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GLOTTAL STOP AND GLOTTALIZATION IN LAI (CONNECTED SPEECH)[1]

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In this paper, I focus primarily on glottal stop and glottalization in connected speech in Lai, a Tibeto-Burman (Kuki-Chin-Naga) language spoken in the northwest region of Burma. After some general remarks on glottal stop and glottalization in the world's languages, I list the phonemes of Lai, and proceed to discuss several topics of interest in connection with the phonetics and morphophonemics of glottalization in this language. These include the influence of glottalization on adjacent vowels, and its relationship to vowel length, creaky voice, and sonorant length, as well as certain grammatical functions it has acquired. I also provide spectrograms showing how glottalization is configured in Lai connected speech.

GLOTTAL STOP AND GLOTTALIZATION IN THE WORLD'S LANGUAGES

Glottal Stop

According to Ladefoged and Maddieson (1996:73), glottal stop has the characteristic of "a full closure of the vocal folds." Crystal (1997:170) defined glottal stop as "the audible release of a complete closure at the glottis." In the world's languages, glottal stop can be realized in different ways:

> Glottal closures can, of course, occur without accompanying oral closure, in which case they form glottal stops. Different types of glottal stops have been observed in the world's languages. In several languages they are part of regular stop series. This is the case in Hawaiian, in which there are only eight contrasting consonants. . . . Elsewhere, glottal stops serve to demarcate the boundaries of phrases or other prosodic units. A frequent role of this type (for example, in German) is to indicate the beginning of a word when no other consonant is present. In other languages, however, glottal stops function more as a variation in

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> phonation type. In Huatla Mazatec . . . the glottal stop is sometimes realized as laryngealization of the following vowel. In Jalapa Mazatec, the realization is usually entirely as creaky voice on an associated vowel . . . (Ladefoged and Maddieson 1996:74-75)

In the majority of languages, "glottal stops are apt to fall short of complete closure, especially in intervocalic positions. In place of a true stop, a very compressed form of creaky voice or some less extreme form of stiff phonation may be superimposed on the vocalic stream. True stops occur reliably only when it is a matter of gemination . . ." (Ladefoged and Maddieson 1996:75).[2]

As Priestly (1976:271) said, "glottal stop functions differently in different languages." The functions of glottal stop in Lai will be discussed later in this paper.

Glottalization

"**Glottalization** is a general term for any articulation involving a simultaneous glottal constriction, especially a glottal stop" (Crystal 1997:170). In Siona, a Tucanoan language spoken on the Colombia-Ecuador border, there is a set of glottalized stops: /p', t', k', kw'/, in contrast with the simple set of stops: /p, t, k, kw/. In connection with such consonants, Ladefoged and Maddieson (1996:74) said, "Our impression is that there is a simultaneous glottal closure with the 'glottalized' series. Both stop series have a brief delay of voice onset after the release of the oral closure, but whereas this is filled with an acoustically noisy interval in the simple stop series, there is essentially silence between the oral release of a 'glottalized' stop and the beginning of voicing for a following vowel."

The main types of glottalization are preglottalization (/ʔC/) and postglottalization (/Cʔ/) (see Shorrocks 1987).

Glottal Stop and Tonogenesis

In Southeast Asian Languages such as Vietnamese or Lahu, glottal stop plays an important role in tonogenesis (Matisoff 1970, 1973). In Vietnamese, glottal stop developed to become a higher pitch or a rising contour due to the tension at the larynx:

> Haudricourt succeeded in demonstrating that the tones of Vietnamese were secondary developments arising from a breakdown of the system of

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2 Creaky voice is a state of the glottis in which the arytenoid cartilages are pressed tightly together, so that the vocal cords can vibrate at the other end: "This is a very low-pitch sound that occurs at the ends of the falling intonations for some speakers of English" (Ladefoged 1993:141).

> consonantal oppositions at the beginning and the end of the Mon-Khmer syllable. The proto-language had syllables with final segments of three significant types: those ending in an open vowel or nasal (i.e. with no laryngeal final segment); those ending in voiceless spirants, **s* or **s'*, which had reduced to *-h* by pre-Vietnamese times; and those ending in some sort of stop which had reduced to glottal stop by the pre-Vienamese period. In addition, the language had a voiced/voiceless distinction for its syllable-initial consonants . . . . (Matisoff 1973:74)
>
> By the sixth century, final *-h* and *-?* had disappeared, leaving in their wake a compensatory falling and rising effect (respectively) on the pitch of the preceding vowel . . . . At this point the language had a three-tone system, which apparently remained stable as long as the voiced/voiceless opposition for initial consonants remained in force. But by the 12th century, the old voiced series had merged with the voiceless series. The language responded to this threat to its contrastive power by doubling the number of tones from three to six; the three tones descending from syllables with *voiced initials were then distinctively lower in pitch than the three which derived from syllables with *voiceless initial consonants. . .. (ibid.:74-75)

Matisoff continues:

> This explanation—which has gone unchallenged by subsequent scholars—presupposes the existence of certain universal phonetic mechanisms which interrelate articulatory gestures of the larynx with the production of audible tonal effects. (a) Laryngeal final consonants affect the contour of the preceding vowel's pitch, with *-h* acting as a pitch depressor (i.e. leading to falling tones) and final *-?* having the opposite effect (leading to rising tones) . . . . (ibid.:75)

There are two basic contrasting "laryngeal attitudes": tense-larynx syndrome and lax-larynx syndrome (see Matisoff 1973:76 [Figure 4]). The former configuration relates to higher pitch/rising contour, glottal stop, voicelessness, retracted tongue root, "creaky" laryngeal turbulence, and larynx-tense and/or raised ('raised' = reduced supraglottal cavity). The latter configuration is associated with lower pitch/falling contour, *-h,* voicedness, breathiness, advanced tongue root, "rasping" laryngeal turbulence, and larynx-lax and/or lowered ('lowered' = distended supraglottal cavity).

That is, a glottal stop creates a tension at the larynx which in turn makes the pitch higher or rising.

THE PHONEMES OF LAI

Table 1 presents a chart of the Lai phonemes. Note that glottal stop is one of the phonemes in Lai.[3]

	bilabial	*dental*	*alveolar*	*palatal*	*velar*	*glottal*
plosive						
-voice, -asp.	p	t	ʈ	ts	k	ʔ
-voice,+asp.	ph	th	ʈh	tsh	kh	
+voice	b	d	—	—	—	—
nasal						
-voice	hm	hn		hɲ	hŋ	
+voice	m, ʔm	n, ʔn		ɲ	ŋ, ʔŋ	
fricative						
-voice		f	s			h
+voice		v	z			
lateral/trill						
-voice			hl	hr		
+voice			l, ʔl	r, ʔr		
approximant						
+voice	w, ʔw			j, ʔj		

Table 1. Lai phonemes.

GLOTTAL STOP AND GLOTTALIZATION IN LAI

Distribution

In Lai, glottal stop can occur in the following environments:

•1. In the initial position of a syllable (see spectrogram, Figure 1):
[___ V(C)]

(1) ʔan 'they'

•2. In the final position of a syllable (see spectrogram, Figure 2):
[CV ____]

(2) naŋ-maʔ 'you'

[3] Linguists do not always agree on whether the glottal stop is or is not a phoneme in a given language. Some linguists do not count it as a Thai phoneme, e.g., Noss 1964:9: "Fortis glottal stop [ʔ] occurs in both initial and final positions, but it is not a phoneme . . ."

•3. Two glottal stops can occur in the same syllable: one as an initial and the other as a final (see spectrogram, Figure 3): [___ V ___]

(3) ʔaʔ 'LOCATIVE'

In Lai, glottalization can occur before, during, or after the consonants /r, l, w, m, n, ŋ, j/. This glottalization always occurs with the syllable-final consonant.

•/ʔr/ (see spectrogram, Figure 4)

(4) hŋeʔr-tee 'ant'

•/ʔl/ (see spectrogram, Figure 5)

(5) hŋaʔl 'know'

•/ʔw/ (see spectrogram, Figure 6)

(6) zaʔw 'look at'

•/ʔm/ (see spectrogram, Figure 7)

(7) phoʔm 'to pound'

•/ʔn/ (see spectrogram, Figure 8)

(8) zaj hmaʔn 'anything'

•/ʔŋ/ (see spectrogram, Figure 9)

(9) phoʔŋ 'unloose'

•/ʔj/ (see spectrogram, Figure 10)

(10) daʔj 'ADVERBIALIZER'

There are three subtypes of glottalization in Lai. Each word with a glottalization can be realized as more than one subtype, depending on context.

1. A glottal stop occurs between a preceding vowel and a following final consonant (usually a sonorant). This is called preglottalization, and is the most common of the three types in Lai:

C	V	ʔ	C
initial		**preglottalization**	final

(11) hŋeʔr-tee 'ant' (see spectrogram, Figure 11)

However, others, such as Mary Haas, consider it to be a phoneme in Thai, and I agree with this view.

2. A glottal stop occurs within the final consonant (a sonorant). This type is called medial glottalization, and will sometimes be represented here by an underlined C:

C	V	C
initial		**medial glottalized sonorant**

(12) hŋe?r-tee 'ant' (see spectrogram, Figure 12).

3. A glottal stop occurs after a final consonant, as found by Madeleine Plauché (Plauché et al. 1998). This is called postglottalization.

C	V	C	?
initial		final	**postglottalization**

(13) zaj hma?n 'whatever' (see spectrogram, Figure 13).

Glottal stop, Glottalization, and the Qualities of the Adjacent Vowels and Sonorants

Glottal stops, Glottalization, and Vowel Length

In Lai, a glottal stop can occur in front of, behind, or on both sides of a vowel. In the first case, a vowel which follows a glottal stop can be either short or long. In the second case, a vowel preceding a glottal stop can be a monophthong or a diphthong. If it is a monophthong, it is always a short vowel. In the third case, a vowel which has both preceding and following glottal stops is always short. We have found only one vowel, that is the vowel /a/, that can occur in this environment.

A glottalization always occurs in syllable-final position. The vowel preceding a glottalization is always short. The average length of a vowel before a glottalization is 102.4 ms, whereas the average length of a plain vowel is 135.5 ms (Plauché et al. 1998). There is no report of any diphthong preceding a glottalization.

Some examples are shown in Table 2.

Glottal Stops, Glottalization, and the State of Adjacent Vowels

Besides influencing the length of the vowels, glottal stop and glottalization sometimes cause the spreading of the creaky state of the glottis to nearby (preceding or following) vowels. Furthermore, in some instances we cannot see the single burst that identifies the presence of a glottal stop in a spectrogram. Instead, we find the creaky state of the adjacent vowel without any burst bar (see Appendix 1).

Type	*Examples*
A. ? V	**?a** 'he'; **?an** 'they'; **?in** 'ADVERBIALIZER'
B. ? VV (long)	**?aa** 'Ah!'; **?oo** 'INTERJECTION'; **?ook** 'PURPOSE'
C. CV ?	**do?** 'likely'; **hno?** 'to wipe'; **se?** 'to bite'
D. CVV? (diphthong)	**lia?** 'to lick'; **tshia?** 'to place'
E. ?V?	**?a?** 'LOCATIVE'
F. CV (?) C (C̲) (?)	**na?j** 'to have'; **hŋe?r-tee** 'ant'; **zaj hman?** 'whatever'

Table 2. Examples of glottal stops, glottalization and vowel length.

A glottal stop or creaky voice requires the closing of the vocal folds. For a glottal stop, the vocal folds are tightened together. Creaky voice is "a mode of vibration of the vocal folds in which the arytenoid cartilages are much closer together than in modal voice. Creaky voice also involves a great deal of tension in the intrinsic laryngeal musculature, so that the vocal folds no longer vibrate as a whole" (Ladefoged and Maddieson 1996:53).

Since both glottal stop and creaky voice are active at the same point of articulation, namely the glottis, creaky voice can easily occur in the environment of glottal stops.

Glottalization and Sonorant Length

A sonorant which is (pre-, medial, or post-) glottalized has a shorter length than a plain sonorant without glottalization. The average length of a glottalized sonorant is 77 ms, whereas the average length of a plain sonorant is 268 ms (Plauché et al. 1998).

The Function of Glottal Stops and Glottalization in Lai Grammar

Typologically, Lai is a language which has the structures of SOV (subject-object-verb), AN (adjective-noun), GN (genitive-noun), RCN (relative clause-head noun), and ergativity. In Lai there are two main types of sentences: ergative and absolutive; these are distinguished by case markers and verb forms. The markers used in a Lai ergative sentence are */ni? /* for a subject and

/khaa/ for an object. The markers used in Lai absolutive sentences are */khaa* / or */tsuu/*. The markers always occur after nouns. See examples (14) and (15):

An absolutive sentence:

(14)	tshia? hŋaak tshia?	pool	khaa	?a lak ?in	?an	lut	khaw
	students	some	ABS	free	3PL	enter	may
	'Students may come in for free.'						

An ergative sentence:

(15)	tsew-maŋ	ni?	thil	khaa	?a-ba?
	Tsew Mang	ERG	clothes	OBJ	3SG-hang up
	'Tsew Mang hung up his clothes.'				

In Lai, most verbs can have more than one form. The form of the verb depends on the type of sentence in which it is found. Table 3 (next page) shows various verb types and forms.

It can be seen from this table that glottal stops and glottalization play an important role in distinguishing verb forms: (a) In Form 2, verbs in Types C and G have glottal stops at the finals; (b) in Form 2a, verbs in Types B and H have glottalization with the final consonants; and (c) in Form 2b, verbs in Type E have glottalization with the final consonants.

Each verb form is used differently; see Table 4.

Examples:

•*An absolutive declarative sentence*

(16)	tsew-maŋ	thil	?a-bat
	Tsew Mang	clothes	3SG-hang up (Form 1)
	'Tsew Maŋ hung up his clothes.'		

•*An absolutive interrogative sentence*

(17)	na	?aj	tsaŋ	moo ?
	you	eat (Form 1)	PERF	Q
	'Have you eaten yet?'			

•*An absolutive declarative negative sentence*

(18)	ka	thaj	law
	I	know (Form 1)	NEG
	'I don't know.'		

Verb Type	*Form 1*	*Form 2a*	*Form 2b*
A invariant *ex.* 'to begin'	ʔot	ʔot	—
B *ex.* 'eat'	-sonorants ʔaj	-ʔ + sonorants ʔaʔj	—
C *ex.* 'sleep'	-p, -t, -k ʔit	-ʔ ʔiʔ	—
D *ex.* 'visit'	-ŋ tlooŋ	-n tloon	—
E *ex.* 'understand'	-ŋ thliaŋ	-n thlian	-ʔn thliaʔn
F *ex.* 'love'	-Ø doo	-C doot	—
G *ex.* 'see'	-Ø hmuu	-ʔ hmuʔ	—
H *ex.* 'be early'	-uan tuan	-oʔn toʔn	

Table 3. Verb forms.

Verb Forms	***Declarative***		***Interrogative***	
	absolutive	*ergative*	*absolutive*	*ergative*
		non- neg. neg.		
Form 1		—		
Form 2	—	—	—	—

Table 4. The use of Lai verb forms.

•*An ergative declarative sentence*

(19) law thlaw paa ni? ?in khaa ?a rak hmu?
farmer ERG house OBJ 3SG PERF see (Form 2)
'The farmer saw the house.'

•*An ergative interrogative sentence*

(20) tsew-maŋ ni? tii ?an rak than piak moo?
Tsew Mang ERG water you PERF carry (Form 1) COLL[4] Q
'Did Tsew Mang fetch you some water?'

•*An ergative declarative negative sentence*

(21) tsew-maŋ ni? tsun ?a ka veel law
Tsew Mang ERG contrast. 3SG 1SG beat up (Form 1) NEG
'Tsew Mang did not beat me up.'

Roughly speaking, Form 1 is used with absolutive sentences, ergative interrogative sentences, and ergative negative sentences. Form 2 is used with ergative affirmative sentences. Moreover, glottal stops and glottalization, which are found in Form 2 in certain types of verbs, have the main function of distinguishing Form 2 from Form 1.

GLOTTAL STOPS AND GLOTTALIZATION IN LAI CONNECTED SPEECH

Introduction

Many linguists have studied the behavior of glottal stops in connected speech. Much of this research is in languages where the glottal stop is not a phoneme. This means that there are unexpected glottal stops or glottalization in the connected speech of those languages.

One of the languages which have been studied in this connection is English. There are several important points concerning glottal stop in English connected speech.

1. Shorrocks (1988) mentioned the places where glottal stops and glottalization can occur in English (dialect of the Greater Boston area):

   (a) preglottalization (always occurs before a pause)

   (22) [wɪk?] 'week'

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4 "COLL" ("collaborative") indicates that the subject gives some help to the object, and can also be called "benefactive applicative."

(b) postglottalization

(23) [cep? ɹɛ:nd] 'cheap round'

(c) glottalization occurs in the middle of final consonant clusters

(24) [fant?si] 'fancy'

2. Roach (1973) presented rules for the occurrence of glottalization in RP British English as follows:

(a) $\begin{bmatrix} +\text{plosive} \\ -\text{voice} \end{bmatrix} \rightarrow \left\{ \begin{bmatrix} +\text{plosive} \\ -\text{voice} \\ +\text{glottalized} \end{bmatrix} \right\} / \text{V } ([+\text{sonor}])\_\_ \left\{ \begin{bmatrix} +\text{cons} \\ -\text{voc} \end{bmatrix} \text{ /h/} \right\}$

(25) [a:?ktik] 'arctic'

(b) $\begin{bmatrix} +\text{plosive} \\ -\text{voice} \end{bmatrix} \rightarrow \left\{ \begin{bmatrix} +\text{plosive} \\ -\text{voice} \\ +\text{glottalized} \end{bmatrix} \right\} / \text{V}\_\_ \left\{ \begin{bmatrix} +\text{cons} \\ -\text{voc} \end{bmatrix} \text{ /h/} \right\}$

(26) [be?ts] 'bets'

(c) $\begin{bmatrix} +\text{plosive} \\ -\text{voice} \end{bmatrix} \rightarrow \left\{ \begin{bmatrix} +\text{plos.} \\ -\text{voice} \\ +\text{glott.} \end{bmatrix} \right\} / \begin{bmatrix} \text{V} \\ +\text{stress} \end{bmatrix} ([+\text{sonor}])\_\_ \begin{bmatrix} \alpha\ \text{cons} \\ \alpha\ \text{voc} \\ -\text{syl} \end{bmatrix}$

(27) ['kʌl?prɪt] 'culprit'

3. Umeda (1978) found that glottal stops or pauses functioned as boundary markers in the flow of speech. She also observed:

> It has been suggested that the kind of phoneme which precedes the word-initial stressed vowel determines the probability of the occurrence of a glottal stop at the beginning of the vowel . . . As a whole, vowels right before the word boundary have a greater chance for the presence of a glottal stop than consonants, and voiceless consonants greater than voiced ones . . . (91)

Moreover, her experiment indicated that infrequent content words received a glottal stop twice as often as frequently used content words. She concluded that the most favorable environments for a glottal stop to occur were words with a stressed vowel, a back vowel, and/or a soft initial consonant such as /w, l, r/. The words with the least favorable environments included the following:

> *(1) words which fall between function and content classifications;* (2) content words which start with an unstressed vowel; (3) content words which start with a vowel with secondary stress; and (4) those with the prefix "-un" (e.g., *unnaturally*). (Umeda 1978:93)

4. Among the most interesting conclusions about preglottalization in standard English that are arrived at in Andrésen 1970 are the following:
   (a) There is no clear correlation between stress or tone and preglottalization.
   (b) Preglottalization is most frequent after vowels with open tongue position.
   (c) "When followed by a vowel sound belonging to the same simple or complex word (i.e. in what is generally called an 'open syllable'), /p/, /t/, and /k/ are *never* pre-glottalized. In this position /tʃ/ is *less frequently* pre-glottalized than it is in word-final position" (116).
   (d) The common situations where preglottalization occurs are utterance final, word final followed by a consonant in the next word, and in final position in the A-element of a compound followed by a consonant in the B-element. The rare situations are word final followed by a vowel in the next word, and in final position in the A-element of a compound followed by a vowel in the B-element.

5. Chan 1970 is an example of research on glottalization in a language other than English. She describes the merger of **-k* and **-ʔ* in stressed syllables and the loss of glottal stop in compound words, as in the *example below:*

   (28) *pa.mi* 'white rice' (< paʔ 'white' 白 + mi 'rice' 米)

However, what interests me is the behavior of glottal stops and glottalization in the connected speech of languages which already have glottal stop as a phoneme.

First of all, I would like to present the behavior of glottal stops in Thai connected speech. In Thai, glottal stop is considered to be a phoneme. It can occur at the initial of a syllable such as /ʔa.rɔ̀y/ 'tasty' or at the end of a syllable such as /càʔ/ 'IRREALIS'. When it occurs as the final of a syllable, the preceding vowel is always short. (In Thai, there is a contrast between long and short vowels).

In the spectrogram in Figure 14, there is an example of the word /ʔà:t/ 'may' in isolation and in connected speech. In this situation, the glottal stop is sentence-initial.

The spectrogram in Figure 15 shows the word /càʔ/ 'IRREALIS' in isolation and in connected speech. In this situation, the glottal stop is in sentence-final position.

The spectrogram in Figure 16 illustrates the word /saʔ. baaj/ 'comfortable, relaxed' in isolation and in connected speech. In this situation, the glottal stop is at the end of the first syllable: [CV___ CVVC]

The spectrogram in Figure 17 shows the word /naʔ. khaʔ/ 'PARTICLE FOR FEMALE SPEAKERS' in isolation and in connected speech. The glottal stop is at the end of both syllables. In connected speech, this word is at the end of the sentence and is followed by a pause.

To sum up, there still remains a glottal stop in initial position in connected speech (Figure 14). However, it can be seen that there is a loss of glottal stop at the final position in connected speech (Figures 15, 16 and 17).

From this comparative perspective, it is interesting to study the behavior of glottal stop and glottalization in a language like Lai Chin. This language is different from languages like English in that glottal stop and glottalization are phonemic. The main point of the following study was to see the various situations where glottal stop and glottalization occurred in Lai connected speech. There were three crucial concerns:

1. That a glottal stop or a glottalization occurs where it should occur.
2. That a glottal stop or a glottalization does not occur where it should occur.
3. That a glottal stop or a glottalization occurs where we do not expect it to occur.

Procedures

1. Two Lai short stories (texts given in Appendix 2) were narrated by a male native speaker, and were recorded on analog tape at the Phonology Laboratory of the University of California at Berkeley.
2. The two stories were glossed and translated into English.
3. They were played and digitized-recorded for making their spectrograms.

4. The two stories were converted to spectrograms and printed for analysis.

5. The two stories were analyzed for occurrence or non-occurrence of expected and unexpected glottal stop or glottalization.

Results

The following tables (Tables 5 and 6) show the Lai words we have studied, all of which have glottal stop or glottalization in isolation.

The first story

The story "ruul lee hŋe?r-tee" contains 411 words. There are 159 words with glottal stop or glottalization (38.68%) in isolation.

The majority of these 159 words with glottal stop or glottalization in isolation (135 words, or 88%) also show glottal stops or glottalization in connected speech. This indicates that glottal stop and glottalization are not easily deleted. See Table 5.

The second story

In the story "?uj-tsaw lee me-he?," there are 365 words; 168 of them (46%) have glottal stop or glottalization in isolation.

Of these 168 words, the majority (143 words: 85%) show the presence of glottal stop or glottalization even in connected speech. This again indicates that glottal stop and glottalization are not easily deleted. See Table 6.

ANALYSIS

There are four main points in this analysis.

1. It can be noticed in Tables 5 and 6 above that most of the words in Context A are function words, while most of those in context D are verbs. Words with glottal stop or glottalization in isolation mainly preserve the glottal state in connected speech. The words which lose their glottal state always occur in a group containing several words in a row. In some situations, a whole word can be lost. The spectrogram in Figure 18 shows the presence of glottal stop in the word /?aa/, an interjection 'Ah!'. This word occurs after a pause; thus, its glottal stop is too important to be deleted. In the spectrogram in Figure 19, however, since the word /?a/ is a bound third person singular pronoun and since it occurs in a group of words, not only the glottal stop but also the whole word are deleted.

Table 5. The use of glottal stop and glottalized words in the story "ruul lee hŋeʔr-tee": four environments.

CONTEXT A: ʔ___

	Number of occurrences	*Occurrences with /ʔ/ or a creaky state*	*Occurrences without /ʔ/*
ʔii 'and'/'REFLEXIVE'	26	23	3
ʔin 'ADVERBIALIZER'	3	3	-
ʔa 'he'	27	23	4
ʔaa *INTERJECTION: 'Ah!'*	2	1	1
ʔan 'they'	20	17	3
ʔay 'eat'	1	1	-
ʔum 'be'	3	3	-
ʔoo 'INTERJECTION'	1	1	-
ʔook 'PURPOSE'	2	2	-
tiaʔ ʔa 'QUOT-he'	*1*	*1*	-
TOTAL	86	75	11

CONTEXT B: _?

	Number of occurrences	*Occurrences with /ʔ/ or a creaky state*	*Occurrences without /ʔ/*
diʔ 'COMPLETIVE'	1	1	-
doʔ 'likely'	2	2	-
khoʔ 'be able to'	1	1	-
liaʔ 'to lick'	1	1	-
leʔ 'to reply'	1	1	-
kaj-maʔ 'I'	2	-	2
naŋ-maʔ 'you'	5	5	-
hnoʔ 'to wipe'	1	-	1
pahniʔ 'two'	1	-	1
niʔ 'ERGATIVE'	10	9	1
hruʔ 'crazy'	1	1	-
seʔ 'to bite'	1	1	-
tshiaʔ 'to place'	1	1	-
tuaʔ 'do'	2	2	-
TOTAL	30	25	5

CONTEXT C: ?V?

	Number of occurrences	?a	a?	?a?	a	a
?a? 'LOCATIVE'	14	2	-	7	2	3
tik ?a? 'when'	3	1	-	2	-	-
TOTAL	17	3	-	9	2	3

CONTEXT D: ?C (GLOTTALIZATION)

	Number of occurrences	*Occurrences with /ʔ/ or a creaky state*	*Occurrences without /ʔ/*
do?**ŋ** 'end'	1	1	-
ko?**m** 'be friend'	1	1	-
zaj hma?**n** 'whatever'	2	2	-
hŋe?**r**-tee 'ant'	15	15	-
na?**j** 'have'	1	1	-
pa?**r** 'make into pieces'	1	1	-
ta?**r** 'to place'	1	1	-
za?**w** 'look at'	4	1	3
TOTAL	26	23	3

Table 6. The use of glottal stop and glottalized words in the story "ʔuj-tsaw lee me-heʔ": four environments.

CONTEXT A: ʔ___

	Number of occurrences	*Occurrences with /ʔ/ or a creaky state*	*Occurrences without /ʔ/*
ʔii 'and'/'REFLEXIVE'	15	15	-
ʔin 'ADVERBIALIZER'	2	2	-
ʔa 'he'	39	37	2
tik ʔaʔ 'when'	4	4	-
ʔaa! INTERJECTION: 'Ah!'	3	3	-
ʔan 'they'	13	13	-
ʔaj 'eat'	1	1	-
ʔuj tsaw 'a dog'	10	4	6
TOTAL	87	79	8

CONTEXT B: __?

	Number of occurrences	*Occurrences with /ʔ/ or a creaky state*	*Occurrences without /ʔ/*
diʔ 'COMPLETIVE'	1	-	1
zaj-daʔ 'QUESTION WORD'	2	2	-
duʔ 'to want'	1	1	-
ka-duaʔ 'my friend'	2	2	-
zaŋ-faʔ 'please'	1	1	-
heʔ 'with'	1	1	-
me-heʔ 'goat'	10	9	1
hmuʔ 'see'	4	3	1
khaʔ 'TOPICALIZER'	1	1	-
liaʔ 'to lick'	1	1	-
kaj-maʔ 'I'	1	-	1
niʔ 'ERGATIVE'	12	9	3
tiaʔ 'saying'	7	7	-
tuaʔ 'do'	1	1	-
tshuaʔ 'come out'	1	1	-
TOTAL	46	39	7

CONTEXT C: ?V?

	Number of occurrences	*?a*	*a?*	*?a?*	*a*	*a*
?a? 'LOCATIVE'	7	1	-	2	-	4
tik ?a? 'when'	5	-	-	-	-	5
TOTAL	12	1	-	2	-	9

CONTEXT D: ?C (GLOTTALIZATION)

	Number of occurrences	*Occurrences with /ʔ/ or a creaky state*	*Occurrences without /ʔ/*
ba?**w** 'to bark'	3	3	-
bu?**n** 'put'	2	2	-
da?**j** 'away'	1	1	-
hŋa?**j** 'have'	2	1	1
pa?**w** '(when)ever'	1	1	-
phe?**r** 'dried meat' (see footnote 10)	5	5	-
pho?**m** 'to pound'	3	3	-
pho?**ŋ** 'unloose'	1	1	-
tza?**w** 'look at'	3	3	-
TOTAL	21	20	1

2. In the two Lai stories, unexpected glottal stops, glottalization, and creaky-state vowels occur in the following words:

   (a) The word /ʔii/ (> [ʔiʔ], [ʔḭ]), which either has a connective meaning 'and' or is a reflexive word, has a glottal stop or a creaky state on the vowel when it is followed by a pause. The spectrogram in Figure 20 presents the word /ʔii/ with a glottal stop at the final and the spectrogram in Figure 21 shows the word /ʔii/ with a creaky state on its vowel.

   (b) The word /khaa/ (> [kha̰ʔ]), which is an objective or absolutive marker, has a glottal stop when it is followed by a pause. The spectrogram in Figure 22 will show this.

   (c) The word /tsuu/ (> [tsuʔ], [tsṵ]), which is a topicalizer, has a glottal stop when it is followed by a pause, as shown in the spectrogram in Figure 23, and has a creaky-state vowel as seen in the spectrogram in Figure 25.

   (d) The word /hii/ (>[hḭ]), which is a demonstrative 'this', has a creaky state on the vowel when it is followed by a pause, as shown in the spectrogram in Figure 24.

   (e) The word /kii/ (> [kiiʔ]) 'a horn' has a glottal stop at the final of the word followed by a pause, as shown in the spectrogram in Figure 25.

   (f) The word /ʔaj/ (> [ʔaʔj]), which means 'to eat,' has a glottalization of the final consonant as shown in the spectrogram in Figure 26.

Table 7 (below) presents the number of occurrences of unexpected glottal stop, glottalization, and creaky-state vowels.

To summarize, most of the words which have unexpected glottal stop and creaky-state vowels are function words. The environment of the occurrence of glottal stop and creaky-state vowels is always after a pause. Moreover, when an unexpected glottal state occurs, the vowel is always shortened.

3. Besides the three main situations, there is an interesting case where a glottal stop in a word can be partially lost: it loses its point of articulation. This can be seen from the spectrogram in Figure 27. In Figure 27, the word */ʔaʔ/* changed its glottal point of articulation to a velar one */ʔak/* because it is assimilated to the velar stop of the following word.

	Story 1	*Story 2*
?ii	15	13
> ?ii?	7	5
> ?i̲i̲	8	8
khaa > kha?	1	4
tsuu	6	9
> tsu?	3	1
> ts̲u̲	3	8
hii > h̲i̲i̲	2	3
khii > khii?	2	8
?aj > ?a?j	1	1
TOTAL	27	35

Table 7. The occurrences of unexpected glottal stop, glottalization, and creaky-state (underlined) vowels.

4. Some words containing glottal stop are combined with a previous word in connected speech, so that they fuse into a single word. The second word, if it has an initial glottal stop, will lose it. In Figure 28, the words */tsuu/* + */ʔan/* become */tsuan/*.

CONCLUSION

Lai is a language which has many words containing glottal stops and glottalization. The main purpose of this study has been to observe the presence and absence of glottal stop and glottalization in connected speech, paying special attention to unexpected occurrences of glottal stop, glottalization and creaky-state vowels.

The analysis shows that glottal stop and glottalization can disappear when there are many words in series, and that unexpected glottal stop and glottalization always occur before a pause. This corresponds to the point Umeda made about the relationship between a pause and a glottal stop in English.

APPENDIX 1

Spectrogram Reading for Glottal Stop and Glottalization

The spectographic cues for the appearance of glottal stop are as follows:

First, a glottal stop is a stop. A cue for a stop is a burst bar shown as number 1 in the spectrogram in Figure 29.

Second, after a burst bar, there is a gap between the bar and the next sound, seen as number 2 in the spectrogram in Figure 29.

Third, there is no voicing bar during a glottal stop because a glottal stop is voiceless, seen as number 3 in the spectrogram in Figure 29.

Fourth, sometimes a glottal stop creates a creaky state on a nearby vowel. This creaky state can be seen from a series of pulses and gaps as in Figure 29. A glottal stop with adjacent creaky vowel sometimes does not present a clear sharp stop bar. However, we still judge that there is an occurrence of a glottal stop there.

Fifth, if a stop bar does not occur, if there is no nearby creaky vowel, and if we still hear a glottal stop on the tape, the way to judge whether there is a glottal stop or not is the sharp beginning of the formants of the following vowel (if the glottal stop is at the initial position of a word), seen in Figure 30.

Sixth, if I am not sure whether at the end of a word there is a glottal stop or not, I reverse the suspected word (following Professor John Ohala's advice). It is easier to hear an initial consonant than a final one. The spectrogram in Figure 31 shows the word */ʔii /* before it was reversed, and that in Figure 32 shows the word */ʔii /* after it was reversed.

That is, spectrographic cues for a glottal stop include a stop bar followed by a gap, a sharp beginning of the formants of the following vowel, and/or a nearby creaky vowel.

Other cues for glottalization have been presented in Gerfen 1999:

First, we can see the highly irregular and low frequency glottal pulsing. From the spectrogram in Figure 33, we can see the sharp drop of fundamental frequency during a glottalization (also suggested by J. Ohala, p.c.).

Second, the amplitude drops during glottalization, as seen in the spectrogram in Figure 34.

Third, we can see spectral tilt (cf. the spectrogram in Figure 35).

Fourth, to differentiate between pre-, medial and postglottalization, we look at whether a stop bar or glottal pulses come before (preglottalization), inside (medial glottalization) or after (postglottalization) a final sonorant. These can be seen from the spectrograms in Figures 11, 12 and 13.

APPENDIX 2

Lai Story 1: "ruul lee hŋe?r-tee" "The Snake and the Ant"

1	?a hlaan liaw pii ?a?,	tii-vaa	pooŋ	pa-khat	?a?
	3SG.S-before-TEMP-big-LOC	river	near	one	LOC
	=once upon a time,				

ruul	lee	hŋe?**r**-tee	?an rak ?um	?an	tii.
snake	and	ant	3PL.S-PAST-exist	3PL.S	say

Once upon a time, there were a snake and an ant near a river, they say.

2	?ii	ruul	lee	hŋe?**r**-tee	tsuu	?an	?ii kom
	and	snake	and	ant	DEM	3PL.S	REFL-be.friend

ŋai	?ii	tsuu tii tsun	?an	?um	ʈii
very	and	DEM-say-DEM (= 'thus')	3PL.S	exist	together

?ii	rool	tee hna	zoŋ	?an	?ay	ʈii	tii
and	food	DIMIN-PL	also	3PL.S	eat	together	water

zoŋ	?an	?ii	liaw	ʈii,	?an	vaak
also	3PL.S	REFL	swim	together	3PL.S	go out (wander)

ʈii	?an	tii.
together	3PL.S	say

And the snake and the ant are close friends in the way that they have food together, swim in the water together, and hang out together, they say.

3	voj khat tsuu	ruul	ni?	hŋe?**r**-tee	khaa	?a	za?**w**
	CLF-one-DEM	snake	ERG	ant	DEM	3SG.S	look at

?a?-hin	"hii	hŋe?**r**-tee	hmee tee	hii	zaj-tik-hma?**n**-?**a**?
LOC-DEM	DEM	ant	small-DIMIN	DEM	Q-time-even-LOC[5]

5 'At any time I did not say that'—used in negative sense. [KVB]

sii	do?	?a	sii	law"	tia? ?a tii	?an	tii.
COP	be likely	3SG.S	COP	NEG	QUOT-3SG.S-say	3PL.S	say

One day, the snake looked at the ant and said, "Look how small this ant is. It is not anything at all"; they say.

4

hŋe?**r**-tee	ni?	ruul	khaa	?a za?**w**	vee	?ii	"hii,
ant	ERG	snake	DEM	3SG.S-look at	also	and	DEM

ruul	saaw zeeŋ zuaŋ	hii	zaj hen	ka	
snake	long IDEO	DEM	why	1SG.S	

ko?**m**	hno?	tshan	?a sii ?a tii ?ii
befriend	APPLIC	reason	3SG.S-COP-3SG.S-say-and

?a za?**w** ?a za?**w**	?a? hin	?a rem	tii law	?an	tii.	
3SG.S-look-3SG.S-look	when	3SG.S-tolerate /be in harmony with	no longer	3PL.S	say	

As the ant looked at the snake, he said, "This long-stretched one, this snake—why am I a friend of *his*?'" As the ant looked at the snake, it no longer got along with him, they say.

5

voj khat tsuu	tsuu	tii	rem	law	in	?an
CLF (time)-one-DEM	DEM	say	tolerate	NEG	ADVR	3PL.S
('one day')						

?um	?a? tsun	hŋe?**r**-tee	ni?	naŋ-ma?	ruul
exist	when	ant	ERG	2PL.S	snake

saaw zeeŋ zuaŋ	hii	zaj hma?**n**	tii	kho?	mii	
long IDEO	DEM	anything	do	able	REL	

na?**j**	do?	na si	law	?a	tii	?an	tii.
have	likely	2SG.S-COP	NEG	3SG.S	say	3PL.S	say

Finally, they just couldn't get along. The ant said, "You, long-ass snake, you are likely not able to do anything"; they say.

6 ruul ni? "naŋ-ma? hŋe?r-tee tham hii tsuu
snake ERG 2SG.S ant DIMIN DEM DEM

voj khat ka-n-lia? laaj ?ii paj[6] ka poo
CLF-one 1SG.S-2SG.O-lick FUT and (CONTRASTIVE) 1SG.S-
('once') stomach

tshuŋ ?a? na phaak kaw laaj tsuu" ?a tii tik-?a?
inside-LOC 2SG.S-arrive AFFIR FUT DEM 3SG.S-say-when

tsuu tii tsun ?an ?ii sii ?ii ?an ?ii veel
DEM-say-DEM 3PL.S REFL-quarrel and 3PL.S REFL fight

?an tii.
3PL.S say

The snake said "You, small ant, once I lick you, you will end up in my stomach." When the snake said this, they quarreled and fought, they say.

7 ?ii? tsuu di? tsun ?an ?ii veel ?ii hŋe?r-tee lee
and DEM-finish-DEM 3PL.S REFL-quarrel and ant and
('after that')

ruul tsuu ?an ?ii sual ?ii tsuu tii ?an ?ii sual
snake DEM 3PL.S REFL-struggle and DEM-say-3PL.S-REFL-struggle

pa? ?a? tsun hŋe?r-tee ni? ruul luu
while LOC.DEM ant ERG snake head
(simultaneous action) ['at that (situation)']

tsuŋ ?a? khan ?a phaan khaw ?an tii.
on.top (PREP) LOC-DEM 3SG.S reach able 3PL.S say

And in this way they fought and the ant and the snake struggled. And, as they struggled like that, the ant got to be on the head of the snake, they say.

---

6 Another example of the use of *paj*:
naŋ-ma? paj na sii kaw hii!
2SG.S (CONTRASTIVE) 2SG.S COP AFFIRM DEM
'It is you, no one else!' [KVB]

8

ʔii	hŋeʔr-tee	ruul	luu	tsuŋ	ʔa	phaak	ʔin tsun
and	ant	snake	head	on.top	3SG.S	reach	when

ruul	khaa	zaj	tii	tua?	ʔook	ʔa	thay
snake	DEM	Q ('how')	do	do	PURP	3SG.S	know

tii law,	zaj	tshiim	ʔook	ʔa	thay	law
no longer	Q	say	PURP	3SG.S	know	NEG

ʔii	hŋeʔr-tee	ni?	khan	"Khaa,	hii
and	ant	ERG	DEM	Look!	DEM

hii	paj	na	sii	kaw	tsuu	naŋ-ma?
DEM	(CONTRASTIVE)	2SG.S	COP	AFFIRM	TOP	2SG.S

tham	tsuu	ʔan	tii.
DIMIN	TOP	3PL.S	say

And when the ant reached the head of the snake, the snake did not know what to do or say. The ant said, "Look, you are just like this [very easy to beat up]!"; they say.

9

ruul	ni?	tsun	zaj	tii	tua?	ʔook	ʔa
snake	ERG	DEM	Q ('how')	do	do	PURP	3SG.S

thay	law	ʔii	hŋeʔr-tee	ni?	tsun	ʔa	se?
know	NEG	and	ant	ERG	DEM	3SG.S	bite

leeŋmaaŋ	foon	ʔii	"ʔa sii nee lee	na	ʈum
all.the.time	REGR	and	3SG.S-COP-otherwise	2SG.S	descend

law	ʔa	sii	ʔaʔ tsun	naŋ-ma?	zoŋ	na thii laaj.
NEG	3SG.S	COP	if	2SG.S	also	2SG.S-die-FUT

The snake did not know what to do and the ant bit the snake repeatedly. "If it's going to be like this," [the snake said], "if you don't climb down, you will also die . . .[7]

7 Utterances 9 and 10 are connected. [KVB]

10 kaj-ma? zoŋ ka thii laaj ?a tii ?ii "?aa!"
1SG.S also 1SG.S die FUT 3SG.S say and Ah!

hŋe?r-tee ni? "kaj-ma? tsuu ka thii laaj law
ant ERG 1SG.S DEM 1SG.S die FUT NEG

?a do?ŋ naak ?a? tsun naŋ-ma? na thii tee kaw laaj."
3SG.S-end-NOM-LOC-DEM 2SG.S 2SG.S-die-DIMIN-AFFIRM-FUT
'finally' 'at some point'

?an tii.
3PL.S say

. . . and I'll die too." "Ah!" the ant said," I am not going to die. Finally, you will die"; they say.

11 ruul tsuu khua ?a ruat ?a ruat ?ii tsoo-leeŋ kal
snake DEM cosmos-3SG.S-think 3SG.S-think and cow-cart go

naak ?a? khan ?a luu ?a va ta?r ?an tii.
NOM LOC DEM 3SG.S head 3SG.S-DIR-place 3PL.S say

The snake thought deeply and went to a cart road, and put his head on it [so that the cart might crush his head], they say.

12 hŋe?r-tee ni? tsun hii ruul hru? hii tsuu ?oo !
ant ERG DEM DEM snake crazy DEM DEM INTERJ

zaj hen tsoo-leeŋ kal naak ?a? hin ?a luu hii
Q-DEM ('why') cow-cart go NOM LOC DEM 3SG.S head DEM
(= 'why does he put his head on the cart road?')

?a rak tshia? hŋaa ?a tii tik ?a? tsoo-leeŋ tsuu
3SG.S DIR place IRREALIS[8] 'when he said' cow-cart DEM

---

8 Cf. ?a raa hŋaa moo? 'I *wonder* whether he will come?' [KVB]
3SG.S come IRREALIS Q

ʔa	raa	tsiaam maam	ʔii ruul luu tsuu	pa**ʔr** kaw
3SG.S	come	IDEO	and-snake-head-DEM	shatter-AFFIRM

ʔin	ʔa von	rial	tik-ʔaʔ	khan	hŋeʔ**r**-tee	zoŋ
ADVZR	3SG.S-DIR	crush	when	DEM	ant	also

khaa	ʔa	rial	tshiʔ ʔii ʔan	pahniʔ ʔin ʔan thii
DEM	3SG.S	crush	altogether-and-3PL.S	two-ADVZR-3PL.S-die

ʔan	tii.	Tsuu vial.
3PL.S	say	DEM-MEASURE.WORD (= 'That's all')

The ant said, "How crazy the snake is! Why does he put his head on the cart road?" When he said that, a cart came and crushed the snake's head into pieces. The ant also died. Both of them died, they say. That's all (= THE END).

Lai Story 2: "ʔuj-tsaw lee me-heʔˇ
"The Dog and the Goat"

a) ʔa tuu kan tshim diŋ mii tuan-bia tsuu
3SG.S-now 1PL.S speak PURP REL early-word DEM

ʔuj-tsaw lee me-heʔ koŋ ʔa sii laaj
dog and goat story 3SG.S COP FUT

The story we are going to tell now is the story of the Dog and the Goat.

1 ʔa hlaan liaw ʔaʔ hin ʔuj-tsaw niʔ hin
3SG-before-TEMP-LOC DEM dog ERG DEM
= 'once upon a time'

kii ʔa rak hŋaʔj ʔan tii.
horn 3SG.S PAST have 3PL.S say

Once upon a time, dogs had horns, they say.

2 me-heʔ niʔ hin kii ʔa rak hŋaj law ʔan tii.
goat ERG DEM-horn 3SG.S PAST have NEG 3PL.S say

Goats did not have horns, they say.

3 voj khat tsuu ʔuj-tsaw niʔ mii-nuu pakhat
CLF (time)-once DEM dog ERG person-female one

sum ʔa suk liaw khaa ʔa hmuʔ ʔii
mortar 3SG.S pound TEMP DEM 3SG.S see and

zaj daʔ ʔa tuaʔ hŋaa tiaʔ ʔa zaʔw ʔan tii.
what 3SG.S do IRREALIS QUOT 3SG.S look 3PL.S say

One day, the Dog saw a woman pounding with the mortar, and the Dog *went and looked at what she was doing, they say.*

4 tsuu ʔa va zaʔw ʔaʔ tsun mii-nuu niʔ tsun
DEM 3SG.S DIR see when person-female ERG DEM

sa pheʔ**r** ʔa rak phoʔ**m** ʔii ʔa sa pheʔ**r**
dried.meat[9] 3SG.S-DIR-pound and 3SG.S dried.meat

phoʔ**m** mii tsuu ʔa hmuj tuk ʔii ʔuj-tsaw
pound REL DEM 3SG.S be.fragrant very and dog

niʔ tsun ʔaj ʔa duʔ tuk ʔan tii.
ERG DEM eat 3SG.S eat very 3PL.S say

When he went and looked there, the woman was pounding dried meat and the dried meat smelled very good and the Dog wanted to eat it, they say.

5 ʔii mii-nuu tsuu sa pheʔ**r** ʔa phoʔ**m** diʔ
and person-female DEM dried.meat 3SG.S-pound finish

tsun sum tsuu ʔa kal taak ʔii ʔuj-tsaw
DEM mortar DEM 3SG.S-go-APPL and dog

niʔ tsun sum ʔa va zaʔ**w** tik-ʔaʔ
ERG DEM mortar 3SG.S-DIR look at when

tsun sum tshuŋ ʔaʔ tsun sa pheʔ**r** tloom-paal
DEM mortar inside LOC DEM dried.meat a.little

ʔa taaŋ mii khaa ʔa hmuʔ ʔan tii.
3SG.S leftover REL DEM 3SG.S see 3PL.S say

After she finished pounding the dried meat, she went away (leaving the mortar) and the Dog went and looked at the mortar. Inside the mortar, he saw some leftover dried meat, they say.

---

9 Literally 'hanging meat' (*pheʔr* 'hang'), i.e., hung above the fireplace to dry. [KVB]

6 ʔii tsuu liaw ʔaʔ tsun me-heʔ kha ʔa raa vee
and DEM-TEMP-when goat DEM 3SG.S come also

ʔii ʔuj-tsaw niʔ tsun ka dua! zaaŋ faʔ naak ʔin
and dog ERG DEM 1SG.POSS friend strength-pain-NOMZR-ADV[10]

ka kii hii rak ka ken piak tshuŋ
1SG.S horn DEM DIR 1SG.S keep APPL inside
[= 'for a while']

loo sum khii ka va liak taa laaj
SUGGESTIVE mortar DEM 1SG.S DIR lick TEMP FUT

tiaʔ me-heʔ khaa ʔa-fial ʔan tii.
QUOT goat DEM 3SG.S-request 3PL.S say

And, at that time, a Goat also came. The Dog said, "My friend, please keep my horn for a while. I will lick that mortar for a while." He asked the Goat, they say.

7 ʔii me-heʔ niʔ tsun ʔaa! ka-n ken
and goat ERG DEM ah! 1SG.S-2SG.O keep

piak kaw laaj ʔa tii tik-ʔaʔ ʔuj-tsaw
APPL AFFIRM FUT 3SG.S say when dog

niʔ tsun ʔa kii tsuu ʔaa phoʔŋ ʔii
ERG DEM 3SG.S horn DEM REFL unloose and

me-heʔ tsuu ʔa ken ter ʔan tii.
goat DEM 3SG.S keep CAUS 3PL.S say

And when the Goat said," Ah! I will keep it for you," the Dog unloosed the horn and let the Goat keep it, they say.

10 This expression is a psycho-collocation meaning roughly 'please.' See Van-Bik, next issue.

8 ʔii sum tsuu ʔa vaa lia? ʔii sa phe?**r**
and mortar DEM 3SG.S DIR lick and dried.meat

tsuu ʔa thoo ŋaaj ʔii ʔa von tshua?
DEM 3SG.S tasty very and 3SG.S DIR come out

tik-ʔa? tsun ʔa hmu? mii tsuu me-he?
when DEM 3SG.S see REL DEM goat

ni? khan ʔa kii khaa keŋ
ERG DEM 3SG.POSS. horn DEM keep
law ʔin ʔa luu ʔa? ʔa rak ʔii
NEG ADVBZR 3SG.POSS. head LOC 3SG.S DIR REFL

bu?**n** da?**j** ʔan tii.
put away 3PL.S say

And when he (the Dog) licked the tasty dried meat in the mortar, he saw the Goat put his (the Dog's) horn on top of his own (the Goat's) head instead of just holding it, they say.

9 ʔuj -tsaw tsuu ʔa thin ʔa huŋ[11] ŋaaj ŋaaj
dog DEM 3SG.POSS-liver-3SG.S-come (= 'angry') very

ʔii "ka dua! zaj tsaa da? ka kii tsuu
and 1SG.POSS. friend WH-Q for-what 1SG.POSS horn DEM

na luu ʔa? naa bu?**n**" tia? ʔa
2SG.POSS head LOC 2SG.REFL put QUOT 3SG.S

hal tik-ʔa? "ʔaa! hii hii kaj-ma? taa ʔa
ask when ah! DEM DEM 3SG.POSS own 3SG.S

sii, ka-n pee khaw law" tia? ʔa tii
COP 1SG.S-2SG.O give able NEG QUOT 3SG.S say

ʔan tii.
3PL.S say

11 A psycho-collocation; see Van-Bik, next issue.

The Dog was very angry and asked the Goat, "My friend! Why did you put my horn on your head?" The Goat replied," This is MINE. I will not give it to you"; they say.

10 ʔuj -tsaw tsuu ʔa thin ʔa huŋ ŋaaj ŋaaj
dog DEM 3SG.POSS-liver-3SG.S-come very

ʔii me-heʔ tsuu heʔ-tshet tiaʔ
and goat DEM with great effort QUOT

ʔa ba**ʔw** ʔan tii.
3SG.S bark 3PL.S say

The Dog was very angry and barked at the Goat with great effort, they say.

11 me-heʔ niʔ tsun na ka ba**ʔw** leen
goat ERG DEM 2SG.S 1SG.O bark REPET

zoŋ ʔaʔ ka kii tsuu ka-n pee
even.if 1SG.POSS horn DEM 1SG.S-2SG.O give

hlaj laaj law tiaʔ ʔa tii ʔan tii
still FUT NEG QUOT 3SG.S say 3PL.S say

The Goat said," Even if you barked at me repeatedly, I will still not give my horn to you"; they say.

12 hii ruaŋ ʔaʔ hin ʔuj-tsaw niʔ me-heʔ ʔa
DEM-reason LOC DEM dog ERG goat 3SG.S

hmuʔ tik pa**ʔw** ʔaʔ ʔa ba**ʔw** naak
see TEMP each LOC 3SG.S bark NOM-reason

hii ʔa sii tiaʔ ʔan tii. Tsuu vial.
DEM 3SG.S COP QUOT 3PL.S say DEM-MEASURE.WORD

For this reason, every time the dog sees the goat, he barks at him, they say. That's all (= THE END).

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