, *r-, *hr-

Similar to retroflexed obstruents, the retroflexes ɳ- and ɭ- are reflected distinctly from their alveolar counterparts as Qiaoshang spirants. Initials *r- and *hr- usually become modern fricatives and may also be distinguished from each other by their original tonal series.

	Proto-Gelao		*Laozhai*	*Qiaoshang*	*Wanzi*
1. thick	*ɳ-	A2	ni	ze	ntau
2. bird	*ɳ-	D2	ni	zau	ntau
3. fat	*ɳ-	A2	nõ	zø	nan
4. give	*ɳ-	D2	—	zɒ	ni
5. salty	*ɳ-	A2	—	za	naŋ A1
6. near	*ɭ-	C2	lʏɯ	ze	lau
7. hawk	*ɭ-	C2	lu	zø	li
8. bee	*r-	A2	ʐə	ʐa	zei
9. sick	*r-	C2	ʐɪ	ʐɪ	zai
10. ear	*r-	A2	ʑi	ʐe	zau
11. drink	*hr-	C1	ʐɑ̃	sen C2	han
12. cut	*hr-	C1	ʐo	—	han

Notes
5. This etymon may point to *ʔɳ-. Cf. 4.1.3.2, #4 'six' where Wanzi form similarly shows tone series 1 corresponding to Qiaoshang form with tone series 2.
12. For Ng, cf. Majiang /ɕe^{33}/.

4.1.5. Spirants *v-, *(ɣ)w-, *x-

Spirant *v- has been devoiced in Qiaoshang but remained voiced in the other varieties. On the other hand, the labio-velar *(ɣ)w- has become modern v- instead, both in Qiaoshang and in Wanzi. Laozhai approximant ɣ- before w- may be considered as an innovated onglide, in which case *(ɣ)w- may be simply reconstructed as *w-.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. sieve	*v-	A2	vu	fy	vi
2. go	*v-	C2	—	fo	vu
3. thin	*(ɣ)w-	C2	ɣwə	vau	vu
4. sun	*(ɣ)w-	A2	ɣwo	—	—
5. hat	*x-	A1	hau	—	hu
6. pluck	*x-	B1	—	χe	hau

Notes
1. Shanbeihou variety has /ʑi^{31}/, perhaps pointing to *vj- (cf. 4.1.6.4).
4. For Ng, see Majiang /ve^{31}/.

4.1.6. Complex onsets

The first or initial member of complex onsets may be stops, nasals or spirants. Usually, the second members or medials are resonants -l-, -r-, -j- or -w-. The combination of -w- plus a liquid (-l- or -r-) is also attested. The tonal series are usually assigned according to the voicing property of the initial members. Examples are few in some types and their reconstructions may remain tentative.

4.2.6.1. Voiceless stops as the initial member.

***pl**-The medial -l- may be lost in certain circumstances in different varieties. For instance, in Laozhai it is lost before modern -u (#3), while in Qiaoshang it

is lost before back vowels in general (#5-6). In Wanzi, the medial is lost early before proto ***-u** (#5).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
1. blood	***pl-**	**D1**	**plɑ**	**plɛ**	**plɒ**
2. peach	***pl-**	**A1**	**plo**	---	**plaŋ**
3. alive	***pl-**	**C1**	**pu**	---	**pləɯ**
4. split	***pl-**	**B1**	---	---	**plau**
5. liquor	***pl-**	**A1**	**plʏu**	**pu**	**pa**
6. boil (n.)	***pl-**	**C1**	**plɑu**	**po**	---

Notes
1-3. The Pudi (Dafang) variety uniquely shows prenasalization in their reflexes of these words: **/mpɛ^{13}/**, **/mpɑŋ^{55}/** and **/mpɛ^{33}/** respectively.
3. For the retention of **-l-** in Swg, cf. Niupo **/plɯ^{55}/**. For Ng, cf. Majiang **/pɑu^{24}/** (this variety does not keep medial **-l-** for this rime).

***pr-** The medial **-r-** has at times induced aspiration, thus pr- has become phr- in some dialects. In dialects where **-r-** later merged into **-l-**, the aspirated quality is sometimes the only feature which distinguish early ***pl-** from ***pr-**. Cf. Niupo **/phlɯ^{35}/** 'silver' (for ***pr-**) contrasting with **/plɯ^{55}/** 'alive' (from ***pl**).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
7. shoulder	***pr-**	**A1**	**phrə**	**py**	**phɒ**
8. silver	***pr-**	**B1**	**phrə**	---	---

***pwl- and *pwr-** The labio-velar medial **-w-** may be found as the first medial member before **-l-** or **-r-**. This occurence of **-w-** has put Qiaoshang reflex into spirant (e.g. ***pwl-** > **vl-**). It is yet unclear, however, why ***pwr-** shows Qiaoshang reflex of tone series 2 in contrast with tone series 1 for ***pwl-** (both become Qiaoshang **vl-**). Majiang, on the other hand, interestingly shows spirant **v-** for ***pwl-** (> **vl-** > **v-**), but affricates (**ts-** or **tɕ-** depending on the following vowels) for ***pwr-** (> **pr-** > **ts-**). Again, in Wanzi, the medial has been lost before ***-u** (#9 ***-ut** and #11 ***-un**). In Laozhai, the medial **-r-** is kept

faithfully only before modern schwa, otherwise it has merged into **-l-** (cf. the similar conditioned variants in this variety under ***kr-**).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
9. ten	***pwl-**	**D1**	**—**	**vlo**	**pe**
10. year	***pwr-**	**A1**	**prə**	**vlen A2**	**plei**
11. die	***pwr-**	**A1**	**plen**	**vlen A2**	**pen**

Notes
9-11. Majiang has following respective forms: /ve^{53}/, /tsə^{24}/ and /tɕi^{55}/.

***kl-** This cluster has been kept in Wanzi. In Qiaoshang the medial **-l-** has become **-w-** (probably through velarized **-ɬ-**). In Laozhai, on the other hand, the initial has been weakened into a preglottalized feature of the surviving medial.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
12. grandson	***kl-**	**A1**	**—**	**kwai**	**klu**
13. close eye	***kl-**	**D1**	**ʔlæ**	**kwa**	**kle**
14. take off	***kl-**	**D1**	**—**	**kwe**	**klu**
15. lazy	***kl-**	**D1**	**ʔlæ**	**kwen**	**kle**
16. fingernail	***kl-**	**D1**	**ʔlæ**	**—**	**kle**

Notes
12, 13, 16. Majiang shows a spirantal reflex for the first two roots: /zo^{53}/ (#12) and /ʑe^{53}/ (#13), probably through retroflex ***ɭ-** < ***kɭ-**), but lateral for the last: /lie^{33}/ (#16). The last example has proto rime ***-it**; perhaps the palatal vowel ***-i-** has blocked the preceding medial from being retroflexed.

***kr-** The reflexes of this cluster in Laozhai and Wanzi are similar to those of ***kl-**. The medial **-r-** is only kept in these dialects when followed by shwa (#17-18, it appears as retroflexed vowel in Wanzi). Early velar has normally become Wanzi postvelar **q-**; the **k-** variant is only found in the modern cluster **kl-**. In Qiaoshang it has become **ɣ-** (probably through < **kɣ-**).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
17. house	*kr-	A1	ʔrə	ɣai	qə-
18. head	*kr-	B1	ʔrə	ɣai	klɒ
19. person/ Gelao	*kr-	C1	ʔlʏɯ	ɣe	klau
20. road	*kr-	A1	—	ɣen	qen

Notes
20. Another instance of Wanzi losing the medial before *-un. For Swg, cf. Niupo /ʔlɑn^{31}/.

***kw-** This onset is separated from simple initial ***k-** mainly on the basis of spirant reflexes in Northern varieties, as exemplified by Qiaoshang **ɣ-**(Majiang has **x-**). Also, the proposed medial ***-w-** may be indirectly substantiated by its effect on modern vowel reflexes. For instance, Wanzi **-ɒ** instead of expected **-an** in item #24 may have developed as follows: **-wan > -uɒ** (normal loss of nasal ending after long vowel, cf. 4.2.2) > **-ɒ**.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
21. horn	*kw-	A1	qʏu	ɣʏu	qa
22. leg	*kw-	A1	qʏɯ	ɣeu B1	qau
23. ax	*kw-	A1	qɪ	ɣai	qu
24. smoke	*kw-	A1	—	ɣø	qɒ
25. skin	*kw-	B1	qo	ɣo	qɒ

Notes
21-24. For extra-Kra evidence of medial **-w-**, cf. Saek **/kwau A1/** (#21), **/kwaa A1/** (#22), Thai **/khwaan A1/** (#23) **/khwan/ A2** (#24).

kj-** There are two competing correspondence sets for this onset. The first one is supported by a good Kra etymon 'iron' (#26). It shows the palatalization of the initial by medial **-j-** in both Wanzi and Qiaoshang (kj- > tɕ**). In Laozhai, the development is parallel with that of ***kl-** and ***kr-**, where the velar stop initial is wealened into glottalized quality preceding the medial.

The other set shows Wanzi and Qiaoshang reflexes having been fricated into **x-** (we temporarily mark it as ***kʒ-**, #27-29). The palatal medial may also be postulated by the fact that Majiang shows for this onset the reflex **/s-/**, which is normally its reflex of pre-palatal or palatal affricates (i.e. ***kʒ-** > ***tʃ-** or ***c-** > **s**). Cf. Majiang **/so^{24}/** (#27) and **/so^{33}/** (#28).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
26. iron	***kj-**	**C1**	**ʔjo**	**tɕø**	**tɕin**
27. dry	***kʒ-**	**B1**	**qʏɯ**	**—**	**xau**
28. light	***kʒ-**	**C1**	**qʏɯ**	**χe**	**xau**
29. heavy	***kʒ-**	**A1**	**qo**	**χø**	**xen**

Notes
29. Majiang reflex remains unpalatalized **/q-/** before ***-ăn** in the example: **/qɑi^{24}/** (#28). The other two examples (#27-28) where palatalization occurs have the open low rime ***-a**.

There remain a few other correspondence sets whose reconstruction is somewhat hypothetical. We temporarily posit alveolar clusters for these sets.

tl-** Wanzi reflex merges with that of ***kl-**, probably through dissimilation of the initial and medial (tl-** > **kl-**). The fricative quality, which has brought about Laozhai and Qiaoshang reflex **ɬ-**, presumbly occurred during the transition when the stop closure released into a lateral approximant (**tl-** > **tθl-** > **ɬ-**).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
30. flow	***tl-**	**A1**	**—**	**ɬi**	**klai**
31. rock	***tl-**	**B1**	**ɬʏɯ**	**—**	**klau**
32. waist	***tl-**	**C1**	**ɬʏu**	**—**	**kla**

Notes
1. For Swg, cf. Niupo **/ɬei^{33}/**.
2-3. For Ng, cf. Majiang **/liu^{24}/** and **/lɑu^{33}/** respectively. This variety also normally shows plain **l-** for PG ***ɬ-**.

***tr-** Reflexes in all representative varieties are affricates, but the correspondences do not fit with any of the established PG affricates. With its

retroflex reflexes in Laozhai and Qiaoshang, this correspondence set may appear to be competing for PG ***tʂ-**. We have preferred the earlier proposed set for ***tʂ-** (4.1.4.1) for several reasons. One reason concerns the Qiaoshang spirant reflex **/z-/** for that established set, which we have taken as a general indication of early retroflex initials (including, namely, ***ʈ-**, ***ɖ-** and others in the series). Another reason is suggested by extra-Gelao evidence. Lachi shows an affricate initial **/tɕ-/** for the established affricate ***tʂ-**, but has an alveolar stop reflex **/t-/** for this ***tr-** set.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
33. nest	***tr-**	**C1**	**tʂɑ**	—	**tsɒ**
34. sprout	***tr-**	**C1**	**tʂɑ**	—	**tsɒ**
35. birth	***tr-**	**C1**	—	**tʂo**	**tsɒ**

4.16.2. Voiced stops as the initial member

Examples of this type of clusters are rare. But the development of these proto initials to modern reflexes is parallel with that of their voiceless counterparts. These initials all have series 2 of tones.

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
36. duck	***bl-**	**A2**	**blu**	**plo**	—
37. orphan	***bl-**	**C2**	**blɑ̃**	—	—
38. louse	***dr-**	**A2**	**dʐu**	**tʂø**	**tshen**

Notes

37. For Ng, cf. Majiang **/vuŋ^{33}/**, which perhaps pointing to ***bwl-**. See a parallel example: Majiang **/ve^{53}/** 'ten' from ***pwl-** (4.1.6.1).

4.1.6.3. Nasals as the initial member

The reflexes of these clusters are mostly parallel with those their stop counterparts. The reconstruction of medial **-r-** in #42 is based on Wanzi retroflexed vowel reflex. For #44, Qiaoshang nasalized spirant **ɣ̃** is a normal reflex of early velar nasal before non-front vowels (cf. 4.1.3.1).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
39. five	***ml-**	A2	**mlen**	**mbau**	**mpu**
40. frost	***ml-**	A2	---	---	**mplai**
41. tongue	***ml-**	A2	**mlõ**	---	---
42. ghost	***mr-**	A2	---	---	**mp**
43. sesame	***ŋl-**	A2	---	---	**ŋklau**
44. dew	***ŋl-**	C2	---	**Nʁʏu**	**ŋkla**
45. yellow	***ŋj-**	C2	**ɳ̟i**	**ɳ̟dʑa**	**ntɕi**
46. nose	***hŋj-**	D1	---	**ɳ̟dʑɒ**	**ɳ̟tɕe**

Notes
40. For Swg, cf. Niupo /**mlei**^{53}/.
41. For Ng, cf. Majiang /**mu**^{31}/. (Majiang normally lost medial -l- in bilabial clusters. It has simple initial /**p**-/ for ***pl**-, for instance).
42. For Swg, cf. Niupo /**mlɯ**^{31}/.
45-46. For the reflexes of original velar nasals, cf. Majiang /**ŋɑi**^{53}/ (#45) and Niupo /**ŋɛ**^{35}/ (#46).

4.1.6.4. Resonants as the initial member

The resonant clusters ***vj-**/***vr-** and ***(ɣ)wj-** have often merged with those of simple initials ***v-** and ***(ɣ)w-** in Wanzi and Qiaoshang. But in Laozhai, the medial has often survived well as the initial of the reflexes (**ʑ-** for ***-j-** and **ʐ̟-** for ***-r-**). The cluster ***(ɣ)wr-** seems to have metathesized early into **ʐ̟w-** and then **ʐ̟-** in Qiaoshang (#53).

		Proto-Gelao	*Laozhai*	*Qiaoshang*	*Wanzi*
47. tall	***vj-**	A2	**ʑu**	**fy**	**vi**
48. wind	***vj-**	A2	**ʑu**	**fy**	**ven**
49. wing	***vj-**	A2	**ʑɒ**	---	**vu**
50. tendon	***wj-**	A2	**ʑu**	**vy**	**ven**
51. kill	***vr-**	A2	**ʐ̟en**	---	**ven**

52. fly (n.)	*vr-	A2	ʐo	fy	van
53. eight	*wr-	A2	—	ʐʏu	vla
54. put	*wl-	A2	—	vlɪ	vlɒ

Notes
49. For Ng, cf. Majiang /fɑu^{31}/.
54. For Swg, cf. Niupo /luɑ^{31}/.

4.1.7. Summary of PG initials

Simple initials

p	t	ʈ	ts	tʂ	tʃ	c	k	ʔ
b	d	ɖ	dz	dʐ	dʒ	ɟ	g	
m	n	ɳ				ɲ	ŋ	
hm	hn					hɲ	hŋ	
v	l	ɭ	z	r	ʒ		(ʏ)w	
	hl		s	hr	ʃ		x	

Complex initials

With -l-			With -r-		
pl	tl	kl	pr	tr	kr
bl				dr	
ml		ŋl	mr		
		wl	vr		wr

With -wl-/-wr-	With -w-/-j-	
pwl-	kw-	kj-
pwr-	vj-	ŋj-

There is a possibility that a few more complex onsets may turn up. Cf. the following examples, which might point to ***b-l-** and ***m-l-** contrasting respectively with ***bl-** (4.1.6.2) and ***ml-** (4.1.6.3):

		Laozhai	*Qiaoshang*	*Wanzi*
barrel	A2	**bloŋ**	**zoŋ**	**luŋ**
crawl	B2	**mlʏɯ**	---	**lau**

Examples are often too few in such cases, and we have not attempted to complicate the initial inventories by including all these potential types until better supporting material turns up.

4.2. PROTO-GELAO RIMES

The rimes in Gelao have drastically diverged from the originals. In fact it is often impossible to figure out precisely what the reconstructed rimes should be without taking into consideration the reflexes in other Kra languages. For instance, the basic rime ***-a** may be reflected as almost everything (e.g. **/-i/** in Laozhai, **/-e/** in Qiaoshang, **/-ɯ/** in Niupo, **/-o/** in Majiang, **-au** in Wanzi, etc). Moreover, within each proto rime, a given dialect may have variant reflexes due to the influence of initial consonants (e.g. ***-a** may become either **-i** or **-ʏɯ** in Laozhai). Without extra-Gelao clues, such variant reflexes may easily lead us to set up different proto rimes, and we will end up with positing unbelievably rich arrays of proto-rimes. Another obvious instance is the case of checked rimes, where no modern Gelao dialects keep the final stops intact; still two stop endings (***-t** and ***-k**) need to be reconstructed at the Proto-Gelao level (4.2.3).

As a footnote following each comparative table in this section, we will also include for reference related forms from other Kra languages, especially Buyang and Laha. (These two languages have kept the original rimes mostly intact). On the other hand, it should be emphasized that these are used merely to provide clues, and that we have not attempted to superimpose facilely the rime from any given Kra language onto PG. It is needless to say that no language has completely kept all the Proto-Kra rimes intact, though we may say that some languages may have adopted lesser changes in this respect. Thus it is still the evidence internal to Gelao that will ultimately confirm the proposed system and justify whether such a system allows us naturally to explain the development from the proto-stage to modern dialects.

4.2.1. Open rimes

Six monophthongs and three diphthongs may be reconstructed. There is no contrast of short and long vowels in open rimes.

4.2.1.1. ***-a**

This proto rime has become **-e** in Qiaoshang and **-au** in Wanzi. In Laozhai the reflexes are **-ʏɯ** after grave initials and **-i** after acute initials.

		Laozhai	*Qiaoshang*	*Wanzi*
1. eye	A2	**ti**	**ʑe**	**tau**
2. thick	A2	**ni**	**ʑe**	**ntau**
3. horse	C2	**ɳi**	**ɳdʑe**	**ɳtɕau**
4. paddy	A1	**tɕi**	**se**	**tsau**
5. ear	A2	**ʑi**	**ʐe**	**zau**
6. tear (n.)	C2	**ʑi**	**se**	**tsau**
7. hand	A2	**mi -v**	**mbe**	**mpau**
8. snake	A2	**ŋʏɯ**	**ŋge**	**ŋkau**
9. expensive	B1	**qʏɯ**	**qe**	**qau**
10. light (a.)	C1	**qʏɯ**	**χe**	**xau**
11. dry	B1	**qʏɯ**	—	**xau**
12. cogon	A1	**qʏɯ**	**qe**	—
13. bran	B1	**pʏɯ**	—	**pau**
14. pluck	B1	—	**χe**	**hau**
15. flower	C1	—	**ŋge**	**ŋkau**

Notes

7. Laozhai reflex is irregular, as if there is a preceding medial **-j-**. Cf. Sui /**mjaa** A1/.

* Buyang: 1. **taa** 2. **naa** 3. **ŋaa** 5. **ðaa** 7. **maa** 8. **ŋaa** 10. **khaa** 11. **haa** 12. **ʔaa** 13. **faa**.

4.2.1.2. ***-i-**

This rime is kept as **/-i/** in Laozhai and Qiaoshang. In Laozhai, the variant **/-ɪ/** is found after retroflexed and postvelar initials (#9-10), and the apical vowel **/ɿ/** is found after sibilants (#6). In Qiaoshang, variant **/-ɪ/** (#4-9) is found after sibilants, and **/-ai/** after postvelars (#10-11). In Wanzi the rime is regularly diphthongized into **/-ai/**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. tree	A1	**ti**	**ti**	**tai**
2. flow	A1	—	**ɬi**	**klai**
3. many	B1	—	**ʔi**	**ʔai**
4. far	A2	**li**	**zɪ**	**lai**
5. intestine	C1	**ɕi**	**sɪ**	**sai**
6. satiated	B1	**tsɿ**	**tsɪ**	**tshai**
7. snow	A2	—	**zɪ**	**ntai**
8. ask	C1	—	**tsɪ**	**sai**
9. sick	C2	**ʐɪ**	**zɪ**	**zai**
10. chicken	A1	**qɪ**	**qai**	**qai**
11. ladder	A1	**ʔli**	**ɣai**	**klai**

* Buyang: 4. **lii** 6. **θii** 9. **ðii**.

4.21.3. *-e

This rime has generally merged with ***-i** in Laozhai and Wanzi. In these varieties, a subtle distinction between ***-e** and ***-i** may be found in their variant reflexes, however. For instance, Wanzi shows the variant **-ei** after early retroflexed initials (cf. **/zei/** 'bee', #4); such a variant does not occur with rime ***-i** (cf. **/zai/** 'sick', #9 above). Similarly, the Laozhai variant **-æ** for ***-e** (#5) contrasts with the variant **-ɪ** for ***-i** after postvelars. After early ***r-**, the reflex is centralized into schwa (cf. similar centralization in rime ***-ai**). Qiaoshang clearly

distinguishes the two front rimes by showing the low vowel **-a** reflex for ***-e**. Internal Gelao evidence does not allow us to determine whether the last two examples (#9 and #10) belong to ***-i** or ***-e**, since the crucial Qiaoshang forms are lacking.

		Laozhai	*Qiaoshang*	*Wanzi*
1. ascend	A1	**ʔi**	**ʔa**	**ʔai**
2. throat	A1	—	**χa**	**qhai**
3. seed	A1	**pi**	**pa**	—
4. bee	A2	**ʐə**	**ʐa**	**zei**
5. limp	C1	**qæ**	**χja**	**qei**
6. use	C2	**læ**	**za**	**lai**
7. send	C2	—	**va**	**vai**
8. fire	A1	—	**pa**	**pai**
9. frost	A2	—	—	**mplai**
10. comb	A1	**sɿ**	—	**sai**

* Buyang: 3. **pee** 9. **mee** 10. **θee.**

4.2.1.4 ***-u***

This rime has become slightly onglided to **-ʏu** in Laozhai and Qiaoshang, except after labials where it remains **-u**. In Laozhai, the **-u** after modern labial nasal has dropped, and the initial has become syllabic nasal (#9-11). Also, after early retroflexed initials, the Laozhai reflex has been centralized to **-ɯ**. In Wanzi, it has regularly become **-a**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. ash	B1	**tʏu**	**tʏu**	**ta**
2. old	B1	**qʏu**	**qʏu**	**qa**

3. horn	A1	**qʏu**	**ɣʏu**	**qa**
4. eight	A2	—	**ʐʏu**	**vla**
5. son-in-law	C2	—	**ʑʏu**	**tsa**
6. waist	C1	**ɬʏu**	—	**kla**
7. pig	A1	**hʏũ**	**ŋgʏu**	**mpa**
8. liquor	A1	**plʏu**	**pu**	**pa**
9. smelly	B2	**m̩**	**mbu**	**mpa**
10. ripe	B1	**m̩**	**ŋgʏu**	**ŋka**
11. pus	B1	**m̩**	—	**ŋka**
12. mountain	A2	**dʐɯ**	**zʏu**	**tsha**
13. pillar	A1	**tɕɯ**	—	**sa**

* Buyang: 1. **tuu** 2. **ʔuu** 3. **ʔuu** 4. **ðuu** 7. **muu** 10. **muu** 11. **muu** 13. **θuu**.

4.2.1.5. *-o

This rime remains **-o** in Laozhai. It has merged with ***-u** and become **-a** in Wanzi (parallel with the general merger of ***-i** and ***-e** in this dialect). In Qiaoshang it has been diphthongized into **-au**.

		Laozhai	Qiaoshang	Wanzi
1. laugh	A1	**so**	**sau**	**sa**
2. know	A1	**so**	—	**sa**
3. door	A1	**hõ**	**ŋkau**	**ŋka**
4. take by force	A2	—	**lau**	**la**
5. tie (v.)	C1	—	**tau**	**ta**
6. escape	B2	—	**ʐau**	**za**

* Buyang: 1. **θoo**. Laha: 2. **soo**.

4.2.1.6. ***-ə***

This rime has remained as Laozhai **-ə**, which become **-o/-u** after labials. It has merged with ***-o** and become **-au** in Qiaoshang. In Wanzi, it has become **-u** (perhaps via **-əu**, in parallel with ***-a** > **-au**).

		Laozhai	*Qiaoshang*	*Wanzi*
1. wing	A2	**ʑə**	—	**vu**
2. thin	C2	**ɣwə**	**vau**	**vu**
3. you	A/B2	**mo A2**	—	**mu B2**
4. four	A1	**pu**	**pau**	**pu**

* Both Laha and Buyang usually have **-aa** for this rime (merging with ***-a**). Pubiao shows variants **-aa** (after postvelar) and **-ii/-ee** (after labials): 2. **Gaa** 3. **mfiii** A2 4. **pee**.

4.2.1.7. ***-ɑu***

This rime has normally merged with ***-au** and become **-o** in Qiaoshang. It has regularly become Wanzi **-əu**. Laozhai shows two variants, **-u** and **-ɑu**, the latter of which occurs after labials and sibilants.

		Laozhai	*Qiaoshang*	*Wanzi*
1. navel	A2	—	**zo**	—
2. younger brother	B2	**ʑu**	**so**	**tsəu**
3. duck	A2	**blu**	**plo**	—
4. pick up	C1	—	**po**	**pəu**
5. chopstick	C2	**dzɑu**	**tso**	**tsəu**
6. male	C1	**pɑu**	**po**	—
7. cooked rice	C2	**mɑu**	**mbo**	**mpəu**

* Buyang: 1. **ʔduə A1** 2. **juə**. Laha: 1. **dau** 2. **jau**.

4.2.1.8 ***-ai**

This rime appears to have merged with ***-e** in Laozhai and with ***-i** in Qiaoshang (with similar conditioned variants as those of the respective rimes ***-e** and ***-i** in those dialects). In Wanzi, it has become **-ɒ**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. female	C2	**mi**	**mbi**	**mɒ**
2. monkey	C1	**tɕi**	**ti**	**tɒ**
3. rat	C1	**ɕi**	**li**	**lɒ**
4. good	A1	—	**ʔi**	**ʔɒ**
5. excrement	C1	**qæ**	**qai**	**qɒ**
6. see	A1	**qæ**	—	**qɒ**
7. head	B1	**ʔrə**	**ɣai**	**klɒ**

* Laha: 3. **lai** 4. **ʔai** 5. **kai** 6. **kai**.

4.2.1.9. ***-au**

This rime has merged with ***-auɪ** and become **-o** in Qiaoshang, while it has merged with ***-ai** and become **-ɒ** in Wanzi. In Laozhai, it has become **-ɑ** (with variant **-o** after postvelar, #5)

		Laozhai	*Qiaoshang*	*Wanzi*
1. meat	C1	**ʔɑ**	—	**ɒ**
2. nest	C1	**tʂɑ**	—	**tsɒ**
3. sprout (v.)	C1	**tʂɑ**	—	**tsɒ**
4. birth	C1	—	**tʂo**	**tsɒ**
5. skin	B1	**qo**	**ɣo**	**qɒ**

* Paha: 1. **ʔaau** 2. **ðaau**.

A main reason for reconstructing the last three rimes as diphthongs (***-aɯ**, ***-ai** and ***-au)** instead of monophthongs (namely, ***-ɯ**, ***-ɛ** and ***-ɔ** respectively) is because they have never occurred in closed rimes. Only six distinct vowels are found with final consonants. To reconstruct these rimes as diphthongs, we can more naturally explain their failure to appear with final consonants as a constraint which applied to the whole distinct class of vowels. To reconstruct them as monophthongs, we cannot explain equally well why it is exactly these three vowels which have adopted such a co-occurrence constraint.

4.3.1.10 Summary of open rime correspondences

	Laozhai	Qiaoshang	Wanzi
*-a	-ʏɯ	-e	-au
*-i	-i	-i	-ai
*-e	-i	-a	-ai
*-u	-ʏu	-ʏu	-a
*-o	-o	-au	-a
*-ə	-u	-o	-u
*-aɯ	-ɑu	-o	-ɔɯ
*-ai	-i	-i	-ɒ
*-au	-ɑ	-o	-ɒ

(Variants are not listed in this summary table.)

4.2.2. Rimes with sonorant endings

Two nasal endings, ***-n** and ***-ŋ**, may be reconstructed for PG. It also appears to be necessary to reconstruct vowel length before these endings. This is hypothesized on the basis of the fact that the finals have been often kept after short vowels but lost after long vowels.

4.2.2.1. ***-an**

This rime is kept as such in Wanzi. It has become **-o** and **ø** in Laozhai and Qiaoshang respectively. In Qiaoshang, the reflex **-ø** is raised to **-y** after labials (#13-16). The survival of a nasality trace in certain Laozhai forms seems to be enhanced by nasal initials (#10-11), with one exception (#12). Extra-Gelao comparisons show that this rime came from the merger of original ***-am** and ***-an**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. hair	A1	so	sø	san
2. egg	A1	to	zø	tan
3. plant (v.)	C1	to	tø	tan
4. bitter	A1	qo	—	qan
5. hatch	C1	qo	—	qan
6. six	A1	—	ndø A2	nan
7. bite	C2	ʐo	—	zan
8. cut	C1	ʐo	—	han
9. stay	A1	—	ʔø	ʔan
10. oil	A2	mlõ	zø	nan
11. deaf	C2	ɳõ	Nʁã -v	ŋan
12. ear of grain	A1	qõ -v	—	qan
13. tooth	A1	pi	py	pan
14. dream	A1	pi	py	pan
15. rub	A1	—	py	pan
16. fly (n.)	A2	ʐo	fy	van

Notes

11. This is the only example where Qiaoshang has the reflex **-ã** for this rime, perhaps due to the preceding unique initial **ʁ-**.

13-14. Laozhai **-i** after labials looks strange, but no counter-examples are found. For these words, Niupo unexpectedly shows medial **-l-**: **/plaŋ^{31}/** and **/plɑ^{31}/** respectively. Otherwise reflexes in all Kra languages simply suggest ***p-** for these etyma.

*Buyang: 1. **θam** 2. **tam** 3. **tam** 4. **ʔam** 6. **nam** 7. **ðam** 9. **ʔan** 14. **pan**

After palatal medials, Wanzi reflex **-an** becomes **-en**, which is further raised to **-in** after modern palatal initials (#21). (Cluster ***dr-**, #19, has probably first become ***dʒ-** and affected the vowel in the same way as other palatal onsets did). Laozhai raised its reflex **-o** > **-u**, except after velar clusters. Qiaoshang shows the normal reflex **-ø**, which becomes **-y** after labials.

			Laozhai	*Qiaoshang*	*Wanzi*
17. tendon	A2	**ʑu**	**vy**	**ven**	***wj-**
18. wind	A2	**ʑu**	**fy**	**ven**	***vj-**
19. louse	A2	**dʐu**	**tʂø**	**tshen**	***dr-**
20. heavy	A1	**qo**	**χø**	**xen**	***kʒ-**
21. iron	C1	**ʔjo**	**tɕø**	**tɕin**	***kj-**

4.2.2.2. ***-aŋ***

This rime is again kept as such in Wanzi. In Qiaoshang, the velar ending has induced nasalization of the vowels. The Laozhai reflex is the same as that of ***-an**, with an example of nasalized vowel probably being enhanced by the prenasalization of the initial [**ⁿd-**] (#2).

		Laozhai	*Qiaoshang*	*Wanzi*
1. cook	B1	**to**	**tɑ̃**	**taŋ**
2. crow (v.)	A2	**dõ**	**zɑ̃**	**thaŋ**
3. peach	A1	**plo**	—	**plaŋ**
4. salty	B1	—	**zɑ̃ B2**	**naŋ**
5. measure (v.)	B2	—	**kɑ̃**	**kaŋ**
6. forehead	A2	—	**tɑ̃**	—

4.2.2.3. ***-aan**

The nasal ending has been lost in all dialects after long vowels. The Laozhai reflex appears to have merged with ***-i** (note the same conditioned variants, **-ɪ** after postvelars (#6) and **-ə** after **-r-** (#8)). This rime has become **-ai** and **-u** in Qiaoshang and Wanzi respectively.

		Laozhai	*Qiaoshang*	*Wanzi*
1. new	A2	**mi**	**mbai**	**mu**
2. thorn	C2	**ɳi**	**ɳdzai**	**ɳu**
3. husked rice	A1	**tɕi**	**sai**	**su**
4. granchild	A1	—	**kwai**	**klu**
5. scold	B1	**ʔi**	**ʔai**	—
6. ax	A1	**qɪ**	**ɣai**	**qu**
7. light (v.)	A1	—	**ɣai**	**qu**
8. house	A1	**ʔrə**	**ɣai**	**qə-**

* Buyang: 1. **maan** 2. **ɳaan** 6. **ʔaan**.

4.2.2.4. ***-aaŋ***

This rime has regularly become Laozhai **-u**. Qiaoshang has **-ø** reflex, with variants **-y** after labials (#1-2) and **-i** after palatals (#5). Wanzi shows **-i**, which becomes **-ə-** after ***-r-** medial.

		Laozhai	*Qiaoshang*	*Wanzi*
1. tall	A2	**ʑu**	**fy**	**vi**
2. sieve	A2	**vu**	**fy**	**vi**
3. hawk	C2	**lu**	**zø**	**li**
4. sorghum	A2	—	**sø**	**tɕhi**
5. mosquito	A2	—	**ʑi**	**tɕhi**
6. root	A1	**tsu**	—	—
7. ghost	A2	—	—	**mpə-**

* Buyang: 1. **vaaŋ** 2. **vaaŋ A1** 3. **laaŋ** 4. **jaaŋ** 5. **jaaŋ** 6. **θaaŋ**.

4.2.2.5. ***-un**

This rime has become **-en** (probably through **-ən**) in all dialects here.

		Laozhai	*Qiaoshang*	*Wanzi*
1. road	A1	—	**ɣen**	**qen**
2. rain	A2	**men**	**mben**	**mei -f**
3. die	A1	**plen**	**vlen**	**pen**
4. back	A2	**len**	**zen**	—
5. buy	A1	**tsen**	**tsen**	**sen**
6. kill	A2	**ʐen**	—	**ven**
7. tear (v.)	B1	**qen**	—	**qen**

Notes

2. This is the only form where Wanzi has lost a nasal reflex, perhaps through dissimilation with the nasal initial.

* Buyang: 1. **hun** 2. **mun**.

4.2.2.6. ***-uun**

Another example of the regular loss of nasal ending after early long vowels. This rime has become Laozhai **-u**, with variants **-o** after postvelars and **-ɿ** after sibilants. In Qiaoshang and Wanzi, it has usually become **-ɒ** and **-əɯ** respectively.

		Laozhai	*Qiaoshang*	*Wanzi*
1. front	A1	**qo**	—	**qəɯ**
2. teach	A1	**tʂɿ**	**zɒ**	**səɯ**
3. heart	C1	—	**lɒ**	**ləɯ**
4. play	A2	**zɿ**	**sɒ**	**zəɯ**
5. alive	C1	**pu**	—	**pləɯ**
6. saliva	A1	**qo**	—	—

* Buyang: 1. **ʔɔɔn** 2. **θɔɔn**.

4.2.2.7. ***-uŋ**

This rime has become **-oŋ** or **-uŋ** in most dialects. Wanzi appears to have developed a unique loss of nasal ending after non-sonorant initials in this rime (#1-3).

		Laozhai	*Qiaoshang*	*Wanzi*
1. cave	A2	boŋ	poŋ	phu
2. lightning	A1	—	qoŋ	qu
3. mouth	A2	—	ŋgoŋ	ŋku
4. barrel	A2	bloŋ	zoŋ	luŋ
5. vegetable	A2	loŋ	—	luŋ
6. stomach	A1	ɬoŋ	—	luŋ

4.3.2.8. ***-uuŋ**

For this rime, Laozhai and Wanzi show the same reflexes as those of ***-uun**. But Qiaoshang distinguishes the two by having **-au** for this rime, contrasting with **-ɒ** for ***-uun**. Qiaoshang also shows variant **-oŋ** after **z-**, as if the rime has merged early with ***-uŋ** in this environment.

		Laozhai	*Qiaoshang*	*Wanzi*
1. water	C1	ʔɲ	ʔau	ʔɔɯ
2. salt	A2	ɳu	—	ɳtɕɔɯ
3. cloth	A1	—	sau	sɔɯ
4. drum	A2	—	zoŋ	lɔɯ
5. star	A2	—	zoŋ	—

Notes

1. The Laozhai rime reflex for this root probably developed as follows: first metathesis, ***ʔuŋ** > ***ʔŋu**, then assimilation, ***ʔŋu** > ***ʔmu**, followed by the loss of **-u** after **m-** (cf. 4.2.1.4, #10-11, for the parallel development ***hŋu (> hmu)** > **ɱ**.

* Buyang: 1. ʔɔɔŋ 4. lɔɔŋ 5. lɔɔŋ.

4.2.2.9. ***-iN**

Wanzi and Qiaoshang reflexes of this rime merge with those of ***-un** (probably through **-ən**). But Laozhai has **-ɑ̃** for this rime, contrasting with **-en** for ***-un**. Extra-Gelao comparison shows that a number of words in this rime came from early ***-um**, perhaps through rounding dissimilation of the vowel and bilabial ending (***-um** > **-im** > **in**). It appears that there is no contrast between alveolar and velar finals (***-in**/**-iŋ**) after high front vowels.

		Laozhai	*Qiaoshang*	*Wanzi*
1. beard	C2	—	—	**men**
2. steal	C2	**lɑ̃**	**zen**	**len**
3. pound	C1	**tɑ̃**	**ten**	**ten**
4. razor (v.)	C1	**ʐɑ̃**	**ʐen**	—
5. shallow	C2	**dzjɑ̃**	**zen**	**ten B1**
6. drink	C1	**ʐɑ̃**	**sen C2**	**han -v**
7. hold in mouth	A1	—	—	**qen**

* Buyang: 1. **muəm** 2. **luəm** 5. **tiən B2** 7. **ʔum**. Laha: 5. **dəl**. Pubiao: 6. **hɑm**.

4.2.2.10. ***-iiN**

This rime has become **-i** in Laozhai (merging with ***-i**), with variants **-ɪ** after postvelars and **-ə** after **-r-**. It appears to have merged with ***-iN** and become **-en** in Qioashang.

		Laozhai	*Qiaoshang*	*Wanzi*
1. garden	A2	—	**fen**	**vei**
2. year	A1	**prə**	**vlen**	**plei**
3. cucumber	A1	**tɕi**	—	—
4. leaf	C2	**ʑi**	**ʐen**	—

* Buyang: 2. **ðiaŋ A2** 3. **tiaŋ A2** 4. **ðiaŋ**.

4.2.2.11. Summary of nasal rime correspondences.

PG	*Laozhai*	*Qiaoshang*	*Wanzi*
***-an**	**-o**	**-ø**	**-an**
***-aŋ**	**-o**	**-ã**	**-aŋ**
***-aan**	**-i**	**-ai**	**-u**
***-aaŋ**	**-u**	**-ø**	**-i**
***-un**	**-en**	**-en**	**-en**
***-uŋ**	**-oŋ**	**-oŋ**	**-uŋ**
***-uun**	**-u**	**-ɒ**	**-ɔu**
***-uuŋ**	**-u**	**-au**	**-ɔu**
***-iN**	**-ɑŋ**	**-en**	**-en**
***-iiN**	**-i**	**-en**	**-ei**

(Variants are not listed in this summary table.)

The system of Gelao nasal rimes is shown to have contained two endings: ***-n** and ***-ŋ**. These endings appear to have been neutralized after high front vowels ***-i/*-ii**. As we have seen, while the final nasals after early short vowels has been kept in several modern reflexes, they hardly survived after early long vowels (the exception is Qiaoshang reflexes of ***-iiN,** where we must assume its early merger with the short rime counterpart ***-iN**). This fate of the nasal endings constitutes a basis for us to reconstruct a PG system of three vowels with length contrast instead of one with six vowels with contrastive height. In other words, we consider it to be phonetically more reasonable to assume that the loss of final nasals was due to the longer sonorant duration of the preceding long vowels (which are two morae, in contrast with one-mora short vowels).

Still, since we have reconstructed six PG vowels in open rimes (without length contrast), it is likely that this nasal rime system of three vowels plus length contrast had developed from an earlier system of six vowels which contrasted qualitatively. The choices are thus whether we should assume that this innovation of a length contrast was already completed at the PG level, or that it was a parallel development in each variety. We have chosen the former in the preceding presentation. The equation of these two systems is as follows:

With length contrast	*Without length contrast*
*-an	*-ɔn
*-aan	*-an
*-aŋ	*-ɔŋ
*-aaŋ	*-aŋ
*-un	*-on
*-uun	*-un
*-uŋ	*-oŋ
*-uuŋ	*-uŋ
*-iN	*-eN
*-iiN	*-iN

4.2.3. Rimes with stop endings

Two stop endings, ***-t** and ***-k**, as well as vowel length may be reconstructed in parallel with those of nasal rimes. The Laozhai reflexes of these rimes are usually accompanied by slight vowel constriction. All these rimes only occur with one proto tone (i.e. tone *D, which later split into two series after the initial mutation).

4.2.3.1. ***-at**

This rime has become **-æ** and **-e** in Laozhai and Wanzi. In Qiaoshang, it has become **-ɒ**, which has been dissimilated into **-a** after rounded medial **-w-**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. close eye	D1	**ʔlæ**	**kwa**	**kle**
2. liver	D1	**tæ**	—	—
3. forget	D2	—	—	**te**
4. flea	D1	**ŋ̊æ**	**ŋ̊kwa**	**mpe**
5. nose	D1	—	**n̥dʑɒ**	**n̥tɕe**

* Buyang: 2. **tap** 3. **ʔdap D1** 4. **mat**.

4.2.3.2. ***-ak**

Laozhai and Qiaoshang have merged this rime with ***-at**. In Laozhai, the reflex **-æ** is raised to **-i** after palatals. In Wanzi, the rime has merged with ***-aŋ** and become **-aŋ**. This development from ***-ak** > **-aŋ** may have gone through the stage of preploded nasal (***-akᵑ**), under the influence of the preceding short vowel which created a premature glottal closure (i.e. ***-a$^{?}$k** > ***-akᵑ** > **-aŋ**). At the stage of constricted stop ***-a$^{?}$k**, if the ending was unreleased, it would become glottal stop /-?/ which could then disappear entirely (***-a$^{?}$k** > **-a?** > **-a**). On the other hand, the velum may be lowered to release the pre-ploded nasal (***-a$^{?}$k** > ***-akᵑ** > **-aŋ**). The former type of development (loss of ending) is commonly found in several languages of the area. The latter type has been less well-known, yet we have noticed such development in a few Northern Mon-Khmer languages such as Bugan (Yunnan, China) and Darang (Chiangmai, Thailand).

		Laozhai	*Qiaoshang*	*Wanzi*
1. bone	D2	**dæ**	**tɒ**	**taŋ**
2. deep	D2	**ʑi**	**lɒ**	**laŋ**
3. hear	D2	—	—	**tsaŋ**

* Buyang 2. **lak D1**. Laha: 1. **dak** 2. **lak D1** 3. **jak**.

4.2.3.3. ***-aat**

This rime has regularly become **-ɑ**, **-e** and **-ɒ** in Laozhai, Qiaoshang and Wanzi respectively. Extra-Gelao comparisons show that this rime came from the merger of original ***-aat** and ***-aap**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. blood	D1	**plɑ**	**ple**	**plɒ**
2. sour	D2	—	**vle**	**vlɒ**
3. bathe	D1	**ʔjɑ**	—	**ɒ**
4. handspan	D1	—	—	**xɒ**

* Buyang: 4. **kaap**. Laha: 1. **plaat** 3. **ʔaap**.

4.2.3.4. ***-aak**

Laozhai has merged this rime with ***-aat** (in parallel with its merger of ***-ak** with ***-at**). Qiaoshang, on the other hand, has merged this rime with its short counterpart ***-ak**. Wanzi normally has reflex **-ei**, which became **-i** after retroflexed initials (#4).

		Laozhai	*Qiaoshang*	*Wanzi*
1. child	D2	**kɑ**	**kɒ**	**kei**
2. rope	D1	**sɑ**	**sɒ**	**tshei**
3. fruit	D2	**mɑ**	—	**mei**
4. give	D2	—	**zɒ**	**ni -v**

* Buyang: 2. **çaak D2** 3. **maak D1** 4. **naak**.

4.2.3.5. ***-ut**

This rime has merged with ***-at** and become **-æ** and **-e** in Laozhai and Anshun respectively. But, Qiaoshang shows reflex **-o** for this rime, contrasting with **-ɒ** for ***-at**.

Qiaoshang shows variant -en in a few forms (#3-4); these we consider to have developed from the early merger of ***-ut** with ***-iK** (**-en** is the normal reflex of ***-iK** in Qiaoshang, cf. 4.2.3.9). For 'tail' (#4), the reflex was probably fronted from ***-ut** > ***-it** after PG prepalatal initial (***tʃ-**). For 'lazy' (#3), the change was due to the dissimilation with rounded medial **-w-** (similar to the dissimilation of **-ɒ** > **-a** after **-w-** in the ***-at** rime).

Wanzi also shows a variant reflex -an in certain forms. The development is similar that of ***-ak** > **-aŋ**, presumably through preploded nasal (***-ut** > **-ə$^{?}$t** > **-at^{n}** > **-an**). The variants **-e** and **-an** probably branched off at the stage of ***-ə$^{?}$t**. The unreleased **-$^{?}$t** may have become **-$^{?}$** and then been lost (**-ə$^{?}$t** > **-e$^{?}$** > **-e**); with ploded nasal, **-ə$^{?}$t** became **-at^{n}** and then **-an**. The conditions which determined the variant developments are unclear, but a few examples with nasal variant seem to show sibilant initials.

		Laozhai	*Qiaoshang*	*Wanzi*
1. fart	D1	**tæ**	**tʂo**	**(tsɑn)**
2. ten	D1	—	**vlo**	**pe**
3. lazy	D1	**ʔlæ**	**kwen**	**kle**
4. tail	D1	**tʂæ**	**tsen**	**tshan**

Notes
1. The parenthesized form is from Dagouchang variety.
* Buyang: 1. **tut** 2. **put** 4. **ɕut D2.**

4.2.3.6. ***-uk**

This rime has regularly become **-i**, **-au** and **-au** in Laozhai, Qiaoshang and Wanzi respectively.

		Laozhai	*Qiaoshang*	*Wanzi*
1. bird	D2	**ni**	**zau**	**ntau**
2. fall	D1	**ti**	**tau**	**tau**
3. itchy	D2	—	—	**tau**

* Buyang: 2. **tuk** 3. **ʔduk D1.**

4.2.3.7. ***-uut**

There do not appear to be examples we may cite with confidence for this rime. The only example provided below is suggested on the basis of the possibly related extra-Gelao form indicating early ***-uut**. The Qiaoshang and Wanzi reflexes may simply point to ***-uuk**.

		Laozhai	*Qiaoshang*	*Wanzi*
1. take off	D1	—	**kwe**	**klu**

* Buyang: 1. **θɔɔt.**

4.2.3.8. ***-uuk**

This rime has become **-au**, **-e** and **-u** in Laozhai, Qiaoshang and Wanzi respectively.

		Laozhai	*Qiaoshang*	*Wanzi*
brain	D1	**ʔau**	—	**u**
white	D1	**ʔau**	**ʐe**	**ʐu**
hat	D1	**hau**	—	**hu**
fog	D2	—	—	**mpu**

* Buyang: 2. **ʔɔɔk** 4. **muok**.

4.2.3.9. ***-iK**

This rime has merged with ***-at** and ***-ut** in Laozhai. It is possible to specify the rime ***-iK** as ***-it** in this variety, since we will then be able to assume that Laozhai has merged together all three short vowels with alveolar endings (***-at**, ***-ut** and ***-it**), probably through ***-ət**. This also appears to be the case in Wanzi. Qiaoshang has developed final nasalization for this rime.

		Laozhai	*Qiaoshang*	*Wanzi*
1. raw	D2	**dæ**	**zen**	**te**
2. fingernail	D1	**ʔlæ**	—	**kle**

* Buyang: 1. **ʔdip D1** 2. **lip D2**.

4.2.3.10. ***-iiK**

This rime has become **-i**, **-ai** and **-ei** in Laozhai, Qiaoshang and Wanzi respectively. The Wanzi reflex is the same as that of ***-aak**.

		Laozhai	*Qiaoshang*	*Wanzi*
full	D1	**ʈi**	**tai**	**tei**
deer	D2	**ɖi**	—	—

* Buyang: 1. **tiak**. Pubiao: 2. **ʔdiet D1**.

4.3.3.11 Summary of stopped rime correspondences

	Laozhai	*Qiaoshang*	*Wanzi*
*-at	-æ	-ɒ	-e
*-ak	-æ	-ɒ	-aŋ
*-aat	-ɑ	-e	-ɒ
*-aak	-ɑ	-ɒ	-ei
*-ut	-æ	-o	-e
*-uk	-i	-au	-au
*-uut (?)	—	-e	-u
*-uuk	-au	-e	-u
*-iK	-æ	-en	-e
*-iiK	-i	-ai	-ei

(Variants are not listed in the summary table.)

4.2.4. Summary of PG rimes

Open rimes

Monophthongs			Diphthongs		
i		u	ai	aɯ	au
e	ə	o			
	a				

Nasal rimes

iiN		uun/uuŋ
iN	an/aŋ	un/uŋ
	aan/aaŋ	

Stopped rimes

iiK		uut/uuk
iK	at/ak	ut/uk
	aat/aak	

CHAPTER 5

WESTERN-KRA AND SOUTH-WESTERN-KRA

In this chapter, we will put the Lachi and Laha languages into comparison with Proto-Gelao. The sound systems of Proto-Western-Kra and Proto-Southwestern-Kra, as well as their development into modern Lachi and Laha, will be presented in sections 5.1-5.3 and 5.4-5.6 respectively.

5.1. LACHI AND PROTO-WESTERN-KRA

Lachi reflexes have hardly added any changes to the system of initials and rimes reconstructible for Proto-Gelao, which therefore can be generally projected back to Proto-Western-Kra (PWK). In the following two sections, we will summarize the development of Lachi from the proto-language with respect to its initials (5.2) and rimes (5.3).

5.2. LACHI AND PWK INITIALS

5.2.1. Simple initials.

The development of simple initials from PWK to Lachi is fairly straightforward. The following main changes may be summarized for simple initials:

1. The retroflexed series has merged with the alveolar series, i.e. ***t-** and ***ʈ-** merged etc. 2. The prepalatal affricates (***tʃ-** and ***dʒ-**) have been deaffricated; the former has become an alveolar fricative (***tʃ- > ʃ- > s-**) while the latter has become palatal (**dʒ- > ʒ-**). 3. The voiceless sonorants have merged with their voiced counterparts, but their early voicing contrast is reflected by separate tonal series. 4. ***l-** and ***r-** merged into **l-**; and ***w-** and ***v-** merged into **v-**.

In the following figures, we provide for reference the section and item numbers where the related Gelao forms discussed in the last chapter may be found.

PWK	*Lachi*	*Examples*		*Gloss*	*References*
*p-	p-	pje	A1	fire	4.1.1.1 #2
*t-	t-	tje	B1	ash	4.1.1.1 #6
*ʈ-	t-	tã	A1	egg	4.1.4.1 #2
*k-	k-	kwɛ	B1	old	4.1.1.1 #10
*ʔ-	ʔ-	ʔi	C1	water	4.1.1.1 #15
*b-	pfi-	pfiu	B2	shoulder	---
*d-	tfi-	tfije	A2	do	4.1.1.2 #4
*ɖ-	tfi-	tfijɛ	D2	raw	4.1.4.1 #5
*dz-	tfi-	tfijo	B2	chopsticks	4.1.2.2 #4
*s-	s-	su	A1	two	---
*ʃ-	s-	so	D1	rope	4.1.2.1 #6
*tʃ-	s-	sɛ	B1	satisfied	4.1.2.1 #7
*ts-	tɕ-	tɕĩ	A1	buy	4.1.2.1 #3
*tʂ-	tɕ-	tɕe	A1	teach	4.1.4.1 #6
*ʒ-	ʑfi-	ʑfio	B2	y brother	4.1.2.2 #5
*dʒ-	ʑfi-	ʑfii	C2	son-in-law	4.1.2.2 #8
*ʒ-	ʑfi-	ʑfiu	C2	grandmother	4.1.2.2 #9
*dʐ-	tɕfi-	tɕfii	A2	mountain	4.1.4.1 #8
*m-	m-	ɱ	A2	hand	4.1.3.1 #1
*(ʔ)n-	n-	nfiĩ	A2	six	4.1.3.2 #4
*ɳ-	n-	nfijɒ	D2	bird	4.1.4.2 #2

*ɳ-	ɳ-	ɳfiũ	A2	salt	4.1.3.1 #9
*ŋ-	ŋ-	ŋ	A2	snake	4.1.3.1 #11
*hm-	m-	mą	D1	flea	4.1.3.2 #3
*hŋ-	ŋ-	ŋ	A1	door	4.1.3.2 #9
*hl-	l-	lje	C1	heart	4.1.3.2 #12
*l-	l-	lfiyɒ	D2	deep	4.1.3.1 #15
*l̥	l-	lfiju	C2	near	4.1.4.2 #6
*r-	l-	lfiu	A2	ear	4.1.4.2 #10
*v-	v-	vfiu	C2	go	4.1.5 #2
*w-	v-	vfiõ	A2	sun	4.1.5 #4

Notes

1. The alveolar fricative (s-) may become palatalized (ɕ-). The following examples show reflexes of rime ***-o**, which has first become Lachi **-ju** after alveolar initials (cf. 5.3.1.5); and thus ***so > sju > ɕu**.

*s-	s- > ɕ-	ɕu	A1	laugh
*s-	s- > ɕ-	ɕu	A1	know

Some Lachi varieties have further undergone labialization of **s-** (> **f-**) before **-u-** (both modern and original):

	Jinchang	*Ban Phung*	*PWK*
tooth	**sei A1**	**fei**	***tʃuuŋ**
tail	**sɐ D1S**	**fɛ**	***tʃut**
two	**su A1**	**fu**	***sa**

2. The modern palatal spirant may be nasalized (**ʑ- > ɳ-**) in certain environments. The nasality may have spread from the vowel (which had in turn been nasalized by PWK nasal endings):

rain	**A2**	**ɳã**	**cf. Laha /jal/, Paha /jin/**

Or, sometimes, the nasalization may spread from the preceding syllable:

tear (n.)	**C2**	**(ʔi) ɳfiũ**	**cf. Gelao /ji/ (Lz)**
neck	**A2**	**(lja ɳ) ɳfiũ**	**cf. Laha /ju/, Paha /jɯ/**

The first morpheme of the former example means 'water' (< ***ʔuuŋ C2**). The preceding syllabic nasal of the latter example is prefixed to a number of body parts, e.g. **/lja ŋ kɛ/** 'throat' **/lja ŋ ku/** 'leg', **/lja ɳ lje/** 'heart', **/lja ɳ tju/** 'eye', etc.

5.2.2. Complex initials.

The major developments of the complex initials from the proto-stage to Lachi may be summarized as follows:

1. Medials **-l-** and **-r-** have usually become Lachi **-j-** after labials. This palatal **-j-** is further lost before front vowels. 2. The medial **-r-** after voiceless grave initials (***pr-** and ***kr-**) also induced aspiration, e.g. ***pr-** becomes ***phj-**. 3. Alveolar and velar clusters with **-l-** (***tl-** and ***kl-**) have merged and become **l-** (with tone series **1**, probably via ***?l-**). Modern Lachi **-j-** in certain examples is not part of the initial reflex, but is the regular epenthetic onglide of certain rime reflexes (e.g. 'waist' which goes back to rime ***-u**, cf. 5.3.1.4). 4. Other complex initials often simply lost the medials.

PWK	*Lachi*	*Examples*		*Gloss*	*References*
***pl-**	**p-**	**pjo**	**D1**	blood	4.1.6.1 #1
***pwl-**	**p-**	**pɛ̰**	**D1**	ten	4.1.6.1 #9
***pr-**	**ph-**	**phjo**	**B1**	silver	4.1.6.1 #8
***pwr-**	**ph-**	**phĩ**	**A1**	die	4.1.6.1 #11
***bl-**	**pfi-**	**pfii**	**D2**	carry on back	blæ D2(Lz)
***tl-**	**l-**	**ljɛ̰**	**C1**	waist	4.1.6.1 #32
***kl-**	**l-**	**lɛ̰**	**D1**	fingernail	4.1.6.1 #16
***kr-**	**kh-**	**kho**	**A1**	house	4.1.6.1 #17
***tr-**	**t-**	**tɒ̰**	**C1**	nest	4.1.6.1 #33
***dr-**	**tfi-**	**tfijã**	**A2**	body louse	4.1.6.2 #3
***kw-**	**k-**	**kwɛ**	**A1**	horn	4.1.6.1 #21
***kj-**	**k-**	**kɛ̰i̯**	**C1**	iron	4.1.6.1 #26
***kɜ-**	**k-**	**ku**	**B1**	dry	4.1.6.1 #27
***gj-**	**kfi-**	**kfiu**	**C2**	skinny	4.1.6.2 #4
***ml-**	**m-**	**m̩**	**A2**	five	4.1.6.3 #1
***mr-**	**m-**	**mfiei**	**A2**	ghost	4.1.6.3 #4

***hŋj-**	**ɳ-**	**ŋa**	**D1**	nose	4.1.6.3 #8
***vj-**	**v-**	**vei**	**A2**	tall	4.1.6.4 #1
***wj-**	**v-**	**vɔ̃**	**A2**	tendon	4.1.6.4 #4

Notes
There are a few instances where Lachi shows a velar initial with slight offglide (**kfiɣ-**) for PG ***r-**.

PG	Lachi	Examples		Glosses PWK	
***r-**	**kfiɣ-**	**kfiɣe**	**C2**	sick	***k-r-**
***r-**	**kfiɣ-**	**kfiɣei**	**C2**	ribs	***k-r-**

For these examples, Laha also shows a velar onset: **khəi** 'sick' (***-r-** lost before **-ə**) and **khlaŋ** 'ribs', suggesting PSWK ***k-r-** (see 5.5.2.2).

5.3. LACHI AND PWK RIMES

The rime system of Proto-Western-Kra is essentially the same as that of Proto-Gelao. For each rime, Lachi often shows variant reflexes conditioned by initials. It is thus necessary to include a number of examples for certain rimes in order to explain their conditioned variants and to justify that these variants do not constitute evidence for separate rimes at the proto-level. Since certain subtle variations are affected by early distinctions of proto-initials which may not have been kept in modern Lachi, we will also provide as reference the PWK initials for each example.

5.3.1. Open rimes

5.3.1.1. ***-a**

This rime has become Lachi **-u**. After alveolar initials (non-sibilants), the short palatal offglide **-j-** is added. After grave nasal onsets (**m-** and **ŋ-**), the vowel further dropped and the initials became syllabic nasals.

PWK		*Lachi*	*Gloss*	*Reference*
***p-**	*B1*	***pu***	*bran*	*4.2.1.1 #13*
***k-**	A1	**ku**	cogon	4.2.1.1 #12
***s-**	A1	**su**	two	---
***t-**	A1	**tju**	eye	4.2.1.1 #1

*ɳ-	A2	ɳju	thick	4.2.1.1 #2
*m-	A2	ɱ	hand	4.2.1.1 #7
*ŋ-	A2	ŋ	snake	4.2.1.1 #8

5.3.1.2. ***-i**

This rime has become Lachi **-je**, which is lowered to **-ɛ** after back consonants. Alveolar sibilants (***s-** and ***ts-**) have become palatalized before the reflex **-je**, and in turn brought the rime back to **-i** (e.g. ***si** > **sje** > **ɕe** > **ɕi**). (Cf. the similar palatalization of the alveolar sibilant under ***-o**, 5.3.1.5).

PWK		*Lachi*	*Gloss*	*Reference*
*t-	A1	tje	tree	---
*d-	A2	tfije	tiger	---
*l-	A2	lje	far	4.2.1.2 #4
*s-	C1	ɕi	intestine	4.2.1.2 #5
*ts-	C1	tɕi	ask	4.2.1.2 #8
*tʃ-	B1	sɛ	satisfied	4.2.1.2 #6
*k-	A1	kɛ	chicken	4.2.1.2 #10

5.3.1.3. ***-e**

This rime has become **-o** (with epenthetic **-j-** after alveolars), with a lower variant **-ɒ** after non-breathy labials. (In narrow transcriptions, there is always a non-contrastive offglide **-w-** before the low back vowel **-ɒ**, e.g. **/pɒ/** = [**pʷɒ**]).

PWK		*Lachi*	*Gloss*	*Reference*
*ml-	A2	mɒ	frost	4.2.1.3 #9
*p-	A1	pɒ	seed	4.2.1.3 #3
*l-	C2	lfijo	wear	---
*m-	C2	mfio	goat	---

5.3.1.4. ***-u**

This rime has in general merged with ***-i** and become **-je**. It shows variants **-i** after modern palatals and **-ɛ** after velar stops. The latter variant [**-ɛ**] occurs with epenthetic **-w-** after the initial, and thus shows a subtle distinction between ***-u** and ***-i** (contrast, for example, **/kwɛ B1/** 'old', from ***-u**, with **/kɛ A1/** 'chicken', from ***-i**). Early velar nasals, on the other hand, have been palatalized by the rime **-je** and in turn raised the reflex to **-i** (e.g. ***ŋu > ŋje > ɳ̟e > ɳ̟i**). (Cf. the parallel development of alveolar sibilants before ***-i**.)

PWK		*Lachi*	*Gloss*	*Reference*
***t-**	B1	**tje**	ash	4.2.1.4 #1
***tl-**	C1	**lje̱**	waist	4.2.1.4 #6
***hm-**	A1	**mje**	pig	4.2.1.4 #7
***kw-**	A1	**kwɛ**	horn	4.2.1.4 #3
***k-**	B1	**kwɛ**	old	4.2.1.4 #2
***k-**	C1	**kwɛ̱**	wild cat	---
***tʂ-**	A1	**tɕi**	pillar	4.2.1.4 #13
***dʐ-**	A2	**tɕɦi**	mountain	4.2.1.4 #12
***dʒ-**	C2	**ʑi**	son-in-law	4.2.1.4 #5
***hŋ-**	B1	**ɳ̟i**	ripe	4.2.1.4 #10
***ŋ-**	B2	**ɳ̟ɦi**	sleep	---
***m-**	B2	**mɦĩ**	smelly	4.2.1.4 #9

Notes

The last example, **/mɦĩ/** 'smelly', shows vowel raising by breathiness (contrast with **/mje/** 'pig'). Cf. the similar contrast in the previous section between **/mɦo/** 'goat' and **/mɒ/** 'frost'.

5.3.1.5. ***-o**

This rime has become Lachi **-ju**. The alveolar sibilants were palatalized by this **-ju** reflex just as they were by the **-je** reflex of the rime ***-i** (e.g. ***so** > **sju** > **ɕu**). (Contrast this with rime ***-a**, where **s-** is not palatalized: ***sa** > **su**.) The vowel further dropped after the velar nasal, which became syllabic (cf. the similar change under ***-a**.)

PWK		*Lachi*	*Gloss*	*Reference*
***l-**	A2	**lfijʉ̃**	take by force	4.2.1.5. #4
***s-**	A1	**ɕu**	laugh	4.2.1.5 #1
***s-**	A1	**ɕu**	know	4.2.1.5 #2
***hŋ-**	A1	**ŋ**	door	4.2.1.5 #3

5.3.1.6. ***-ɔ**

This rime has merged with ***-a** and become Lachi **-u**. Similar loss of the vowel after grave nasal initials, which then become syllabic, also applied.

PWK		*Lachi*	*Gloss*	*Reference*
***p-**	A1	**pu**	four	4.2.1.6 #4
***m-**	C1	**ʔm̩**	you	4.2.1.6 #3

5.3.1.7. ***-aɯ**

This rime has regularly become **-o** (merging with ***-au**). This back vowel **-o**, like **-u**, has also been lost after grave nasal initials, but the remaining syllabic nasal appears to be pronounced with relatively longer duration than the one before the dropped **-u** (contrast **/m̩m/** 'rice' (below) with **/ʔm̩/** 'you' in the previous section).

PWK		*Lachi*	*Gloss*	*Reference*
***ɖ-**	A2	**tfijo**	navel	4.2.1.7 #1
***ʒ-**	B2	**ʑfio**	y brother	4.2.1.7 #2

***dz-**	C2	**tʃijo**	chopsticks	4.2.1.7 #5
***p-**	C1	**pǫ**	male	4.2.1.7 #6
***m-**	C2	**mm**	rice	4.2.1.7 #7

5.3.1.8. ***-ai**

This rime has become Lachi **-ja**. The epenthetic **-j-** is not found after back consonants (cf. ***-i**).

PWK		*Lachi*	*Gloss*	*Reference*
***m-**	C2	**mɲja**	female	4.2.1.8 #1
***hl-**	C1	**lja**	rat	4.2.1.8 #3
***t-**	A1	**tja**	elder brother	---
***k-**	C1	**kạ**	excrement	4.2.1.8 #5
***ʔ-**	A1	**ʔa**	good	4.2.1.8 #4

5.3.1.9. ***-au**

This rime has merged with ***-auɯ** and become Lachi **-o**.

PWK		*Lachi*	*Gloss*	*Reference*
***ʔ-**	C1	**ʔǫ**	meat	4.2.1.9 #1
***tr-**	C1	**tǫ**	nest	4.2.1.9 #2
***tr-**	C1	**tǫ**	sprout (v.)	4.2.1.9 #3

5.3.1.10. Summary of Lachi open rime reflexes

PWK		*Lachi*	*variants*
***-i, *-u**	>	**-i**	**-i, -je, -(w)ɛ**
***-o, *-a, *-ə**	>	**-u**	**-(j)u**

***-e**	>	**-o**	**-(j)o, -ɒ**
***-aɯ, *au**	>	**-o**	**-(j)o**
***-ai**	>	**-a**	**-(j)a**

The monophthongs seem to have undergone a series of counter-clockwise shufflings. The high back vowel ***-u** has generally merged with ***-i** (their subtle distinction may be found in certain conditioned variants). The non-high back and central vowels ***-a**, ***-ə** and ***-o** then slid up to **-u** (again, with certain distinctions amidst their conditioned variants). The mid front vowel ***-e** then backed to **-o**. Diphthongs were monophthongized: ***-aɯ** and ***-au** have become **-o**, while ***-ai** has become **-a**.

5.3.2. Nasal rimes

The nasal finals have been kept in Lachi as vowel nasalization after early short vowels; after early long vowels they have been lost without trace. The two early endings, ***-n** and ***-ŋ**, are distinguished in modern Lachi as different vowel qualities.

5.3.2.1. ***-an**

This rime has become Lachi **-ã**, with the nasalization becoming lost by dissimilation when following nasal initials. After alveolar initials, an epenthetic **-j-** is added before the vowel.

PWK		*Lachi*	*Gloss*	*Reference*
***k-**	C1	**kã**	hatch	4.2.2.1 #5
***p-**	A1	**pã**	dream	4.2.2.1 #14
***t-**	C1	**tjã**	plant (v.)	4.2.2.1 #3
***m-**	A2	**mɲa**	yam	---
***n-**	A2	**nɲja**	six	4.2.2.1 #6

5.3.2.2. ***-aŋ**

This rime has become Lachi **-õ**. The change from ***-a-** > **-ɒ-** must have been influenced by the early velar ending before it was lost (i.e. ***-aŋ** > **-ɒŋ** > **-õ**, in contrast with ***-an** > **-ã**).

PWK		*Lachi*	*Gloss*	*Reference*
***pl-**	A1	**põ**	peach	4.2.2.2 #3
***t-**	B1	**tjõ**	cook (v.)	4.2.2.2 #1
***ɖ-**	A2	**thjõ**	crow (v.)	4.2.2.2 #3

5.3.2.3. ***-aan**

This rime has become Lachi **-o**, which was further raised to -u after labials (including labio-velar **-w-**). The nasal ending has been entirely lost after long vowels in general.

PWK		*Lachi*	*Gloss*	*Reference*
***m-**	A2	**mu**	new	4.2.2.3 #1
***kw-**	A1	**ku**	ax	4.2.2.3 #6
***kr-**	A1	**kho**	house	4.2.2.3 #8
***ŋj-**	C2	**ŋfio**	thorn	4.2.2.3 #2

5.3.2.4. ***-aaŋ**

This rime has become Lachi **-ei** or **-i** after grave or acute initials respectively.

PWK		*Lachi*	*Gloss*	*Reference*
***vj-**	A2	**vei**	tall	4.2.2.4 #1
***mr-**	A2	**mfiei**	ghost	4.2.2.4 #7
***dʒ-**	A2	**zi**	mosquito	4.2.2.4 #5
***ɭ-**	C2	**lfii**	hawk	4.2.2.4 #3

5.3.2.5. ***-un**

This rime has become Lachi **-ĩ**. The vowel probably first became fronted by the acute ending (i.e. ***-un** > **-in** > **-ĩ**). Contrast this with the next rime (***-uŋ** > **-ũ**) where ***-u-** remains as such before the early velar ending. A similar change, though in the opposite direction, has been noted for ***-a-**, where the vowel has remained **-a-** before the alveolar ending ***-n** but has become backed to **-ɒ** before velar ***-ŋ**.

PWK		*Lachi*	*Gloss*	*Reference*
***kr-**	A1	**khĩ**	road	4.2.2.5 #1
***pwr-**	A1	**phĩ**	die	4.2.2.5 #3
***ts-**	A1	**tɕĩ**	buy	4.2.2.5 #5

5.3.2.6. ***-uŋ**

PWK		*Lachi*	*Gloss*	*Reference*
***l-**	A2	**lfũ**	vegetable	4.2.2.6 #5

5.3.2.7. ***-uun**

This rime has become Lachi **-e**. Palatal onglides **-j-** and **-w-** are added after alveolar and velar initials respectively.

PWK		*Lachi*	*Gloss*	*Reference*
***tʂ-**	A1	**tɕe**	teach	4.2.2.7 #2
***hl-**	A1	**lje**	heart	4.2.2.7 #3
***k-**	A1	**kwe**	front/before	4.2.2.7 #1

5.3.2.8. ***-uuŋ**

This rime has become Lachi **-i** and sometimes **-ei**. The conditioning for the latter variant is unclear since only one example has been found.

PWK		*Lachi*	*Gloss*	*Reference*
*?-	C1	ʔi̱	water	4.2.2.8 #1
*l-	A2	li	drum	4.2.2.8 #4
*l-	A2	lei	star	4.2.2.8 #5

5.3.2.9. ***-iN**

This rime has regularly become Lachi **-ĩ** (parallel with ***-uŋ** > **-ũ**).

PWK		*Lachi*	*Gloss*	*Reference*
*l-	C2	lfiĩ	steal	4.2.2.9 #2
*k-	A1	kwĩ	hold in mouth	4.2.2.9 #7
*t-	C1	tɨ̱	pound (v.)	4.2.2.9 #3
*ɖ(j)-	C2	tfiĩ	shallow	4.2.2.9 #5

5.3.2.10. ***iiN**

The reflex shows the expected complete loss of the nasal ending after long vowels, contrasting with that of the previous short rime counterpart.

PWK		*Lachi*	*Gloss*	*Reference*
*t-	A1	ti	cucumber	4.2.2.10 #3
*pwr-	A1	pfii A2	year	4.2.2.10 #2

5.3.2.11. Summary of nasal rimes

Early short vowels		*Lachi*	*Early long vowels*	*Lachi*
*-an		-ã	*-aan	-o
*-aŋ	(> -ɒŋ)	-õ	*-aaŋ	-i
*-un	(> -in)	-ĩ	*-uun	-e
*-uŋ		-ũ	*-uuŋ	-i
*-iN		-ĩ	*-iiN	-i

5.3.3. Checked rimes

The development of checked rimes is parallel with that of nasal rimes. The final stops have left their trace as vowel constriction after early short vowels, while being lost completely after early long vowels. The reflexes of high short vowels (**-ɛ̯**, **-ɔ̯** and **-ɛ̯** for ***-ut**, ***-uk** and ***-iK** respectively) are interestingly lower than those of their nasal counterparts (**-ɪ̯**, **-ʊ̯** and **-ɪ̯** for ***-un**, ***-uŋ** and ***-iN** respectively). This vowel lowering is clearly caused by constricted glottis.

5.3.3.1. ***-at**

PWK		*Lachi*	*Gloss*	*Reference*
***t-**	D1S	**tja̯**	liver	4.2.3.1 #2
***d-**	D2S	**tʃija̯**	forget	4.2.3.1 #3
***hm-**	D1S	**ma̯**	flea	4.2.3.1 #4

5.3.3.2. ***-ak**

PWK		*Lachi*	*Gloss*	*Reference*
***l-**	D2S	**lʃijɔ̯**	deep	4.2.3.2 #1
***d-**	D2S	**tʃijɔ̯**	bone	4.2.3.2 #2
***(d)ʒ-**	D2S	**jʃiɔ̯**	hear	4.2.3.2 #3

5.3.3.3. ***-aat**

PWK		*Lachi*	*Gloss*	*Reference*
***pl-**	D1L	**pjo**	blood	4.2.3.3 #1
***k-**	D1L	**ko**	handspan	---

5.3.3.4. ***-aak**

PWK		*Lachi*	*Gloss*	*Reference*
***m-**	D2L	**mʃiɪ̯**	fruit	4.2.3.4 #3
***l-**	D2L	**lʃii**	child	4.2.3.4 #1

Notes
The nasalization of the vowel reflex ('fruit') was spread from the breathy nasal initial. Cf. 5.3.2.1 ***-an*** for the opposite development, where the nasalization was dissimilated after nasal initial.

5.3.3.5. ****-ut***

PWK		*Lachi*	*Gloss*	*Reference*
****pwl-***	D1S	**pɛ̰**	**ten**	**4.2.3.5 #2**
****tʃ-***	D1S	**sɛ̰**	**tail**	**4.2.3.5 #4**

5.3.3.6. ****-uk***

PWK		*Lachi*	*Gloss*	*Reference*
****ɳ-***	D2S	**njɔ̰**	**bird**	**4.2.3.6 #1**
****t-***	D1S	**tjɔ̰**	**fall (v.)**	**4.2.3.6 #2**

5.3.3.7. ****uut***

PWK		*Lachi*	*Gloss*	*Reference*
****kl-***	D1L	**lja**	**take off**	**4.2.3.7 #1**

5.3.3.8. ****-uuk***

PWK		Lachi	Gloss	Reference
****ʔ-***	D1L	**ʔi**	**white**	**4.2.3.8 #2**

5.3.3.9. ****-iK***

PWK		*Lachi*	*Gloss*	*Reference*
****ɖ-***	D2S	**tʃijɛ̰**	**raw**	**4.2.3.9 #1**
****kl-***	D1S	**lɛ̰**	**fingernail**	**4.2.3.9 #2**

Notes
This rime has become **-ɛ̰** (merging with that of ***-ut***). A higher variant **-ḛ** is found after breathy initials. (Cf. the similar examples of vowel raising by breathiness in rimes ***-u*** and ***-ɛ***).

5.3.3.10. ***iiK**

PWK		*Lachi*	*Gloss*	*Reference*
*t-	D1L	tfii D2	full	4.2.3.10 #1

5.3.3.11. Summary of checked rimes

Early short vowels	*Lachi*	*Early long vowels*	*Lachi*
*-at	-a	*-aat	-o
*-ak	-ɒ	*-aak	-i
*-ut	-ɛ	*-uut	-a (?)
*-uk	-o	*-uuk	-i
*-iK	-ɛ	*-iiK	-i

5.4. LAHA AND PROTO-SOUTHWESTERN-KRA

There are some major changes in the systems of initials and rimes at the Proto-Southwestern-Kra (PSWK) level. Monosyllabic clusters versus sesquisyllabic pre-initial plus medial have to be distinguished, e.g. ***kl-** vs ***k-l-** and ***kr-** vs ***k-r-**. Labial nasal and stop finals (***-m** and ***-p**) are reconstructible, in addition to PWK alveolars (***-n** and ***-t**) and velars (***-ŋ** and ***-k**). Also, a liquid final (***-l**) has to be posited at this proto-stage.

5.5. LAHA AND PSWK ONSETS

5.5.1. Simple onsets

5.5.1.1. Voiceless stops

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
*p-	*p-	p-
*t-	*t-	t-
*k-	*k-	k-
*?-	*?-	?-

		Laha	*Gelao*	*Lachi*	
*p-	A1	pəi	pai	pje	fire
*t-	D1	tok	tau	tjɒ	fall (v.)
*k-	A1	kam	qan	kã	bitter
*ʔ-	A1	ʔai	ʔɒ	ʔa	good

5.5.1.2. Voiced Stops

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
*b-	*b-	b-
*d-	*d-	d-

		Laha	*Gelao*	*Lachi*	
*b-	B2	baa	—	pfiu	shoulder
*d-	D2	dak	taŋ	tfijɒ	bone
*d-	D2	dap	te	tfijạ	forget

Notes
These initials have been devoiced in Ta Mit variety into /**ph-**/ and /**th-**/ respectively, e.g. Ta Mit /**thap**/ 'forget'. The development in Ta Mit is similar to that found in some Lachi varieties, i.e. the initial has first become breathy and then voiceless aspirated (***d-** > tfi- > **th**). Words with these initials have series 2 of tones, indicating a voiced origin.

5.5.1.3. Voiceless Sibilants

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
*s-	*s-	s-
*ts-	*ts-	c-
*tʃ-	*tʃ-	c-
*c-	*c-	c-

		Laha	*Gelao*	*Lachi*	
*s-	A1	so	sa	ɕu	laugh
*ts-	A1	col	sen	tɕĩ	buy
*tʃ-	D1	cot	tshan	sɛ	tail
*c-	C1	cau	tsɔɯ	—	descend

Notes
Laha has contrastive fricative and affricate **s-** and **c-**. However, while Nong Lay variety merged ***tʃ-** with alveolar affricate ***ts-**, Ta Mit variety merged it with fricative ***s-** instead. For the above examples, Ta Mit shows **/so/** 'laugh', **/tɕɯɯ/** 'buy,' but **/sʏt/** 'tail'.

5.5.1.4. Voiced Sibilants

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
*ʒ-	*ʒ-	j-
*dʒ-	*dʒ-	j-
*ʝ-	*ʝ-	j-

		Laha	*Gelao*	*Lachi*	
*ʒ-	B2	jau	tsɔɯ	ʑo	**y brother**
*dʒ-	A2	(m)jaaŋ B2	tɕhi	ʑi	**mosquito**
*ʝ-	C2	jaa B1	ʑo	ʑfiu	**grandmother**

Notes
Ta Mit appears to adopt a change **j- > z-**, cf. **/za C2/** 'grandmother'.

5.5.1.5. Sonorants

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
*m-	*m-	m-
*n-	*n-	n-
*ɳ-	*ɳ-	ɳ-

*ŋ-	*ŋ-	ŋ-
*l-	*l-	l-

		Laha	*Gelao*	*Lachi*	
*m-	A2	maa	mpau	m̥	hand
*n-	A2	nɔi	ntai	nĩ A1	cow
*n̥-	A2	n̥ɔ	n̥tɕɔɯ	n̥ɦũ	salt
*ŋ-	A2	ŋaa	ŋkau	ŋ̊	snake
*l-	C2	lɛ	lai	lɦjo	wear

All forms in the above set have series 2 of tones, indicating voiced sonorants. For what is reconstructed as PWK voiceless sonorants, Laha shows the same plain sonorant reflexes, usually with tonal series 1. Exceptions seem to abound with the PWK voiceless velar nasal (*hŋ-), which at times shows Laha tone series 2 instead, as if indicating the early loss of voicelessness at this position of articulation.

PWK		*Laha*	*Gelao*	*Lachi*	
*hm-	A1	maa	mpau	m̥	dog
*ʔn-	A1	dam (Tm)	nam	nɦja A2	six
*hn̥-	C1	n̥aan	n̥ø (Qs)	—	short (≠long)
*hŋ-	A1	ŋaa A2	ŋkau	—	wait
*hŋ-	D1	ŋat D2	n̥tɕe	n̥a	nose
*hŋ-	A1	ŋai	—	n̥a	sand
*hŋj-	B1	n̥ɔu	ŋka	n̥i	ripe
*hl-	C1	lul	lɔɯ	lje	heart

Ta Mit variety has distinctive stop reflexes for PWK voiceless nasals, while it simply shows plain **l-** for the earlier voiceless liquid. For example, **/ba/** 'dog' and **/laai/** 'rat'.

There is a possibility that the nasal initials in a number of these latter forms were glottalized in early Laha. The reasons are two-fold. First, Ta Mit has stop reflex **/d-/** for what is reconstructible as ***kl-** (5.5.2.1), e.g. Nong Lay **/klaal/** Ta mit **/daan/** 'grandchild'; Nong Lay **/klap/** Ta Mit **/dap/** 'close eye'. This Ta Mit **/d-/** is accompanied by tone series 1, suggesting that the initial was previously glottalized (***kl- > ʔd- > d-**). The glottalized feature is also transcribed in the source in some forms, e.g. Nong Lay **/kliŋ B1/** Ta Mit **/ʔdiŋ C1/** 'black'). This contrasts with the reflex of the early voiceless lateral (***hl-**) which has simply become Ta Mit plain **l-**.

A parallel development may be assumed for nasals, where early glottalized nasals have become Ta Mit stops, i.e. ***ʔm- > ʔb- > b-** (e.g. 'dog') and ***ʔn- > ʔd- > d-** (e.g. 'six'), while voiceless nasals simply become plain nasals ('sand' Ta Mit **/ɳaai A1/** Lachi **/ɳa A1/**). This is consistent with another fact, i.e. that the Nong Lay variety shows tone A1 (usually indicating early plain voiceless initials) for the hypothesized glottalized nasals but tone A1' (usually indicating early voiceless aspirated and fricative initials) for the voiceless nasals. For example, Nong Lay **/ma A1/**, but **/ŋai A1'/**. Nong Lay also shows tone A1' for voiceless lateral (***hl-**), e.g. **/loŋ A1'/** 'stomach'.

As a matter of fact, at the PSWK level, there appear to be very few etyma which can be reconstructed simply as voiceless nasals. All three good PG/PWK etymologies reconstructed with initial ***hm-** correspond to those in early Laha with ***ʔm-**. Already at the Proto-Gelao level, these roots suggest the possibility of reconstructing a velar presyllable plus labial nasal of the sort ***x-m-** (4.1.3.2). Also, the only non-voiced alveolar nasal reconstructible for PG/PWK is glottalized ***ʔn-** ('six'), which can be projected back to the PSWK stage. Without further evidence to the contrary, we may have to temporarily take PG/PWK voiceless nasals ***hɳ-** and ***hŋ-** as valid for PSWK, though some of them may potentially go back to sesquisyllable structures.

5.5.1.6. Retroflexes

The retroflex series have merged with their alveolar counterparts.

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
***ʈ-**	***ʈ-**	**t-**
***ɖ-**	***ɖ-**	**d-**

***tʂ-**	***tʂ-** **c-**
***ɳ-**	***ɳ-** **n-**

		Laha	*Gelao*	*Lachi*	
***ʈ-**	A1	**taa**	**tau**	**tju**	eye
***ɖ-**	A2	**dăŋ**	**thaŋ**	**thjõ**	crow (v.)
***tʂ-**	A1	**cou B2**	**sa**	**tɕi**	pillar
***ɳ-**	D2	**nok**	**ntau**	**njɒ**	bird

5.5.1.7. Spirants

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
***w-**	***w-**	**v-**
***v-**	***v-**	**v-**

		Laha	*Gelao*	*Lachi*	
***w-**	**A2**	**văn**	**ven**	**võ**	tendon
***v-**	**C2**	**vaa**	**vu**	**vu**	go

5.5.2. Complex onsets

5.5.2.1. Clusters with stops as the first member.

With medial -l-: ***pl-** remains Laha **pl-**, while ***tl-** merged with ***kl-**.

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
***pl-**	***pl-**	**pl-**
***tl-**	***tl-**	**kl-**
***kl-**	***kl-**	**kl-**

		Laha	*Gelao*	*Lachi*	
***pl-**	D1	**plaat**	**plɒ**	**pjo**	blood
***pwl-**	D1	**pvt (Tm)**	**pe**	**pɛ**	ten

***tl-**	A1	**klɔi**	**klai**	**lje**	flow
***kl-**	D1	**klɔp**	**kle**	**lɛ**	fingernail
***kl-**	D1	**klap**	**kle**	—	close eye

Notes
Ta Mit variety usually lost medial **-l-** after labials, i.e. ***pl-** > **p-**, while ***tl-** and ***kl-** merged and became **d-**. For the above examples Ta Mit has the following forms: **/pat/** 'blood', **/dɔi/** 'flow,' and **/dap/** 'close eye'.

With medials -r-/-ʒ-: Medial **-r-** has induced aspiration, and ***p(w)r-** and ***kr-** became Laha **phl-** and **khl-** respectively. Before back vowels the medial **-r-** was usually lost and the velar initial was backed to glottal. For example, 'road' ***kron** > **qhʁon** > **qhon** > **hon**, 'monkey' ***krok** > **qhʁok** > **qhok** > **hok**. Medial **-ʒ-** has fricated the initial and ***kʒ-** has become Laha **kh-**.

Proto-Southwestern-Kra	*Proto-Western-Kra*	*Laha*
***pwr-**	***pwr-**	**ph(l)-**
***kr-**	***kr-**	**kh(l)-**
***kʒ-**	***kʒ-**	**kh-**

		Laha	*Gelao*	*Lachi*	
***pwr-**	A1	**phɔn**	**pen**	**phĩ**	die
***kr-**	C1	**khlaa**	**klau**	**hu**	"Kra"/person
***kr-**	A1	**hon**	**qen**	**khĩ**	road
***kr-**	D1	**hok**	—	**kho**	monkey
***kɪ-**	B1	**xe** (Tm)	**khɔ**	**khja**	head
***kʒ-**	B1	**khaa**	**xau**	**ku**	dry (a.)

Notes
Ta Mit reflexes are usually fricatives: **/fuɯ/** 'die', **/ha/** 'Kra', **/xʏk/** 'monkey'. (For ***kr-**, the record shows variants **x-** and **h-**, probably depending on the following vowels.)

5.5.2.2. Sesquisyllables with stops as the preinitial

All the clusters in the previous type have series 1 of tones, which were assigned according to the voicelessness of the stop initial of the clusters. There are still other sets of forms where Laha also shows velar clusters of the types **kl-** and **kh(l)-**, but which are accompanied by series 2 of tones. These clusters usually correspond to simple initials ***l̥-** or ***r-** in Gelao, implying that the tones were assigned according to the voiced medials. We may thus set up sesquisyllabic structures of the type ***k-l-** and ***k-r-** contrasting with the clusters ***kl-** and ***kr-** of the previous section. It is probably relevant that for PSWK ***k-l-**, PG always shows retroflexed ***l̥-**, which must have resulted from the rhoticization of intervocalic ***-l-** (> ***l̥-**) in contrast with initial ***l-** (> ***l-**). (For the ***k-l-** examples below, Qs Gelao has **/zɪ/**, **/zoŋ/**, and **/ze/** respectively.)

		Laha	*Gelao*	*Lachi*	
***k-l-**	A2	**klɔi**	**lai**	**lje**	far
***k-l-**	A2	**kluŋ**	**zoŋ (Qs)**	**lei**	star
***k-l-**	C2	**klaa B2**	**lau**	**lju**	near
***k-r-**	A2	**khlaa**	**zau**	**lu**	ear
***k-r-**	C2	**khlaaŋ**	**z̥u (Lz)**	**kfiɣei**	ribs
***k-r-**	C2	**khɔi**	**zai**	**kfiɣe**	sick

Notes

It is unclear whether we should separate the onsets in such forms as 'ear' from those of the others ('ribs' and 'sick') at this level based on the different Lachi reflexes (lfi- and **kfiɣ-**). It is possible to assume that Lachi lost the velar initial before **-u** (cf. Lachi **/hu/** 'person' but **/khɪ̄/** 'road', both from ***kr-**), while the medial has first become velarized **-ɬ-** and then sometimes became modern l-, as initial, or **-ɣ-**, as medial after velar.

5.5.2.3. Other complex onsets

In clusters which have sonorants or spirants as the first member, Laha usually dropped the medials.

		Laha	*Gelao*	*Lachi*	
***ml-**	A2	**maa**	**mlõ (Lz)**	**nfijo**	tongue
***mr-**	A2	**kmaaŋ B2**	**mpɔ·**	—	ghost

***vj-**	A2	**van**	**ven**	—	wind
***vj-**	A2	**vaa**	**vu**	—	wing
***wj-**	A2	**van**	**ven**	**vɔ̃**	tendon

Laha shows an example of labio-velar **/kw-/** corresponding to PWK ***vj-**, pointing to a presyllable plus medial parallel to ***k-r-** and ***k-l-**. In addition, there are also a few instances which probably point to ***b-l-** and ***m-l-**. As in the case of ***k-l-**, intervocalic **-l-** in these latter two onsets has become PG ***l-** (Qs Gelao **/ze/** and **/zɪ/** respectively).

		Laha	*Gelao*	*Lachi*	
***(k-)vj-**	A2	**kwaaŋ**	**vi**	**vei**	tall
***b-l-**	A2	**blaa**	**lau**	—	afraid
***m-l-**	B2	**mlɔi**	**lei**	—	d-in-law

5.6. LAHA AND PSWK RIMES

Laha has kept PSWK rimes almost intact. The length distinction of Proto-Western-Kra vowels in closed syllables normally corresponds to Laha vowel height contrast. Evidence from Laha also suggests that three additional endings need to be reconstructed at the PSWK level; these are two labials ***-m** and ***-p**, plus a liquid ***-l**.

5.6.1. Open rimes.

Laha has diphthongized proto high vowels: ***-i > -ɔi** and ***-u > ɔu**. The two mid vowel counterparts, ***-e** and ***-o**, became **-ɛ** and **-ɔ** respectively, while the central vowels ***-ə** and ***-a** have merged into **-aa**. Diphthongs ***-ai** and ***-au** remain unchanged, while ***-auɯ** has merged with **-au**.

5.6.1.1. ***-i > ɔi**

		Laha	*Gelao*	*Lachi*
d-in-law	B2	**mlɔi**	**lai**	—
tree	A1	**tɔi**	**tai**	**tje**
ask	C1	**cɔi**	**sai**	**tɕi**

flow	A1	klɔi	klai	(ʔ)lje
far	A2	klɔi	lai	lje
sick	C2	khɔi	zai	kfiɣe
many	B1	ʔɔi	ʔai	—
satisfied	B1	ci	tshai	sɛ

Notes
In the last example, the reflex remains **-i** after the early prepalatal initial (***tʃ**). Contrast with /cɔi/ 'ask', from ***ts-**.

5.6.1.2. ***-u > -ɔu**

		Laha	*Gelao*	*Lachi*
liquor	A1	pɔu	pa	—
pig	A1	mɔu	mpa	mje
three	A1	tɔu	ta	tje
do	A2	dɔu	tha	tfije
ripe	B1	ɳɔu	ŋka	ɳi
pillar	A1	cou B2	sa	tɕi
horn	A1	kou	qa	kwɛ
old	B1	kou	qa	kwɛ

Notes
Variant **-ou** occurs after the early retroflex (cf. 'pillar', from ***tʂ-**) and velar initials (last two examples).

5.6.1.3. ***-e > -ɛ**

		Laha	*Gelao*	*Lachi*
goat	C2	mɛ	mæ (Lz)	mfio
wear	C2	lɛ	lai	lfijo
bear	A2	mɛ	mi (Lz)	mɒ

5.6.1.4. ***-o > -ɔ***

		Laha	*Gelao*	*Lachi*
know	A1	**sɔ**	**sa**	**ɕu**
laugh	A1	**sɔ**	**sa**	**ɕu**
salt	A2	**ŋɔ**	—	**ŋɦũ**

5.6.1.5. ***-ə > -aa***

		Laha	*Gelao*	*Lachi*
four	A1	**paa B1**	**pu**	**pu**
you	B2	**maa**	**mu**	**m̩ C2**
wing	A2	**vaa**	**vu**	—

5.6.1.6. ***-a > -aa***

		Laha	*Gelao*	*Lachi*
bran	B1	**paa**	**pau**	**pu**
hand	A2	**maa**	**mpau**	**m̩**
eye	A1	**taa**	**tau**	**tju**
thick	A2	**naa**	**ntau**	**nju**
dry	B1	**khaa**	**xau**	**ku**
snake	A2	**ŋaa**	**ŋkau**	**ŋ**

5.6.1.7. ***-ai > -ai***

		Laha	*Gelao*	*Lachi*
good	A1	**ʔai**	**ɒ**	**ʔa**
rat	C1	**lai**	**lɒ**	**lja**
excrement	C1	**kai**	**qɒ**	**kạ**

bite	B1	**tai**	**zei (Qs)**	**tja**
sand	A1	**ŋai**	**—**	**ɳa**

5.6.1.8. ***-auɯ > -au**

		Laha	*Gelao*	*Lachi*
descend	C1	**cau**	**tsəɯ**	**—**
y brother	B2	**jau**	**tsəɯ**	**ʑfio**
navel	A2	**dau**	**ʐo (Qs)**	**tfijo**
male	C1	**pau (Tm)**	**po (Qs)**	**pǫ**

5.6.1.9. ***-au > -au**

		Laha	*Gelao*	*Lachi*
grass	A1	**klau**	**—**	**lo**

5.6.1.10. Summary of open rimes

PSWK	*PWK*	*Laha*
***-i**	***-i**	**-əi**
***-u**	***-u**	**-əu**
***-e**	***-e**	**-ɛ**
***-o**	***-o**	**-ɔ**
***-ə**	***-ə**	**-aa**
***-a**	***-a**	**-aa**
***-ai**	***-ai**	**-ai**
***-auɯ**	***-auɯ**	**-au**
***-au**	***-au**	**-au**

5.6.2. Closed rimes

In closed as well as open syllables, the PSWK vowels differ primarily in quality. These are different from those of Proto-Western-Kra, which distinguish three pairs of vowels with contrastive length. Nonetheless, while we may assume that PSWK had a six-vowel system with qualitative contrast, it is also possible that the sub-phonemic quantitative distinction already existed between high and low vowels (***-i-**, ***-u-**, and ***-a-**) on the one hand, and mid vowels (***-e-**, ***-o-** and ***-ə-**) on the other. This redundancy of qualitative and quantitative distinctions would then allow alternative vowel developments into the daughter languages.

PSWK labial and alveolar endings merged as PWK alveolars (PSWK ***-m** and ***-n** > PWK ***-n** and PSWK ***-p** and ***-t** > PWK ***-t**), while the PSWK liquid ending merged with the PWK alveolar nasal (PSWK ***-l** > PWK ***-n**).

5.6.2.1. ***-ə- > -a-**

		Laha	*Gelao*	*Lachi*
bitter	A1	**kam**	**qan**	**kã**
plant (v.)	C1	**tam**	**tan**	**tjã**
dream	A1	**pan**	**pan**	**pã**
tendon	A2	**van**	**ven**	**vɔ̃**
louse	A2	**mdal**	**tshen**	**tʃijã**
heavy	A1	**khal C1**	**xen**	**kjã**
thunder	A2	**daŋ**	**thaŋ**	**tʃijɔ̃**
forehead	A2	**daŋ B2**	**tã (Nd)**	—
forget	D2	**dap**	**te**	**tʃija**
close eye	D1	**klap**	**kle**	—
flea	D1	**mat**	**mpe**	**ma**
nose	D1	**ŋat D2**	**ɳtɕe**	**ɳa**
bone	D2	**dak**	**taŋ**	**tʃijɒ**
deep	D2	**lak D1**	**laŋ**	**lʃijɒ**

5.6.2.2. ***-a- > -aa-**

		Laha	*Gelao*	*Lachi*
borrow	??	**saam B2**	**tshu A1**	—
thorn	C2	**ŋaan (Tm)**	**ŋ̊u**	**ŋfio**
coal	B1	**thaan**	**thu**	**thjo**
grandchild	A1	**klaal**	**klu**	—
new	A2	**maal**	**mu**	**mu**
hawk	C2	**klaaŋ**	**li**	**lfii**
mosquito	A2	**mjaaŋ B2**	**t̥chi**	**ʑi**
bathe	D1	**ʔaap**	**ʔɒ**	—
blood	D1	**plaat**	**plɒ**	**pjo**
fruit	D2	**maak**	**mei**	**mfiĩ**
child	D2	**laak**	**lei**	**lfii**

5.6.2.3. ***-u- > -u-**

		Laha	*Gelao*	*Lachi*
front	A1	**kun B2**	**qəɯ**	**kwe**
heart	C1	**lul**	**ləɯ**	**lje**
water	C1	**ʔuŋ**	**ʔəɯ**	**ʔi̥**
fog/cloud	D2	**muk**	**mpu**	—
white	D1	**ʔuk**	**zu**	**ʔi**

5.6.2.4. ***-o- > -o-**

		Laha	*Gelao*	*Lachi*
road	A1	**hon**	**qen**	**khĩ**
die	A1	**phən**	**pen**	**phĩ**

buy	A1	**col**	**sen**	**tɕĩ**
vegetable	A2	**kloŋ A1**	**luŋ**	**lfiũ**
bamboo hat	D1	**klop**	—	—
tail	D1	**cot**	**tshan**	**sɛ**
bird	D2	**nok**	**ntau**	**njɒ**
fall (v.)	D1	**tok**	**tau**	**tjɒ**

Notes
After labial initials, the reflex **-o-** has been dissimilated into **-ə-**; cf. 'die'. Ta Mit variety seems to usually have central vowel reflexes (variantly transcribed as **-ə-**, **-ʏ-**, or **-ɯ-**) for this proto-vowel. For example, **/sʏt/** 'tail', **/nək/** 'bird', **/fɯn/** 'die' and **/tɕɯn/** 'buy'.

5.6.2.5. ***-i- > -i-**

		Laha	*Gelao*	*Lachi*
yellow	C2	**ŋil**	**nʲtɕi**	—
cucumber	A1	**tiŋ**	**tɕi (Lz)**	**ti**
year	A1	**phiŋ**	**plei**	**pfii A2**
full	D1	**tik**	**tei**	**tfii D2**

5.6.2.6. ***-e- > -ə-**

		Laha	*Gelao*	*Lachi*
shallow	C2	**dəl**	**dzɑ̃ (Lz)**	**tfiĩ**
sweet	C1	**thəl**	**tɑ̃ (Lz)**	—
fingernail	D1	**kləp**	**kle**	**lɛ**
raw	D2	**dəp**	**te**	**tfijɛ**

5.6.2.7. Summary of closed rimes

PSWK	*PWK*	*Laha*
***-i-**	***-ii-**	**-i-**
***-e-**	***-i-**	**-ə-**

*-u-	*-uu-	-u-
*-o-	*-u-	-o-
*-ɔ-	*-a-	-a-
*-a-	*-aa-	-aa-

Certain aspects of the system of modern Laha (Nong Lay) vowel reflexes in closed rimes and open rimes (cf. 5.6.1.10) may be noted. Only low central vowels **-a-** and **-aa-** show a phonemic length contrast, and only in closed syllables. (In open syllables, all vowels are probably phonetically long, though they are not usually indicated as such). This system resembles that of many languages of the area including some Tai dialects and Vietnamese. Comparative evidence reveals that, for native words, the vowel **-o-** is basically found in closed syllables while **-ɔ** is found in open syllables. The front vowels also appear to show similar complementary distribution, with **-e-** found exclusively in closed syllables and **-ɛ** in open syllables (an exception where the vowel **-ɛ** is found in a closed syllable is **/kɛl C1/** 'iron', but in this case the vowel may have developed from ***-ja-**, PSWK ***kjal**). Besides, the modern vowel **-e-** has not been found in good etymologies; for PSWK ***-e-**, the modern reflex is normally **-ə-**. Likewise, the high vowels **-i-** and **-u-** are basically found in closed syllables; they have been diphthongized into **-əi** and **-əu** (with certain variants) in open syllables.

PSWK	*Laha (Open rimes)*	*Laha (Closed rimes)*
*i	-əi	-i-
*e	-ɛ	-ə-
*u	-əu	-u-
*o	-ɔ	-o-
*ɔ	-aa	-a-
*a	-aa	-aa-

CHAPTER 6

CENTRAL EASTERN KRA

In this chapter, we will discuss the reconstruction of Proto Central Eastern Kra (PCEK), based on three languages: Paha, Buyang and Pubiao. The system of PCEK initials will be worked out in the first section (6.1) followed by PCEK rimes (6.2).

6.1. PCEK INITIALS

6.1.1. Stops

***p-**

A. This initial has become **p-** in all languages. The Buyang reflex is at times fricated into f- before rounded **-u-** (e.g. 'fire', ***pui** > **pβ^{w}i** > **fii**). This initial has series 1 of tones.

		Paha	*Buyang*	*Pubiao*
fire	A1	**pui**	**fii**	**pei**
seed	A1	**pii**	**pee**	**(pan)**
four	A1	**paa**	**paa**	**pee**
father	B1	**paa**	**paa**	**pee**

B. There are certain words where Eastern Kra reflexes are also **p-**, but Paha shows voiced stop **b-** instead. The Paha reflex nonetheless has tone series 1, indicating voicelessness in origin. We may reconstruct the initial as PCEK prenasalized stop ***mp-**.

		Paha	*Buyang*	*Pubiao*	
peach	A1	**baŋ**	**paŋ**	**paŋ**	***mp-**
bran	B1	**bwaa**	**faa**	—	***mpw-**

C. The third set shows Eastern Kra **p-** corresponding to Paha **v-**. Again the reflexes take tone series 1, indicating a voiceless origin. The initial may be reconstructed as ***pw-**. On the other hand, except for the first example where PSWK also shows medial ***-w-**, other etyma appear to simply point to plain initial ***p-**. We may suggest the possibility of positing medial ***-p-** for these roots, assuming that it has become spirantized into **v-** in Paha. This will be consonant with the need to posit a medial stop at other positions of articulation (namely ***-ṭ-** and ***-k-**).

		Paha	*Buyang*	*Pubiao*	
ten	D1	**vat**	**put**	**pɑt**	***pw-**
dream	A1	**van**	**pan**	**pan**	***ʔ-p-**
male	B1	**vaau**	—	—	***ʔ-p-**
walk	A1	**vhii**	**vii A2**	—	***fi-pw-**

Notes
For 'walk', cf. Gelao (Wz) **pai A1**.

t- and *ṭ-

A. The alveolar and retroflexed voiceless stops have merged in Eastern Kra. Paha distinguishes the two by showing **t-** for the former and **ð-** for the latter.

		Paha	*Buyang*	*Pubiao*
three	A1	**tuu**	**tuu**	**tau**
plant (v.)	C1	**tam**	**tam**	**tap**
liver	D1	**tap**	**tap**	**tjap**
chest	D1	**tak**	**tak**	**tak**
fall	D1	**tɔɔk**	**tuk**	—
egg	A1	**ðam**	**tam**	—
bite	B1	**ðaai**	—	—

B. This set of words shows Eastern Kra **t-** corresponding to Paha **d-**, for which we may posit PCEK ***nt-**. There does not appear to be evidence for setting up the prenasalized retroflexed stop ***nʈ-**.

		Paha	*Buyang*	*Pubiao*	
ash	B1	**duu**	**tuu**	**tau**	***nt-**
full	D1	**dɛɛk**	**tiak**	**tek**	***nt-**
eye	A1	**daa**	**taa**	**tee**	***nt-**
get	B1	**duuu**	**tuə**	**tuu**	***nt-**
locust	D1	**dak**	**tak**	—	***nt-**

C. The medial ***-ʈ-** may be posited for the correspondence Eastern Kra **t-**: Paha **ðh-**. We may assume that the initial has been spirantized in Paha into **ð-** with (aspirated >) breathy quality having been induced by retroflexion. If there were an early medial ***-t-**, we might expect that it would have become Eastern Kra **t-** : Paha **ð-** (without breathiness), and thus its reflexes would have merged early with those of ***ʈ-**.

		Paha	*Buyang*	*Pubiao*	
head louse	A1	**ðhuu**	**tuu**	—	***C-ʈ-**

***k-**

A. This sound is often pronounced as a post-velar in modern dialects. In the representative Buyang dialect, the sound has further become glottal stop **ʔ-**.

		Paha	*Buyang*	*Pubiao*
bitter	A1	**qam**	**ʔam**	—
chicken	A1	**qai**	**ʔai**	**qai**
cogon	A1	**qaa**	**ʔaa**	**qaa**
front	A1	**qɔɔn**	**ʔɔɔn**	—

old	B1	quu	ʔuu	qau
wildcat	C1	quu	ʔuu	qau
chin	C1	qaaŋ	ʔaaŋ	qaaŋ

B. The velar prenasalized stop ***ŋk-** may be set up in parallel with the corresponding bilabial and alveolar sounds. The prenasalized feature appears to prevent the backing of modern reflexes.

		Paha	*Buyang*	*Pubiao*	
handspan	D1	gaap	kaap	kuɔp	*ŋk-

C. The following set of initials show Paha velar spirant (ɣ-) corresponding to Eastern Kra plain voiceless stop. We propose for this PCEK medial ***-k-**, in parallel with the reconstructed medial stops at other articulations.

		Paha	*Buyang*	*Pubiao*	
leg	A1	ɣaa	ʔaa	—	*-k-
horn	A1	ɣuu	ʔuu	qau	*-k-
dove	A1	ɣuu	kaai (Yl)	—	*-k-
ear of grain	A1	ɣan	—	—	*-k-
liquor	C1	ɣaa	—	—	*-k-
knee	B1	ʁoo	huu B2	qau	*-k-

The Paha initial reflex of the last example is pronounced very back (probably due to the following vowel **-oo**). For 'ear of grain' and 'liquor', cf. Lachi **/kã/** and **/ku/** respectively.

***ʔ-**

This initial can be reconstructed without any problem and is reflected by the expected series 1 of tones.

		Paha	*Buyang*	*Pubiao*
good	A1	ʔaai	—	ʔai
have	A1	ʔan	ʔan	ʔan
meat/flesh	C1	ʔaau	ʔuə	ʔjau
water	C1	ʔɔɔŋ	ʔɔɔŋ	ʔɔŋ
crow (n.)	D1	ʔaak	—	ʔaak
hold in mouth	A1	ʔam	ʔum	ʔɑm
vegetable	D1	—	ʔup	ʔɑp
sleep	B1	—	ʔuu	ʔau
soil	D1	—	ʔɔɔt	ʔuət

6.1.2. Sibilants

A. The representative Buyang dialect has merged all sibilants into **θ-**, but the Yalhong variety has a fricative for ***s-** but an affricate for the others, e.g. **/θau/** 'two' but **/tsja/** 'root', and **/tsaai/** 'ask'. Paha has usually kept early fricative and affricate initials distinct.

		Paha	*Buyang*	*Pubiao*	
two	A1	θaa	θaa	ɕee	*s-
hair	A1	—	θam	θam	*s-
male	A1	—	θee	ɕje	*s-
root	A1	tɕaaŋ	θaaŋ	tɕaaŋ	*ts-
buy	A1	tɕɛn	—	—	*ts-
ask	B1	—	tsaai (Yl)	—	*ts-
pestle	D1	tɕaak	ɕiak	—	*tʃ-

B. When preceded by presyllabic nasal, the fricative has become an obstruent (e.g. ***ns-** > **nth** > **dh-**) in Paha.

		Paha	*Buyang*	*Pubiao*	
hair	A1	**dham**	**θam**	**θam**	***ns-**
pillar	A1	**dʑhuu**	**θuu**	**tɕau**	***nts-**

C. When occurring as medial, the fricatives become spirantized in Paha into either **ðh-** or **jh-**, depending on whether the original sounds were respectively alveolar (***-s-**) or alveo-palatal (***-ʃ-**; contrast 'laugh' with 'rope', for instance). The (aspirated >) breathy quality of the modern reflex is clearly the remnant of early fricatives. The medial affricate, on the other hand, has become a plain spirant (cf. 'tooth' and 'tail').

		Paha	*Buyang*	*Pubiao*	
intestine	C1	**ðhii**	—	**θai**	***ʔ-s-**
garlic	B1	**ðhɛɛ**	**θui**	**θei**	***ʔ-s-**
laugh	A1	**ðhuuu**	**θoo**	**θaau**	***ʔ-s-**
tooth	A1	**jɔɔŋ**	**θɔɔŋ**	**θuaŋ**	***ʔ-tʃ-**
rope	D1	**jhuu**	**ɕaak D2**	**θaak**	***ɦ-ʃ-**
tail	D1	**jɛt**	**ɕut D2**	**θɑt**	***ɦ-tʃ-**

Notes
For 'tooth', 'tail' and 'rope', Yalhong forms are **/tsuə/**, **/tsɔt/** and **/tsɛ/** respectively.

6.1.3. Implosives

A. This set of initials, ***ɓ-**, ***ɗ-** and ***ɖ-**, have become glottalized stops in Buyang and Pubiao. The latter two sounds, in fact, have merged in these languages. Modern Paha reflexes of ***ɓ-** and ***ɗ-** are plain voiced stops, but which are accompanied by series 1 of tones, indicating early unvoiced initials. The retroflexed ***ɖ-** is reflected as **ð-**, contrasting with **d-** for ***ɗ-**. (Cf. a similar contrast between ***t-** and ***ʈ-** , which have become Paha **t-** and **ð-** respectively).

		Paha	*Buyang*	*Pubiao*	
pluck	D1	bit	ʔbit^{n}	—	*ɓ-
orphan	C1	—	ʔbɔɔŋ	ʔbuoŋ	*ɓ-
skin	A1	—	ʔbuŋ	ʔboŋ	*ɓ-
do	A1	duu	ʔduu	—	*ɗ-
forget	D1	dap	ʔdap	ʔdjap	*ɗ-
itchy	D1	dɔɔk	ʔduk	—	*ɗ-
split	B1	—	ʔdie	ʔdaai	*ɗ-
back (side)	C1	—	ʔdaŋ	ʔdaŋ	*ɗ-
chopsticks	B1	daau	—	ʔdau	*ɗ-
crow (v.)	A1	ðaŋ	ʔdaŋ	ʔdaŋ	*ɖ-
leaf	A1	ðɛɛŋ	ʔdiaŋ	—	*ɖ-

B. Another set of words shows Buyang glottalized stop initials corresponding to Paha and Pubiao nasals. We may reconstruct for this set of initials the prenasalized counterpart of the previous implosive set, assuming that the Paha and Pubiao reflexes result from the influence of this prenasalization. As in the case of prenasalized voiceless stops, there is no evidence to distinguish *retroflexed initials from *alveolar.

		Paha	*Buyang*	*Pubiao*	
escape	A1	man	ʔban	—	*mɓ-
shoulder	B1	maa	ʔbaa	ŋaa -i	*mɓ-
navel	A1	naau	ʔduə	nau	*nɗ-
gall bladder	A1	nii	ʔdii	—	*nɗ-
moon	A1	naan	ʔdaan	nin	*nɗ-
body louse	A1	nan	tɛn A2	nan	*nɖ-

The Buyang reflex of the last example is irregular. The initial of this word has been reconstructed as Proto-Gelao ***dr-**, and may be assumed to be ***nɖr-** here. This intervoiced **-ɗ-** then became Buyang ***d- > t-** (tone series 2), contrasting with ***nɖ- > ʔd-** (tone series 1).

6.1.4. Nasals

Voiced nasals

A. This set of initials remain largely intact in modern languages, and take series 2 of tones indicating a voiced origin. In Pubiao, the reflexes are accompanied by breathiness in syllables with tones A and B; in Paha, the breathiness is never found in A tone syllables.

		Paha	*Buyang*	*Pubiao*
new	A2	**maan**	**maan**	—
tongue	A2	**maa**	**mee**	**mfijee**
yam	A2	**man**	**man**	**mfiɔn**
frost	A2	—	**mee**	**mfiɑɑi**
you	A2	**mɔɔ**	**maa**	**mfiii**
smelly	B2	**mhuu**	**mauɯ (Yl)**	**mfiuu**
beard	C2	—	**muɔm**	**muum**
mother	C2	**mhaai**	**mii**	**maai**
cloud	D2	**mhook**	**mok**	**muok**
hair	D2	**mhuut**	**mɔt (Yl)**	—
right (side)	D2	**mhit**	**mat (Yl)**	**mat**
fat	A2	**nan**	**nɐn**	**nfiin**
snow	A2	**nii**	**nei (Yl)**	**nfiei**
field	A2	—	**naa**	**nfiee**
bird	D2	**nhook**	—	**nokŋ**

give	D2	**nhaak**	**naak**	—
salt	A2	**ɳɯɯɯ**	**ɳoo**	**ɳɦũ**
tendon	A2	**ɳin C1**	**ɳin**	**ŋɤn**
snake	A2	**ŋaa**	**ŋaa**	**ŋɦɯɑ**
sesame	A2	**ŋaa**	**ŋaa**	**ŋɦɯɑ**
sleep	B2	**ŋhuu**	—	—
deaf	C2	—	**ŋat^n**	**ŋan**

B. There are other sets of words where Paha shows instead series 1 of tones. One set shows modern Paha plain nasal initials (plausibly from earlier glottalized ones), while another set shows breathy nasals. In parallel with the reconstructions set up for occlusives, we may posit medial nasals for these words.

		Paha	*Buyang*	*Pubiao*	
bear	A2	**mii A1**	—	**mɦje**	***ʔ-m-**
thick	A2	**naa A1**	**naa**	**nɦee**	***ʔ-n-**
yellow	C2	**ŋaan C1**	**ŋaan**	**ɳin**	***ʔ-ŋ-**
flower	C2	**ŋaa C1**	**ŋa (Lj)**	—	***ʔ-ŋ-**
five	A2	**mhaa A1**	**maa**	**mɦɑɑ**	***ɦ-m-**
mole	A2	**mhaai A1**	**maai**	—	***ɦ-m-**
drunk	A2	**mhii A1**	**mee**	—	***ɦ-m-**

Voiceless nasals

A. The voiceless feature of this set of initials has been kept in Pubiao and Paha. Reflexes in all languages show tone series 1, indicating original voicelessness.

		Paha	*Buyang*	*Pubiao*
belly	D1	**mhɔɔk**	—	**ɲok**
scold	B1	**ɳhaan**	**ɳɛɛn**	—
pillow	B1	**ɳhii**	**ɳee**	—
pus	B1	**ŋhuu**	**muu**	**hau**
nose	D1	**ŋhat**	—	—

Notes
For 'pus', the reflexes may point to ***hŋw-**, whose labio-velar resulted in Buyang labial **m-**. The loss of nasal quality at the velar articulation (***hŋ-**) is known to occur in many Tai dialects and is exemplified here in Pubiao.

B. There is another set of initials where Eastern Kra voiceless nasals (tone series 1) correspond to Paha voiced nasals (tone series 2). We may provisionally write preinitial ***x-** plus nasal medials for this set, assuming that the presyllable has become ***h-** in Eastern Kra but **ɣ-** in Paha before the tone split. (Cf. Proto-Tai ***x-** which has become **ɣ-** or **fi-** in certain Northern Tai dialects.)

		Paha	*Buyang*	*Pubiao*	
dog	A1	**maa A2**	—	**ɲaa**	***x-m-**
pig	A1	**muu A2**	**muu**	**ɲuu**	***x-m-**
flea	D1	**mhat D2**	**mat**	**ɲat**	***x-m-**
six	A1	**nam A2**	**nam**	**ŋam**	***x-n-**
door	A1	**ŋɯɯ A2**	—	—	***x-ŋ-**

Notes
For 'door', cf. Gelao (Lz) **/hoŋ/**, (Wz) **/ŋkau/** A1.

6.1.5. Resonants

(ɣ)w-

This initial has become **v-** in Paha and Buyang, and the postvelar approximant **G-** in Pubiao.

		Paha	*Buyang*	*Pubiao*
wing	A2	**vaa**	—	**Gɯɔ**
wind	A2	**vum**	**vɔn**	—
sieve	A2	**vaaŋ**	**vaaŋ A1**	**Gɯɔŋ**
fly (n.)	A2	—	**vɔn**	—
thin (not thick)	C2	—	**vɛɛ**	**Gaa**
go	C2	**vaa**	**vaa**	—

j-

The reflexes of this initial are straightforward and all show series 2 of tones.

		Paha	*Buyang*	*Pubiao*
mosquito	A2	**jaaŋ**	**jaaŋ**	**jfiaaŋ**
sorghum	A2	**jaaŋ C1?**	**jaaŋ**	—
rain	A2	**jin**	**juɔt**	—
oil	B2	**jhuu**	—	**jfiuu**
y brother	B2	—	**juɔ**	—
rest	C2	—	**jaŋ**	**juŋ**
son-in-law	C2	**jhuu**	—	**jau**
grandmother	C2	**jhaa**	**jaa**	—

One example shows a Paha reflex in tone series 1 instead, perhaps pointing to medial ***-j-**.

neck	A2	**juuu A1**	**joo**	—

l- and *ɭ-

As in the case of stops and implosives, the retroflexed initial is distinguished from the alveolar by the Paha spirantal reflex ð- (cf. *ʈ- and *ɖ- which also became Paha ð-). Reflexes of these initials have series 2 of tones, indicating original voicing.

		Paha	*Buyang*	*Pubiao*
armpit	A2	—	lie	lfiii
behind	A2	lan	lɔn (Yl)	—
above	A2	—	luu	lfiuu
earth	B2	—	luu	lfiuu
lick	C2	—	lɛɛm	liam
wear	C2	lhii	lee	—
steal	C2	lham	luɔm	—
child	D2	lhaak	laak	—
vegetable	A2	ðuŋ	—	—
star	A2	ðɔɔŋ	lɔɔŋ	lfiuuŋ
hawk	C2	ðaaŋ	laaŋ	laaŋ

hl-

This is the voiceless counterpart of the voiced lateral *l-. As in the case of voiceless nasals, the voiceless feature has been kept in Paha and Pubiao. All reflexes show series 1 of tones.

		Paha	*Buyang*	*Pubiao*
heart	C1	lhin	—	—
deep	D1	lhak	lak	lak
stomach	A1	luŋ -i	luŋ	loŋ

r-

This initial has become a spirant in some languages. In Yalhong dialect, the voiced spirant reflex has further devoiced into **ɬ-**, but still shows tone series 2 indicating early voicing. Among the examples below, Yalhong has **/ɬaa/** 'bee', **/ɬɔŋ/** 'rotten' and **/ɬak/** 'wet'. The Paha reflex **/ð-/** is the same as that of retroflexed initials.

		Paha	*Buyang*	*Pubiao*
bee	A2	**ðii**	**ðee**	**rfiɑɑi**
rotten	B2	**ðhuŋ**	**ðuŋ**	—
sick	C2	**ðii**	**ðii**	**rai**
write	C2	**ðaai**	**ðaai**	—
take by force	D2	**ðhaak**	—	—
wet	D2	—	**ðak**	**rak**
crab	D2	**ðhaat**	**ðaat**	—

hr-

This is the voiceless counterpart of the previous initial. All reflexes show tone series 1. The Pubiao variant reflex **h-** is probably conditioned by the following rime (***-um**), but examples are too few to be precise about the exact cause.

		Paha	*Buyang*	*Pubiao*
shrink	D1	—	**ðut**	**ɾut**
cut	C1	**ðan**	—	**ɾan**
drink	C1	**ðam**	**ham (Yl)**	**hɑm**

6.1.6. Other complex onsets

6.1.6.1. Stop presyllabic initials plus resonant medials

A. The presyllabic grave initials (***p-** and ***k-**) were usually lost in Buyang, while they were clustered with the resonants of the main syllable in Pubiao (the

resonants might then be lost after velars). Reflexes in these languages have tone series 2 according to the voicing of the main syllable resonant initials. In Paha, the presyllabic initials have sometimes clustered with resonants, and the tones were always assigned according to the voiceless pre-initials.

		Paha	*Buyang*	*Pubiao*	
afraid	A2	**pjaa A1**	**laa**	—	***p-l-**
rock	A2	**pɣaa A1**	**ðaa**	**pɦjɑɑ**	***p-r-**
ear of grain	A2	—	**ðaaŋ**	**pɦjɑɑŋ**	***p-r-**
ear	A2	**kaa A1**	**ðaa**	**(qa) rfiɑɑ**	***k-r-**
tall	A2	**vhəəŋ A1**	**vaaŋ**	**qfiɑɑŋ**	***k-(ɣ)w-**
far	A2	**ðhii A1**	**lii**	**qfiai**	***k-l-**

B. The alveolar presyllabic initial was also lost in Buyang, and we may generalize that the stop presyllabic initials all disappeared in this language, leaving modern resonant reflexes with tone series 2. In Pubiao, the alveolar stop preinitial with lateral release (***t-l-**) has resulted in voiceless fricative **ɬ-**. In Paha, it must have first become a velar cluster ***kl-**, whose lateral medial was then lost. (A number of etyma reconstructible with **-l-** clusters in Southwestern Kra also lost their medial in Paha, e.g. Gelao (Wz) **/plɒ/**, Laha **/plaat/**, Paha **/pɛ/** 'blood'; Gelao (Lz) **/plo/**, Paha **/baŋ/** 'peach').

		Paha	*Buyang*	*Pubiao*	
flow	A1	**qui**	**lui A2**	**ɬei**	***t-l-**
sunny	A1	**qaaŋ**	—	**ɬaaŋ**	***t-l-**
medicine	A1	**qaau**	**luə A2**	—	***t-l-**
waist	C1	**quu**	—	—	***t-l-**
fingernail	D1	**ɣap**	**lip D2**	—	***ʈ-l-**

The Paha reflex in the last example is irregular. We provisionally assume that the preinitial might have been retroflexed ***ʈ-** which normally gives a Paha

spirant reflex **ð-**, but which has further dissimilated into a velar, i.e. ***ʈ-l-** > **ɣ-** in parallel with ***t-l-** > (***kl-**) > **q-**.

6.1.6.2. Clusters with velar stop as initials

The following set of examples seem to point to velar clusters with resonant medials. The initial appears to have been generally fricated and become **h-** and **qx-** in Buyang and Pubiao respectively (with the exception of medial ***-(ɣ)w-** which does not fricate the initial in Pubiao. In Paha, the medial **-r-** is dropped (cf. ***k-r-** > **k-** above), while the palatal medial has induced (frication >) breathiness (which was lost in A tone syllables).

		Paha	*Buyang*	*Pubiao*	
heavy	A1	**qan**	**han**	**qxan**	***kj-**
light	C1	**ghaa**	—	**qxan B1**	***kj-**
dry (a.)	B1	**ghaa**	**haa**	**qɣaa -i**	***kj-**
paddy	A1	—	**haaŋ**	**qxaaŋ**	***kj-**
road	A1	—	**hun**	**qxwɑn**	***kr-**
house	A1	**qaan**	—	—	***kr-**
blood	C1	—	**haa**	**qaa**	***k(ɣ)w-**
ladder	A1	—	**hɔɔŋ**	**quuŋ**	***k(ɣ)w-**

6.1.6.3. Nasal presyllabic initial

The following examples may point to another type of complex onsets with presyllabic nasal plus resonant, ***m-r-**:

		Paha	*Buyang*	*Pubiao*	
eight	A2	**muu**	**ðuu**	**ɲfiuuu**	***m-r-**
year	A2	**mɛɛŋ**	**ðiaŋ**	—	***m-r-**

6.2. PCEK RIMES

PCEK shows a six vowel system similar to that of PSWK. In open rimes, at least four diphthongs may also be reconstructed: ***-ai**, ***-aɯ**, ***-au** and ***-ui**. In closed rimes, the six proto-vowels have paired up into three sets with contrastive length (similar to the system found in Western Kra). Seven final consonants are reconstructible: three nasals (***-m**, ***-n**, ***-ŋ**), three stops (***-p**, ***-t**, ***-k**) and a liquid (***-l**). These endings, except ***-l**, are kept very much intact in the languages of this branch.

6.2.1. Open rimes

6.2.1.1. ***-aa**

This rime has become **-aa** in all languages. But Pubiao shows certain variants: front vowel **-ee** after acute initials and back vowel **-ɑɑ** after breathy initials. In addition, the velar onglide has been added after velar breathy initials and the reflex becomes **-ɯɑ**.

		Paha	*Buyang*	*Pubiao*
shoulder	B1	**maa**	**ʔbaa**	**ɱaa**
cogon grass	A1	**qaa**	**ʔaa**	**qaa**
dry	B1	**ghaa**	**haa**	**qɣaa**
nine	B1	**dhaa**	**vaa**	**ɕjaa**
eye	A1	**daa**	**taa**	**tee**
two	A1	**θaa**	**θaa**	**ɕee**
thick	A2	**naa A1**	**naa**	**nʃee**
field	A2	—	**naa**	**nʃee**
five	A2	**mhaa A1**	**maa**	**mʃiɑɑ**
fish	A1	**pjaa**	**pjaa**	**pʃijɑɑ A2**
stone	A2	**pɣaa A1**	**ðaa**	**pʃijɑɑ**
ear	A2	**kaa A1**	**ðaa**	**rʃiɑɑ**
snake	A2	**ŋaa**	**ŋaa**	**ŋʃiɯɑ**
sesame	A2	**ŋaa**	**ŋaa**	**ŋʃiɯɑ**

6.2.1.2. ***-ii**

This rime remains **-ii** in Paha and Buyang, but diphthongized into **-ai** in Pubiao. The last example is somewhat irregular, showing **-ai** in all languages. This is the only example of ***-ii** following a velar, and there has been no counter-example for explaining the variant correspondence as conditioned by the initial.

		Paha	*Buyang*	*Pubiao*
tree	A1	**tii**	—	**tai**
far	A2	**ðhii A1**	**lii**	**qxai**
short	C2	—	**tii**	**tai**
sick	C2	**ðii**	**ðii**	**rai**
walk	A1	**vhii**	**vii A2**	—
intestine	C1	**ðhii**	—	**sai**
chicken	A1	**qai**	**ʔai**	**qai**

6.2.1.3. ***-ee**

This rime remains **-ee** in Buyang, but in Paha has merged with ***-i** and become **-ii**. Pubiao has diphthongized the rime into **-aai**, which further became **-ɑɑi** after breathy initials (cf. the parallel diphthongization of ***-oo** > **-aau**). The conditions for the variant **-ee** are still unclear.

		Paha	*Buyang*	*Pubiao*
seed	A1	**pii**	**pee**	—
comb (n.)	A1	**ðhii**	**θee**	—
wear	C2	**lhii**	**lee**	—
goat	C2	**mhii**	—	—
bear (n.)	A2	**mii A1**	—	**mɲje**
male	A1	—	**θee**	**ɕje**
pillow	B1	**ɳhii**	**ɳee**	—

choose	B2	**θii**	**lee**	—
frost	A2	—	**mee**	**mɦɑɑi**
bee	A2	**ðii**	—	**rɦɑɑi**

6.2.1.4. ***-uu**

The development of this rime resembles that of ***-i**. It remains **-uu** in Paha and Buyang, but has diphthongized into **-au** in Pubiao (except after labials where it also remains **-uu**). In addition, Pubiao shows a central variant **-ɯɯ** after rhotic **r-**.

		Paha	*Buyang*	*Pubiao*
pus	B1	**ŋhuu**	**muu**	**hau**
saliva	B1	**ðuu**	**tuu B2**	**tau**
old	B1	**quu**	**ʔuu**	**qau**
wild cat	C1	**quu**	**ʔuu**	**qau**
horn	A1	**ɣuu**	**ʔuu**	**qau**
ash	B1	**duu**	**tuu**	**tau**
do	A1	**duu**	**ʔduu**	—
sleep	B1	**(ŋhuu B2)**	**ʔuu**	**ʔau**
pillar	A1	**dʑhuu**	**θuu**	**tɕau**
I	A1	**kuu**	**kuu**	**kau**
three	A1	**tuu**	**tuu**	**tau**
son-in-law	C2	**jhuu**	—	**jau**
knee	B1	**ʁoo**	**huu B2**	**qau**
eight	A2	**muu**	**ðuu**	**rɦɯɯɯ**
ripe	B1	**muu**	**muu**	—
smelly	B2	**mhuu**	—	**mɦuu**
pig	A1	**muu**	**muu**	**ɱuu**

6.2.1.5. ***-oo**

This rime remains Buyang **-oo**, but centralized to **-ɯɯ** in Paha. Pubiao shows a long back diphthong **-aau**, parallel with **-aai** from ***-ee**.

		Paha	*Buyang*	*Pubiao*
neck	A2	**jɯɯ A1**	**joo**	—
door	A1	**ŋɯɯ A2**	—	—
laugh	A1	**ðhɯɯ**	**θoo**	**θaau**
salt	A2	**n̥ɯɯ**	**n̥oo**	**(n̥ĥũ)**

6.2.1.6. ***-ə-**

This rime has merged with ***-aa** in Paha and Buyang. In Pubiao, it has become **-ee**, which is further raised to **-ii** after breathy initials. After velar onsets, an onglide **-ɯ-** is added, and the reflex become **-ɯə.** The reconstruction of this rime is somewhat tentative. *Pubiao initials* **p-** *and* **G-** *are not currently* found with ***-aa**, and thus the reflexes here may be conditioned variants of that rime. Also, the first three etyma are kinship terms, numerals, or pronouns, which may at times undergo peculiar sound changes due to pragmatic factors.

		Paha	*Buyang*	*Pubiao*
father	B1	**paa**	**paa**	**pee**
four	A1	**paa**	**paa**	**pee**
you	A2	**məə -v**	**maa**	**mfiii**
wing	A2	**vaa**	—	**Gɯə B**

6.2.1.7. ***-aɯ**

This rime has merged with ***-au** and become **-aau** in Paha, but has merged with ***-uu** and become **-au** in Pubiao. Buyang shows a mid vowel reflex **-ə** with rounded onglide.

		Paha	*Buyang*	*Pubiao*
navel	A1	**naau**	**ʔduə**	**nau**
meat	C1	**ʔaau**	**ʔuə**	**ʔjau**

younger brother	B2	—	**juə**	—
male/husband	C1	**vaau**	—	—
medicine	A1	**qaau**	**luə A2**	—

6.2.1.8. ***-ai**

This rime has become **-aai** in all languages. The Pubiao reflex is the same as that of ***-ee**.

		Paha	*Buyang*	*Pubiao*
love	A1	**ŋaai**	**maai**	**ŋaai**
good	A1	**ʔaai**	—	**ʔaai**
bite	B1	**ðaai**	—	—
monkey	C1	**taai**	—	—
see	C1	**qaai**	—	—

6.2.1.9. ***-au**

This rime has become Paha **-aau**, parallel with Paha **-aai** for ***-ai**. Pubiao shows a monophthong **-oo** (while ***-oo** has become **-aau**, cf. 6.2.1.5).

		Paha	*Buyang*	*Pubiao*
nest	C1	**ðaau**	—	**θoo**

6.2.1.10. ***-ui**

This rime is usually reflected as Pubiao **-ei**. Paha has kept the diphthong after grave initials, otherwise merging it with ***-ii**. Buyang has normally kept the diphthong, except in the first example where the high rounded vowel **-u-** of the diphthong has fricated the preceding bilabial initial and been lost (***pui** > **pβ^{w}i** > **fii**).

		Paha	*Buyang*	*Pubiao*	
fire	A1	**pui**	**fii**	**pei**	***-ui**
flow	A1	**qui**	**lui**	**lei**	***-ui**
snow	A2	**nii**	—	**nfiei**	***-ui**

6.2.1.11 Summary of PECK open rimes

	Paha	*Buyang*	*Pubiao*
*-aa	-aa	-aa	-aa
*-íí	-íí	-íí	-aí
*-ee	-ii	-ee	-aai
*-uu	-uu	-uu	-au
*-oo	-uuu	-oo	-aau
*-ɔɔ	-aa	-aa	-ee
*-ai	-aai	-aai	-ai
*-auɯ	-aau	-uɔ	-au
*-au	-aau	—	-oo
*-ui	-ui	-ui	-ei

6.2.2. Closed rimes

6.2.2.1. ***-a-***

This vowel generally remains **-a-** in all languages. For rimes ***-an** and ***-al**, Buyang adopts variants **-ə-** after labiodental **v-**, and **-ɛ-** after acute consonants. In Pubiao, the reflex may be raised by breathy initials to **-ə-**, which further becomes **-i-** between acute consonants (e.g. 'fat').

		Paha	*Buyang*	*Pubiao*
hair	A1	—	θam	θam
black	A1	lham	ʔdam	ʔdam
six	A1	nam A2	nam	ŋam
bitter	A1	qam	ʔam	—
egg	A1	ðam	tam	—
plant	C1	tam	tam	tap

hatch	C1	**qam**	**ʔam**	**qam**
bite	C2	—	**ðam**	**ram**
dream	A1	**van**	**pan**	**pan**
have/stay	A1	**ʔan**	**ʔan**	**ʔan**
sun	A1	**vhan**	**vən**	**wfiən A2**
fly (n.)	A2	—	**vən**	—
scold	B1	**ɳhan**	**ɳɛn**	—
crow (v.)	A1	**ðaŋ**	**ʔdaŋ**	**ʔdaŋ**
rest	C2	—	**jaŋ**	**ʐuuŋ**
back	C1	—	**ʔdaŋ**	**ʔdaŋ**
peach	A1	**baŋ**	—	**paŋ**
forehead	A1	**ðaŋ**	—	**ʔdaŋ**
liver	D1	**tap**	**tap**	**tjap**
close eye	D2	—	**nap**	**nap**
forget	*D1*	***dap***	***ʔdap***	***ʔdjap***
flea	D1	**mhat D2**	**mat**	**ɱat**
nose	D1	**ŋhat**	—	—
chest	D1	**tak**	**tak**	**tak**
hear	D2	**jhak**	—	**tɕak**
deep	D1	**lhak**	**lak**	**ɬak**
wet	D2	—	**ðak**	**rak**

6.2.2.1.1.

Words in the following set have been reconstructed with PSWK ***-al**. Cf. Laha **/khal/** 'heavy', **/mnal/** 'fat', **/mdal/** 'louse', **/mal/** 'yam', **/jal/** 'rain', **/kel/** 'iron', and **/ŋal/** 'deaf'. Eastern Central Kra languages usually show the merger of this rime with ***-an**, but the Yalhong variety (Southern Buyang) has kept the distinction between the two by showing reflexes **-an** for ***-an** but **-at** for ***-al**.

For the examples below, Yalhong has the following forms: **/ʔbɔt/** 'escape', **/nɔt/** 'fat', **/ʔdɔt/** 'louse', **/ʑuut/** 'rain', **/qat/** 'iron, and **/iit/** 'deaf' (for ***ŋ- > ø-** in the last example, cf. Yalhong **/iiə/** Buyang **/ŋaai/ A1** 'maggot').

		Paha	*Buyang*	*Pubiao*
heavy	A1	**qan**	**han**	**kxan**
escape	A1	**man**	**ʔban**	—
fat	A2	**nan**	**nɛn**	**nfiin**
body louse	A2	**nan A1**	**tɛn**	**nan A1**
yam	A2	**man**	**man**	**mfiən**
rain	A2	**jin**	**juɔt**	—
iron	C1	**qan**	—	—
deaf	C2	—	**ŋat^{n}**	**ŋan**

Notes

The change from nasal > stop or preploded nasal ending (e.g. **-m > -p** and **-n > -t^{n}**) occurs sporadically in a few Pubiao and Buyang forms with tone C (cf. 'plant' (v.) and 'deaf'). This was probably caused by the glottal constriction at the end of the syllable that accompanied this proto-tone in these languages.

6.2.2.2. ***-aa-**

This rime has become **-aa-** in all languages. Pubiao shows variants **-ɑɑ-** after breathy initials and **-ɯə-** after velars (cf. the same change as in the open rime ***-aa**). Paha shows an instance of the shift from **-aa- > -əə-**, perhaps influenced by the breathy initial (cf. 'tall').

		Paha	*Buyang*	*Pubiao*
thorn	C2	**ŋaan**	**ŋ̊aan**	**ŋɯən**
ax	A1	**qɣaan**	**ʔaan**	—
tall	A2	**vhəəŋ A1**	**vaaŋ**	**qfiɑɑŋ**
hawk	C2	**ðaaŋ**	**laaŋ**	**laaŋ**
mosquito	A2	**jaaŋ**	**jaaŋ**	**jaaŋ**

cooked rice	A1	—	**haaŋ**	**qhaaŋ**
sieve	A2	**vaaŋ**	**vaaŋ** A1	**Guɔŋ**
handspan	D1	**gaap**	**kaap**	**kuɔp**
bathe	D1	**ʔaap**	—	—
needle	D1/2	—	**ŋaat**	**ŋuɔtⁿ**
ladder	D1	**tɕaat**	—	—
crab	D2	**ðhaat**	—	—
sock	D2	**maat**	**maat**	**maat**
fruit	D1	**maak**	**maak**	**mjaak** D2
give	D2	**nhaak**	**naak**	—
crow (n.)	D1	**ʔaak**	—	**ʔaak**
child	D2	**lhaak**	—	—

The following set of words has PSWK final ***-l**. Again, the Yalhong variety shows final **-t** for the rime reconstructible as ***-aal**, contrasting with **-aan** for ***-aan**. For the examples below, Yalhong has the following forms: **/maat/** 'new', **/ŋaat/** 'yellow'. Cf. also Laha **/maal/** 'new', **/saal/** 'husked rice' and **/ŋil/** 'yellow'. The last example seems to show an alternation between ***-aal** and ***-iil**.

		Paha	*Buyang*	*Pubiao*
new	A2	**maan**	**maan**	—
husked rice	A1	—	—	**θaan**
yellow	C2	**ŋaan**	**ŋaan**	**ŋin**

6.2.2.3. ***-i-***

This vowel remains **-i-** in Paha and Buyang. Paha shows an instance of **-i-** > **-a-** after spirant initial ('fingernail'). Pubiao has lowered the vowel to **-a-**, which variantly become **-ɑ-** before velars (e.g. 'nose') or **-ə-** after breathy initials (e.g. 'tendon').

		Paha	*Buyang*	*Pubiao*
tendon	A2	**ŋ̍in C1**	**ŋ̍in**	**ŋfiən**
nose	C1	—	**tiŋ**	**tɯŋ**
raw	D1	—	**ʔdip**	**ʔdap**
fingernail	D1	**ɣap**	**lip D2**	—
pluck	D1	**bit**	**ʔbitn**	—
right (side)	D2	**mhit**	—	**matn**
weep	D2	**ŋ̍hit**	**ŋ̍iet D1**	—

Notes
The last example seems to show alternation between ***-it** (Paha) and ***-iit** (Buyang).

The following examples show the Laha reflex of the rime ***-il**: **/dəl/** 'shallow' and **/thəl/** 'sweet'. Paha and Pubiao, as expected, have merged the rime with ***-in** (Paha ***-in** > **-an** after spirants). But the Buyang reflex looks like it goes back to ***-iil**, perhaps due to the medial **-j-** reconstructible for these two etyma (***dj-** and ***tj-** respectively).

		Paha	*Buyang*	*Pubiao*
shallow	B1	**ðan**	**tien B2**	**ʔdan**
sweet	C1	—	**ʔjen**	—

6.2.2.4. ***-ii-**

This proto-vowel has been found mainly before velar endings. Before velars, Buyang has diphthongized the vowel into **-ia-**, which further monophthongized back to **-ɛɛ-** in Paha. The few instances of the vowel before labials and alveolars suggest that in Buyang the reflex is variantly front **-ie-** before alveolars (e.g. 'weep') and (**-iɛ** >) **-ɛɛ-** before labials (e.g. 'lick'). In Pubiao, the vowel has normally diphthongized into **-ie-**, which becomes **-e-** before velars.

		Paha	*Buyang*	*Pubiao*
lick	C2	—	**lɛɛm**	**liem**
cucumber	A1	**dɛɛŋ**	**tiaŋ A2**	—

leaf	A1	ðɛɛŋ	ʔdiaŋ	—
hot	C1	pɛɛŋ	—	—
year	A2	mɛɛŋ	ðiaŋ	—
ginger	A1	qɣɛɛŋ	ɕiaŋ	qeŋ
deer	D1	—	—	ʔdiet
weep	D1	(n̥hit)	n̥iet	—
full	D1	dɛɛk	tiak	tek
excrement	D1	—	ʔiak	ʔjek

6.2.2.5. ***-u-**

This vowel remains **-u-** in Buyang. In Paha, the vowel has centralized into **-a-** before labials and alveolars; the reflex has further fronted to **-ɛ-** after palatal initials (e.g. 'tail'). The vowel has remained **-u-** before velar nasal, but has become **-ɔɔ-** (merging with ***-uu-**) before velar stop. In Pubiao, the vowel has lowered to **-ɑ-** (with onglide **-w-** after velar initial, e.g. 'road') before labials and alveolars, and to **-o-** before velars. The reflex has become **-ə-** after breathy initials (e.g. 'rain'). Cf. the parallel lowering of the high vowel ***-i-** > **-a-/-ɑ-** in this language.

		Paha	*Buyang*	*Pubiao*
hold in mouth	A1	ʔam	ʔum	ʔɑm
drink	C1	ðam	ham (Yl)	hɑm
steal	C2	lham	(luɔm)	—
road	A1	—	hun	kxwɑn
rain	A2	—	mun	mfiən
back/behind	A2	lan	—	—
skin	A1	—	ʔbuŋ	ʔboŋ
stomach	A1	luŋ	luŋ	ɬoŋ
rotten	B2	ðhuŋ	—	—
vegetable	A2	ðuŋ	—	—

vegetable (2)	D1	—	ʔup	ʔɑp
fart	D1	ðat	tut	tɑt
tail	D1	jet	ɕut	θɑt
shrink	D1	—	ðut	ʂɑt
ten	D1	vat	put	pɑt
fall	D1	tɔɔk	tuk	—
foot	D1	kɔɔk	—	—
itchy	D1	dɔɔk	ʔduk	—
belly	D1	mhɔɔk	—	ɱok
bird	D2	nhook	—	nokˀ

The following example has corresponding final **-l** in Laha: **/col/**. The Paha reflex is as expected ***-ul > *-un > -ɛn** (after palatal initial, cf. 'tail' above).

		Paha	*Buyang*	*Pubiao*
buy	A1	tɕɛn	—	—

6.2.2.6. ***-uu-**

This vowel has diphthongized in Buyang into **-uə-** before labials and further become **-ɔɔ-** before alveolar and velar endings. Paha regularly shows **-ɔɔ-**, which raised to **-oo-** after breathy initials (e.g. 'cloud'). Pubiao shows a number of variants. Before velars, the vowel reamins **-uu-** after breathy initials ('star') or rounded medials ('ladder', from ***kw-**). Otherwise the vowel is diphthongized into **-ua-** ('tooth' and 'cloud'), which becomes **-ɔ-** in ***C** tone syllables ('water' and 'orphan'). Before alveolar, the vowel has become **-uə-**.

		Paha	*Buyang*	*Pubiao*
beard	C2	—	muəm	muum
steal	C2	(lham)	luəm	—
teach	A1	—	θɔɔn	θuən

spirit	A2	—	ŋɔɔn	ŋɦiuən
front/before	A1	qɔɔn	ʔɔɔn	—
tooth	A1	jɔɔŋ	θɔɔŋ	θuaŋ
star	A2	ðɔɔŋ	lɔɔŋ	lɦiuuŋ
water	C1	ʔɔɔŋ	ʔɔɔŋ	ʔɔŋ
ladder	A1	—	hɔɔŋ	quuŋ
drum	A2	—	lɔɔŋ	—
orphan	C1	—	ʔbɔɔŋ	ʔbɔŋ
soil	D1	—	ʔɔɔt	ʔuət
cloud	D2	mhook	mok -v	muak
white	D1	lɔɔk	ʔɔɔk	—

One example shows the Laha reflex ***-uul: /lul/ C1** 'heart'. The related form in Central Eastern Kra has been only found in Paha, but its reflex seems to point to ***-in/-il: /lhin/ C1**.

6.2.2.7. Summary of PCEK closed rimes

The low vowels ***-a-** and ***-aa-** stay largely intact before all finals, while the reflexes of the high vowels ***-i-**, ***-ii-**, ***-u-** and ***-uu-** may be conditioned by endings. The long high vowels ***-ii** and ***-uu** usually broke into diphthongs (**-iə-** and **-uə-** or their variants), which may be further monophthongized back to low vowels (**-ɛɛ-** and **-ɔɔ-** respectively). The short high vowels ***-i-** and ***-u-**, on the other hand, may be laxed into **-a-/-ɑ-** (or their variants); this regularly occurs in Pubiao and, to a lesser degree, in Paha. Rimes with final liquid ***-l** have generally merged with those with the alveolar nasal ***-n**, but the Yalhong language (Southern Buyang) shows final stop **-t** for the former contrasting with the expected nasal **-n** for the latter.

	Paha	*Buyang*	*Pubiao*
*-a-	-a-	-a-	-a-
*-aa-	-aa-	-aa-	-aa-
*-ip	-ap	-ip	-ap
-in/-il	-in	-in	-an
*-it	-it	-it	-at
*-iŋ	—	-iŋ	-ɑŋ
*-iim	—	-ɛɛm	-iem
*-iit	—	-iet	-iet
*-iiŋ	-ɛɛŋ	-iaŋ	-eŋ
*-iik	-ɛɛk	-iak	-ek
*-um	-am	-um	-ɑm
*-up	—	-up	-ɑp
-un/-ul	-an	-un	-ɑn
*-ut	-at	-ut	-ɑt
*-uŋ	-uŋ	-uŋ	-oŋ
*-uk	-ɔɔk	-uk	-ok
*-uum	—	-uɜm	-uom
*-uun	-ɔɔn	-ɔɔn	-uɜn
*-uut	—	-ɔɔt	-uɜt
*-uuŋ	-ɔɔŋ	-ɔɔŋ	-uoŋ
*-uuk	-ɔɔk	-ɔɔk	-uok

CHAPTER 7

PROTO-KRA

In this concluding chapter, we will be offering as a summary the system of Proto-Kra onsets, rimes, and tones. These are mainly based on the evidence and lower level reconstructions which have been discussed in Chapters 3 to 6 of this study. Over 300 etyma arranged according to semantic areas will be provided in the Appendix.

7.1. PROTO-KRA ONSETS

p	t	ʈ	ts	tʂ	tʃ	c	k	ʔ
b	d	ɖ	dz	dʐ	dʒ	ɟ	g	
m	n	ɳ				ɲ	ŋ	
w	l	r	z		ʒ	j	ɣ	
			s		ʃ		x	

In the following sections, supporting forms are mainly provided from three languages of different branches: Gelao (Wanzi), Laha (Nong Lay) and Paha. Other varieties and languages may be cited when forms in the representative languages are lacking.

7.1.1. Voiceless obstruents.

Voiceless stops

These consonants generally show straightforward reflexes across languages. Evidence from Paha suggests that these sounds may appear as medials. They have become Paha voiced stops when preceded by an early nasal (symbolized by ***m-**) and Paha spirants when preceded by other pre-initials (symbolized by ***C-**).

		Gelao	*Laha*	*Paha*	
fire	A1	**pai**	**pɔi**	**pui**	***p-**
three	A1	**ta**	**tɔu**	**tuu**	***t-**
egg	A1	**tan**	**tam**	**ðam**	***ʈ-**
old	B1	**qa**	**kou**	**quu**	***k-**
water	C1	**ʔɔɯ**	**ʔuŋ**	**ʔɔɔŋ**	***ʔ-**
bran	B1	**pau**	**paa**	**bwaa**	***m-pw-**
full	B1	**tei**	**tik**	**dɛɛk**	***m-t-**
eye	A1	**tau**	**taa**	**daa**	***m-ʈ-**
handspan	D1	—	**ko (Lc)**	**gaap**	***m-k-**
male/husband	C1	**po (Qs)**	**po (Lc)**	**vaau**	***C-p-**
fart	D1	**tæ (Lz)**	**tɻ (Lc)**	**ðat**	***C-t-**
head louse	A1	**ta**	**tou**	**ðhuu**	***C-ʈ-**
leg	A1	**qau**	**kaa**	**ɣaa**	***C-k-**

Notes
For the distinction between ***m-t-** and ***m-ʈ-**, cf. Gelao (Qs) **/tai/** 'full' and **/ze/** 'eye' respectively. Paha normally keeps ***t-** and ***ʈ-** separated (cf. 'three' and 'egg'), but the distinction has apparently been neutralized after prenasalization.

Voiceless sibilants

Like stops, sibilants may appear either as initials or medials. After nasal onset in Paha, the fricative has become a stop, leaving a trace of its continuant quality as (aspirated>) breathiness of the reflex (***m-s- > mth- > dh-**). Proto-Gelao palatal ***c-** is doubtful at this level, and may have developed from an earlier cluster, namely Proto-Kra ***pj-**, as in 'paddy' (PG ***ca** A1, Pubiao **/pjee/** A1).

		Gelao	*Laha*	*Paha*	
two	A1	**su**	**saa**	**θaa**	***s-**
buy	A1	**sen**	**col**	**tɕɛn**	***ts-**

satisfied	B1	**tshai**	**ɕi**	—	***tʃ-**
teach	A1	**səɯ**	**tɕe (Lc)**	—	***tʂ-**
descend	C1	**tsəɯ**	**cau**	—	***c-**
laugh	A1	**sa**	**sɔ**	**ðhuɯɯ**	***C-s-**
tooth	A1	**sei (Lc)**	**cuŋ**	**jɔɔŋ**	***C-tʃ-**
rope	D1	**tshei**	—	**jhuu**	***C-ʃ-**
hair	A1	**san**	**sam**	**dham**	***m-s-**
pillar	A1	**sa**	**cou**	**dʑhuu**	***m-tʂ-**

7.1.2. Voiced obstruents

Early voiced obstruents may be divided into two sets. The stops (***b-**, ***d-** and ***ɖ-**) are better recognized as implosives, which have become glottalized voiced stops (with tone series 1) in the Central Eastern Kra branch. Examples with velar stop (***g-**) are rare, and are mainly found in clusters with **-j-** or **-w-** (cf. 7.1.4.1). Voiced sibilants, on the other hand, remain voiced in all languages. This split development of early voiced obstruents may not be surprising. Constraints on the configurations and airstream needed in producing implosives exclude non-stop sounds and disfavor velar articulation.

Voiced implosives

		Gelao	*Laha*	*Paha*	
pluck	D	—	**bət D2**	**ʔbit D1**	***b-**
do	A	**tha A2**	**dəu A2**	**duu A1**	***d-**
crow (v.)	A	**thaŋ A2**	**daŋ A2**	**ðaŋ A1**	***ɖ-**
shoulder	B	—	**baa B2**	**maa B1**	***m-b-**
gall bladder	A	**di A2 (Lz)**	**dəi A1 -t**	**nii A1**	***m-d-**
navel	A	**zo A2 (Qs)**	**dau A2**	**naau A1**	***m-ɖ-**

Notes

As in the case of voiceless stops, the distinction between alveolar and retroflexed stops appears to have been neutralized after prenasalization in Paha.

There are instances which may suggest medial ***-d-**. For example, 'forehead' ***C-daŋ A**: Gelao (Qs) **tã A2**, Laha **daŋ B2**, Paha **ðaŋ A1**, Pubiao **ʔdaŋ A1**. If the onset was a retroflexed initial ***ɖ-** (as might be suggested by the Paha reflex), the Gelao (Qs) reflex should be **/z-/**. Thus we may assume instead that the Paha spirant /**ð-**/ has developed from an intervocalic ***-d-** (cf. PK ***-t-** > Paha **ð-**).

Voiced sibilants

Supporting evidence for voiced sibilants is uneven. While ***ʒ-** and ***dʒ-** may be reconstructed without difficulty, alveolar and retroflexed sounds are only found in a few examples. PG ***ʝ-**, like its voiceless counterpart ***c-**, may be doubtful at this level and might alternatively be considered as an approximant ***j-**.

		Gelao	*Laha*	*Paha*	
field	C2	**zəɯ**	**haa B2**	—	***z-**
chopsticks	C/B	**tsəɯ C2**	**dɔ B2**	**daau B1**	***dz-**
mountain	A2	**tsha**	**tɕfii (Lc)**	—	***dʑ-**
y brother	B2	**tsəɯ**	**jau**	**juə (By)**	***ʒ-**
mosquito	A2	**tɕhi**	**mjaaŋ B2**	**jaaŋ**	***dʒ-**
grandmother	C2	**ʑo**	**ʑu (Lc)**	**jhaa**	***ʝ-**

7.1.3. Nasals

7.1.3.1.

Nasals may also appear as initials or medials. Paha reflexes show tonal series 1 when preceded by a presyllable ***C-**, probably indicating that the pre-initials had led to preglottalization of the nasals in this language. In other languages, the presyllables often dropped without trace (and the reflexes show tone series 2, as is characteristic of ordinary voiced nasals). The nasal pre-initial ***m-**, if it ever existed, must have become indistinguishable from the medial nasals.

		Gelao	*Laha*	*Paha*	
new	A2	**mu**	**maal**	**maan**	***m-**
cow	A2	**ntai**	**nəi**	—	***n-**

bird	D2	**ntau**	**nok**	**nhook**	***ɳ-**
salt	A2	**ɳ̊tɕəɯ**	**ɳ̊ɔ**	**ɳ̊ɯɯɯ**	***ɳ̊-**
snake	A2	**ŋkau**	**ŋaa**	**ŋaa**	***ŋ-**
bear	A2	**mi (Lz)**	**mɛ**	**mii A1**	***C-m-**
thick	A2	**ntau**	**naa**	**naa A1**	***C-n-**
yellow	C2	**ɳ̊tɕi**	**ŋil**	**ŋaan C1**	***C-ŋ-**

7.1.3.2.

A set of voiceless nasals may be reconstructed in addition to voiced nasals. It is possible to hypothesize that the voicelessness has resulted from preceding onsets, namely ***s-**, but no concrete evidence has been found.

Within this set, there are also certain special etyma where Paha (and certain Gelao dialects such as Qiaoshang) show tone series 2 instead. We have provisionally reconstructed these with a velar pre-initial ***x-** based on the fact that it has caused medial labial nasals from to become dorsal in some languages (e.g. Gelao (Qs) **/ŋqwau A2/** 'dog' and **/ŋqwa D2/** 'flea'), while in other languages it has left its trace only in the voicelessness of the nasals.

		Gelao	*Laha*	*Paha*	
belly	D1	—	—	**mhɔok**	***hm-**
scold	B1	—	**ɳ̊a (Lc)**	**ɳ̊haan**	***hɳ̊-**
pillow	B1	**ɳ̊i (Lz)**	**ɳ̊a (Lc)**	**ɳ̊hii**	***hɳ̊-**
pus	B1	**ŋka**	**ŋfiũ B2 (Lc)**	**ŋhuu**	***hŋw-**
nose	D1	**ɳ̊tɕe**	**ŋat D2**	**ŋhat**	***hŋj-**
flower	C1	**ŋkau**	—	**ŋaa**	***hŋ-**
dog	A1	**mpau**	**maa**	**maa A2**	***x-m-**
pig	A1	**mpa**	**mɔu**	**muu A2**	***x-m-**
flea	D1	**mpe**	**mat**	**mhat D2**	***x-m-**
six	A1	**nan**	**dam (Tm)**	**nam A2**	***x-n-**

7.1.4. Resonants

7.1.4.1. Resonants as initials

Like nasals, the liquids may be voiced or voiceless. Examples of the reconstructed ***r-** unfortunately lack related Laha forms, and might in fact belong to ***d-r-** (see 7.1.4.2).

		Gelao	*Laha*	*Paha*	
child	D2	**lei**	**laak**	**lhaak**	***l-**
back/behind	A2	**len (Lz)**	**lɪ̈ (Lc)**	**lan**	***l-**
rotten	B2	**zuŋ**	—	**ðhuŋ**	***r-**
bee	A2	**zei**	—	**ðii**	***r-**
heart	C1	**lʉu**	**lul**	**lhin**	***hl-**
stomach	A1	**luŋ**	**loŋ**	**loŋ**	***hl-**
cut	C1	**han**	—	**ðan**	***hr-**
drink	C1	**han**	—	**ðam**	***hr-**

Approximants are mainly found as medials. This preponderant occurrence of approximants is consistent with their place as the weakest members on the sonorant hierachy. Velar ***ɣ-** may be found as initial clustered with other approximant medials.

		Gelao	*Laha*	*Paha*	
sieve	A2	**vi**	**vei (Lc)**	**vaaŋ**	***gw-**
wing	A2	**vu**	**vaa**	**vaa**	***gjw-**
wind	A2	**ven**	**van**	**vum**	***gjw-**
thin	C2	**vu**	—	**vɛɛ (By)**	***ɣw-**
tendon	A2	**ven**	**van**	—	***ɣjw-**

Notes

Cf. Pubiao **/Gɯəŋ/** 'sieve', **/Gɯə/** 'wing', and **/Ga/** 'thin (not thick)'.

Gelao (Lz) **/vu/** 'sieve', but **/ʑʏɯ/** 'wing' and **/ʑu/** 'wind'. Also, **/ɣwə/** 'thin (not thick)', but **/ʑu/** 'tendon'.

7.1.4.2. Resonants as medials

Resonants may be preceded by obstruents or a nasal. They may be completely clustered with the preceding onsets or may become initials by themselves (which then determine the tones of the syllables) in modern languages. The former type may be considered as PK clusters, and the latter as PK presyllable plus medial.

Clusters

In clusters, the tonal series are normally assigned according to the voicing of the initials.

Labials as initials

		Gelao	*Laha*	*Paha*	
blood	D1	**plɒ**	**plaat**	**pɛɛ**	***pl-**
silver	B1	**phrə (Lz)**	**phjo (Lc)**	**phjaau**	***pr-**
die	A1	**pen**	**phən**	—	***pɣ-**
duck	A2	**blu (Lz)**	—	—	***bl-**
orphan	C2	**blɑ̃ (Lz)**	—	**ʔbɔɔŋ C1 (By)**	***bɣ-**
peach	A1	**plo (Lz)**	—	**baŋ**	***m-pl-**
carry	D2	**blæ (Lz)**	**pfii (Lc)**	**mɛɛk D1**	***m-bl-**
bran	B1	**pau**	**paa**	**bwaa**	***m-pw-**

Notes

For contrast between ***bl-** and ***bɣ-**, cf. Gelao (Qs) **/plo/** 'duck' and **/vuŋ/** 'orphan' respectively. This is parallel to the case of ***pl-** and ***pɣ-**, which respectively give Gelao (Qs) **/plɛ/** 'blood' and **/vlɛn/** 'die'.

Alveolars as initials

		Gelao	*Laha*	*Paha*	
nest	C1	**tsɒ**	**to (Lc)**	**ðaau**	***tr-**
sweet	C1	**tin**	**thəl**	**ʔjɛn (By)**	***tj-**

mortar	A2	**tsha**	—	**ʔduu A1 (By)**	***dr-**
shallow	C2	**zen (Qs)**	**dəl**	**ðan B1**	***dj-**
body louse	A2	**tshen**	**mdal**	**nan A1**	***m-dr-**
moon	A2	**zai (Qs)**	**daan**	**naan A1**	***m-dj-**
seven	A1	**tʏu (Qs)**	**tho (Tm)**	**ðhuu**	***C-tj-**

Velars as initials

		Gelao	*Laha*	*Paha*	
grandson	A1	**klu**	**klaal**	**ʔaan (By)**	***kl-**
close eye	D1	**kle**	**klap**	—	***kl-**
road	A1	**qen**	**hon**	**hun (By)**	***kr-**
house	A1	**qə-**	**kho (Lc)**	**qaan**	***kr-**
light (a.)	C1	**xau**	**khaa**	**ghaa**	***kʒ-**
dry (a.)	B1	**xau**	**khaa**	**ghaa**	***kʒ-**
iron	C1	**tɕin**	**kɛl**	**qan**	***kj-**
hundred	A1	**tɕin**	**kei (Lc)**	**qan**	***kj-**
throat	A1	**qhai**	**kɛ (Lc)**	**qee (Pb)**	***kɣ-**
ginger	A1	**qhei**	**khiŋ**	**qɣɛɛŋ**	***kɣ-**

Presyllable plus medial

Grave consonants as onsets

With these onsets, the tones are normally assigned according to the voicing of resonant medials. The presyllable initials may be dropped, namely in Gelao varieties, or they may be kept as in Laha. In Paha, the medials usually cluster with the grave presyllable onsets, and the tones are assigned according to the *voicing of the then initials (e.g. tone series 2 for* ****m-****, and tone series 1 for* ****p-****).*

		Gelao	*Laha*	*Paha*	
d-in-law	B2	**lai**	**mlɔi**	—	***m-l-**
face	B2	**lau**	**ɱ** (Lc)	**mfijɑɑ** (Pb)	***m-l-**
eight	A2	**vla**	**mahu** (Tm)	**muu**	***m-r-**
afraid	A2	**lau**	**blaa**	**pjaa** A1	***p-l-**
fish	A2	**lau**	**blaa**	**pjaa** A1	***p-l-**
rock	A2	—	**ɱ** (Lc)	**pɣaa** A1	***p-r-**
kill	A2	**ven**	**phən**	**puan**	***p-ɣ-**
ear	A2	**zau**	**khlaa**	**kaa** A1	***k-r-**
far	A2	**lai**	**klɔi**	**ðhii** A1	***k-l-**
tall	A2	**vi**	**kwaaŋ**	**vhəəŋ** A1	***k-(ɣ)w-**

Alveolar obstruents as onset

Alveolars as presyllabic initials have slightly different histories. ***t-l-** has become cluster ***tl-** which often further merged with ***kl-** in a number of languages (including the three representative varieties below). But Buyang shows initial **l-** reflex with tone series 2 (contrasting with **ʔ-** < **k-** < ***kl-**), indicating early voicing at the time of tonal split, and suggesting that the complex onset had not uniformly become a cluster at the Proto-Kra level.

The voiced presyllable onset ***d-l-** has also become cluster **kl-** in Laha, but its original voicing contrast with ***t-l-** is shown by distinct tonal reflexes (i.e. ***t-l-** > **kl-** with tone series 1 and ***d-l-** > **kl-** with tone series 2). Similarly ***d-r-** has become **kr-** (with modern aspiration further induced by medial **-r-**).

		Gelao	*Laha*	*Paha*	
flow	A1	**klai**	**klɔi**	**qwi**	***t-l-**
sun	A1	**klei**	**klaaŋ**	**qaaŋ**	***t-l-**
throat	A	**ʔloŋ** (Lz)	—	**ðhoŋ**	***t-r-**
star	A2	**zoŋ** (Qs)	**kluŋ**	**ðɔɔŋ**	***d-l-**

hawk	C2	**li**	**klaaŋ**	**ðaaŋ**	***d-l-**
sick	C2	**zai**	**khɔi**	**ði**	***d-r-**
crab	D2	—	**khlaat**	**ðhaat**	***d-r-**

Liquids as onsets

There are also a few examples which may point to liquid pre-initials plus stop medials. For these etyma, most languages show plain voiceless stops corresponding to Paha spirant reflexes, thus suggesting medial stops of the type ***C-p-**, etc. The pre-initial ***C-** is decoded as a liquid for these roots based on reflexes in such languages as Niupo Gelao, e.g. **/pla/** 'dream', /plɑŋ/ 'tooth' and **/ʔlɯ/** 'mushroom'. We may assume that the liquid pre-initial and stop medial were metathesized in such dialects (e.g. ***l-p-** > **pl-** and ***l-k-** > **kl-** > **ʔl-**), while the pre-initial has dropped in other dialects. (Cf. also the PK clusters ***pl-** and ***kl-** for contrastive correspondences with those in this set.)

		Gelao	*Laha*	*Paha*	
dream	A1	**pan**	**pã (Lc)**	**van**	***l-p-**
tooth	A1	**pan**	—	—	***l-p-**
mushroom	A1	**qvɯ (Lz)**	**ku (Lc)**	**qaa (Pb)**	***l-k-**

There are also other instances which may point to liquid pre-initials plus nasals. For these words, reflexes in Gelao varieties may simply point to PG clusters, namely ***ml-** or ***mr-**. But, since a PK nasal pre-initial plus liquid, e.g. ***m-l-**, is reflected as a cluster in Laha, it would be somewhat strange if Laha lost the liquid medial of an original cluster (i.e. ***m-l-** > **ml-**, but ***ml-** > **m-**). The pre-initial ***r-** may also be distinguished from ***l-** in this set of words, partly by some Gelao reflexes which retain retroflexion (cf. 'ghost'), and partly by the Paha breathy reflex with tone series 1 (***r-m-** > ***hm-**).

		Gelao	*Laha*	*Paha*	
sesame	A2	**ŋklau**	—	**ŋaa**	***l-ŋ-**
tongue	A2	**mlõ (Lz)**	**maa**	**maa**	***l-m-**

frost	A2	**mplai**	**mɒ (Lc)**	**mee (By)**	***l-m-**
ghost	A2	**mpɘ-**	**kmaaŋ B2**	—	***r-m-**
five	A2	**mpu**	**ma (Tm)**	**mhaa A1**	***r-m-**
drunk	A2	—	**mɒ (Lc)**	**mhii A1**	***r-m-**

Notes
For 'five', cf. also Laozhai Gelao **/mlen/**, Niupo **/mlɯ/**.

7.2. PROTO-KRA RIMES

7.2.1. Proto-Kra vowels

Monophthongs

i		**u**
e	**ɘ**	**o**
	a	

Diphthongs

ai	**aɯ**	**au**
	ui	

Proto-Kra has six monophthongs, which are similarly reconstructible at the lower proto-levels. In closed syllables, these six monophthongs have often developed into three pairs of vowels with contrastive length. In general, the mid vowels have become the short counterparts of their respective high or low vowels. This development appears to have occurred in most branches except Southern Kra (Laha).

At least four diphthongs are reconstructible for Proto-Kra. Three of these, ***-ai**, ***-aɯ** and ***-au**, are also recognized in all branches. Diphthongs have not been found in closed syllables.

7.2.2. Proto-Kra finals

-m	**-n**	**-ŋ**
-p	**-t**	**-k**
	-l	

Seven well-supported endings are reconstructed for Proto-Kra. Three pairs of final nasals (***-m**, ***-n** and ***-ŋ**) and stops (***-p**, ***-t**, and ***-k**) have been kept very much intact in all language groups except Western Kra. At the Proto-Western-Kra level, the labial endings appear to have merged with alveolars. A number of Gelao and Lachi varieties have in fact further lost alveolar and velar endings as well. In the Jinchang Lachi variety, for instance, all nasal and stop endings have respectively become nasalization and constriction of the preceding vowels.

The liquid final ***-l** has been kept as such in certain varieties of Laha, otherwise it has merged with final ***-n** in most Southwestern Kra languages. In the Central Eastern Kra branch, a Yalhong language has reflexed this final as **-t**, contrasting with **-n** for ***-n**, and thus offers additional supporting evidence for positing the final at the Proto-Kra level.

7.3. PROTO-KRA TONES

Three tones (*A, *B, and *C) have been reconstructed for Proto-Kra. An additional tonal category (*D) only occurs in syllables ending with stop consonants. This system of proto-tones has proved to be sufficient to generally explain the development of various tonal systems in the modern languages, which now range from three to six tones. These proto-tones are split in some modern dialects, conditioned by voicing or other laryngeal properties of initial consonants such as aspiration and glottalization. In the case of the D tone class, the tone may be further split by vowel length. Details of the tonal splits in individual languages have been discussed in Chapter 3.

APPENDIX

PROTO-KRA ETYMA

In this last section, we provide for reference over three hundred Proto-Kra etyma arranged in ten semantic areas: I. body parts; II. animals; III. plants; IV. nature; V. material culture (food, artifacts etc); VI. kinship and human relations; VII. adjectives; VIII. verbs; IX. space and time; X. numerals. Under each section, the roots are further listed in the alphabetical order of the glosses, except in the last section where the numerals are listed in numerical order from low to high. For each gloss, forms from representative dialects of the six Kra languages are provided in the following order: Gelao (Wanzi), Lachi (Jinchang), *Laha (Nong Lay), Paha (Yanglian), Buyang (E-Cun) and Pubiao (Pufeng).* The Proto-Kra forms are put in the last column. For more details on dialectal forms and reconstruction, readers are referred to the discussions in the body of this study.

APPENDIX
Proto-Kra Etyma

I. Body Parts and Bodily Functions

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
armpit (1)	**tɕi C1 (Lz)**	**tjạ C1**	**taai C1**	**taai B1 -t**	**—**	**—**	***tai C**
armpit (2)	**—**	**—**	**—**	**—**	**lie A2**	**lfiii A2**	***lje A**
beard	**men C2**	**—**	**—**	**—**	**muəm C2**	**muum C2**	***mum C**
belly	**—**	**—**	**—**	**mfiɔɔk D1**	**—**	**ɱok D1**	***hmok D**
blood (1)	**plɒ D1**	**pjo D1L**	**plaat D1**	**pɛɛ D1 -f**	**—**	**—**	***plat D**
blood (2)	**—**	**—**	**—**	**—**	**haa C1**	**qaa C1**	***kɣa C**
boil (n.)	**plɑu C1 (Lz)**	**—**	**—**	**—**	**—**	**pau C1**	***plaɯ C**
bone	**taŋ D2**	**tfijɒ D2S**	**dak D2**	**—**	**—**	**ʔdak D1**	***dək D**
cheek/face	**lau B2**	**ɱ B2**	**—**	**—**	**—**	**mfijɑɑ B2**	***m-la B**
chest	**—**	**—**	**—**	**tak D1**	**tak D1**	**tak D1**	***tək D**
chin	**—**	**kfiei C2 -t**	**kaaŋ C1**	**qaaŋ C1**	**ʔaaŋ C1**	**qaaŋ C1**	***kaŋ C**
ear	**zau A2**	**lfiu A2**	**khlaa A2**	**kaa A1**	**ðaa A2**	**rfiɑɑ A2**	***k-ra A**
excrement (1)	**qɒ C1**	**kạ C1**	**kai C1**	**qɛɛ B1 -t**	**—**	**—**	***kai C**
excrement (2)	**—**	**—**	**—**	**—**	**ʔiak D1**	**ʔjek D1**	***ʔik D**
eye	**tau A1**	**tju A1**	**taa A1**	**daa A1**	**taa A1**	**tee A1**	***m-ʈa A**

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
fart	**tæ D1 (Lz)**	**tɛ D1S**	**—**	**ðat D1**	**tut D1**	**tɑt D1**	***C-tot D**
fingernail	**kle D1**	**lɛ D1S**	**kləp D1**	**ɣap D1**	**lip D2**	**—**	***t-lep D**
foot	**—**	**kǫ D1S**	**kok D1**	**kɔɔk D1**	**—**	**—**	***kok D**
forehead[1]	**tã A2 (Qs)**	**—**	**daŋ B2 -t**	**ðaŋ A1**	**—**	**?daŋ A1**	***C-dəŋ A**
gall bladder	**di A2 (Lz)**	**—**	**dəi A1**	**nii A1**	**—**	**—**	***m-di A**
hair	**mpe D2**	**mfiɛ D2S**	**—**	**mfiɯt D2**	**—**	**—**	***mot D**
hair (head)	**san A1**	**—**	**sam A1h**	**dfiam A1**	**θam A1**	**θam A1**	***m-səm A**
hand	**mpau A2**	**ɱ A2**	**maa A2**	**—**	**—**	**ɱii B1 -it**	***mja A**
head	**klɒ B1**	**khja B1**	**xe B1 (Tm)**	**—**	**—**	**—**	***krai B**
heart	**ləɯ C1**	**lje C1**	**lul C1**	**lfiin C1**	**—**	**—**	***hlul C**
intestine	**sai C1**	**ɕi C1**	**si C1**	**ðfiii B1 -t**	**—**	**θai C1**	***C-si C**
knee	**qʏu B1 (Lz)**	**kwɛ B1**	**—**	**ʁoo B1**	**huu B2**	**qau B1**	***C-ku B**

[1] There are instances of tonal mismatch where Laha shows a *B2 tonal reflex for Proto-Kra *A2. Laha reflexes of tones *A2 and *B2 are transcribed in the source as having the same high pitch [55], distinguished from each other only by glottalization accompanying the former reflex. Perhaps the transcriptions are doubtful in such examples where tone A2 is expected. Cf. also 'mosquito', 'yam', 'spirit', and 'fat (a.)'.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
leg	**qau A1**	**ku A1**	**kaa A1**	**ɣaa A1**	**ʔaa A1**	—	***C-ka A**
liver	**tæ D1 (Lz)**	**tjạ D1S**	**tap D1**	**tap D1**	**tap D1**	**tjap D1**	***təp D**
meat[2]	**ʔɒ C1**	**ʔọ C1**	**ʔəu C1**	**ʔaau C1**	**ʔuə C1**	**ʔjau C1**	***ʔauɯ C**
mouth (1)	**ŋku A2**	—	—	—	**ŋɔɔŋ A1**	—	***ŋuŋ A**
mouth (2)	—	—	**mul B2**	—	—	**mɑn B2**	***mul B**
navel	**zo A2 (Qs)**	**tɦijo A2**	**dau A2**	**naau A1**	**ʔduə A1**	**nau A1**	***m-ɖauɯ A**
neck	—	**ɳ̊ɯ̃ A2**	**ju A2**	**juɯ A1**	**jo A2**	—	***C-jo A**
nose (1)	**ɳ̊tɕe D1**	**ɳ̊a D1**	**ŋat D2 -t**	**ŋhat D1**	—	—	***hŋət D**
nose (2)	—	—	—	—	**tiŋ C1**	**taŋ C1**	***teŋ C**
pus	**ŋka B1**	**ŋɦiũ B2 -t**	—	**ŋhuu B1**	**muu B1**	**hau B1**	***hŋwu B**
saliva	**tsa B1**	—	—	**ðhuu B1**	**tuu B2**	**tau B1**	***t-ru B**
shoulder	—	**pɦiu B2**	**baa B2**	**maa B1**	**ʔbaa B1**	**ɱaa B1 -i**	***m-ba B**
skin (1)	**qɒ B1**	—	—	—	—	—	***kwau B**
skin (2)	—	**tu A1**	**taa A1**	—	—	—	***ta A**

[2] This root shows alternation between ***-auɯ** (Eastern-Kra) and ***-au** (Gelao). Lachi and Paha reflexes may go back to either rime.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
skin (3)	—	—	—	—	ʔbuŋ A1	ʔboŋ A1	*boŋ A
stomach	luŋ A1	njũ A1	loŋ A1'	luŋ A1	luŋ A1	ɬoŋ A1	*hloŋ A
tear (n.)	tsau C2	nˌfiũ C2	—	—	—	—	*ʒa C
tendon (1)	ven A2	vɔ̃ A2	van A2	—	—	—	*ɣwjən A
tendon (2)	—	—	—	nˌin C1-t	nˌin A2	ŋfiʏn A2	*ŋen A
throat (1)	ʔloŋ A1 (Lz)	—	—	ðhoŋ A1	—	—	*t-roŋ A
throat (2)	qhai A1	kɛ A1	—	—	—	qee A1	*kɣe A
tongue[3]	mlõ A2 (Lz)	nfijo A2 -i	maa A2	maa A2	mee A2	mfije A2	*l-ma A
tooth (1)	pan A1	—	—	—	—	—	*l-pən A
tooth (2)	—	sei A1	cuŋ A1	jɔɔŋ A1	θɔɔŋ A1	θuaŋ A1	*C-tʃuŋ A
waist	kla C1	ljɐ C1	—	qu C1	—	ɬau C1	*t-lu C

[3] This root seems to show rime alternation between ***-a** and ***-e** (Eastern-Kra and Lachi). The Gelao (Lz) cluster **ml-** is presumably metathesized from ***l-m-**. The presyllabic l-, however, may be secondary, having been reduced from an independent morpheme; cf. Laha **/lə̀l¹ maa²/**. The first morpheme **/lə̀l¹/** is plausibly related to Tai **/lin C2/**.

II. Animals

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
ant	—	—	mot D2	—	mut D2	—	*mot D
bear	mi A2 (Lz)	mɒ A2	mɛ A2	mii A1	—	mfije A2	*C-me A
bee	zei A2	—	—	ðii A2	—	rfiɑɑi A2	*re A
bird	ntau D2	ɲjɒ D2S	nok D2	nhook D2	—	nokŋ D2	*ɳok D
buffalo	—	kwɒ A1	—	—	—	qaai A1	*kwai A
cat (wild)	qa C1	kwɛ C1	—	quu C1	ʔuu C1	qau C1	*ku C
chicken	qai A1	kɛ A1	kəi A1	qai A1	ʔai A1	qai A1	*ki A
cow	ntai A2	nĩ A1 -t	nəi A2	—	—	—	*ni A
crab	—	—	khlaat D2	ðhaat D2	—	—	*d-rat D
crow (n.)	ʔɒ D1 (Qs)	—	ʔaak D1	ʔaak D1	—	ʔaak D1	*ʔak D
deer	dʑi D2 (Lz)	tfije D2L	—	—	—	ʔdiet D1	*dit D
dog	mpau A1	ɱ A1	maa A1	maa A2	—	ɱaa A1	*x-ma A
duck (1)	plo A2 (Qs)	—	—	—	—	—	*blaɯ A
duck (2)	—	ko D1L	kaap D1	—	ʔaap D1	qaat D1 -f	*kap D
egg	tan A1	tã A1	tam A1	ðam A1	tam A1	—	*ʈəm A

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
fish[4]	lau A2	lfii A2 -v	blaa A2	pjaa A1	pjaa A1 -it	pfijɑɑ A2	*p-la A
flea	mpe D1	mą D1S	mat D1	mhat D2	mat D1	ɣmat D1	*x-mət D
goat	mæ C2 (Lz)	mfio C2	mɛ C2	mhii C2	—	—	*me C
hawk	li C2	lfii C2	klaaŋ C2	ðaaŋ C2	laaŋ C2	laaŋ C2	*d-laŋ C
horn	qa A1	kwɛ A1	kou A1	ɣuu A1	ʔuu A1	qau A1	*C-ku A
horse	ŋ̊tɕau C2	ŋ C2	—	ŋaa C2	ŋaa C2	—	*ŋja C
louse (head)	ta A2 -t	tje A1	tou A1	ðhuu A1	tuu A1	—	*C-ʈu A
louse (body)	tshen A2	tfijã A2	mdal A2	nan A1	tɛn A2	nan A1	*m-drəl A
maggot	xe D1	kją D1S	—	—	—	qat D1	*kʒət D
monkey (1)	tɒ C1	—	—	taai C1	—	—	*tai C
monkey (2)	—	kho D1S	hok D1	—	—	ʂɔɔk	*krok D
monkey (gibbon)	—	—	mju A2 -m	—	ma luu A2	—	*m-lu A
mosquito	tɕhi A2	ʑi A2	mjaaŋ B2 -t	jaaŋ A2	jaaŋ A2	jaaŋ A2	*dʒaŋ A
pig	mpa A1	mje A1	məu A1	muu A2	muu A1	ɣmuu A1	*x-mu A

[4] The Buyang form for this root may be a loan from Tai. For initials like ***p-l-**, ***t-l-**, and ***k-l-**, the Buyang reflex is normally l- with tone series 2. Cf. 'afraid' Buyang **/ma laa A2/**, PK ***p-la**; 'flow' Buyang **/ta lui A2/**, PK ***t-lui**; 'far' Buyang **/ʔa lii A2/**, PK ***k-li**.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
rat	lɒ C1	lja C1	lai C1	—	—	—	*hlai C
shellfish	—	sɛ A1	ci A1	—	—	—	*tʃui A
tail	tshan	sɐ	cot	jɛt	ɕut D2	θɑt	*C-tʃot D
snake	ŋkau A2	ŋ A2	ŋaa A2	ŋaa A2	ŋaa A2	ŋɦɯɑ A2	*ŋa A
tiger	di A2 (Lz)	tɦije A2	kdəi A1	—	—	—	*(k-)di A
wing	vu A2	—	vaa A2	vaa A2	—	Gɯə B1 -t	*gwja A

III. Plants

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
banana	—	—	tok D1	—	tuk D1	—	*tok D
beans	tai C1	tjɒ C1	—	dii B1 -t	—	—	*m-te C
bran	pau B1	pu B1	paa B1	bwaa B1	faa B1	—	*m-pwa B
cogon grass[5]	qe A1 (Qs)	ku A1	khaa A2 -it	qaa A1	ʔaa A1	qaa A1	*ka A
cucumber	tɕi A1 (Lz)	ti A1	tiŋ A1	dɛɛŋ A1	tiaŋ A2	—	*m-tiŋ A
ear of grain	qan A1	kã A1	—	ɣan A1	—	—	*C-kən A

[5] The Laha form is plausibly a Tai loan (Proto-Tai *ɣ- A2). Both the initial and tonal reflexes are irregular.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
flower (1)	ŋkau C1	—	—	ŋaa C1	—	—	*hŋa C
flower (2)	bi A2 (Lz)	—	baal A2	—	—	—	*bal A
fruit	mei D2	mfiĩ D2L	maak D2	maak D1	maak D1 -t	mjaak D2	*C-mak D
garlic (1)	ɕi B1 (Lz)	se B1	—	ðhɛɛ B1	θui B1	θei B1	*C-sui B
garlic (2)	qhau A1	—	—	—	—	—	*kɣa A
ginger	qhei A1	kei A1	khiŋ A1'	qɣɛɛŋ A1	ɕiaŋ A1	qeŋ A1	*kɣiŋ A
grass/tobacco	—	lo A1	klau A1	qaau A1	luə A2	—	*t-lauɯ A
leaf	zen A2 (Qs)	—	—	ðɛɛŋ A1	?diaŋ A1	—	*ɖiŋ A
mushroom	qau A1	ku A1	—	—	—	qaa A1	*l-ka A
paddy (grain)	tsau A1	ʑe B1(?)	—	—	—	(pjee A1)	*ca A
peach	plo A1	põ A1	—	baŋ A1	—	paŋ A1	*m-pləŋ A
rice (cooked)[6]	mpəɯ C2	ɳm C2	mlaa C2	ɳaa C2	—	mii C2	*mla(ɯ) C
rice (husked)	su A1	—	saal A1'	—	—	θaan A1	*sal A
rice	—	—	—	—	haaŋ A1	qxaaŋ A1	*kʒaŋ A

[6] This etymon shows an alternation between ***-aɯ** (Gelao) and ***-a** (others).

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
root	tsu A1 (Lz)	tɕi A1	caaŋ A1	tɕaaŋ A1	—	—	*tsaŋ A
seed	pa A1 (Qs)	pɒ A1	—	pii A1	pee A1	(pan A1)	*pe A
sesame	ŋklau A1	—	—	ŋaa A2	ŋaa A2	ŋɦɯɑ A2	*l-ŋa A
sorghum	tɕhi A2	—	—	jaaŋ C1 -t	jaaŋ A2	—	*ʒaŋ A
taro (1)	vəˑ D2	—	haak D2	pɣaak D2	ðaak D2	—	*p-ɣak D
taro (2)	—	vfio C2	—	—	—	roo C2	*rwau C
thorn	ɳu C2	ŋfio C2	—	ŋaan C2	ɳaan C2 -i	ŋɯən C2	*ŋjan C
tree[7]	tai A1	tje A1	təi A1	tii A1	—	tai A1	*ti A
vegetable (1)	luŋ A2	lfiũ A2	kloŋ A1	ðuŋ A2	—	—	*ɖ-loŋ A
vegetable (2)	—	—	—	—	ʔup D1	ʔap D1	*ʔop D
yam	mbø A2 (Qs)	mfia A2	mal B2 -t	man A2	man A2	mfiən A2	*məl A

[7] Some Northern Gelao dialects shows a spirantal reflex, indicating *ʈ-. Cf. Longli Mulao /zɑ/.

IV. Nature

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
ash	ta B1	tje B1	thəu B1-i	duu B1	tuu B1	tau B1	*m-tu B1
coal	lvɯ B2 (Lz)	---	—	—	laa B2	lfiɑɑ B2	*la B
cloud/fog	mpu D2	—	muk D2	mfiook D2	mok D2 -v	muak D2	*muk D
earth	la B2	—	—	—	luu B2	lfiuu B2	*lu B
earth (soil/mud)	—	ʔo D1L	—	—	ʔɔɔt D1	ʔuət D1	*ʔut D
field (wet)	—	nu A2 -v	naa A2	—	naa A2	nfiee A2	*na A
field (dry)	zəɯ C2	—	haa B2 -t	—	—	—	*za C
fire	pai A1	pje A1	pəi A1	pui A1	fii A1	pei A1	*pui A
firewood	—	ɕi A1	—	θuu A1 -v	θui A1	—	*sui A
frost	mplai A2	mɒ A2	—	—	mee A2	mfiɑɑi A2	*l-me A
hail	san D1	tɕɐ̯ D1S	—	—	θi D1 -f	θap D1	*tsep D
iron	tɕin C1	kɐ̯i C1	kɛl C1	qan C1	---	—	*kjəl C
moon (1)	zai A2 (Qs)	tfiju A2	daan A2	naan A1	ʔdaan A1	nin A1	*m-ɖjan A
moon (2)	tsu A1	---	—	—	tjan C2 -t	taan A1	*(C-)tjan A
mountain	tsha A2	tɕfii A2	—	—	—	—	*dzu A

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
rain	mei A2	—	—	—	mun A2	mfiən A2	*mon A
rain	—	ɳfiã A2	jal A2	jin A2	(juət D2)	—	*jəl A
road	qen A1	khĩ A1	hon A1'	—	hun A1	qxwɑn A1	*kron A
rock (1)	klau B1	lju B1	—	—	—	—	*t-la B
rock (2)	ʔəɯ A1	—	—	—	—	—	*ʔuŋ A
rock (3)	—	ɱ A2	—	pɣaa A1	ðaa A2	pfijɑɑ A2	*p-ra A
sand	—	ɳa A1	ŋai A1'	—	—	—	*hŋai A
silver (1)	phrə B1 (Lz)	phjo B1	—	phjaau B1	—	phjo B1	*praɯ B
silver (2)	ɳin A1	—	—	—	ŋan A2	—	*ŋjən A
smoke[8]	qɒ A1	kã A1	khwan B2 -t	ghan A1	—	—	*m-kwən A
snow	ntai A2	—	—	nii A2	—	nfiei A2	*ɳui A
star	zoŋ A2 (Qs)	lei A2	kluŋ A2	ðɔɔŋ A2	lɔɔŋ A2	lfiuuŋ A2	*d-luŋ A
sunlight	klei A1	—	klaaŋ A1	qaaŋ A1	—	łaaŋ A1	*t-laŋ A
sun	lø A2 (Qs)	vfiõ A2	van A1'	vhan A1	vən A1	wfiən A2	*(l-)wən A

[8] The Laha form is perhaps a Tai loan (Proto-Tai *ɣw- A2). Cf. 'cogon grass'.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
water	ʔəɯ C1	ʔi̯ C1	ʔuŋ C1	ʔɔɔŋ C1	ʔɔɔŋ C1	ʔɔɔŋ C1	*ʔuŋ C
wind	ven A2	kfiue A2	van A2	vɯn A2	vən A2	—	*gwjən A

V. Material culture (Food, Artifacts et al)

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
ax	qu A1	ku A1	—	qɣaan A1	ʔaan A1	—	*kwan A
boat	—	thɯ (Bp)	thaa A2 (Tm)	---	ʔdaa A1	—	*da A
chopsticks	tsəɯ C2	tfijo B2	dɔ A2 -vt	daau B1	—	ʔdaau B1	*dzaɯ B/C
comb	tshai A1	—	—	ðhii A1	θee A1	—	*C-ʃe A
den/nest	tsɒ C1	tɋ C1	—	ðaau C1	—	θoo C1	*trau C
door	ŋka A1	ŋ A1	—	ŋɯɯ A2	—	—	*x-ŋo A
drum	ləɯ A2	li A2	—	—	lɔɔŋ A2	—	*d-luŋ A
hat (bamboo)	—	—	klop D1	—	lup D2	—	*t-lop D
house	qə˞ A1	kho A1	—	qaan A1	—	—	*kran A
ladder (1)	klai A1	—	—	—	—	—	*kwli A
ladder (2)	—	—	—	—	hɔɔŋ A1	quuŋ A1	*kɣuŋ A

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
liquor (1)	pa A1	—	pəu A1	—	—	pau A1	*plu A
liquor (2)	—	kuˌ C1	—	ɣaa B1 -t	—	—	*C-ka C
medicine	—	lo A1	klau A1	qaau A1	luə A2	—	*t-lauɯ A
mortar	tsha A2	—	—	—	ʔduu A1	—	*dru A
needle[9]	lian D2	nfiɛ̨ D2S	—	—	ŋaat D2 -v	ŋɑtⁿ D2	*ŋlot D
pestle	—	—	caak D1	tɕaak D1	—	—	*tsak D
pillar	sa A1	tɕi A1	cou B2 -t	dʑhuu A1	θuu A1	tɕau A1	*m-tʂu A
pillow	ɳi A1 (Lz)	—	—	ɳhii A1	ɳee B1 -t	—	*hnɭe A
rope	tshei D1	so D1L	—	jhu D1 -f	ɕaak D2	θaak D1	*C-ʃak D
salt[10]	ɳtɕəɯ A2	ɳfiũ A2	ɳoo A2	ɳɯɯ A2	ɳoo A2	ɳfiũ A2 -f	*ŋo A
sieve	vi A2	vei A2	—	vaaŋ A2	vaaŋ A1 -t	Gɯaŋ A2	*gwaŋ A
skirt	ʔen C1	ʔɪ̃ C1	—	—	—	—	*ʔen C
thread	tsi B2	ɳfie B2	—	—	—	—	*ʒun B
village	mɒ A2	mja A2	—	mɣaai A2	—	—	*mɣai A

[9] Cf. Laozhai Gelao /ŋu li D2/, which seems to point to an independent etymon.

[10] Gelao forms point to the nasal rime *-uŋ.

VI. Kinship, Pronouns and Human Relations

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
brother (elder)[11]	**tɒ A1**	**tja A1**	—	—	—	—	***tai A**
brother (younger)	**tsəɯ B2**	**ʑfio B2**	**jau B2**	—	**juə B2**	—	***ʒauɯ B**
child	**lei D2**	**lfii D2L**	**laak D2**	**lhaak D2**	—	—	***lak D**
father[12]	**phɒ A2**	—	—	—	—	—	***ba A**
father	—	**po B1 -v**	—	**paa B1**	**paa B1**	**pee B1**	***pa B1**
female-in-law	**lai B2**	—	**mləi B2**	—	—	—	***m-li B**
grandchild	**klu A1**	—	**klaal A1**	—	**ʔaan A1**	**zaan A1**	***klal A**
grandfather	—	—	—	**baau B1**	**puu B1**	—	***m-pau B**
grandmother[12]	**ʑɒ C2 -v**	**ʑfiu C2**	**jaa B1 -t**	**jhaa C2**	**jaa C2**	—	***ja C**
I (1)[13]	—	**ki A1**	—	**kuu A1**	**kuu A1**	**kau A1**	***ku A**

[11] It is undetermined whether the proto-initial is actually ***t-** or ***ʈ-** because the related forms in criterial varieties such as Qiaoshang Gelao or Paha are lacking (these languages would have spirant reflexes, **ð-** or **z-**, for ***ʈ-**).

[12] Gelao (Wz) has irregular vowel reflexes for these roots, which are perhaps due to pragmatic-based analogies among kinship terms. Cf. the following forms in this Gelao variety: **/phɒ/** 'father', **/jɒ/** 'grandmother', **/mɒ/** 'mother,' and **/tɒ/** 'brother'.

[13] The initial reflexes of this root are unique. It shows **k-** in all modern varieties, including dialects whose normal reflexes of ***k-** would be **q-** (Paha and Pubiao) or ***ʔ-** (Buyang). Cf. 'eat' for similar reflexes.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
I (2)	ʔi A1	—	—	—	—	—	*ʔe A
male/husband	po C1 (Qs)	pǫ C1	—	vaau B1 -t	—	—	*C-paɯ C
male/husband	sæ A1 (Lz)	—	sɛ A1'	—	θee A1	ɕje A1	*se A
male-in-law	tsa C2	ʑi C2	—	jhuu C2	—	jau C2	*dʒu C
mother	mɒ C2	mɦja C2	—	mhai C2	mii C2	maai C2	*mai C
name	ntsai A2 -i	nje A2	—	—	—	nɦiii A2	*n(ʒ)i A
orphan	blɑ̃ C2	—	—	—	ʔbɔɔŋ C1	ʔbuoŋ C1	*bɣuŋ C
sister (elder)	pai C1	—	—	pii C1	—	—	*pi C
sister (younger)	ʔen C1	—	ʔon C1	ʔɔɔn A1 -t	ʔun C1	—	*ʔon C
spirit	ŋku A2	nɲɦi A2	—	—	ŋɔɔn A2	ŋɦiuən A2	*ŋun A
spirit	mpə̀ A2	mɦiei A2	kmaaŋ B2 -t	---	—	—	*r-maŋ A
strength	tshen A2	nɲɦiɑ̃ A2	—	—	—	—	*ʒan A
we	ta A1	te A1	—	dhuu A1	—	tɦiuu A2	*t-ɣu A
who	nɒ C2	njo A1	—	nau A1	nɔɔ A2 -v	njau C2	*ʔ-nau A/C
you	mu B2	ʔm̩ C1 -t	maa B2	məə A2	maa A2	mɦiii A2 -v	*mə A/B

VII. Adjectives

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
bitter	qan A1	kã A1	kam A1	qam A1	ʔam A1	—	*kəm A
black[14]	lan A1	ljã A1	—	lham A1	ʔdam A1	ʔdam A1	*hl/dəm A
bright	—	—	ʔaaŋ C1	—	ʔaaŋ C1	—	*ʔaŋ C
deaf	ŋan C2	ɳfia C2	ŋal C2	—	ŋatⁿ C2	ŋan C2	*ŋəl C
deep[15]	laŋ D2	lfijɒ D2S	lak D1	lhak D1	lak D1	ɬak D1	*(h)lək D
drunk	—	mɒ A2	—	mhii A1	—	—	*r-me A
dry	xau B1	ku B1	khaa B1	ghaa B1	haa B1	qɣaa B1 -i	*kʒa B
far	lai A2	lje A2	kləi A2	ðhii A1	lii A2	qxai A2	*k-li A
fat	nan A2	nfija A2	mnal B2 -t	nan A2	nɛn A2	nfiin A2	*(m-)ɳəl A
full	tei D1	tfii D2L -t	tik D1	dɛɛk D1	tiak D1	tek D1	*m-tik D
good	ʔɒ A1	ʔa A1	ʔai A1	ʔaai A1	—	ʔai A1	*ʔai A
heavy	xen A1	kjã A1	khal C1 -t	qan A1	han A1	qxan A1	*kʒəl A
hot	—	pi C1	—	pɛɛŋ C1	—	—	*piŋ C

[14] This root shows alternation between ***d-** (Eastern-Kra) and ***hl-** (others).

[15] There is an alternation between ***l-** (Western-Kra) and ***hl-** (others) in this root.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
itchy	tau D2	—	dok D2	dɔɔk D1	ʔduk D1	—	*dok D
lazy	—	phĩ A1	—	pin A1	—	—	*pren A
light (not heavy)[16]	xau C1	kũ C1 -f	khaa C1	ghaa C1	—	qxan B1 -f	*kʒa C
long	ʐ̩ C2 (Lz)	ʑfie C2	—	ðhii C2	ðii C1 -t	—	*ri C
many	ʔai B1	—	ʔəi B1	—	—	—	*ʔi B
near	lau C2	lju̱ C1	klaa B2 -t	ðaa C2	(θuə C1)	(tuu C1)	*d-la C
new	mu A2	mu A2	maal A2	maan A2	maan A2	—	*mal A
old (1)	qa B1	kwɛ B1	kou B1	quu B1	ʔuu B1	qau B1	*ku B
old (2)	kau C1	kẹ C1	—	kaa C1	ʔie B1	qee B1	*kja C/B
raw	te D2	tfiję D2	kthop (Tm)	—	ʔdip D1	ʔdap D1	*(k-)ɖep D
real	ŋkau B2	ŋ̊fiã B2	—	—	—	ŋfiwɑ B2	*ŋ(w)a B
ripe	ŋka B1	ŋ̊i B1	ŋ̊əu B1 -i	muu B1	muu B1	—	*hŋwu B
rotten	zuŋ B2	—	—	ðhuŋ B2	—	—	*roŋ B
salty	naŋ B1	—	—	ðaŋ B1	—	—	*ʔ-ŋəŋ B

[16] This word is reflected in a Baisha dialect of Hlai with final -l: /khaal C/, and is proposed as suggesting a Proto-Kra-Dai form with dorsal final *-ɬ (Ostapirat 1995). The Pubiao reflex -n may be a remnant of this ending (*-ɬ > *-l > -n).

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
satiated	**tshai B1**	**sɛ B1**	**ci B1**	—	**θii B1**	—	***tʃi B**
shallow[17]	**zen C2 (Qs)**	**tfiĩ C2**	**dəl C2**	**ðan B1**	**tiən B2 -it**	**ʔdan B1**	***ɖjel C/B**
short (≠ long 1)	**nu̯ø C1 (Qs)**	—	**nu̯an C1**	—	—	—	***hnu̯an C**
short (≠ long 2)	—	—	—	—	**tii C2 -t**	**tai C1**	***ti C**
short (≠ tall)	**te B1 (Qs)**	—	**taa C1**	**taa B1**	**taa C2 -t**	—	***ta B/C**
skinny	**gɑu C2 (Lz)**	**kfiu C2**	—	—	—	—	***gjaɯ C**
sour	**vlɒ D2**	—	—	—	**ʔdaat D1**	**bjaat D2 -t**	***bwlat D**
small	—	**ʔi̯ D1S -v**	—	**ʔii D1 -f**	**ʔit D1**	—	***ʔet D**
smelly	**mpa B2**	**mfiĩ B2**	**məu B2**	**mhuu B2**	—	**mfiuu B2**	***mu B**
sweet	**tin C1**	—	**thəl C1**	—	—	—	***tjel C**
tall	**vi A2**	**vei A2**	**kwaaŋ A2**	**vhəəŋ A1**	**vaaŋ A2**	**qfiɑɑŋ A2**	***k-ɣwaŋ A**
thick	**ntau A2**	**nju A2**	**naa A2**	**naa A1**	**naa A2**	**nfiee A2**	***C-na A**
thin	**vu C2**	—	—	—	**vɛɛ C2 -v**	**Gaa C2**	***ɣwə C**
warm (1)	**ta C1**	—	**təu C1**	—	—	—	***tu C**

[17] This root shows an alternation of tone *C (Southwestern-Kra) versus tone *B (Central Eastern Kra). The Buyang reflex seems to point to presyllabic ***m-**. Cf. PK ***m-drəl** 'louse (body)', Buyang **/tɛn A2/**.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
warm (2)[18]	—	ʔũ B1 -v	—	—	ʔuən B1	ʔuən B1	*ʔun B
wet	—	—	—	—	ðak D2	rak D2	*rək D
white	zu D1	ʔi D1L	ʔuk D1	lɔɔk D1 -i	ʔɔɔk D1	—	*r-ʔuk D
yellow[19]	ɳʈɕi C2	—	ŋil C2	ŋaan C1	ŋaan C2	ɳ̊in C2	*C-ŋil C

VIII. Verbs

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
afraid	lau A2	m̥ A2	blaa A2	pjaa A1	laa A2	—	*p-la A
alive	pləɯ C1	li̥ C1 -i	—	—	—	—	*pluŋ C
ask	sai C1	tɕi̥ C1	cəi C1	—	—	—	*tsi C
bark (v.)	plɒ B1	—	plau B1	bau B2 -t	—	ʔbuu B1	*m-plau B
bathe	ʔɒ D1	—	ʔaap D1	ʔaap D1	—	—	*ʔap D
bite	zei B1 (Qs)	tja B1	tai B1	ðaai B1	—	—	*ʈai B
bite	zan C2	—	—	—	ðam C2	ram C2	*rəm C

[18] The expected Lachi rime reflex is -e. This etymon is perhaps a Tai loan.

[19] This root displays alternation between *-a- (Paha and Buyang) and *-i- (others).

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
buy	**sen A1**	**tɕĩ A1**	**col A1**	**tɕɛn A1**	—	—	***tsol A**
carry on back (1)	**pe C1 (Qs)**	**pɻ̩ C1**	**paa C1**	—	—	—	***pa C**
carry on back (2)	**blæ (Lz)**	**pɦi D2L**	**bik D1 -t**	**mɛɛk D1**	—	—	***m-blik D**
choose	**ɬi B1 (Lz)**	**se B1**	—	**θii B2 -t**	**lee B2**	—	***s-le B**
close eye (1)	**kle D1**	—	**klap D1**	—	—	—	***kləp D**
close eye (2)	—	—	—	—	**nap D2**	**nap D2**	***nəp D**
come[20]	**mu A1**	—	**maa A2**	—	—	**ɱee A1**	***(C-)ma A**
come (return)	—	**tɦi A2**	**dɔŋ A2 -v**	**nɔɔŋ A2 -t**	**ʔdɔɔŋ A1**	—	***m-duŋ A**
crow (v.)	**thaŋ A2**	**tɦijõ A2**	**daŋ A2**	**ðaŋ A1**	**ʔdaŋ A1**	**ʔdaŋ A1**	***ɖəŋ A**
cut (1)	**tai C1**	—	**tɛ C1**	—	—	—	***te C**
cut (2)	**han C1**	—	—	**ðan C1**	—	**ɻan C1**	***hrən C**
descend (1)	**tsəɯ C1**	—	**cau C1**	—	—	—	***caɯ C**
descend (2)	—	**lɦijũ A2**	**kloŋ A2**	—	**luŋ C2 -t**	—	***d-loŋ A**
die	**pen A1**	**phĩ A1**	**phən A1'**	**puan C2 -t**	—	—	***pɣon A**

[20] Initial reflexes of this root vary a great deal. Gelao forms point to ***ʔm-** (cf. Laozhai **ʔɱ** A1), Pubiao ***hm-** and Laha ***m-**. It is possible that some of these forms are borrowed from Tai or Kam-Sui (cf. Tai **/maa A2/**, Sui **/ɱa A1/**).

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
do	**tha A2**	**tɦje A2**	**dəu A2**	**ʔduu A1**	**ʔduu A1**	**—**	***du A**
dream	**pan A1**	**pã A1**	**pan (Tm)**	**van A1**	**pan A1**	**pan A1**	***l-pən A**
drink	**han C1**	**—**	**—**	**ðam C1**	**—**	**hɑm C1**	***hrom C**
dry in sun	**tei D1**	**—**	**—**	**daak D1**	**taak D1**	**ɣaak D1 -i**	***m-ɬak D**
eat[21]	**—**	**kfio A2 -t**	**—**	**kaan A1**	**kaan A1**	**kən A1 -v**	***kan A**
fall	**tau D1**	**tjo̱ D1S**	**tok D1**	**tɔɔk D1**	**tuk D1**	**tɔɔk D1 -v**	***tok D**
flow	**klai A1**	**lje A1**	**klәi A1**	**qui A1**	**lui A2**	**ɬei A1**	***t-lui A**
forget	**te D2**	**tɦją̱ D2S**	**dap D2**	**ʔdap D1**	**ʔdap D1**	**ʔdjap D1**	***dəp D**
give	**ni D2**	**—**	**nak D2 -v**	**nhaak D2**	**naak D2**	**—**	***nak D**
get (1)	**pɒ B1**	**—**	**—**	**—**	**—**	**—**	***pwən B**
get (2)	**—**	**tju B1**	**—**	**duɯɯ B1**	**tuə B1**	**tuu B1**	***m-to B**
go	**vu C2**	**vu C2**	**vaa C2**	**vaa C2**	**vaa C2**	**—**	***ɣwa C**
hatch	**qan C1**	**kq̃ C1**	**—**	**qam C1**	**ʔam C1**	**qam C1**	***kəm C**
have	**ʔan A1**	**ʔĩ A1 -v**	**ʔan A1**	**ʔan A1**	**ʔan A1**	**ʔan A1**	***ʔən A**

[21] This etymon agrees with 'I' in having unique reflexes of ***k-**. We would expect **q-** (Paha and Pubiao) and **ʔ-** (Buyang).

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
hear	**tsaŋ D2**	**jɒ D2S**	**jak D2**	**jhak D2**	—	**tɕak D2**	***dʒək D**
hold in mouth (1)	**qen A1**	**kwĩ A1**	—	—	**ʔum A1**	—	***kom A**
hold in mouth (2)	—	—	—	**ʔam A1**	**ʔum A1**	**ʔɑm A1**	***ʔom A**
kill	**ven A2**	—	**phən A2**	**puan C2 -t**	—	—	***p-ɣon A**
know[22]	**sa A1**	**ɕu A1**	**sɔ A1'**	—	—	—	***so A**
laugh[22]	**sa A1**	**ɕu A1**	**sɔ A1'**	**ðhɯɯ A1**	**θoo A1**	**θaau A1**	***k-so A**
lick	—	**lfii C2**	—	—	**lɛɛm C2**	**liam C2**	***lim C**
love[23]	**ŋɒ B2**	**mfiɒ B2**	**məi A1 -v**	**ŋaai A1**	**maai A1**	**ŋaai B1**	***(h)ŋwai A/B**
plant (v.)	**tan C1**	**tjã̠ C1**	**tam C1**	**tam C1**	**tam C1**	**tap C1**	***təm C**
pluck	—	—	**bət D2**	**bit D1**	**ʔbitⁿ D1**	**ʔbit D1**	***bet D**
rest[24]	**ʔji A1**	**ɳa̠ A1**	**jaŋ B2 -t**	—	**jaŋ C2**	**ʑɯŋ C2**	***(ʔ)jəŋ A/C**
scold (1)	**ʔi B1 (Lz)**	—	—	—	—	—	***ʔi B**

[22] Reflexes of these two roots are identical in most languages. It is in fact undetermined whether the former etymon ('know') should be reconstructed as ***s-** or ***-s-**, since the crucial Paha form is lacking.

[23] This etymon shows an alternation between ***ŋw-** (Western Kra) and ***hŋw-** (others).

[24] This etymon is somewhat doubtful. Western-Kra reflexes point to ***ʔj-** with tone *A versus Eastern Kra reflexes ***j-** with tone *C.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
scold (2)	**qan C1**	—	—	—	—	**qan C1**	***kən C**
scold (3)	—	**ɳa B1**	—	**ɳhaan B1**	**ɳɛn B1**	—	***hɳan B**
see	**qɒ A1**	—	**kai A1**	**qaai A1**	—	—	***kai A**
see (look)	—	—	**təi C1**	—	—	**tai C1**	***ti C**
sell	**sai A2**	**ve A2**	**vəi A2**	**θii A1**	—	—	***s-ɣwi A**
shake/shiver	—	**sã B1**	**sal B1**	—	**θen B1**	—	***səl B**
sick	**zai C2**	**kfiɣe C2**	**khəi C2**	**ði C2**	**ði C2**	**rai C2**	***d-ri C**
sleep (1)	**ŋka B2**	**ɳfii B2**	—	**ŋhuu B2**	—	—	***ŋu B**
sleep (2)	—	—	**ʔou B1**	—	**ʔuu B1**	**ʔau B1**	***ʔu B**
smell	**mpa B2**	**mfiĩ B2**	**məu B2**	**mhuu B2**	—	**mfiuu B2**	***mu B**
split (1)	**plau B1**	—	**phaa B1**	—	—	—	***pɣa B**
split (2)	—	—	—	—	**ʔdie B1**	**ʔdaai B1**	***de B**
steal[25]	**len C2**	**lfiĩ C2**	—	**lham C2**	**luəm C2**	—	***lum C**
steam (v.)	—	**tɕi̯ C1**	—	**tɕuu C1**	—	—	***tsu C**

[25] Most varieties except Buyang seem to show reflexes which go back to ***-em**, perhaps through an early rounding dissimilation between the vowel and the ending.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
swallow (v.)[26]	**lu C2**	**lfii A2**	**dəl C2 -iv**	**—**	**lɔɔn A2**	**laan C2 -v**	***d-lwal C/A**
take off	**klu D1**	**lja D1L**	**—**	**—**	**(θɔɔt D1)**	**—**	***klut D**
teach	**səɯ A1**	**tɕe A1**	**—**	**—**	**θɔɔn A1**	**θuan A1**	***tʂun A**
wait[27]	**ŋkau A1**	**—**	**ŋaa A2**	**—**	**ŋuə A1**	**—**	***hŋa(ɯ) A**
walk	**pai A1**	**pi A1**	**—**	**vhii A1**	**vii A2**	**—**	***C-pwi A**
wear	**lai C2**	**lfijo C2**	**lɛ C2**	**lhii C2**	**lee C2**	**—**	***le C**
weep	**—**	**ɳfio D2L -v**	**ɳit D2**	**ɳhit D2**	**ɳiet D1**	**—**	***ɳit D**

IX. Space, Time and Deictics

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
above	**—**	**—**	**—**	**—**	**luu A2**	**lfiuu A2**	***lju A**
back/behind	**len A2 (Lz)**	**lfiĩ A2**	**—**	**lan A2**	**—**	**—**	***lon A**
back/behind	**—**	**—**	**—**	**—**	**ʔdaŋ C1**	**ʔdaŋ C1**	***dəŋ C**
before/front	**qəɯ A1**	**kwe A1**	**kun B2 -t**	**qɔɔn A1**	**ʔɔɔn A1**	**—**	***kun A**

[26] The Lachi reflex is the same as that of ***-u-**, probably an early merger of ***-wa- > *-u-**. The Laha form may not be directly related. If this is the case, the initial of this etymon may be reconstructed simply as ***l-**.

[27] The Buyang reflex points to ***-auɯ**.

	Gelao	*Lachi*	*Laha*	*Paha*	*Buyang*	*Pubiao*	*Proto-Kra*
below	—	ɳi C2	ɳun B2	—	—	—	*ɳun B/C
day[28]	ɣwo A2	vfiõ A2	van A1'	vhan A1	vən A1	wfiən A2	*(h)wən A
inside	kləɯ C1	—	kluŋ C1	—	lɔɔŋ C2	—	*t-luŋ C
left	—	—	maaŋ A2 -t	mhaaŋ B2	—	mfiieŋ B2	*mjaŋ B
month	zai A2 (Qs)	tfijo A2	daan A2	naan A1	ʔdaan A1	nin A1	*m-ɖjan A
outside	—	—	haai C2	—	ði C1	—	*ri C
right	—	—	—	mhit D2	—	ɱatⁿ D1	*(x-)mit D
that[29]	nu B2 -i	—	ɳaa C2	ɳəə B1	ɳaa C2	—	*ʔ-ɳa C/B
this[29]	ni B2	njɛ C1	nəi C2	nii B1	nii C2	nai C2	*ʔ-ni C/B
year	plei A1	pfii A2 -t	phiŋ A1	mɛɛŋ A2	ðiaŋ A2	mfijɑɑi A2-v	*m-(p)ɣiŋ A

[28] This root shows an alternation between ***w-** and ***hw-** (Laha, Paha, and Buyang).

[29] These deictics show a *B/*C tonal alternation. The Gelao (Wz) irregular reflex **n-** of 'that' may be due to analogy with 'this'.

X. Numerals

	Gelao	Lachi	Laha	Paha	Buyang	Pubiao	Proto-Kra
one	tʂɿ C1 (Lz)	[illegible] C1	cam C1	—	—	tɕja C1 -f	*tʂəm C
two	sɿ A1	[illegible] A1	saa A1h	θaa A1	θaa A1	ɕee A1	*sa A
three	ta A1	[illegible] A1	təu A1	tuu A1	tuu A1	tau A1	*tu A
four	pu A1	[illegible] A1	paa B1 -t	paa A1	paa A1	pee A1	*pə A
five	mpu A2	[illegible] A2	ma (Tm)	mhaa A1	maa A2	mɦɑɑ A2	*r-ma A
six	maa A1	[illegible]ja A2	dam (Tm)	nam A2	nam A1	ŋam A1	*x-nəm A
seven	tru A1 (Qs)	[illegible] A1	tho (Tm)	ðhuu A1	tuu A2	tuu A1	*t-ru A
eight	vla A2	[illegible]vɛ A2	mahu (Tm)	muu A2	ðuu A2	rɦuɯɯ A2	*m-ru A
nine[30]	sou B1	[illegible]ju B2 -i	sa wa (Tm)	dhaa B1	vaa B1	ɕja B1	*s-ɣwa B
ten	pe D1	[illegible] D1S	pət (Tm)	vat D1	put D1	pɑt D1	*pwlot D
hundred	tsin A1	[illegible]i A1	—	qan A1	—	—	*kjən A

[30] Gelao rime reflexes seem to point to *-(w)aɯ. Cf. 'rice (cooked)' for a similar rime alternation.

REFERENCES

Abbreviations:

BEFEO	*Bulletin de l'École Française d'Extrême Orient*
BIHP	*Bulletin of the Institute of History and Philology*, Taipei
ICSTLL	International Conference on Sino-Tibetan Languages and Linguistics

ANONYMOUS. 1959. *A report on the survey of the Bu-yi language.* Beijing: Chinese Academy of Social Sciences. [in Chinese]

BENEDICT, Paul K. 1942. "Thai, Kadai, and Indonesian: a new alignment in Southeastern Asia." *American Anthropologist*, n.s. 44: 576-601.

_____. 1975. *Austro-Thai: language and culture with a glossary of roots.* New Haven: HRAF Press.

BONIFACY, Auguste. 1905. "Étude sur les langues parlées par les populations de la haute Rivière Claire." *BEFEO* 5: 306-27.

_____. 1906. "Étude sur les coutumes et la langue des La-ti." *BEFEO* 6: 271-78.

_____. 1908. "Étude sur les coutumes et la langue des Lolo et des La-qua du Haut Tonkin." *BEFEO* 8: 531-58.

BROWN, Marvin. 1965. *From ancient Thai to modern dialects.* Bangkok: Social Science Association Press of Thailand.

CHAMBERLAIN, James R. 1975. "A new look at the history and classification of the Tai languages." In Jimmy Harris and James R. Chamberlain (eds.), *Studies in Tai linguistics in honor of William J. Gedney*, pp. 49-66. Bangkok: Central Institute of English Language.

CHANG Kun. 1973. "The reconstruction of Proto-Miao-Yao tones." *BIHP* 44.4: 541-628.

CHANG Yimin and Jerold A. EDMONDSON 1994. "A study of the tones of Vietnamese Lachi and Gelao." Paper presented at the 27th ICSTLL, Paris.

DANG Nghiem Van, NGUYEN Truc Binh, NGUYEN Van Huy and THANH Thien. 1972. *Ethnic groups of the Austroasiatic family of languages in Northwestern Vietnam.* Hanoi: Social Sciences Publishing House. [in Vietnamese]

DOWNER, Gordon. 1963. "Chinese, Tai, and Miao-Yao." In Harry Shorto (ed.), *Linguistic Comparison in South East Asia and the Pacific (Collected Papers in Oriental and African Studies).* London: School of Oriental and African Studies.

EDMONDSON, Jerold A. and NGUYEN Van Loi. 1997. "The Lachi language of the upper reaches of the Song Lo (Rivière Claire) in Ha Giang province, Vietnam." Paper presented at the 30th ICSTLL, Beijing.

EDMONDSON Jerold A. and Graham THURGOOD. 1992. "Gelao reconstruction and its place in Kadai." Paper presented at the 25th ICSTLL, Berkeley.

GEDNEY, William. 1964. "A comparative sketch of White, Black, and Red Tai." *Social Science Review* 1: 1-47.

_____. 1965. "Yay, a northern Tai language of North Vietnam." In Milner, G.B., and Eugénie J.A. Henderson (eds.), *Indo-Pacific linguistic studies*, vol.1: 180-93. Amsterdam: North Holland Publishing Co.

_____. 1970a. "The Saek language of Nakhon Phanom Province." *Journal of Siam Society* 58.1: 67-87.

_____. 1970b. "A spectrum of phonological features in Tai." Paper presented at the 3rd ICSTLL, Cornell.

_____. 1972. "A checklist for determining tones in Tai dialects." In Estellie M. Smith (ed.), *Studies in linguistics in honor of George L. Trager*, pp. 423-37. The Hague: Mouton.

GREGERSON, Kenneth and Jerold A. EDMONDSON. 1997. "Outlying Kam-Tai: notes on Ta Mit Laha." *Mon-Khmer Studies* 27: 257-269.

HASHIMOTO, Mantaro J. 1980. *The Be language: a classified lexicon of its Limkow dialect.* Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

HANSELL, Mark. 1988. "The relation of Be to Tai: evidence from tones and initials." In Edmondson, Jerold and David Solnit (eds.), *Comparative Kadai: linguistic studies beyond Tai*, pp. 239-287. Texas: Summer Institute of Linguistics and the University of Texas at Arlington.

HAUDRICOURT, André G. 1954. "De l'origine des tons en viêtnamien." *Journal Asiatique* 242: 69-82.

_____. 1961. "Bipartition et tripartition des systèmes de tons dans quelque langues d'Extrême-Orient." *Bulletin de la Société Linguistique de Paris* 56.1: 163-80.

_____. 1965. *Le vocabulaire Bê de F.M. Savina.* Paris: Publications de l'École Française d'Extrême-Orient 57.

HE Jiashan. 1983. *A sketch of the Gelao languages.* Beijing: Nationalities Publishing House. [in Chinese]

HOANG Luong. 1994. "A glimpse of the Kadai ethnic communities of Vietnam: an anthropological study." *Kadai* 4: 41-57.

HOANG Van Ma and Vu Ba Hung. 1992. *Tieng Pubiao (The Pubiao language).* Hanoi: Social Sciences Publishing House. [in Vietnamese]

LAJONQUIÈRE, Étienne E. Lunet de. 1906. *Ethnographie du Tonkin septentrional.* Paris: Leroux.

LI Fang-Kuei. 1940. "The Tai dialect of Lungchow." *BIHP*, monograph series A, no.16. [in Chinese]

_____. 1943. "The hypothesis of a pre-glottalized series of consonants in primitive Tai." *BIHP* 11: 177-88.

_____. 1948a. "Notes on the Mak language." *BIHP* 19: 1-80.

_____. 1948b. "The distribution of initials and tones in the Sui language." *Language* 24: 160-7.

_____. 1956. "The Tai dialect of Wuming, texts, translations, and glossary." *BIHP*, monograph series A, no.19.

_____. 1965. "The Tai and Kam-Sui languages." In G.B. Milner and Eugénie J.A. Henderson (eds.), *Indo-Pacific linguistic studies*, vol.1: 148-79. Amsterdam: North Holland Publishing Co.

_____. 1968. "Notes on the T'en or Yanghuang language: Glossary." *BIHP* 40.1: 397-504.

_____. 1977. *A handbook of comparative Tai.* Honolulu: Unversity of Hawaii Press.

LI Jinfang. 1996. "Yalhong and Buyang languages." ms.

LIANG Min. 1990. "On the affiliation of the Ge-Yang language group." *Kadai* 2: 45-55.

_____. 1990a. "The Buyang language." *Kadai* 2: 13-21.

_____. 1990b. "The Lachi language." *Kadai* 2: 35-44.

MATISOFF, James A. 1988. "Proto-Hlai initials and tones: a first approximation." In Jerold Edmondson and David Solnit (eds), *Comparative Kadai: linguistic studies beyond Tai*, pp. 289-321. Texas: Summer Institute of Linguistics and the University of Texas at Arlington.

NGUYEN Van Huy. 1972. "A first step towards understanding the relationship among various groups of Gelao of Ha Giang province." *Thongbao Dan Toc Hoc (Journal of Ethnological Study)* 1972.1: 76-89. [in Vietnamese]

OSTAPIRAT, Weera. 1993. *Proto-Hlai vowel system.* M.A. thesis, Mahidol University.

_____. 1995. "Notes on Laha final -l." *Linguistics of the Tibeto-Burman Area* 18.1: 173-181.

OUYANG Jueya and ZHENG Yiqing. 1983. *Research and survey of the Li languages.* Beijing: China Social Sciences Press. [in Chinese]

ROBERT, J. 1913. "Notice sur les Lati." *Revue d'Ethnographie et de Sociologie* 4: 338-52.

SOLNIT, David. 1982. "The nasal and fricative initials of the Li language: a new type of conditioning for tonal partition?" Paper presented at the 15th ICSTLL, Beijing.

_____. 1999. "New data on the tone system and initial consonant types of Proto-Gelao." ms.

SOLNTSEVA, N. V. and Hoang Van Ma. 1986. *Jazyk Laxa.* Moskva: Nauka.

THURGOOD, Graham. 1988. "Notes on the reconstruction of Proto-Kam-Sui." In Edmondson, Jerold and David Solnit (eds), *Comparative Kadai: linguistic studies beyond Tai*, pp. 179-218. Texas: Summer Institute of Linguistics and the University of Texas at Arlington.

WANG Li and QIAN Sun. 1951. "First steps in the White Sand Li language of Hainan." *Lingnan Science Journal* 2.11: 253-300. [in Chinese]

WULFF, Kurt. 1934. *Chinesisch und Tai: Sprachvergleichende Untersuchungen.* Copenhagen: Levin and Munksgaard.

ZHANG Jimin 1993. *A study of the Gelao languages.* Guiyang: Guizhou Nationalities Publishing House. [in Chinese]

ZHANG Junru. 1982. *A sketch of the Sui language.* Beijing: Nationalities Publishing House. [in Chinese]

ZHANG Yuansheng, MA Jialin, WEN Mingying, and WEI Xinglang. 1985. *The language of Lingao, Hainan.* Nanning: Guangxi Nationalities Publishing House. [in Chinese]