

Word Games: Some Implications for Analysis of Tone and Other Phonological Constructs

JEAN-MARIE HOMBERT

INTRODUCTION

Word games have always been of interest to linguists because they represent an unusual sociocultural use of language. Nevertheless, from the very first articles on this phenomenon it has been recognized that word games can also assist the linguist in the task of discovering the structure of the language using them (see, e.g., Chao 1931, 1934; Conklin 1956, 1959; Haas 1957, 1969; Halle 1962; Burling 1970; Sherzer 1970, 1976; Bamgbose 1970; Laycock 1972; Hombert 1973; Surinramont 1973; Price & Price 1976). This latter aspect of word games received renewed attention in the late 1960s due to the greater interest in "psychologically real" accounts of language structure (Chomsky & Halle 1968, p. viii).

In this chapter I discuss some cases where word games can shed light on problems of phonological description, especially as these involve the issue of whether tone should be given a segmental or suprasegmental representation.¹ The possibility of inventing word games where none previously

¹This is an expanded and completely revised version of papers presented in 1973 at the Summer Linguistics Conference at University of California, Santa Cruz, and at the December Linguistic Society of America Annual Meeting in San Diego. Some of the data were also discussed in Hombert (1973).

existed, that is, using them to perform what might be considered controlled experiments, is also discussed as well as potential limitations of the data yielded by them.

WORD GAMES AND THE ANALYSIS OF SEGMENTS AND SYLLABICITY

In this section I illustrate the use of a naturally occurring word game in Bakwiri (a Bantu language, Duala group, Guthrie's A. 22), a language spoken on the southern slopes of Mount Cameroun. The game consists of inverting the position of the two syllables in disyllabic words.

Syllable Structure

CANONICAL FORMS OF SYLLABLES

Word games can help to define the canonical syllable structure used by a language. Given words of the sort in (1), one might wonder whether they should be syllabified as in the third or the fourth columns (where '\$' indicates syllable boundary).²

- (1) a. *məkə* 'plantain' *mə\$əkə* or *məkə\$*
b. *iqə* 'throat' *i\$iqə* or *iqə\$*

These words are transformed by the word game as shown in (2).

- (2) a. *məkə* > *kəmə*
b. *iqə* > *qə'i*

Considering these data, the Bakwiri syllable structure should be analyzed as (C)V or, as seen later, (C)V(V). Of course, this conclusion is based on the assumption that it is the syllables that are manipulated by the word game. If we do not make this assumption, we can at least conclude that (C)V sequences form some kind of psychologically accessible chunk in the language.

It is interesting to notice the appearance of the glottal stop in *qə'i*. In Bakwiri, glottal stops occur only before a vowel in word-initial position such that the phonetic form of the original is [*ʔiqə*]. These may escape the notice of the fieldworker whose native language makes glottal stops nonphonemic in this position, but they become obvious when the syllables are reversed in

²In this chapter the phonetic transcription follows the conventions of the International Phonetic Association. Tone is marked in three ways: with diacritics [' \ ^ ˇ] (signifying high, low, falling, rising, and mid tones, respectively); with the Chao tone letters (Chao 1930); and, where these prove inadequate, with parametric drawings of the pitch curve enclosed in square brackets. > is to be read "is transformed by the word game into."

the word game—yet another one of its uses for the phonologist. (This analysis is complicated by the fact that although the sequence [oɪ] does occur in the language, like other VV sequences, even with dissimilar V's, it seems to constitute a single syllable, as discussed below. Thus the glottal stop between the vowels in the transformed version might serve to preserve the disyllabic character of the word and as such could be inserted rather than lexical.)

THE ANALYSIS OF CLUSTERS

The only consonant clusters occurring in Bakwiri consist of nasals followed by homorganic voiced stops. This restricted distribution suggests that these clusters are phonological units. Their behavior in the word game confirms this analysis as shown in (3), where they are not broken up.

- (3) a. *kómbà* > *mbákò* 'to take care of'
 b. *kónà* > *ndíkò* 'rice'
 c. *zángò* > *ngózà* 'father'

Glides

One of the problems in the analysis of Bakwiri is establishing whether words such as those in (4) contain intervocalic glides or not.

- (4) a. *lijé* or *lié* 'stone'
 b. *lówá* or *lóa* 'excrement'
 c. *tèjí* or *téi* 'small'
 d. *mbówà* or *mbóa* 'village'

Phonetically, some sort of glide is present in all cases but one could argue that they are purely surface-level phenomena, that is, an automatic transition element: [j] after front vowels and [w] after back vowels. The word game provides a way to decide this issue, as shown in (5). Since the glide shows up in the transformation of (5a) and (5b), it is presumably not simply a surface-level element but is present at a deeper level.

- (5) a. *lijé* > *jèlí*
 b. *lówá* > *wáló*
 c. *tèjí* > *tèjí*
 d. *mbówà* > *mbówà*

On the other hand, the fact that (5c) and (5d) fail to undergo any transformation suggests that they are monosyllabic and that the glides that are heard are indeed transition elements. (Other phonological data reinforce this analysis. For example, the plural form of (5a) is [màjé] where the glide appears in a form and in an environment where it is less likely to be confused as a transitional element.)

Vowel Length

When a Bakwiri word with a long vowel is transformed by the word game, a curious thing happens, as shown in (6): The length is not transposed; it remains in the same place, even if it falls on different vowel quality.

- (6) a. *liùngá* > *ngààlú* 'stomach'
 b. *zéejá* > *jáázé* 'burn'
 c. *é zèè* > *zé?èè* 'it is not'

When a long or double vowel is formed by two different vowels, the native speaker was sometimes unable to apply the word game but in other cases gave forms such as that in (7), where the double vowels do move but still leave length behind.

- (7) *liðbá* > *βààlió* 'door'

The problem encountered by the native speaker in such cases can have two origins. Either it can be a difficulty in replacing a sequence of two different vowels by a sequence of two identical vowels, or, more probably, the speaker feels he is violating the length pattern of the word by putting a double vowel in a position where there was a single vowel before the transformation. These data seem to suggest that in Bakwiri the length pattern is a property of the whole word and consequently is not dependent on the segment(s) to which it is originally assigned. The same kind of pattern is reported by Conklin (1956, 1959) for word games in Tagalog and Hanunó as shown in (8a) and (8b), respectively, and in Sanga (8c) as reported by Coupez (1969).

- (8) a. *dooti* > *diito*
 b. *buuga* > *gaabu*
 c. *nkàámbò* > *mbòónkà*

TONE

The Segmental or Suprasegmental Status of Tone

An issue which has been hotly debated in modern phonological literature on tone is whether tone should be represented as a segmental or suprasegmental entity. Schachter and Fromkin (1968), Maddieson (1971), Fromkin (1972), and Woo (1972) argue for segmental representation. Pike (1948) and McCawley (1970, 1978) view the syllable as the domain of tone. Welmers (1962) claims that tone should be regarded as a feature of the morpheme in Kpelle. Edmondson and Bendor-Samuel (1966) present evidence for regarding the phonological word as the tone-bearing unit in Etung. More recent studies on a number of languages, generally African, have presented the same

view: Elimelech (1974) on Kru; Leben (1973) on Mende, Bambara, Maninka, and Hausa; Mazaudon (1972) on Tamang (a language of Nepal); and Goldsmith (1976) on Igbo. (See also Anderson 1978; Leben 1978; Goldsmith 1979.)

One argument for tone as a feature of the word in some of these languages is that the shape of the attested tone patterns is not dependent on the number of vowels or syllables a word has. For example, (9) exemplifies the entire inventory of tone patterns for monosyllabic and disyllabic words in Kru. Quite transparently, the disyllabic tone patterns are just expanded versions of the permissible tone patterns for monosyllabic words.³

(9) Monosyllabic		Disyllabic		
a.	<i>bá</i> [—]	'pepper'	<i>númó</i> [— —]	'wine'
b.	<i>kò</i> [—]	'rice'	<i>tàpè</i> [— —]	'cup'
c.	<i>jū</i> [—]	'child'	<i>kélè</i> [— —]	'inside'
d.	<i>sū</i> [—]	'chicken'	<i>kitā</i> [— —]	'coconut'

That is, there are just four tone patterns, and these are mapped onto the phonological word as the tone-bearing units permit.

The Behavior of Tone in Bakwiri Word Games

As the reader has no doubt already noticed from many of the examples cited, the tone pattern of disyllabic words in Bakwiri is not affected by the word game transformation. These patterns are shown in a systematic fashion in (10).

(10) a.	<i>mòkò</i>	>	<i>kòmò</i>	'plantain'
b.	<i>kʷéli</i>	>	<i>likʷé</i>	'death'
c.	<i>mòkò</i>	>	<i>kòmò</i>	'one person'
d.	<i>kʷéli</i>	>	<i>likʷè</i>	'falling'

As was true for the length pattern of words, speakers abstract the tone pattern as a property of the whole word, that is, without a particular tone being attached to a particular syllable or segment. This suggests that in Bakwiri tone is a suprasegmental feature.

It is interesting to note that in Thai and Burmese word games, reported by Haas (1969), the above pattern does not occur. In word games which consist of interchanging the finals (or 'rhyme') or two successive syllables, the tones move with the transposed segments, as shown in (11a) for Thai and (11b) for Burmese, respectively.⁴

³This is not the case for all Kru dialects (W. Welmers, personal communication).

⁴According to J. Gandour (personal communication), dialect-specific and even speaker-specific variation occurs with respect to treatment of tone in the Thai word game.

- | | | | | |
|---------|----------------|---|----------------|--------------|
| (11) a. | <i>kôn jàj</i> | > | <i>kàj jôn</i> | 'big bottom' |
| b. | <i>mí bòw</i> | > | <i>mòw bí</i> | 'fire place' |

This suggests that in these languages tone may best be analyzed as a segmental feature.

Invented Word Games

In order to explore further this difference between speakers of different tone languages in their ability (or readiness) to separate tone from the syllable and segments on which it is normally realized, I attempted to use the same word-game technique with speakers of other tone languages. Since other linguistic communities or individual speakers of those communities may not know the kinds of word games required, I invented two word games which I refer to as WG1 and WG2; the transformation(s) of disyllabic words in these games are defined in (12). Simply stated, WG1 transposes the rhymes of successive syllables, like the Thai and Burmese games discussed above; WG2 is the same as the Bakwiri game in transposing successive syllables.

- | | | | |
|-----------|-------------------|---|-------------------|
| (12) WG1: | $C_1 V_1 C_2 V_2$ | > | $C_1 V_2 C_2 V_1$ |
| WG2: | $C_1 V_1 C_2 V_2$ | > | $C_2 V_2 C_1 V_1$ |

Using invented word games brings this technique more into the mold of what is commonly considered an experiment in the sense that the phonologist creates the circumstances under which the hypothesis-testing observations may be made (see Ohala, 1975). Except for the nature of the response elicited, the overall format of the method to be described is not unlike the concept formation technique discussed by Jaeger (this volume).

If they did not already know these word games, I taught them to speakers of Bakwiri, Dschang (a Bamileke language spoken in Cameroun), Kru (spoken in Liberia and Sierre Leone), Mandarin, Cantonese, Taiwanese, and Thai. The first three are referred to as 'the African tone languages' and the latter four as the 'the Asian tone languages.' There was one speaker of each language except for Cantonese and Taiwanese, which had two each. To train subjects in these games, I used only simple syllable structure (CV, not CVV or CVC) and words having identical tones on both syllables. When subjects showed mastery of the manipulations required on these simple words, I then gave them the disyllabic words of interest (occasionally with more complex syllable structure than CV) to transform in the same way.

In general, the results from WG2 were quite consistent for speakers of both the African and the Asian tone languages (data from the Taiwanese speakers are discussed separately below). As exemplified in (13), the tone pattern was left unchanged by speakers of the African tone languages.

- (13) a. Bakwiri *k^wéli* > *lík^wè* 'falling'
 b. Dschang *àk^wè* > *k^wèā* 'bone'
 c. Kru *túwè* > *wétú* 'axe'

But apart from very rare exceptions which are discussed below, the tones were moved with the syllables by the speakers of the Asian tone languages; examples are given in (14).

- (14) a. Thai *p^hu* ∨ *jiŋ* ∟ > *jiŋ* ∟ *p^hu* ∨ 'woman'
 b. Cantonese *fɔŋ* ∟ *pin* ∟ > *pin* ∟ *fɔŋ* ∟ 'convenient'
 c. Mandarin *tɕ'i* ∟ *ma* ∟ > *ma* ∟ *tɕ'i* ∟ 'at least'

The treatment of words under WG1 was also consistent for the speakers of the African tone languages: the tones, again, were not moved when the vowels were interchanged. Examples are given in (15); see (13) for glosses.

- (15) a. *k^wéli* > *k^wíle*
 b. *àk^wè* > *èk^wā*
 c. *túwè* > *téwū*

However, the behavior of the speakers of the Asian languages was not so straightforward as it was for WG2. In Thai, the great majority of the forms elicited (70%) shifted tone with the shifted segments as exemplified in (16a), but for the rest, the tone remained in place as shown in (16b). (It should be recalled that this type of word game already has some currency among Thai speakers.)

- (16) a. *p^hu* ∨ *jiŋ* ∟ > *p^hiŋ* ∟ *ju* ∨
 b. *nam* ∟ *nom* ∟ > *nom* ∟ *nam* ∟

With Cantonese, half of the responses (from the two subjects) moved the tone and half did not as exemplified in (17a) and (17b).

- (17) a. *fɔŋ* ∟ *pin* ∟ > *fin* ∟ *pɔŋ* ∟ 'convenient'
 b. *ha:m* ∟ *tɕoi* ∟ > *hoi* ∟ *tɕa:m* ∟ 'salted vegetables'

For Mandarin the tone pattern was almost always left unchanged when manipulated by WG1; in a very few cases the tones were shifted; (18) is an example of the dominant pattern.

- (18) *tɕ'i* ∟ *ma* ∟ > *tɕ'a* ∟ *mi* ∟ 'at least'

The different treatment of tone under WG1 and WG2 by the speakers of the Asian tone languages is puzzling, and I have no definitive explanation for it. One possibility is that since in these tone languages tone does seem to be tied to the segments on which it sits (as demonstrated by the consistent results from WG2), somehow the tone is also associated with the initial con-

sonant whether syllabic or not, and when subjects are required by the word game to break up the initial and rhyme part of the syllable they sometimes keep the tone with this initial consonant and sometimes with the rhyme.

The different behavior of the speakers of the Asian and the African tone languages with these word games might be attributed not to inherent differences in the relation between tone and the syllables or segments on which they are realized but rather to the fact that in these Asian languages words tend to be monosyllabic as opposed to the polysyllabic tendency in the African languages. Speakers of the African languages might also shift tone if the transposed units were whole words. In order to try to control for this difference I included three types of disyllabic compounds in the items to be transposed by the speakers of the Asian tone languages: one set was compounds of two clearly distinct words, as in (19), a second set contained compounds which were "felt" to be single words, as in (20), and a third set consisted of artificial compounds of words which made very little sense together, as in (21). It was expected that if monosyllabism of words influenced speakers' behavior in the word games, then the first and the third sets would show a greater tendency to shift tones with syllables or segments than would the second set. As it happened, the first and second sets were treated uniformly in that tones were moved with the syllables and segments they were imposed on; some items from the third set, unexpectedly, were the only exceptions to this tendency during WG2.

- (19) a. Thai *mai* ∟ *ju* ∟
 b. Cantonese *ma:u* ∟ *mei* ∟
 c. Mandarin *hei* ∟ *gou* ∟
 (20) a. Thai *p^hu* ∨ *jiŋ* ∟
 b. Cantonese *ma:* ∟ *lau* ∟
 c. Mandarin *huo* ∨ *tɕ'e* ∟
 (21) a. Cantonese *ma:u* ∟ *fuŋ* ∟
 b. Mandarin *huo* ∨ *tɕu* ∟

These studies with invented word games represent a very preliminary effort. Nevertheless, the largely consistent behavior of the speakers with WG2 suggests that the psychological representation of tone may be different for speakers of the African and the Asian tone languages. The speakers of the African tone languages never shifted tone when the syllables were interchanged, whereas the speakers of the Asian tone languages exhibited variable behavior on this point. Although it is possible that a contributory cause of this difference between the two language groups is the dominant monosyllabism of the words or morphemes in the Asian tone languages as opposed to the polysyllabic character of words or morphemes in the African tone lan-

guages, this does not seem to explain all the differences. I conclude, then, that there is strong evidence that the word is the tone-bearing unit in the African tone languages but that, tentatively, tone may be a feature on a smaller unit in the Asian tone languages. Further investigations with more speakers are needed.

LEVEL OF APPLICATION OF WORD GAME RULES

When word games are used by linguists as a method of gaining insight into the native speaker's psychological representation of words, it is very important to know at what level the word-game rules apply, that is, whether at the surface phonetic level or at deeper, possibly lexical levels. Obviously, the import of the resulting data will be different if the game operates on the surface level rather than on deeper levels. If the word-game rules interact with other productive phonological rules, it is sometimes possible to determine the level of their application. This is the case when the above word games apply to Taiwanese compounds which are subject to tone sandhi. If we consider only the nonchecked tones, Taiwanese has five tones, listed on the left in (22). When two monosyllabic words form a compound, the first tone is changed into its sandhi form, listed on the right in (22). The tone of the second word is left unchanged.

(22)	high level	┘ > ┘
	high falling	┘ > ┘
	mid	┘ > ┘
	low falling	┘ > ┘
	mid rising	┘ > ┘

Examples of how WG2 operated on three Taiwanese compounds also subject to tone sandhi are shown in (23), (24), and (25). In each case (a) presents the lexical tonal representation (that is, the underlying form) in slashes and the normal phonetic form due to tone sandhi in square brackets, (b) gives the form after WG2 is applied, and (c) gives the presumed order in which tone-sandhi (TS) and the word-game rule apply such that (b) could be derived from the underlying form in (a).

- (23) a. /i ┘ su ┘/ [i ┘ su ┘] 'meaning'
 b. su ┘ i ┘
 c. / ┘ ┘ / --- (TS) ---> ┘ ┘ --- (WG2) ---> [┘ ┘]
- (24) a. /hue ┘ lui ┘/ [hue ┘ lui ┘] 'flower'
 b. lui ┘ hue ┘
 c. / ┘ ┘ / --- (TS) ---> ┘ ┘ --- (WG2) ---> ┘ ┘ --- (TS) ---> [┘ ┘]

- (25) a. /ku ┘ tshu ┘/ [ku ┘ tshu ┘] 'old house'
 b. tshu ┘ ku ┘
 c. / ┘ ┘ / --- (WG2) ---> ┘ ┘ --- (TS) ---> [┘ ┘]

Unexpectedly, the order of application of word-game rule and tone-sandhi rules were quite variable: tone sandhi first then word game in (23) and (24), but in (24) tone sandhi applied a second time. In (25), however, the word game applied before the tone sandhi. (See also the different results obtained by Hsieh, 1970, and Liao, 1972, in their tests of the productivity of these tone-sandhi rules on neologisms.) Whatever the reasons for this behavior, the point is that it is possible to tell the relative level at which the word-game rules apply.

CONCLUSION

I have attempted to show that word games, naturally occurring or invented, can be used to gain insight into the psychological representation of a language's phonology. This is illustrated by clarifying the structure and representation of syllable structure, glides, vowel length, and tone in Bakwiri and other languages. One of the more significant findings is that tone is a feature of the word, not the syllable or segment, in three African tone languages studied. It is tentatively concluded that this is not true in some Asian tone languages examined.

Naturally, information derived from word games is most valuable when one obtains consistent responses from many speakers and comparable results from different languages (which was not always the case in this study). The results of this study, though tentative, demonstrate that larger, more elaborate studies using this technique are worth the effort.

ACKNOWLEDGMENTS

Some of the experimental work reported here was done at the Phonology Laboratory, University of California, Berkeley, and was supported in part by the National Science Foundation.

I am deeply grateful to my informants for their great patience and willingness to subject their linguistic knowledge to my investigation and experimentation. I also thank Steve Baron, Bill Ewan, Larry Hyman, Hector Javkin, Boyd Michailovsky, John Ohala, and the members of the tone seminar at UCLA for their valuable comments on earlier versions of this paper. Thanks also to Baruch Elimelech and Martine Mazaudon for the use of their data on Kru and Tamang, respectively. I take responsibility for the content of the chapter.

REFERENCES

- Anderson, S. R. 1978. Tone features. In V. A. Fromkin, ed., *Tone: A linguistic survey*, 133-175. New York: Academic Press.
- Bamgbose, A. 1970. Word play in Yoruba poetry. *International Journal of American Linguistics* 36:110-116.
- Burling, R. 1970. *Man's many voices*. New York: Rinehart & Winston.
- Chao, Y. R. 1930. A system of tone letters. *Le Maître Phonétique* 45:24-27.
- Chao, Y. R. 1931. Eight varieties of secret language based on the principle of Fanch'ieh. *Bulletin of the Institute of History and Philology* (Academia Sinica) 2:310-354.
- Chao, Y. R. 1934. The non-uniqueness of phonemic solutions of phonetic systems. *Bulletin of the Institute of History and Philology* (Academia Sinica) 4:363-397.
- Chomsky, N., & M. Halle. 1968., *The sound pattern of English*. New York: Harper & Row.
- Conklin, H. C. 1956. Tagalog speech disguise. *Language* 32:136-139.
- Conklin, H. C. 1959. Linguistic play in its cultural context. *Language* 35:631-636.
- Coupez, A. 1969. Une leçon de linguistique. *Africa-Tervuren* 15:1-5.
- Edmondson, T., & J. T. Bendor-Samuel. 1966. Tone patterns in Etung. *Journal of African Languages* 5:1-6.
- Elimelech, B. 1974. On the reality of underlying contour tones (*Working Papers in Linguistics* 27), 74-83. University of California at Los Angeles.
- Fromkin, V. 1972. Tone features and tone rules. *Studies in African Linguistics* 3:47-76.
- Goldsmith, J. 1976. Autosegmental phonology. Bloomington: Indiana University Linguistics Club.
- Goldsmith, J. 1979. The aims of autosegmental phonology. In D. A. Dinnsen, ed., *Current approaches to phonology theory*, 202-222. Bloomington: Indiana University Press.
- Haas, M. R. 1957. Thai word games. *Journal of American Folklore* 70:173-175.
- Haas, M. R. 1969. Burmese disguised speech. *Bulletin of the Institute of History and Philology* (Academia Sinica) 39:277-285.
- Halle, M. 1962. Phonology in generative grammar. *Word* 18:54-72.
- Hombert, J.-M. (1973). Speaking backwards in Bakwiri. *Studies in African Linguistics* 4:227-236.
- Hsieh, H.-T. 1970. The psychological reality of tone sandhi rules in Taiwanese. *Papers from Regional Meeting of the Chicago Linguistic Society* 6:489-503.
- Jaeger, J. J. 1980. Testing the psychological reality of phonemes. *Language & Speech* 23:233-253.
- Laycock, D. 1972. *Towards a typology of ludlings, or play-languages* (Linguistic Communications, Working Papers of the Linguistic Society of Australia, Monash University) 6:61-113.
- Leben, W. 1973. The role of tone in segmental phonology. In L. M. Hyman, ed., *Consonant types and tone*, 115-149. Southern California Occasional Papers in Linguistics 1.
- Leben, W. 1978. The representation of tone. In V. A. Fromkin, ed., *Tone: A linguistic survey*, 177-219. New York: Academic Press.
- Liao, C. C. 1972. The psychological reality of tone sandhi rules in Taiwanese revisited. May 1972 *Monthly Internal Memorandum*, Phonology Laboratory, University of California, Berkeley, 24-30.
- Maddieson, I. 1971. The inventory of features. In *Tone in generative phonology* Research notes, vol. 3, nos. 2 & 3, 3-18. University of Ibadan.
- Mazaudon, M. 1972. Consonantal mutation and tonal split in six Himalayan dialects of Tibeto-Burmese. Paper presented at International Seminar on Anthropological Linguistics, Patiala, Punjab, 11-14 October 1972.

- McCawley, J. 1970. Some tonal systems that come close to being pitch accent systems but don't quite make it. *Papers from the Regional Meeting of the Chicago Linguistic Society* 6:526-532.
- McCawley, J. 1978. What is a tone language? In V. A. Fromkin, ed., *Tone: A linguistic survey*, 113-131. New York: Academic Press.
- Ohala, M. 1975. Nasals and nasalization in Hindi. In C. A. Ferguson, L. M. Hyman, & J. J. Ohala, eds., *Nasalfest. Papers from a symposium on nasals and nasalization*, 317-332. Language Universals Project, Stanford University.
- Pike, K. 1948. *Tone languages*. Ann Arbor: University of Michigan Press.
- Price, R., & S. Price. 1976. Secret play languages in Saramaka: Linguistic disguise in a Caribbean creole. In B. Kirshenblatt-Gimblett, ed., *Speech play*, 37-50. Philadelphia: University of Pennsylvania Press.
- Schachter, P., & V. Fromkin. 1968. *A phonology of Akan: Akuapem, Asante, and Fante* (Working Papers in Phonetics 9). University of California at Los Angeles.
- Sherzer, J. 1970. Talking backwards in Cuna: The sociological reality of phonological descriptions. *Southwestern Journal of Anthropology* 26:343-353.
- Sherzer, J. 1976. Play languages: Implications for (socio)linguistics. In B. Kirshenblatt-Gimblett, ed., *Speech play*, 19-36. Philadelphia: University of Pennsylvania Press.
- Surinramont, A. 1973. Some aspects of underlying syllable structure in Thai: Evidence from Khamnuan—a Thai word game. *Studies in the Linguistic Sciences* 3:121-142.
- Welmers, W. 1962. The phonology of Kpelle. *Journal of African Languages* 1:69-93.
- Woo, N. 1972. *Prosody and phonology*. Bloomington: Indiana University Linguistics Club.