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PROTO LOLO-BURMESE

by Robbins Burling

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PROTO LOLO-BURMESE

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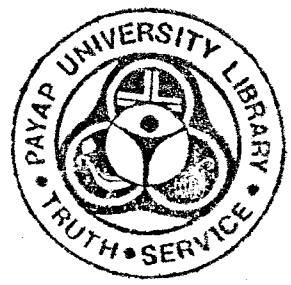
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by

ROBBINS BURLING



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ACKNOWLEDGEMENTS

This monograph has been long in the making. I first conceived the idea of comparing the Lolo and Burmish languages when I rather suddenly found myself in Burma in 1959 as a Lecturer at the University of Rangoon under the Fullbright program. Among the students at the University were speakers of many of Burma's multitude of languages, and a number of them proved to be not only cooperative, but highly intelligent informants. Except for the Akha examples, the data which I use here were collected from these students, or at least checked with them after items had been suggested to me by a published source. For my Akha material I am indebted entirely to the generosity of Paul Lewis of the American Baptist Mission in Burma.

Since returning to the United States many other tasks have interrupted my work but I have periodically returned to my six language comparison. The decisive step in moving from notes to manuscript was made during a year free from teaching duties provided by a Fellowship at the Center For Advanced Studies in the Behavioral Sciences which was supported by a Postdoctoral Fellowship from the National Institutes of Health in 1963-64. The laborious task of checking the materials and final organization into a manuscript were completed at the University of Michigan where a Faculty Research Fellowship from the Rackham Graduate School provided me with funds for research and clerical assistance.

For research assistance I was fortunate in obtaining the help of an eminently able and enthusiastic student, Lynn Levine, who diligently checked and rechecked my sometimes obscure notes. From time to time I have discussed my materials with a number of friends and colleagues among whom in particular I should mention Paul Lewis, Mary Haas, Floyd Lousbury, and A. L. Becker. From all these I have received both encouragement and sensible suggestions about how to proceed. Above all, I wish to express my gratitude to Professor Gordon Luce who was still living in Rangoon during our year there. Professor Luce made his incredible library available to me, and shared generously his monumental knowledge of the languages of Burma. He and his wife Daw Ti Ti, extended their hospitality to my wife and myself as they did so graciously to so many people. Coming to know the Luces must certainly rank as one of the rewarding results of a truly rewarding year.

1. INTRODUCTION

There can be little serious doubt that the six languages considered in this monograph, Burmese, Atsi, Maru, Lisu, Lahu and Akha, fall into a single sub-group of the Tibeto-Burman language family. All are spoken in Burma today and several of them overlap the borders of Yunnan, Laos or Thailand as well. These six, to be sure, are not the only members of their sub-group, but they are probably reasonably representative of it, and are certainly more closely related to one another than they are to most other Tibeto-Burman languages such as Jinghpaw, Karen, or Chin in Burma, the Tibeto-Burman languages of Assam, or those of the Himalayan border regions of India, Nepal and Tibet. The very fact that it is possible to make the close comparisons among these six languages and the reconstructions which are presented here serves to demonstrate their close relationship.

It seems no less clear that these six languages are themselves divided into two coordinate sub-branches: Burmese, Atsi and Maru on the one hand, and Lisu, Lahu and Akha on the other. Politically and numerically, of course, Burmese is the most important of the six, and it is the only language considered here with an ancient tradition of writing. Today, Burmese is spoken throughout most of lowland Burma and it is used as the administrative language and to some extent as a lingua franca throughout the highlands as well. As with all languages spoken over a sizeable territory, one can recognize a number of dialects of Burmese. Among the more divergent are Arakanese spoken in Arakan in the coastal areas adjacent to East Pakistan, and even across the border in Pakistan; the dialects of Tavoy and Mergui spoken in the Tennaserim peninsula in southeastern most Burma; and a number of dialects such as 'Inle' spoken in the hills of the southwestern Shan States, adjacent to the Burmese plains. These dialects, however, are relatively undifferentiated compared with the range of difference between Burmese and the other five languages considered in this monograph, and only standard Burmese as spoken in Rangoon will be considered here.

The closest linguistic relatives of Burmese are spoken in northern Burma, particularly in Kachin state, but they are found in the adjacent parts of the northern Shan States and in Yunnan province, China as well. These languages include Atsi and Maru represented here, and also some others such as Lashi and Hpon, all of which are often known collectively

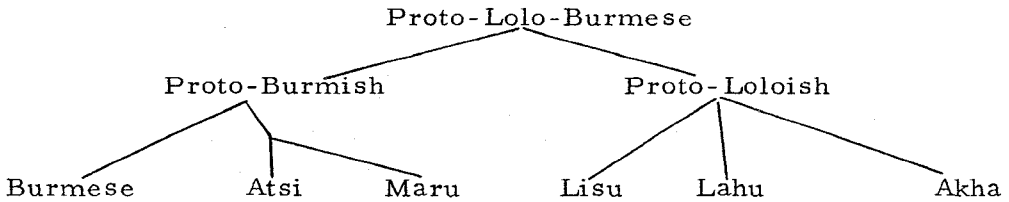
as the 'Kachin' languages. The term 'Kachin' can be misleading, however, for the language often referred to as 'Kachin proper' but more precisely known as Jinghpaw, belongs to an entirely different branch of Tibeto-Burman. The term 'Kachin proper,' has no purely linguistic value, therefore but derives from the cultural use of the Jinghpaw language as something of a lingua franca among various linguistic communities in the area, and in particular, by speakers of Atsi, Maru, and the other languages which do fall into the same language sub-group as Burmese. Speakers of Jinghpaw and of the various other languages share many aspects of their culture and social organization and are often bilingual in one another's languages, but in historical affiliation, the Jinghpaw language stands apart.

Atsi (variously known as Zi, Szi, Asi, Tsaiwa) and Maru (also known as Lawng or Lawngwaw) would appear to be somewhat more closely related to each other than either is to Burmese, but while they share many lexical and phonological features, speakers emphatically deny their mutual intelligibility, and indeed a number of significant differences between them will appear in the data given below.

Lisu (know also as Yawyin), Lahu (Muhso), and Akha (Kaw), are three representatives of the 'Lolo' group of languages. Lisu is spoken primarily in the northern Shan States, while Lahu and Akha are found in the eastern Shan States and across the international borders in both China and Thailand. Many other 'Lolo' languages or dialects variously known as Muso, Nashi, Nakhi, and even Lolo, are scattered about Yunnan and indeed collectively they form one of the important linguistic components in that linguistically heterogeneous province. Historically, Lolo itself has been the most important of these languages, and probably still has the largest number of speakers. Lolo had a well developed script based apparently on Chinese characters, though deviating considerably from them. Although a number of short word lists have appeared from time to time on these Lolo languages of Yunnan, their reliability is questionable and none of them are taken into account in this monograph. The variability provided by Lisu, Lahu and Akha is so great, however, that I doubt if data from additional languages would greatly extend our perspective.

The few scholars who have interested themselves in these languages seem to have been in general agreement about their phylogenetic grouping. Shafer (1940 : 308) for instance, recognizes essentially the same sub-grouping. He has suggested the terms 'Loloish' to cover the various Lolo languages and 'Burmish' for Burmese and its nearest relatives. While these terms can scarcely be credited with euphony, they correspond so well with the linguistic evidence that the term 'Proto-Loloish' can conveniently be used for the forms reconstructed from Lisu, Lahu and Akha, and 'Proto-Burmish' can be used for the forms reconstructed

from Burmese, Atsi and Maru. The even more distant ancestral language lying behind all six modern descendents must be called Proto-Lolo-Burmese. From all that has been said, it follows that the general phylogenetic relationships of the languages can be diagrammed as follows:



Quite naturally Burmese has received more attention from linguists than have any of the other languages. Cornyn (1944) wrote the first modern grammar and has contributed various teaching materials for Burmese. Stewart *et al.* (1940 and later) have begun an ambitious dictionary project which surpasses in scope Judson's standard dictionary (1922). Phonology has been given particular attention by McDavid (1945), Bernot (1963), and most recently by Sprigg (1964). Since Burmese written records date back for almost 1000 years, scholars interested in historical relationships have quite naturally devoted considerable attention to the writing system which diverges in a number of respects from the modern spoken language. It has been assumed with little evidence that the orthography reflects earlier characteristics of the language, but the only way to determine whether or not this is so, is, of course, to obtain independent evidence for the earlier forms. In order not to prejudice a judgement in this matter, I have, in preparing this monograph, deliberately avoided any consideration of Burmese written forms but have confined myself to the spoken language. It should now be rewarding to compare my reconstructions with the written forms, since the reconstructions provide, for the first time, criteria against which to judge the orthography.

Atsi has been the least well documented of the six languages considered here. A few short word lists have appeared, references to which will be found in Shafer (1957). Besides similar short word lists, Maru has been the subject of a separate work (Clerk, 1911) which, however, I have never seen.

Lisu and Lahu have each been the subject of better than average traditional handbooks. (Fraser, 1922, and Telford, 1938, respectively). These are unusual for works of this vintage in giving quite reasonable indication of tone, though their transcriptions are in some respects difficult (see below).

More complete bibliographies for all these languages and references to the scattered materials which have been published on Akha, will be

found in Shafer's wide-ranging Bibliography of Sino-Tibetan Languages (1957).

In this monograph I undertake the comparison of the phonological characteristics of these six languages and I construct a system ('Proto-Lolo-Burmese') in which reconstructed forms can be given. With the exception of Akha, I collected all the data myself or at least checked it personally with speakers of the various languages, largely with students at the University of Rangoon in 1959-60. For the Akha material, I am indebted entirely to the excellent work of the Rev. Paul Lewis, a member of the American Baptist Mission, who has worked extensively with the language, and who graciously shared his findings with me.

I have arranged my materials as follows: Section 2 gives a rapid survey and presents the major conclusions of the entire work. I hope this will allow those who do not care to plow through the mass of detail, to survey the results quickly, and that it can also serve as orientation for those who wish to study the details more intensively. In Section 3 the phonology of each of the six modern languages is described. Section 4 gives the phonological equations which relate the various languages, and symbols are assigned which will be used in reconstructions, on the three different levels: 1) Proto-Lolo-Burmese, 2) Proto-Burmish, and 3) Proto-Lolish. Section 5 consists of a lengthy table showing the comparable items from the various languages, together with the reconstructed forms.

2. SURVEY

In this section the general conclusions of the monograph are presented rapidly, but the detailed supporting data will be left for the later chapters. The end result of the work will be to present reconstructed forms of a 'Proto' language which has many characteristics of the six daughter languages, and from which it is possible to derive by mechanical phonological rules, the forms found in these six languages.

In all six languages the syllable occupies a unique role. Morpheme boundaries and syllable boundaries generally coincide and the syllable is normally the shortest item that can be readily articulated in isolation. Each syllable has a vowel and a characteristic tone; most syllables also have an initial consonant and some have a final consonant as well. In every language the array of syllable initial (prevocalic) consonants, is more extensive than that of syllable final (postvocalic) consonants, and the phonological characteristics of the two sets are often quite divergent. Final consonants tend to be sharply limited in their distribution with respect to the preceding vowels, while initials can usually be shuffled far more freely before all vowels. For this reason, when one compares the phonology of these languages, it is almost mandatory to consider it in terms of the three relatively independent parts of the syllable: 1) Initial consonant or cluster, 2) Final, including both vowel and any final consonant, and 3) Tone.

For certain purposes it is also convenient to recognize a set of 'medials,' semi-consonants, which occur between the initial consonant and the vowel. In these six languages only a palatal (written with 'y') and a labial ('w') occur as medials. Although their occurrence is to some extent restricted both by the preceding consonant and the following vowel, 'y' is generally more limited with respect to the initial, and 'w' more restricted with respect to the vowel and it is therefore reasonable to treat 'y' and 'w' differently. In other words, 'y' can be thought of as forming something like consonant clusters with initial consonants, while 'w' forms a labialized on-glide to the following vowel. A speculative suggestion is given later (Section 4. 16) for reconstructing certain additional medials, but only two survive in the modern languages considered here.

While it is convenient to describe Proto-Lolo-Burmese, and the changes which have led through intermediate stages to the six modern languages in terms of initials, finals, and tones, not even these three

sets are entirely independent. Lisu and Lahu have undergone extensive tone changes which were dependent upon the class of the initial consonant of the syllable. In a number of other cases, vowels change in a manner governed by the initial consonant or by the medial. Tones and finals too, are interdependent, for the development of tones in stopped syllables is totally different from their development in non-stopped syllables. (Since syllables with a final nasal act in most ways, — in particular with respect to tone — exactly like open syllables, the crucial distinction to be made is between stopped and non-stopped syllables, rather than that between closed and open syllables.) The number of distinctive tones is always less in stopped syllables than in non-stopped syllables and particularly in those languages in which the glottal is the only final stop, it is tempting to regard the stop as simply one phonological feature of an additional tone. If phonological conditioning has crossed syllable boundaries, this has, with one minor exception (see Sec. 4. 12), not been taken into account in the materials to follow. Given the important phonological and lexical distinctiveness of the syllable, however, it seems unlikely that such conditioning could have been important. Only rarely, in fact, does a reconstructable item consist of more than a single syllable. A sketch of each of the three parts of the syllable of the proto-language as suggested by the comparisons will now be given.

2. 1 Initials

The large majority of the initials which must be provided for in the reconstructed Lolo-Burmese language can be displayed in a single chart, (Table 2. 1-1) and the development from this array to the condition of each of the six modern languages can be rather parsimoniously described by means of various mergers of the rows and columns.

Table 2. 1-1

	P	PY	T	NY	TS	C	KY	K
S ₁	ph	phy	th		tsh	ch	khy	kh
S ₂	p?	p?y	t?		ts?	(c?)	(k?y)	(k?)
S ₃	p	py	t		ts	c	ky	k
N ₁	m	my	n	(ny)				ŋ
N ₂	m?	m?y	n?	n?y				ŋ?

All of the distinctions suggested by this Table 2. 1-1 are found in both Atsi and Maru, so these languages make a convenient starting point from which to describe the phonological developments. In Atsi and Maru

all initials shown with 'y' are, in fact, clusters of a stop or nasal with a /y/. These languages have two series of affricates and three points at which stops and nasals can be articulated, bilabial, apical, and velar. The members of the S₁ series turn up in Atsi and Maru as voiceless aspirated stops and affricates, while the S₃ series is voiced. The members of the S₂ series are voiceless and unaspirated, but most strikingly, they are always followed by a vowel with glottal constriction. The two nasal series are distinguished exclusively by this feature of glottalization, the N₁ series being followed by clear vowels, the N₂ series being followed by glottalized vowels. These features make it reasonable to refer to the S₁, S₂, and S₃ series of stops and affricates as 'aspirated,' 'glottalized,' and 'voiced' respectively, and to the N₁ and N₂ nasal series as 'plain' and 'glottalized.'

In all the languages other than Atsi and Maru one or more pairs of rows and columns have merged and their phonetic characteristics are somewhat varied. In Burmese, the C and KY series have fallen together as affricates, but the PY and NY series remain as distinct clusters. The TS series has been deaffricated and appears as the aspirated and unaspirated /sh/ and /s/ of modern Burmese. On the other dimension, the S₁ and S₂ series have fallen together to form the Burmese aspirated stops, while the S₃ series appears in modern Burmese as the unvoiced unaspirated stops. (No regular correspondences have been discovered for the voiced stops of modern Burmese, and it appears most likely that they arose first from the assimilation of voiceless stops in intervocalic position, followed by irregular morphological loss of first syllables, aided perhaps by borrowing from Pali and other languages, see Section 4. 12). The N₁ series results in the simple nasals, of modern Burmese while the N₂ series develops into the preaspirated nasals.

In all three of the Loloish languages, Lisu, Lahu and Akha, the two nasal series have fallen together. However, even in these languages their original separation is attested by the differing development of tones in syllables reconstructable as belonging to the N₁ series from those belonging to N₂. Tones develop in syllables originating from N₁ initials just as they do in those with S₃ (presumably voiced) initials while syllables reconstructed with the N₂ series have tones which develop in the same manner as tones in syllables with S₂ initials. One cannot confidently specify phonetic character of the original N₂ or S₂ series, but they do seem to have had some parallel characteristic, possibly glottalization. Similarly the N₁ and S₃ series could well have shared clear voicing.

All Lolo languages also share the tendency to reduce the number of 'Y' clusters. The 'y' has been lost from the PY and NY series before certain vowels in Lisu and Akha, while in Lahu the P and PY series have been completely merged and the NY series has been reduced to simple

nasals. The KY series had a somewhat varied fate in the three languages, but nowhere do its members appear as real clusters.

In Lisu the KY series has fallen together with K and resulted in simple stops. The S₁, S₂ and S₃ series are distinct in Lisu, appearing as voiceless aspirated, voiceless unaspirated, and voiced, respectively, and the S₂ initials do not have the glottalizing effect upon the following vowels that is so characteristic of the Atsi and Maru reflexes of the S₂ series.

In Lahu the KY and K series remain distinct, but both appear as simple stops, the KY series being represented by front velar stops, and the K series by very far back velar stops. The TS and C series no longer contrast in Lahu, although this language has two phonetically quite distinct types of affricates which are in complementary distribution with one another. Finally, in Lahu the S₂ and S₃ series have fallen together as voiceless but unaspirated stops, which contrast with the aspirated stops derived from S₁. Modern Lahu does have voiced stops but they do not seem to correspond to cognate forms in the other languages.

Finally, in Akha, the members of the KY series appear as simple velar stops, while the members of the K series appear as velar fricatives: /x/ and /ɣ/. The TS and C series remain distinct in Akha, but the S₁ and S₂ series have fallen together (as in Burmese, but unlike the more closely related Lahu) as voiceless stops, which remain in contrast with the voiced stops derived from S₃. Akha, alone of the six modern languages considered here appears to have but two series of stops.

These languages have a few other initials which cannot be arranged into such an orderly array as these in Table 2. 1-1 and their development appears to be rather more idiosyncratic. Those which can be compared with partial confidence are shown in Table 2. 1-2.

Table 2. 1-2

	Burmese	Atsi	Maru	Lisu	Lahu	Akha
*l	l	l	l	l	l	l
*l?	hl	l?	l?	l	l	l
*s	θ	s	s	s/š	s	s/š
*š	θ	š	š	s/š	s	s/š
*w	w	v	w	w	v	y/z
*y	y	y	y	ř/y	y	y/z

For the most part this chart should be self explanatory, but it should be noted that *l and *l? develop just as the two series of nasals do.

Indeed *l? has the same effect upon tone development in the Lolo languages that the N₂ and S₂ series have. *s and *š have fallen together in Burmese as /θ / thus maintaining their distinction from the presumably new /s/ and /sh/ of Burmese, the latter corresponding to the /ts/ and /tsh/ affricates of most of the other languages. *s and *š have also fallen together phonemically in Lahu, but like the affricates which have also fallen together (and with which the sibilants are homorganic) two rather distinct allophones are found in modern Lahu. *s and *š seem to have fallen together but then resplit along new lines in the history of both Lisu and Akha.

Three far more tentative correspondences are shown in Table 2. 1-3.

Table 2. 1-3

	Burmese	Atsi	Maru	Lisu	Lahu	Akha
*hy	y	y	y	hy/h	h	y
*γ	y	v	γ	γ/y	g̣	y/z
*h	š	h	γ			

In each of these three cases, the correspondences within the Burish languages (Burmese, Atsi, and Maru) can hardly be doubted, but their correspondences with the Loloish languages are too fragmentary to be more than suggestive.

2. 2 Finals

Although many regular correspondences can be found among the finals (vowels and final consonants) of the six languages, they do not fall into the kind of satisfyingly symmetrical arrangements that can suggest structured changes in the course of divergence of the languages. As a matter of fact, a considerable number of almost bizarre correspondences must be recognized as regular, simply because they are so common, and no confidence at all can be placed in any guess about the phonetic reality of the vowels of the proto-languages.

The least ambiguous aspect of the finals is the relationship among the post-vocalic consonants. As has already been pointed out, all six languages have fewer post-vocalic consonants than they do initials, but some languages are particularly impoverished in this respect. The three Lolo languages and Burmese have only one distinctive final stop (always a glottal stop except for its non-distinctive assimilation to the following syllable initial in Burmese), but Atsi and Maru also have final -p, -t, and -k. By and large all the final stops of Atsi and Maru are cognate to glottal stops in the other languages. Lisu and Lahu have no distinctive

final nasals or nasalized vowels. Burmese has nasal vowels (written with 'n' following the vowel) which are distinct from the non-nasal vowels, and Akha has two distinctive nasal finals, a syllabic /m/ and a low back nasalized vowel /ɔ̃n/ but other Akha vowels are never nasalized. As with final stops, Atsi and Maru have the fullest compliment of final nasals: -m, -n, and -ŋ. Usually, though not invariably, Burmese nasal vowels, and the Akha nasals are found in words in which the Atsi and Maru cognates also have nasals. In the case of both final stops and final nasals, therefore, it seems reasonable to put the greatest reliance upon Atsi and Maru in assigning symbols for the proto-language, since it is in Atsi and Maru that the greatest differentiation persists today.

Vowels in syllables which are terminated by nasals or stops almost invariably show radically different correspondences than the vowels of open syllables. So different are the correspondences that reconstructions for open, nasal and stopped syllables rarely support one another. This means that while it is easy for instance to assign the symbol *ok as the Proto-Lolo-Burmese form that has led to /au?/, /u?/, /ok/, /o?/, /ɔ?/, /o?/ in Burmese, Atsi, Maru, Lisu, Lahu and Akha respectively and to assign *o to the correspondence /ou/, /au/, /uk/, /u/, /ɔ/, /ɸ/ in the same languages, it would be rash to imagine that the letter 'o' as used to symbolize these two reconstructed forms represents ancestral sounds which were phonologically similar, or which had any particular structural relationship. An additional complicating factor is that initial and medial consonants seem to have strongly effected the development of certain vowels. In Atsi and Maru, vowels following medial -y- or -w- are quite divergent from others, and labials, sibilants, and affricates seem to have had a pronounced effect upon certain vowels in both Lisu and Lahu.

Given these problems, the vowel symbols assigned for the reconstructed forms can be no more than convenient labels. The reconstructed forms can be used to predict back to the modern languages, but they do not necessarily represent the phonetics of the ancestral language. For what it is worth, the symbols assigned to the finals of Proto-Lolo-Burmese are arranged in Table 2. 2-1 as if they had some internal organization, but the details of their development will be discussed in Section 4. Those preceded by (w) may be accompanied by a reconstructed medial *w, while those in parentheses are reconstructable only in Proto-Burmish and not in Loloish or Proto-Lolo-Burmese.

Table 2. 2-1

i	(w)ei	(w)e	(w)ə	(w)a	o	u
				ap		up
(it)				at		ut

Table 2. 2-1

(ik)		ok
	(w)a?	
	(w)am	um
	(an)	(un)
ij	aj	oj

2. 3 Tones

Phonetically the tones are undoubtedly the least stable feature of these languages, and yet, because no language has more than a small number of tones, the correspondences that emerge upon comparing the various languages typically have a larger number of examples than do either the vowels or consonants. As a result, though virtually nothing can be stated about the phonetic nature of the tones of the original language, one can nevertheless have considerable confidence in the nature of the tonal system of the proto language, and the steps by which the tones of the reconstructed levels develop into the tones of the modern languages can be stated with some assurance.

The clearest aspect of the tones is that stopped and non-stopped syllables develop in an entirely different manner, and with two exceptions stopped syllables of one language correspond to stopped syllables in the others, while other cognate sets are uniformly unstopped. One must recognize at least three distinctive tones for the unstopped syllables of the proto-language, which persist without serious rearrangement in Burmese, Maru, and Akha. In Atsi, Lisu, and Lahu, however, two of the tones split apart. The splitting in Lisu and Lahu depends upon the class of the syllable initial — whether it is voiced, voiceless, or aspirated — but the situation in Atsi seems to have been more complex (see section 4).

Two original stopped tones, must be recognized to account for a persisting contrast in the Loloish languages. Lahu and Akha each retain two stopped tones, while Lisu has consistently lost one of them. The two stops seem to have fallen together by the stage of proto-Burmish, however, and in Atsi and Burmese all stopped syllables have the same tone. In Maru a new split along different lines has occurred among stopped syllables (see Section 4. 32). In spite of a large number of complications, therefore, most of the features of the tones of all six modern languages can be described as having derived from three unstopped and two stopped tones of proto Lolo-Burmese. The tone correspondences are tabulated and summarized in Section 4. 4.



3. THE MODERN LANGUAGES

In this section the phonology of each of the six modern languages is considered individually, and where relevant, comparisons are made between the transcription used here and transcriptions that have been used elsewhere.

3. 1 Burmese

Burmese is the only one of the six languages considered here which has received any appreciable attention by modern linguists, and the interested reader can be referred to more complete accounts of the phonology than can be given here. (Cornyn, 1944; McDavid, 1945) The transcription used here is, with minor changes, like that used by Cornyn in his Outline of Burmese Grammar.

3. 11 Initials

The syllable initial consonants and clusters of Burmese can be displayed as follows:

aspirated	ph	phy	th	sh	ch	kh				h
unaspirated	p	py	t	s	c	k			θ	š
voiced	b	by	d	z	j	g	l	w	y	
nasal	m	my	n	ny		ŋ				
preaspirated	hm	hmy	hn	hny		hŋ	hl		hy	

The stops, as well as the affricates and sibilants fall into three distinct series: voiceless aspirated, voiceless unaspirated, and voiced. The nasals as well as /l/ occur both plain and with preaspiration. θ is an interdental fricative, voiceless but with less aspiration than English /θ/, and /h/, consists of aspiration with its quality assimilated to the following vowel very much as in English. /y/ and /w/ are palatal and bi-labial semi-consonants.

Burmese is characterized by wholesale assimilation both of syllable final stops and vowel nasalization to the initial of the following syllable, and also of syllable initials to the voicing characteristics of the preceding syllable. Thus what appears in absolute final position as

a glottal stop assimilates to the articulatory position of the initial stop of the following syllable, while a final nasal is always homorganic with the following syllable initial. Contrarywise, initial stops are always voiced when they occur in close juncture after open syllables.

In his Outline of Burmese Grammar Cornyn includes this assimilation in his transcription and thus each morpheme is likely to occur in several different forms, depending upon what precedes and follows. For historical work it is mandatory to consider each syllable in a basic or 'morphophonemic' form, the form assumed by the syllable when spoken in isolation, and the form from which the various particular instances can be automatically derived by simple, phonologically expressed rules. All Burmese examples in this monograph are cited in this form. It happens that a high proportion of phonetically voiced stops, affricates and sibilants /b, d, g, j, z/ occur as a result of assimilation, and they are somewhat rare in absolute initial position.

My transcription deviates from Cornyn's in one other trivial respect. In conformity with conventional Burmese orthography, Cornyn indicates an additional initial consonant: /?/. Syllables which he writes with /?/ are written here with no initial consonant at all. This makes no difference to the analysis, but it will avoid confusion with the entirely separate final /?/, and the phonemically and phonetically distinct initial glottalization that co-occurs with other initials in Atsi and Maru.

3. 12 Medials

The only forms in Burmese that might be interpreted as initial clusters are formed with /y/ or /w/. Medial /y/ occurs only after a limited range of initial consonants: ph, p, b, m, hm, n, hn, h. /y/ is made by a raising of the front of the tongue toward the palate, and it is then followed by a rapid glide toward the vowel. Medial /w/ can follow any simple initial (other than initial /w/) but it does not occur with clusters having medial /y/ except for /hyw/. The distribution of /w/ is limited, however, since it only precedes the vowels /i, ei, e, and a/.

3. 13 Finals

The following symbols, the same as those used by Cornyn, account for all Burmese finals.

i	in	i?	High front unrounded.
ei	ein	ei?	Higher midfront unrounded. Only slight glide.
e		e?	Lower midfront unrounded.
	ain	ai?	Low central with strong glide to high front.

a	an	a?	Low central unrounded.	-
	aun	au?	Low central with strong glide to highback rounded.	
o			Lower mid back rounded.	
ou	oun	ou?	Higher mid back rounded. Only slight glide.	
u	un	u?	High back rounded.	

In general the 'n' indicates nasalization of the vowel, but it is written after the vowel sign rather than above it so as not to interfere with the tone marks. Nasalized vowels moreover do assimilate to an initial consonant which follows in close juncture to produce a homorganic nasal. Nasalization is incompatible with the glottal stop, but both nasalized and stopped high vowels (in, i? un, u?) are articulated somewhat lower than the most similar open vowel.

3. 14 Tones

Open and nasal syllables occur in one of three tones. All stopped syllables have the same tone and these have been taken to constitute the fourth tone of Burmese, contrasting with the other three. Besides these four, Burmese has a 'weak' syllable type in which the vowel is very short, always low or mid central and weakly stressed. Such syllables can never occur alone and they never occur in word final position. No tone contrast is found on such syllables and they might, therefore be called 'toneless' syllables. Alternatively, they might be said to constitute a fifth tone, but since these syllables occur only with a single 'shwa' like vowel, their status is clearly quite different from that of the other tones. I symbolize these tones with 'ă,' instead of the simple 'a' which Cornyn used so as to make its condition explicit. The tones of Burmese are:

/á/	Low, long and gently rising.
/â/	Higher than /á/, falling.
/à/	High, short sharply falling and accompanied by marked glottal constriction. This glottal constriction which produces the so-called 'creaky voice' is perhaps the most noticeable characteristic of this tone.
/a?/	Very short and terminated by a glottal stop. As noted above this glottal tone does not occur with nasal vowels.
/ă/	'Toneless,' short, weakly stressed and occurring only with a midcentral vowel. Never nasalized or stopped.

3. 2 Atsi

3. 21 Initials

The initials and initial clusters of Atsi can be symbolized as follows:

aspirated	ph	phy	th	tsh	ch	khy	kh
glottalized	p?	p?y	t?	ts?	c?	k?y	k?
plain (voiced)	p	py	t	ts	c	ky	k
nasal	m	my	n	ny			ŋ
glottal-nasal	m?	m?	n?	n?			ŋ?
spirant				s	ʃ		h
liquid	v		l	(r)			
glottal-liquid			l?				

The three series of stops and affricates are differentiated phonetically as much as anything else by the quality which they impose upon the following vowel. The members of the 'plain' series are vigorously voiced and are always followed by a loud clear vowel. The 'plain' consonants could, of course, be written with 'b,' 'd,' and 'g,' but since the two voiceless series (aspirated and glottalized) seem to have something imposed upon them besides voicelessness, it is reasonable to mark the additional feature. This makes additional symbols for the voiced consonants unnecessary. This symbolization is forcefully suggested by the two nasal series which differ in voice quality of the following vowel. If /m/ and /m?/ are to be differentiated only by /?/ it seems reasonable to differentiate /p/ and /p?/ in the same way. The aspirated series include a strong puff of breath after the stop, and they are followed by clear vowels.

The middle series of stops, those marked on the chart as 'glottalized' have less familiar phonetic characteristics. These stops are unaspirated and unvoiced, but the more striking phonetic characteristic of the series is the quality which they impose upon the following vowel. These vowels have the voice quality which has sometimes been termed 'creaky' in southeast Asian languages and there seems to have been little agreement about the precise manner in which such 'creaky' vowels are articulated. It is my belief that the voice quality of these Atsi vowels is imposed by a constriction of the muscles of the larynx. This constriction in no way interferes with the fundamental vibration frequency of the vocal cords (such vowels take all the tone contrasts of the language) but it does impose a very distinctive quality upon the voiced portion of the syllable. In all likelihood this 'creaky' voice quality is initiated by a release of the stopped glottis occurring simultaneously or very shortly

after the release of the other articulators, although no marked glottal stop is audible. Of course the precise phonetic nature of this stop series makes little difference to the pattern of phonological contrasts found in the language and there can be no doubt at all that syllables of the 'glottalized' series do contrast with other syllables in the language.

Nasals occur in each of the three stop positions, bilabial, apical and velar, and they and the lateral occur either plain voiced, or with the same glottalized voiced quality as the second stop series.

Atsi has two unvoiced spirants, (written /s/ and /š/), which are very close phonetically to the English phones. Corresponding to these are two series of affricates which have the same three-way contrasts (aspirated, glottalized, and voiced) as the stops.

/h/ is not unlike the English phone, although it tends, (particularly before /a/) to have a bit more friction than its English counterpart. /y/ can occur initially, and is also much like the English consonant. /v/ is a voiced labial fricative. In most positions the preponderant friction is usually labio-dental. Before /e/, however, and before /a/, in high toned syllables, /v/ has bilabial friction as well, and in other positions it has rather wide free variation in the direction of a bilabial fricative, or [w]-like sound. Atsi has a rare /r/, rather retroflex but somewhat fricative, which probably occurs only in borrowed words. It does not figure in historical comparisons.

3. 22 Medial

Atsi, as analysed here, has only one medial: /y/. It can occur after /ph, p?, p, m, m?, n, n?, kh, k?, k/ a list made longer than the Burmese by the addition of the velars.

3. 23. Finals

Atsi can be described as having five simple vowels and three diphthongs. The simple vowels but not the diphthongs can be followed by one or another of several stops and nasals.

/i/ High, unrounded. When following initial or medial /y/ it is high front, but it is otherwise backed toward high central.

/e/ Mid front, unrounded.

/a/ Low, central, unrounded.

/o/ Back, lower mid rounded.

/u/ High, back, rounded.

These five simple vowels may be followed by the nasals /-m, -n, -ŋ/, and by the stops /-p, -t, -k, -?/. The stops are unaspirated, and

in final position, unreleased. All the vowels except /a/ are lowered somewhat in stopped syllables as compared with unstopped syllables.

The three remaining vowels are diphthongs, and these cannot be followed by a final consonant.

- /au/ A vowel beginning at low central and gliding toward high back rounded. It is quite similar to the English vowel of 'how.'
- /ai/ A vowel beginning at low central and gliding toward high front. It is similar to the English vowel of 'high.'
- /ui/ A vowel beginning with high back rounded articulation and proceeding toward a high front unrounded. Phonetically the two parts of this vowel seem more distinct than in the case of other two diphthongs, and it seems superficially to be almost bi-syllabic, rather like the English vowel in 'gooey.' Only one tone occurs with the pair however, and its role in the syllable seems in no way distinct from that of the other diphthongs. As will be demonstrated below, many instances of Atsi /ui/ are found in words which are cognate to Burmese words having a medial /w/, and indeed phonetically they are not dissimilar to the latter. One might, therefore be tempted to interpret this Atsi vowel as a combination of a medial /w/ with the vowel /i/. To do so however, would require the peculiar limitation that medial /w/ could occur only before /i/. In view of this limitation it seems more natural to consider /ui/ as a unit comparable to the other two diphthongs. Like the other two diphthongs moreover, /ui/ cannot be followed by a final consonant.

3. 24 Tones

Atsi unstopped syllables (open and nasal final) occur in four contrasting tones. All stopped syllables can be considered to have the same tone, collectively constituting a fifth tone.

- /à/ Low, falling and moderately long. This tone does not occur on verbs.
- /â/ With non-verbs in final position this tone is falling, but short and not quite so low as /à/. In certain positions, notably when followed by certain suffixes, verbs have a mid, even, and rather long tone. With other suffixes these verbs assume a tone rather more like the nouns with short falling tones. In spite of rather great variability of the phonetic realization in these various cases, all varieties are considered to be members of the same tone. Since /à/ does not occur with verbs it would be possible distributionally to include these verbs with /à/ rather than with /â/. To do so,

however, would have gone against the intuition of my informant, and as it turns out, it would have made the statement of equivalences between Atsi tones and those of the other languages a good deal more complex.

/á/ High, short and falling.

/ā/ High, more even, and longer than any of the other tones. Tones /á/ and /ā/ are both higher than either /à/ or /â/. So far as is known they are not restricted to any particular syntactical classes.

Stopped tone. Atsi syllables which are terminated with a stop, whether /p, t, k, or ?/, can all be considered to have a single tone, and the tone need not be indicated by a special mark beyond the sign for the stop. Phonetically, however, there are a number of variations among these, depending upon the initial consonant of the syllable. If the initial consonant is /s, š, h/, or one of the voiceless aspirated series of stops, the vowels of stopped syllables are high, clear and very short. If the initial consonant belongs to the glottalized series, the vowel has a particularly strong 'creaky' quality and a high pitch which is terminated by the stop. If the initial consonant of the syllable is /v, y, l/, or a voiced (plain) stop, nasal or affricate, the vowel is both lower in pitch and longer than in the other cases, and the vowel is pronounced clearly with no 'creaky' quality.

Toneless syllables. As in Burmese certain non-final syllables of Atsi are 'weak' in the sense of being weakly stressed and having limited phonological contrasts as compared with other syllables. All have a mid-central 'shwa' like vowel and no tonal contrasts are found among weak syllables. As in Burmese the vowels of these 'weak' syllables will be written /ǎ/.

3. 3 Maru

3. 31 Initials

The initials of Maru are very similar to those of Atsi. The entire collection of stops, affricates and nasals shown in the table of Atsi initials is precisely paralleled in Maru. Like Atsi, Maru has three series of stops and two affricates, each of which may be plain (voiced), glottalized or aspirated, and the lateral and nasals may be plain or glottalized. Moreover, the Maru initials condition the voice quality of the following vowel just as in Atsi. Some detailed differences distinguish the remaining consonantal initials of Maru however.

/s/ Apico-alveolar rill spirant, unvoiced. The apex of the tongue is apparently pointed upward.

- /š/ Lamino-alveolar rill spirant, unvoiced. The apex of the tongue apparently is bent downwards, but the friction takes place further to the front than in English /š/. In this respect, Maru /š/ differs from Atsi /š/ (which is far more like English) and the Maru affricates which I write as /ch, c?, c/ are articulated in the same position as /š/.
- /y/ A continuant with a considerable amount of friction produced between the lamina and the alveola. The friction is less than in /š/, but /y/ is most naturally interpreted as the voiced counterpart of /š/.
- /w/ A continuant that is predominantly bilabial in most positions. When preceeding /o/ it has considerable labio-dental friction as well. Maru /w/ will be shown to be cognate with Atsi /v/ and the phonetic shift required to move from one to the other is less than may seem to be implied by the use of different symbols, since both bilabial and labio-dental friction is found in both languages. Nevertheless, in Maru, unlike Atsi, the predominant quality is bilabial.
- /h/ A voiceless fricative probably with some degree of both pharyngeal constriction, and glottal friction.
- /ɣ/ Voiced velar fricative. This initial, is quite unlike anything found in either Atsi or Burmese.

Maru syllables, like those of Atsi, may also occur with no initial consonant.

3. 32 Medials

/ph, p?, p, m, m?, n, n?, kh, k?, k/, may be followed by a medial /y/. A very small number of words in my Maru sample contain a medial /w/. I judge that these are borrowed words, and at any rate they do not appear in items comparable with Burmese or Atsi, and are thus not cognate to the Burmese medial /w/.

3. 33 Finals

Like Atsi, Maru has five simple vowels which are sometimes followed by the stops /-p, -t, -k, ?/, or one of the nasals /m, -n, -ŋ. Diphthongs also occur, and again as in Atsi, they cannot be followed by a consonant. The vowels are:

- /i/ High, front, unrounded. Slightly lower before /n/ than in other positions.
- /e/ Mid front, unrounded. Somewhat higher before /?/ than in other positions.

- /a/ Low central unrounded.
- /o/ Back mid rounded. Lower before /ŋ/ and /k/ than in open syllables or before /?/.
- /u/ High, back, rounded. Slightly lower before /k/ than in other positions.

These five vowels can all be followed by one or more consonants, to form nasal and stopped finals, but the distribution of vowel and consonant combinations is peculiarly limited. The only common combinations are the following: /in, it, e?, am, aŋ, a, ap, at, ak, o, oŋ, ok, o? um, un, uk/. Each of these occurs in many words, and while other combinations are not unknown, they are far less frequent. It may be that the rare combinations have been introduced into Maru with borrowed words, and certainly a number of them do occur in words which appear to be of Jinghpaw origin. In any event, it is possible to find correspondences between Maru and the other languages only for the commoner combinations.

Maru, like Atsi also has several complex vowels which take a single tone, but which do not occur with nasal or stop finals. These are:

- /ai/ A diphthong much like the vowel of English 'my.'
- /au/ A diphthong much like the vowel of English 'how.'
- /oi/ A diphthong much like the vowel of English 'boy.'

My informant also used a few words with a front mid rounded vowel /ɔ̃/. He was rather variable in his pronunciation of this vowel, and in some words it varied a diphthongized /oi/. Conceivably this vowel is also the result of borrowing, and it does not appear in correspondences with the other languages.

3.34 Tone

Each open and nasal syllable carries one of three easily distinguishable tones:

- /à/ Low falling and a bit shorter than the other tones. It differs from /ā/ more in its falling contour and its shortness than in pitch.
- /ā/ Mid, level and moderately long.
- /á/ High level and moderately long. /a/ and /ā/ differ only in pitch.

Stopped syllables may carry one of two contrasting tones, high or low. Phonetically these are quite like the allophones of the Atsi stopped tone, but Maru has ample contrasts. In syllables with glottalized initial consonants however, and the associated glottalized voice quality of the

vowel, no contrasting tones occur in stopped syllables. The possible stopped tones will be written as follows, S serving as a cover term for any stop:

/ãS/ Low stopped tone. Can occur with all initial consonants except the glottalized series.

/áS/ High, stopped tone. With non-glottalized initials.

/aS/ In syllables with a glottalized initial, (stop, affricate, nasal, or l?).

Toneless syllables. Maru 'weak' or toneless syllable will be written /ã/ like the very similar Atsi and Burmese examples. They are much like the Burmese toneless syllables and occasionally appear to be cognate with them. Occasionally, however, toneless syllables alternate with syllables having full tone, and it would seem that under certain unknown conditions, full syllables may be reduced to toneless ones in Maru. All initials (except possibly the glottalized nasals) appear to occur in toneless syllables including the voiceless unaspirated stops. The characteristic glottalized quality of the vowel which usually occurs with these stops, does not, however, occur in toneless syllables.

3. 4 Lisu

The three Loloish languages, Lisu, Lahu, and Akha differ in a number of rather marked ways from the members of the Burmish group. Final consonant contrasts are reduced, for only Akha has any remnant of final nasals, and the glottal stop is the only final stop in any of the languages. As if in compensation the number of vowel contrasts is greater in the Loloish languages than in the members of the Burmish group. Speakers of the Loloish languages have had close ties with speakers of Shan-Thai and it is worth noting that the complex vowel systems of the Loloish languages seem to approach typologically the characteristics of Thai. Lahu even has something very like the nine-vowel system for which Thai is noted. On the other hand, the near-absence of final consonants is quite unlike the situation in Thai. The Loloish languages lack the weak syllables found in all three Burmish languages, and show nothing of the glottalized or 'creaky' voice quality so characteristic of Atsi and Maru.

3. 41 Initials

The initials of Lisu may be displayed as follows:

aspirated	ph	phy	th	tsh	ch	kh	khw	
voiceless unaspirated	p	py	t	ty	ts	c	k	kw

voiced	b	by	d		dz	j	g	gw	
nasal	m	my	n	ny				ŋw	
fricative	f				s	š		x	h hy
voiced	w		l	ly	ř	y		ɣ	

The three series of stops and affricates are: aspirated with a slightly spirantal release; voiceless unaspirated with no spirantisation upon release; and a voiced series with a vigorous breathy release. Stops and nasals occur in three positions, bilabial, apical and velar.

/s/ is an apico-alveolar spirant and /š/ is lamino-alveolar. /ř/ and /y/ are clearly the voiced equivalents of these though they have considerable free variation in their degree of friction. /ř/ varies from a voiced apical rill spirant to a voiced retroflex continuant and /y/ in a parallel manner varies from a voiced lamino-alveolar spirant to a palatal continuant. The medial /y/ which occurs immediately after certain initial stops is always a continuant, however, and never has appreciable spirantal quality.

The remaining simple consonants are of a somewhat miscellaneous nature. /f/ is an unvoiced labio-dental fricative with some bilabial friction as well. When /w/ occurs before /o/ and /a/ it is a voiced bilabial continuant much like English /w/. Before /u/ it consists of a very slight bilabial and labio-dental friction. Before /ɸ, e, æ/, /w/ is a labio-dental fricative, much like English /v/. In clusters (see below) /w/ never has spirantal quality. /x/ and /ɣ/ are voiceless and voiced dorso-velar fricatives. They occur only before /ʌ/, /ə/, and /a/. /l/ is a voiced lateral, with the apex of the tongue placed well forward against the upper teeth. /h/ is, in part a laryngal spirant, but it is initiated by a puff of air through the nose resulting in a voiceless nasal, and the velum usually stays down through at least part of the following vowel, resulting in non-distinctive nazalization of the vowel.

3. 42 Medials

The chart given above shows the possibility of medial /y/ following /ph, p, b, m, l, h/, and medial /w/ following the velars. In fact both /y/ and /w/ do occur following a number of other consonants as well, but the ones shown are the only common ones and the only ones that appear to be reconstructable. The rarer clusters do not seem to figure in the historical comparisons, and it seems probable that most or all of them were introduced through borrowings, particularly from Yunnanese Chinese.

3. 43 Finals

Lisu vowels seem resolvable into five front and five back vowels, with high and mid vowels further distinguished as rounded (ʉ , ϕ , u , o) and unrounded (i , e , ə , \wedge). The pattern of vowels can be displayed as follows:

	Front		Back	
	Unrounded	Rounded	Unrounded	Rounded
High	i	ʉ	ə	u
Mid	e	ϕ	\wedge	o
Low	æ		a	

$/\text{æ}/$ is remarkably like English, $/\text{æ}/$, while $/a/$ is a low central or back unrounded vowel. All vowels are nasalized when following $/m, n, \eta, h/$. When such a nasalized vowel is followed in its turn by an initial stop in the next syllable, a fleeting, but non-distinctive assimilation of the nasal to that consonant may occur, giving the impression of a final nasal, homorganic to the following stop. Since nasalization is completely predictable by the surrounding consonants, it is not marked in any way, and no final consonants other than $/\text{?}/$ need be marked as distinctive.

3. 44 Tones

- $/\acute{a}/$ Very high.
- $/\check{a}/$ Mid, gently rising.
- $/\hat{a}/$ Slight rise, followed by a somewhat pronounced fall. Vowels in this tone have a slightly glottalized voice quality.
- $/\bar{a}/$ Mid level. This is made at approximately the same pitch as $/\hat{a}/$, but without the rise and fall, and without any trace of glottalization.
- $/\grave{a}/$ Very low.
- $/a\text{?}/$ Stopped syllables exhibit no tone contrasts, and it is convenient to consider $/a\text{?}/$ as simply constituting a sixth tone. Stopped syllables are short and abruptly terminated by a glottal stop.

A six way contrast among these tones is demonstrated by the following: $/l\acute{o}/$, 'look'; $/l\check{o}/$, 'sink'; $/l\hat{o}/$, 'throw'; $/l\bar{o}/$, 'light weight'; $/l\grave{o}/$, 'cart'; $/lo\text{?}/$, 'enough.'

Frazier (1922) uses a somewhat different transcription for Lisu than that used here. With a few exceptions (partly due no doubt to dialect differences) the transcription seem largely inter-convertible.

Equivalent symbols are listed here. Those not listed are the same in both transcriptions.

Burling	Frazier
ph, th, kh, ch, tsh	hp, ht, hk, hch, hts
c	ch
ŋ	ng
f	h
h	h
x	hh
w (initial)	v
š	sh
ř	r
γ	rg
ʎ	ü (sometimes i)
φ	ē
æ (occasionally e)	a
ə	i, or rgh
^	rghe
o	aw
/	l
~	2
^	3
-	4
\	5
?	6

3. 5 Lahu

3. 51 Initials

	ph	th	ch	kh	kh			
f	p	t	c	k̂	ḳ	s	h	l
v	b	d	j	ĝ	g̣	y		
	m	n		ŋ				

Like Lisu, Lahu has three series of stops and affricates, voiceless aspirated, voiceless unaspirated, and voiced. Unlike Lisu, however, and indeed unlike any of the other five languages considered here, Lahu has stops articulated in four positions: instead of a single velar series as is found in all the other languages, Lahu has two quite distinct series, one of which /k̂, ḳ, ĝ/ is articulated well to the rear of the other

/k_h, k̤, g, ŋ/. /th, t, d, n/ are apical and /ph, p, b, m/ are in most circumstances bilabial. When occurring before the vowel /i/ and only before /i/, however, /ph, p, b, m/ are instead, affricates, which start with bilabial closure, but terminate with labio-dental friction. The acoustic effect of /ph/ when it occurs before /i/ is very much like the initial of German 'pferd.' /m/ when occurring before /i/ is a labio-dental nasal.

/x/ is a voiceless spirant, and /y/ is its voiced equivalent. These and the affricate series /ch, c, j/ are like the /ph, p, b, m/ in having strikingly different allophones when preceding the vowel /i/, than when preceding other vowels. When preceding /i/, /s/ and /y/ are articulated with the apex of the tongue pointed upward so that friction occurs between the apex and alveola, and the affricates commence with an apical stop and are released with apical friction: [s, z, tsh, ts, dz]. Before all other vowels, however, the fricatives are made by curling the apex downward so that friction occurs between the front of the tongue and the alveola. (/y/ in this position has rather less friction than /s/, which is why 'y' seems a more reasonable choice of symbol than 'z'.) The affricates begin with laminal stops, and are released with laminal friction: [š, ŷ, čh, č, ĵ].

/f/ and /v/ are labio-dental fricatives. /v/ is exceedingly common, but /f/ appears to be rather rare. /h/ and /l/ are much like the similar English phonemes.

3. 52 Medials

Lahu alone of the six languages considered here, has no medials at all.

3. 53 Finals

The majority of Lahu vowels fall into a rather neat nine vowel pattern. /i, e, ε/ are front, the other six further rear. The rear vowels are further differentiated into an unrounded /ə, ʌ, a/ and a rounded set /u, o, ɔ/. The remaining vowel /ɨ/ confuses the picture. /ɨ/ is a very high and unrounded central vowel. In articulation, it is not far from /ə/ but seems to be even higher and it is very short and close. More peculiar is the limited nature of its distribution, for it occurs only after /ph, p, b, m, s, y, ch, c, j/ and in all these cases it induces strikingly peculiar allophones upon those phonemes.

The vowel /ɨ/ raises certain problems in the interpretations of Lahu phonology, because this vowel occurs only after a limited set of consonant phones and these, in turn, occur only before this vowel. At the expense of setting up a new series of labio-dental stops and a second set of affricates, it would, in principle, be possible to consider [ɨ] to be an allophone of /ə/. Alternatively, one could write a special symbol between

the initial and the vowel which would govern phonetic modifications in both directions. (These alternatives have been considered more fully in Burling, 1966.) The alternative chosen here, that of setting up /ɨ/ as a special vowel, but considering bilabial stops and labio-dental fricatives to be allophones of one another has the virtue of producing the simplest historical rules.

Lahu vowels may, therefore be tabulated as follows:

	ɨ	
i	ə	u
e	ʌ	o
ɛ	a	ɔ

Certain complex vowels occur in some Lahu words, but the largest proportion of them appear to be recent borrowings from Shan, and I did not succeed in analysing them sufficiently to include them within a single Lahu system. As in Lisu, all syllables are either open, or closed with a glottal stop.

3. 54 Tones

- /á/ High and distinctly rising.
- /â/ Moderately high and slightly falling.
- /ā/ Mid, even, almost sung.
- /ǎ/ Moderately low and slightly falling.
- /à/ Very low and even.
- /á?/ High, short, with glottal closure.
- /ā?/ Mid with glottal closure.

Stopped syllables occur with two contrasting tones. It would be possible, to assign these to two of the unstopped tones, but their phonetic characteristics are not particularly close to any of the open tones. Such an assignment would therefore be rather arbitrary and so it seems most natural to think of Lahu as having syllables which occur in one of seven distinctive tones. In two of the tones the glottal stop happens to be an inherent part of the phonetic quality.

A romanized Lahu orthography has been developed largely by missionaries and is widely known among Lahu speakers. Though not completely standardized, it has been used in some publications including Telford, (1938). Telford's transcription differs in a number of ways from that which I use. For one thing the peculiar consonants which occur only before /ɨ/ (Telford's 'uh') and which I consider allophones of the bilabials, etc., are orthographically distinguished. Thus:

Burling	Telford	
	before 'uh'	otherwise
ph	hpf	hp
p	pf	p
b	bv	b
m	mv	m
ch	ts	ch
c	tc	c
j	tz (occasionally tj)	j
s	s	sh

Other differences seem to be a matter of simple substitution:

Burling	Telford
ph, th, kh, kḥ	hp, ht, hk, hk
kḥ, ḳ, g̣	kh, k, g
kh, k, g	hk, k, g
ŋ	ng
ə	uī
ε	eh
ʌ	eu
ɔ	aw
ɨ	uh
á?	a^
á	ā
â	a^
ā	a: (unmarked in some Lahu materials)
ǎ	a _w
ǎ	a (marked a_ in some Lahu materials)
ā?	a _^

3. 6 Akha

As mentioned earlier, Akha is the only one of the six languages considered here in which I have not personally checked all items with a native speaker. For the phonological sketch given here, as well as for the lexical items, I am indebted to Paul Lewis.

2. 61 Initials

p	py	t	ts	c	k _h	x	s	š	h
b	by	d	dz	j	g	ɣ	y	z	l
m	my	n		ny					

Akha is the only one of the six languages to lack a three-way contrast in mode of articulation for the various stops and affricates. /p, t, ts, c, k/ are aspirated in open syllables, but unaspirated in syllables which are terminated with /?/ so that aspiration and its absence do not minimally contrast. /b, d, dz, j, g/ are voiced. /x, ɣ/ are far back velar fricatives, voiceless and voiced respectively. /š, y, s, z/ appear to have much the same phonetic qualities as the allophones of Lahu /s, y/ but Akha /s/ contrasts with /š/, and /y/ contrasts with /z/ as they do not in Lahu.

3. 62 Medials

/y/ can occur as a medial after the three bilabials. /ny/ is written here as if it also consisted of a cluster of an initial /n/ with the medial /y/, and indeed it appears to be cognate with /ny/ clusters in Lisu and other languages, but in Akha it is described as a laminal nasal instead, and is therefore entered in that position in the consonant chart.

3. 63 Finals

i	ɨ	ɨ̃	u
e	ɸ	ɸ̃	o
ɛ		a	ɔ
	m	ɔn	

Akha has a particularly rich assortment of vowels. /ɨ/ and /ɸ/ are front rounded, while /i/ and /ɸ̃/ are back and unrounded. The phonetic nature of most of the others can probably be judged reasonably well from the chart. /m/ and /ɔn/, however, are distinctive nasalized vowels and Akha is the only one of the Loloish languages to have such nasals. /ɔn/ is low back rounded and nasalized, the 'n' being written after the vowel only so as to avoid interference with the tonemarks. /m/ is described as a 'syllabic m.' Whatever its precise phonetic characteristics, it acts as a distinctive vowel and can apparently occur with all initials. It can take the various tones as the other vowels do. Other vowels do not occur with nasalization.

3. 64 Tones

/á/	High	/ā?/	Mid stopped.
/ā/	Mid	/à?/	Low stopped.
/à/	Low		



4. PHONOLOGICAL CORRESPONDENCES

In this section the phonological correspondences among the six languages are listed and discussed, and symbols will be assigned for reconstructed levels. For each correspondence, references are given to the table of examples given in Section 5, and with the symbols provided it becomes possible to give reconstructions from which by regular rules, the forms in the modern languages can be derived.

Since the languages fall into two distinct sub-groups, it is necessary to recognize three different levels of reconstruction: 1) Proto-Burmish which provides for Burmese, Atsi, and Maru, 2) Proto-Loloish which covers Lisu, Lahu and Akha, and 3) Proto Lolo-Burmese which stands behind the other two reconstructed levels as well as all six modern languages. Wherever it has seemed reasonable, I have kept the transcriptions of these three reconstructed levels the same, but in a number of instances this has not been possible.

In the actual course of investigations, it proved necessary first to compare the three Burmish languages with each other, then to treat the Loloish languages, and only then to attempt the further comparisons which carry back to Proto Lolo-Burmese. The members of each set of phonological correspondences are given in the pages to follow in this order: Proto Lolo Burmese (L-B); Proto Burmish (P-B); Burmese (Bu); Atsi (At); Maru (Ma); Proto Loloish (P-L); Lisu (Li); Lahu (La); Akha (Ak). After each set the glosses are listed for all items which demonstrate this particular correspondence and which can be reconstructed for Proto Lolo-Burmese. Finally, additional items reconstructable within Burmish alone or within Loloish alone are listed. The particular lexical items which support the two sub groups are often different and not all items reconstructable for Proto Lolo-Burmese are simultaneously able to support reconstructions within the two sub groups, since cognates are occasionally found in only one language of each of the two sub groups. The items of the various languages, together with reconstructions are given in Section 5.

4. I Initials

4. 11 Stops and Affricates

The initials, particularly stops, affricates, and nasals, can be reconstructed with more assurance than either finals or tones. In general one must recognize considerable merging of the various reconstructed classes in the course of development toward particular modern languages,

but not very much in the way of splitting. The major exception to this generalization involves the medial *y. The *y of Proto Lolo-Burmese *phy, *p?y, *py, *my, *m?y was uniformly lost in Lahu. In Lisu and Akha it appears to have been lost when followed by *ei, *aŋ, *u, or *ə, but to have been retained when followed by *a, *ok. Very slim evidence (the words for 'full' and 'pus') hints that medial *y was lost in Lisu but retained in Akha when followed by *iŋ. In addition, Atsi seems to have acquired a /y/ before certain high front vowels when following *m, *m? or *n (which see).

Before those vowels in which all Lolo languages lose y, therefore, Proto Lolo-Burmese *Cy develops into Proto Lolo *C, and where Burmish cognates are lacking it is impossible to tell whether the Lolo items should be listed with the simple initials or with the clusters. I have arbitrarily listed them with the simple initials. Their position does not, of course effect their reconstruction which cannot be pushed back before the simple initial of the Proto-Lolo stage.

- *ph. P-B *ph; Bu ph; At ph; Ma ph; P-L *ph; Li ph; La ph; Ak p.
 P-L-B: chaff, leaf, price, vomit.
 P-B: grandfather, male (animal)-1, roast, tea, widower.
 P-L: cloth, flee, search-2, wife's sibling.
- *p?. P-B *p?; Bu ph; At p?; Ma p?; P-L *p; Li p; La p; Ak p.
 P-L-B: frog.
 P-B: embrace.
 P-L: change, male (human)-2.
- *p. P-B *p; Bu p; At p; p; P-L *b; Li b; La p; Ak b.
 P-L-B: anvil, carry (on back), give, insect, rotten, thin, tree-2.
 P-B: flower (noun)-1, flower (classifier), mountain, owl, short, sun.
 P-L: born, chin, deaf, ear-2, male (human)-2, moon.
- *phy. P-B *phy; Bu phy; Ma phy; PL *ph(y); Li ph(y); La ph; Ak p (y).
 P-L-B: destroy; pick; untie; white.
 P-B: chill; grandmother.
- *p?y. P-B *p?y; Bu phy; At p?y; Ma p?y; P-L *p(y); Li p(y); La p;
 Ak p(y).
 P-L-B: porcupine.

P-B: fly-gnat.

*py. P-B *py; Bu py; At py; Ma py; P-L *b(y); Li b(y); La p;
Ak b(y).

P-L-B: bee; fly (verb)-1; full; pus.

P-B: disappear; fight.

*y of *phy, *p?y is retained in Lisu and Akha when preceding *a or *ok, but lost when preceding *ei, *aŋ, *u, or *ə. It may have been lost in Lisu but retained in Akha when preceding *iŋ.

*th. P-B *th; Bu th; At th; Ma th; P-L *th; Li th; La th; Ak t.

P-L-B: above; sharp; thick.

P-B: behind; come out -1; firewood; pound (verb); span (finger); stab; support; think; turban.

P-L: touch.

*t? P-B *t?; Bu th; At t?; Ma t?; P-L *t; Li t; La t; Ak t.

P-L-B: place (verb).

P-B: answer-1; attach; stand (transitive)-1.

P-L: plant (verb); stand (trans)-2.

*t. P-B *t; Bu t; At t; Ma t; P-L *d; Li d; La t; Ak d.

P-L-B: ascend; blunt; dig; poison; wing; word.

P-B: animal (classifier); ask for; cubit; fly (verb)-2; hammer; nephew-1; push; shine; straight.

P-L: alive; come out-2; drink-2; kill-2; stick; worm.

*tsh. P-B *tsh; Bu sh; At tsh; Ma tsh; P-L *tsh; Li tsh; La ch; Ak ts.

P-L-B: fat; join; mortar; sugar; ten.

P-B: dam; deer (sambhur); dye (verb); elephant; hair; joints; old (of objects); repay; salt; stop up.

P-L: person; thorn-2.

*ts?. P-B *ts?; Bu sh; At ts?; Ma ts?; Li ts; La c; Ak ts.

P-L-B: boil; clench

P-L: build; lungs

*ts P-B *ts; Bus; Atts; Ma ts; P-L *dz; Lidz; Lac; Akdz.

P-L-B: bridge; eat; pair; rice (cooked).

P-B: drum; key; kite (bird); neck; rule; shrimp; son; thorn-1; tooth; year.

- P-L: have; ride.
- *ch. P-B *ch; Bu ch; At ch; Ma ch; P-L *ch; Li ch; La ch; Ak c.
P-L-B: deer (barking); marrow; medicine; navel; sweet; this.
P-B: dusk; follow; ginger.
P-L: dung-2; lift; rat-2; squeeze; suckle-2; weave.
- (*c?.). P-B *c?; Bu ch; At c?; Ma c?; P-L *c; Li c; La c;
P-B: borrow-2; granary; love; suckle-1.
P-L: cough.
- *c. P-B *c; Bu c; At c; Ma c; P-L *j; Li j; La c; Ak j.
P-L-B: parrot.
P-B: slave.
P-L: waist.
- *khy. P-B *khy; Bu ch; At khy; Ma khy; P-L *kh; Li kh; La kh; Ak k.
P-L-B: foot-leg; garden; horns; six; son's wife; voice.
P-B: break; dung-1; month; road (classifier); sew; throat; undress.
P-L: call; crossbow-2.
- (*k?y.) P-B *k?y; Bu ch; At k?y; Mak?y.
P-B: dry; mosquito.
- *ky. P-B *ky; Bu c; At ky; Ma ky; P-L *g; La k; Ak g.
P-L-B: between; cold; fall; fear; hear.
P-L: copper.
- *kh. P-B *kh; Bu kh; At kh; Ma kh; P-L *kh; Li kh(w); La kh; Ak x.
P-L-B: bitter; draw water; smoke (noun); split 2; steal.
P-B: cucumber; cup; dog; endure; owl; split-1.
P-L: answer-2; hole (classifier); pot-2; year (classifier).
- (*k?.) P-B *k?; Bu kh; At k?; Ma k?; P-L *k; Li k(w); La k.
P-B: bark; branch; dry up.
P-L: sing.

*kh and *kʔ appear in Lisu as /khw/ and /kw/ respectively when followed by /a/, but otherwise as simple /kh/ and /k/.

*k. P-B *k; Bu k; At k; Ma k; P-L *g; Li g; La k; Ak γ.

P-L-B: crooked; nine.

P-B: cross; dance; rice (paddy); shield.

P-L: empty.

In partial summary, the correspondences given above suggest that the following set of distinctive stop and affricate initials should be attributed to Proto Lolo-Burmese.

ph	phy	th	tsh	ch	khy	kh
pʔ	pʔy	tʔ	tsʔ	(cʔ)	(kʔy)	(kʔ)
p	py	t	ts	c	ky	k

*cʔ, *kʔy and *kʔ are placed in parentheses because no examples exist which decisively carry them back to Proto Lolo-Burmese, though all three must be attributed to Proto Burmish, and *cʔ and *kʔ are both necessary for Proto Loloish. Clearly the set of stops and affricates is so satisfyingly symmetrical that it is inviting at least to leave spaces for these items in Lolo-Burmese even in the absence of proof.

As arranged here, the system of stops and affricates is identical to that found in modern Atsi and Maru. There is, of course, no assurance that the items in Proto Lolo-Burmese had the same phonetic characteristics as their descendants in Atsi and Maru, although there is no counter evidence either.

The same distinctions among stops and affricates remain in Proto-Burmish and they are shown in the Proto-Burmish reconstructions by the same symbols. The Loloish reconstructions on the other hand use somewhat different symbolization, although the same system of items must be recognized as distinctive:

ph	phy	th	tsh	ch	$\overset{\cdot}{k}h$	$\overset{\cdot}{k}h$
p	py	t	ts	c	$(\overset{\cdot}{k})$	$\overset{\cdot}{k}$
b	by	d	dz	j	$\overset{\cdot}{g}$	$\overset{\cdot}{g}$

The differences in symbolization are of two sorts. First and simplest, the phonetic characteristics of the Burmish languages suggest a contrast between kh and khy, etc., a distinction still found in Atsi and Maru although the khy series has merged with the kh series of modern Burmese to form affricates. On the other hand Loloish items cognate to these suggest instead a contrast between front and back velar stops. The items have fallen together as stops in Lisu but are contrasting stops in Lahu, while in Akha * $\overset{\cdot}{k}h$, * $\overset{\cdot}{k}$ and * $\overset{\cdot}{g}$ series have become fricatives.

There is no suggestion within any of the Loloish languages that the kh series ever had an associated 'medial' y. For Proto-Loloish, therefore, the obvious symbolization to use is that which suggests a contrast between two types of velar stops. In carrying back this contrast into Proto Lolo-Burmese, one could with almost equal legitimacy choose to symbolize it either by ky vs. k, or by $k̄$ vs. $k̄$. I have chosen the former alternative only because there is some other evidence for the loss of medial /y/ in the Loloish languages, and very little evidence for the development of medial /y/ anywhere. Beyond this, by recognizing a ky series we produce a barely more symmetrical picture for the original language.

The second difference in symbolization between the Proto Lolo-Burmese and Proto Burmish reconstructions on the one hand and the Proto Loloish on the other is that the former retains the ph/p?/p contrasts used in Atsi and Maru, whereas the latter retains the ph/p/b contrasts used in Lisu (and similarly for the other articulatory positions). The three modes of articulation have a regular one to one correspondence between Atsi-Marua and Lisu (certain rows have fallen together in the other languages) but the phonetics of the various series are rather different in the two cases, though not as different as the symbolization may seem to imply. As with the k/ky contrast either symbolization could be suggested as almost equally reasonable for Proto Lolo-Burmese. The one substantial argument in favor of retaining the ph/p?/p of Atsi and Maru is that it is necessary to recognize two sets of nasals, (m and m?, etc., see below) in the original language, and having done this it seems reasonable also to extend the same symbolization to the stops and affricates.

Whatever the precise phonetic character of these items in the original language, their development into the various modern languages provides the most satisfyingly elegant part of the entire comparison. Atsi and Maru retain all of the contrasts set up for the original, while each of the stops and affricates of each of the other four languages can be derived by simply merging various rows and columns, together with certain reasonable phonetic modifications. These mergings and phonetic modifications were summarized in Section 2-1, and can be followed in more detail in the sets of correspondences given above. Only in the case of the Py series is there any ambiguity for in Lisu and Akha the y is lost under certain conditions only and thus Py and P merge before certain vowels but not before others. In all other cases, rows and columns either remain entirely separate or merge completely. The phonetic reflexes of the various rows and columns can be given in tabular form:

	Burmese	Atsi and Maru	Lisu	Lahu	Akha
P	Bilabial Stop	Bilabial Stop	Bilabial Stop or Stop + y	Bilabial Stop	Bilabial Stop or Stop + y
PY	Stop + y	Stop + y			
T	Apical Stop	Apical Stop	Apical Stop	Apical Stop	Apical Stop
TS	Sibilant	[ts] type affricate	[ts] type affricate	[ts] and [ɕ] in complementary distribution	[ts] type affricate
C	[ɕ] type affricate	[ɕ] type affricate	[ɕ] type affricate		[ɕ] type affricate
KY		Velar Stop + y		Front velar Stop	Velar Stop
K	Velar Stop	Velar Stop	Velar Stop	Back velar Stop	Velar fricative

	Burmese	Atsi & Maru	Lisu	Lahu	Akha
S ₁	Aspirated, voiceless	Aspirated, voiceless	Aspirated, voiceless	Aspirated, voiceless	Voiceless
S ₂		Glottalised, voiceless	Unaspirated, voiceless	Unaspirated, voiceless	
S ₃	Unaspirated, voiceless	Voiced	Voiced		

4. 12 Voiced initials of Burmese and Lahu

To the stops and affricates derived from the earlier forms of the language, Burmese and Lahu have both added a new series of voiced stops and affricates which show no regular correspondences with items in the other languages. In Burmese, phonetically voiced initial consonants are common in medial positions, where they result from regular morphophonemic voicing of consonants which are voiceless if they occur in initial position. It may be guessed that the present voiced Burmese series arose in part by the voicing of consonants in medial position with a subsequent generalization of voicing to occasional initial positions. A rather scattered selection of Burmese words which otherwise appear to be perfect cognates with words in Atsi and Maru, have voiced initials when, to predict only from the Atsi and Maru examples, one would expect a member of one of the unvoiced series to appear in Burmese. It can be tentatively suggested that the voicing of these Burmese examples resulted from assimilation, though the conditions for such assimilation cannot be stated precisely. The following examples have voiced Burmese initial consonants, counter to what would be expected from the Atsi and Maru examples: between, dove, ginger, horn, owl, seven, shrimp, throat. The Burmese examples for these terms in the chart of Section 5, are enclosed in parentheses to indicate their divergent character.

4. 13 Nasals

- *m. P-B *m; Bu m; At m(y); Ma m; P-L *m; Li m; La m; Ak m.
 P-L-B: blow; dream; feather (body hair); female suffix; fire; hungry; mouth-l; mushroom; old (of people); sky.
 P-B: bamboo shoots; hat; sand-2; snake; tail-l; wife.
 P-L: city; earth; grass; heart; land; negative prefix.

It is impossible to tell whether the P-L examples given here are derived from P-L-B *m or *my, since both result in P-L *m, except before certain vowels. Atsi has /my/ before vowels deriving from *i, *e, *ei, *eɲ, but otherwise has /m/.

*m?. P-B *m?; Bu hm; At m?(y); Ma m?; Li m; La m; Ak m.

P-L-B: overtake.

P-B: aunt; ladle; ripe-1.

P-L: tail; teach.

'tail' and 'teach' could be grouped as well under *m?y, since P-B-L *m? and *m?y can both develop into P-L *m?. Atsi has m?y before *i, but otherwise has m?.

*my. P-B *my; Bu my; At my; Ma my; P-L *m(y); Li m(y); La m; Ak m(y).

P-L-B: arrow; eye; horse; many; monkey; see; woman.

P-B: earth-1; grandchild; grass-1; name-1; root; seed-3; swallow (verb).

P-L: ripe-2.

*m?y. P-B *m?y; At m?y; Ma m?y; P-L *m?(y); Li m(y); La m; Ak m(y).

P-L-B: high; name-2.

P-B: banyan; yam.

*n. P-B *n; Bu n; At n(y); Ma n; P-L *n; Li n; La n; Ak n.

P-L-B: awake; bamboo ties; black; ill; morning; rest; spirit; thou; tread upon.

P-B: brains; breast; cattle; creeper; day; dwell; ear-1; knead; red-1; tender-1.

P-L: beans; remember; rice (glutinous); tender-2.

In the absence of Burmish cognates it is impossible to know whether the P-L items listed here should be grouped instead with *ny, since P-B-L *ny and *n both result in P-L *n except before certain vowels. Atsi has /ny/ before /i/ when derived from *ei, but otherwise has /n/.

*n?. P-B *n?; Bu hn; At n?(y); Ma n?; P-L *n?; Li n; La n; Ak n.

P-L-B: nose.

P-B: awaken; mouth-2; seven-2; sesamum; snot.

P-L: ask question; ear-2; finger-2; red-2/

The P-L items could have also been listed under *n?(y). Atsi has /n?y/ before /i/ when derived from *ei or *it, but otherwise /n?/.

(*ny.) P-B *ny; Bu ny; At ny; P-L *n(y); Li(y); La n; Ak n(y).

P-B: green-1.

P-L: sibling (younger); two.

*n?y. P-B *n?y; Bu hny; At n?y; Ma n?y; P-L *n?(y); Li n(y); La n; Ak n(y).

P-L-B: penis.

P-B: finger-1.

P-L: green-2.

*ŋ. P-B *ŋ; Bu ŋ; At ŋ; Ma ŋ; P-L *ŋ; Li ŋ(w); La ŋ; Ak ŋ.

P-L-B: cry; fish; five; I.

P-B: little; stump (of tree).

*ŋ?. P-B *ŋ?; Bu hŋ; At ŋ?; Ma ŋ?; P-L *ŋ?; Li ŋ; La ŋ; Ak ŋ.

P-L-B: bird; borrow-1.

*ŋ appears in Lisu as /ŋw/ when followed by /a/, but otherwise as single /ŋ/.

The nasals of Proto Lolo-Burmese can be tabulated as follows

m	my	n	ny	ŋ
m?	m?y	n?	n?y	ŋ?

Burmese, Atsi and Maru all have two contrasting series of nasals, plain and either preaspirated (Burmese) or glottalized (Atsi and Maru).

The three Lolo languages are alike in having only a single series of nasals and it would seem at first that a single series would be adequate at the level of Proto-Loloish. However it turns out that the tones of Lisu and Lahu syllables with nasal initials, correspond according to two quite distinct patterns. This is reminiscent of tones on syllables with initial stops where the Lisu and Lahu tones develop quite differently depending upon whether the initial belongs to the voiced, voiceless unaspirated, or aspirated series (see Section 4. 3). Tone correspondences on syllables with nasal initials follow one of two patterns: either the same as syllables with voiced initial stops or the same as syllables with

- voiceless but unaspirated initial stops. It seems reasonable to suppose that syllables following the tone pattern associated with voiced initial stop syllables have always had plain voiced nasal initials, but syllables following the tone pattern of syllables with unvoiced unaspirated initial stops may have had some phonetic quality allying them to those stops. The exact nature of this quality in Proto-Loloish is difficult to guess, but the two nasal series also turn out to correspond to the two nasal series which have to be recognized for the Burmish languages. For this reason it is convenient to symbolize the Proto-Loloish initial nasal series (possibly inexactly) as *m?, *n?, *ŋ? as contrasted with plain *m, *n, *ŋ. Only by recognizing some sort of contrast in Proto-Loloish can sense be made out of the development of tones in Lisu and Lahu.

4. 14 Irregularities in Voicing and Aspiration.

In a number of cases items which otherwise appear to be good cognates defy the correspondence rules which I have set up, only in having an incorrect condition of voicing, aspiration or glottalization of the initial. For instance the word for 'thorn' reconstructs to *tsu^{2c} in Proto-Burmish but to *tshu² in Proto-Loloish. In several cases (ear, green, red, tail) Burmish reconstructs to a plain nasal, but Loloish to a glottalized nasal. A number of examples also occur in which Burmese alone has a preaspirated nasal but in which apparent cognates in Atsi and Maru do not have the expected glottalization (arrow, blow, brains, mushroom). A number of other more random examples will be found in the table in Section 5. Divergent items are listed there but enclosed in parentheses to indicate that they are not taken into account in the reconstructions. These discrepancies are comfortably outnumbered by items which do fit the rules, but they are plentiful enough to be disturbing.

One possible source of these discrepancies lies in morphological processes, such as are still active in modern Burmese. Many pairs of verbs have transitive and intransitive members which differ phonologically only in that the transitive member is aspirated but the intransitive is not (Cornyn and McDavid 1943). Pairs of such items, which are close to each other both semantically and phonologically could give rise to forms in the daughter languages which are discrepant in the manner of the items mentioned above.

4. 15 Miscellaneous Initials

The remaining initials do not fall into such orderly arrays as stops, affricates and nasals, and some of the reconstructions cannot be accepted as securely proved. They are presented here more or less in descending order of reliability.

- *l. P-B *l; Bu l; At l; Ma l; P-L *l; Li l; La l; Ak l. -
 P-L-B: come; enough; hand; heavy; pot; interrogative suffix;
 river; span (arm).
 P-B: ant (flying); bet; copulate; crossbow-l; easy-l; husband;
 maggots; male (animal)-2; middle; mule; neck; round object
 (classifier); wind-air.
 P-L: light weight.
- *l?. P-B *l?; Bu hl; At l?; Ma l?; P-L *l?; Li l; La l; Ak l.
 P-L-B: boat.
 B-B: flea; spear.
 P-L: round (verb).
- *l and *l? develop in a manner which precisely parallels that of the nasals. As with the nasals they fall together in the Lolo languages but not before influencing the development of tones.
- *s. P-B *s; Bu θ; At s; Ma s; P-L *s; Li s/š; La s; Ak s/š.
 P-L-B: blood; kill-l; liver; sand; three. -
 P-B: breathe; nails; nest; new; onion; shans; tree-l; walk;
 wipe.
 P-L: easy-2; know; rough; seven-l; tree-3.
- *š. P-B*š; Bu θ; At š; Ma š; P-L*s; Li s/š/xwa; La s; Ak s/š.
 P-L-B: die; fruit; iron; meat.
 P-B: drink-l; flame; louse; pull.

The correspondences among the spirants present some rather confusing puzzles but the majority of apparent cognates can be explained by the assumption that Proto Lolo-Burmese had a contrast between *s (presumably an apical spirant) and *š (presumably a laminal spirant). These remain distinct in Atsi and Maru but have fallen together in Burmese as /θ/. It is easiest to assume that they had also fallen together at the stage of Proto-Loloish, although there could well have been allophones preserving various phones, but preserved now in complimentary distribution. This is still the situation in Lahu where there is a single phoneme (written /s/) which is usually a laminal spirant, but when it precedes /i/ it is apical instead. The merger of *s and *š in Lahu is paralleled precisely by the merger of *tsh and *ch which have lost phonemic contrast in Lahu, although the resulting phoneme does have allophones which vary with the following vowel, just like Lasu /s/.

In Lisu and Akha, the Proto-Lolo *s (resulting from the falling together of earlier P-B-L *s and *š), seems to have split again into contrasting phonemes. Lisu and Atsi have /š/ before vowels derived from *ei but otherwise have /s/. A single example ('liver') hints that Atsi (but not Lisu), may also have developed /š/ before *ij. The apparent complimentary distribution of /s/ and /š/ in Lisu and Akha has been broken up by other terms, possibly borrowed, which do not seem to have cognates in the other languages.

The evidence for the splitting of Proto-Loloish *s in Lisu and Akha is not extensive and it might be regarded with complete skepticism except for the fact that it is confirmed by a closely parallel splitting of Proto-Lolo *y. In Akha this develops into /z/ (an apical voiced spirant) when followed by /a/ but otherwise it develops instead into /y/ (a continuant, without too much friction but clearly the voiced equivalent of /š/). In Lisu, Proto-Lolo *y splits into /ř/ and /y/, (apical and laminal respectively, and again the voiced partners of /s/ and /š/), according to the following vowel, /ř/ appearing after vowels derived from *a, *u, *aŋ, *ok but /y/ appearing elsewhere. In summary, Proto-Lolo *s and *y have both split into apical and laminal phonemes, and the split depends upon the following vowel.

Very slim evidence (the words for 'iron' and 'meat') suggests that Proto-Lolo *s developed into /xw/ in Lisu when followed by /a/.

*ɣ. P-B *ɣ; Bu y; At v; Ma ɣ; P-L *ɣ; Li ɣ/y; La g; Ak y/z.

P-L-B: bone; get.

P-B: ant; beads, chest; difficult; laugh; loom; mature; place (noun); rain; skin; strength; swell up; wall; water; woman.

*ɣ becomes Akha /z/ when preceding /a/, otherwise it becomes /y/.

*y. P-B *y; Bu y; At y; Ma y; P-L *y; Li y/ř; La y; Ak y/z.

P-L-B: house; person (classifier); sheep; sleep; stand (intransitive); take.

P-B: grow; itch; leak; lick; male (human)-l; right hand.

P-L: child; drink; seed-l.

The P-B items listed here could equally well be grouped under P-L-B *y, or under *hy, since these two both result in P-B *y, and since they have the same results in Burmese, Atsi, and Maru. They are listed here in view of the tentative nature of *hy. *y becomes Lisu /y/ when preceding /i/, otherwise it becomes /ř/. Akha has /z/ when preceding /a/, otherwise /y/.

- *w. P-B *w; Bu w; At v; Ma w; P-L *w; Li w; La v; Ak y/z.
 P-L-B: bamboo; bear; buy; far; palm-sole; pig; wear.
 P-B: brave; carry on shoulder; enclose; enter; stomach.
 P-L: flower (noun)-2.
- *w?. P-B *w?; Ma w?; P-L *w; Li w; La v; Ak y.
 P-L-B: leech.

A correspondence with only a single item could not be taken seriously except that this *w? diverges from *w in a precisely parallel manner to the way in which *l; and the glottalized nasals diverge from *l and the plain nasals. In Akha, *w and *w? became /y/ except when followed by /a/, in which case they became /z/. In other words *w and *w? fall together in Akha with the reflexes of Proto-Lolo *γ and *y. The phonetic shifts suggested by the varying use of 'w' and 'v' in the other languages are less than might be imagined. Some degree of both bilabial and labio-dental friction is often present (see the descriptions of the individual languages in Section 3. 1).

- *hy. P-B *y; Bu y; At y; Ma y; P-L *hy; Li hy ~ h; La h; Ak y.
 P-L-B: antelope; field; hundred.
 P-L: eight-2.

The correspondences grouped under *hy can not be regarded as more than suggestive. Burmese, Atsi, Maru, and Akha have exactly the same reflexes as under *y. In Lahu, /h/ appears instead. The words for antelope and hundred have /hy/ in Lisu, while the words for dry field and eight have /h/. While conditioning by the following vowel cannot be ruled out, the examples are too meager to allow any real conclusions to be drawn.

- (*h). P-B *h; Bu s; At h; Ma γ.
 P-B: ashamed; in front; search.

While few in number, and lacking correspondences in the Loloish languages, the correspondences grouped under *h are at least consistent.

- *#. P-B #; Bu #; At #; Ma #; P-L #; Li #/wu; La #; Ak #.
 P-L-B: below; egg; head; intestine; sell.
 P-B: nephew-2; pot-1; rice beer; succeed.
 P-L: four.

A number of items lack consonantal initials in all six languages. Burmese has sometimes been described as having an initial /ʔ/ in these items and the other languages could be described in the same way, but in no language does an initial /ʔ/ contrast with its absence. Lisu has an initial /w/ before /u/ in items where cognates in the other languages lack an initial.

4. 16 Reconstruction of Initial Clusters

One far more speculative suggestion can be made about the initials of the Burmish branch (excluding Lisu, Lahu, and Akha). None of the modern languages has initial clusters except those with y or w as the second member. Many more distantly related Tibeto-Burman languages, however, have various clusters with r, or l, as the second member and one may wonder whether the evidence of the modern languages can point to any other earlier clusters. A tentative argument in favor of such clusters at the level of proto-Burmish can be made, but it can hardly be extended back to Proto-Lolo-Burmese. The argument runs as follows:

(1) Correspondences which have been labeled as *P, *Py, *K, *Ky, and *T, have been rather firmly established. (The capital letters are to be taken as cover symbols for the entire series made at one point of articulation, *P for instance standing equally for correspondences previously labeled as *ph, *pʔ, *p, and so on. Examples are too scarce to consider the various conditions of voicing and aspiration separately.)

(2) To extend the symmetry of the 'y' clusters, it is tempting to suggest that what has up until now been written *C could instead be written as *Ty. This is not phonetically unreasonable. The reflexes of *Py and *Ky tend to have less affricate quality than the reflexes of this suggested *Ty, but all three are likely to have had palatal release.

(3) For eight cognate sets, an argument can be made for an original *Kl or *Ky cluster. In each of these sets, the Burmese item has /c/, while four of the Atsi and Maru terms have /l/, and the other four have /v/ in Atsi or /ɣ/ in Maru, as we would usually expect from Proto-Burmish *ɣ. If the originals had *Kl and *Ky clusters, the modern forms with their apparently bizarre correspondences would be explained if Atsi and Maru had simply lost the initial *K, and if in the development toward Burmese, medial *ɣ and *l fell together with medial *y so as to form *Ky clusters, in time for them to develop by the regular rule into /c/ of modern Burmese. None of these modern Burmish languages has a cluster, but this speculation is supported for one of these words by a much more distantly related Tibeto-Burman language which does have a cluster. Garo of Assam has grit 'sugar cane' where the Burmese-Marua comparison suggests a Proto-Burmish initial *kl cluster. (Forms from

Garo and from Proto-Bodo which has been reconstructed from Garo and some other closely related languages, are given here only to show the existence of clusters where none of the modern Burmish languages have them. Precise correspondences between Bodo and Lolo-Burmese have not been worked out and l and r, among other problems, seem to be interrelated in complex ways), (Burling, 1959). Unfortunately the vowels in three of these eight sets of terms do not follow the correspondence rules for other vowels, but one cannot rule out the possibility that medial *l and *ɣ cause special vowel developments about which our examples are too few to draw firm conclusions. Certainly it is clear that both medial *y and *w did bring extensive changes in the vowels that follow, and medial *l and *ɣ could have done the same.

(4) A single example, the word for 'ashes' might be explained in a similar way. If we imagine that the earlier word had initial *pɣ then the present /py/ of Burmese can be explained by the falling together of medials *y and *ɣ, while the /v/ of Atsi and the /ɣ/ of Maru can be explained by the loss of initial *p, followed by the regular development of *ɣ. This is given some support by the cluster *pl which can be reconstructed for the Proto-Bodo word for 'ashes.'

(5) If *Pɣ, and Kɣ, are recognized, can we find a *Tɣ? The items previously reconstructed as *Ts seem likely candidates. If the *Ts affricates involved an apical closure (as they probably do in both Atsi and Maru where Ts is retained) contrasting with the laminal closure of *C, then just as C can be rewritten as *Ty (point 2 above), it is reasonable phonetically to rewrite *Ts as *Tɣ. (ɣ of modern Maru, the only Modern Burmish language in which I use this symbol, is a voiced velar fricative. I am assuming here that it could have had 'r' like antecedents, involving apical elevation, rather like the ř of Lisu or the z of Akha.)

(6) Having recognized a *Kl cluster can we hypothecate other l clusters as well? A series of words in which Burmese has /s/, seems to correspond to a series in which Atsi and Maru have /c/, in defiance of the more usual rule. The range of clusters can be increased by guessing that these correspond to an original *Tl, and once again the guess is given some support by a Garo word which does have a cluster: cri, 'seed.'

(7) If *Ts and *C are rewritten as *Tɣ, and *Ty respectively, one may ask if the contrast between *s and *š could not be similarly indicated. One could rewrite *š as *sy or alternatively rewrite *s as šɣ. Or, we can rewrite both, and have *sy and *sɣ, although this leaves us without a simple *s.

(8) Finally, two common words, 'tongue' and 'eight,' have initial š in all three modern Burmish languages in defiance of the more usual rule in which Burmese θ corresponds to the š of the other languages. It

is tempting to add in one final way to symmetry of the correspondences by suggesting that these might be derived from *sl. The guess that these words once had a cluster is given some support by the Garo word for 'tongue' which retains a cluster today: sre.

Unfortunately these guesses about initial clusters are given very little support by the Loloish languages. Few of the terms discussed in points 3, 4, 6, or 8, have plausible cognates in the Loloish languages. Confirmation or eventual dismissal of these guesses, then, will have to await the collection and analysis of further data, particularly from those Tibeto-Burman languages in which initial clusters are better preserved than they are in the modern Lolo-Burmese languages. In the full table of correspondences in part five, these speculatively reconstructed clusters are listed, but they are enclosed in parentheses to indicate their highly tentative nature.

In Table 4. 16-1, I summarize these guesses in the form of an array. The speculative cluster reconstruction is given first with an asterisk. Where pertinent, this is followed by an additional asterisked form placed in parenthesis which gives the more conservative reconstructed symbol. These more conservative symbols have been used in all discussion before this section and are used throughout the table in section 5. The parenthesized form is followed in turn by cover forms for modern Burmese, Atsi, and Maru respectively, capital letters indicating all conditions of voicing and aspiration. Underneath each of the newly suggested speculative cluster correspondences are glosses for terms which may exhibit this correspondence. The complete list of speculative correspondences are given in 4. 16-2.

Table 4. 16-1

*P > P, P, P.	*T > T, T, T.	*K > K, Ky, Ky	
*Py > Py, Py, Py	*Ty(*C) > C, C, C	*ky > C, Ky, Ky	*sy(*š) > θ, š, š
*Pγ > Py, v, γ (ashes)	*Tγ(*Ts) > s, Ts, Ts	*Kγ > C, v, γ (fowl, big, cat, rat)	*sγ(*s) > θ, s, s
	*Tl > s, C, C (rice [husked], seed, sparrow, tear vulva, wash)	*Kl > C, l, l (buffalo, stone, sugar cane, tiger)	*sl > š, š, š (tongue, eight)

Table 4. 16-2

	Proto Burmish	Burmese	Atsi	Maru
ashes	pɣV	pyá	vap	ɣáp
big	kɣi ²	cī		ɣī
cat	kɣV ^{1a}	cáun	vun	
fowl	kɣa?	ce?	vo?	ɣò?
rat	kɣVS	cwe?		ɣùt
rice (husked)	thlan ^{1b}	shán		chìn
seed-2	tɪV ³	ǎsì	ǎcī	ǎcít
sparrow	tla ^{1a}	sá	cô	
tear	thlut	shou?		chát
vulva	tlok	sau?	cu?	còk
wash	thlei ²	shêi	chí	chít
buffalo	klwe ²	cwê	lùi	lôi
stone	klok	cau?		lòk
sugar cane	klV ^{1a}	cán		lōŋ
Tiger	kla ²	câ	lò	
tongue	sla ^{1b}	šá	šó	šò
eight	slit	ši?	šit	

4.2 Finals

Although a number of clear correspondences among the vowels and final consonants of the six languages can be discerned, the overall patterning of their relationships is far more obscure than is that of the consonants, and it is difficult to make sensible guesses about the phonetic reality of the proto-forms. The symbols which are assigned to the correspondences and which are used in the reconstructions, therefore, must not be taken as implying very much about the sounds of the ancestral language.

Atsi and Maru (particularly the former) have a wider selection of final nasals and final stops than Burmese or any of the Loloish languages. In general it must be supposed that Burmese has, in the course of its history reduced its final stops to the glottal stop alone, and reduced its nasals to the single feature of vowel nasalization. Lisu and Lahu have lost all trace of distinctive final nasals, while Akha preserves two, but no Loloish language has any final stop except the glottal. It seems reasonable, therefore to give the greatest weight to Maru and particularly to Atsi in speculating about the final consonants of the proto-language. By and large, final stops correspond to final stops in all languages, though there are exceptions even to this rule. Where nasals are preserved, they generally correspond to other nasals. The locations of the vowels are more difficult to make phonetic sense of. Certain correspondences do seem generally to be represented by high front vowels, and others by low or high back vowels, but there are many eccentric exceptions and various complex shifts seem to have taken place. The most that can be said for the symbols chosen to represent the correspondences is that they are no more unreasonable than any other choices.

Developments of finals which seem to have originally been open, nasal, and stopped are so utterly different from one another that the vowels and final consonants, if any, must be considered together, and the use of the same symbol in an open and in a closed syllable (such as *a, *aŋ, *aʔ, *at, etc.) can not be seriously interpreted as confidently grouping these finals together as having a common phonological element.

Some of the correspondences are represented by fewer items than desirable. In particular the Loloish languages are often only weakly represented, and in a few cases it seems reasonable to recognize Burmish correspondences even in the absence of Loloish cognates. Only occasionally does parallelism of two sets give support to each other, but the correspondences labeled *it and *ik develop in parallel fashion within the Burmish languages, as do *ap and *at; *an and *am; and *up and *ut. For the most part each set of correspondences follows its own separate rule.

The syllable initial often has a marked effect upon the following vowel, or to put it differently, the vowel correspondences are often quite different in syllables with varying initials. /l/, /y/, and /w/, whether initial or medial, seem to cause particularly great changes within the Burmish languages, while sibilants, affricates and bilabials govern more changes within the Loloish languages. /w/ as initial or

medial is given in reconstructions as occurring only before the vowels *ei, *e, *ə, *a, *a? and *am. Medial /w/ is largely lost in the Loloish languages but within the Burmish languages initial and medial /w/ develop in much the same way, as can be seen in the list of correspondences. Remarks on particular correspondences are scattered below.

*i: P-B *i; Bu i; At i; Ma i; P-L *i; Li ə/ɰ/i; La i; Ak i.

P-L-B: fire; fruit; overtake; penis; woman.

P-B: aunt; big; borrow-1; granary; laugh; tail-1; wife.

P-L: earth-2; kill-2; know; land; lift; plant (verb); ride; sibling (younger); tail-2; two; weave.

Lisu has /ɰ/ following *c, *ch, *s; /i/ in two examples following *ny; elsewhere /ə/.

(*it): P-B *it; Bu i?; At it; Ma ət.

P-B: eight-1; love; root; seven-2.

(*ik): P-B *ik; Bu i?; At ik; Ma ak.

P-B: bamboo shoots; chillie, joints; new; shoot; tree-1.

*it, and *ik have no consistent correspondences in the Loloish languages and indeed they are not common in the Burmish languages. At least the parallelism of the two sets makes them mutually supporting.

*iŋ: P-B *iŋ; Bu e/i; At iŋ' Ma aŋ; PL *iŋ; Li i; La ɛ; Ak ɔn

P-L-B: full; liver; name-2; pus, ripe-2.

P-B: dam; drum; nails; neck-2; ripe-1; straight.

Burmese has /i/ when following medial *y, but otherwise has /e/.

*ei: P-B *ei; Bu ei; At i/ui/ai; Ma it/a; P-L *ei/ *i; Li ɰ/ə/i

La i/i; Ak i.

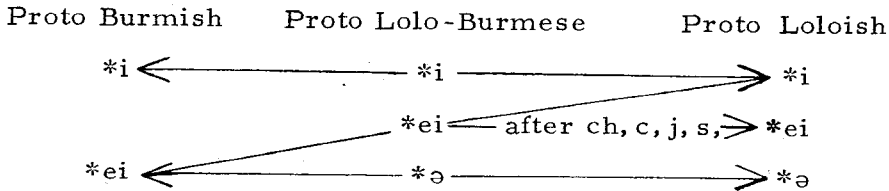
P-L-B: anvil; blood; boat; deer (barking); die; give; heavy; medicine; parrot.

P-B: crossbow-1; day; dog; dung-1; dwell; earth-1; flea; grandchild; grandmother; in front; rice beer; sand-2; skin; sun; wash; water; wind.

P-L: cough; seven-1.

The Proto Lolo Burmese *ei is necessary to provide for a number of rather diverse reflexes in the modern languages. Forms reconstructable as Proto-Burmish *ei have quite diverse results in the

modern languages depending upon the preceding consonant initial or medial, but the examples are numerous and *ei seems very reliable at the Proto Burmish stage. It appears to correspond to several different Loloish vowels however, and in order to provide for all of the interrelationships it is necessary to hypothecate three distinct Proto Lolo-Burmese vowels *i, *ei, and *ə. The latter two are considered to have fallen together by the Proto-Burmish stage, while *i remained separate. In Loloish on the contrary *ə remains distinct, while *ei fell together with *i except when following *ch, *c, *j, or *s, in which case *ei has a set of reflexes in the daughter languages unlike any other vowel. This formulation must be regarded as tentative but it accounts for the data fairly well. The following diagram shows the relationships schematically.



The modern reflexes of *ei, are as follows: Burmese has /ei/ under all conditions. Atsi has /ui/ from *wei where the earlier medial *w merges with the vowel, /vui/ from *γei, /ai/ following initial *l, and otherwise has /i/. Maru has /a/ when following *l or initial or medial *w, but otherwise has /it/. (See section 4.32 for a discussion of this final stop in Maru.) Lisu has /i/ following *l; ʋ following *ch, *c, *j, and *s; elsewhere /ə/. Lahu has /i/ following *ch, *c, *j, *s; and elsewhere has /i/. Akha has /i/ in all cases. Media *w is lost in all the Loloish languages.

*ə: PB *ei; Bu ei; At i/ui; Ma ft/a; P-L *ə; Li ə; La ə; Ak ɿ.

P-L-B: far; foot-leg; mouth-l; untie.

P-L: copper.

Burmish reflexes of *ə are identical to those of *ei so unless there are Loloish cognates the Burmish examples are listed under *ei. As with *ei, Atsi has /ui/ from *wə but /i/ elsewhere, and Maru has /it/ except following *w where it has /a/. Medial w is lost in Loloish.

*o: P-B o; Bu ou; At au/ui; Ma uk; P-L o; L; u/ʋ; La ɔ/ɿ; Ak ɸ.

P-L-B: awake; bone; carry on back; cry; feather-body hair, insect; horn; mushroom; nine; price; sky; smoke; steal; sweet.

P-B: awaken; break; breast; copulate; difficult; dove; dye; finger-l; grandfather, green-l; leak; nephew-2; old

(of objects); pot-1; rule; seed-3; stab; stop up; swallow (verb); widower.

P-L: city; finger-2; four; green-2; hole; remember; rice (glutinous); seed-1; touch.

*o must be counted as one of the most reliable correspondence sets among the vowels. Its reflexes, though quite varied, are usually rounded, and more often than not are back. Atsi has /ui/ only when following *y or *γ, otherwise au. Lisu and Lahu usually have /u/ and /ɔ/ respectively, but when following bilabial consonants *ph, *pʔ, *p, *m, Lisu has /ʉ/ and Lahu has /ɨ/. (For a discussion of the final Maru stop, which is believed to be intrusive, see section 4.32.)

*ok: P-B *ok; Bu auʔ; At uʔ; Ma ok; P-L *oʔ; Li o (?); La ɔʔ/iʔ; Ak oʔ.

P-L-B: below; crooked; enough; fear; monkey; person (classifier); poison; six.

P-B: bark; brains; build; disappear; dry; drink-1; grow; hat; maggots; male (human)-1; rice (paddy); shine; stone; support; vulva; yam.

P-L: answer-2; beans; come out-2; grass-2; search-2; waist; year (classifier).

Lisu, loses its stop in one tone (see below under tone). Lahu has /ɔʔ/ except after labials *ph, *pʔ, *p, *m, where it has /ɨʔ/.

(*oŋ): P-B *oŋ; Bu aun; At uŋ; Ma oŋ; (P-L *oŋ; Li u; La ɔ; Ak ɔŋ).

P-L-B: sell; voice; wing.

P-B: ask for; bet; cubit; owl; pound; succeed; throat.

The Burmish examples of *oŋ seem convincing, but the Loloish examples are too fragmentary to be more than suggestive.

*we: P-B *we; Bu we; At(v)ui; Ma oi; (P-L *ə; Li ə; La ə).

P-L-B: buy; chaff; son's wife; split-2.

P-B: beads; buffalo; creeper; easy-1; tooth.

In Atsi initial *w is retained as /v/, so *we > vui, but medial *w merges with the vowel and *Cwe > Cui. The Lolish correspondences

are only slightly less fragmentary than under *oŋ.

- *e: P-B *e; Bu e; At e; Ma e; P-L *e; Li i; La i; Ak e.
 P-L-B: bamboo ties; sand-1; ten; this.
 P-B: knead; little; red-1; pull.
 P-L: dung-2; red-2; worm.
- *a: P-B *a; Bu a; At o/a; Ma o/a/u; P-L *a; Li a; La a/e; Ak a.
 P-L-B: antelope; arrow; bamboo; bee; between; bitter;
 borrow-1; come; eat; fall; female suffix; field-dry;
 fish; five; frog; get; hear; hundred; I; ill; interroga-
 tive suffix; many; meat; nose; palm; place (verb);
 rest; rice (cooked); sugar; thin; tiger; tongue.
 P-B: cattle; cucumber; dance; ear-1; embrace; flower (clas-
 sifier); itch; male (animal)-1; male (animal)-2; mule;
 place (noun); rain; right; road (classifier); salt;
 search-1; shield; son; span (finger); sparrow; stand
 (trans.)-1; walk.
 P-L: ask question; change; child; chin; cloth; ear-2; easy-2;
 heart; male (human)-2; moon; negative prefix; sing;
 stick; teach; wife's sibling.

*a is far and away the best attested vowel correspondence and it can be accepted with confidence. /a/ is the most common reflex in all languages except Atsi and Maru which usually have /o/. After initial *w however, Atsi also has /a/. The combination of medial *w with *a results in /wa/ in Burmese, /o/ in Atsi and /u/ in Maru. Items with medial *w do not have plausible cognates in the Loloish languages. Lahu has /ɛ/ as a reflex of Proto-Loloish *ya, where *y is medial. Thus Proto-Loloish *mya?² 'eye' > Lolo mɛ? and Proto-Loloish *bya² 'bee' > Lolo pɛ̂. However, certain 'y' clusters which are reconstructed for Proto-Lolo-Burmese, do not give rise to this Lahu change. Thus, Proto-Lolo-Burmese *kya?² 'cold' develops into Lahù ká?. This gives some support for the reconstruction of the Proto-Loloish stage as *ga?² with a front velar stop rather than a medial y. The contrast in development can be seen most clearly as follows;

	P-L-B	P-L	Lahu
eye	*mya? ²	*mya? ²	mɛ?
cold	*kya? ²	*ga? ²	ká?

- (* ap) P-B *ap; Bu a?; At ap; Ma e?; (P-L *ap; Ak ɔ?).
 P-L-B: draw water; stand (intrans.).
 P-B: attach; month; repay; snot.

- *at: P-B *at; Bu a?; At at; Ma e?; P-L *e?; Li e?; La e?; Ak ε?.
 P-L-B: kill-1; leech; spirit; vomit.
 P-B: deer; middle.
 P-L: alive; eight-2, flower (noun)-2.

*ap and *at develop in parallel fashion in the Burmish languages giving mutual support to the somewhat sparse examples of each. *ap is hardly represented in Loloish at all, (two possible Akhu cognates only) and correspondences between Burmish *at and Loloish *o? are rare enough that Proto Lolo Burmese *at cannot be accepted with real confidence.

- *a?: P-B *a?; Bu e?; At o?/a?; Ma o?/uk; P-L *a?; Li æ (?);
 La a?/ ε?; Ak a?.
 P-L-B: above; ascend; bird; black; cold (personally); destroy;
 dream; eye; fowl; hand; join; leaf; loom; morning;
 navel; pick (harvest); pig.
 P-B: ant; be ashamed; branch; breathe; carry (on shoulder);
 come out-1; cup; light; grass-1; key; lick; split-1;
 tea (leaf).
 P-L: rat-2; rough; crossbow-2.

Like *a, *a? is a well attested correspondence and in this case alone there is some parallelism between a stopped and an unstopped vowel. Burmese always has /e?/ from *a?, but in Atsi *a? becomes /o?/ except when following initial *w when *wa? > va?, (just as *wa > va in Atsi). Similarly Maru has /o?/, except when derived from a vowel following medial *w, in which case *-wa? > -uk. Lisu has /æ?/ except when following /y/, where it retains /a?/. In the case of the second stop tone (S²) the stop is lost in Lisu (as is always true of S²) but the loss of stop apparently happened after the vowel change, for Lisu develops /æ/ even though the stop is not present in the modern language. Lahu has /a?/ except that *ya? > ε?.

- *am: P-B *am; Bu an/un; At am; Ma in; P-L *am; Li o; La o; Ak m.
 P-L-B: bear; iron; span (arm); bridge; garden.
 P-B: brave; endure; flame; hair; sesamum; Shans, spear;
 stomach; swell up; wall.

Burmese has /an/, except following *w, when *wam > /wun/.

- (*an): P-B *an; Bu an; At an; Ma in; (P-L *an; Li ∅; La o).
 P-L-B: fly (verb)-1.
 P-B: dry up; flower (noun)-1; rice (husked); year.

*an is weakly attested even in Burmish, but it is attested by only a single word in Lisu and Lahu. *an and *am develop in somewhat parallel fashion within the Burmish languages, however.

- *aŋ: P-B *aŋ; Bu in; At aŋ; Ma a; P-L *ɔ; Li o; La ɔ; Ak ɔ
 P-L-B: high; horse, marrow; old (of people); river; see; sheep; thou; tread upon; tree-2; word.
 P-B: banyan; behind; chest; elephant; enclose; enter, firewood; fly (verb)-2; follow; ginger; husband; mature; mosquito; think.
 P-L: born; deaf; drink-2, ear-2; empty; flee; have; light weight; person(noun).
- *u: P-B *u; Bu u; At u; Ma au/u; P-L *u; Li u; La u; Ak u.
 P-L-B: boil; dig; egg; fat; head; intestine; porcupine; take; thick; white.
 P-B: answer-1; animal; ant, (flying); cross; hammer; nephew -1; tender-1; thorn-1.
 P-L: call; pot-2; stand (transitive)-2; tender-2; thorn-2.

In Maru *u > /au/ except when following *ɣ, when *yu > /yu/.

- *uɸ: P-B *uɸ; Bu ou?; At uɸ; Ma aɸ; P-L *u?; Li i(?) /ʋ(?); La i?; Ak u?.
 P-L-B: clench; rotten; sleep.
 P-B: owl; fly-gnat; sew; suckle-1; turban.
 P-L: squeeze; suckle-2; tree-3.

*uɸ develops into Li /i?/ except after *ch and *c, when it develops into /u?/. The stop is lost in Lisu in one of the tones (see section 4.33, S²)

- *ut: P-B *ut; Bu ou?/u?; At ut; Ma at; P-L *ut; Li i(?) /ʋ?; La ʌ?; Ak ɛ?.
 P-L-B: blow; hungry; wear.
 P-B: dusk; ladle; lungs; mouth-2; nest; roast; stump; tear (verb); undress; wipe.
 P-L: drunk.

In Burmese *ut > /ou?/ except after *y when *yut > /yu?/. Lisu has /i?/ except following *m and *c, when *ut > /ʋ?/.

- (*un): P-B *un; Bu un; At un; Ma um.
 P-B: kite (bird); net; onion; push; shrimp; slave.



*um P-B *um; Bu oun; At um; Ma am; P-L *um; Li u; La ɛ; Ak m.
 P-L-B; blunt; hot; house; mortar; pair; three.
 P-B: mountain; round object (classifier); strength.
 P-L: round (verb).

4. 3 Tones

4. 31 Discussion:

The reconstruction of tones presents quite different problems than that of either initials or finals. On the one hand, since there are relatively few tones in any of the languages, (as compared to the inventory of either initials or finals) numerous examples of each correspondence can be given, and the influencing factors can therefore be determined with some confidence. In fact, it is possible to suggest a rather simple set of tones for the Proto-Lolo-Burmese, which in spite of a number of complicating rearrangements in the daughter languages, satisfactorily accounts for the great majority of their tones. On the other hand, it must simply be admitted that the phonetic quality of the reconstructed tones is totally unknown, for what appears to have originally been the same tone, results in tones of utterly differing qualities in the various daughter languages. The short falling 'creaky' tone of Burmese, for instance, regularly corresponds to the high, even, and long tone in Atsi and Maru, to a tone with a slight rise and then pronounced fall in Lisu, and to mid even tones in Lahu and Akha. Because of such phonetic idiosyncracies, I have labelled reconstructed tones by arbitrary raised numbers placed at the end of the syllabic formula, though I have used accents in the various modern languages, in the hope that they could suggest in some degree their phonetic nature.

The one phonetically reliable feature of the reconstructed tone system is the contrast between stopped and unstopped syllables. (Syllables with final nasals behave tonemically like open syllables.) Some of the modern languages have only a single tone in stopped syllables, others a choice of two, and it is necessary to recognize a two-way tone contrast among the stopped syllables of the reconstructed language. With two minor exceptions stopped syllables are stopped in all languages (although changes from one final stop to another are not uncommon) and unstopped syllables are uniformly unstopped. The exceptions are: 1) In Lisu stops have been lost from all syllables derived from one of the original stopped tones, and 2) In syllables with certain vowels,

Maru seems to have added stops (see section 4. 32).

Proto-Loloish can be rather neatly reconstructed as having three unstopped tones, and two stopped tones, a situation which has remained unchanged in present day Akha. In Lisu and Lahu, however, two of the original open tones (those which I have numbered '1' and '2') have split in two depending upon the class of the initial which begins the syllable. In Lisu, for instance, tone 1, becomes mid-level (/ˊ/) in syllables with nasal, voiced, aspirated, or fricative initials, but with voiceless unaspirated stops and affricates, tone 1 develops into the rising-falling tone (/ˊˋ/). (In all cases these initial classes refer to the reconstructed forms rather than to the modern language.) A similar split has developed in tone 2 in Lisu, and both tones 1 and 2 have split in Lahu, though the precise conditions according to which they split, differ in each case. The two stopped tones remain in contrast in Lahu and Akha but one of the originally stopped tones loses its stop in Lisu and these syllables have merged tonemically with unstopped tones, leaving Lisu with a single stopped tone.

The same three tones of unstopped syllables account with no great change for the tones in modern Burmese, and very nearly for the unstopped tones of Maru. In Atsi, however, tone 2 became split on a different basis than in any other language. Here verbs derived from tone 2 (including intransitives, glossed with English adjectives) developed into the high short falling tone /ˊ/ while nouns developed into the low falling tone /ˋ/. To base divergent phonological developments on the syntactic contrast between nouns and verbs appears odd if not downright suspect, yet the consistency of the pattern in a considerable number of examples cannot be easily dismissed (about 60 nouns and 35 verbs). Although my data on Atsi syntax is unfortunately not complete enough to be certain of the relations between tones and grammar the following factors may be relevant: Atsi verbs seem always to require a suffix and my informant was reluctant to pronounce a verb base without a suffix. Nouns on the other hand, were readily pronounced in isolation. If we imagine a single older Atsi tone to have derived consistently from tone 2, then nouns bearing this tone came to have modern Atsi /ˋ/. Verbs from original tone 2, however, fell together tonemically with /ˊ/ (possibly having something to do with their obligatory suffix) which is otherwise derived from older tone 1. As a result, my informant gave no verbs with /ˋ/.

More disturbing, because less patterned, Atsi also has two distinct tones corresponding to tone 1 of the other languages. It would be gratifying to find some conditioning factor to explain this split, which occurs

in Atsi alone, but no such factor is apparent. It seems unfortunate to have to set up a special tone on the basis of a single language out of the six, and yet in the absence of some recognizable conditioning factor no other recourse is available. To indicate the less assured nature of this division, I have labeled these two tones as 'la' and 'lb', rather than with entirely separate numbers and they are shown this way on the reconstructions. At the level of Proto-Loloish no distinction can be made between 'la' and 'lb' of course, nor can a distinction be made if an Atsi example is lacking. Thus reconstructions at the Proto-Loloish level and a few at both Proto-Burmish and Proto Lolo-Burmese are shown with the number '1' but without 'a' or 'b'.

As has been stated, Maru open syllable tones can almost be derived directly from the three reconstructed originals. However, a complication arises with tone 2. As a reflex of tone 2, Maru usually has a mid tone but in 18 cases Maru has instead, the low tone that usually is derived from tone 1. Of these 18 only 5 have apparent cognates outside the Burmish languages. It is not inconceivable that these deviant Maru syllables are the result of borrowing or even of misrecording, but until some conditioning or other factor can be found to explain them, reconstructions of forms with this Maru anomaly are labeled '2c,' both in Proto-Burmish and in Proto Lolo-Burmese, while those following the normal pattern are labeled simply '2'.

Two original stopped tones are required for explaining the present situation in the Loloish languages but these had apparently fallen together in Proto-Burmish. Neither Burmese nor Atsi has a tonal contrast in stopped syllables. In Maru, however, this single stopped tone was re-split, but along new lines. To a considerable extent, syllables with voiced initials developed low stopped tones, while those with voiceless initials developed high stopped tones, but enough extra complications entered the picture to bring these into contrast.

In summary, Proto-Lolo-Burmese can be assumed to have had two stopped tones (S^1 and S^2), and at least three unstopped tones. Where all other languages suggest an original single tone (tone 1) Atsi alone suggests the presence of two separate originals (la and lb) and a few items in Maru hint at the possibility of a separate tone 2c. The conditioning factors, and the varying results which they bring in the modern languages are summarized below in Table 4. 4-3.

4. 32 Intrusive Steps in Maru:

It has already been pointed out that two exceptions exist to the generalization that stopped syllables are consistently stopped in all six languages. One of the exceptions is simply that Lisu loses all stops from one of the earlier stopped tones. The other exception is both more complicated and more interesting. In the case of two vowels, a substantial number of correspondences exist in which Burmese and Atsi have open syllables but Maru has a stopped syllable. These, and the symbols for Proto-Burmese as assigned above are:

P-B	Burmese	Atsi	Maru
*ei	-ei	-i	-it
*o	-ou	-au (*yo > ui)	-uk

On surveying the lexical items exemplifying these correspondences, one might first suppose that the Maru forms represent the older condition, and that the stops had been lost in the history of the other two languages. Such a suspicion, however, would run into the difficulty that the Burmese and Atsi items exhibit all of the tone correspondences that are regular and expectable for open syllables. If these original syllables had been stopped, there would be no way to explain the development of the three or four diverse tone correspondences that they show. If, however, we start with the opposite, and initially somewhat implausible hypothesis that the Maru stops are intrusive, it becomes possible to explain the correspondences in tone in a simple way. We can assume the full variety of unstopped tones for the reconstructed forms, and then have the task of explaining the particular stopped tone that is found in the Maru examples. (I have described this set of correspondences elsewhere, see Burling, 1966.)

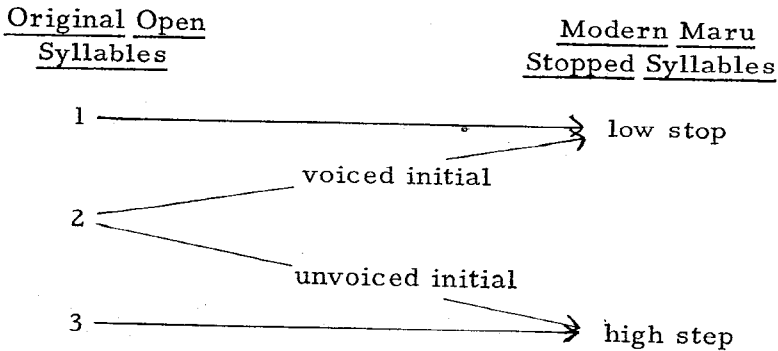
We must recognize three types of tone correspondences in the Burmish languages:

1) In the most common case in which Maru does not have stopped syllables the tone correspondences among the three languages are as follows:

	Burmese	Atsi	Maru
1.	/	^ /	\ (low)
2	^	\ /	— (mid)
3	\	v	/ (high)

2) Where all three languages have stopped syllables, Maru develops its high stopped tone when the syllable has an unvoiced initial but a low stop when the syllable has a voiced initial

3) Finally, in the case of the two vowels, which are open in Burmese and Atsi, but stopped in Maru, Maru develops a low stopped tone where a low open tone would otherwise be expected and a high stopped tone where a high tone would otherwise be expected, regardless of the syllable initial. This alone would account for the breaking up of the earlier unified stopped tone into the two contrasting stopped tones of modern Maru. (It should be recalled that the single stopped tone of Atsi has two quite distinct allophones, lower in syllables with voiced initials, higher where the initial is voiceless. This presumably was the situation in earlier Maru, but the two pitches have come into contrast by the mechanism discussed here.) When Maru would otherwise have developed a mid open tone, these newly stopped syllables split in their tone, following what seems to have been the old rule for allotones: Syllables with voiced initials developed a low stopped tone, but those with unvoiced initials developed a high stopped tone. In this way the three unstopped tones of Proto-Burmish can be seen as having regularly developed into the two stopped tones of modern Maru, when occurring with these particular vowels. Of course the great majority of syllables both stopped and unstopped were not effected, except that where there had formerly been merely an allotonic difference between high and low stopped syllables, a contrast resulted. The change in tones consequent upon the stopping of these syllables can be summarized as follows:



The initially implausible hypothesis that the final stops of Maru are intrusive, therefore, not only makes it possible to explain the full complement of tones in Burmese and Atsi, but also gives a mechanism by which the single stopped tone of Proto-Burmish became split in two.

Neither of these developments can be explained if it is assumed instead that the stops are ancient but became lost in Burmese and Atsi.

Once the intrusive stops are recognized as a possibility, their phonetic shapes can be seen to be not entirely unreasonable. Only after high back vowels, very likely indeed only after a vowel glide which moved toward the high back position, was a final velar stop introduced. After high front vowels (perhaps a glide toward high front) an apical stop was introduced.

Items showing intrusive Maru stops will be found in the table of Section 5 under the following glosses: For open tone 1 developing into Maru low stop--cry, die, difficult, green, horn, mushroom, nephew, rice beer, skin, sweet, water, widower; For open tone 2 developing into Maru low stop--bone, copulate, grandchild, parrot, sky; For open tone 2 developing into Maru high stop--dung, dye, grandmother, grandfather, old, smoke, steal, star, wash; For open tone 3 developing into Maru high stop--breast, feather, in front, seed, stop up.

4. 33 Tone Correspondences:

The sets of tone correspondences given below are in many cases distinguished from one another according to the class of initial of the syllable. Thus, although it is possible to reconstruct a single tone *1, this tone split in both Lisu and Lahu, the split depending upon the class of reconstructed initial. The classes can be taken from Table 2. 1-1 where stops are shown as either aspirated, glottalized, or voiced (S_1 , S_2 , or S_3), while nasals are either plain voiced (N_1) or glottalized (N_2). *1, *w, *y, *ɣ act as do the voiced stop (S_3) or the plain nasal (N_1) series in governing tone changes. *s and *s̥ act as voiceless initials in governing tones or Maru stoppèd syllables but they act like the S_1 series in Lisu and like the S_2 series in Lahu. *1? would be expected to govern tone changes as does N_2 series, but examples ('boat,' 'round') are too few to allow more than speculation. *w? is similarly meagerly represented, but the word for 'leech' at least, has tone correspondence which parallel the N_2 series. *hy so far as its few examples show, seems to act as do the aspirated stops (S_1). *h in two relevant examples acts as do voiceless stops in developing a high stopped tone in Maru. This is notable in spite of the poverty of examples because *h develops into voiced /ɣ/ in Maru but the tones found in 'ashamed' and 'in front' are appropriate to the earlier (presumably) voiceless *h, rather than to the modern voiced /ɣ/. This, then is another way in which the earlier

rigid allophonic association of high stops with voiceless initials, and of low stops with voiced initials was broken: Initial *h became voiced, and in fact fell together with /ɣ/ derived from *ɣ, but the stopped tones of the former remained high, while the tones of the latter remained low. Where there had formerly been a contrast between initials in Proto-Burmish, Maru now has a contrast between tones.

*1a (with plain nasal or voiced initial stop--S₃, N₁ *y, *#):

P-B *1a; Bu^ˊ; At^ˆ; Ma^ˋ; P-L *1; Li^ˉ; La^ˋ; Ak^ˊ.

P-L-B: anvil^a; buy; come; cry; bear^a; bridge; fly (verb)-1^a; hot; I; ill; mushroom; pair; pig^a; pus; rice (cooked)^a; river^a; see; sheep^a; span (arm); spirit^a; take; thou; tree-2^a; wing.

P-B: cat; chest; creeper; cubit; drum; dwell; earth-1^a; enter; easy-1; green-1; hammer; kite (bird); knead; laugh^a; leak; little; mountain; name-1; neck; net^a; place (noun); rain; red-1; right; shield; skin; slave; snake; sparrow; succeed; swallow (verb); tooth; wall; water; wind; year.

P-L: drink; ear-2; earth-2; have; land; light weight; stick; worm.

Items marked here and in the next two sets below with a superscript 'a' are ambiguous as to whether they are *1a or *1b, because of the absence of the form in Atsi which is the only language to make a distinction between these two. P-L forms are also ambiguous, because none of the modern Loloish languages from which P-L is reconstructed has any sort of distinction between 1a and 1b. All these forms could just as well be listed with 1b instead of course. Reconstructions for these items in the Table of Section 5 show the tone as a simple '1'.

*1a (with aspirated stop initials and voiceless fricatives--S₁, *s, *š, *hy, *h)

P-B *1a; Bu^ˊ; At^ˆ; Ma^ˋ; P-L *1; Li^ˉ; La^ˉ; Ak^ˊ.

P-L-B: die; field^a; hundred^a; marrow^a; thick; this^a; untie; white.

P-B: elephant^a; pull; search-1.

P-L: call; cloth; flee; home (classifier); person (noun).

*1a (with glottalized initials--S₂, N₂): P-B *1a; Bu^ˊ; At^ˆ; Ma^ˋ; Ma^ˋ; P-L *1; Li^ˆ; La^ˉ; Ak^ˊ.

P-L-B: boil; high; leech^a; overtake^a.

P-B: embrace.

P-L: ask question; change; easy-2; finger-2; green-2; plant (verb); red-2; sing; stand (transitive)-2.

'Plant' and 'sing' can be reconstructed in Proto-Loloish as having either tone 1, or tone 3, since the results in Lisu and Lahu, the only languages in which these items are represented, would be the same.

*1b (with plain nasal and voiced initial--S₃, N₁, *y, *#):

P-B *1b; Bu ˘; At ˘; Ma ˘; P-L *1; Li ˉ; La ˘; Ak ˘.

P-L-B: house; intestine; tongue.

P-B: ant (flying); cat; fly (verb)-2; husband; nephew-1; nephew-2; rice beer; sand-2; shrimp; sugar cane.

*1b (with aspirated initials and voiceless fricatives--S₁, *s, *š)

P-B *1b; Bu ˘; At ˘; Ma ˘; P-L *1; Li ˉ; La ˉ; Ak ˘.

P-L-B: deer; fat; foot-leg; garden; horns; iron; mortar; sweet; ten.

P-B: dam; endure; flame; hair; onion; rice (husked); road (classifier); span (finger); think; wash; widower.

*1b (with glottalized initial--S₂, N₂, *1?): P-B *1b; Bu ˘; At ˘; Ma ˘; P-L *1; Li ˘; La ˉ; Ak ˘

P-L-B: boat; name-2; nose; porcupine.

P-B: granary; mosquito; spear.

*2 (with aspirated voiceless, plain nasal and voiced initials --S₁, S₃, N₁, *γ, *y, *hy, *#):

P-B *2; Bu ˘; At ˘ (Noun) ˘ (Verb); Ma ˉ; P-L *2; Li ˘; La ˘; Ak ˘.

P-L-B: antelope; arrow; awake; bamboo; bamboo ties; bee; between; blunt; bone; bitter, carry (on back); chaff; dig; eat; far; fire; fish; five; give; hear; heavy; insect; horse; interrogative suffix; many; medicine; mouth-1; nine; old (of people); palm (sole); price; rest; sell; smoke; son's wife; split-2; steal; sugar; thin; tiger; tread upon; voice, word.

P-B: animal (classifier); ask for; beads; break; buffalo; cattle; copulate; cross (verb); crossbow-1; cucumber; difficult; dog; dung-1; dye (verb); firewood; flower (noun)-1; follow; ginger; grandfather; grandmother; itch; male (animal)-2; old (of objects); owl; pot-1; round object

(classifier); rule; salt; seed-3; son; stab; stomach;
swell up; tail-1; throat; wife.

P-L: child; chin, city, copper; deaf; dung-2; empty; four; lift;
negative prefix; remember; rice (glutinous); ride
(horse); seed-1; tender-2; thorn-2; touch; two; weave;
wife's sibling.

*2 (with initials *s, *š):

P-B *2; Bu ^; At \ (noun) / (verb); Ma ¯; P-L *2; Li \; La \;
Ak \.

P-L-B: blood; meat; liver; sand-1.

P-B: louse; nails; walk.

P-L: know; seven-1,

*2 (with glottalized initials--S₂, N₂): P-B *2; Bu ^; At \ (noun) / (verb);
Ma ¯; P-L *2; Li /; La \; Ak \.

P-L-B: borrow-1; frog; head; penis; place (verb).

P-B: awaken; banyan; borrow-2; dove; dry up; finger-1;
sesamum.

P-L: cough; ear-2; kill-2; male (human)-2; round (verb); tail-
2; teach.

*2c: P-B *2c; Bu ^; At \ (noun) / (verb); Ma \; (Proto Lolo develops
as in tone 2)

P-L-B: fruit; heavy; parrot; sky; woman.

P-B: answer-1; bet; ear-1; enclose; flea (of dog); grandchild;
mule; neck; pound (verb); push; strength (of arm); thorn
-1; three

*2c is distinct from *2 only in Maru. Items without Maru examples
are ambiguous, but are placed with the majority under the 2.

*3: P-B *3; Bu \; At v; Ma /; P-L *3; Li ^; La ¯; Ak ¯.
P-L-B: egg; fall; feather; female suffix; full; get; ripe-2.
P-B: aunt; behind; brave; breast; dance; day; flower (classifier);
(in) front; male (animal)-1; mature; Shans; ripe-1;
stand (transitive)-1; seed-2; stop up; straight; tender-1.
P-L: born; heart; moon; pot-2; sibling, younger.

*S¹ (with voiced initials--S₃, N₁, *γ, *y)

P-B: *S; Bu ?; At S; Ma \S; P-L *?¹; Li ?; La ¯?; Ak \?.

P-L-B: crooked; enough; hand; hungry; loom; monkey; morning;

poison; rotten; sleep; stand (intrans); wear.

P-B: ant; bamboo shoots; brains; carry (on shoulder); disappear; fight; grass-1; grow; hat; key; lick; maggots; male (human)-1; middle; owl; rice (paddy); shine; shoot; stone; stump (of tree); vulva; yam.

P-L: alive; drunk; waist.

*S¹ (with aspirated initials--S₁, *s, *h, *hy)

P-B *S; Bu ?; At S; Ma' S; P-L *?; Li ?; La⁻ ?; Ak[^] ?.

P-L-B: draw water; join; kill-1; leach; leaf; navel; six.

P-B: ashamed; breathe; chili; come out-1; cup; deer (sambhur); drink-1; dusk; joints; month; nest; new; repay; roast; root; sew; split-1; support; tea (leaf); tear (verb); tree-1; turban; undress; wipe.

P-L: answer-2; eight-2; rat-2; suckle-2; year (classifier).

*S¹: (with glottalized initials: S₂, N₂, w ?)

P-B *S; Bu ?; At S; Ma S; P-L *?¹; Li ?; La⁻ ?; Ak[^] ?.

P-B: attack; bark; build; branch; dry; eight; fly-gnat; ladle; love; lungs; mouth-2; seven-2; snout; suckle.

Maru has a contrast between high and low tones in stopped syllables except when these syllables begin with a glottalized consonant (of S₂, or N₂ series). The latter must therefore be set aside from the former.

Since *S¹ and *S² fall together in Proto-Burmish there is no way to assign items to one or the other stop if Lolo cognates are not available. Items confined to Burmish are listed arbitrarily with S¹ but are shown in the Proto-Burmish reconstructions of Section 5 with a stop, but without a super-script number.

*S² (with voiced initials--S₃, N₁, *y, *#)

P-B *S; Bu ?; At S; Ma[^] S; P-L *?²; Li[^]; La[^] ?; Ak⁻ ?.

P-L-B: ascend; below; bird; black; blow; clench (first); cold (personally); dream; eye; fear, fowl; person (classifier).

P-L: beans; come out-2; flower (noun)-2; grass-2.

*S² (with voiceless initials: S₁, S₂, N₂, *s)

P-B *S; Bu ?; At S; Ma[^] S; P-L *?²; Li[^]; La[^] ?; Ak⁻ ?.

P-L-B: above; destroy; pick (harvest); sharp; vomit; crossbow-2; search-2; squeeze.

P-L: rough; tree.

4. 4 Summary of Correspondences

Tables 4. 4-1, 4. 4-2, and 4. 4-3 summarize the correspondences among the initials, finals, and tones respectively of the six languages. Items separated by a slant line are alternative developments from the same proto-form, and the conditions governing the choice among these alternatives have been spelled out earlier in section 4. A stop or nasal followed by '(y)' indicates that under certain conditions the 'y' is present, and under certain other conditions it has been lost, the particular conditions having again been specified earlier in section four. Similarly, a '(?)' placed in parentheses following a vowel in Lisu indicates that the final glottal stop is lost under stateable conditions. Reconstructed items placed in parentheses are poorly attested, and must be regarded with some skepticism. Blank spaces indicate that no reasonable correspondences have been found for these items in these particular languages. The phonetics of the various items in the modern languages are described in section 3.

TABLE 4. 4-1 Initials

P-B-L	P-B	Bu	At	Ma	P-L	Li	La	Ak
*ph	*ph	ph	ph	ph	*ph	ph	ph	p
*p?	*p?	ph	p?	p?	*p	p	p	p
*p	p	p	p	p	*b	b	p	b
*phy	phy	phy	phy	phy	*ph(y)	ph(y)	ph	p(y)
*p?y	*p?y	phy	p?y	p?y	*p(y)	p(y)	p	p(y)
*py	*py	py	py	py	*b(y)	b(y)	p	b(y)
*th	*th	th	th	th	*th	th	th	t
*t?	*t?	th	t?	t?	*t	t	t	t
*t	*t	t	t	t	*d	d	t	d
*tsh	*tsh	sh	tsh	tsh	*tsh	tsh	ch	ts
*ts?	*ts?	sh	ts?	ts?	*ts	ts	c	ts
*ts	*ts	s	ts	ts	*dz	dz	c	dz
*ch	*ch	ch	ch	ch	*ch	ch	ch	c

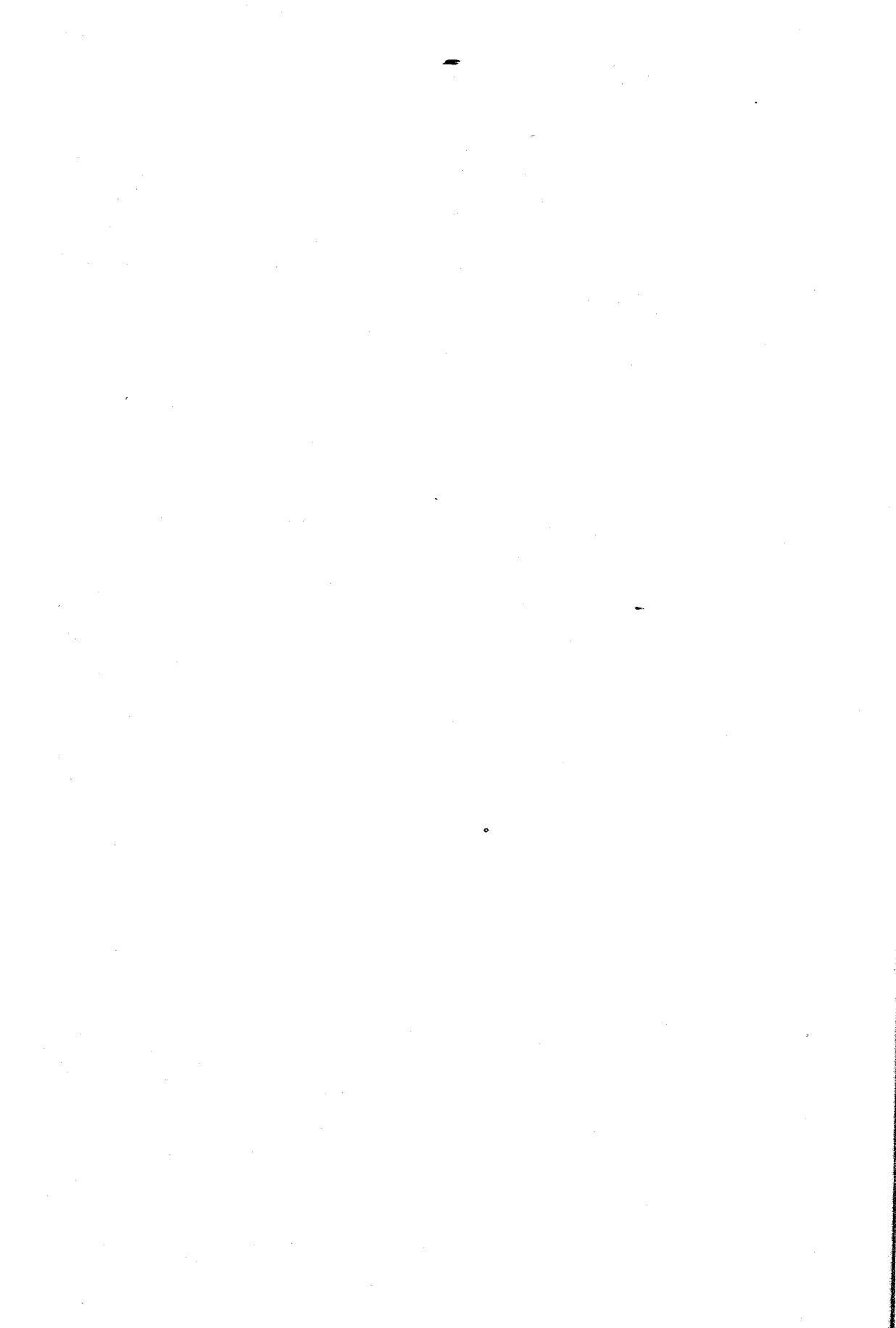
P-B-L	P-B	Bu	At	Ma	P-L	Li	La	Ak
(*c?)	*c?	ch	c?	c?	*c	c	c	
c	*c	c	c	c	*j	j	c	j
*khy	*khy	ch	khy	khy	* <u>kh</u>	kh	<u>kh</u>	k
(*k?y)	*k?y	ch	k?y	k?y				
*ky	*ky	c	ky	ky	* <u>g</u>		<u>k</u>	g
*kh	*kh	kh	kh	kh	* <u>kh</u>	kh(w)	<u>kh</u>	x
(*k?)	*k?	kh	k?	k?	* <u>k</u>	k(w)	<u>k</u>	
*k	*k	k	k	k	* <u>g</u>	g	<u>k</u>	γ
*m	*m	m	m(y)	m	*m	m	m	m
*m?	*m?	hm	m?(y)	m?	*m?	m	m	m
*my	*my	my	my	my	*m(y)	m(y)	m	m(y)
*m?y	*m?y		m?y	m?y	*m?(y)	m(y)	m	m(y)
*n	*n	n	n(y)	n	*n	n	n	n
*n?	*n?	hn	n?	n?	*n?	n	n	n
(*ny)	*ny	ny	ny		*n(y)	n(y)	n	n(y)
*n?y	*n?y	hny	n?y	n?y	*n?(y)	n(y)	n	n(y)
*ŋ	*ŋ	ŋ	ŋ	ŋ	*ŋ	ŋ	ŋ	ŋ
*ŋ?	*ŋ?	hŋ	ŋ?	ŋ?	*ŋ?	ŋ	ŋ	ŋ
*l	*l	l	l	l	*l	l	l	l
*l?	*l?	hl	l?	l?	*l?	l	l	l
*s	*s	θ	s	s	*s	s/š	s	s/š
*š	*š	θ	š	š	*s	s/š	s	s/š
*γ	*γ	y	v	γ	*γ	γ/y	<u>g</u>	z/y
*y	*y	y	y	y	*y	ŷ/y	y	z/y
*w	*w	w	v	w	*w	w	v	z/y
*w?	*w?			w?	*w	w	v	y
*hy	*y	y	y	y	*hy	hy/h	h	y
*(h)	*h	š	h	γ				
*#	*#	#	#	#	*#	#	#	#

TABLE 4.4-2 Finals

P-B-L	P-B	Bu	At	Ma	P-L	Li	La	Ak
*i	*i	i	i	i	*i	ɨ/i	i	i
(*it)	*it	i?	it	at				
(*ik)	*ik	i?	ik	ak				
*iŋ	*iŋ	e/i	iŋ	aŋ	*iŋ	i	ɛ	n
*ei	*ei	ei	i/ui/ai	it/a	*ei/i	ɨ/ɨi	i/i	i
*ə	*ei	ei	i/ui/ai	it/a	*ə	ə	ə	ɨ
*o	*o	ou	au/ui	uk	*o	u/ɨ	o/i	ɔ
*ok	*ok	au?	u?	ok	*o?	o(?)	o?/i?	o?
(*oŋ)	*oŋ	aun	uŋ	oŋ	(*oŋ	u	o	on)
*we	*we	we	(v)ui	oi	(*ə	ə	ə)	
*e	*e	e	e	e	*e	i	i	e
*a	*a	a	o/a	o/a/u	*a	a	a/ɛ	a
(*ap)	*ap	a?	ap	e?	(*ap			o?)
*at	*at	a?	at	e?	*e?	e(?)	e?	ɛ?
*a?	*a?	e?	o?/a?	o?/uk	*a?	æ(?)	a?/ɛ?	a?
*am	*am	an/un	am	in	*am	o	o	m
(*an)	*an	an	an	in	(*an	ɔ	o)	
*aŋ	*aŋ	in	aŋ	a	*o	o	o	o
*u	*u	u	u	au/u	*u	u	u	u
*up	*up	ou?	up	ap	*u?	i(?)/ɨ(?)	ɨ?	u?
*ut	*ut	ou?/u?	ut	at	*ut	i(?)/ɨ(?)	ʌ?	ɛ?
(*un)	*un	un	un	um				
*um	*um	oun	um	am	*um	u	ɛ	m

TABLE 4. 4-3 Tones

Class of the Syllable Initial	Burmese	Atsi	Maru	Lisu	Lahu	Akha
Nasal (N ₁) Voiced (S ₃), *y					∨	
*1 Aspirated (S ₁) *s, *s, *hy, *h	/	la: ^	\	-		/
Glottalized (S ₂ , N ₂) *1?		lb: /		^	-	
Voiced (S ₃) *γ, *y Aspirated (S ₁), *hy Nasal (N ₁)					^	
*2 *s, *s	^	Nouns: Verbs: (2c: \)	-	\		\
Glottalized (S ₂ , N ₂)				/	\	
*3	\	-	/	^	-	-
Voiced (S ₃ , N ₁) *γ, *y			\s			
*S ¹ Glottalized (S ₂ , N ₂ , *w?)			s	?	-?	\?
Aspirated (S ₁ , *s, *h)			ʼs			
Voiced (S ₃ , N ₁ , *y)	?	s	\s	^		
*S ² Glottalized (S ₂ , N ₂)			s		/?	-?
*Aspirated (S ₁), *s			ʼs	∨		



5. Cognate Sets and Reconstructions

This section consists entirely of a long table. The table includes: 1) the data of the six modern languages arranged by cognate sets in the order of the English glosses, and, 2) reconstructions from these sets at the three levels of ancestral languages, Proto Burmish, Proto Loloish, and Proto-Lolo-Burmese. The items in the six modern languages are transcribed according to the systems described in section 3. The reconstructed languages are transcribed by means of the symbols assigned in section 4. Besides these symbols, a number of conventions and abbreviations are used in the table. Items placed in parentheses are doubtful, deviant, or questionable in some way, and the raised letters placed outside the right hand parenthesis indicate the nature of the doubt as follows:

Bu	Burmese	When placed outside parenthesized reconstructions in Proto-Burmish or Proto-Loloish, these indicate that the item is found only in the indicated daughter language. Being found in only one language this item cannot be used to support comparisons within the sub-group. Nevertheless, these items do have apparent cognates in the opposite sub-group, and can therefore be used to support reconstructions at the level of Proto Lolo-Burmese.
At	Atsi	
Ma	Maru	
Li	Lisu	
La	Lahu	
Ak	Akha	

- A Placed on Burmese items only, this indicates that the presence or absence of a preaspirated nasal (hm, hn, hj) is out of conformity with what would be expected from the most common comparisons between Burmese and the other languages (see sections 4. 12, 4. 14).
- B Placed on Proto-Burmish examples, this indicates that the final (vowel and final consonant) cannot be reconstructed, possibly because of influence of a medial which has since disappeared. The position of the unreconstructable vowel is simply indicated by 'V' (see section 4, 16).
- C Placed on Proto-Burmish reconstructions, this indicates that the cluster suggested by the reconstruction can only be regarded as speculative (see section 4. 16).

- F Placed on one of the modern languages, this indicates that the final, either the vowel or final consonant or both, is in some way out of conformity with the more usual expectations raised by the possible cognates in the other languages. Items marked in this way are not used in reconstructions, but are included in the chart in the hope that additional information or subsidiary rules will eventually make their incorporation possible.
- G Placed on Maru, this indicates that the Maru example has /?/ where /k/ is expectable in view of the other languages. It is unfortunately likely that these glottal stops are the result of original misrecording on my part.
- I Placed on one of the modern languages, this indicates that the initial is not that which would be expected from comparisons with the other languages. Items marked with 'I' are not used in reconstructions.
- N Placed on one of the reconstructed items, this indicates that no tone is indicated because there is ambiguity in the forms shown by the daughter languages, making two alternative interpretations possible, each of which would imply that a different one of the daughter languages is deviant.
- R Placed on one of the modern Burmish languages, this indicates that the modern syllable has been reduced to a 'toneless' syllable but the conditions of this reduction have not been worked out (see section 3. 3).
- T Placed on one of the modern languages, this indicates that the tone of that language is divergent from the tone that would be expected by the more usual rules of correspondence with the other languages. Items marked in this way are not used in making reconstructions.
- V Placed on Burmese, this indicates that Burmese has a voiced stop where either an aspirated or voiceless unaspirated stop would be expected from comparison with the other languages. This is probably the result of assimilation to the previous syllable, but the exact rules governing such voicing are not yet clear (see section 4. 12).
- W Placed on one of the modern languages this indicates that the medial 'w' is in some way divergent from what would be expected by the examples of the other languages.
- Y Placed on one of the modern languages this indicates that the medial 'y' is in some way divergent from what would be expected by the examples in the other languages.

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
above	tha?²	tha?	the?	átho?		(tha?²) Ak		(thā?) T	tā?
alive				tù	tāu	de?¹		tē?	dē? (life)
animal (classifier)	tu²			t?ú	t?áu				
answer-1	t?u²c	thó							
answer-2									
ant	ɣva?	páywe?		páuvo?	phyoʔuk	kho?¹		khō?	xò?
ant (flying)	lu¹b	pául		pàulú			(bo?lô) FT		
antelope	hya²	(ya²) At		yō		hya²	hyà	há	
anvil	pei¹	(pei¹) Bu	péi			(bi¹) La		pítè	
arrow	mya²	(hmyá) A		myò	myō	(mya²) Li	myà		
ascend	ta?²	te?		to?	tò?	da?²	dāe	tā?	dā?
ashamed	ha?	ʒe?		ho?	ɣo?				
ashes	(pɣV) CB	pyà		mivap	mivap				
ask for	toŋ²	táun		túŋ					
ask,									
question									
attach	t?ap	(ta?) I		t?ap	t?e?	n?a¹	nányí	nānī	náhà
aunt	m?i³			m?yi- thāŋ	m?ikan				

awake	no ²	(no ²)Bu ¹ nóu	(no ²)Li	nó	(nó)T
awaken		n?o ² hnóu			
bamboo	wa ²	wá	(wa ²)La	vá	(zá?)T
bamboo shoots		mik (hmyi?)AY			
bamboo ties	ne ²	(hni)AF	(ne ²)Li	māni	(vāné)FT
banyan	m?yaŋ ²	m?yaŋ- kaun			
bark (cf. tree)	k?ok	khau?			
beads	ɣwe ²	ywé			
beans			no? ²	áno	nó?
bear	wam ¹	wún	(wam)Li	wōphà	
bee	pya ²	pyá	bya ²	byà	bya
behind	thaŋ ³	núm- thāŋ			
below	ok ²	(ok)Bu au?	(o? ²)Ak		là?ō? (down)
bet	loŋ ^{2c}	lāun			
between	kya ²	(ja)	(ga ²)La		kāji
big	(kyi ²)C	ci			

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
bird	?a?²	?a?	hpe?	ɲ?o?	ɲ?o?	(ɲ?a?²)La	(nyá)IT	ɲá?	
bitter	kha²	kha²	khá	khó	(khó)T	kha²	khwá	khá	y-áxà
black	na?²	na?	ne?	no?	nò?	na?²	yíné	ná?	yónā?
blood	swei²	swei²	θwéi	sui	sā	sei²	sù	sət	sí
blow (with mouth)	mut²	mut	(hmou?)A	mut	māt	mut²	mú	má?	
blunt	turn²	tum²	tóun	tum	tām	dum²	dùlē		yōdm
boat	1?ei¹b	1?ei¹b	hléi	1?ái	1?à	(1?ei¹)Li	lí		
boil	ts?u¹a	ts?u¹a	shú	ts?ú	ts?au	(tsu¹)Li	tsú		
bone	ɔo²	ɔo²	áyóu	sóvui	sáɣuk	(ɔo²)Ak		(ɔgókū)T	sáyø
born						bɔɔ³		pōlā	bō
borrow-1	ɲ?a²	ɲ?a²	hɲá	ɲ?ó	ɲ?ō	ɲ?a²	ɲwá	ɲá	ɲá
borrow-2		c?i²	chí	c?í					
brains		nok	(hnau?)A	ùnu?	āunòk				
branch		k?a?	ákhe?	ǎk?o?	ǎk?o?				
brave		wam³	wùn	vām					
break		khyo²	chóu	khyúi	(khyú?)C				
breast		no³	nòu (milk)	nāu	núkām				
breathe		sa?	ǎθe?	so?	só?sé				
bridge	tsam¹a	tsam¹a		tsām	tsín	dzam¹		çò	lɔdzm

buffalo (water)	(klwe ²)C cwê	nòlùì	nūplōi	
build	tsʔok shau?	tsʔu?		və̌ (zʔ) ^{IF} kú
buy we ¹ a	wé ¹ a wé	vúì	(wài)F	wé ¹ khu ¹ (bo ²)La
call				
carry po ² on back	pò ² pòu	páu		ph̄ p̄
carry on shoulder	waʔ	vaʔ	wòʔ	
cat	(kɣV ¹ a)CB cáun	vúŋ		
cattle (cow)	nwa ² nwá	nò	(nūŋ)F	
chaff phwe ²	phwe ² phwénù	phùicʔap	wòʔphōi	phè ²
change				dzáphè
chest (body part)	ɣaŋ ¹ a yín	vəŋkaŋ		pá
child, young				pa ¹ ya ²
chili	phyik	v̄siphik	chəphyák	v̄ra yá
chin				bàmèdú
city				má pápīlī m̄m̄

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
clench	ts ² up ²	ts ² up	shou?	ts ² up		(tsu ²) ² La		péct?	
fist									
cloth						pha ¹		phā	pá
cold	kya ²	kya?		kyo?	kyo?	ga ²		kā?	gā?
(personally)									
come	la ^{1a}	la ^{1a}	lá	lô		la ^{1a}	lā	lā	lá
come		thwa?	thwe?	tho ¹ lô					
out-1 (emerge)									
come						do ²	dôlā	tó ¹ lā	dō ¹ lā
out-2									
copper						gə ²		kə	gə
copulate	lo ²	lôu		láu	lùk				
cough									
creeper	nwe ^{1a}	anwé		núi	ànòì	cei ²	tshèch	ct	
crooked	kok ¹	(kok)Bu	kau?			go ¹		ko?	γo?
cross	ku ²	kú		kú	kāu				
(as water) (verb)									
crossbow-1	lei ²	léi		lài	lāts ² ok				
crossbow-2									
cry	yo ^{1a}	yo ^{1a}	yóu	yau	yùk	kha ²	(chá)IF	kā?	kā?
(sob)						yo ¹	ṽu		ṽo

cubit	toŋ ^{1a}	táun	túŋ	(tóŋ) ^T	
cucumber	khwa ²	əǎkhwá	túŋkhò	lǎkhù	
cup	khwa?		khwe?	kho?	
dam	tshíp ^{1b}	shé	tshíp	(thām- tʔáŋ) ^{IT}	
dance	ka ³	kà	kō	(kú) ^F	(kwá) ^I
day (24 hours)	nei ³	nèi	nyī		
deaf					bɔ ²
deer (sambhur)	tshat	sha?	tshat	tshé?	pô
deer (barking)	chei ^{1b}	At	chòchí	chei ¹	chī
destroy	phyá?		phye?	phyo?	(phyá? ^{Li}) phyá
die	šei ^{1a}	ééi	šít	ši	ší
difficult	γo ²		vúi	máγuk	si
dig	tu ²	tú	tú	tāu	du ²
disap- pear (lost)	pyok		pyu?	pyòk	(dú) ^I
dog	khwei ²	khwéi	khui	lǎkha	
dove	kʔyo ²	(jòu) ^V	phúnkʔui		dù

easy-1	lwe ^{1a}	lwé	lú				sa ¹	sā	sá
easy-2							dza ²	cá	dzà
eat	t _u sa ²	sá	tsó	tsō			dza ²	cá	dzà
egg (cf. fowl)	u ³	ù	vo ³ u	γó ³ áu			(a ³ á ³ á ³) ^I	gá ³ u	(yāu ³) ^T
eight-1	(slit)C	śi?	śit	(se ³) ^F					
eight-2						hye ³		(hi) ^F T	yé?
elephant	tsha ²	shín	tshà	tshà					
embrace	p ² a ^{1a}	(phe ³) ^{TF}	p ² ó	p ² ò					
empty						g ²	yigò	kó ¹ ē?	
enclose	wag ^{2c}	wín	vā ³	(wā ³) ^F					
endure	kham ^{1b}	khan	khām						
enough	lok ¹	lau?		lókwa		lo ¹	lo?	lō?	
enter	wag ^{1a}	wín	vā ³	wà					
eye	mya ²	mye ³ si	myo?	myò?		mya ²	myásè	mé ³ si	myā ³ nī?
fall	kya ³	cà		pítkyó		(gā ³) ^{Ak}			gākā
far	wə ²	wéi		ăwā		(wə ²) ^{Ia}	(γə) ^I	və	
fat	tshu ^{1b}	shú	tshú	tshàu		tshu ¹	(tshā) ^F	chū	tsú
fear	kyok ²	cau?	kyu?	kyòk		(gō ²) ^{Ia}		kó?	
female suffix	ma ³	àmā	fumō	taumó		mā ³	māmā	mā	āmā
		(EiSi)	(SoWi)	(SoWi)			(Mother)		(Mother) ¹

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
feather- body hair	mo ³	mo ³	(ámwéi)FT	sómāu	múk	mo ³	má	cmf	AKHA
field (dry)	hya ^{1a}	ya ^{1a}	yá	yó	yò	hya ¹	(ha)I	hē	yá
fight	pya?	pya?		pyo?l?úm	c?ópyò?				
finger-1	n?yo ²	n?yo ²	hnyóu	n?yúi	n?yuk	n?o ¹		nō	nó
finger-2									mi
fire	mi ²	mi ²	mí	myí	mī	mi ²			
firewood	thay ²	thay ²	thín	thay	thā			(ámí)T	
fish	ɲa ²	ɲa ²	ɲá	ɲotsò	ɲō	ɲa ²	(ɲwá)T	ɲá	ɲa
five	ɲa ²	ɲa ²	ɲá	ɲòl?úm	(ɲó)T	ɲa ²	ɲwá	ɲá	ɲa
flame	šam ^{1b}	šam ^{1b}	(hlyán)I	šam	šín				
flea	l?ei ^{2c}	l?ei ^{2c}	hlēi	kho?l?ai	khāi?á				
of dog									
flee								phō	pó
flower-1 (noun)	pan ²	pan ²	pán	pán	nāpín	pho ¹			
flower-2 (cf. tree-3)									áyé?
flower (classifier)	pwa ³	pwa ³	pō		pú	we? ²	šiwé	šivé?	áyé?

	p?yup	phyou?	p?yup	p?yap		byan ¹	by ^ϕ	pδ	
fly- gnat									
fly-1 (verb)	pyan ¹	(pyan ¹)Bu pyan							
fly-2 (verb)		taŋ ^{1b}	taŋ	tà					
follow		chaŋ ² chin	cháj						
foot- leg	khye ^{1b}	khyei ^{1b} chéi	khyí	khyit		khe ¹		khōsē	ākí
four						o ²	ϕ		
fowl	(kya? ²)C	(kya?)C ce?	vo?	γò?		(γa? ²)La	gá?		
frog	p?a ²	p?a ² phá	p?ò	p?ō		pa ²	wupa	pa	xapà
in		hei ³	hi	γitau					
front		sei							
fruit	si ² C	si ² c	si	saksi		si ²	sēsə	isi	asi
				(cf. tree-1)					
full	pyi ³	pyi ³ pyi	pyi ³	pya ³		bi ³	bi	(bi)TIF	byōn
garden	khyam ^{1b}	khyam ^{1b} chan (fence)	khyám	(khin ¹ in) ^Y (wall)		kham ¹	khō	khō	yákm
get	ya ³	ya ³ ya	vō	(thé?- yū)IFT		ya ³	gā	gā	zā
ginger		chaŋ ² (jin)V	chàŋ	chāk?o?					
give	pei ²	pei ² pèi	pyí			(bi ²)La	pi	pi	(bi?)T

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
granary	c ?i ^{1b}	(cí) ¹	c ?i		c ?i				
grandchild	myei ^{2c}	myèi			myit				
grand-mother	phyei ²	(əphwá) ^F	áphyi		phyit				
grand-father	pho ²	áphou	áphau		phúk				
grass-1	mya ?	mye ?	myo ?			mo ? ¹		mi ?	mò ?
grass-2									
green-1	nyo ^{1a}	nyóu(brown)	nyúi		(nyú ?) ^G				
green-2						n ?yo ¹		ɔ̃nɔ̃ (yellow)	nyɔ̃
grow	yok	yau ?	yu ?		yók				
hair	tsham ^{1b}	shán	tshám		tshín				
hammer	tu ^{1a}	tú	páttú		tàu			(thātū) ^T	
hand	la ?	le ?	lo ?		lò ?	la ? ¹	lee ?	lā ?	àlà ?
hat	mok	khāmau ?	mu ?						
have						dzɔ ¹	dzō	cɔ̃	
head	u ²	u	ùkhu ?	(pillow)	āu	u ²	wúúú		ùúú
hear	kya ²	cá	kyó		kyō	ga ²		ká	gá
heart						ma ³	nímá	nīmāsì	nýmā

heavy lei ² C	lei ² C	léi	lái	là	(lei ²)Li	lì	(m ⁺)F	(yōmón)F (long)
high m ⁺ yaŋ ^{1a}	m ⁺ yaŋ ^{1a}	m ⁺ yaŋ ^{1a}	m ⁺ yaŋ	m ⁺ ya	(m ⁺ ?)Li	m ⁺	(m ⁺)F	
hole	(myin)IT				kho ¹	khū	khō	
(classifier)								
horns khyo ^{1b}	khyo ^{1b} (ŋjōu)V	khyú	khyú	(khyù?)G	(kho ¹)La	ámò	ŋkhō	(m ⁺)F
horse myaŋ ²	myaŋ ² myín	myaŋ	myā	myā	(m ⁺)Li	ámò	(ím ⁺)F	
hot lum ^{1a}	lum ^{1a} loun	lóm	lám	lám	lum ¹	lám	lě	lm
house yum ^{1b}	yum ^{1b} (éin)IF	yúm	yám	yám	(yum ¹)La	hyā	yě	yá
hundred hya ¹	ya ¹ yá	(so)I	yò	yò	hya ¹	hyā	hā	yá
hungry mut ¹	(mut)At	tsómút	tsómút		mut ¹		m ⁺ ?	hòmè?
husband	lap ^{1b} lín	láp	láp	là				
I	pa ^{1a}	pa	pa	pa	a ¹	pa	pa	pa
ill	na ^{1a}	na	na	na	na ¹	na	ana	
insect, po ²	po ² pou	pau	pau	(páthòŋ)R	bo ²	bú (silk)	pí	bó
worm								
inter- la ²	(la ²)Bu				(la ²)Li	là		
rogative suffix	lâ							
intestine	u ^{1b} ú	ú	ú	au	u ¹	wū		bōu
iron	sam ^{1b} éán	sám	sám (knife)		sam ¹	xwō	sō	sám
itch	ya ² yá	yó	yó					

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
join	tsha ? ¹	tsha ?	she ?	tsho ?	tshó ?	(tsha ? ¹) ^{Ak}			tsà ?
joints	tshik	tshik	ǎshi ?	(ǎtsho ?) ^F	tshák				
key	tsha ?	tsha ?	tso ?	tso ?	tsò ?				
kill-1	sat ¹	sat	θa ?	sat	sé ?	(se ? ¹) ^{Ak}			disé ?
kill-2						di ²		tipé	disé ?
kite (bird)		tsun ^{la}	sún	tsún	tsum- k ?yā				
knead		ne ^{la}	né	né					
know		(θi) ^T	(sé) ^F	(sé) ^F	si ²		(s [^]) ^{FT}	si	si
ladle		m ?ut	hmou ?	(mut) ^I	m ?at				
land						mi ¹		(mr) ^{mi}	mixon
laugh		γi ¹	yí	(vúi) ^F	γi				
leaf	pha ? ¹	pha ?	phe ?ywe ?	pho ?	(ǎwó ?) ^I	pha ? ¹		st ?phā ?	ápa ?
leak		yo ^{la}	yóu	yúitho ?				(cf. tree-3)	
leech	w ?at ¹	(w ?at) ^{Ma}			w ?e ?nyúk	we ? ¹		vē ?	áyē ?
lick		ya ?	ye ?	yo ?	yò ?				
lift						chi ²		chí	ci
light weight						lɔ ¹	lō	lɔ	lɔ

little	ɲe ^{la}	ɲé	ɲé						
liver	siŋ ²	ǎəé	siŋ	sāŋ	siŋ ²	sɛ	(satsan) ¹		
loom	ya?kan ²	ye?kánzín	vo?kàn	yo?kín	ya?i	ya?	za?		
louse	šam ² /šan ²	θán		šin					
love	c?it	chi?	c?it						
lungs	ts?ut	áshou?	ts?ut						
maggots	lok	lau?	lu?	lòk					
male-1 (human)	yok	yau?cá	yu?ké	yòkkài					
male-2 (human)					pa ²	yípa	pa		
male-1 (animal)	pha ³	phà	phō	phó					
male-2 (animal)	la ²	lá	àlò						
many mya ² marrow chaŋ ¹	mya ²	myá	myó		(mya ²) ^{Ak} (chə ¹) ^{La}		γəmyá		
	(chaŋ ¹) ^{Bu}	chínzi				chōpōɛ			
mature	yaŋ ³	yín	vāŋ						
meat	ša ²	ǎəá	šo	šo	ša ²	xwá	sà	sáji	

name-1	myiŋ ^{1a} myí	myiŋ (noun)	(mǎŋ)Y						
name-2	m?yiŋ ^{1b}	m?yiŋ(noun)	(mǎŋ)Y						
navel	cha? che?	m?yiŋ(verb)	cho?	m?yiŋ ¹	(my ¹)F	mĕ	cómyǝn		
neck	lip ^{1a} lé tsiŋ ^{2c}	cho?	chó?	(cha?¹)Ak			cà?tǝn		
		liŋtsiŋ	lǎŋtsǎŋ						
negative prefix	(mǎ-)R		(mǎ-)R	ma ²	mǎ-	mǎ-	mǎ-		
nephew-1	tu ^{1b} tú	tú	tàu						
nephew-2 (cross)	o ^{1b}	tsáau	ùk						
nest	sut	sut	ʔ?o?sát						
net (fishing)	kun ¹ kún	(sùm-kòn)	kùm						
new	sik	sik	sák						
nine	ko ² Bu	(kǎu)T	(kò?)F	go ²		kǝ	γø		
		kǎu							
nose	n?a ^{1b}	n?o	n?ò	n?a ¹					
old (of people)	maŋ ² mǎn	(mǎŋtsò)T	mǎ	mǎ ²	nǎbī	(nǎkhǝ)T	námé		
old (of objects)	tsho ² shǝu	ǎtshǎu	ǎtshúk			mǝ	tsǝmǝ		
onion	sun ^{1b}	hùsún	(hǎu)I						
		ce?θún							

poison tok ¹	(tok) ^{Bu} tau?			do? ¹	do?	tɕ?	dò?
porcupine	p?yu ^{1b} phyú	p?yú	p?yù	pu ¹	pú	pū	pú
pot-1	o ² óu	àu	(ó?) ^F	khu ³	xū	khū	xū
pot-2	thog ^{2c} tháun	thúŋ	thòŋ				
pound (verb)							
price pho ²	pho ² ǎphóu	phàu	phò	pho ²	pʰ	phi	pʰ
pull	ǎse ^{1a}	ǎsè	ǎsè				
pus pyiŋ ^{1a}	pyiŋ ^{1a} pyí	pyiŋ	pyí	(byiŋ ¹) ^{Ak}	byón		
push	tun ^{1c} tún	(c?ún) ^I	tùn				
rain	ɣwa ^{1a} ywá	vó	mùkɣù				
rat-1	(kɣVS) ^{CB} cwe?		ɣút				
rat-2				cha? ¹		fá?chā?	xō?cā?
red-1	ne ^{1a} (ní) ^F	né	nè			nī	né
red-2				n?e ¹	ni	dʌnʌ	nʌta
remember				no ²	na		
replay	tshap sha?	tshap					
rest na ²	na ² ná	nó	(nō) ^I	na ²	na		ɣana
rice (paddy)	kok kau?	ku?	kòk				

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
sheep	yap ¹	(yap ¹)Ma			yà	yɔ ¹	aró	yɔ	yɔ
shield		ka ^{1a} ká	ko						
shine		tok	tau?	tu?					
blaze									
shoot		pik	(pyi?) ^Y	pik	pàk				
shrimp		tsun ^{1b}	(bázún) ^V	pàutsún					
sibling (younger)						nyi ³	nyi	ni	
sing									
six	khyok ¹	khyok	chau?	khyu?l?ùm	khyók	ka ^{1/3}	kwá	kā	
skin		yei ^{1a}	áyéi		sá'yit			khɔ?	kò?
sky	mo ^{2c}	mo ^{2c}	môu (rain)	màu	mùkkòŋ	(mo ²)La	(mùkwá)F	mfnómā	
slave		cun ^{1a}	cún	cún					
sleep	yup ¹	(yup)Ma			yàp	yu?1	yi?ta	yí?	yù?
smoke	kho ²	kho ²	khôu	myìkhàu	mìkhúk	kho ²	mùkhù	míkhó	uxø
(noun) (cf. fire)									
snake		mwei ^{1a}	mwéi	l?ágmú	mòi				
		/mwéi ^a							
snot		n?ap	hna?	n?ap	n?e?				
son		tsa ²		tsò	tsò				

son's	(khywei ² ma ³) Bu	(khe ² ma ³) La	ɔkhəmə
wife (cf. female suffix)	chwéimà		
span (arm)	lam ^{1a} lam ^{1a} lán	(lam ¹) La	lõ
span (finger)	thwa ^{1b} thwá		
sparrow	(tia ^{1a}) ^C sá	cókhyaŋ	
spear	l ¹ ?am ^{1b} hlán	l ¹ ?ám	l ¹ ?int ¹ ?at
spirit nat ¹	(nat)Bu na?	(ne ¹) ^{Ak}	nə?
split-1	kha?	kho?	khó?
split-2	khwe ²) Bu khwé	(khə ²) Li	khè
spueeze		chu ²	chǔ
stab	tho ² thóu	tháu	thúk
stand yap ¹ (intrans.)	yap ya?	yap	yè?
stand (trans.-1)	t ¹ ?a ³ thà	t ¹ ?áyè?	gəyò ² ?yò?
stand (trans.-2)		tu ¹	tú
steal kho ² (sneak)	kho ² khóu	kho ²	túhú (intrans.) xø
		kháu	khó
		khúk	khó
		khù	khó
		khú	khó

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
stick (cf. tree-3)						da ¹	sí ² dā	sé ¹ ?tā	dákò
stomach (belly)	wam ²	wún	vám	wintù?					
stone	(klok) ^C	cau?		lòktsaŋ					
stop up	tsho ³	shòu		tshúk					
straight	tiŋ ³	tè	tīŋtiŋ						
strength	γum ^{2C}	γoun	vum	γam					
stump (of tree)	γut	γou?	γut						
succeed	oŋ ^{1a}	áun	úŋ	òŋ					
suckle-1	c?up	(sou?) ^I	su?c?up	c?ap					
suckle-2						chu? ¹	chm?		cù?
sugar tsha ² (cf. sweet)	(tsha ²) ^{At}		tshòchui			(tsha ²) ^{Li}	tshàchm̄		
sugar cane	(kiv ^{1a}) ^{CB}	cán		iōnpāŋ					
sun	pwei ^{1a}		pui	pà					
support	thok	thau?	thu?	thók					(tʃ?) ^I
swallow (verb)	myo ^{1a}	myóu	myüi	(myúk) ^T					

sweet	cho ^{1b}	cho ^{1b}	chóu	(chú) ^F	chùk	cho ¹	chǔ	ch ⁵	c ⁶
swell up		ɣam ²	(yáun) ^{FT}	vám	ɣín				
tail-1		mi ²	ámí	sòmýì	sámí				
tail-2						m [?] i ²	mé		dòmí
take	yu ^{1a}	yu ^{1a}	yú	yú	yù	yu ¹	rū	yú	yú
tea (leaf)		pha?	le?phe?	lǎpho?					
teach						m [?] a ²	má	mà	(mǎ) ^F
tear (verb)		(thlut) ^C	shou?	(che?) ^F	láchát				
ten	tshe ^{1b}	tshe ^{1b}	shé	tshé	tsè	tshe ¹	tshi	chí	tse
tender, soft-1		nu ³	nù	ánū					
tender-2						nu ²	nù	nú	
thick	thu ^{1a}	thu ^{1a}	thú	thú	thàu	thu ¹	thū	thū	tú
thin	pa ²	(pa ²) ^B	pá	(p [?] o) ^I	(p [?] o) ^I	'ba ²	bà	pá	bà
think		thay ^{1b}	thín	tháy					
this	che ¹	(che ¹) ^{Mia}		chè	chè	(che ¹) ^{La}		chí	
thorn-1		tsu ^{2c}	sú	tsù	tsàu				
thorn-2						tshu ²	tshù	áchú	
thou	naɣ ^{1a}	naɣ ^{1a}	nín	náy	nà	no ¹	(nū) ^F	nó	nó
three	sum ^{2c}	sum ^{2c}	θoun	súm	sàm	(sum ²) ^{Ak}			səm

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
throat		khyoŋ ² cháun		khyùŋ	khyōŋ	la ²	(la [?] má)T lā		la
tiger	(kla ²)C	(kla ²)C cá		lò		la ¹			mĕlá
tongue	(sla ^{1b})C	(sla ^{1b})C	sá	só	sò		láchø		tø
tooth		tswe ^{1a} swé	tsúi	tsúi	tsòì				nɔ
touch								thó	
tread	naŋ ²	naŋ ² nín	náŋ	náŋ		tho ²			
upon						(no ²)Ak			
tree-1	sik	sik	θi?	sikhám	sáksàŋ	(bɔ ¹)Ak			abɔ
tree-2	paŋ ¹	(paŋ ¹)Bu	pín						
tree-3						su [?] 2	si	si [?] cĕ	
turban		thup	(thóun)FT	ùthup	ãutháp				
(cf. head)									
two		khyut chu?	khyut	khyut	khyátkhyó	nyí ²	nyí	ní	nyí
undress		phyei ^{1a} phyéi	phyei ^{1a} phyéi	phyei ^{1a} phyéi	(phùm)Y	phē	phē	phē	pí
untie	khyoŋ ²	(khyoŋ ²)At	khyùŋ	khyùŋ		(khoŋ ²)La		khs	
voice	phat ²	(phat)At	phat	phat		(phe [?] 2)La	(pe [?])IT	phé?	
vomit		(tlok)C sau?	cu?	cu?	còk				
vulva									
waist						jo [?] 1	cō [?] cĕní		jò?

	P-L-B	P-B	BURMESE	ATSI	MARU	P-L	LISU	LAHU	AKHA
wife		mi ²		myi	mi				
wife's sibling						pha ²	ɣòpha	ɣ̃̀p̃̀há	
wind - air		lei ^{1a}	léi	lái	láhuk				
wing	toj ^{1a}	toj ^{1a}	ɣ́́áun	túŋ	tòŋ	dog ¹	dùlæ?		̀adón

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