Re-evaluating the Sal hypothesis

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The present study reassesses the Sal hypothesis, a proposed meso-level node of the Sino-Tibetan (Trans-Himalayan) language family, consisting of Bodo-Garo, Northern Naga, and Jingpho-Asakian language groups. An evaluation of the most explicit arguments of shared lexical inheritance finds that the supporting data is equivocal in its support for a Sal node. Morphological arguments are potentially stronger, but thus far only validate certain relationships within the putative group. By using a dynamic language relationship model (a.k.a. "cloudy tree"), it is possible to represent what is known about the three language groups, as well as their external influences, without succumbing to some of the methodological weaknesses inherent in both the family tree and the fallen leaves models.

Keywords: Stammbaum, language family, Sino-Tibetan, language area, language change, historical linguistics

1. Introduction

Language subgroups are proposed on the basis of exclusively shared innovations (Hock 1991). Within the Sino-Tibetan ("Trans-Himalayan") language family, in a region lying in Northeast India, Northern Myanmar, and adjacent areas of Yunnan, China, researchers have noted linguistic affinity among the Bodo-Garo, Northern Naga and Jingpho-Asakian groups since Grierson (1903) coined the term "Bodo-Nāgā-Kochin". Burling (1983; 2003) proposed a meso-level group of Bodo-Garo, Northern Naga, and Jingpho, labeling the languages "Sal" in reference to the proposed shared lexeme *sal 'sun/day'. To Burling's credit, he carefully hedged his proposal, noting that the data available at that time were not adequate to support an unassailable subgrouping. To quote him at length:

"The final judgement about sub-grouping should rest upon a close understanding of all types of shared innovations of the sub-group and upon a detailed understanding of the phonological correspondences among the languages. In our present state of knowledge about Tibeto-Burman languages, however, we must usually be content with an examination of simpler lexical similarities. We are reduced to the following fairly obvious and simple presumptions: if a group of languages 1) share lexical items that other languages

fail to share, 2) show no sign that these shared terms are due either to mutual borrowing or to the residue of a still earlier stage of the language, and 3) have similarities that go beyond those expectable by simple chance, then it is plausible to conclude that these languages shared a period of common innovation and thus form a sub-group within the larger family." (Burling 1983: 2)

"… This looks like a group of languages with some sort of historical relationship." (Burling 1983: 15)

As one reviewer pointed out, Burling's optimistic proposal of a Sal subgrouping was marked with notes of caution, where he points out that definitive support was still wanting. In spite of Burling's caution, numerous subsequent publications have referenced a Sal group, without noting its provisional status, and also without providing additional support of the type that Burling called for.

The primary thrust of the present study is to evaluate Burling's first "presumption": that the languages under consideration "share lexical items that other languages fail to share."

The final adjustment to the constituency of Burling's (1983) Sal group, as defined here, is contributed by Matisoff (2013), who demonstrated that Jingpho should be grouped with Luish into its own subgroup. He also proposed the term Asakian, to replace the pejorative "Luish," cf. Post & Burling (2017: 235). We shall refer to this cluster as Jingpho-Asakian. In accord with Shafer's (1955) earlier proposal, Bradley (1997: 20–27), Burling (2003: 175) and Matisoff (2013) argue for a closer grouping between Bodo-Garo and Northern Naga (Figure 1).

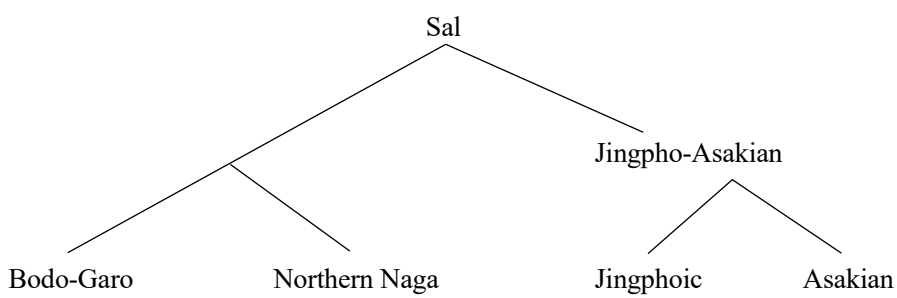

Figure 1. Proposed structure of Sal subgroup (based on Bradley 1997; Burling 2003; Matisoff 2013)

In terms of Sal-adjacent groupings, Bradley (1997) suggests that Kuki-Chin and Pyu could be closely related to Sal. Peterson (2009) suggests a connection between Mruic and Bodo-Garo, and remains open as to whether this connection is above or below the Sal node.

Jacquesson & van Breugel (2017) propose an alternative to Sal, in which Bodo-Garo links with more southerly languages, such as the Zeliangrong group ("Zemeic"), within Kuki-Chin-Naga, rather than with Northern Naga and Jingpho-Asakian. This analysis depends primarily on the retention of Proto-Tibeto-Burman ("PTB") *diphthongs. However, linguistic subgrouping is usually based on exclusively shared innovations, rather than shared retentions, as languages in separate branches can retain some of the same features of the proto-language. For example, both Rgyalrongic and Written Tibetan languages retain many of the complex onset clusters of PTB. Nevertheless, the languages are in separate Rgyalrongic and Bodic sub-branches of the family. On the other hand, using the test of shared phonological innovations, Karenic languages can be convincingly subdivided (Manson 2011). Another issue that weakens the argument in Jacquesson & van Breugel (2017: 120) is that "The resemblance is exemplified in only a small number of words.". Thus, the proposed shared retention has been demonstrated in only a small subset of the relevant languages. In the absence of a more substantial argument linking Bodo-Garo with Zeliangrong and Kuki-Chin-Naga languages, the attention in this paper will focus on the Sal hypothesis.

Supportive arguments for a Sal grouping come from Burling (1983) and Matisoff (2013). Burling (1983) proposed about 130 sets of corresponding words that he proposed as evidence for a Sal group. Matisoff (2013) re-evaluated these sets and found that most of them contained general Sino-Tibetan roots, or borrowings, or were not cognate. From among Burling's (1983) proposed sets, Matisoff identified about forty word sets that he considered to be solid exemplars of a Sal grouping, and also identified many Asakian cognates. §2 of this paper evaluates the contribution of these exemplars to the Sal hypothesis, especially in light of newer data than Burling had access to in the early 1980's. By bringing in more language data, both Sal-internal and -external, it will be shown that the residue of probable lexical innovations is actually much smaller than what Burling (1983) and Matisoff (2013) propose.

In addition to the above-mentioned lexical approach, DeLancey (2011) and van Dam & Muheim (2023) explore various morphological properties of the languages in question, in order to evaluate the plausibility of a Sal meso-level grouping. §3 considers their evidence for Sal-level morphological innovation. §4 presents some conclusions and suggestions for fine-tuning the Sal hypothesis.

In the discussion within this paper, I use the term "Sino-Tibetan" for the group of languages also known as "Trans-Himalayan". "Tibeto-Burman" is shorthand for non-Sinitic languages of this group. No particular theoretical claims are suggested by the choice of nomenclature.

2. Evaluating the Sal hypothesis

Coupe (2012) and Matisoff (2013) take two complementary approaches in evaluating Burling (1983). Coupe (2012) looks at Burling's (1983) "most promising" lexical innovations (Burling (1983: 19, Table 1a) from the perspective of Northern Naga, bringing in fresh data, and also evaluating relevant PTB roots. He concludes that eight of the roots remain potentially convincing.

Matisoff (2013) evaluates all of Burling's (1983) proposed illustrative lexica, particularly from the perspective of Jingpho-Asakian. In evaluating Burling's proposed Sal cognate sets for shared innovations, Matisoff filters out words that have a non-Sino-Tibetan provenance, such as 'falcon, kite, bird of prey' from Austroasiatic. He also filters out words with Sino-Tibetan cognates outside of the Sal languages, such as 'far' from PTB *dzya:l. On pages 41 to 47 of Matisoff (2013), about forty of the word sets from Burling (1983) are identified as supporting the Sal hypothesis, due to apparent shared innovation. Those sets are again evaluated here for evidence of an origin other than Proto-Sal. After undergoing this scrutiny, a few sets are still consistent with Sal-level innovation. These are presented first in the following discussion.

Before presenting the data, a word explaining the organization of the following tables is offered in service to the reader. A row under the header is reserved for reconstructions. Proto-Bodo-Garo reconstructions are given in the order of Joseph & Burling (2006), followed by Burling (1959). If only one reconstruction is available, then the form from Joseph & Burling (2006) is given before the semi-colon, or the Burling (1959) form appears after it. If the two sources have identical reconstructions, then only one is given without a semicolon. Supportive forms in Joseph & Burling (2006) follow the helpful convention that segments or tones that do not conform to the sound laws are presented in parentheses. Thus, the Tiwa form /kó/ 'fall' is transcribed /k(o)/, because the initial and tone display the expected values; the vowel is exceptional. The parentheses are not shown in the data cited here. Northern Naga reconstructions come from French (1983). Support for Jingpho-Asakian exists in cognate set form only; sound laws have proven to be elusive, even between Jingpho dialects (Keita Kurabe, pers. comm.). On the Jingphoish side, Southern varieties (e.g., Jingphaw (Burma), Jingpo (Yunnan), and Gauri) maintain more segmental distinctions than do Northern varieties (e.g., Singpho, Duleng), where more mergers have occurred (Keita Kurabe, pers. comm., cf. Kurabe 2014)).

The tables of cognates are organized as follows. Supportive forms from Burling (1983), Coupe (2012) and Matisoff (2013) are listed first in their respective columns. Chang and Khiamniungan forms from Coupe (2012) are labeled with C. Atong forms taken from van Breugel (2014), when they differ from earlier sources, are labeled Atong B. Koch forms come from Kondakov (2015). Dimasa L forms come from Longmailai (2014). Jingpho forms with tone

numbers are from the STEDT database (*The Sino-Tibetan Etymological Dictionary and Thesaurus*, Matisoff 2015), usually ultimately from Huang et al. 1992. Forms under "Other ST" are taken from the STEDT database, unless marked otherwise. Resources for language data are given at the end of the paper, before the references. Individual glosses are only given when they are semantically exceptional from the headword.

The organization of information sources within the following tables is as portrayed in Table 1. Language data have been re-transcribed to conform to IPA standards, including Proto-Bodo-Garo and Proto-Northern Naga. STEDT reconstructions have not been edited.

Table 1. Organization of source data in the following sets

Bodo-Garo	**Northern Naga**	**Jingpho-Asakian**	**Other ST**
PBG [a] (JB06; B59)	PNN (F83)	(No published PJA)	PTB from STEDT (with set number)
BG forms: B59, B83, M13, STEDT, Atong B, Koch	NN forms: C12, B83, F83, M13, STEDT, Chang C, Khiamniungan C	JA forms: B83, M13, STEDT	Other sources

a. PBG stands for Proto-Bodo-Garo, PNN for Proto-Northern Naga, PJA for Proto-Jingpho-Asakian, BG for Bodo-Garo, NN for Northern Naga, and JA for Jingpho-Asakian. JB06 refers to Joseph & Burling (2006), B59 to Burling (1959), B83 to Burling (1983), M13 to Matisoff (2013), C12 to Coupe (2012), and F83 to French (1983).

In the subsequent sections, supporting cognates are grouped according to the subgroups in which they are attested, beginning with etyma that are attested in the three subgroups, and not elsewhere in Sino-Tibetan.

2.1 Best supporting sets

In this section, we examine the cognate sets that are attested among Sal languages, but are not attested outside of the group. Not surprisingly, the first set to examine is *sal 'day/sun'.

Table 2. 'Day/sun' cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*sal		*cəl				*tsyar (2753)	
Boro	sàn	Mo-shang	roŋ-ʃar	Jingpho	tʃan[33]	Bahing	tʃǎr
Dimasa [a]	sajn	Nocte	san	Kadu	səmíʔ		
Kok-borok	ʃa	Yogli	raŋ ʃal	Sak	cəmíʔ		
Garo	sal	Wan-cho	raŋ han	Ganan	ʃəmíʔ		
Atong B	raŋ san	Chang	*can ŋu				
Tiwa	sâl						
Rabha	sàn						

a. Evans & Langthasa (2024).

Burling's (1959) Bodo-Garo reconstruction forms the eponym for the group of languages. French (1983) notes that the first syllable in the Moshang, Yogli, and Wancho forms (as well as the Atong B form) is the 'sky/weather' morpheme (cf. Table 12). In the Asakian languages, the cognate form is realized as a prefix (Matisoff 2013). On the basis of the Bahing (Western Kiranti) form, Benedict & Matisoff (1972, *Sino-Tibetan: A Conspectus*, henceforth "STC") and STEDT reconstruct an etymon at the PTB level. However, the Bahing form demonstrates a large semantic distance from the pan-Sal 'day/sun' meanings. Furthermore, Michailovsky (1989) gives the semantically-proximal Bahing /d̪ap-/ 'shine (of the sun)' (from the STEDT). Thus, despite claims to the contrary, it appears that the *sal etymon might be shared by only the putative Sal languages.

The following three cognate sets appear to exist only in Sal languages, and do not appear to have wider attestation in Sino-Tibetan.

Table 3. '(A)live/green', etc., cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**	
*thaŋ[1]; *taʔŋ 'green', *taŋ 'live'		*t(o/u)ŋ (jpe)			
Boro 'green'	gəʔ-taʔŋ	Chang C	saŋ[11]tɯŋ[55]	Sak	túŋ
Boro 'live'	taŋ-nəʔ	Nocte	atoŋ		
Garo	taŋ-	Tangsa	lun-toŋ		
Tiwa	taŋ	Phom	tʰɯŋ[55]		
Dimasa	gtaŋ;				
Dimasa L	tàŋ				
Kokborok	taŋ				

Although not presented in Burling (1983), the Sak form appears to be cognate, establishing a set with representation in all three Sal branches, and with no known extra-Sal cognates; no Jingpho cognate has been identified. The Northern Naga forms are from Burling (1983) and Burling & Phom (1998); no Northern Naga reconstruction has been provided. French (1983) presents other words for '(a)live'/ 'green', etc., which Coupe (2012) connects with PTB *raŋ 'live/alive/green/raw/give birth' (Matisoff 2003) and *s-riŋ 'live/alive/green/raw' (STC, *404).

Table 4. 'Pestle' cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**	
*mol ~ *man (jpe)		*mol ~ *man (jpe)		*mu(n/ŋ) (jpe)	
Garo	rimol; imol	Tangsa	mol	Jingpho	tʰum mun, thu^{31} mun^{33}
Bodo	rəmən	Nocte	man	Sak	múŋ
Atong	aman	Phom	mA^{55}		
		Wancho	mAn^{52}		

Burling (1983) connects the first cited Garo form with Nocte, Tangsa, and Jingpho; the form /imol/ is from Garo Mission, American Baptist Foreign Mission Union (1905). Further support for this set comes from Wancho and Sak. French (1983) does not propose a set for Northern Naga 'pestle'. A form like *mu(n/l) seems to be a common ancestor; no extra-Sal examples have been found. The Tiwa form /lom-pʰór/ (and Joseph & Burling's (2006) reconstruction *lɯm^{1}) reflect a different etymon. A concern expressed by Matisoff (2013) is that as a cultural item, 'pestle' is easily borrowed, although no donor language has been identified. Lending support to the possibility of borrowing is the near-identicality of forms across the three groups, especially Bodo-Garo and Northern Naga. The first morpheme of the Jingpho forms comes from PTB *(t)sum 'mortar' (STEDT).

Table 5. 'Rice (uncooked)' cognates

Bodo-Garo		**Northern Naga**	
*maj^{1}-roŋ; *majʔ-roŋ		*C-wuŋ	
Boro	majʔ-roŋ	Chang C	aŋ^{11}
Garo	me-roŋ	Konyak	woŋ
Atong	maj-roŋ	Nocte	voŋ
Tiwa	rôŋ	Moshang	vuŋ
Rabha	maj-rùŋ	Wancho	voŋ
Koch	maj ɾuŋ	Chang	aŋ

The first morpheme in most of the Bodo-Garo ‘rice (uncooked)’ forms descends from PTB *may≍mey ‘rice’ (Matisoff 1985), which has reflexes across the language family, including Chinese 米 (Mandarin *mǐ*). The second morpheme of the Bodo-Garo forms appears to be cognate with the Northern Naga forms (Matisoff 2013), and does not seem to have extra-Sal cognates. While this set seems to suggest shared innovation, there are no forms appearing in the Jingpho-Asakian group. Because of this gap, the form is consistent with, but does not suggest a Sal mesolevel.

To date only these three or four sets, ‘sun/day’, ‘live/green’, ‘pestle’ and ‘rice (uncooked)’ appear to have both a shared origin within this group of languages, and also to lack cognates outside of the group; i.e., to be shared innovations. Pestle and rice are easily borrowed cultural items, and ‘rice (uncooked)’ is not attested in Jingpho-Asakian. One could wish for a more substantial foundation for the hypothesis.

2.2 Sets in all three subgroups, with Sal-external cognates

This group of sixteen cognate sets have representative forms in all three Sal branches. The first three of these sets (‘hand/arm’, ‘foot/leg’, ‘finger’) overlap in semantics and some morpheme composition.

Table 6. ‘Hand/arm’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*dʒak		*glək		*l-tak (jpe)		*lak (695)	
Garo	dʒak	Konyak	jak	Jingpho	lətáʔ	WT	lag
Tiwa	já	Nocte	dak	Jingpho	tạ̄ʔ^{55}	WB	lak
Rabha	cák	Tangsa	dʒak	Kadu	tāk	PTani	*lak
Wanang	cak-toŋ	Moshang	jok pʰa	Chairel	lɑk	PLoloish	*lak^{L}
Atong B	cak	Yogli	jak				
Koch	tʃɑk	Wancho	cak				
Dimasa L	jaū	Phom	lak				
		Chang	jik				

Here and below, some Proto-Jingpho-Asakian forms are provisionally reconstructed for the purpose of capturing known sound relationships, such as *-k > Jingpho -ʔ in ‘hand’.

Table 7. ‘Foot/leg’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
; *dʒaʔ		*glaᴬ		*l-ta (jpe)		*la (350)	
Garo	jaʔ-a	Yogli	ja	Kadu	ta	Mimi	lai
Atong B	caʔ	Moshang	ja	Sak	á-ta	Sulong	læ³³
Rabha	cá-	Nocte	da	Jingpho	lă³¹ko³³	PTani	*lə
Wa-nang	ca-	Wancho	ca, cja			Tshona	le¹³ mɛʔ⁵³
Garo	jaʔ-a	Konyak	ja			Hayu	le
Koch	tʃɑ tʰuŋ	Phom	la			[…]	

Both ‘hand’ and ‘foot’ descend from well-attested Proto-Tibeto-Burman roots, where the ‘hand’ form has the structure of the ‘foot’ form with an added *-k. Matisoff (2013) claims that the correspondence of final k-like sounds in ‘hand’ and the absence of a final stop in ‘foot’ words reflects a “special relationship” between Bodo-Garo and Northern Naga. However, not only are the individual roots widespread, other languages also show this ±*-k semantic relationship; e.g., Proto-Tani *lak ‘hand’, *lə ‘leg’. Many ST languages do not directly preserve final *stops, which could add to the challenge in identifying extra-Sal reflexes of this word pair.

Table 8 isolates examples where Sal languages have cognates for the two related ‘hand’ and ‘foot’ morphemes, as well as some key reconstructed and ancient attested forms for comparison.

Table 8. Related ‘hand/arm’ and ‘foot/leg’ morphemes

	hand	**foot**		**hand**	**foot**
PBG	*dʒak	*dʒaʔ	PNN	*glək	*glaᴬ
Garo	dʒak	jaʔ-	Konyak	jak	ja
Rabha	cák	cá-	Nocte	dak	da
Wanang	cak-	ca-	Yogli	jak	ja
Atong	cak	caʔ	Moshang	jok	ja
Koch	tʃɑk	tʃɑ	Wancho	cak	ca
			Phom	lak	la
	hand	**foot**		**hand**	**foot**
PJA	*l-tak	*l-ta	PTB	*lak	*la
Jingpho [a]	lətáʔ	lă³¹	PTani	*lak	*lə
Kadu	tāk	ta	WT	lag	
Chairel	lɑk	lɑ	WB	lak	
Ganan	tɑk³	tɑ¹	OC	*lik 力	
Lui	lök	la			

a. It is not obvious that the first syllable of /lă³¹ko³³/ is ‘hand’, rather than a prefix. However, Marrison (1967) records /la kra/ ‘right hand’ and /la pai/ ‘left hand’, which confirm the semantics of the initial syllable.

In the following set for ‘finger’, full forms include an initial ‘hand’ morpheme; e.g., Garo /dʒak-si/ ‘finger’. For the purpose of comparison, only the ‘finger’ morpheme of the compounds is presented here. Across the language family, PTB *(t)si ‘finger’ reflexes seem to always occur as bound morphemes or within compounds.

Table 9. Cognate ‘finger’ morphemes

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*-si;		*-cuəy				*(t)si (331)	
Dimasa	-si	Yogli	-ʃĩ ‘thumb’	Sak	ʃĩʔ	Karbi	-chi-
Garo	-si	Nocte	-su			Bunan	-si
Tiwa	-sí	Tangsa	-si			Tamang	-tsi
Rabha	-si ‘hand’	Moshang	ʃi			Yi (Mojiang)	-tsi^{55}
Atong B	-si						
Koch	si						
Dimasa L	-ʃĩ						

The first morpheme in the Bodo-Garo and Northern Naga forms is the ‘hand’ morpheme shown in Table 6. Hence, the full ‘finger’ words are Tiwa /ja-sí/, Atong B /caksi/, etc. The full Sak form is /aʔ ʃĩʔ/, where the first morpheme may be a fossilized form of ‘hand’; the extant Sak lexeme ‘hand’ is /təhu/ (STEDT). Outside of Sal, compounds of PTB *lak-*(t)si are not common, although it is found in Northern Loloish, as in Yi (Mojiang) /lɐ̱^{21} tsi^{55}/ ‘finger’. Thus, the Sal languages show a shared characteristic ‘finger’ compound, but it is clearly a shared innovation.

Table 10. ‘Sambar deer’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*ma-tʃok (jpe)		*gyuk				*d-yuk (2794)	
Garo	mat cok	Konyak	tok	Jingpho	kʰjì-dút	P-Kuki Chin	*ʃa-juk
Atong B	ma tʃok	Nocte	cok	Sak	kəjuʔ	Tawrã	mɑ^{31} tɕu^{53}
Dimasa	mo so	Wancho	cok				
Dimasa	m-saj [a]	Phom	ʃok				
Deuri	me si	Chang	sak				
Koch	mɑktʃɔk						

a. Evans & Langthasa (2024).

The Bodo-Garo /mV/ morphemes are an animal formative: Dimasa /m-sep/ ‘buffalo’, /m-zo/ ‘rat’, etc., (Evans & Langthasa 2024; cf. also Table 14, Table 19). French associates the Northern-Naga ‘sambar’ forms with the cited PTB proto-form. Matisoff connects the first syllable of the Jingpho form with *d-key ‘muntjac’ (STEDT #2313), and proposes the Proto-Jingpho-Asakian *-ut rime for the Jingpho second syllable (Matisoff 2013). It is likely that more cognates would be found if the semantics were broadened; e.g., Gurung /gjuu/ ‘sheep’ (French 1983: 541). ‘Sambar’ is another cognate set that shows neither shared innovation nor shared retention at the Sal level.

Table 11. ‘Cooking pot’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*tɯk; *dək		*ʔ-dik				*mʔ-dikŋ (5786)	
Boro	dəʔ	Konyak	tük	Jingpho	tiʔ^{31}	Muya	di^{53}
Garo	dik	Nocte	tik	Sak	tiʔ	Old Chinese	*t^{ʕ}eŋʔ
Atong	dək	Tangsa	koti-cik	Ganan	tejʔ-s^{h}i	Mandarin	*dīng*, 鼎
Rabha	túk			Kadu	tejʔ-ɕi		
Koch	mutuk						

‘Cooking pot’ appears to be inherited from a general Sino-Tibetan form. The Sal forms suggest that the parent form was non-prefixed, with *-k ending; Jingpho-Asakian final /-ʔ/ often descends from *-k (Matisoff 2013). The Chinese form reflects a *-ŋ allofam.

Table 12. ‘Sky/rain’ cognates

Bodo-Garo ‘sky’		**Northern Naga**		**Jingpho-Asakian ‘rain’**		**Other ST ‘rain’**	
*raŋ^{4}; *k-raŋ (jpe)		*rəŋ ‘sky’				*ms-raŋ (3571)	
Boro	no-k^{h}raŋ	Yogli	hr̥aŋ	Jingpho	mă^{31}ʒaŋ^{33}	Maram	tiŋ maraŋ a baŋ ’rainbow’
Garo	raŋ-ra	Moshang	roŋ	Sak	hráŋ	Old Chinese	*r^{ʕ}eŋ
Atong B	raŋ ra	Nocte	raŋ			Mandarin	*líng* 零 ‘rain’
Tiwa	raŋ-ká-raŋ	Wancho	raŋ				
Rabha	raŋ	Konyak	waŋ				
Koch	rɑŋ ‘rain’	Phom	vaŋ ʃo				
		Chang	loŋ				
		*raŋ ‘rain’					
		Moshang	raŋ				
		Chang	laŋ				

The semantics of the Bodo-Garo forms center around ‘sky’. The semantics center on ‘rain’ in Jingpho-Asakian and the extra-Sal ST examples. Northern Naga seems to show a transitional area that distinguishes two related morphemes, with ‘rain’ words descending from Proto-Northern Naga *raŋ, ultimately from the ‘sky’ morpheme (French 1983: 535). Moshang /raŋ/ ‘rain’ vs /roŋ/ ‘sky’, Chang /laŋ/ ‘rain’ vs /loŋ/ ‘sky’ validate the distinction (French 1983: 550). STEDT notes that Schuessler (2007; 2009: 361) observed the connection between the Chinese and Jingpho forms. French also suggests possible descent from PTB *m-raŋ ‘high’. However, as he observes, Moshang has /raŋ/ ‘high’ vs /roŋ/ ‘sky’, which would then need to be explained.

Table 13. ‘Bone’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*kreŋ³; *greʔŋ		*raːŋ				*g-r(wy)a(ŋk) (238)	
Boro	b-geʔŋ	Konyak	wan	Jingpho	n³¹ʒa³³	PTani	*loŋ
Garo	greŋ	Nocte	a ra	Sak	áməra	WTibetan	*rus-krang* ‘skeleton’
Atong	g-reŋ	Tangsa	raŋ	Taman	raŋ	Kom Rem	ə ru ə rəŋ
Atong B	kreŋ	Moshang	a raŋ				
Wanang	k-reŋ	Wancho	ho ra				
Tiwa	kréŋ	Phom	vaŋ				
Rabha	kéŋ-dʒuŋ						
Koch	krɛŋ						
Dimasa L	b-grēŋ						

The Sal instances of ‘bone’ seem mostly to descend from the *g-raŋ form of the PTB ‘bone’ allofamic set. This etymon is widely attested across the Tibeto-Burman family; a few exemplars are recorded here. Matisoff says that the /ʒ-, r-/ initial forms in Jingpho and Nocte descend from a separate root, cognate with Written Tibetan *gra-ma* ‘fish bone’ (Matisoff 2013). The Taman form is consistent with Bodo-Garo and Northern Naga reflexes, suggesting that it descends from the PTB form cited here.

Table 14. ‘Tiger’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**
*mV⁴-ʃa		*C-gjaᴮ				*k-la
Boro	mo-sa	Yogli	ca	Sak	kə sa	(see below)
Garo	mat-ca	Moshang	ca	Kadu	kasà	
Atong B	mat sa	Nocte	sa			
Koch	mɑsɑ	Wancho	ca ɲu			
Dimasa L	mīʃī	Konyak	ʃa ɲu			
		Cham	saw ɲu			

The first syllable of the Bodo-Garo ‘tiger’ forms is an animal prefix, as seen in Dimasa: /m-si/ ‘tiger’, /m-sɾoŋ/ ‘fox’, /m-saj/ ‘deer’, /m-sep/ ‘buffalo’, /m-zo/ ‘rat’ (Evans & Langthasa 2024; cf. Table 10, Table 19). Additional morphemes to exclude from comparison are the second morphemes of the Northern Naga disyllable: /ɲu/ descends from Northern Naga *ɲəw ‘big’ (French 1983: 458). Matisoff observes that the initial half syllable of Jingpho /ʃǎ^{31} ʒo^{33}/ (not shown above), despite its *prima facie* resemblance to the Bodo-Garo and Northern Naga forms, consists of the ‘animal prefix’ < PTB *sya-n (STEDT #34). The second syllable of the Jingpho form descends from PTB *roŋ ‘wildcat’ (Matisoff 2013: 45). The comparanda then are the voiceless affricate- and fricative-initial syllables of Bodo-Garo, Northern Naga, and Asakian. Despite the similarities, there is no reason to assume that ‘tiger’ is a shared lexical innovation at the Sal level. ‘Tiger’ is a well-known *Wanderwort* of Southeast Asia. French himself did not think the Northern Naga forms were autochthonous, but saw parallels with:

“Burmese-Lolo *(k-)la (WB kjà), which Benedict identifes as “ultimately a loan from Austro-Asiatic *k(u)la” (STC 177–178, n. 472); the Khasi is /u-kla/. This is probably also the source of the Northern Naga form, with the development of medial -j- < *-l- paralleled in Burmese, and Northern Naga *C- < PTB *s- ‘animal prefix’.” (French 1983: 569, lightly edited for clarity)

In summary, there is no innovative ‘tiger’ root shared by Bodo-Garo, Northern Naga, and Jingpho-Asakian.

‘Tree’ is treated in Burling (1983) as a single entry. However, Joseph & Burling (2006) and Burling (1959) reconstruct two ‘tree’ roots which are represented accordingly here.

Table 15. ‘Tree 1’ cognates

Bodo-Garo		**Northern Naga**	
*pol;*bVl		*pul	
Boro	bon ‘firewood’	Tangsa	pul
Garo	bol	Yogli	pul tʃoŋ
Atong	ban	Chang	pu
Wanang	pan	Phom	bʌ^{55}
Jingpho-Asakian		**Other ST**	
		*(pb)ul (2176)	
Jingpho	pʰun^{55}	PKuki-Chin	*ɓul ‘stump/ base’
Kadu	pʰón	P-Tangkhu-lic	*pal
Sak	púŋ-láʔ ‘bark’	Old Chinese	*C.pʿənʔ 本
		Mandarin	*běn*

‘Tree 1’ descends from PTB *(b/p)ul ‘stump, tree’, with cognates in many branches of Sino-Tibetan, as well as reflexes in all three Sal language groups.

Table 16. ‘Tree 2’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*pʰaŋ; *(p)iʔ-paʔŋ		*baŋ				P Loloish	*baŋ² [a]
Garo	bi-paŋ	Nocte	baŋ	Sak	apʰáŋ	W Burmese	tθɑs⁴ pɑŋ²
Dimasa	bu-paŋ, boŋ-paŋ	Wancho	pan			Khoirao	siŋ baŋ
Tiwa	páŋ						
Koch	pɑŋ						

a. Bradley (1979).

The second syllable of ‘tree 2’ has cognates elsewhere, including the Zemeic language Khoirao, and the Lolo-Burmese branch. Thus, the roots of ‘tree 1’ and ‘tree 2’ are general Sino-Tibetan etyma. Across Tibeto-Burman, in disyllables, ‘tree 2’ occurs as the second syllable.

Table 17. ‘Wife/woman’ cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other TB**	
*dʒɯk, *mV²-cik;		*C-ciːk					
Garo	dʒik, meʔ-cik	Moshang	ja ʃik, ja tʃik	Andro	tīk-sɑ jɑhū	Mianchi Qiang	tɕé (tsì) mèi
Rabha	dʒɯk-saj, mí-cik	Nocte	de hiek	Ganan	jɑ¹ ʃi¹	Darma	ɕya , ci
Koch	mitʃik	Yogli	a ʃik			Tsangla	tsheroʔ
Dimasa L	-tʃik	Konyak	ʃeko			Motuo Menba	tshe roʔ
		Wancho	ʃiku			Yakha	a-mecha
						Guiqiong	gue³⁵ tɕhi³³
						Xumi	mɛ³³ tʂhŋ⁵³
						Sulong	a³³ ciɛ⁵³

The forms for ‘wife/woman’ are cognate across Bodo-Garo and Northern Naga (French 1983: 486), and Asakian. Cognate morphemes also appear in many other ST languages. There does not seem to be a proposed PTB or PST etymon.

Table 18. 'Seed' cognates

Bodo-Garo		**Northern Naga**		**Jingpho-Asakian**		**Other ST**	
*ca²-lɯi; *c(aʔ)-li		*li				*li (3560)	
Boro	jɯ-lɯi	Konyak	ə li	Jingpho	li³³	Old Chinese	*lip* 'grain of rice'
Atong	caʔ-ri	Nocte	kʰet a li			Mandarin	*lì* 粒
Wanang	ca-li	Tangsa	uli			PTani	*li
Rabha	cá-ri	Phom	ʃej li			Idu	lĩ
		Chang	li la			Zeme	he-laj
						Karbi	tʃʰi li
						Tsangla (Motuo)	li¹³
						Pumi (Taoba)	le³⁵
						Yi (Liangshan)	lŋ²¹

In addition to support from Bodo-Garo, Northern Naga, and Asakian, cognate 'seed' words are found in Tani languages, as well as in the following families (representative languages only) Tawrã-Idu (Idu), Zemeic Naga (Zeme), Bodic (Tsangla), Qiangic (Pumi). The Chinese cognate is a provisional suggestion proposed by this author.

Table 19. '(Game) animal/meat/flesh' cognates

Bodo-Garo		**Northern Naga**	
*ma⁴; *mat		*meːj	
Boro	mɯ-, maj	Konyak	mej
Dimasa	mej; m-	Chang	mej
Garo	mat-bu-riŋ	Wancho	maj
Atong	mat		
Wanang	mat-a		
Tiwa	m-		
Rabha	má		
Deuri	me cu		

Table 19. *(continued)*

Jingpho-Asakian		Other ST	
Sak	*mey (39)	Angami	²the ⁴muo
		Liangmei	ka-mî
		Karbi	me sang 'langur'
		Chepang	mayʔ
		Old Chinese	*mr(ə)i [a] 'Pere David's deer'
		Mandarin	*mí* 麋
		Old Chinese	*mwəg [b] 脢
		Mandarin	*méi* 'meat along the spine' [c]

a. Schuessler (2007: 381).

b. Karlgren (1957: #947).

c. Schuessler (2009: 4).

Cognates of the 'animal/meat' words are rife throughout ST, including Chinese. Sample cognates are from Angami Naga group, Zemeic (Liangmai), Karbi, Himalayish (Chepang), and Chinese. In Bodo-Garo, reflexes of *mey occur as prefixes in animal names, as in Dimasa /m-/; cf. Table 10 and Table 14.

Table 20. 'Hold/take' cognates

Bodo-Garo		Northern Naga		Jingpho-Asakian		Other ST	
; *lawʔ		*C-la^{B}		*la (jpe)		*la-k (5056)	
Boro	lá	Nocte	la he	Jingpho	la^{55}	PKuki-Chin	*la:-I, *la:k-II
Kokborok	la	Wancho	la	Sak	la	Lepcha	bla
Deuri	la-	Konyak	ja				
Atong	rawʔ	Phom	ja²				
Wanang	ləw						

Reflexes of PTB *la-k 'hold/take' are widespread across the three sub-branches in question. It also occurs in Kuki-Chin languages and the Himalayish language Lepcha.

Table 21. 'Stomach' cognates

Bodo-Garo		**Northern Naga**	
*bwok (Joseph & Burling 2006)		*wuk	
Rabha	bok-dom	Yogli	vuk
Atong B	pi puk	Moshang	vak
Dimasa L	bōhō	Nocte	vok
		Wancho	vok
*Vk (Burling 1959)		Chang	ok si 'bowels'
Garo	ok		
Koch	ok, hɔk		
Wanang	ok		
Jingpho-Asakian		**Other ST**	
Jingpho	pù-hpam	*wuk (6723) *p^{w}u (2103)	
		Maring	uk
		PKaren	*ɣóʔ
		Old Chinese	*pjuwk 腹
		Mandarin	*fù* 'belly' [a]

a. I wish to thank a reviewer for point out this etymon.

The PTB reconstruction *wuk is one of many possible allofams of *d-(p/b)u-k (STEDT); the reflexes in Bodo-Garo and Northern Naga descend from forms with final *-k, and most with a labial initial, thus *bwok and *wuk. Bodo-Garo is further divided into two etymological sets, with Joseph & Burling (2006) proposing *bwok, and Burling (1959) suggesting *Vk. The first syllable of the Jingpho form, with a plain vowel rhyme, descends from an open syllable root, cited in STEDT as *p^{w}u. Cognates of this root are found in Kuki-Chin (Maring), Karenic, and Sinitic.

Table 22. 'Wolf/dhole/wild dog', etc., cognates

Bodo-Garo		**Northern Naga**	
N/A		*C-khjual	
Dimasa	si	Wancho	ʃan
Kokborok	ʃej	Konyak	ʃo
Garo	si:-ol	Phom	ʃo
		Chang	ʃo

Table 22. *(continued)*

Jingpho-Asakian		**Other ST**	
Jingpho	tʃa̲³³khjon³³	*s-k-ywal (6053)	
		Lushai	sihal
		Karbi	hi jai
		Newar	syāl
		Kman	kɑl³³
		PLolo-Burmese	*wan¹

The three subfamilies all have reflexes of the general TB root *s-k-ywal, as indicated by French (1983), Burling (1983) and Matisoff (2013). The root is widely attested in Chin (Lushai), Karbi, Newar, Deng (Kman) and Lolo-Burmese families.

2.3 Sets lacking Jingpho-Asakian cognates

The next seventeen sets have cognates in Bodo-Garo and Northern Naga, but not in Jingpho-Asakian.

Table 23. 'Drink' cognates

Bodo-Garo		**Northern Naga**		**Other ST**	
*lɯŋ¹; *ləŋ		*N-liːŋ			
Boro	ləŋ	Yogli	niŋ	PKuki-Chin	*in
Garo	riŋ-	Moshang	niŋ	Moyon	lń
Atong	rəŋ-	Wancho	liŋ		
Wanang	ləŋ-	Konyak	jiŋ	Sulung	riŋ³³
Tiwa	nûŋ-	Phom	jiŋ		
Rabha	rùŋ-				
Koch	liŋ; ləŋ	*N-luːŋ			
Dimasa L	līŋ	Chang	juŋ		

French (1983) shows two allofams for Northern Naga, which are separated in the above set. Burling (1983) presents the "doubtful" Jingpho form /lù?/, which Matisoff (2013) rules out as not cognate. Extra-Sal cognates occur in other languages of the Northeast India area.

Table 24. 'Wing' cognates

Bodo-Garo		**Northern Naga**		**Other ST**	
*kraŋ[1]; *g-raŋ		*C/V-rəŋ (French 1983: 579)		*g-raŋ (720)	
Boro	gaʔŋ	Konyak	jaŋ	Kman (Miju)	ɹɑ̆u[53] ɹɑŋ[55]
Garo	graŋ	Nocte	a raŋ	Yimchungrü	keang
Atong	ga-raŋ	Moshang	wu roŋ	Tsangla (Tilang)	garaŋ
Atong B	karaŋ	Wancho	raŋ		
Wanang	ka-raŋ	Phom	jaŋ		
Tiwa	kráŋ				
Rabha	krèŋ				
Koch	kɑrɑŋ				

Correspondence between Northern Naga and Bodo-Garo 'wing' forms was noticed by French (1983: 579). Although claimed as a support for a Sal meso-level, 'wing' cognates are widespread across TB, with a PTB reconstruction cited from STEDT. According to STEDT, the second syllables of Jingpho-Asakian forms descend from a similar etymon *k(w)aŋ (#240): Jingpho /sìŋ-kō/, Kadu /taí-kū/, Sak /ayáiŋ-ko/. The Jingpho form cited in Maran (n.d.) preserves the final nasal /sìŋ-koŋ/.

Table 25. 'Boil/cook' cognates

Bodo-Garo		**Northern Naga**	
*ʃoŋ[2]; *sVŋ		N/A	
Garo	soŋʔ	Chang C	tʰuŋ[11]
Boro	saŋ	Khiamniungan C	a[33]-theŋ[11]
Tiwa	ʃóŋ	Nocte	soŋ-daŋ
Rabha	sóŋ	Tangsa	soŋ
Atong B	waʔ suŋ 'bamboo cooking tube'		
Dimasa L	gə̄ʃà		

Although Northern Naga 'cook' forms are from Burling (1983), French does not construct an etymological root for these. Proto-Kuki-Chin forms *tshuaŋ-I, *tshuan-II (STEDT) suggest cognates outside of Sal, although no higher-level reconstruction has been identified. Coupe (2012) connects these forms with PTB *tsyow 'boil/burn/cook/bake' (STEDT #2749), which seems to fit better with Jingpho /dʒu/, Dimasa /saw/, Garo /so/ 'burn'. Evidence for this alignment includes the final nasal in the Bodo-Garo and Northern Naga forms in Table 24.

Table 26. ‘Face/forehead’ cognates

Bodo-Garo		**Northern Naga**		**Other ST**	
*mɯk-kʰaŋ; *m(u)-kaŋ		*kʰaŋ		*s-kawŋ ‘hollow (object)/ head’ (387)	
Boro	mɯ-kaŋ	Konyak	ʃakeŋ	Tangkhul	ki kaŋ
Garo	mik-kaŋ	Nocte	ǩʰaŋ	W Burmese	khɔŋ³
Tiwa	mo-kʰaŋ	Tangsa	kʰaŋ kaŋ	Ao	o¹-kaŋ³
Rabha	nú-kʰaŋ	Moshang	kʰaŋ	Tsangla	kʰar khaŋ ‘cheekbone’
Mech	mu-kʰaŋ	Yogli	kʰaŋ	Chepang	kwaŋ
Atong B	mə-kʰaŋ	Wancho	kʰaŋ ra		
Koch	məhuŋ	Chang	kʰeŋ ca		
		Khiam-niungan C	kha¹¹		

Words for ‘face/forehead’ in Bodo-Garo and Northern Naga descend from a form like *kaŋ or *kʰaŋ; the first morphemes in the Bodo-Garo compounds mean ‘eye’. Jingpho-Asakian lacks cognates, but numerous Sal-external Sino-Tibetan languages do show cognates; only a sample of more obvious supporting forms is provided in this set.

Table 27. ‘Insect/worm’ cognates

Bodo-Garo		**Northern Naga**		**Other ST**	
*joŋ²; *joʔŋ; *dʒoŋ (jpe)		*gluŋ		*s-lu(k/ŋ) (5432, provisional)	
Dimasa	juŋ	Konyak	joŋ	PKuki-Chin	*luŋ
Garo	dʒoʔ-oŋ, dʒoŋʔ	Nocte	maŋ doŋ	PLolo-Burmese	*k-luk ≍ k-luŋ
Atong	coʔŋ	Tangsa	joŋ	PKarenic	*hloŋᴮ
Wanang	coŋ	Wancho	coŋ	Old Chinese	*C.lruŋ
Rabha	cóŋ	Phom	loŋ tʰə	Mandarin	*chóng* 蟲
Koch	tʃɔŋ	Chang	jaŋ		
		Khiam-niungan C	suŋ¹¹		

The Northern Naga and Bodo-Garo forms have cognates in branches outside of Sal. The Jingpho word /ʃiŋ³³ ta̲i³³/ ‘insect/worm’, etc., does not appear to be cognate to forms in either of the other two groups (Matisoff 2013).

As noted in Burling (1959) and Burling (1983), ‘insect’ belongs to a group of sets where Northern Naga *gl- corresponds to Bodo-Garo *dʒ-/j- and Jingpho-Asakian *t-. These forms descend from PTB roots with initial *(C-)l-; cf. Table 28. The set ‘hand’-‘foot’-‘big 2’-‘insect’

shows quite regular correspondences across the initials (although Jingpho ‘foot’ may be problematic). Because all of the forms descend from PTB, the sets do not provide clear evidence for a Sal meso-level.

Table 28. Correspondence of Bodo-Garo *dʒ-, Northern Naga *gl-, Jingpho-Asakian *t-

	Bodo-Garo	**Northern Naga**	**Jingpho-Asakian**	**PTB**
‘hand’	PBG *dʒak	PNN *glək		*lak
	Rabha cák	Konyak jak	Jingpho tạ̄ʔ^{55}	
	Atong B cak	Nocte dak	Kadu tāk	
		Phom lak	Chairel lɑk	
‘foot’	PBG *dʒaʔ	PNN *gla^{A}		*la
	Rabha cá-	Konyak ja	Jingpho lă^{31} ko^{33} (?)	
	Atong B caʔ	Nocte da	Kadu ta	
		Phom la	Sak -ta	
‘big 2’	PBG dʒuŋ (jpe)	PNN *gluŋ		
	Rabha cùŋ	Konyak joŋ pu	-- --	
	Atong B cuŋ	Nocte a doŋ		
		Phom loŋ pə		
‘insect’	PBG *dʒoŋ (jpe)	PNN *gluŋ		*s-lu(kŋ)
	Rabha cóŋ	Konyak joŋ	Jingpho ʃĭŋ^{33} tạ̄i^{33}	
	Atong B coʔŋ	Nocte maŋ doŋ		
		Phom loŋ tʰə		
‘moon’	PBG *ja	PNN *gla poj		*(s/g)-la
	Garo ja-joŋ	Moshang ja pi	Jingpho ʃă^{33}tạ̄^{33}	
	Atong B caŋ-; ja	Nocte da	Kadu səda	
			Sak sədá	

Table 29. ‘Dry’ cognates

Bodo-Garo	**Northern Naga**	**Other ST**
*ran^{2}; raʔn	*ra:n	
Boro g-raʔn	Konyak wan	Karbi kreŋ
Garo raʔn-	Nocte ran	
Atong raʔn-	Khiamniungan C uwanpu	
Wanang ran-		
Tiwa rán-, rân		
Rabha rán-, ràn		
Koch ɾɑn		

Bodo-Garo and Northern Naga languages have forms like *(r/w)an*. Matisoff (2013: 43) and STEDT propose a common Sal ancestor *g-ran (#7198). The Karbi form is very similar to the

Bodo-Garo forms, suggesting the possibility of a non-Sal origin. According to STEDT, Jingpho /lām/ and Sak /məláŋ/ descend from a different root, *s-la(m/p) (#3515). Thus, Bodo-Garo and Northern Naga show a different etymological root from Jingpho-Asakian, with an extra-Sal cognate.

Table 30. 'House' cognates

Bodo-Garo		**Northern Naga**		**Other ST**	
*nok; *nok					
Boro	noʔ	Konyak	nok	Batang	n̥oʔ^{53} 'be in the house'
Garo	nok			Guiqiong	nɔ̃^{31} 'be in the house'
Atong	nok				
Wanang	nok				
Tiwa	nó				
Rabha	nók				
Dimasa	noʔ				
Kokborok	noʔ				
Koch	nɔk				

Bodo-Garo *nok is a solid root for that group, with a cognate in Konyak. French (1983) reconstructs Proto Northern Naga *kium, which fits other Northern Naga languages: Yogli /him/, Moshang /jim/, Nocte /hum/, Wancho /ham/, Phom /ʃem/, Chang /cam/. Possible cognates of Bodo-Garo/Konyak *nok that are found outside of Sal have the meaning 'be in the house'. There is no Jingpho-Asakian cognate of either of the two protoforms represented by Bodo-Garo and Northern Naga.

Table 31. 'Bark (v.)' cognates

Bodo-Garo	**Northern Naga**	**Other ST**
--	--	*zu(k/ŋ) (1792)
Garo a-cak 'dog'	Nocte tʃʰok	Tshangla (Motuo) suk^{13}, zuk
	Tangsa ^{1}so(ʔ)	W Tibetan *zug*
		Gurung cʰuq ba
		Hani tsɛ̲^{31} [a]

a. Tentative, per STEDT.

For 'bark', Burling (1983) offers support from Nocte 'bark' and Garo 'dog', which might be considered speculative. There are no Jingpho-Asakian cognates. STEDT reconstructs a general

PTB etymon, and reflexes are found, for example, in Bodic (Tshangla, WTibetan), Tamangic (Gurung), and possibly Loloish (Hani).

Table 32. 'Big 1' cognates

Bodo-Garo	**Northern Naga**	**Other ST**
*dVr²;		PKarenic *do²
Boro dér	Tangsa adil	
Garo dalʔ		
Tiwa tór-		
Dimasa g-de		
Koch gɔ-da		

Table 33. 'Big 2' cognates

Bodo-Garo	**Northern Naga**
*dʒuŋ (jpe)	*gluŋ
Atong B cuŋ	Yogli a dʒuŋ
Rabha cùŋ	Nocte a doŋ
	Khaling doŋ 'broad'
	Wancho coŋ
	Konyak joŋ pu
	Phom loŋ pə
	Cham jaŋ bu

'Big 1' is mostly attested in Bodo-Garo, but appears to have one cognate in Northern Naga; the Tangsa and Garo forms are similar. We also note a likely cognate in Proto-Karenic. On the other hand, 'big 2' is more widely attested in Northern Naga. The *gl- of Northern Naga corresponds to initial palatals in Atong and Rabha in other sets ('hand' (6), 'foot' (7), 'insect' (27)). No Jingpho-Asakian cognate has been found.

Table 34. 'Bite 1' cognates

Bodo-Garo	**Northern Naga**	**Other ST**
*gak (Burling 1959)	*gək	*k(w)ak (755)
Atong gak-	Nocte kak	PAo *m-kak
Wanang kak-	Tangsa kok	Tujia ka^{35}
Rabha kák	Moshang kok	W Burmese *kuik*
Koch kɑk	Nocte kak	PLoloish *C-kuk^{L}

Table 35. 'Bite 2' cognates

Bodo-Garo		Northern Naga		Other ST	
*cik (Joseph & Burling 2006)				*kyak (755)	
Garo	tʃʰik	Phom	ʃak 'tear'	PKiranti	*kek
Tiwa	tʃĭ-	Chang	tak		

The first set of 'bite' words reflects PTB allofam(s) without medial *-y-. The second set shows evidence of medial *-y- inducing palatalization in Garo, Tiwa, Phom and Chang. Both Bodo-Garo and Northern Naga forms descend from a well-attested PTB root, with reflexes in numerous branches of the family, but without Jingpho-Asakian attestation thus far.

Table 36. 'Come/go' cognates

Bodo-Garo		Northern Naga		Other ST	
*pʰVV¹; pəj		*paːj 'come, stand, lift'		*pay (446)	
Boro	pəj, pù̀j	Konyak	pej	PNorthern Chin	*paaj
Atong	ɸəj-	Chang	paj	Xumi	bi³⁵
Tiwa	pʰôj, pʰi	Phom	pej	Naxi	bɯ³³
Rabha	pʰoj-				
Dimasa L	pʰaj				
Koch	pʰuj				

Cognates of PTB *pay 'come/go' occur in multiple branches, including Northern Chin, Qiangic (Xumi) and Naxi. No reflexes have been found yet in Jingpho-Asakian. The Joseph & Burling's (2006) reconstruction for PBG, with aspirated voiceless initial may be over-transcribed. Nearly all BG languages have only a two-way voicing/aspiration distinction, which may be simply represented as a voiced/ voiceless opposition.

Table 37. 'Mat 1' cognates

Bodo-Garo		Northern Naga		Other ST	
*am¹;		*klem		*hyam (3532)	
Boro	èm	Nocte	ham	Sema	a je pʰu
Dimasa	jam-	Konyak	əm	Ukhrul	kə-hɐm
Kokborok	jam	Chang	am ɲu		
Garo	am	Phom	am⁵⁵		
Tiwa	âm				
Deuri	am su				

Table 38. ‘Mat 2’ cognates

Bodo-Garo		**Northern Naga**	
*dam (jpe)		*dam (jpe)	
Atong B	dam	Moshang	dam
Rabha	dàm	Wancho	dam
Koch	dam	Tangsa	dam

‘Mat 1’ looks like a solid set of reflexes of PTB *hyam. This etymon is identified by STEDT as having reflexes in Bodo-Garo, Northern Naga, Angami (Sema) and Tangkhulic (Ukhrul) languages, making it a regional TB word, as all of these languages are in the Northeast India language area, but belong to separate branches. However, ‘mat 2’ forms, despite being included within ‘mat 1’ by the relevant authors, looks to be a recent borrowing, due to the nearly identical forms across Bodo-Garo and Northern Naga.

Table 39. ‘Nose’ cognates

Bodo-Garo		**Northern Naga**		**Other ST**	
*kuŋ[1]-tuŋ; *gVʔŋ-tVʔŋ		*na-guːŋ		*(k/g)ywaŋ (809)	
Atong	na-kʰuŋ	Wancho	na kuŋ	Milang	nu-kuŋ-a-ruŋ
Koch	nɑkuŋ	Konyak	na teŋ	Chinbok	hŋa-kɔŋ
Boro	goʔn-toʔŋ	Yogli	kʰawŋ	Tengsa	tana ko
Dimasa	guŋ	Nocte	kʰo	Meithei	nə khaŋ
Kok-borok	bə=koŋ	Chang	kuŋ	WTibetan	*sna-khuŋ*, ‘nostril’
Garo	giŋ			Guiqiong	ŋo[55] kũ[53]
Deuri	gu tũ				
Tiwa	kûŋ				
Rabha	kùŋ				

Some of the Sal forms (Atong, Koch, Wancho, Konyak) and all of the cited extra-Sal forms are compounds of two nose morphemes: PTB *s-na followed by *(k/g)ywaŋ. PTB *s-na (803) is the most widely attested ‘nose’ root (as in Jingpho /nə[31]/), while *(k/g)ywaŋ appears to have meant ‘hole’ (the meaning of *khuŋ* in Written Tibetan). The compound is attested in a wide swath of subgroups: Tani (Milang), Kuki-Chin (Chinbok), Aoic (Tengsa), Bodic (Written Tibetan), and Qiangic (Guiqiong). The second member of the compound is not attested in Jingpho-Asakian.

The remaining Bodo-Garo and Northern Naga languages have generalized the second morpheme (‘hole’) to mean ‘nose’. Because both groups attest shared retention of the PTB

*compound, *‘hole’ > ‘nose’ appears to be a parallel development. No reflexes of PTB *(k/g)ywaŋ have been noted in Jingpho-Asakian.

2.4 Sets lacking Bodo-Garo cognates

Four sets have cognates in Northern Naga and Jingpho-Asakian, but not in Bodo-Garo.

Table 40. ‘Mother’ cognates

Northern Naga		Jingpho-Asakian		Other ST	
*ɲəːw				*n(y)u (1621)	
Konyak	a ɲu	Jingpho	kă^{31} nu^{31}	Hayu	nu nu
Nocte	taŋ ɲu	Sak	anú	Lushai	nu la
Yogli	ɲaw				
Moshang	ɲu				
Wancho	a ɲu				
Phom	ɲə				

French suggests a relationship between the Northern Naga forms and PTB *s-nəw ‘breast, milk’. However, Matisoff (2003) reconstructs PTB *n(y)u ‘female, mother’, with various cognates external to the Sal group. Bodo-Garo lacks a cognate.

Table 41. ‘Bear (n.)’ cognates

Northern Naga		Jingpho-Asakian		Other ST	
*C-gjap					
Konyak	ʃap-ɲu	Jingpho	tsáp	Dulong	ɕɯi^{55}
Nocte	sap-ba	Kadu	kasát	Tujia	khu^{21} tɕhi^{21}
Tangsa	ʃap			Hani	xa^{31} ɔ^{55} (1st syll.)
Phom	ʃap^{33} daw^{55}			Naxi	gɣ^{21}
Wancho	tʃʰap				

Among the Sal languages, forms descending from *C-gjap, or its variant, are found in Northern Naga and Jingpho-Asakian. Across the ST family, most ‘bear’ words descend from *d-wam (STEDT #2777), including the second syllable of the Hani form cited here. However, the Northern Naga and Jingpho-Asakian forms listed here appear to be cognate to *C-gjap. Likewise, the Na and Naxi forms are good candidates for reflexes of this root. No cognates have been found in Bodo-Garo.

Table 42. 'Garden/fence' cognates

Northern Naga		Jingpho-Asakian		Other ST	
*pal 'fence'					
Yogli	pal rik	Jingpho	n^{31} phan^{33}	Lushai	pal (French 1983)
Nocte	pan			Meithei	sam bal (French 1983)
Chang	pa			Old Chinese	*par 藩
*pəl 'garden'				Mandarin	*fán* 'fence'
Nocte	pan				
Konyak	pi ʃa				
Phom	pe				
Chang	ba				

The attested Bodo-Garo words for 'garden/fence', such as Boro /ba-ri/ appear to be borrowings from Indo-Aryan; cf., Assamese/Hindi *bagicha* and Bengali *bagan*. Assam has place names ending in *-bari*, such as *Jalukbari*, 'chilli garden' or 'house of chilli' (Dhrubajit Langthasa, pers. comm.), suggesting some time-depth for this *Wanderwort*.

Northern Naga has separate forms for 'garden' and 'fence' in most languages. French (1983: 487) treats *pal 'fence' as cognate with Lushai /pal/ and Meithei /sam bal/. Both the Northern Naga and Jingpho forms appear to be cognate with the Chinese forms.

Table 43. 'New' cognates

Northern Naga		Jingpho-Asakian		Other ST	
Nocte	anjan	Jingpho	nìŋ-nān	Chaudangsi	nũdə
Tangsa	anal	Sak	nájŋ	Raji	noŋ
Wancho	ho dʒan	Kadu	najá	Newar	nhu:
				Khaling	nin

The cognate for 'new' that is shared by Northern Naga and Jingpho-Asakian is not found in Bodo-Garo, and does not seem to have been reconstructed at the PTB level. However, cognates seem to be found in at least Western Himalayish (Chaudangsi, Raji), Newar, and Kiranti (Khaling).

2.5 Sets lacking Northern Naga cognates

The remaining three sets do not have forms in Northern Naga.

Table 44. 'Dive/sink' cognates

Bodo-Garo		**Jingpho-Asakian**		**Other ST**	
*r(i/ɯ)p;				*l(i/u)p (2407)	
Boro	tʰrup	Jingpho	lup³¹	Lepcha	lap 'bury'
Dimasa	lip~lup			Limbu	lup-
Garo	srip			Achang	lo³¹
Tiwa	ríp			Lisu	løʔ²¹
Rabha	rʉ̀p				
Koch	tilup				

The 'dive/sink' etymon is best attested in Bodo-Garo with cognates in Jingpho, as well as throughout the ST family. Examples cited here are from Himalayish (Lepcha), Kiranti (Limbu), Burmish (Achang), and Loloish (Lisu). The extra-Sal cognates and the lack of Northern Naga forms cause this set to be non-supportive of a Sal hypothesis.

Table 45. 'Cover with cloth/wrap/put on and wear'

Bodo-Garo		**Jingpho-Asakian**		**Other ST**	
*phVn¹;				*pun (2579)	
Boro	pìn	Jingpho	phun⁵⁵	PKuki-Chin	*puan
Garo	pin	Kadu	pʰūn	PCentral Naga	*m-p[a/ə]n

In the 'cover' set, cognates are found in Bodo-Garo, Jingpho-Asakian, and extra-Sal languages, but not in Northern Naga. In addition to the above reconstructions, Proto-Tani *pu 'wrap up in a bundle' might descend from this etymon (STEDT).

Table 46. 'Shake/move' cognates

Bodo-Garo		**Jingpho-Asakian**		**Other ST**	
*mao¹;				*mow (2455)	
Boro	samaw	Jing-pho	ʃamawt; mu 'work (n.)'	Yi (Liangshan)	sɻ⁵⁵ mu³³
Dimasa	ʃamaw	Sak	rəmú	W Burmese	*mu*
Meche	maw			Anong	ə mu
Atong B	mot				

The Boro, Dimasa, and Jingpho forms show the *s- causative prefix; the Jingpho noun 'work' is just /mu/. The STEDT database shows that this morpheme, in the sense of 'work', shows up in many ST languages. Sample cognates are drawn from Nungic (Anong) and Lolo-Burmese (Written Burmese, Yi)

The final set cited in Matisoff (2013) as a good candidate for Sal support, 'vulture', is comprised of Garo /so-gin/ and Tangsa /skun/. However, these are Indo-Aryan loans; cf. Assamese /ʃakun/ and Bengali /ʃokun/ (borrowing noted in Jacquesson 2005).

As shown above, lexical innovation provides little support for a Sal grouping. There are only two or three forms, 'sun/day' (2), '(a)live, green' (3) and 'pestle' (4) that contain support in all three putative branches, and for which no Sal-external cognates have been identified. 'Rice (uncooked)' (5) provides support for a linkage between Bodo-Garo and Northern Naga. As cultural items, 'pestle' and 'rice' are easily borrowed words; cf. the borrowing of those words into English from French. Whether 'day/sun' is a Sal-level innovation is controversial, although favored in the present analysis.

As mentioned in the introduction, one of Burling's desiderata for settling the validity of the Sal hypothesis was "a detailed understanding of the phonological correspondences among the languages" (Burling 1983: 2). One example can be seen in Table 28. Ideally, subgroup-defining sound laws would derive from shared innovative lexica, because shared retentions do not provide evidence for "a period of common innovation" (Burling 1983: 2). About 130 Sal-level cognates have been proposed (Burling 1983). Some of them are erroneous (e.g., borrowings from Indo-Aryan). About ninety cognate sets were ruled out as descending from PTB (Matisoff 2013). Further analysis of the remaining sets identified PTB roots for most of them (above), leaving the sets represented in Table 47 as the most likely candidates for Sal-level innovation.

Table 47. Subgroup-level forms for apparent shared innovative lexica

Gloss	**Proto-Bodo-Garo**	**Northern Naga**	**Jingpho-Asakian**	**Table #**
'sun/day'	*sal	*cəl	Jingpho /ʧan^{33}/	2
'(a)live/ green'	*taŋ	*t(o/u)ŋ	Sak /túŋ/	3
'pestle'	*mol ~ *man	*mol ~ *man	PJA *mu(n/ŋ)	4
'rice (uncooked)'	*majʔ-roŋ	*C-wuŋ	--	5

As Table 47 shows, teasing out non-trivial innovative sound correspondences across these languages is a tricky endeavor. For the majority of cognates, establishing sound correspondences does not bolster the Sal hypothesis, because it merely solidifies shared retention.

The next section evaluates whether shared morphological innovation can aid in the validation of the Sal hypothesis.

3. Morphological evidence for the Sal hypothesis

The constituency of the Bodo-Garo group has been determined through identifying morphosyntactic innovations in the noun phrase and verb phrase (e.g., Wood 2008; 2011). Similar approaches have contributed to our understanding of Northern Naga (Morey 2018; van Dam & Muheim 2023). The relationship between Jingpho and Asakian languages is supported by shared phonological innovations, such as the fate of certain rhymes, morphology of 'eat'/'food'/'cooked rice', and shared lexical items (Matisoff 2013).

At a higher level, DeLancey (2011) and van Dam & Muheim (2023) both use comparative pronominal morphology to more precisely reconstruct relationships among certain Sal languages. DeLancey (2011) notes highly specific and typologically unusual hierarchical agreement systems shared by Nocte (Northern Naga) and Jingpho. For example, both languages have speech act participant-based agreement, marked with nearly-identical morphemes. The thesis is that this type of system should reconstruct to a Proto-Sal stage. Bodo-Garo languages are morphologically reduced, due to the creolization they have undergone (DeLancey 2014); no cognates to the system are found in Bodo-Garo. In fact, DeLancey (2014) claims that Bodo-Garo is the most thoroughly creolized and mixed sub-branch in ST (cf. Post 2022). Bodo-Garo is characterized by extreme creoloid grammar. For example, Bodo-Garo verbs tend to have very little paradigmatic morphology, with parts of the Tense-Aspect-Mood-Evidentiality system being expressed through serial verb constructions. Thus, it is not possible to find highly specific morphological correspondence between Northern Naga & Jingpho-Asakian and the Bodo-Garo branch, and DeLancey's (2011) test is only probative for Nocte/Northern Naga and Jingpho/Jingpho-Asakian. It is also worth noting that Nocte and Singpho (Jingphoic) speakers live in the same Tirap District, and morphological convergence may have occurred through contact.

In a similar vein, van Dam & Muheim (2023) evaluated whether a Proto-Sal pronominal system can be reconstructed. Although there are some common morphemes across the group, features like clusivity and dual plural are only reconstructible to any convincing degree in Proto-Northern-Naga.

Summarizing the findings of DeLancey and van Dam & Muheim, it is possible to reconstruct some shared morphological innovations among subsets of "Sal" languages. However, discovering ancient patterns shared by certain member languages is not the same as defining the

subgroup itself. In particular, although numerous scholars have identified a closer relationship between Northern Naga and Bodo-Garo (cf. §1), the types of tests used in the recent studies do not seem to work well with Bodo-Garo data.

Of additional concern is that in this area of the world, even typologically unusual features can be borrowed. For example, the morphosyntactic order *classifier numeral* is highly unusual. Outside of Southeast Asia, it is only documented in two Amazonian languages that only have a few numbers. However, for many ST languages of Northeast India, this highly atypical order is the norm (Evans 2022a; 2022b). It appears to have spread from Tai languages, where when specifying 'one (noun)', the classifier precedes the numeral. Thus, even shared highly unusual morphosyntactic properties does not constitute unassailable evidence of shared innovation.

4. Discussion and proposal

After weighing the evidence for various proposed linguistic relationships with Jingpho, Matisoff (2013: 41) writes:

"Working on this paper has brought home to me with particular clarity the utter crudeness of the traditional family-tree model of linguistic relationships, especially in a complex contact area like Southeast Asia. We are sorely in need of a new sort of diagrammatic representation…"

Taking the tree model of Figure 1 as a starting point, we may observe at least three weaknesses with the *Stammbaum* approach to language relatedness, especially in the context of Mainland Southeast Asia.

A line is a line. Not to be overly tautologous, but tree structures consist of lines. In many cases, language group bifurcations are well established. For example, a tree that divides Lolo-Burmese into Loloish and Burmish branches would be non-controversial, other than its nomenclature. However, in much of Sino-Tibetan, tree structures are tentative, or controversial. For example, the placement of Mruic within Tibeto-Burman has undergone multiple analyses. Shafer (1955) placed Mruic as a sub-branch of Burmic, with which Löffler (1966) agrees. Bradley (1997) asserts that its exact position is not certain, and acknowledges that others think Mru is a Kuki-Chin language; however, Peterson (2017) shows that Mru lacks the defining shared innovations of Kuki-Chin; e.g., verb stem alternation. Peterson (2009) asserts that Mruic is a TB branch that shares a higher node with Bodo-Garo, and perhaps Sal, based on morphological similarities with Bodo-Garo. At this time, any line connecting Mruic to a point

on the TB tree represents a perspective on language data that is more controversial than lines joining Loloish and Burmish. Nevertheless, the same indicator, a line, is used in both cases.

The basis of the line is not manifest to the reader. Related to the above point, a tree diagram presents the conclusions of an author's analysis. Hopefully, that analysis is contained in prose somewhere accessible to the reader or is otherwise made explicit. However, the reasoning and evidence are not part and parcel of the diagram. The subgrouping value of certain features, such as pronominalized marking on verbs, are controversial in Sino-Tibetan linguistics. If a controversial analysis is the basis for a line on the chart, the reader would benefit from awareness of the analysis.

The tree metaphor does not always fit reality. As noted above by Matisoff (2013), speakers of ST languages have been engaging in "complex contact" for millennia. DeLancey (2011; 2014) details how the structure of Bodo-Garo languages has become heavily creolized, due to the languages' social context over the past dozen centuries or more. Kurabe (2021) sheds light on how some of this intense context occurs on a micro-level. Within Kachin society, multiple languages are spoken. Exogamous marriage requires a husband and wife to come from different clans. It is typical that the husband and wife each retain his/her native tongue when speaking to the other, thus creating a sort of household-level creole environment.

In response to problems with tree models, van Driem (2011) proposes a highly agnostic "fallen leaves" model, in which there are no connecting lines between low-level subfamilies (Figure 2). In this figure "Brahmaputran" includes the Sal languages. This approach to the structure (or lack thereof) of the family offers several benefits.

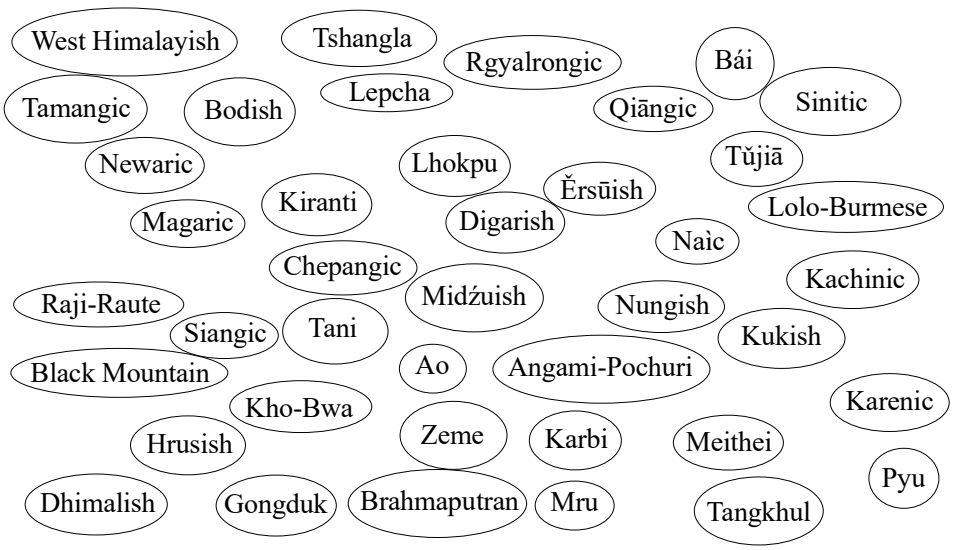

Figure 2. "Fallen leaves" model of Trans-Himalayan (Sino-Tibetan) (van Driem 2011: 37)

First, by definition, *it draws no erroneous lines*. By treating each subgroup as a distinct entity, no false levels of higher order are created.

Second, *it allows for multiple modes of transmission*. The tree model is a metaphor for genetic or genealogical transmission of language across time. However, the fallen leaves approach communicates that influences may be expected from multiple directions.

Nevertheless, there are certain inherent weaknesses in the fallen leaves approach.

First, linguists are not completely lacking in *gnosis*. For example, the hyphen in the "Lolo-Burmese" leaf in Figure 2 obscures a vast body of literature that details the split into Loloish, Burmish, and thence into finer divisions, many of which are well-established. Some leaves fall to the forest floor in attached clumps, and ignoring pre-existing knowledge does not create new insights.

Second, although the model allows for influence between groups, perhaps suggested by physical adjacency, these influences are not explicitly encoded in the model. Of course, this weakness also applies to the traditional tree approach.

Third, it does not distinguish vertical vs horizontal transmission. Linguists typically think of Qiangic and Rgyalrongic (and perhaps Ersuish) as sharing a historical node. Thus, we expect certain similarities in their member languages (like cognate forms for 'urine') that are more likely due to common inheritance than to contact. Some Qiangic languages, such as Northern Qiang have been in longstanding contact with Rgyalrongic, and show phonological convergence or

shared retention, such as complex onset clusters. However, Southern Qiang, under intense contact with Southwest Mandarin has phonologically converged to resemble Southwest Mandarin.

It appears that the field of historical linguistics needs an approach to modeling language relationships that avoids the excesses of false precision (trees) as well as needless imprecision (fallen leaves). I wish here to make a few suggestions that might yield a more informative visual representation of relationships among languages. The goal is to represent different ways that languages interact, and to provide the reader with the evidence that has been used to decide on putative relationships. I tentatively call it a "cloudy tree" model.

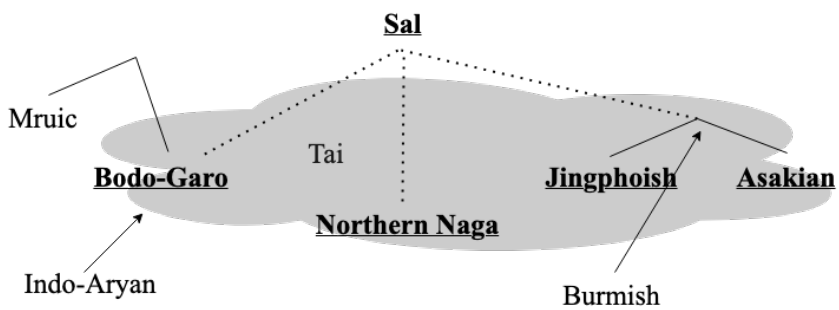

Figure 3. Cloudy Tree model of Sal languages

Legend:

Line style	Dotted lines represent less well-argued connections than solid lines do.
Northern Naga to Jingpho-Asakian	Nocte (Northern Naga) and Jingpho share unusual nominal verb morphology (DeLancey 2011).
Jingphoish to Asakian	Shared vocabulary; morphological relationships between eat/food/rice; similar rhyme innovations. Matisoff (2013).
Bodo-Garo to Sal	Shared lexica (Burling 1983; Matisoff 2013), but controversial and perhaps very few (Coupe 2012, in this paper).
Mruic to Bodo-Garo	Verbal and nominal morphology (Peterson 2009).
Tai cloud	Contribution of vocabulary, classifiers, sesquisyllabicity.
Indo-Aryan to Bodo Garo, Burmish to Jingpho-Asakian	Lexical influence through borrowing.

The "cloudy tree" representation in Figure 3 has the following properties:

1. Solid lines represent established genealogical relationships. For example, there are solid lines of descent connecting Northern Naga and Jingpho-Asakian through the Sal node.

2. Dotted lines represent tantalizing similarities. These connections are less certain, or indicate a more degraded inheritance. These languages may have changed in a way that the kind of data used to draw the solid line between Bodo-Garo and Mruic is not available. Witness the line connecting Bodo-Garo and the other language groups.
3. Arrows and clouds represent influence. Burmish and Indo-Aryan languages have their lexical influences. Tai has affected both phonological and grammatical structures across a swath of languages.
4. This kind of diagram helps to convey the areal properties of *lingua franca*. For example, arrows could be added from Jingpho to show it exerting a horizontal dominant influence on other languages on the tree, in addition to Asakian. This could be expressed by individual arrows, or by a cloud to show influence on multiple languages.

The cloudy tree representation can communicate more about each language connection than the tree and fallen leaf models do. It is not limited to representing languages under a shared ancestor. An integral part of the diagram is the accompanying documentation, which allows readers to draw their own conclusions. For example, Coupe (2012: 204) states:

"[It] is still arguably the case that eight lexical innovations constitute quite robust support for recognition of the Sal languages as a distinct branch of Tibeto-Burman, although the evidence for this must now be considered a little less compelling than was originally assumed when Burling's (1983) article first appeared."

By making the supporting claims explicit, the reader can see what the effect would be if certain supporting evidence were removed. For example, in the present model, if one rejects the lexical evidence for Bodo-Garo in the Sal group, then the figure could be re-drawn without the dashed line.

Despite the shaky ground on which a lexically-based Sal hypothesis stands, for the past 100+ years, the "Bodo-Nāgā-Kochin" grouping, along with its nomenclatural descendants, has served as a useful categorization for linguists. It is hoped that new linguistic information will enhance our understanding of relationships and influences among these languages. Perhaps by representing dynamic language relationships as a "cloudy tree", linguists can avoid the excesses of previous representations, and be able to better represent the linguistic forest through its trees.

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Language resources

Atong B	van Breugel (2014)
Chang C	Coupe (2012)
Chinese (old/middle)	Schueussler (2007; 2009); Baxter & Sagart (2011)
Dimasa	Longmailai (2014); Evans & Langthasa (2024)
Jingpho	If tone marks, then from Huang et al. (1992). If no tone marks, then from STEDT (Matisoff 2015)
Kadu	Sangdong (2012), Huziwara (2012; 2020)
Khiamniungan C	Coupe (2012)
Phom	Burling & Phom (1998)
PTB, etc.	STEDT (Matisoff 2015)
Sak	Huziwara (2012; 2020)
Wancho	Burling & Wangsu (1998)

Abbreviations

B59	Burling (1959)
B83	Burling (1983)
BG	Bodo-Garo
C12	Coupe (2012)
F83	French (1983)
JA	Jingpho-Asakian
JB06	Joseph & Burling (2006)
M13	Matisoff (2013)
NN	Northern Naga
PBG	Proto-Bodo-Garo
PJA	Proto-Jingpho-Asakian
PST	Proto-Sino-Tibetan
PTB	Proto-Tibeto-Burman
ST	Sino-Tibetan
STC	*Sino-Tibetan: A Conspectus*, by Benedict & Matisoff (1972)

STEDT	*The Sino-Tibetan Etymological Dictionary and Thesaurus*
TB	Tibeto-Burman

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