

CHAPTER 5 Continuity and Change in the Duodenary Cycle: Language Contact in the Laos-China Border Area

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CHAPTER 5

Continuity and Change in the Duodenary Cycle: Language Contact in the Laos-China Border Area

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[Abstract]

The Duodenary Cycle is a method of reckoning time that is used widely in mainland Southeast Asia. In the upland areas, ethnic groups that have historically been in contact with speakers of Chinese and Tai languages commonly use a 12-day cycle for determining what livelihood and ritual activities should be done on which days. The terminology used in these cycles shows influence from different cultures and languages, but there has also been a significant degree of internally motivated innovation. In this paper we explore data from several Tibeto-Burman languages spoken along the Laos-China-Vietnam border area. While the linguistic influence of Tai and Chinese are predictably strong we find various strategies to localize the duodenary system, where native terms for the symbolic animal are incorporated. These processes are of interest in light of the history of the original duodenary systems, which were themselves a product of cultural and linguistic contact, and where symbolic and specific names for the days have been in flux.

1. Introduction

Various ways of reckoning time are shared across the ethnic landscapes of mainland Southeast Asia. The duodenary cycle is one important cultural notion that is foundational in the daily lives of many groups, but demonstrates significant variation in terms of linguistic and ritual practice. In order to understand the diversity of practices found in counting the 12-year, or 12-day cycles, a simple conceptual framework of “continuity and change” can help us recognize elements of shared, be it borrowed or inherited, cultural similarity while at the same time unpacking the dynamic detail that characterizes localization practices. The lexical characteristics and trajectories of these systems are an important indicator of contact and innovation.

This paper discusses the duodenary cycles for counting days in several Tibeto-Burman languages spoken in the Laos-China-Vietnam border area, within the context of cultural contact that characterizes the linguistic ecology of the region. In this area, the duodenary cycle used in the reckoning of auspicious days for organizing daily life, rather than the more commonly known cycle of years. Local mosaics of multilingualism bring speakers of smaller Tibeto-Burman and Austroasiatic languages together with larger

Lao-Tai groups, as well as varieties of Chinese. Despite the strong literary elements associated with Tai-Lao and Chinese traditions, cultural contact among upland groups in this area takes place within an exclusively oral framework of interaction.

Norman's (1985) notes on the origin of the Chinese duodenary cycle uncovered the basic fact of cultural contact and linguistic borrowing in the formation of this important institution that had been considered to be solidly "Chinese". This was an important contribution to thinking that challenges the idea of a Chinese cultural complex that was impervious to external influences. Paul Benedict's proposal of Austro-Thai etymologies for the "twelve branches" and George Coedès' demonstration of the "Old Muang" source of the Siamese and Cambodian cycles were pointing to the larger finding that the Chinese cyclical names, which bear no resemblance to the animal names with which they are associated, are in fact derived in large part from the adoption of "normal" Austroasiatic animal names (Norman 1985). Norman's proposal is that for six of these names, the best and most systematic resemblance is with languages of the Kri-Mol (or Vietic) languages Muong and Vietnamese. Ferlus (2014) has deepened the comparative analysis proposing Old Vietnamese as the source language and discussing historical replacements of animal names. This historical contact has important implications for consideration of cultural interactions between speakers of Sinitic and Austroasiatic languages along the southeast coast of China.

From a contact situation of this scale and time-depth, we zoom down to the duodenary cycles of Phongsaly, Laos, and some adjacent areas in China, as used today. The geographic area we are working in can be considered a Lue cultural zone, that is overlain with influences from the Sinosphere, where diverse Tibeto-Burman, Austroasiatic and other Tai languages are spoken. Terwiel (1981) provides a wide-ranging discussion of how Tai systems of reckoning 10-day and 12-day cycles are shared across ethnolinguistic groups in Southeast Asia. Drawing on his presentation of the similar features found in the area, our contribution brings finer-grained resolution to the non-Tai systems to highlight the different ways in which these systems diverge. The Tibeto-Burman languages discussed here have been in cultural and linguistic contact with both Tai-speaking Lue and Chinese speaking Ho Yunnanese. Both of these languages have been used as lingua francas in the multilingual upland landscape. The micro-level analysis presented here suggests that although culturally pervasive, the lexical composition of the duodenary cycles demonstrates a high degree of innovation and adaptation, reflecting multidirectional linguistic influences. We trace the localized intersection of the larger Chinese and Tai cycles, and explore the linguistic agency that has created a wide range of hybrid systems within languages that are otherwise closely related and in frequent contact.

2. Duodenary Cycles in Tai-Chinese-Austroasiatic Contact Area

At the outset, we provide an overview of Tai-Chinese-Austroasiatic contact in the history of the duodenary cycles of the region. The Chinese and Tai systems are well-known in the region and offer an important foundation from which we start our investigation of the Tibeto-Burman cycles in use in the Phongsaly-Sipsongpanna area.

2.1 Chinese 12 Earthly Branches

One early point of interest in the possibility of linguistic contact in these systems arose from the observation that the cycle names and the animal names bore no resemblance. Table 1 shows the 12 Earthly Branches and associated animals in Mandarin and Cantonese (Norman 1985), with Austroasiatic words shown in bold.

Table 1: Mandarin and Cantonese forms for 12 Earthly Branches and Associated Animals

Year animal	order		12 Earthly Branches		Animals	
			Mandarin	Cantonese	Mandarin	Cantonese
tiger	3	寅	yín	yàhn	hǔ	fú
rabbit	4	卯	mǎo	máau	tù	tou
dragon	5	辰	chén	sàn	lóng	lùhng
snake	6	巳	sì	jih	shé	sèh
horse	7	午	wǔ	ńgh	mǎ	máh
goat	8	未	wèi	meih	yáng	yeuhng
monkey	9	申	shēn	sàn	hóu	hàuh
chicken	10	酉	yǒu	yáuh	jī	gāi
dog	11	戌	xù	sēut	gǒu	gáu
pig	12	亥	hài	hoih	zhū	jyū
rat	1	子	zǐ	jí	shǔ	sú
ox	2	丑	chǒu	cháu	niú	ngàuh

As shown by Norman and discussed further by Ferlus, the cycle years Ox, Dragon, Horse, Goat, Chicken and Pig have Austroasiatic sources. We refer the reader to Norman's article, but provide the Proto-Vietic reconstructions (from the SEALang Mon-Khmer Etymological Dictionary¹) together with the Cantonese forms for reference in Table 2.

Table 2: Six Austroasiatic sources in the Chinese cycle

Ox	Cantonese cháu < Proto-Vietic *c-lu: 'buffalo'
Dragon	Cantonese sàn < Proto-Vietic *k-lən 'python'
Horse	Cantonese ńgh < Proto-Vietic *m-ŋə:ʔ 'horse'
Goat	Cantonese meih < Proto-Vietic *bəbeʔ 'goat'
Chicken	Cantonese yáuh < Proto-Vietic *r-ka: 'chicken'
Pig	Cantonese hoih < Proto-Vietic *ku:l 'pig'

¹ <http://sealang.net/monkhmer/dictionary/>

Although this accounts for only half of the system, it is clear that a significant number of “normal” animal names were borrowed from Austroasiatic and associated with the Sinitic cycle.

2.2 Khmer-Siamese System

Although the Khmer-Siamese system is not as source of cultural influence directly in the Phongsaly border area, it has been demonstrated that an ancestral language of the Vietic branch of Austroasiatic, probably spoken in the area of southern China, is the source of the entire system (Table 3). Siamese and Khmer forms given are for the written language, Khmer and Written Thai is from Norman (1985).

Table 3: Siamese and Khmer duodenary cycle with Austroasiatic sources

	Khmer	Written Thai	Proto-Vietic
rat	jūt	jvat	(Muong /cuot/)
ox	chlū	chlū	*c-lu:
tiger	khāl	khāl	*k ^h a:l
hare	thoḥ	thoḥ	(Vietnamese tho)
naga/serpent	roñ	maḥroñ	*-ro:ŋ
snake	msāñ	maḥsēñ	(Muang /sap/)
horse	mamī	maḥmia	*m-ŋə:ʔ
goat	mamē	maḥmē	*bəbēʔ
monkey	vōk	vōk	*vɔ:k
cock	rakā	raḥkā	*r-ka:
dog	ca	cō	*cɔ:
pig	kur	kuñ	*ku:l

The contact scenario is then between speakers of old varieties of Khmer and Vietic to generate the system, with borrowing of the Khmer system in entirety into Siamese first in its written form (Ferlus 2014). The Siamese system is part of the large-scale linguistic and cultural influence taken on from Khmer in the Chao Phraya valley between the 8th and 12th centuries (Huffman 1986), and parallels what may have happened in the older Chinese system. Speakers of Siamese and Khmer refer to the 12-years with these names that do not evoke specific animals, but use the common name of the relevant animal associated in parallel.

2.3 Tai Cycle and Regional Linguistic Culture

A different Tai system is widely used across the non-Siamese Tai world, including Austroasiatic and Tibeto-Burman languages spoken within. There is a stable structure easily identified within Tai languages, with minor variation limited to some phonological differences. The following comparative data (Table 4) are adapted from Terwiel (1981) for Lao, Khmu and Phunoy, and Hanna (2012) for Lue.

Table 4: Tai cycle across language families

Day	Lao	Khmu	Phunoy	Lue
rat	cheu	cho	cho	caj ³
ox	pao	plau	pau	paw ³
tiger	nyi	nyi	nyi	ji ⁴
rabbit	mao	mau	mau	maw ³
naga/serpent	si	si	si	si ¹
snake	seu	so	so	saj ³
horse	sanga	sanga	sanga	sanjaa ⁶
goat	mot	mot	mot	met ⁵
monkey	san	san	san	san ¹
cock	hao	rau	hau	haw ⁶
dog	set	sot	set	set ²
pig	kheu	go	kho	kaj ⁶

The historical depth of contact is evident in the Khmu form /go/ which retains the voiced *g consonant that shifted to /kh/ in Tai languages. Khmu also preserves old *r in Chicken, providing evidence of the older link to Vietic *r-ka ‘chicken’. The Tai system preserves disyllabic form for Horse, where the sesquisyllabic source has been reduced to a monosyllable in all others. It is worth noting that Rabbit has become Cat in this system, and the twelfth element in Lue is Elephant in the contemporary language, rather than Pig.

3. Innovation in the Phongsaly-Sipsongpanna Area

In the Phongsaly-Sipsongpanna area, we find variations in the duodenary cycles of a group of related Tibeto-Burman languages. The core of this group – three languages known as Phousang, Sida and Muji – share a common origin myth. These “Three Brothers” are believed to descend from a female ancestor known as Go Kheu (Sida ko⁵⁵yu⁵⁵), migrating south from an area known as “Phousang” (located in Nyot Ou District near the Laos-China border). The last segment of their migration was down the Ou watershed, where they lived within Haw mountain *monthon* together with other Phunoy, Akha and Khmu groups, above riverside Lue (for more detail see Badenoch et al forthcoming).

These languages are currently spoken in Samphanh district of Phongsaly, Laos. All three have exonym/autonym contrast. The autonyms are not well known to other groups: Phousang *pa³³za³³*, Sida *wa³³ɲɻ³¹* and Muji *wa³³ɲɻ³¹*. All three have been in intense political, economic and cultural contact with Chinese and Tai languages. Although these three languages are deeply influenced lexically by Yunnanese in many areas of the lexicon including ritual terminology, the duodenary system they use can be clearly identified as a Tai cycle. Men in these communities would typically be fluent in Yunnanese, an important common language across the mountains. They would also have

some degree of competence in neighboring Phunoy and Akha languages. As we will show in the following, each language has innovated in different ways.

In these languages², speakers say that it is a 13-day cycle, including Tiger as first and last member. The cycle is used for ordering work, rest and ritual in the flow of time. In Paza, this is called *à-ni jù* [day-take] ‘to find an auspicious day’. In the sections that follow, the 12 terms that constitute the cycle are shown together with the common names for the corresponding animals. Innovations are marked in bold. We refer to Paza with the autonym, but utilize the exonym for Sida and Muji because of the similarity of the autonyms.

3.1 Paza Cycle

This research started with elicitation of the Paza cycle. In daily usage, people often use the common Paza animal name with *à-ni*, to speak of that particular day in the cycle: so *lò à-ni* is the first (and last) day of the cycle. When counting out the days in the full cycle in order to identify what day is appropriate for doing various activities, they use the cycle names.

As shown in Table 5, the Paza cycle has two areas of deviation from the underlying Tai system.

Table 5: Paza cycle

Day	Cycle	Animal	Notes
tiger	<i>m̩ / ni</i>	<i>lò</i>	Tai system
rabbit	<i>ni-teh̩</i>	<i>mý-mý</i>	Tai system plus innovation
dragon	<i>ni-f̩</i>	<i>pe-j̩-pe-to</i>	
snake	<i>só</i>	<i>ú-l̩</i>	Tai system
horse	<i>há</i>	<i>mj̩</i>	
goat	<i>m̩</i>	<i>tchà-m̩</i>	
monkey	<i>s̩</i>	<i>ha-p̩</i>	
chicken	<i>mi-khf̩</i>	<i>ə</i>	innovation
dog	<i>ì-teh̩</i>	<i>mà-khú</i>	
pig	<i>ny-m̩</i>	<i>v̩</i>	
rat	<i>t̩</i>	<i>a-tch̩</i>	Tai system
buffalo	<i>pl̩</i>	<i>pà-n̩</i>	

Paza innovations to the Tai system raise more questions than they answer. Tiger was recorded as both *m̩* and *ni*, but the latter is more common. The second and third elements are compounds that build on Tiger *ni*. Dragon retains the /si/ element found in the others,

² Notation for Paza, Sida and Muji indicates three contrasting tones as x̩ 55, x̩ 33, x̩ 31.

but the source of the second syllable of Rabbit is unclear. Rabbit has been reanalyzed as Cat, as is the case in Sida and Pana, presented below.

Speakers did not provide the meanings of the innovated names that have replaced the original forms for Chicken, Dog and Pig. These are the domesticated animals in the system, all of which are used in ritual offerings. It is possible that this innovation is a type of avoidance. Clarification of the lexical replacements in the Paza system would offer insight into cultural motivations for innovation. Both sequences of innovation have produced disyllabic terms. This approach to localization works to make the system more semantically opaque, supporting the notion of avoidance or taboo.

Horse is reduced to /ha/ from original *sɲa. Paza Buffalo preserves medial /l/, in agreement with the older form found in Khmu /plaw/, going back to the original Austroasiatic form *c-lu-. Final -t of the Tai form Goat /met/ is reflected in the Paza creaky vowel.

3.2 Sida Cycle

The Sida cycle, recorded from Sida speakers in a community that migrated from Phongsaly to Luang Namtha at the turn of the 19th century (Badenoch and Hayashi 2017), is the most conservative and can be considered a complete Tai system. The Sida cycle starts with Tiger, like Paza, as shown in Table 6.

Table 6: Sida duodenary cycle

Day	Cycle	Animal	Vietnam data
tiger	ji	là-mạ	nhì a nhi
rabbit	mao	mí-mí	mào a nhi
dragon	sì	pe-jò	xi a nhi
snake	sɿ	u-ló	xó a nhi
horse	ha	mjò	hà a nhi
goat	mɔ	tɛhè-mɛ	mó a nhi
monkey	sò	hɿ-pɿ	xo a nhi
chicken	laù	ɣ	lau a nhi
dog	mɛ	mó-khù	mê a nhi
pig	kɿ	wɛ	cơ a nhi
rat	tɛɿ	ò-tɛhè	chó a nhi
buffalo	pjaú / plaú	pò-nɛ	plao a nhi

Vietnam Sila (Nguyen Van Huy 1978), given here in the original Vietnamese-style notation, show closely corresponding forms. As expected, Sida preserves medial /l/ in with the modern variation /j/ in Buffalo (Badenoch and Hayashi 2017). The initial of Chicken can be reconstructed in Tai as *r, as attested by Khmu. In the Tai data provided above, the contemporary reflex is /h/, but the Sida form indicates a different sound change of *r > l in /laù/. Like Paza, Horse is reduced to /ha/ from *sɲa.

3.3 Muji Cycle

Muji and Paza live in close contact in Muang Samphanh right bank area bordering Buntai district. Although they share an autonym with the Sida, they believe themselves to be linguistically closer to Paza. The Muji cycle is an example of a set of localized animal names, with the exception of two elements that remain from the older Tai cycle. The Muji cycle starts with Dragon. In elicitation, dragon and snake were given in the opposite order (Table 7).

Table 7: Muji Duodenary cycle

Day	Cycle	Animal	Notes
tiger	teò-lò	teò-lò	
rabbit	thu-lò	thu-lò	
dragon	sé	lú	Tai system
snake	lú	u-lú	
horse	mỳ	mỳ	
goat	jú	jó	Chinese for cycle term
monkey	mò	á-mò	
chicken	ja	ja-tehì	
dog	khù	khù	
pig	wà	wà	
rat	ɔ	ɔ-tehà	
buffalo	ɲỳ	pò-nà	

The two “external” terms are Dragon *sé* and goat *jú*, and it is possible that these are not part of the localized system because the Muji do not know them directly. As with Paza and Sida, Dragon is understood to be the semi-mythical *ngeuak* ‘water spirit’. Goat seems to be Sheep (Chinese 羊 *yáng* or Cantonese *yeungh*), an animal that would not be known in the uplands of this area.

Replacement of the Tai cycle members with common animal names is another type of localization of the system. The Ximoluo language spoken in Mojiang County of Yunnan has a similar system (Dai et al. 2009) in which local animal names have replaced the original Tai cycle, in this case with the exception of Rabbit, Dragon, Snake and Horse. This cycle is used for counting years, and morpheme /mΛ⁵⁵/ ‘year’ is part of the names (Table 8). The data is included for an additional comparative perspective.

Table 8: Ximoluo cycle

Year	Cycle	Animal	Notes
rat	fv ³³ mΛ ⁵⁵	fɥ ³³ tʃha ³¹	
cattle	ɲjv ³¹ mΛ ⁵⁵	mo ⁵⁵ ɲjv ³¹	
tiger	lo ³¹ mΛ ⁵⁵	je ³¹ lo ³¹	

rabbit	mo ⁵⁵ Λ ³¹ mΛ ⁵⁵	tho ³¹ xo ³³	Tai system
dragon	sɿ ⁵⁵ Λ ³¹ mΛ ⁵⁵	---	
snake	ʃΛ ⁵⁵ uɿ ³¹ Λ ³¹ mΛ ⁵⁵	ji ⁵⁵ xo ⁵⁵	
horse	sɿ ³³ ŋa ³³ Λ ³¹ mΛ ⁵⁵	mo ³¹	
(goat)	pɿ ³¹ ʃv ³³ Λ ³¹ mΛ ⁵⁵	tʃhɿ ³¹ pje ³³	“ant”
monkey	mɿ ³¹ mΛ ⁵⁵	a ⁵⁵ mɿ ³¹	
chicken	ja ³³ mΛ ⁵⁵	ja ³³	
dog	khw ³¹ mΛ ⁵⁵	khw ³¹	
pig	va ³¹ mΛ ⁵⁵	va ³¹	

In the Ximoluo system Rabbit, Dragon, Snake and Horse retain the term from the Tai system. These four, together with the notable innovation of Ant in place of Goat, have the Λ³¹ morpheme preceding mΛ⁵⁵. The different morphosyntax seems to suggest that these five elements are double marked as “external” to the contemporary system.

3.4 Akeu and Jino: The Other Sons of Go Kheu

The story of the Three Brothers of Phousang has an older chapter that takes the speakers of these languages back to the original female ancestor Go Kheu. We include two languages associated with the ancestor story – Akeu and Jino – to deepen the comparative perspective.

The Menglun dialect of Akeu, spoken in Sipsongpanna, Yunnan, is another member of Southern Loloish language (Bradley 1997). Table 9 illustrates the names of Cycle and Animal in this language. Like Ximoluo, the cycle names incorporate the morpheme kɔ²¹ denoting ‘year’.

Table 9: Akeu (Menglun) cycle

Year	Cycle	Animal	Notes
rat	o ³³ kɔ ²¹	o ³³ tsa ²¹	internal innovation
cattle	ŋo ²¹ kɔ ²¹	ŋy ²¹ nɿ ⁵⁵	
tiger	ka ²¹ la ²¹ kɔ ²¹	dza ²¹ la ²¹	
rabbit	tɔ ³³ la ⁵⁵ kɔ ²¹	bɿ ²¹ tu ³³	
dragon	bɛ ³³ ɔ ²¹ kɔ ²¹	bɛ ³³ ɔ ²¹	Tai system
snake	ɛɛ ⁵⁵ kɔ ²¹	ɿ ⁵⁵ lɿ ⁵⁵	
horse	mɔ ²¹ kɔ ²¹	mɔ ²¹ pa ²¹	
goat	jo ⁵⁵ kɔ ²¹	tsi ²¹ mɛ ³³	Chinese cycle term
monkey	mɔ ²¹ kɔ ²¹	a ⁵⁵ mɔ ²¹	
chicken	ja ³³ kɔ ²¹	ja ³³ tsi ³³	
dog	ku ²¹ kɔ ²¹	ku ²¹	
pig	wa ²¹ kɔ ²¹	wa ²¹	

Some cycle names clip off the root of the animal names and suffix *kɔ²¹*, as in the year of ‘rat’, ‘monkey’, ‘dog’, ‘chicken’ and ‘pig’, while the other names change the vowel of the animal names, such as the year of ‘cattle’ and ‘horse’.

The year of ‘tiger’ employs *ka²¹la²¹* which may have derived from PL *k-la², and it may be more conservative than the animal’s name *dza²¹la²¹*. The linguistic consultants of the author told that the year of ‘rabbit’ was interestingly named after ‘camel.’ Note that the animal term for ‘rabbit’ in Menglun Akeu was borrowed from Chinese 白兔 *báitù*. The years of ‘snake’ and ‘goat’ may be borrowed from Chinese 蛇 *shé* and 羊 *yáng* respectively. To conclude, the Akeu Cycle system mostly utilizes the animal terms, partially reformatting their vowels for disambiguation, but some Chinese words may have been integrated into the Cycle system.

Jino, another language spoken in Sipsongpanna, Yunnan, has been classified as a Central Loloish language (Bradley 1997), but there is much evidence suggesting a close relationship with the Three Brothers of Phousang (Badenoch and Hayashi 2017 with regards to Sida), and more generally to Southern Loloish languages. The Jino system starts with Dog (Table 10).

Table 10: Jino cycle

Day	Cycle	Animal	Notes
tiger	ji ³³	lo ⁵⁵ mu ⁴⁴	
rabbit	mao ⁵⁵	pə ³³ thu ⁵⁵	
dragon	ʃi ⁴²		Tai system
snake	sa ³³ u ⁵⁵	u ³³ lə ³³	
horse	su ⁵⁵ ŋa ⁴²	mjo ⁵⁵	
goat	pu ⁵⁵ xo ⁴²	təhi ⁵⁵ pre ⁴⁴	
monkey	ʃi ⁵⁵ to ³³	xo ³³ mɔ ⁵⁵	
chicken	mi ⁵⁵ khju ⁵⁵	ja ⁴²	Innovation
dog	ji ³³ tʃho ⁵⁵	khu ³³ mi ⁵⁵	
pig	ŋ ⁴⁴ mɔ ⁴⁴	va ⁵⁵	
rat	tʃa ³³ u ⁴⁴	xo ³³ tʃha ⁵⁵	Tai system
buffalo	prau ³³	pu ⁵⁵ na ⁴²	

The retentions in the Jino cycle are interesting. The original form of Horse *sŋa stays disyllabic. Like others, original medial is maintained in Buffalo, but realized as /r/ (as expected in regular correspondence?). Original vowel in Snake and Rat are realized as /a-u/, *sa³³u⁵⁵* < Tai seu, Sida sɿ and *tʃa³³u⁴⁴* < Tai cheu, Sida tɛʃ.

The area of lexical innovation overlaps with Paza, both in terms of place in the cycle and forms (Chicken, Dog, Pig), but Jino has innovated two more adjacent members, Goat and Monkey as well. Currently, we cannot offer any insight on the meaning of these terms, but point out the potential for comparison between the Paza and Jino. As far as the authors know, Paza and Jino speakers are not in direct contact, so the history of these innovations must be of spatial, temporal and cultural significance.

4. Innovating Back to the Sinosphere

The Pana language spoken in Luang Namtha is related to the Three Brothers of Phousang. The Pana have different migration routes and timing, and now are located at some distance from the Muang Samphanh area we have been discussing. Pana speakers generally consider the Paza to be “closest” to them linguistically, more so than the Sida. They are highly Sinified, and in the past 100 years of residence in the Boten area of the China-Laos border near Luang Namtha they have taken on significant influence – clan system, rituals – as a result of marriage with ethnic Chinese in the early 20th century and Khmu in the past 30 years. They are also polyglots. Pana ethnic identity is now defined by use of Pana, Khmu and Lue languages (Badenoch forthcoming).

The Pana system is a completely different thing from the Three Brothers of Phousang, and was the second datapoint that catalyzed our interest in the question of localization of the duodenary cycle.

4.1 Pana Cycle

The Pana cycle starts with Dragon, and if we take the Tai system as the hypothetical start of all the systems discussed so far, we find that the entire system is innovated. However, we observe not patterns of replacement, but rather a combination of the Chinese forms. The first is the cycle term and the second is the Chinese name of the animal associated. The Pana cycle is shown in Table 11.

Table 11: Pana cycle

Day	Cycle	Animal
tiger	ji-fu	lo-mə-khú-thú
rabbit	mào-thỳ	mi-mí
dragon	eu-lu	pe-ù
snake	sɿ-ɕ]	ú-lú
horse	ỳ-ìp̃	mjù
goat	ṽɿ-jà	tehò-mø-lø
monkey	ɕ̃-ɦɿ	la-kha
chicken	j̃-ki	ja-teh]
dog	si-kuu	khú-nò
pig	hai-teɣ	và
rat	tɕɿ-tehỳ	ò-tehà
buffalo	teh̃-ñ	pò-nà

The Pana has produced a number of hybrid rituals as a result of their contact with Chinese, Lue and Khmu people. As an extremely small group that was hard hit by disease in the past, they have constantly incorporated Chinese and Khmu people through intermarriage and establishment norms of trilingual communication in the village. This is described by elders as a survival strategy, and has resulted in what is to-date a small, but stable linguistic community. It is possible that in order to ensure that this important

ritual knowledge was passed on in periods of demographic instability, they fused the two sets of terms. This duodenary cycle can be understood as an innovation within this Pana multicultural space, making full use of their fluency in Chinese language and comfort with adapting cultural institutions.

5. Comparison of Terminology

For reference, the comparative tables are given here for Sida, Muji, Paza, Jino and Pana to provide a sense of the type and degree of innovations that have been made.

5.1 12-day Cycle Comparison

Areas of innovation are marked to track the areas of innovation away from the original Tai system, preserved intact by Sida. In Table 12 we can observe different areas and strategies of innovation.

Table 12: 12-day Cycle Comparison

	Sida	Muji	Paza	Jino	Pana
tiger	ni	teɔ-lò	ni	ni ³³	jì-fu
rabbit	mao	thu-lò	ni-teh̃	mao ⁵⁵	mào-thỳ
dragon	sì	sé	ni-f̃j̃	f̃i ⁴²	eu-lu
snake	sɿ	lú	só	sa ³³ u ⁵⁵	sɿ-ɛ̃
horse	ha	m̃ỹ	ha	su ⁵⁵ ŋa ⁴²	ỳ-m̃
goat	mɔ̃	jú	mɔ̃	pu ⁵⁵ xo ⁴²	ṽɿ-jã
monkey	sò	m̃ə̃	sã	f̃i ⁵⁵ to ³³	ɛ̃ɿ-hɿ
chicken	laù	jã	mi-khf̃ỹ	mi ⁵⁵ khju ⁵⁵	jỳ-ki
dog	m̃ɛ̃	khù	ì-teh̃	ji ³³ t̃fo ⁵⁵	si-kuu
pig	kɿ	wà	ɲy-m̃	ŋ ⁴⁴ m̃ ⁴⁴	haí-tey
rat	teɿ	ɹ	teɿ	t̃ʃa ³³ u ⁴⁴	tey-teh̃ỹ
buffalo	pjaú / plaú	ɲỹ	pló	prau ³³	teh̃ỹ-ɲỹ

The conservative elements of these systems are relevant for confirming older forms, for example medial liquid in Buffalo, disyllabism of Horse and vowel in Snake and Rat. They also show three models of innovation: localization with native animal names (Muji and Ximuluo), avoidance creating semantic opacity and disyllables (Paza and Jino), and lexical compounding to consolidate elements of cultural knowledge (Pana).

5.2 Animal Name Comparison

Names for these common animals are shared across the languages, with Pana showing the most innovation. Animal terminology is not the key concern in this paper, but the 12-member dataset allows for some commentary. Bradley's (1979) Proto-Loloish reconstructions are given for historical reference.

Table 13: Animal Name Comparison

	Sida	Muji	Paza	Jino	Pana	Proto-Loloish
tiger	là-mà	təo-lò	lò	lɔ ⁵⁵ mu ⁴⁴	lɔ-mə-khú-thú	*k-la ²
rabbit/cat	mí-mí	thu-lò	mý-mý	pə ³³ thu ⁵⁵	mi-mí	*taŋ ² ‘rabbit’/ mi ¹ ‘cat’
dragon	pe-jò	lú	pe-jỳ- pe-tə		pe-ù	
snake	u-ló	u-lú	ú-lý	u ³³ lə ³³	ú-lú	*laŋ ¹
horse	mjò	mý	mjũ	mjo ⁵⁵	mjù	*mraŋ ²
goat	tehè- mɛ	jó	tehà-mə	tehi ⁵⁵ pre ⁴⁴	tehè-mə-lə	*(k)-cit ^L
monkey	hɣ-pɣ	á-mə	ha-pɣ	xo ³³ mɔ ⁵⁵	la-kha	*myok ^L
chicken	ɣ	ja-tehi	ɤ	ja ⁴²	ja-tehɿ	*k-rak ^H
dog	mó- khù	khù	mà-khú	khu ³³ mi ⁵⁵	khú-nò	*kwe ²
pig	wɣ	wà	và	va ⁵⁵	và	*wak ^L
rat	ò-tehè	ɔ-tehà	a-tehà	xo ³³ tʃha ⁵⁵	ò-tehà	*(k)-rwak ^H
buffalo	pò-nɛ	pò-nà	pà-nà	pu ⁵⁵ na ⁴³	pò-nà	*nwa ² ‘cattle’

For the most part, animal names have solid etymologies. Disyllabic forms are most common, while Pana employs reduplication in Tiger and Goat, perhaps reflecting preference for euphony in animal names (Badenoch 2019). Sida and Paza agree on morphosyntax of Dog, while Jino and Pana agree on the reverse pattern of compounding. There seems to be a common Tai lexeme ‘ngeuak’, which has been replaced in Muji with what looks like the old base word for ‘snake’, which might signify more of a ‘dragon’ image. [See Badenoch this volume.]

6. Conclusions: Ongoing Change in Cultural Contact Zones

This paper is part of an effort to engage in the research of fauna terminology in Southeast Asia from a wide range of perspectives. We consider the diverse lexicons of animal names of the region to be a source of new understanding of human-nature interactions over time and space. Animal names in the duodenary cycles of the region offer an interesting perspective on how these interactions are represented within ritual frameworks. These systems are the site of cultural contact, and language offers an important perspective on how structures of knowledge are produced and reproduced by daily linguistic practice. The importance of language contact in shaping the terms in these systems has been clear since the evidence of Austroasiatic sources of the Chinese system was demonstrated, but the question of how this might have happened, as a product of socio-cultural interactions between speakers of languages, can be unpacked by looking at linguistic change in the multilingual contexts in which these systems are used.

This micro-analysis of duodenary cycles in Tibeto-Burman languages in the Phongsaly-Sipsongpanna area has produced insights beyond the concurrent trends of lexical retention and innovation.

- The duodenary cycle, as a linguistic practice, is treated as a “counting out” system, where people produce the individual elements in a recitation of the entire system. As such, the sound elements would be given primary concern in such performance. However, the elements remain closely attached to culturally important decisions, which means that phonological ambiguity and drift in the system is problematic. The names of the days generally have recitation forms (cycle names given in the tables) and reference forms (which combine the animal with a construction meaning ‘day’).
- The Tai system is common in the area regardless of ethnolinguistic group, despite significant influence from Chinese culture/language and historically more limited bilingualism with Lue. Conservation systems like Sida maintain the full Tai cycle, but the systems are also open to change.
- There are three main types of innovation away from the base Tai system, each of these can be seen as a type of localization but demonstrating different cultural motivations and linguistic manipulations: general replacement of individual base terms with common animal names (Muji), replacement of specific base terms with native terms as an avoidance (Paza and Jino) and replacement of the entire set with morphological intervention as part of larger cultural adaptations (Pana).
- Closely related groups in frequent contact have brought about different types of innovation in their systems, probably motivated by a range of cultural drivers (Muji and Paza). Yet some common complex innovations are observed in languages that are not in close contact (Paza and Jino). At the same time, the most conservative and most innovative systems are in close contact (Sida and Pana).

The contact dynamics in a linguistic micro-ecology help shed light on larger forces of cultural continuity and change, in places where areal forces such as Chinese and Tai culture interface with the creative agency of smaller societies, which are in contact with each other. At this level, it is not hard to imagine how contact between Sinitic and Austroasiatic languages could have produced the linguistic evidence observed in the duodenary system. There is constant interplay between the abstract terms associated with a shared cultural system and the productive imaginations of local knowledge systems. In this case, the cultural salience of the animal names allow us to look into the process of adaptation to get a sense of how a linguistic/cultural area is produced and reproduced, challenging assumptions about the hegemonic structures of political, economic and ritual

power, perhaps shining some light on how the original Vietic-Sinitic contact situation played out.

Data Sources

Akeu (Menglun dialect): Hayashi fieldnotes
Chinese: Norman (1985)
Jino: Hayashi (2009) and Hayashi fieldnotes
Khmu: Terwiel (1981)
Lao: Terwiel (1981)
Lue: Hanna (2012)
Muji: Badenoch fieldnotes
Pana: Badenoch fieldnotes
Paza: Badenoch fieldnotes
Phunoy: Terwiel (1981)
Proto-Loloish: Bradley (1979)
Proto-Vietic: SEALANG Website
Sida: Badenoch and Hayashi (2017) and Badenoch fieldnotes
Ximoluo: Dai et al. (2009)

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