

GLOTTAL STOP AND GLOTTALIZATION IN LAI (CONNECTED SPEECH)¹

Rungpat Roengpitya

University of California, Berkeley

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

¹ I would like to thank Professor James A. Matisoff, Professor John J. Ohala, and Professor Gary Holland for their valuable advice and comments. I also would like to thank Mr. Ken Van-Bik, our language consultant, and my classmates in Linguistics 240, Field Methods, at UC Berkeley during the academic year 1996-1997.

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

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-Vietnamese 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 -ʔ 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 -ʔ 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

	<i>bilabial</i>	<i>dental</i>	<i>alveolar</i>	<i>palatal</i>	<i>velar</i>	<i>glottal</i>
<i>plosive</i>						
-voice, -asp.	p	t	t̚	ts	k	ʔ
-voice, +asp.	ph	th	tʰ	tsh	kh	—
+voice	b	d	—	—	—	—
<i>nasal</i>						
-voice	hm	hn		hɲ	hŋ	
+voice	m, ʔm	n, ʔn		ɲ	ŋ, ʔŋ	
<i>fricative</i>						
-voice		f	s			h
+voice		v	z			
<i>lateral/trill</i>						
-voice			hl	hr		
+voice			l, ʔl	r, ʔr		
<i>approximant</i>						
+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) nan-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 . . ."