

## **Garó as a minimal tone language**

**Robbins Burling**  
University of Michigan

### *1. Introduction.*

The Garó language is spoken by about half a million people in the western part of the state of Meghalaya in northeastern India and in adjacent regions of Bangladesh to the south.<sup>1</sup> On a number of occasions (e.g., Burling 1981) I have described Garó as unusual among Tibeto-Burman languages in its lack of contrasting tones. Strictly speaking, this description is accurate, but it ignores a phonological feature of Garó that acts very much as do tones in many of its Tibeto-Burman cousins: the glottal stop.

As Tibeto-Burmanists well know, glottal stops are frequent participants in the tonal systems of their languages. Burmese is a good example. It can be described as having three contrasting tones on unstopped syllables, but stopped syllables (the stop is ordinarily a glottal in spoken Burmese) do not have the same contrasts. These stopped syllables might be described as lacking tone entirely, but it has often seemed more reasonable to think of them as constituting a fourth tone. Some other languages do have a tonal contrast on stopped syllables, but the number of stopped tones is generally smaller than the number found on unstopped syllables, and their phonetic characteristics often differ markedly. Thus it is often impossible to describe the tonal system of a Tibeto-Burman language without taking the difference between stopped and unstopped syllables into account.

Garó does completely lack tonal contrast among its unstopped syllables (these include both open syllables, and syllables closed with simple /m/, /n/, /ŋ/ or /l/). Nor is there contrast among stopped syllables. This justifies my description of the language as lacking tones. However, the difference *between* syllables with a glottal stop and those without one is very reminiscent of the distinction between stopped and unstopped tones in some other Tibeto-Burman languages. If Burmese can be described as a language with three tones on unstopped syllables and one tone on stopped syllables, it is not outrageous to describe Garó as a language with one glottal tone and just one nonglottal tone. This would qualify Garó as a language with an absolutely minimal tone system. It is the purpose of this paper to justify

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<sup>1</sup> I worked among Garos in India as long ago as the 1950s, and since 1985 I have made several trips to Bangladesh to work with Garos there. I am indebted to both the National Science Foundation and to the Fulbright Foundation for generous support of this research.

the treatment of Garo phonology in these terms. I must start with a sketch of the Garo syllable.

## 2. *Syllables.*

As in many Southeast Asian tone languages, each Garo syllable is pronounced as a distinct unit. The transitions between syllables are clear; adjacent syllables have less influence on one another than in many languages in other parts of the world. This makes it possible to describe a large part of Garo phonology in terms of the syllable. Leaving aside considerations of tone for the moment, these syllables can be described by (1) their initial consonant or consonant cluster, (2) their central vowel, and (3) their final consonant or consonant cluster. As in most Tibeto-Burman languages, the inventory of initial and final consonants is quite different, and the initial inventory is considerably richer.

A well designed Garo Romanization was developed by Baptist missionaries more than a century ago. It has been widely used ever since, and the transcription I use in this paper is close to conventional spelling. In particular I write some syllable initial and syllable final consonants with the same letters, although, in most cases, the pronunciations are quite different. This means that consonants that come between vowels can be consistently, and confidently, interpreted as belonging either to the preceding or to the following syllable. To make the assignment of consonants to syllables clear, I will write hyphens between the syllables of all polysyllabic words.

Syllables are important not only for Garo phonology, but as units of meaning as well. Hardly a Garo morpheme can be found that is shorter than a syllable, and each syllable of a polysyllabic Garo word often contributes its own separate meaning to the total. Many morphemes are exactly one syllable long. Borrowed words, of which a great many have come to Garo from Bengali, are less likely to have syllables with identifiably separate meanings, and a good many native polysyllabic morphemes are also found, but it is very common for syllable boundaries and morpheme boundaries to coincide. All this, of course, will seem familiar to students of Southeast Asian languages.

Table 1 displays the consonants and consonant clusters that can begin a syllable in the older core vocabulary of Garo. Table 2 displays the finals. “#” is included in the tables to indicate that neither an initial nor a final consonant is needed in a Garo syllable. Garos whose language has been influenced by Bengali or English sometimes use versions of Bengali or English consonants in borrowed words, but these do not bear upon the argument of this paper, and they can be safely ignored.

## Syllable Initial Consonants

p-	t-	k-		
b-	d-	g-		
m-	n-			
s-	ch-	j-		
r-	h-	w-	#-	
sp-	st-	sk-		
pr-	tr-	kr-		
br-	dr-	gr-		
mr-				
sr-	chr-	jr-		
spr-		skr-		

or<sup>2</sup>

p-	t-	ch-	k-	#-
b-	d-	j-	g-	
pr-	tr-	chr-	kr-	
br-	dr-	jr-	gr-	
sp-	st-	s-	sk-	
spr-		sr-	skr-	
m-	n-	mr-		
w-		r-		h-

TABLE 1

## Syllable Final Consonants

-p	-t	-k		
-m	-n	-ng	-l	- #
-ʔm	-ʔn	-ʔng	-ʔl	-ʔ

TABLE 2

Garó is typical of southeast Asian languages in having more initials than finals and in having quite different inventories of initials and finals. Indeed, initials and finals differ more than is implied by the transcription. Initial /p-/ , /t-/ , and /k-/ are vigorously aspirated, while final /-p/ , /-t/ , and /-k/ are not merely unaspirated, but not even released. In fact, the single set of final stops could be written as /-b/ , /-d/ , and /-g/ just as easily as /-p/ , /-t/ , and /-k/ , and there is really very little reason even to try to identify specific initials with specific finals. Of all the consonants, only /m/ and /n/ are really phonetically similar in initial and final position, and even they can be differentiated by their juncture with the adjacent vowels and consonants.

The glottal stop never occurs as syllable initial, but it occurs easily as syllable final, as demonstrated by many minimal pairs:

<sup>2</sup> Alternative presentation of syllable initial consonants. [Ed.]

bu-a	'pierce'	buʔ-a	'tell lie'
ka-a	'tie'	kaʔ-a	'bitter'
ja-ko	'month' (objective)	jaʔ-ko	'leg' (objective)
ru-a	'pour'	ruʔ-a	'long'

As in several of these examples, glottal stops often occur intervocally, and these can always be interpreted as belonging to the previous syllable rather than to the syllable that follows. They do not, however, occur as a part of a word's final syllable. The combining form of the word 'leg, foot', for instance, is jaʔ-. This can be followed by a considerable range of other syllables, as in jaʔ-pa 'sole of the foot', jaʔ-so 'toe', jaʔ-ko 'foot' (objective), and many others. When used without a suffix, however, some adjustment is always made to the root that keeps the glottal stop from appearing in a word-final syllable.

In the northern dialects of Garo that are spoken in India, including the dialect upon which Garo orthography is based, the usual solution is to add an echo vowel after the glottal stop whenever a syllable with a glottal stop threatens to appear in word final position. As a result, the root (subject form) of 'foot' is pronounced jaʔ-a in northern dialects. In the southernmost dialects that are spoken across the international border in Bangladesh, however, the usual solution is simply to stop the glottal stop when it would otherwise occur in the final syllable of a word. The usual Bangladeshi Garo pronunciation of the subject form of the word for 'foot', then, is simply ja, rather than the jaʔ-a of northern dialects. Occasionally an echo vowel can be heard even in Bangladesh, but usually only under very heavy emphasis and stress.

In addition to being used by itself at the end of a syllable, the glottal stop can be combined with a syllable final nasal or lateral. In these "clusters," the stop occurs more or less simultaneously with the other phone. The cluster that I write as /-ʔm/, for example, starts with a nasal. This nasal is interrupted very briefly by a glottal stop but then continues as a nasal. In standard Garo orthography, the apostrophe (the conventional symbol for the glottal stop) is written *after* the other consonant, but for reasons that will become apparent shortly, I prefer to write the glottal stop first. The following minimal pairs illustrate the co-occurrence of glottal stops with nasals and /l/.

jom-a	'sick'	joʔm-a	'go stealthily, sneak'
rim-a	'take, bring'	riʔm-a	'catch, hold, work'
chon-a	'small'	choʔn-a	'finish'
sin-a	'like'	siʔn-a	'cold'
song-a	'set up, as a post'	soʔŋ-a	'cook'

ring-a	'drink'	riʔŋ-a	'sing'
bil-a	'fly'	biʔl-a	'roll up'

When a syllable with a glottal cluster threatens to occur finally, an adjustment is needed, just as in the case of a simple glottal stop. In northern dialects the glottal stop and the nasal are pulled apart, and an echo vowel is inserted between them. It is to allow this rule to be represented simply on paper that I prefer to write the glottal stop before the other consonant. In orthographic Garo, where the glottal stop is written as the second member of the cluster, a misleadingly radical rewriting is needed when the syllable comes at the end of a word, for the apostrophe has to jump before the other consonant. In southern dialects the glottal stop is simply omitted whenever the syllable comes last in a word, while the nasal or /-l/ survives alone at the end of the word.

	<i>Combining form</i>	<i>Northern final form</i>	<i>Southern final form</i>
bird	doʔ-	doʔ-o	do
tuber	taʔ-	taʔ-a	ta
fire <sup>3</sup>	waʔl-	waʔ-al	wal
bug	joʔŋ-	joʔ-on	joŋ-

Garo has only five distinctive simple vowels, conveniently and reasonably written with the five vowels of the Roman alphabet. Of these, only /i/ raises any complication, but it is an important complication and it bears upon the use of the glottal stop.

The vowel that I write, following conventional Garo orthography, as /i/, actually has two quite different phonetic realizations. In open syllables and in syllables that end with a simple glottal stop (i.e., a glottal stop that is not a part of cluster) /i/ is pronounced as a high front unrounded vowel. In closed syllables (except for those closed by a simple glottal stop) it is still high and unrounded but it is pronounced distinctly further to the rear. The two pronunciations of /i/ are strikingly different. Indeed, Garo speakers themselves point to the difference. Nevertheless, in native Garo words (though not in Bengali borrowings) the two phones are in perfect complementary distribution, and the orthography recognizes this by writing them with the same letter. When necessary for phonetic clarity, I will write the backed form of this vowel as [ɨ].

<sup>3</sup> Historically this glottal prosody seems to have originated as a feature of the syllable-initial, as shown by the preglottalized Jingpho cognate ʔwən 'fire' (see STC #220 [p. 50] and n. 78 [p. 23]). Burling pioneered in the discovery of similar glottal features in the Burmish languages Maru and Atsi (Zaiwa), which he represented by a glottal stop before the vowel (e.g., pʔa, kʔa) (Burling 1967). [Ed.]

The difference between the two pronunciations of /i/ means that Garo words such as *bi-ma* 'female' and *rim-a* 'take, bring' have very different vowels. The words are pronounced as [bima] and [rima], respectively, and they do not rhyme. The first word sounds rather like 'be ma'. The first syllable of the second word sounds more like the first syllable of 'remark' when pronounced rapidly and with no stress on its first syllable. Differences such as this make it crucial to attend to Garo syllable boundaries. The closed syllable pronunciation of /i/ is somewhat reminiscent of the English schwa. It is unrounded and it is at least central if not quite back. It is higher than the English schwa, however, and it is not so markedly distressed. Unlike our schwa, it is often quite tense. However, /i/ is distinctly shorter in closed than in open syllables, and it is particularly short when following /s-/. When /i/ occurs *between* syllable initial /s-/ and a syllable final consonant, it is in effect shortened from both directions, and it can almost be shortened out of existence.

The other four Garo vowels vary less from one phonological environment to another than does /i/. All are shortened slightly in closed syllables, but much less markedly than is /i/.

The great majority of syllables include one, and only one, vowel, but pairs of vowels are sometimes fused together tightly enough to make it reasonable to consider the pair to belong to a single syllable nucleus. The most common pairs are /ai/, as in *ja-mai* 'son-in-law', and /au/, as in *lau* 'water pumpkin', both of which are borrowed words. The pair /oi/, as in *boi* 'book', is also quite common, but probably occurs only in borrowings. It is very much like the English vowel in *boy*.

/ai/, /au/ and /oi/ are plausibly interpreted as established diphthongs. Other pairs of vowels occur together occasionally, but at low enough frequencies that they can best be regarded as sequences of simple vowels, even as forming two syllables. /oi/ is certainly a borrowing, but /ai/ and /au/ are found in a few words that do not seem to have been borrowed, and they certainly fit comfortably among the other sounds of the language. There are two words that are especially difficult to handle unless their vowels are treated as diphthongs. These words can be written as *chau?-a* 'rob, steal' and *hai?-a* 'know'. They are unlikely to be borrowings, since borrowed words rarely or never have glottal stops. When a speaker is asked to pronounce these words slowly and carefully, the glottal stop seems almost to interrupt the vowel and even to split the diphthong into two syllables: [cha?-u-a], [ha?-i-a]. In ordinary fluent speech, however, the roots [chau?-] and [hai?] seem much more like single syllables that are closed by the following glottal stop. If they can be regarded as single syllables, then /au/ and /ai/ must indeed be considered to be diphthongs and included in the inventory of syllable nuclei. /ai/ and /au/

most often occur in open syllables. They are unusual though not quite unknown in syllables closed with consonants other than the glottal stop.

### 3. *The Glottal Stop.*

As I have described it so far, the glottal stop is not markedly different from other consonants. No other consonant has exactly the same phonotactic distribution, but other consonants also have their own phonotactic peculiarities. The glottal stop, however, is subject to considerably more complex morphophonemic alternation than is any other phonological unit. Unlike other phonological units, glottal stops have a disconcerting tendency to disappear. Phonetically, of course, they are stops, but their effects upon their surroundings are strikingly different from the effects of the other stops. In particular, syllables that are closed only with a glottal stop act, in several respects, more like open syllables than do syllables closed with another consonant. A glottal stop, in effect, does not "close" a syllable as tightly as do other consonants. Note in particular the following:

1. As already mentioned, all other syllable final consonants cause a preceding /i/ to assume its backed allophone. In syllables closed with a glottal stop, however, /i/ has the fronted articulation that is otherwise found only in open syllables. This is one example of the failure of the glottal stop to close its syllable as tightly as do other syllable final consonants. Clusters of the glottal stop plus a nasal or /-l/ back the vowel in the same manner as all other consonants.

2. One minor exception to my generalization about phonological stability is some limited assimilation of the vowel of one syllable to the vowel of the preceding syllable. This assimilation affects only /i/ and only when it occurs in a syllable that is closed but that lacks an *initial* consonant. In the dialects of Bangladesh, this assimilation is most apparent with the progressive affix that, by surprising coincidence, has the underlying form -iŋ-. When following most closed syllables, the /i/ of the progressive affix has the expected backed pronunciation: *kat-iŋ-a* 'running' is pronounced [kat-ɨŋ-a]. (*Kat-* is a verb base meaning 'run' and *-a* is the present/ neutral tense ending.)

When the progressive affix occurs after an open syllable, however, its vowel assimilates to the previous vowel. The phonetic effect is that of a lengthened vowel: [bu-uŋ-a] *bu-iŋ-a* 'telling a falsehood', [ka-aŋ-a] *ka-iŋ-a* 'tying'. Words such as [si-iŋ-a] *si-iŋ-a* 'dying', are almost unique in the language in having a phonetically high front vowel in a closed syllable. In effect, the vowel that is backed by the following consonant is *refronted* by the influence of the preceding high front vowel.

When the progressive affix follows a syllable closed by a glottal stop, vowel assimilation takes place just as it does when it follows an open syllable: [chaʔ-aŋ-a] chaʔ-iŋ-a 'eating', [piʔ-iŋ-a] piʔ-iŋ-a 'breaking', [suʔ-uŋ-a] suʔ-iŋ-a 'igniting'. Where the glottal stop is used together with another final consonant, however, assimilation is blocked and backing occurs: [soʔŋ-iŋ-a] soʔŋ-iŋ-a 'cooking'. The transparency of the glottal stop to vowel assimilation, suggests, once more, that it closes the syllable less tightly than do other consonants.

3. Certain sound changes that have affected vowels in Bangladeshi dialects have developed differently in syllables closed by a glottal stop than in other closed syllables. In words where more northern dialects of Garo (and orthographic Garo) have /e/ in open syllables (i.e. in syllable final position), Bangladeshi dialects generally have /i/. In most closed syllables, Bangladeshi dialects retain /e/ in the same words where /e/ is found in northern dialects. In syllables where an /e/ is followed only by a glottal stop, however, Bangladeshi dialects have changed the vowel to /i/, just as if it were an open syllable. In parallel fashion, words with /o/ in northern dialects have changed to /u/ in some (though not all) Garo dialects of Bangladesh, but this has happened only in open syllables and in syllables closed by a glottal stop. Again, just as in the two previous cases, glottal stops close the syllable less tightly than do other consonants.

	<b>Northern dialects</b>	<b>Southern dialects</b>
'surfeited'	pek-a	pek-a
'carry by a strap'	ke-a	ki-a
'go'	reʔ-a	riʔ-a
'white'	gip-bok-a	gip-bok-a
'throw'	go-a	gu-a
'ignite'	soʔ-a	suʔ-a

In each of these three ways, the glottal stop acts very differently from any other consonant. In all cases, syllables closed only with a glottal stop act more like open syllables than do those closed by other consonants. It should be noted that syllables ending with /-ʔm/, /-ʔn/, /-ʔŋ/, or /-ʔl/ act, in all these respects, like fully closed syllables.

The most striking way in which glottal stops differ from other consonants, however, is in their regular disappearance under certain well defined conditions. As I have already stated, most Garo phonological segments show a notable stability. Most consonants and vowels retain their form under most conditions. There are a few minor exceptions to this sweeping generalization (such as the vowel assimilation noted above), but the most dramatic exception concerns the glottal stop, for underlying glottal



stops often fail to be realized. The following generalizations account for whether or not a glottal stop will be realized in any particular appearance of a syllable.

1. First, just as each syllable can be characterized as having particular consonants and a particular vowel, so each syllable can be characterized either as having or as not having an underlying glottal stop. Syllables without an underlying glottal stop (almost) never acquire them, but syllables with underlying glottal stops frequently lose them. The glottal stop appears most reliably when its syllable comes first in a polysyllabic word. Examples have already been given of a few of the many minimal pairs that are unambiguously distinguished by the presence or absence of a glottal stop in the first syllable.

2. As mentioned briefly earlier, glottal stops are never found in the last syllable of a word. Garo morphology frequently allows a syllable to appear in varying positions in a word, sometimes finally and sometimes nonfinally, so it is a simple matter to compare the pronunciations of a syllable under varying circumstances. In Bangladeshi dialects the glottal is generally dropped when its syllable is last in a word. This means that a glottal stop is never expressed in a monosyllabic word even when the syllable must be interpreted as having an underlying glottal stop. Examples already given include *ja* 'foot' and *wa* *l* 'fire', as pronounced in Bangladeshi dialects. These must be considered to have underlying glottal stops because stops appear consistently in compounds and in inflected forms: *waʔl-ni* 'of the fire', *jaʔ-ni* 'of the foot'. In northern dialects, the nominative or citation form of these words is *waʔ-a* *l* and *jaʔ-a*. The inserted echo vowel keeps the glottal stop away from the end of the word, and by creating an extra syllable at the end of the word, ensures that the glottal stop occurs in the penultimate rather than the ultimate syllable.

The rules for avoiding glottal stops in final syllables can be made to work consistently only by being careful about what is considered to be a separate word and what is considered to be a compound. Indeed the rule can be used to help define word boundaries: *haʔn-chi* 'blood', literally 'body-water', must be regarded as a compound since a glottal stop appears in *haʔn* -. In southern Garo, when *han* is used as a separate word it has no glottal. In *han jak* 'whole body', literally 'body hand', no glottal stop occurs with *han*, and this requires us to interpret the *han* of this phrase as a separate word.

Many monosyllabic verb bases occur in the language, but verb bases are almost always followed by at least one suffix. Noun bases are frequently used with no suffixes at all. This means that glottal stops are more consistently retained by verb bases than by noun bases. The suffixes protect verb bases from the loss of the glottal stop in southern dialects and from the insertion

of an echo vowel in northern dialects. In very limited circumstances, however, even verb bases can be used without a suffix and in such cases an adjustment for the glottal stop is made. One form of the negative imperative is formed by a verb prefix instead of a verb suffix. (This is the only productive prefix in the language.) This negative imperative prefix is often used in conjunction with a suffix, but occasionally it is used alone, and then a glottal stop is lost from a verb base, just as it is from any other final syllable. (The more usual negative imperative morpheme in northern dialects is a suffix, and this blocks the need for an echo vowel.)

chaʔ-bo 'eat' (imperative) daʔ-cha 'don't eat' (neg. imperative)

3. Glottal stops are deleted from syllables that occur as the second syllable of a word, but they are retained in third syllables (unless that third syllable is final). In two syllable words, of course, this rule simply duplicates the effect of rule 2. In longer words the effects of the rule become clear. The most salient situation where these glottal stop deletions can be noticed is in verb compounds and in verbs with a derivational syllable that directly follows a monosyllabic verb base. Many of these second syllables can occur under other circumstances where their glottal stops appear, but they disappear when in second position. piʔl- 'back, return', for example, has a glottal stop when it is used either as a verb base (and thus initially), or when occurring as the third syllable of a complex verb. However, it lacks a glottal stop when it occurs in second position. Similarly, daʔl- 'to be big' has a glottal stop when used as a verb base, but it lacks the stop when it comes second in a compound. The operation of this rule can be seen in the following examples. -baʔ- 'in this direction' does not occur as an independent word, but since it does occur with a glottal stop when in the third syllable position it must be regarded as having an underlying glottal stop. This also disappears when the syllable comes second.

piʔl-a	'return'
kat-pil-a	'run back'
kat-ba-a	'run in this direction'
kat-ba-piʔl-a	'run back in this direction'
kat-pil-baʔ-jok	'ran back in this direction'
taʔm-biŋ-a	'round'
mik-tam-biŋ-a	'round faced'
daʔl-a	'big'
roŋ-dal-a	'big, of round things'
niʔŋ-a-o	'inside'
haʔ-niŋ-a-o	'in the ground'

roʔ-a	'long'
maŋ-ro-a	'long, of an animal'
toʔŋ-sa	'one, of cylindrical objects'
rat-toŋ-a	'cut, of cylindrical objects'
kaʔl-a	'play'
maŋ-kal-a	'fool around'
toʔm-a	'gather'
ka-tom-a	'pack, wrap up'

As soon as it is recognized that glottal stops occur easily in first and third syllables, but not in second syllables, it is natural to wonder about fourth syllables. It is not easy to maneuver syllables with underlying glottal stops into the fourth position of a word, but the following examples, built either with the disyllabic verb base *gu-ri* 'wander around' or with the disyllabic affix, *-ru-raʔ-* 'back and forth', suggest that the glottal stop is deleted from the fourth syllable just as it is from the second.

gu-ri-baʔ-pil-jok	'wander back in this direction'
gu-ri-piʔl-ba-jok	'wander back in this direction'
iʔ-ru-raʔ-pil-a-riŋ-a	'coming back in a back and forth way'

It is more natural for *-baʔ-* to precede *-piʔl-* than the reverse, so *gu-ri-piʔl-ba-jok* is not a fully convincing example. *Gu-ri-baʔ-pil-jok* is an entirely natural construction, however, and the glottal stop does seem to be lost from *-piʔl-* in this word, and from *iʔ-ru-raʔ-pil-a-riŋ-a*. I do not have full confidence in my hearing with such long words, however, and I find it surprisingly difficult to fix the location of the glottal stops with full confidence. I have been unable to devise longer words that would test later syllables. Verbs of six or seven syllables are easy enough to construct, but none of the syllables that typically come late in the word has an underlying glottal stop.

This rule of second-syllable glottal stop deletion accounts for the patterns by which glottal stops are distributed in words formed by reduplication. Reduplication is a reasonably productive process in Garo, but many reduplicated forms have also become fixed as lexical items. Such words may have a glottal stop on the first syllable, but not on the second:

jeʔm-jem-a	'constantly'
jiʔŋ-jiŋ-a	'sift'
moʔl-mol-a	'request, beseech'
diʔl-dil-a	'shake with cold or fear'

When disyllabic words are reduplicated, any glottal stop on the first syllable is faithfully copied into the third syllable as well. It is not easy to find firm criteria for deciding whether these should be regarded as one word or two:

jeʔ-et-jeʔ-et	'very heavy'
soʔ-om-soʔ-om	'comfortable, soft'
soʔl-i-soʔl-i	'by small chops, as when carving'

Reduplication leads to one apparent exception to the preservation of the glottal stop on the third syllable of a word. Reduplicated syllables are sometimes suffixed to a verb base. If the original single syllable has an underlying glottal stop, it would not appear in the second syllable of the reduplicated form, and once suffixed to a monosyllabic verb base the glottal stop will also disappear from the first syllable of the reduplication. In such cases the glottal stop does not reappear on the second syllable of the reduplication, even after it has become the third syllable of the word. This can easily be accounted for by assuming that suffixation takes place after reduplication. By the time suffixation occurs it seems to be too late to recover the underlying glottal stop. However, I have not uncovered very many examples, and too much faith should not be placed in this generalization.

jeʔm-jem-a-ri	'repeatedly'
deʔn-jem-jem-a	'cut repeatedly'

A particularly interesting example is provided by han daʔl-a 'big of body'. The underlying and combining forms of both haʔn- 'body' and daʔl- 'big' have glottal stops. I believe I have heard two alternative pronunciations when they are used together: haʔn-dal-a and han daʔl-a. If my hearing is accurate, haʔn-dal-a can be regarded as a compound, where the first syllable retains its glottal stop, but the second syllable loses it. Han daʔl-a can be regarded as consisting of two separate words, with the glottal stop lost from the first word because it has only a single syllable. Of the two pronunciations, han daʔl-a is the clearer, for it is the pronunciation heard with careful articulation. It is the pronunciation used whenever the linguist asks a speaker to repeat for checking. Haʔn-dal-a seems to occur with rapid articulation, but its very rapidity makes it more difficult to hear or to interpret with confidence. If my hearing is accurate, it suggests, reasonably enough, that with rapid

speech, the two words merge into a compound. In any case the phrase (or compound) always has one and only one glottal stop.

4. In only one situation is a glottal stop ever introduced where none exists in the underlying form. When a two syllable verb (generally consisting of a monosyllabic verb root plus a one-syllable derivational suffix) ends with /a/, or less often with another vowel, a glottal stop may be introduced before the present/neutral verb suffix, -a. The more emphatically the word is pronounced (as in demonstrating for a puzzled linguist) the more likely it is that a glottal stop will be introduced. In effect, the glottal stop separates the two a's that would otherwise come together. This rule can override rule 3, above, with the result that, in this single circumstance, a glottal stop can appear in the second syllable of some words, and this can happen even when that syllable directly follows a glottal stop in the first syllable. As the following examples suggest, the glottal stop is not introduced into the second syllable when a verb suffix other than -a follows the verb, but the glottal stop is often heard before the suffix -a, at least under careful articulation.

iʔ-baʔ-a	'come' (present)
iʔ-ba-paʔ-a	'come with' (present)
iʔ-ba-bo	'come!' (imperative)
iʔ-ba-paʔ-bo	'come with!' (imperative)

There is, however, one important and clear exception even to this exceptional introduction of the glottal stop. The negative -ja- does not acquire a glottal stop when occurring before -a. In fact the two /a/'s of -ja- and -a do not keep their distance at all, but merge. Verbs that must be considered to have been formed from underlying -ja- plus -a are pronounced with a simple -ja.

iʔ-ang-a	'go'
iʔ-ang-ja	'not go'

Compare these with:

iʔ-ang-jok	'have gone'
iʔ-ang-ja-jok	'not go anymore'

Here, -ja- and -jok both retain their full forms. -ja- occurs freely and without change not only with -jok but with all other verb suffixes except -a. Where -ja- and -a would be expected to occur together, they merge into a single syllable, a very rare situation in the language, for in this

instance we might consider a single syllable to embrace two morphemes. Even here it would be as natural to say that *-a* is simply dropped when it follows *-ja-*.

It is tempting to view the fate of *-ja-* and of other */-a-/'s* before the suffix *-a* as if there is some difficulty about pronouncing two */a/'s* in a row. They seem to be in danger of merging into a single vowel unless they are kept apart by a glottal stop. The vowel of *-ja-* merges, while a glottal stop is inserted in other cases. This cannot be a satisfactory "explanation," however, because there is no problem at all about letting the *-a* suffix follow directly after a monosyllabic verb base that ends in */a-/'*: *sa-a* 'serve food', *ga-a* 'climb'. In such cases, no glottal stop is introduced, but with even modestly careful articulation, the vowel is long enough to let it be counted as two syllables. It is clearly longer than a single */a/'* as in, for instance, *cha* 'tea'. We are left with a peculiar and rather eccentric rule that allows a glottal stop to be introduced into second syllables, but only in the single situation where the suffix *-a* follows. In no other situation are glottal stops added.

In its failure to close syllables as tightly as other consonants and in its tendency to disappear, the glottal stop clearly acts quite differently from other consonants. Such behavior would not be surprising for a tone, but it is noteworthy in a stop.

#### 4. *CV?N, CV?-VN and CV?-VS Sequences.*

While many Garo morphemes have only one syllable, all dialects of Garo, including the southern dialects of Bangladesh, have a considerable number of bisyllabic morphemes in which a glottal stop occurs between two identical vowels in the two syllables. These words have the form *CV?-VN* or *CV?-VS*, where *N* stands for a nasal or */-l/'*, and *S* for syllable final */-p/'*, */-t-'*, or */-k/'*. Since there are five vowels in the language, pure chance would lead one to expect only one fifth of the words with intervocalic glottal stops to have identical vowels. In fact, words with identical vowels are far more common. Consider, first, *CV?-VN* words, in which the second syllable is closed with an */-l/'* or a nasal:

<i>be?-en</i>	'meat'
<i>ke?-em-a</i>	'excrement'
<i>be?-el-a</i>	'spit out food'
<i>so?-om-so?-om</i>	'comfortable, soft'
<i>sa?-al-a</i>	'swell up, as rice when cooking'

These have the same form as words of northern dialects that result from the expansion of an underlying single syllable by the addition of an echo vowel. Such expansions are a regular feature of these dialects. Northern  $j\phi^?-\phi\eta$  'worm', for example, is expanded from the underlying and combining form  $j\phi^?\eta-$ , which appears in a large number of compounds. To anyone familiar with the echo vowels, words such as  $be^?-en$  'meat' give a strong impression of having been expanded from something shorter, and this impression is strengthened by some examples in which expanded and unexpanded forms alternate, even in the southern dialects of Bangladesh where such expansion is uncommon:

$bo^?l-a$ , $bo^?-ol-a$	'rotten, of eggs'
$j\phi^?l-a$ , $j\phi^?-ol-a$	'rise, of water'

However, it by no means the case that all CV?-VN words alternate with corresponding single syllables. A good many words in all dialects have the CV?-VN form without having unexpanded partners.  $Be^?-en$  'meat, flesh' is a common word in both northern and southern dialects but it never takes the form  $*be^?n-$ , even when followed by a suffix. Nor, so far as I am aware, does  $*so^?m$  ever appear as an alternate pronunciation of  $*so^?-om$  'soft'. Though its true historical origin is unknown, a word like  $be^?-en$  has the look of an expansion that has become lexicalized, frozen in its expanded form. About all that can be done with the synchronic language is to list the various forms that each word assumes, and admit a lack of consistency.

More interesting are CV?-VS examples in which the second syllable ends with  $/-p/$ ,  $/-t/$ , or  $/-k/$ .

$ga^?-ak-a$	'fall down'
$go^?-ok-a$	'come apart, come loose'
$so^?-ot-a$	'kill'
$de^?-ep-a$	'hold by pressure, as with tongs'
$se^?-et-a$	'pinch between two fingers'
$ru^?-ut-a$	'stretch'
$je^?-et-je^?-et$	'very heavy'

As the language is spoken today, these cannot be considered expansions from underlying single syllables, because clusters consisting of a glottal stop plus  $/-p/$ ,  $/-t/$ , or  $/-k/$  (which would have to be the underlying and unexpanded source for the words) do not exist in any dialect of Garo that I have encountered. It will be recalled, however, that the glottal stop *can* appear in syllables along with any *other* possible syllable final consonant *except* the stops (see Table 2). If words having the form CV?-VS

could be derived from underlying syllables of the form CV<sup>?</sup>S-, this would imply a more symmetrical phonological pattern. It would mean that a glottal stop could co-occur with any other syllable feature of the language (leaving recent borrowings aside). In effect, any sort of a syllable at all could either have a glottal stop or lack a glottal stop.

The temptation to treat the CV<sup>?</sup>-VS words in this way is strengthened by one curious alternation:

so <sup>?</sup> -ot-a	'kill'
ra-sot-a	'kill by slicing (with a knife)'
ri <sup>?</sup> m-sot-a	'kill by choking'

The syllable -sot- is too much like so<sup>?</sup>-ot- to be dismissed as a simple coincidence, but alternations of this sort are not common, and this alternation is too irregular to fit any obvious pattern in the present language. Nevertheless, if both so<sup>?</sup>-ot- and -sot- are regarded as deriving from an underlying (but never realized) \*so<sup>?</sup>t-, an entirely regular pattern presents itself. In ra-sot-a and ri<sup>?</sup>-m-sot-a the glottal stop disappears, just as glottal stops always disappear in second syllables. In so<sup>?</sup>-ot-a, on the other hand, an echo vowel is introduced allowing the glottal stop to be preserved in a language that does not (any longer?) allow /-<sup>?</sup>t/ clusters to be realized. Unfortunately, this is the only unambiguous example of this sort that I have come across.

The CV<sup>?</sup>-VS words have a phonetic quality that sets them apart: they are sometimes pronounced with a distinctly creaky voice quality. That is, the glottalization brought by the stop can carry through the vowels, conferring a creakiness that is otherwise unusual in the language. Creakiness is a quality sometimes associated with glottal stops in Southeast Asian languages and it sometimes occurs with particular tones. It is not a widespread or salient feature of Garo phonology, but its appearance in CV<sup>?</sup>-VS sequences both sets them apart as distinctive, and gives a unity to this bisyllabic sequence that is not typical of two syllable sequences in Garo. This phonetic feature makes them seem more unified, more monosyllabic, than they otherwise would. The fact that these sequences are monomorphemic, in violation of the common Garo pattern of single-syllable morphemes, also confers a sense of unity on them.

It is, therefore, very tempting to reinterpret these sequences, and to regard them as deriving from underlying syllables of the form CV<sup>?</sup>S. It must be admitted, however, that CV<sup>?</sup>-VS sequences are considerably less common than CV<sup>?</sup>N- syllables. Garo has scores, possibly hundreds, of CV<sup>?</sup>N- syllables in which the glottal stop co-occurs with a nasal or /-l/. I know of only a dozen or two words that might be interpreted as deriving from an



underlying (but never realized) CV?S-. There are even fewer words with CV<sub>1</sub>?-V<sub>2</sub>S in which the vowels differ, so the words with identical vowels do cry out for some sort of explanation. Still, even at an abstract underlying level, CV?S- syllables cannot really join CV?N- syllables as a characteristic part of the language.

There is, moreover, one other possible source for the apparent echo vowels of CV?-VC sequences. As was described earlier, syllables beginning with underlying /i/ (with no initial consonant) undergo vowel assimilation to the vowel of the previous syllable, but this happens only when the previous syllable is open or ends in a glottal stop. This results in words in which a glottal stop is surrounded by phonologically identical vowels. We can speculate that a word such as be?-en 'meet' could have originated from an earlier \*be?-in, by assimilation of the /i/ to the previous vowel. There is no real support for this in the contemporary language, however, nor is there any historical data that would either confirm or disconfirm it. Still, if vowel assimilation was ever a more active process than it is today, it could have yielded the considerable number of words with identical vowels separated by a glottal stop that are now found in the language.

## 5. *Conclusions.*

The glottal stop has now been described in sufficient detail to demonstrate its unique status in the Garo language. It does not act like any other consonant. In addition to co-occurring with any syllable initial consonant and with any vowel, it can also co-occur with most (other) syllable final consonants, and at an abstract level, a case can even be made for its co-occurrence with all of them. From a narrowly phonetic point of view, we might expect that nothing would "stop" the vocal tract more effectively than a glottal stop, but syllables with glottal stops act, in several respects, like open syllables rather than like closed syllables. More accurately, the glottal stop seems to have no bearing upon whether a syllable is closed or open. When it is found in a syllable that is closed by a nasal, the syllable acts closed. When it is found in a syllable that is closed by nothing else, the syllable acts as if it is open.

Indeed, if a nonnative speaker may offer a subjective impression of the glottal stop, I would describe it as floating along in the syllable in considerable independence of the (other) consonants. While the glottal stop does occur late in the syllable, it is more difficult to have confidence about its linear order than was implied in my initial description. When it co-occurs with a syllable final nasal it does, more or less, come in the middle of the nasal, but it seems nearly independent of the mechanism producing the nasal, and the precise linear order does not seem crucial. In the phrase

han daʔ1-a 'big of body' that was discussed earlier, it is remarkably difficult to pin down the position of the glottal stop. It is clear enough that the phrase has one and only one glottal stop, but it does not much matter just where in linear order it occurs. (I have avoided the terminology of autosegmental phonology in this paper, but the glottal stop surely belongs on a tier of its own.)

The echo vowels used in northern dialects show how easily the glottal stop can be dissociated from the nasal with which it otherwise seems more intimately to co-occur. It is better to describe the glottal stop as a feature of the syllable, distinct not only from the vowels but phonotactically distinct from the (other) consonants as well. Rather than describing the syllable as having three parts, it is more revealing to describe it as having four parts: initial consonants, vowels, final consonants, and glottalization. The glottal stop acts more like a feature of the syllable and less like a linearly ordered segment than do the vowels and (other) consonants of the language.

In all these respects, the distinction between the Garo glottal stop and its absence is very much like the distinction among tones in other Southeast Asian languages. Glottalization typically works closely with the tonal system in these languages, and it works in ways that are reminiscent of the behavior of the Garo glottal stop. The phonetics of the Garo glottal stop hardly justify calling it a tone, but the language does present us with something that looks like a minimal tone system.

Any historical linguist will want to ask whether Garo should be regarded as having an incipient or a degenerate tone system. Is the glottal stop all that is left of a once richer system? Or does it represent the beginning of a move toward a full system of tones? The historical data that would decide this issue are not now in hand, but my presumption is that it is a degenerate, rather than an incipient, system. I have never heard a proposal that a tone system might begin with a system such as we find in Garo, but it seems to be an entirely plausible way for a tone system to end. If all the nonstopped tones of a language were to fall together, while the former contrast between stopped and unstopped tones were to survive, the result would be the pattern we find in Garo today. Garo's closest relative is Boro, which is spoken in the Assam valley to the north and east of Garo. Boro has been described as having two tones (Halvorsrud 1959, Halvorsrud and Mosahari 1968). Garo and Boro are close enough so that the available data should make it possible to find out whether there is any systematic relationship between the Boro tones and the Garo glottal stop.

### REFERENCES

- Burling, Robbins. 1967. *Proto-Lolo-Burmese*. *International Journal of American Linguistics* 33(2), Part II. Issued simultaneously as Publication 43 of Indiana Publications in Anthropology and Linguistics. The Hague: Mouton and Co.
- \_\_\_\_\_. 1981. "Garo spelling and Garo phonology." *LTBA* 6(1).61-81.
- Halvorsrud, H. 1959. *A Short Grammar of the Boro Language*. Goalpara, Assam: The Boro Literature Board.
- \_\_\_\_\_. and Maguram Mosahari. 1968. *Boro-English Dictionary*. Shillong, Meghalaya: Boro Literature Board.