

PHONEMES OF SIANE

Ramona Lucht and Dorothy James

(Summer Institute of Linguistics).

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0. *Introduction.* This paper describes the phoneme system of the Siane² language. Thirteen consonant, five vowel, and two tone phonemes have been identified in Siane. Two phonemes are manifested by a wide range of allophones, several with a few, and two with only one allophone. The frames of reference used in this paper to describe distribution of phonemes are syllable and word.³

A tentative phonemic analysis was included in a monograph by Salisbury (1956) on the Siane language and peoples. His work is based on one year of anthropological field work, of which the first month was devoted particularly to phonemic analysis and vocabulary collection. The analysis presented in this paper concurs with his in some respects, and in particular gives evidence for the uniting of *k* and *h* into one phoneme and for the non-phonemic status of palatalization and labialization, which he suspected. There are three major areas of difference between his analysis and that presented in this paper. (1) Voiced prenasalized stops, which he described as consonant clusters occurring across syllable boundaries and wrote as *mf*, *nt*, *nk*, are here being treated as units and written as *b*, *d*, *g*. While his analysis results in economy of phonemes, it is felt that this one is more consistent with the structure of the language for the following reasons: (a) there are no other consonant clusters, (b) prenasalized stops occur initially as well as medially, and (c) there are no final consonants (except in borrowed words where they are usually followed by a voiceless

1. Organization and presentation of this material is based on the tri-modal approach developed by K.L. Pike 1954, 1955 and 1960.

2. The Siane language belongs to the Gende-Siane-Gahuku-Kamano-Fore Family of the East New Guinea Highlands Stock according to Wurm 1961. Five major dialects of Siane (Komogu, Labau, Ono, Kolepa and Yafiyufa) are mentioned by Salisbury 1956. Wurm includes Yafiyufa (with 4,464 speakers) in the Siane Sub-Family but gives it a major separation from the rest of Siane (with a total of 15,336 speakers). The analysis presented in this paper is based on the Komogu dialect.

Data were gathered in New Guinea under the auspices of the Summer Institute of Linguistics. Many informants were used over a period of fourteen months residence in Nonabalo, a village near the government patrol post of Watabung in the Eastern Highlands District. Balo, a young man of about twenty years of age, and Tela, a boy of about fifteen years of age, both residents of Nonabalo, have been our major informants. Intensive analysis was done, particularly on tone, during a linguistics field study program conducted by Dr. Kenneth L. Pike at the Summer Institute of Linguistics Base in New Guinea from February-May 1962. We are indebted to colleagues in the New Guinea Branch of the Summer Institute of Linguistics for valuable suggestions in the drafting of this paper.

3. Throughout this paper, the term "word" refers to the phonological word, tentatively defined as having phonemic juncture boundaries (symbolized by space) of which the most obvious phonetic characteristic is potential pause. Analysis of phonological units of higher level than phoneme and syllable which has been done up to this time is insufficient for more than tentative treatment in this paper.

vowel). (2) Interrogative high pitch intonation at the end of a sentence as described by Salisbury has not been observed by the present authors. (3) Tone, which is not mentioned by Salisbury, has definite phonemic significance.

1. Phoneme Identification

1.1. *Consonants*. The thirteen consonant phonemes are *p, t, k, b, d, g, f, s, m, n, w, y, l*.⁴ There is contrast in manner of articulation between voiceless stops, voiced prenasalized stops, fricatives, nasals, semi-vowels and a vibrant. Stops contrast at labial, alveolar and velar points of articulation. Fricatives, nasals and semi-vowels contrast at labial and alveolar points of articulation. Consonant phonemes contrast in analogous or identical environment:

- p/b*: *kóopá* 'mixed', *yóobá* 'hardwood tree'
t/d: *néta* 'something', *léedá* 'morning'
k/g: *kálá* 'his ear', *gála* 'little finger'
f/p: *ofó* 'part of arrow', *opo* 'blow off ashes'
s/t: *máasá* 'cooking pot', *láta* 'type tree'
m/b: *kénománé* 'fast', *kómobáná* 'unripe'
n/d: *númúná* 'house', *dúnúmá* 'fat'
w/f: *yówala* 'fur', *yófalá* 'his rib'
y/s: *kúliyálá* 'his name', *kílisáwá* 'snout'
l/t: *gála* 'little finger', *láta* 'type tree'
l/d: *lálo* 'good', *fádo* 'bamboo'

1.2. *Vowels*. The five vowel phonemes are *a, e, i, o, u*. Vowels are in contrast in high, mid, and low tongue positions. The high and mid vowels contrast in front and back tongue positions. Vowel phonemes are in contrast in analogous or identical environments:

- i/e*: *kíipá* 'boy', *kéefá* 'cooked pork'
a/e: *kálá* 'his ear', *kéla* 'frog'
a/o: *máwa* 'molars', *mówa* 'mountain'
o/u: *kóomú* 'cough', *kúumú* 'file stone'

1.3. *Tone*. There are two emic level tones in Siane, (h)igh (marked with acute accent over the vowel) and (l)ow (unmarked). Tone phonemes contrast in analogous and

4. In only one word of the dialect being described, glottal stop occurs: [ʔ] 'no'. This word is in frequent use both in conversation and text, and the glottal occurs in contrast with *k* and with its absence: *éʔéé* 'no', *ékéfé* 'bitter', *éémí* 'knife'. Semi-literate consistently express puzzlement when they try to write this word, and do not equate the glottal with any other consonant phoneme. It has been observed that the Kolepa dialect of Siane uses glottal stop much more extensively than does Komogu, but the relative frequency of occurrence and/or contrastive aspects of the glottal stop in Kolepa is not yet known.

identical environments:

- h-h/l-h: léyá 'sweet', meyá 'his back'
 h-h/h-l: kíyá 'spear', kíya 'type bird'
 h-l/l-h: kánu 'path', kanú 'grub worm'
 h-l/l-l: móno 'bow-string', mona 'beetle'
 l-l/l-h: epe 'wind', sefé 'dung'
 l-l/h-h: oko 'mucus', ókó 'day before yesterday'

Tone glides occur on phonetically short vowels in contrast with level tones. [nê^hmá] 'bird', [nê^lmá] 'louse'; [nâ^hmbá] 'big', [nâ^lmbá] 'greens'; [y^hõ] 'fire', [y^lá] 'tree', [f^hò] 'sun'. These glides are being interpreted as a combination of high and low tones on a geminate vowel cluster because they parallel in length glides on diverse vowel clusters, due to factors of syllable dynamics discussed in section 3.1. [fâ^hngyá] 'far', [ndiyá^h] 'light blue'.

2. Phoneme Manifestation.

2.1. *Consonants.* Stops, fricatives, and nasals have a lengthened variant which often occurs utterance medial. With prenasalized stops, this length is usually actualized in the nasal.

The consonants *p, k, b, g, f, m* are labialized when preceded by *u* and not followed by high vowels. It is occasionally possible to hear labialization of *t, d, n* under these conditions, but this is very rare and the degree of labialization is slight. *k* and *m* are not labialized when followed by *o*. Optional lip-rounding of the bilabials *p, b, m* occurs in conjunction with the labialization of these consonants. The consonants *p, t, k, b, d, g, f, m, n, s* are palatalized when preceded by *i* and not followed by *o*.⁵

In addition to the foregoing variants, consonant phonemes are manifested as follows:

The voiceless bilabial and alveolar fortis stops, *p* and *t*, each have an unaspirated variant which occurs in all positions and varies freely with a slightly aspirated variant in word initial position: [pótíyê]/[phótíyê] 'having a hole', [sópí] 'arrow part'; [túr^hstáurê]/[túr^lstáurê] 'woven bamboo', [lútú] 'flea'.

The voiceless velar stop *k* has the following variants: lenis [k], [k^h], [k̠]. [k̠] vary freely in word initial position, and fortis [k] occurs in word medial position: [kíni]/[k^híni]/[k̠íni]/[híni] 'type shrub', [ak̠é] 'sand'. One morpheme has been noted in which fortis [k] occurs initially, in some idiolects, contrasting with others in which the lenis initial form occurs: [kírã] 'corn', [kírãwã] 'house frame'. A few morphemes have been observed in which lenis [k̠] occurs medially in normal speech with fortis [k] occurring only in emphatic or precise speech, and in some idiolects not at all. This contrasts with most morphemes in which fortis [k] occurs medially both for normal and precise speech: [sègèfã] 'mosquito', [ékéfã] 'bitter'; [wágã] 'good', [wákã] 'down there'. Though these apparent contrasts exist, semi-literate consistently write *k* in all instances of occurrences both lenis and fortis, and read it correctly with comparative ease.

5. In some idiolects labialization and palatalization are in free variation with their absence. This has been observed particularly among informants who have had some schooling in English.

The voiced prenasalized bilabial, alveolar and velar stops, *b*, *d*, *g*, each have one allophone: [mbóřinyó] 'type fish', [námhá] 'greens'; [ndòiráiyê] 'he picks', [móndá] 'enough'; [ŋgéyáŋgéyá] 'grasshopper', [éŋgá] 'type bean'.

The voiceless labio-dental fricative *f* has the following variants: fortis [f] occurs word initially and lenis [f̥], [ɸ], [ɸ̥], [ɸ̥̥] occur in free variation word medially. [fáná] 'long', [kířiyá] / [kířiyá] / [kířiyá] / [kířiyá] 'his eyebrow'.

The voiceless alveolar grooved fricative *s* has one allophone: [súkí] 'false', [kòsinYá] 'sky'.

The voiced bilabial and alveolar nasals, *m* and *n*, each have one allophone: [mónò] 'bow-string', [ámá] 'here'; [námò] 'I', [wínuná] 'his beard'.

The voiced bilabial and alveolar semi-vowels, *w* and *y*, each have one allophone: [wéřá] 'his mouth', [kówà] 'fingernail'; [yáfó] 'pig', [ákiyá] 'his shoulder'.

The voiced alveolar flap *l* has two variants, [l̥] and [l̥̥]. Both variants occur in initial and medial positions; [l̥] is more frequent word initially, and [l̥̥] medially. Both are optionally slightly retroflexed. [lémé] 'lizard', [kírá] 'fence'.

2.2. *Vowels*. Non-contrastive half-length often occurs on the vowel nucleus of a stressed syllable. The nucleus of a final syllable preceding pause is normally lengthened and fades into faint voicelessness. (The final syllable of a word elicited in isolation is often pronounced with slight voiceless fade but without length. It may be optionally cut off with glottal closure, but this occurs rarely.)

In addition to the foregoing variants, vowel phonemes are manifested as follows:

The high front and back vowels, *i* and *u*, each have one allophone; [írá] 'garden stake', [fímóná] 'wasp'; [úkwaná] 'his body', [kúwó] 'salt'.

The mid front vowel *e* has the following variants: [ɛ] occurs except preceding *i* or *y*, and (e) occurs preceding *i* or *y* and in fluctuation with [ɛ] word medially and finally, [émí] 'knife', [léyá] 'sweet', [kémá] / [kémá] 'who?'

The mid back vowel *o* has two variants: [o] occurs in all positions and fluctuates with [ɔ] preceding *i*. [órá] 'tongs', [móiyò] / [móiyò] 'mother (direct address)'.

The low central vowel *a* has two variants: [a] occurs in all positions and fluctuates with [ʌ] word final. [áí] 'bird arrow', [émířá] / [émířʌ] 'flesh'.

2.3. *Tone*. High tone has the following variants: a single unstressed high between low tones is phonetically mid. High tone has higher allotones at the beginning of a pause group and lower allotones at the end of a pause group are influenced by a general falling intonation pattern.⁶ The final high tone of a series of highs within a word or pause group receives primary stress and is phonetically higher in pitch.

Low tone has the following variants: a single low between high tones is phonetically mid. Low tone has higher allotones at the beginning of a pause-group and lower allotones at the end of a pause-group.

2.4. *Stress*. Normally the first syllable of a word is stressed with secondary stress occurring on alternate following syllables. The following conditions (in addition to the one named above in section 2.3.) may disturb the normal stress pattern by causing either a stress shift or additional primary stresses (one or occasionally two to occur: the verb negative suffix *-ám* is stressed with high tone. A syllable carrying diverse tones receives primary stress.⁷

3. Phoneme Distribution

3.1. *In Syllable*. A syllable in Siane consists of a nucleus of one or two vowels (each of which carries one tone) with optional consonant onset, resulting in four

6. A general falling intonation pattern occurs over an utterance in conversation and over a pause group in narration. It is greatly exaggerated in utterances spoken in anger or great excitement, which may begin on extremely high pitch and end in low murmur.

7. It is expected that additional conditioning factors of stress patterning will be found on further study of higher level phonology.

possible patterns:⁸ V, *ú.ku* 'fish-hook'; VV, *ai.mó* 'himself'; CV, *kú.la* 'dog'; CVV, *mói.ta* 'rubbish'. Syllables are of relatively the same length in similar positions in the word whether the syllable nucleus is V or VV, due to a timing feature in which each word within a pause group takes nearly the same length of time regardless of the number of syllables it contains. Within a word, the length of each syllable is conditioned by its internal structure (i.e. length variants of consonant and/or vowel (s) and by the total number of syllables the word contains. Thus within a word containing only one or two syllables, a syllable is longer than one within a word containing several syllables.

Any vowel may occur in either of the vowel slots of a syllable. Any consonant may occur in the consonant slot of a syllable.

Clusters of vowels, a mid or low vowel going to a high vowel, a low vowel going to a mid vowel, and geminate clusters occur: *áfoiya* 'bridge', *léedáe* 'morning'. In all cases of high vowel going to mid or low, and mid going to mid or low there is intervening y following front vowels or w following back vowels in the absence of any other consonant: *kíiyé* 'banana', *yúuwá* 'grass', *nówe* 'I eat'. A geminate vowel cluster carries only a diverse tone sequence, either high-low or low-high, since contrast between single vowels and geminate vowel clusters carrying an identical tone sequence is neutralized by factors of syllable dynamics discussed earlier in this section.⁹ *yoó* 'fire', *úufá* 'seed'.

3.2. *In Word.* Words of from one to eleven syllables using combinations of the four possible syllable patterns have been observed. Any vowel may occur word initial, medial, or final. Any consonant may occur word initial or medial. V and VV syllables occur only word initial.¹⁰

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8. The nasal of a prenasalized stop or the non-contrastive lengthening of a stop, fricative, or nasal often provides sub-phonemic syllable closure utterance-medially.
 9. It is probable that further study will reveal the occurrence of geminate vowel clusters carrying identical tone sequences, produced on the morphological level by reduplication.
 10. Several words have been noticed in which there appears to be syllable division between the two vowels of a diverse cluster. If further study bears this out, this would allow a V syllable word medially. In each case the normal stress pattern of the word seems to fall on the second of the two vowels rather than on the next following syllable. In each word in which this feature has been noticed, all or part of the word is a reduplication, and the stress and syllable division falls on the beginning of the reduplicated part of the word. This suggests the possibility of an existing phonological unit between the levels of syllable and word.