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A PHONOLOGY AND MORPHOLOGY OF MIKASUKI

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A PHONOLOGY AND MORPHOLOGY OF MIKASUKI

By

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A mis padres y mi esposo

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SYMBOLS AND CONVENTIONS

Consonants

[ɸ] bilabial fricative

[ɣ] lateral fricative

[s] dental fricative

[š] palatal fricative

[c] dento-alveolar affricate

[č] palatal affricate

[ɤ] voiced velar approximate

[x] voiceless velar continuent

[ʕ] voiced pharayngeal continuent

[h] voiceless pharyngeal continuent

[ŋ] velar nasal

//N// nasal morphophoneme

/N/ neutralization of //m//, //n//, and //N//

/š/ neutralization of /š/ and /č/

Vowels

[ə] short, unstressed central vowel

[ʌ] short, stressed ventral vowel

[ɤ] unrounded [o]

[ɯ] unrounded [u]

/O/ neutralization of /a/ and /o/

Diacritics

/:/ vowel length

[·] 'half-long' vowel or consonant

/Ṽ/ nasalization

['] stress

[C̬] lax consonant

[lʷ] velarized 'l'

[N̥] voiceless nasal

[N̩] syllabic nasal

[ʔ] glottal stop

[C̚] unreleased articulation

[ ] phonetic transcription

/ / phonemic transcription

// // morphophonemic transcription

Pitch

/ˋ/ low pitch

/-/ mid pitch

/ˊ/ high pitch

Other

C any consonant

V any vowel

K any obstruent

L any sonorant

V CV syllable boundary

= stem boundary

- morpheme boundary

* non-occurring form

~ alternate form

, , infix boundary

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A PHONOLOGY AND MORPHOLOGY OF MIKASUKI

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Mikasuki is an Eastern Muskogean language spoken by approximately 74% of the 2,000 Florida Seminole, who live in the southern part of the state. While brief mention of the language was made in the 18th and 19th centuries, the bulk of descriptive studies has been written during the last twenty years. The present study, which includes a detailed phonological description and a morphological sketch, is the most extensive work to appear to date. It is based on data collected during five and one half months' residence at Big Cypress Reservation in south Florida and on work with various Mikasuki speakers off the reservation over a five-year period from 1972 until 1977.

Chapter 1 presents a brief history of the development of the Seminole, a description of the linguistic situation and bilingual education projects of the Seminole, and a survey of literature.

Chapters 2 through 5 contain the phonological analysis with emphasis on the suprasegmentals of pitch, length and stress.

The phonemic inventory of consonants and vowels, their distribution within the syllable and positions of contrast and neutralization are given in Chapter 2. The distribution of the three contrastive pitches, conditioned by phonological and morphological criteria, and the phonetic details of the realization of the contrastive pitches is given in Chapter 3. Chapter 4 is concerned with contrastive vowel length and nasalization. The distribution of stress in noun roots, and in inflected and uninflected verbs is given in Chapter 5.

Chapters 3, 4, and 5, and Appendix II also contain spectrographic data obtained from wide- and narrow-band spectrograms and average amplitude readings made from data taped in the field. These were used in the discussion of the phonetic realization of pitch, length, nasalization and stress.

The morphological sketch in Chapter 6 summarizes and expands the grammatical examples used throughout the study and points to areas needing further research. Also included are two texts in phonetic and phonemic transcriptions, with interlinear and free translations.

The three appendices contain a discussion of the Mikasuki alphabet, wide-band spectrograms comparing nasalized and non-nasalized vowels, and a list of a-stem and i-stem verbs.

CHAPTER 1
HISTORY OF THE SEMINOLE AND REVIEW OF LITERATURE

1.0 The Florida Seminole

Mikasuki is spoken by approximately 74% of the some 2,000 Florida Seminole; Seminole, the Florida dialect of Creek, by 23%; and English by the remaining 3%. Mikasuki and Seminole are classified as Muskogean, the great language family of the Southeast. The languages of this family are grouped in dialectal pairs, the Eastern languages being Mikasuki-Hitchiti, Creek-Seminole, and Alabama-Koasati. The Western languages are Choctaw and Chickasaw (Haas, 1941:54-55). All are spoken today except Hitchiti.

Although there are Seminole in Oklahoma and Florida, Mikasuki is spoken only in Florida. Creek is the language of the Oklahoma Seminole, and Seminole the Florida dialect of that language. Alabama is spoken in Texas, and Koasati in Texas and Louisiana. Chickasaw speakers live in Oklahoma today, and Choctaw speakers in Oklahoma, Mississippi, and Louisiana (Crawford, 1975:25-44).

The Florida Seminole live in the southern part of the state, from Lake Okeechobee south to the Tamiami Trail, west to Naples, and east to Fort Lauderdale and Miami. There are five reservations. Brighton is situated to the northwest of Lake Okeechobee, Big Cypress (composed of two adjoining reservations, one federal and one state) to the south of the lake in the center of the state, Hollywood (formerly

Dania) near Fort Lauderdale, and the 'Trail,' belonging to the Miccosukee Tribe of Florida, on the Tamiami Trail running between Naples and Miami. A small group of families is located in Immokalee, a rural community west of Big Cypress reservation. Other families live along the Tamiami Trail but not on the reservation; Seminoles also live in Naples, Miami, and other South Florida towns.

There are two separate Seminole tribal organizations--the Seminole Tribe of Florida and the Miccosukee Tribe of Florida. The people who live on the reservation located along the 'Trail' belong to the latter group, and the people of the Brighton, Big Cypress and Hollywood reservations to the former group. Thus the Seminole Tribe is composed of people who speak both Mikasuki and Seminole, which is usually called 'Creek' by the Indians themselves. This tribal division, made by people who share a common culture, was done for philosophical reasons. Miccosukees were more traditionalist and desired less contact with outsiders.

The Seminole Tribe is a bi-partite organization. The political entity, the 'Seminole Tribe of Florida,' is run by the tribal council. The economic entity, the 'Seminole Tribe of Florida, Inc.,' is headed by a board of directors. Both the board and the council have five members each, but the president of the board of directors is also the vice-chairman of the tribal council (Garbarino, 1972:87). The organization is as follows:

Tribal Council		Board of Directors	
Chairman	Vice-chairman	President	Vice-president
One representative from each reservation--Brighton, Big Cypress and Hollywood		One representative from each reservation--Brighton, Big Cypress and Hollywood	

People who are at least one-quarter Seminole are eligible for tribal membership; they are at the same time shareholders in the corporation.

Two different general sources of income are available to members of the tribe. Dividends are paid out of money earned by the tribal businesses, but the greater part of a person's income comes from individual effort. Tribal enterprises include cattle and range management, leasing of reservation land for agriculture and mining, a tourist center called Okalee Village located on the Hollywood reservation, a credit union, a loan program and a cattle ranching operation. Individual Seminole work in these tribal projects as managers, directors, salespeople, secretaries, and clerks. Other tribal organizations providing jobs are the Indian Health Board, the Headstart and Hot Meals programs, the Tribal Housing Authority, the Utilities Commission and the Alligator Times, the tribe's newspaper (Tribal Organization Chart, July 1974).

Individuals may also do craft work, field or ranch work at farms near the reservations, or teach at Ahfahkee Day School and the Adult Education Program at Big Cypress. One person is an 'Avon Lady.' Contrary to popular opinion, 'very limited numbers, less than 3%, are recipients of state-federal welfare' (Fairbanks, 1973:50).

There is a great contrast between life at Hollywood reservation and at Big Cypress reservation, although their populations are about equal. The former is the seat of tribal government and the headquarters of the local representative of the Bureau of Indian Affairs. It is also an urban reservation, located between U.S. 441 and the Sunshine State Parkway. Tourism is encouraged. The Seminole who work for the tribal government live on the reservation or in the vicinity, and their lives are similar to those of their non-Indian neighbors across the street. Hollywood people have a great deal of contact with the outside world and are accustomed to it.

Big Cypress is located about two hours' drive from Hollywood. It is reached by taking 'Alligator Alley,' as State Road 838 is called. Approaching from the east one turns off the double-lane toll road onto Snake Road, which winds north through vistas of sawgrass with hardwood hammocks (raised land on which trees taller than the surrounding sawgrass can grow) protruding roundly on the horizon. White cattle egrets probe the grass beside the road, and flocks of white ibis, ducks, and wood ibis, called /yǒstákwī/ 'dried-up heads,' soar overhead. An occasional swallow-tailed kite, the /hâcfálátkī/ 'scissor-tail,' floats low over the marsh. Closer to the residential part of the reservation, cattle graze in improved pasture. Across the bridge over a large drainage canal cutting through the reservation, stand Ahfachkee Day School, the principal's house, the adult education trailer, and the trailers housing the day school teachers. Looming above is the green water tower. There are also several kinds of houses for Seminole families along this road:

cement block houses, trailers, traditional palm-thatched houses called 'chickees' (/čiki/ 'house'), and wooden frame houses with screened windows. The latter were built to overcome the feeling of being 'closed into' the cement block houses, and to approach the air-cooled comfort of the chickee, while still enabling people to have modern baths, kitchens, etc. Like the traditional camps, the frame dwellings of each family have separate buildings for cooking, sleeping and bathing. Past the school and the land management equipment compound are two small general stores, a baseball field, the building housing the hot meal program, and a circular road with more cement block homes and several duplexes along it. This miniature subdivision is the most densely populated part of the reservation. Surrrounding the reservation to the west and north are large ranches and agricultural lands. Forty-five miles to the north on the edge of Lake Okeechobee is Clewiston, a sugar-refining center, surrounded by cane fields. On weekends there is a general exodus from the reservation, with people going to Clewiston, or Immokalee to the west, for shopping, clothes washing, and amusement.

The people at Big Cypress are more wary of outsiders than the Hollywood people are, and outsiders are very conspicuous on the reservation. Few visitors come, although one of the stores stocks a small supply of handicrafts made for sale to tourists. Strangers are treated courteously but distantly. Voices are low, and eyes averted. This is Seminole politeness; it is rude to stare at the person with whom you are talking. A non-Indian coming to work on the reservation is also treated courteously, but formally until the person's character

is revealed. Joking and humorous comments become common once an outsider is accepted.

At Hollywood and Big Cypress, tribal and BIA employees wear the dresses, slacks, and shirts common to the general population, as do the school children. The same is true of Seminole teachers at Ahfachkee and the adult education program. However, it is common to see women wearing the traditional Seminole skirt at Big Cypress. Older women wear ankle-length skirts and some the net overblouse (/šompàtā:kī/). Younger women wear their skirts at just below knee level and only wear overblouses on special occasions. Men wear Seminole jackets on dress-up occasions, made by the same technique that is used in making the women's skirts.

Two specialties of the Seminole diet are frybread and sofkee, called /ok*i/ in Mikasuki. Frybread (/lapa:li/) is a round, flat bread made of self-rising flour and water fried in a frying pan with oil until it is splotched with gold. Sofkee is a drink made of corn. In the old days corn was parched and pounded with a mortar and pestle before being boiled to make the thin, lumpy drink. Today's convenience method uses store-bought corn meal and baking powder.

A typical meal consists of a starch, such as rice, beans or spaghetti, fried or boiled meat, frybread, fruit, and a soft drink, fruit juice or /ok*i/. Large quantities of food are cooked, so that some can be saved for a later meal, and large quantities are served.

Most food comes from the grocery, but hunting and fishing provide some items. Deer is the favorite game, and ducks and other birds are

also hunted. One person mentioned that the white ibis, /o̅:lo̅:li̅/, is very tasty. Fish and turtles are caught in the canals. Rabbits are not eaten, because the meat is said to cause muscle cramps.

1.1 Methodology

The principal method used for the descriptive analysis of Mikasuki phonology is the one developed for the study of unwritten languages, exemplified by Pike's Phonemics (1947). Knowledge of this method has been gained by the author through field methods courses dealing with such diverse languages as Aymara, Korean, and Twi (an Andean language, an Asian language, and an African language, respectively). Examination of the suprasegmentals has been supplemented by acoustic analysis, using the sound spectrograph to obtain wide and narrow band spectrograms, and average amplitudes. Generative phonological studies of prosody, such as Woo (1969), and stratificational studies of neutralization, such as Sullivan (1977), have also been used in the phonological analysis.

The grammatical sketch found in the last chapter is also descriptive. Its organization is based on the grammatical structure of Mikasuki itself. The outline proceeds from the smallest morphological building blocks, roots and affixes, through the less complicated nominal morphology to the complex tense/aspect system of inflected verbs.

The study of Mikasuki was begun at the University of Florida in the fall of 1972 in an advanced field methods course. The Mikasuki speaker was available for four hours of class elicitation each week,

plus outside private sessions. This study continued until March 1973. During the 1973-74 academic year, papers on Mikasuki were written as part of the course work leading to the preliminary examinations. Full-time field work with a Seminole family in Naples, Florida, was done from July to December 1974. In January 1975 the author moved to the Big Cypress reservation to continue data collection. During this time she also assumed the directorship of the Seminole bilingual project at Ahfachkee Day School. Five and one-half months were spent on the reservation. Between the summer of 1975 and the fall of 1977 periodic visits were made to the reservation to collect further information.

The data collected include tapes of stories and legends, analysis of these tapes, frame sentences and word lists used in the phonological analysis of pitch, field notes, and the translations of several children's songs and a poem into Mikasuki. Many people have helped with this work. They include the source person for the initial field methods course, and people living in both Naples and at Big Cypress. In the list below, the first three people are the principal sources; they participated in hours of elicitation sessions and made many of the tapes. Visits with their friends and relatives have also contributed to the data. The author is also grateful to the people she met as the director of the bilingual project; they helped not only with linguistic matters but also with her stay on the reservation:

J.F. Male, 21, residence Gainesville, Big Cypress and Immokalee, bilingual in Mikasuki and English, attended the University of Florida and Lake City

Community College, learned English in elementary school

C.C.J. Female, 23, residence Big Cypress, bilingual in Mikasuki and English, completed eighth grade, learned English in elementary school

T.J.O. Female, 27, residence Big Cypress, bilingual in Mikasuki and English, GED (high-school equivalence) and bilingual education workshops, learned English in elementary school

T.O. Female, 46, residence Naples, bilingual in Mikasuki and English, secondary education, learned English in school

J.O. Female, 68, residence Naples, monolingual Mikasuki speaker with some passive knowledge of English

B.O. Female, 14, residence Naples, bilingual in Mikasuki and English, in junior high school, learned English at school

N.S. Female, late twenties, residence Miccosukee reservation, bilingual in Mikasuki and English

S.J.C. Female, 15, residence Big Cypress, bilingual in Mikasuki and English, in junior high school in Clewiston, learned English in school

M.C.B. Female, 41, residence Big Cypress, monolingual Mikasuki speaker with an understanding of some English

L.O. Female, 27, residence Big Cypress, bilingual in Mikasuki and English, secondary school education, workshops in adult education, learned English in school

D.B. Female, 32, residence, Big Cypress, bilingual in Mikasuki and English, GED, on-the-job training and conferences in food service, learned English in school

R.B. Female, 9, residence Big Cypress, bilingual in Mikasuki and English, in Ahfachkee Day School, learning English in school

L.J. Female, 33, residence Big Cypress, bilingual in Mikasuki and English, GED, workshops in bilingual education, learned English in school

J.C. Female, 19, residence Big Cypress, bilingual in Mikasuki and English, GED and some college courses at Nova University, bilingual education workshops, learned English in school

S.J.B. Female, 75, residence Big Cypress, monolingual in Mikasuki

S.T. Male, 18, residence Big Cypress, bilingual in Mikasuki and English, secondary school, learned English in school

1.2 Outline of the Study

This study investigates the phonology of Mikasuki, the language of about 74% of the Florida Seminole, with particular attention paid to the suprasegmentals: pitch, vowel length, nasalization and stress. The emphasis on the suprasegmentals serves three purposes. First, understanding of this aspect of the language is essential to any grammatical analysis of the language, especially of the tense/aspect system of verbs. Pitch, stress and nasalization, and their position within the inflected verb are just as important as the affixes in the Mikasuki tense system. Secondly, the Muskogean language family, to which Mikasuki belongs, has several languages in which pitch has been shown to be significant, namely, Creek, Alabama, and Choctaw. Comparative and historical analysis of the language family needs as much prosodic information as possible to further understanding of inflected verbs. Finally, the investigation of the Mikasuki suprasegmentals adds to the linguistic fund of knowlege concerning prosodic systems in general. In phonological theory, pitch has been studied relatively less than segmental phonology. Furthermore, of all the prosodic systems found in the languages of the world, the pitch-accent languages, of which Mikasuki is one, have been the least studied. Therefore, the prosodic analysis of Mikasuki adds to the knowledge of the language itself, furthers the analysis of the Muskogean language family, and amplifies the knowledge of prosodic systems.

Chapter 1 contains a short history of the development of the Seminole people, and a survey of literature pertaining to the linguistic

analysis of Mikasuki and Hitchiti. Chapter 2 presents the phonemic inventory of consonants and vowels, their distribution within the syllabic structure of the language, and their positions of contrast and neutralization. Chapters 3, 4, and 5 are concerned with the supra-segmentals. Contrastive pitch on noun and verb roots, and the phonetic variants of the three contrastive pitches are presented in Chapter 3. Chapter 4 details the phonemic and phonetic aspects of vowel length and nasalization. Contrastive stress on roots, the distribution of stress with reference to syllables, and the acoustic phonetic details of stress are given in Chapter 5. Finally, the morphological sketch in Chapter 6 summarizes and expands the grammatical examples used throughout the other chapters and points to areas needing further study.

1.3 History

The descendants of the small group of Indians who survived the Seminole wars of the nineteenth century, the Florida Seminole, live in the tropical flatlands and glades of south Florida. They speak two languages, Mikasuki and Seminole; they have two separate tribal organizations and they live on four reservations; and yet, despite their diversity, they have a common culture. This simultaneous unity and diversity is the heritage of their ancestors, the Hitchiti- and Creek-speaking people of the Creek Confederacy. An examination of the events which produced the Seminole will illuminate some of the reasons for their present circumstances.

The account is divided into seven periods: the pre-European period, the time before the Creek were much affected by Europeans (up

to about 1565); the pre-Seminole period, from the beginning of the disruption caused by European settlement until the depopulation of Florida (1565-1716); colonization, the repopulation of Florida by migration from the Creek Confederacy (1716-1763); separation, the time of the increasing independence of the Florida Seminole from the Confederacy (1763-1790); resistance and removal, the warfare against Europeans during the first two Seminole Wars, and the removal of the greater part of the remaining people to Indian Territory (1790-1840); withdrawal, the retreat to isolation in south Florida (1840-1880); and modern crystallization, the time of renewed contact with outsiders and the changes brought by this contact (1880-the present).[1]

1.3.1 The Pre-European Period (Pre-1500 - 1565)

As stated above, the Creek Confederacy is the root of Seminole social and linguistic organization.[2] The Confederacy was an association of people of various languages loosely banded together for purposes of defense (Crawford, 1975:37). This association arose, according to legend, from the migration of the Muskogee, the Alabama, the Koasati, the Apalachee, the Hitchiti, and the Mikasuki into the southeastern area from the north, west, and south. The core group consisted of the Muskogean-speaking peoples, but other groups from other language families, such as the Yuchi (Siouan), Shawnee (Algonkian), and Natchez (a language isolate with no identified related languages) were also members (Haas, 1945:69).

These diverse origins gave rise to a complex society. The basic societal unit was the talwa,[3] of which there were about fifty

at the height of the Confederacy. The talwa (plural: talwa-alki) was 'body of people . . . connected by heredity and tradition' (Opler, 1952:71). As a community the talwa owned its own land, and public and ceremonial buildings. Its population might range from 100 to 1,000 people living in extended, matrilocal, matrilineal families. A talwa contained from thirty to one hundred houses (Spencer, Jennings et al., 1965:420). Membership in the talwa was inherited through one's mother. As a governmental unit each talwa had a body of officers and could act independently in civil and military matters. Depending on the origin of a particular talwa, the primary intra-talwa language might be Hitchiti, Yuchi, Alabama, Muskogee, etc., but all non-Muskogee-speaking talwa-alki used Muskogee as a lingua franca for communication with outsiders.

It can be presumed that the people speaking the 'minority languages,' such as Hitchiti, were bilingual (Haas, 1945:69), while the speakers of the dominant language, Muskogee, had no need to be unless they were powerful leaders. In that case, multilingualism would have been a useful tool for rallying support among the many talwa-alki. Such was the dominance of Muskogee that some talwa-alki lost their own languages and adopted Muskogee. Tukabahchee, a Shawnee-speaking talwa, and various Hitchiti-speaking talwa-alki were supposed to have done this (Sturtevant, 1971:96).

In this society an individual would be born into a particular talwa, and would at the same time acquire membership in the clan of the mother. The clan system bound the rather loose-jointed Confederacy

together, because clan ties extended outside the talwa (Opler, 1952: 172). So, for example, a person visiting another talwa could find hospitality in the camp of a fellow clan member.

However, not all clans were represented in all the talwa-alki of the Confederacy. In 1928, Swanton gave a list of fifty clans which had existed in the southeast. Apparently as new talwa-alki entered the Confederacy they brought new clans with them (Swanton, 1924-25b:267). Thus the clans found in one talwa might differ from those of another.

Broadly speaking, the basic societal unit of the Confederacy, the talwa (and by implication the various families living together in it), and the intra-talwa language can be called 'localizing factors,' which focused the view of the individual on the immediate society. Day-to-day activities and ceremonies were organized within the talwa. In addition, in the talwa-alki using minority languages, speech also bound the people to their local group rather than to the Confederacy as a whole. 'Integrating factors,' which extended the view beyond the local scene, were the clans and the Creek culture, which all the talwa-alki had more or less in common. During the course of history and the development of the Seminole, it seems that local interests have had a stronger hold on the individual. Evidence of this is the preservation of languages spoken by relatively small groups of people, and the relative lack of success of attempts, both historical and recent, to impose an organization on the Seminole above the local level. The futile search for one 'chief' of all the Seminole for treaty-signing purposes is another example of the loose-knit organization inherited from the Confederacy.

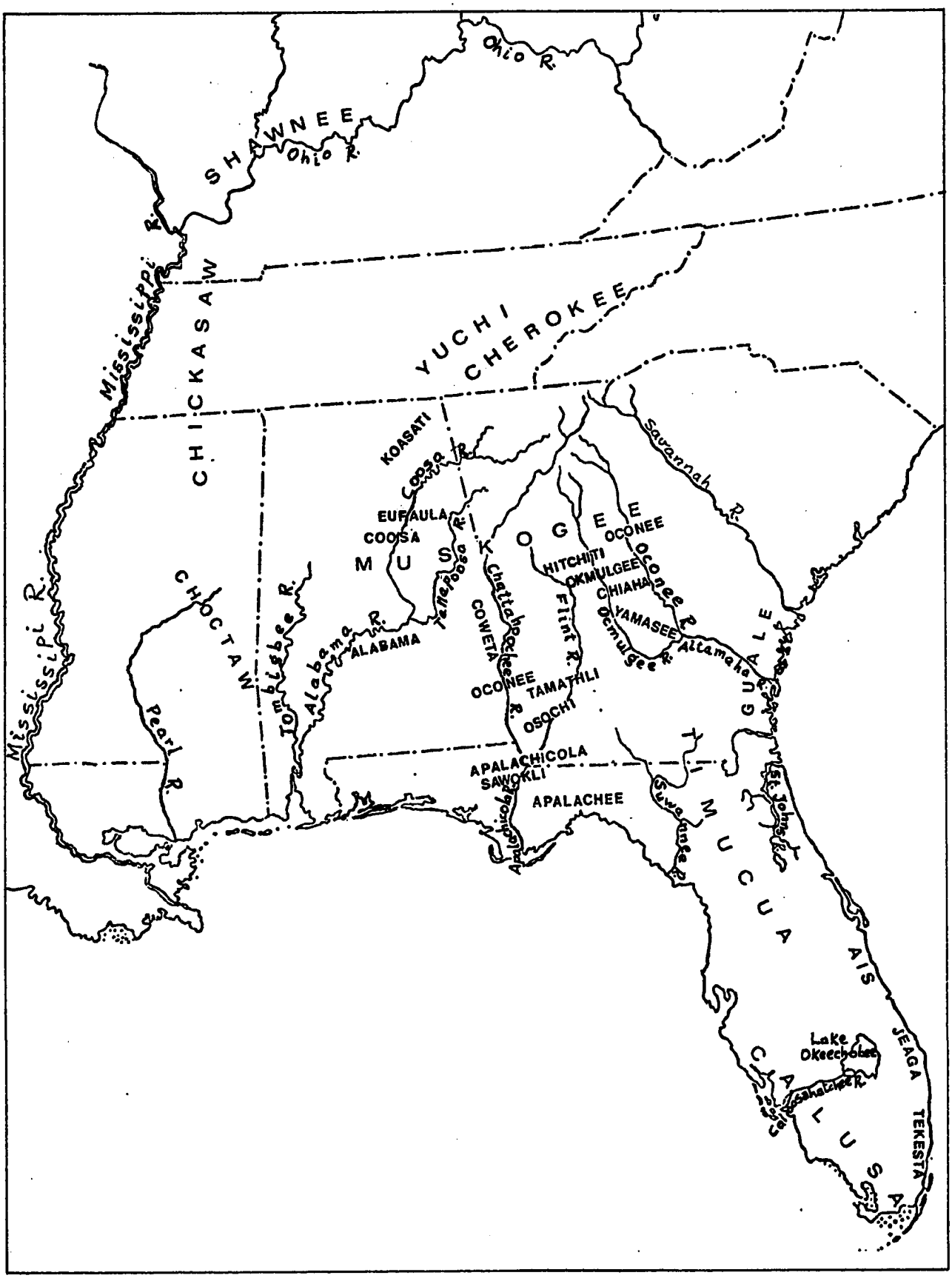
The Muskogee (or Creek, as they later came to be called) and their allies in the Confederacy were little disturbed by early European exploration before the 1550s, although de Soto passed through the Southeast around 1541, and information about European activities, such as slaving, probably filtered north. Closer contact with Europeans and the concomitant changes and disruptions began in earnest in 1565 with the founding of St. Augustine on the east coast of Florida. This event ends the pre-European period and ushers in the pre-Seminole period.

1.3.2 The Pre-Seminole Period (1565-1716)

St. Augustine became the nucleus for Spanish exploration, missionizing and military activities. Spanish influence spread out from this base, and was greatest from about 1600 until 1700. North of St. Augustine the earliest missions were begun among the local Indians, the Guale, around 1566. These were a Muskogean-speaking people who were apparently only marginally associated with the Confederacy. They revolted against the Spanish in 1597, the first Indians to do so, and were put down. Missions survived in the area until 1680. The Timucua of Florida and southern Georgia were also collected into missions by the Spanish padres in the late 1500s; by 1633 the subjugation was complete, and Spanish attention turned to the Apalachee in western Florida.

The Apalachee were important to the Spanish for several reasons. The first was their strategic location in west Florida. The Apalachee missions served as a stop-over on the route between the Pensacola

Figure 1.1 The Southeast around 1650 (after Swanton, 1946, map 1)



settlement to the west and St. Augustine in the east. Cattle herds and agricultural products from the Apalachee missions helped to support St. Augustine. In addition the Apalachee and their attendant missionaries were a barrier to 'foreign,' i.e., European, intervention in Spanish Florida (Fairbanks, 1957:74). The Apalachee, however, found little advantage in their relations with the Spanish. They were forced to work in Spanish fields and on Spanish cattle ranches. They were also 'press-ganged' and sent to work on the new fort, El Castillo de San Marcos, in St. Augustine. There were two revolts, one in 1638 and a second in 1647. These revolts were quashed; in the second the Spanish were aided by a Spanish faction among the Apalachee themselves. This type of factionalism among the Indians of the Confederacy would become a regular feature of Indian-European relations; 'when it began among the Creeks north of Apalachee it became one of the primary sources of the Seminole nation' (Fairbanks, 1957:17). It also became a tactic of the Europeans, who used it to keep the various Indian groups, pro-Spanish, pro-British, pro-American, etc., divided among themselves.

The history of the Apalachee is pertinent to the later development of the Seminoles in another way. During the years 1659 to 1675, four new missions were set up in Apalachee territory. However, presaging later developments, these settlements were not composed entirely of Apalachee, but of mixed Apalachee, Yamasee, Tamathli, Caparaz, Amacano and Chine people (Fairbanks, 1957:77). The Seminoles were later formed from such a heterogeneous mixture.

The Guale, the Timucua and the Apalachee, in addition to other Florida tribes such as the Calusa, the Ais, the Tequesta and the Jeaga,

had been under Spanish influence for almost a century by the middle of the 1600s. Lack of resistance to foreign diseases, and losses due to revolts had begun to thin their ranks. The founding of the South Carolina colony in 1670 was the first step in a series of events leading to the completion of the destruction already being visited on the Florida people. This opened the way for the repopulation of Florida by the proto-Seminole (Cline, in Sturtevant, 1971:102).

Reacting to the forays of the aggressive Carolinians, the Spanish sought to extend their influence among the Lower Creek, who were mainly Hitchiti speakers. Moving up the Apalachicola River to its confluence with the Chattahoochee and the Flint, they contacted the Sawokli, the Apalachicola, the Osochi, one group of Oconee, and the Tamathli. Meanwhile the Hitchiti, Ocmulgee, Chiaha, Yamasee, and a second group of Oconee who were living on the Oconee and Ocmulgee rivers in central Georgia were being visited by Carolinian traders and slavers. Also at this time some Lower Creeks moved north from the Chattahoochee to the Ocmulgee in order to escape the Spanish and to be able to trade with the Carolinians (Fairbanks, 1957:85). Elements of all these people, disturbed by Spanish and English activities in their areas, would eventually contribute to the formation of the Seminole.

All of the Indian groups, but especially the mission Indians, suffered from their association with Europeans. Some Apalachicola mission towns were destroyed by the Spanish for accepting the attention of English traders (Smith and Gottlob, 1978:7). The Carolinians encouraged slave raids on all the Spanish missions by the Cherokee,

Yamasee and Lower Creeks. Destruction by the English and their Indian allies of the Guale, Timucua and Apalachee culminated in 1703-4 with Colonel Moore's invasion and conquest of the Apalachee area with his fifty Carolinian volunteers and 1,000 Creek support troops (Swanton, 1922:120). Many Apalachee who were not killed were taken back to South Carolina as slaves.

The collapse of the Apalachee missions left the area open to the southward migration of the Indians who had previously made war there--the Hitchiti, Oconee and other Lower Creeks. The Yamasee War of 1715, instigated by Emperor Brim of Coweta (a Lower Creek) against the English in South Carolina, failed as an attempt to eliminate the Europeans, but it initiated further southern migration toward the Chattahoochee and Flint Rivers. The Lower Creeks living on the Oconee and Ocmulgee rivers near the Carolinians feared reprisal. Lower Creek migration into Florida was also encouraged by the Spanish, who sent Diego Peña on three expeditions to the Hitchiti, Yuchi, Sawokli, Oconee, and even the Upper Creeks in 1716, 1717 and 1718 (Fairbanks, 1978:165). The Yamasee and the Apalachee who had been enslaved by Moore and taken north fled to the vicinity of St. Augustine. Thus the period of Indian repopulation of Florida began.[4]

1.3.3 The Colonization Period (1716-1763)

Instability in north Florida was heightened by the founding of the Georgia colony in 1732. This brought the English even closer to St. Augustine, and to the Lower Creeks who had moved south to get away from the Carolinians (Fairbanks, 1957:20-21). In addition to the

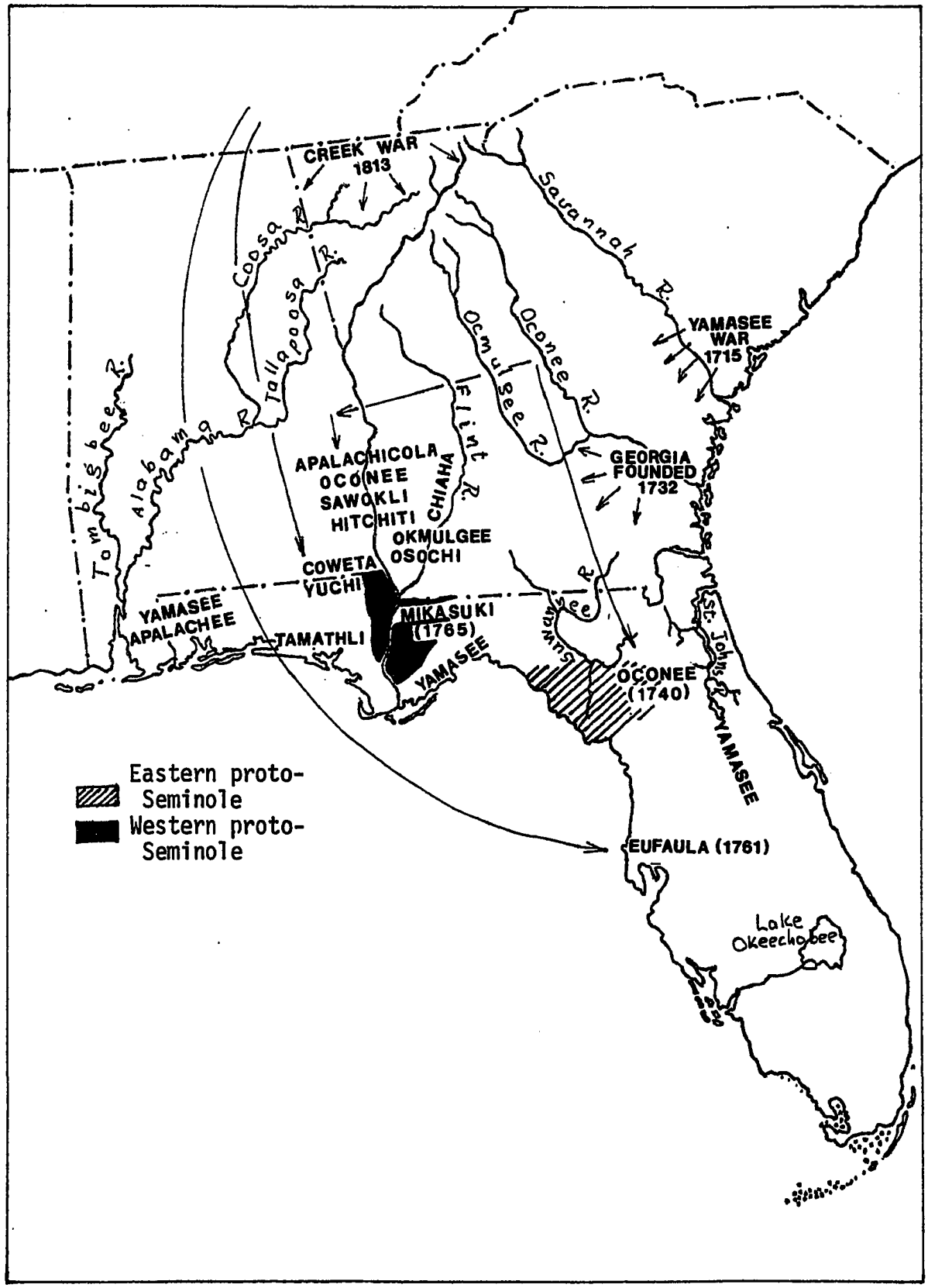
pro-Spanish factions among the Creek now moving into Florida, there were also anti-British factions going in the same direction. By 1738 there were reports of Lower Creeks in the Alachua area (possibly Cowkeeper and his Oconee), while Spanish factions of Hitchiti speakers were settling in Apalachee (Fairbanks, 1957:120). There was a third settlement of Hitchiti speakers in the Lake Miccosukee area near Tallahassee (Fiarbanks, 1978:167). The English and Spanish continued their Indian diplomacy, the Georgians making treaties with the talwa-alki on the Chattahoochee, and the Spanish setting up a trading store in Apalachee.

The proto-Seminole who were in Florida at this time lived apart from the Spanish and the English; aspects of Seminole culture which date from this period were an adaption to a more southerly climate, and not to European ways (Fairbanks, 1978:169). The desire for separation, dating back to pre-Florida experiences, has endured throughout Seminole history until the present. Linguistic change during this period would have reflected this situation. As is the case today, there were probably relatively few loan words from European languages; new items would be designated by shifts in the meanings of Muskogean words or by compounding.

In 1740, Oglethorpe, the governor of Georgia, laid seige to St. Augustine, and in 1742 the Spanish retaliated by invading St. Simon's Island (Fairbanks, 1957:123-124). Both sides depended on their Indian allies, the English on Upper and Lower Creeks and Cherokees, and the Spanish on the Yamasee. The raids were rather unsuccessful, but

Figure 1.2 Florida from 1750-1813

Source: Fairbanks, 1957:57-82; Swanton, 1946: map 1; Cline, 1974b: maps 3, 4, 5, 11



they introduced many Creeks to Florida. By 1750 there were Indian settlements in Apalachee (the western proto-Seminole) and Alachua (the eastern proto-Seminole). When England succeeded Spain as the government of Florida in 1763 the English learned of these settlements, and in their treaty-making soon discovered the increasing separation of the proto-Seminole from the Lower Creeks.

1.3.4 The Separation Period (1763-1790)

Linguistic evidence of the existence of a separate Florida group was the rise around 1763 of the terms Seminole and Cimarrón to refer to them. These words connoted a 'people who left settled towns (talwa) and settled in vacant lands' (Fairbanks, 1978:171). They did not mean 'wild' or 'untamed' as many writers have said. This usage appears in contemporary literature at the beginning of the separation period.

Seminole separatism was advantageous to the British, who practiced the principle of 'divide and conquer' on the Indians; it fitted their policies to treat the Lower Creeks and the Seminole as separate groups. The isolation of the Seminole from other Indians was also due to the abandonment of Florida by most of the last remaining aboriginal inhabitants, the Timucua, Calusa, Ais, Tequesta and Jeaga, many of whom left with the Spanish in 1763.

Cultural change was rapid during this period. 'The deerskin trade, the introduction of guns, and the increase of warfare all encouraged increased mobility and the breakup of the old settled agricultural villages; and the new diplomatic negotiations with Europeans

undoubtedly affected the Creek political system' (Sturtevant, 1971: 103).

Changes in the political system are perhaps demonstrated by the absence of town squares and council houses in some of the Florida towns, for these were the centers of political organization in the Creek talwa. The lack of a town square cannot, however, be totally accepted as proof of the simplification of the political system. A 'daughter' talwa, the offshoot of a principal talwa, did not have a square ground (Fairbanks, 1957:163). It may have been that Florida towns lacking squares were considered the 'offspring' of the Lower Creek talwa-alki for which they were named, or as the offspring of an older Florida talwa. Two of the more important talwa-alki did in fact have square grounds. Mikasuki, described in 1767 as 'the most important Seminole town in Florida' had one (Fairbanks, 1957:164), as did Cuscowilla, the town located near the Alachua savanna (Van Doren, 1955: 167).

The pattern of settlement in the Florida towns was different from that in the Confederacy. It was not as concentrated as it had been previously (Fairbanks, 1978:174-5). The trend toward simplification may have been due to the heterogenous nature of the new Florida towns. With refugees from various places, talwa traditions and organization could not be simply transferred, although the names of Creek talwa-alki were brought to Florida (Sturtevant, 1971:104).

The two Seminole population centers were located in the areas best suited to Indian agriculture--west Florida, near present-day

Tallahassee, and east Florida, near the Alachua prairie. The Seminole hunted and fished over most of Florida, however (Fairbanks, 1957:190). According to Bartram, a Philadelphia botanist who made several trips to Florida and the southeast, in 1774 there were at least nine major Seminole towns, from the forks of the Flint and Chattahoochee rivers all the way down to Caloosahatchee Bay (Fairbanks, 1957:172). The Seminole maintained their contacts with the Spanish even during the British occupation, and made trips to Cuba and the Bahamas (Fairbanks, 1957:171). They also had fairly good relations with the British, with whom they traded and from whom they obtained fine presents at treaty-signing 'parties,' so that when the British turned Florida back over to Spain in 1783 the Seminole were very unhappy. In the interest of preserving peace, and also to keep the Seminole between themselves and the ever-eager Georgians, the Spanish were forced to placate the Seminole by retaining the English firm of Panton, Leslie and Company to continue the trading posts. This arrangement was furthered by Alexander McGillivray, the Upper Creek/Scots war leader of the Creek Confederacy from 1783-1793. He hated the Georgians, and an allegiance with Spain not only afforded him trade, and possible military support, but also a safe retreat if the Georgians pressed too hard (Fairbanks, 1957:190).

McGillivray strengthened the Confederacy, including the Seminole, and treated with the Spanish, the English and the Americans with the intention of getting rid of all of them once the Confederacy had gained enough power. For a time McGillivray's Confederacy had

competition in the form of the State of Muskogee, a 'nation' which William Augustus Bowles, an Englishman married to a Lower Creek woman, tried to establish among the Lower Creeks (leaving out the Seminole) (Fairbanks, 1957:199). Before the failure of the state of Muskogee in 1792, Bowles induced Lower Creek towns on the Flint and Chattahoochee rivers to migrate to the St. Mark's/Apalachee area of west Florida. 'This, coupled with the Negro refugee towns in the area, created the focus of irritation that led directly to Jackson's march (and the First Seminole War) in 1818' (Fairbanks, 1957:199). McGillivray's united Confederacy did not survive his death in 1793, and lapsed into its former loose system of alliances. The Seminole went their own way once more.

By 1799, according to Benjamin Hawkin's report, there were seven Seminole towns in Florida, which were made up of people from Oconee, Sawokli, Eufaula, Tamathli, Apalachicola and Hitchiti (Sturtevant, 1971: 103). The Seminole talwa-alki of this time are classified according to language as follows (Sturtevant, 1971, note 4):

Language	Talwa
Hitchiti	Hitchiti, Chiaha, Oconee, Mikasuki; probably Tamathli, Sawokli, Apalachicola; possibly Yamasee
Muskogee	Coweta, Eufaula, and three others
Mixed Hitchiti and Muskogee	Possibly Tallahassee
Alabama	Yuchi; probably Chiska Taloofa
Yuchi	Possibly two towns

The Indian population in Florida also included remnants of the aboriginal Calusa, and of the Spanish mission Apalachee, and the imigrant Yamasee.

1.3.5 The Resistance and Removal Period (1790-1840)

By 1800 the Seminole were recognized as a group independent of the Creek Confederacy (Fairbanks, 1957:239). The term 'Seminole,' which had first applied to the eastern Alachua group only, was extended to apply to all the Florida Indians (Sturtevant, 1971:105).

Until about 1814 the Hitchiti speakers were the largest single language group among the Seminole, and Mikasuki was the chief town of the Florida people. But the Creek War of 1813-1814 (also called the Red Stick War because of the red-painted war sticks sent from town to town as a sign of alliance (Boyd, 1934-5:89), waged by Muskogee-speaking conservative Upper Creeks in an attempt to return to the way of life disrupted by the Europeans, changed this situation. The failure of this revolt brought many Muskogee-speaking refugees to Florida, for the Seminole had remained neutral in the conflict. The Upper Creeks were hostile to the Americans who had defeated them, and to the Lower Creeks, some of whom had fought on the side of the Americans. The influx of Upper Creeks made Muskogee the majority language of the Seminoles and increased the separation of the Seminole group from the rest of the Confederacy.

The hostility imported by the Upper Creeks was only one element of the very unstable condition of Florida at this time. Georgians continued their raids on the nearby towns, stealing cattle and carrying

off escaped black slaves. The Spanish were unable to prevent the depredations; in fact, they stirred up the Indians against the Americans, telling them that if the Americans ever controlled Florida, the Seminole would lose their land. British agents were also active in fomenting trouble by supplying arms and advice to Seminole hostile to the United States.

One cause of the First Seminole War was the group of blacks who lived among the Seminole in Florida, either in Seminole towns or in towns of their own adjacent to the Seminole communities. They were valuable allies, for they were familiar with European ways, and could serve as advisors and interpreters (Fairbanks, 1978:178). They also strengthened Seminole resistance toward the Georgians who were killing and capturing both blacks and Indians.

The unrest in Florida, the resistance of the western Seminole, who were especially influenced by Upper Creek immigrants, and the desire of the United States to acquire the Florida territory led to the invasion of west and north-central Florida by Andrew Jackson in 1818. With Jackson came Captain Hugh Young, who wrote a description of the Seminole towns the army encountered between the Suwanee and the Apalachicola. A notable feature of his memoir is Young's recognition that 'the Seminoles have among them three distinct languages--the Hitcheta, the Uchee and the Creek--and the names of the different settlements of these tribes are derived from their towns without indicating any difference either of language of customs' (Boyd, 1935; vol. 2:83). Young lists three large Hitchiti-speaking towns, one Yuchi town,

and seventeen Creek towns. Despite the discrepancy in the number of towns, the populations of Creek and Hitchiti-speakers were about equal. Mikasuki alone had about 2,000 inhabitants.

Jackson destroyed the 300 houses he found in Mikasuki, and houses in the other towns along his route. The young boy who would be known as Osceola was captured with a number of women and children in a town near the Suwanee, but all were released in an attempt to capture the men, who had escaped. Thus Osceola's war with the invaders would last nearly all his life. The results of this campaign were the destruction of the western Seminole towns, and the acquisition by the United States of the Florida territory from the Spanish. The Seminole became even more distrustful of the Americans and sought to move away from them farther into Florida. This move disrupted Indian agriculture; crops were destroyed in the old towns and the areas to which the Seminole migrated were not as fertile (Fairbanks, 1978:183).

The First Seminole War resolved none of the pressures which had produced the original outbreak of fighting. The Georgians continued their attacks on Indian and black towns, and eager settlers and speculators pressed for land cessions from the Indians. The Treaty of Moultrie Creek of 1823 was an attempt by the Americans to consolidate the Seminole in a central Florida reservation and thus gain access to the good Indian land in other parts of the territory. The settlement was very deleterious to the Indians. The climate and sandy central Florida soil were unfamiliar, and not suitable for Indian agriculture, inadequate provisions were made for trading stations, on which the

Indians had to depend for supplies, and the U.S. agents who were in charge of administration were inept (Fairbanks, 1978:183-185).

Researchers have tried to find the origins of the dichotomy between the Hitchiti-speaking and the Creek-speaking Seminole in the period between 1818 and 1823, but the results are inconclusive for several reasons. Muskogee was used as the means of communication with all outsiders; most of the non-Indians who came in contact with the Seminole did not realize that they also spoke other languages. Captain Young was one of the few exceptions. Attempts to locate the towns in which Hitchiti and Muskogee were spoken are also frustrating because of the vagaries of spelling common at the time, and of course, because of the travelers' unfamiliarity with the Indian languages (Sturtevant, 1971:107). In addition, the topography of Florida was little known, so that the geographic locations given for Seminole towns are not reliable (Fairbanks, 1957:242).

Tensions between the Seminole and the non-Indian inhabitants of Florida and Georgia mounted through the years following 1823, until the outbreak in 1835 of what is called the Second Seminole War. During the seven years of this guerrilla action, the population of the Seminole was reduced from about 5,000 people to 500 refugees in south Florida. Four thousand, four hundred and twenty people were deported to Indian Territory. A large number died during the fighting or as a result of the disruption of agriculture (Sturtevant, 1971:108). Talwa organization was destroyed; 'the Indians were forced to divide into small bands subsisting largely by hunting and gathering' (Sturtevant,

1971:109). The blacks associated with the Seminole maintained the relations established before the war; the two groups aided each other militarily, but remained separate otherwise. After the war, some of the blacks went to Indian Territory with the Seminole, some went to Andros Island in the Bahamas, and a few remained in Florida (Sturtevant, 1971:109).

1.3.6 The Withdrawal Period (1840-1880)

The attitude of the Seminole toward outsiders during this period is indicated by the fact that in 1841 at the Green Corn Dance 'a law was passed, that should any Indian, male or female, be found in communication with a white man, they should be put to death' (Sturtevant, 1953: 55). There was little contact with outsiders, other than for trade, and few descriptions of the Seminole are available for the time from 1840 until 1880. Therefore there is little record of the adaption of the Seminole to the South Florida environment. Changes in housing and dress, and in the social system as a result of isolation from whites and from other Indians is undocumented. The 'chickee' house and the matrilocal camp developed during this time (Fairbanks, 1973:187). Creek houses had been enclosed wooden cabins. The chickee represented the adjustment necessary in the warm subtropical climate of the Everglades. The camps consisted of a woman and her extended family, including her husband, her daughters and their families. In each camp were a cooking chickee, an eating chickee, and individual sleeping chickees for each nuclear family. Each camp also had a garden. From the years 1850 to 1865 the Seminole lived in about ten camps 'in six rough groupings

within an area about forty miles in diameter on the northern edge of the Big Cypress Swamp and south of the Caloosahatchie River' (Sturtevant, 1971:110).

Despite their isolation the Seminole came into conflict with the few whites in south Florida. In 1855 a party of surveyors destroyed a garden and scorned the Indians' objections. There was fighting and troops were brought in again. The Third Seminole War, which continued for three years, resembled the Second in the lack of success of the American army, the destruction of Indian camps and crops, the deportation of some Seminole to Indian Territory, and the failure of the U.S. to remove all the Seminole from Florida. The Seminole in Florida today are the descendants of the 200 survivors of this final war (Sturtevant, 1971:124). The remaining Seminole withdrew into the Everglades and Big Cypress Swamp. Their isolation was almost complete from about 1858 until around 1880, for there is little contemporary information from this period.

1.3.7 The Crystallization Period (1880-Pnesent)

Contact was reestablished with the Seminole around 1880. They were living in two groups, the Muskogee speakers to the east, north and west of Lake Okeechobee, and the Mikasuki speakers, 'the Big Cypress Indians,' on the northern edge of the Big Cypress Swamp and on the edge of the Everglades near Miami and Fort Lauderdale (Sturtevant, 1971:113). Social organization was the same as that found before the Seminole War. Camps were occupied by matrilocal extended families who hunted and cultivated small fields, and traded hides and skins for cloth, tools and

guns, canned goods, coffee, sugar and salt (Sturtevant, 1971:114). As in the Creek Confederacy, the ties of an individual were local, to the camp and family. This relative isolation helped to maintain the division of such a small group of people into two linguistic communities. Another factor was the terrain which made travel very difficult. Paralleling the linguistic division was the fact that the list of clans for the Muskogee and Mikasuki speakers was not identical (Sturtevant, 1971:115); intergroup marriage was apparently infrequent. Despite the numerical superiority of Mikasuki speakers, Muskogee was still used as the lingua franca. Muskogee words only are found in the trade jargon used by the Seminoles and whites until about 1920.

The opening of south Florida to land speculation caused dislocation of the Seminole population. The Mikasuki living near present-day Fort Lauderdale moved north and west away from the new Miami settlements. However, when the Tamiami Trail was built in 1928, linking Naples with Miami, camps from both Big Cypress and Miami were moved closer to the highway to take advantage of the tourist trade. These 'Trail People' were mainly Mikasuki speakers.

Outside attempts to organize the Seminole into either political or religious groups were not able to create any pan-Seminole organizations. In the 1930s three reservations were established, at Brighton, at Dania (now Hollywood), and at Big Cypress. Muskogee speakers lived mainly at Brighton, Mikasuki speakers at Dania and Big Cypress. Creek-speaking missionaries from Oklahoma who came to Florida in the 1940s caused a split between Christian converts and traditionalists among the

Seminole. This occasioned another population shift. Christians tended to settle at Dania and Big Cypress, traditionalists in off-reservation locations. The efforts of the U.S. government to establish one 'Seminole tribe' also failed. In 1958 the Seminole Tribe of Florida was created, which now has members living at Brighton, Hollywood and Big Cypress, and in Miami, Fort Pierce, Immokalee, and on the Tamiami Trail (Garbarino, 1972:87). In 1965 the Miccosukee Tribe of Indians of Florida was created; its members live on the Miccosukee reservation and at other locations along the Trail. There are also unaffiliated Seminole who belong to neither of these two tribal organizations.

In conclusion, the relative lack of success of organization broader than family and clan is perfectly congruent with the Seminole's past history. During the Confederacy, a person's primary allegiance was to family and talwa. Relations with clan members from outside the talwa and with political leaders representing the Confederacy as a whole were more infrequent. Today family and clan ties are still the most important local concerns of many individuals. Wider affiliation is reperesented by tribal membership, but formal participation in tribal business is not great, and is governed by family and clan considerations. This is exemplified by the importance of the clans in the election of tribal leaders (King, 1975).

As to the maintenance of two languages by a small population, this can also be seen as a continuation of tradition. The Big Cypress and Brighton reservations, and the Miccosukee reservation on the Trail have populations of around 300 people each. This number falls within

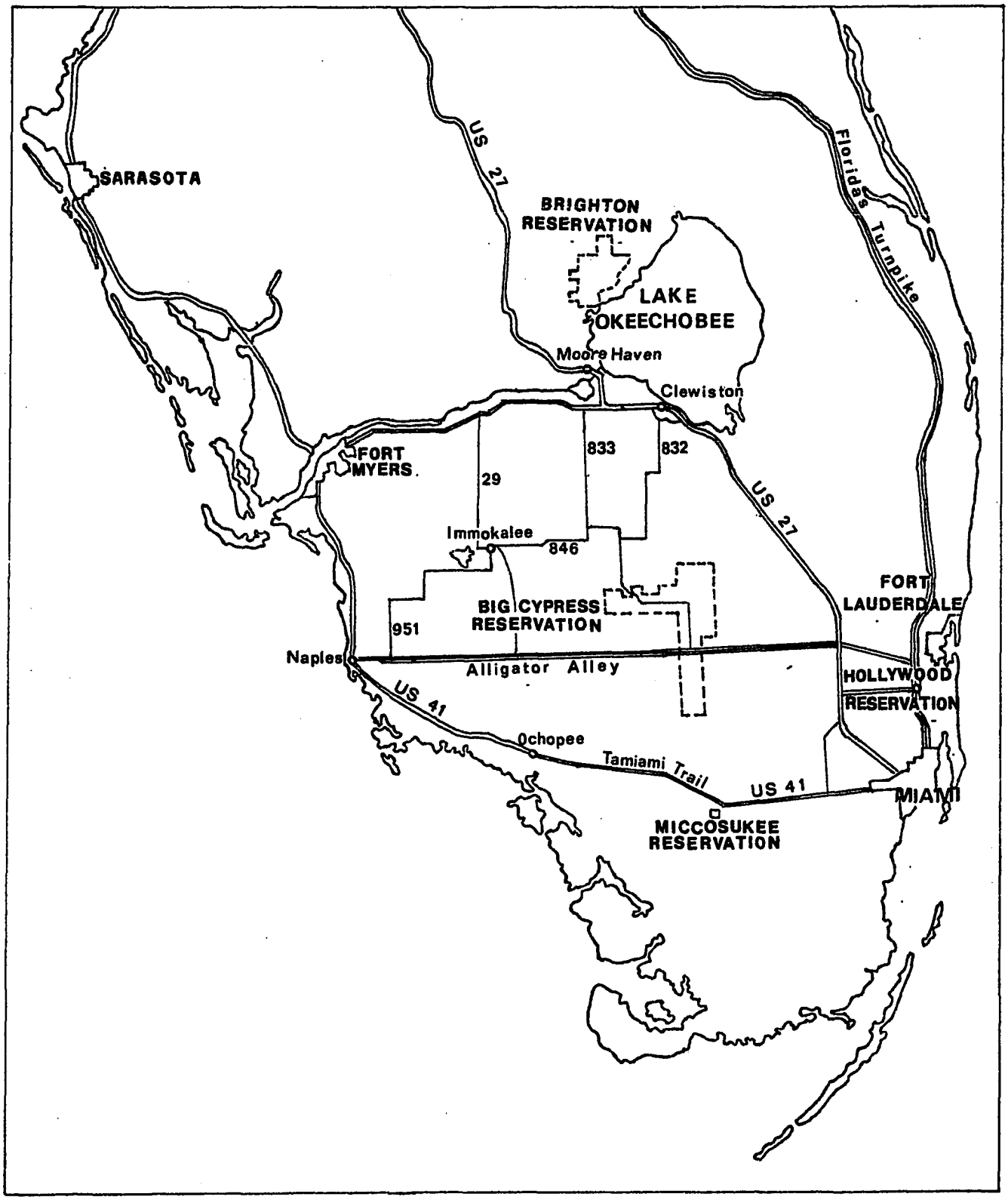


Figure 1.3 The Seminole and Miccosukee Reservations

the population range postulated for the Creek talwa, in which minority languages were maintained during the Confederacy. The lingua franca today is English rather than Muskogee, but the use of a local minority language within the modern analogue of the talwa continues. Thus the modern situation of the Seminole, with their division into small linguistic and political groups is the product of a set of cultural norms maintained through the turbulent history of the development of the Seminole.

1.4 Modern Linguistic and Educational Situation of the Seminole

The 1974 census of the Seminole Tribe includes information on language, clan affiliation, and reservation of residence, as well as the more usual census data on family, age, etc. Thus the census is useful for a brief linguistic survey of the group. It includes Big Cypress, Brighton, Hollywood and off-reservation Seminole. In turn this linguistic information has direct application to the discussion of the educational system, and of the two bilingual education projects in particular.

1.4.1 Linguistic Survey of the Seminole Tribe

In 1974 there are 1,215 people registered as members of the Seminole Tribe: 67% speak Mikasuki, 30% speak Creek (the Florida dialect), and 3% speak neither of these two Muskogean languages, but probably use English as their first language.[5] The distribution of speakers throughout the three reservations, and among the off-reservation people is as follows:

Number of Speakers of	Big Cypress	Brighton	Hollywood	Off-reservation
Mikasuki	303 (97%)	45 (16%)	268 (79%)	185 (63%)
Creek	5 (2%)	223 (83%)	61 (18%)	82 (28%)
English	2 (1%)	2 (1%)	12 (3%)	27 (9%)
Total:	310 (100%)	270 (100%)	341 (100%)	294 (100%)

The Big Cypress people are almost exclusivley Mikasuki-speaking, while the majority at Brighton speak Creek. The urban reservation at Hollywood has a slightly more heterogenous population, although Mikasuki is still the majority language. Of the off-reservation people, the majority speak Mikasuki, but the percentage of English speakers is higher than on any of the reservations.

The percentage of the number of speakers of each language in the total number of residents in each of these four groups is given in graph form below. This demonstrates the contrast between Big Cypress and Brighton on the one hand, where a majority speak either Mikasuki or Creek, and Hollywood and the off-reservation population on the other hand, where the proportions of Creek, Mikasuki, and English speakers are more similar to each other. Geographical location, and the concomitant amount of contact with outsiders is probably one cause of this situation. Big Cypress and Brighton are relatively isolated in rural areas, and contact with English speakers is limited. The amount of contact with English speakers at Hollywood, and at off-reservation locations is probably similar, because of Hollywood's urban situation.

Note: M. = Mikasukee, C. = Creek, and E. = English

There are thirty-eight families listed in the census in which the adults each speak a different language. Using these data it is possible to speculate on how the language of the adults and the language of the reservation will affect the language of the children. In the table below the languages of the adults and children are shown on the left, and the number of families (not individuals) of each type living at each reservation is shown on the right.

Adult Male	Adult Female	Children	B.C.	Brtn.	Hlywd.	Off-R.	Total
Ck.	Mik.	Mik.	2	5	4	-	11
Mik.	Ck.	Ck.	-	4	6	-	10
Ck.	Eng.	Eng.	-	3	-	2	5
Mik.	Eng.	Eng.	-	-	2	5	7
Ck.	Mik.	Ck.	-	1	-	-	1
Eng.	Eng.	Eng.	-	-	1	2	3
	Mik.	Eng.	-	-	-	1	1
			2	13	13	10	

Several conclusions may be drawn from these data. First, the language of the children is in almost all cases the same as the language of the adult female (relative or guardian), regardless of the language of the reservation on which the family lives, if the languages are either Creek or Mikasuki. This runs contrary to Sturtevant's assertion that 'linguistic affiliation is determined by propinquity rather than by descent' (1971:115). It is possible, however, that children living on a reservation where their home language and the reservation language differ either become bilingual in Creek and Mikasuki, or that English may be used among playmates.

A second conclusion is that language change, including a higher degree of bilingualism in a Muskogean language, and a shift toward a greater use of English, is occurring more rapidly at Hollywood and Brighton than at Big Cypress. More mixed-language families, both Creek- or Mikasuki-speaking families, and Creek-English or Mikasuki-English-speaking families, live at these two reservations than at Big Cypress. The prevalence of 'mixed' families at Hollywood is due to the fact that it is the tribal headquarters; Mikasuki and Creek speakers from other reservations are drawn there by employment.

A third rather obvious conclusion is that a higher percentage of families in which English is spoken at home is found living off the reservations. Six of these families live at either Brighton or Hollywood, and ten off the reservation. In twelve of the families English is spoken by the adult female and either Creek or Mikasuki by the adult male. In the census data there are no records of Muskogean-speaking women living in families in which the men speak English.

According to Sturtevant (1971:115) in the 1950s the list of clans found among Creek speakers and among Mikasuki speakers was not completely identical. This is still true today. The numbers of Mikasuki speakers and Creek speakers belonging to each of the clans is given below. 'Mikasuki' clans are those having a majority of Mikasuki speakers, and 'Creek' clans those with a majority of Creek speakers. 'Joint' clans are those whose members are both Mikasuki and Creek speaking.

Mikasuki clans:	Mikasuki	Creek
/fablihca:ɣi/ 'Wind'	70	0
/osa:na:ɣi/ 'Otter'	116	6
/nokosa:ɣi/ 'Bear'	27	0
Creek clans:		
/cinta:ɣi/ 'Snake'	3	50
/i:ca:ɣi/ 'Deer'	0	13
Joint clans:		
/kowa:ɣi/ 'Panther'	433	127
/fo:sa:ɣi/ 'Bird'	101	152

	Mikasuki	Creek
People with no clan:	10	17

People with no clan who do not speak a Muskogean language: 45

(Note: People whose mothers are not Indian have no clan.)

1.4.2 Education

One of the most important areas in which these linguistic data apply is in Seminole education. Only two of the Florida reservations have local schools. Ahfachkee Day School is located on Big Cypress reservation, and Miccosukee Day School is located on the Miccosukee reservation at Forty-Mile Bend on the Tamiami Trail. There is also an adult education program for teenagers and adults at Big Cypress. All three of these educational projects involve some degree of bilingual education.

The adult education classes are held in the 'Blue Trailer' adjacent to Ahfachkee School. Academic, vocational and craft classes are taught by non-Indian and Seminole teachers. Special emphasis is given to work leading to the 'GED' or high-school equivalency diploma. Instruction is individualized and students may come in on their own schedule. Foreign language credit for Mikasuki is given by a Mikasuki speaker hired as a language consultant. Taped material in Mikasuki and a newsletter written in English and Mikasuki have been prepared by the staff.

The organization of the Seminole[6] and Miccosukee[7] schools is similar. Due to the small number of students, approximately forty-five

at each school, classes are divided into an upper section and a lower section, with one head teacher and several teacher aides in each level. Grades kindergarten through seventh are offered in both schools. The head teachers were all English speakers in 1974 (although a Creek Seminole from Oklahoma began to teach at Ahfachkee in 1976); the teacher aides are Mikasuki speakers. Before the advent of the bilingual projects, classes were taught in English from English languaqe texts.

The performance of students under this monolingual approach was poor, and many students fell behind. Bilingual projects in both schools were instituted to try to remedy the situation. The Miccosukee program began in 1972, and the Seminole project in 1974.

There are two major differences between the approaches taken to bilingual education at the two schools. The first is the emphasis on different types of teaching materials. The approach used in the Seminole bilingual project is primarily oral. Tapes made by members of the Big Cypress and Immokalee communities are used in the classroom, accompanied by written exercises and illustrations made by the staff artist. There have been some written lessons in Mikasuki, but there has been no systematic program to teach reading and writing in the language. In the Miccosukee project on the other hand, one of the primary goals has been the production of a graded set of reading material in Mikasuki, together with graphics and a bilingual dictionary.

The second distinction between the two bilingual projects is that English as a second language is taught at Miccosukee, but not at Ahfachkee, although almost all the children in both programs enter

kindergarten speaking only Mikasuki. This forces the Mikasuki-speaking teacher aides at Ahfachkee to carry the responsibility for almost all the instruction in the early grades. The children learn to function in English, but they are not adequately equipped to handle the more difficult reading material of the higher grades. A survey of reading skills made in 1975 at the end of the school year at Ahfachkee showed third and fourth graders reading at second-grade level, and fifth and sixth graders at the fourth-grade level on the average. Another factor contributing to the low reading scores is the fact that much of the subject matter is outside the experience of the children, despite their superficial exposure to general American culture on television. In summary, the bilingual project at Miccosukee Day School includes the teaching of literacy in Mikasuki and English, English as a second language, and training in Seminole cultural values. The Big Cypress program concentrates on oral Mikasuki and the teaching of Seminole cultural values and crafts.

The emphasis at Ahfachkee on oral Mikasuki is a reflection of the traditional Seminole approach to education, in which memory training was highly valued. Medicine men, for example, underwent years of apprenticeship to learn Seminole medicinal practices; necessarily, all of this knowledge was memorized. At present the ability to remember accurately is still prized and the reliance of non-Indians on writing to aid recall is disfavored. The act of writing is disapproved for another reason. The Seminole feel that much of their Indian way of life is threatened by pressure from the dominant society.

Many believe that to write their language would be to expose it to the gaze of critical people. Furthermore, written stories and legends meant to be used in the local school might fall into the hands of unauthorized outsiders, who could use them for purposes the Seminoles would not approve. This feeling, and the tradition of small group autonomy, may be the reason that the materials developed for the Miccosukee bilingual project have not been made available to the Seminole bilingual project.

Even if written Mikasuki is not used at Ahfachkee, the children would benefit greatly from a program of English as a second language. The outline of a course in English phonology has been prepared by Kruse (1975). (Kruse, 1975, is reviewed further in Section 1.5.3.10 of this chapter.) It is based on a contrastive analysis of Mikasuki and English segmental phonology, and subscribes to the whole-word approach to teaching reading. This method introduces sounds within the context of words rather than as isolated sounds (Kruse, 1975:46). It also introduces regular English sound-spelling correspondences before irregular ones. English phonemes with analogues in Mikasuki are taught in syllabic positions similar to the positions within which they occur in Mikasuki.

The use of this outline for teaching English phonology, together with lessons in English syntax, would help to alleviate the present learning situation, in which the children are expected to learn to read in a language which they may understand only imperfectly. A project for the future is to make a set of lessons based on this

outline. However, a few comments on Kruse's proposals may be made at this point.

First, Kruse suggests using minimal pair drills for sounds which are contrastive in English, but non-contrastive in Mikasuki, such as [t,d], [k,g], and [ey,ay]. If these sounds are presented in the same lesson the first time they are introduced, this may reinforce their connection in the children's minds and obscure the fact that they must be distinguished in English. Such pairs should be presented sequentially, with the unmarked, unvoiced sound (in the case of the consonants) given first. Only after they have been introduced and practiced separately should they be contrasted in minimal pair drills.

Kruse proposes using two-syllable words in reading lessons rather than the one-syllable words which are common in beginning English readers because one-syllable words are rare in Mikasuki. The teaching of consonant clusters could be combined with this goal by introducing consonant clusters in compound words. This is an environment in which consonant clusters are frequently found in Mikasuki. This also forms a bridge from Mikasuki to English compound words. Children who are familiar with a compound such as /òhōn-kō:š-ī/ 'skirt' (/òhō:n-/ 'dress,' /kō:š-/ 'cut') will easily assimilate the structure of 'bla<u>ckb</u>oard.'

Finally, a more thorough contrastive study must be made of English and Mikasuki suprasegmental phonology. This will enable the teacher to understand the errors the students might make, and to be prepared to teach lessons in stress patterns and intonation in English.

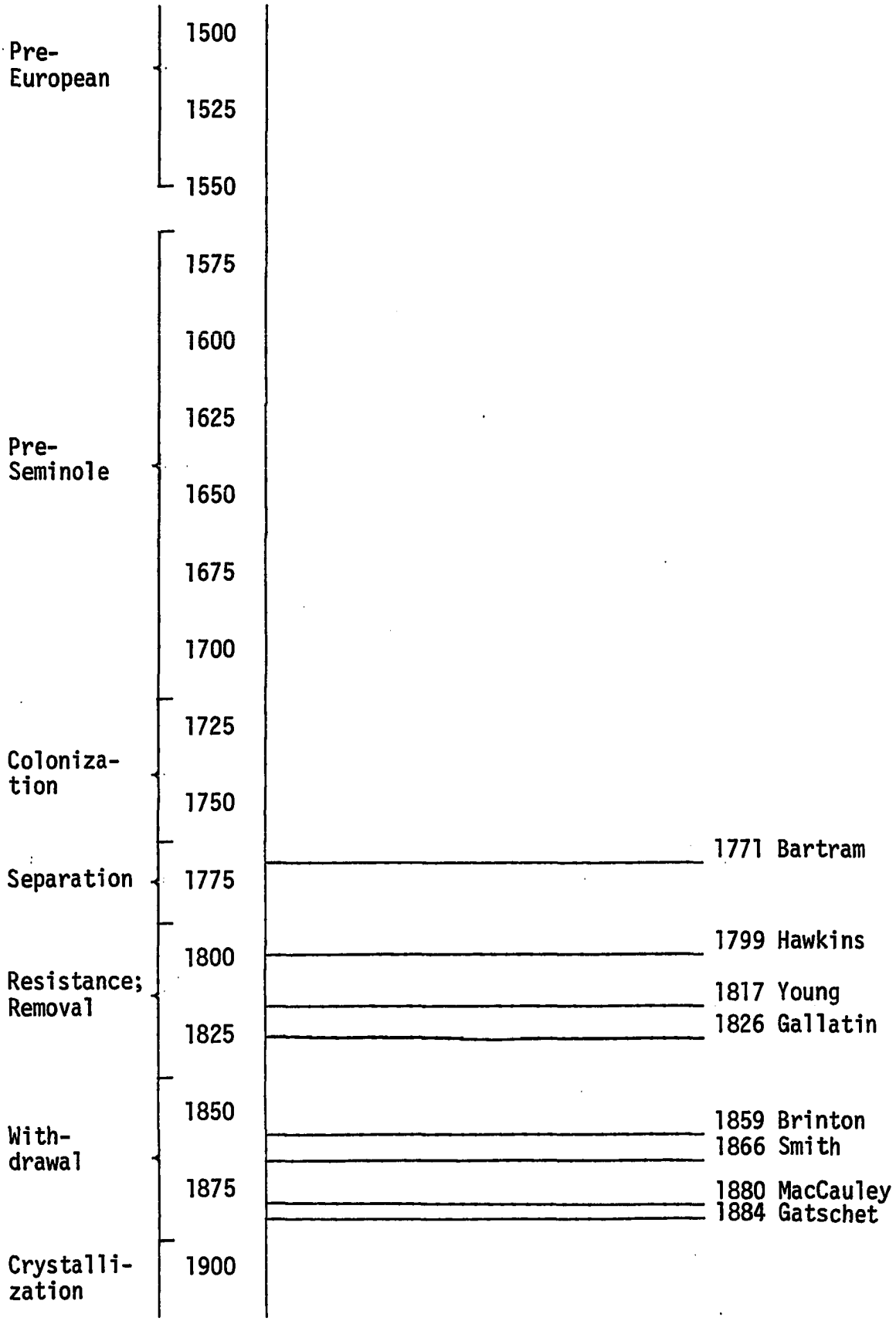


Figure 1.4 Time Line: Seminole History; Muskogean Scholars

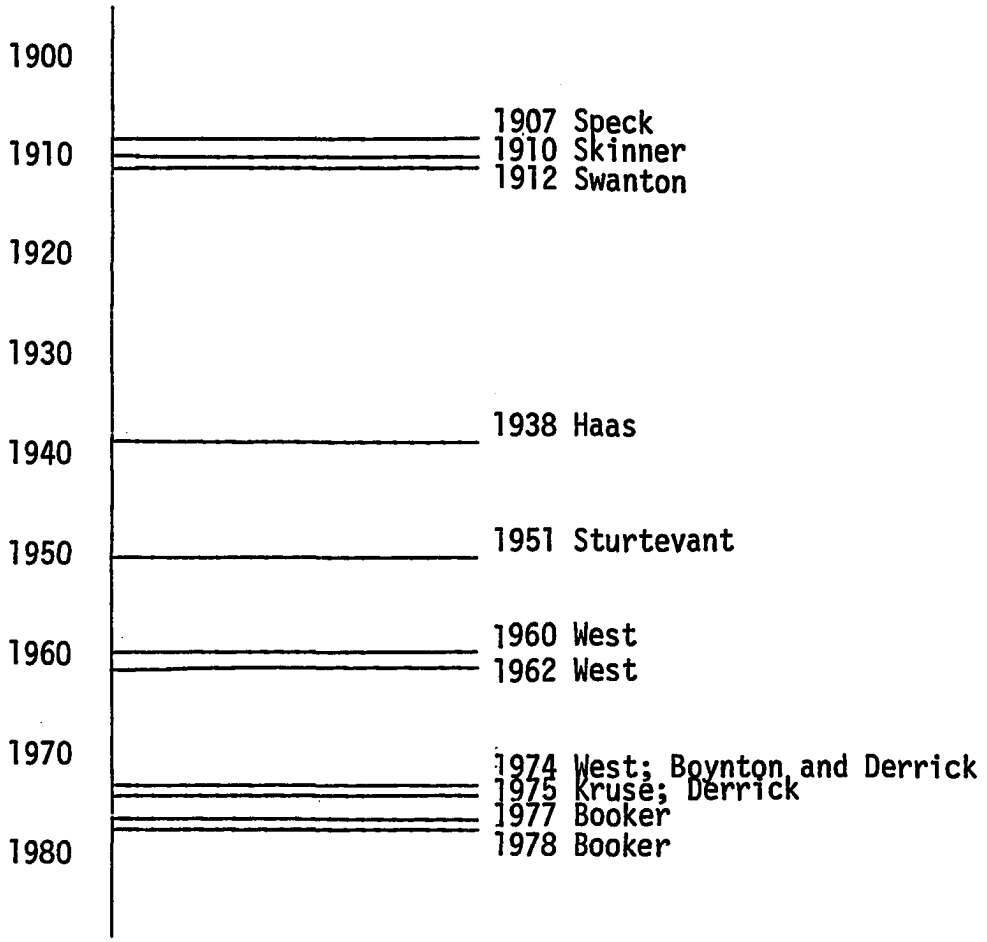


Figure 1.5 Time Line: Seminole History: Muskogean Scholars

1.5 Survey of Literature

Given the isolation of the Seminole throughout much of their history, and the turbulence of the time in which they developed, it is not surpising that there are only a comparatively few descriptions of the Mikasuki language to be found in the literature. Furthermore, most explorers, military men, and early linguists who have left records of their contact with the Seminole mainly list Muskogee vocabularies, for this was the lingua franca of the Seminole, even during the period when Hitchiti speakers were in the majority in Florida. The earliest vocabulary of Hitchiti, the Muskogean dialect closest to Mikasuki, was published in 1836; the first notice of Mikasuki appears in a vocabulary from 1866, when the Seminoles had been in existence for one hundred years. The first grammatical analysis of Mikasuki only appears in the twentieth century.

In this survey of references to Mikasuki and Hitchiti those containing vocabularies or linguistic analyses will be reviewed more extensively. The references are listed in chronological order from the earliest to the latest, according to the date when the observations were made. The dates of observation do not always coincide with the dates of publication.

1.5.1 The Eighteenth Century

There are no descriptions of either Mikasuki or Hitchiti dating from the years 1710 to 1763, when Florida was being reoccupied by the Lower Creeks. However, William Bartram, a Philadelphia botanist and

naturalist, traveled through the area in 1774, and his account contains brief mention of the Seminole. Another observer, Benjamin Hawkins, was the agent sent to the Creeks by the United States government. His account contains the first mention found to date of the Miccosukee settlement.

1.5.1.1 William Bartram--1774

Bartram set out from Philadelphia in April 1773 'to search the Floridas and the western parts of Carolina and Georgia, for the discovery of rare and useful products of nature, chiefly in the vegetable kingdom' (Van Doren, 1955:29). In the company of a trader based at the trading store of Mr. M'Latche on the St. John's River, Bartram visited Cowkeeper's settlement of Cuscowilla (apparently near the present-day Micanopy). They were received kindly by the Indians and Bartram, nicknamed 'Puc Puggy,' the Flower Hunter, was given permission to pursue his research in the area.

Of the Indians at Cuscowilla he says that most of the Alachuas, as Cowkeeper's group was called, and 'most of the Lower Creeks or Siminoles [sic] . . . speak and understand Spanish' (Van Doren, 1955: 163). He does not say what language was used among the Indians themselves in the village, nor what language was used for communication between the trader and the Indians. The few botanical terms that Bartram learned from them are in Muskogee, however.

According to Bartram, four indigenous languages were spoken in the Confederacy: Muscogulge (Creek), Yuchi (also called Savanucca), Chichasaw, and Stincard (Van Doren, 1955:366-367). Muskogulge was

reported to be used throughout the Confederacy; Yuchi was a language 'altogether or radically different from the Creek or Muskogulge tongue' (Van Doren, 1955:313). Chichasaw was considered a dialect of Muskogulge.

It is not clear where Bartram got the term 'Stincard.' We can assume that he was referring to Hitchiti or Mikasuki, deducing from the list of towns on the Tallapoose (Tallapoosa), Chata Uche (Chattahoochee), and Flint Rivers in which 'Stincard' was spoken. The Flint and the Chattahoochee were long the home of the Lower Creeks, who are assumed to have spoken Hitchiti. According to Swanton's map of the area (Swanton, 1946), in the late 1770s the Lower Creek towns of Oconee, Apalachicola and Hitchiti among others were located on that river system. Bartram declared that Stincard, like Yuchi, was radically different from Muskogulge, but unfortunately gives no examples. He did recognize that 'the Siminoles [sic] speak both the Muskogulge and Stincard tongues' (Van Doren, 1955:367).

1.5.1.2 Benjamin Hawkins--1799

Hawkins does not discuss the Seminole in detail. He lists the Florida towns, and the towns from which their people migrated in the Confederacy, but makes no comment on their way of living or language. His account is notable as an early mention of the town of Miccosukee. According to Cline (1974:85), Miccosukee and Tallahassee 'formed the second nucleus of the proto-Seminole' in northwest Florida. Contemporary sources dating from 1767, 1778, 1788, and Hawkin's report in 1799 all name Miccosukee as a town in the area (Cline, 1974b).

1.5.2 The Nineteenth Century

Linguistic investigation really began to develop in the nineteenth century (Hoijer, 1973:658). Researchers were attempting to classify native American languages into families, and also to classify them according to the grammatical categories suggested by Humboldt. But access was limited by the hazards of travel in unsettled areas, and linguists often depended on word lists collected by military personnel, or on vocabularies obtained from Indians who had come to Washington to deal with the federal government. Not until the late 1880s is there any investigation made of the Seminole by anthropologists in the field.

1.5.2.1 Captain Hugh Young--1817-1818

Captain Young accompanied General Jackson as a topographical engineer on his incursion into east and west Florida in 1818. As part of his record of the expedition he included a short description of the Seminole, 'a branch of the great Muscogee Nation' (Boyd, 1935:82). The Seminoles spoke three languages, Hitcheta, Uchee and Creek. Hitchiti speakers lived in three towns, Miccosukee, Foul Town, and Oka-tiokina, all in the area north of Apalachee Bay near the present Georgia-Florida border. He described Miccosukee as the largest and most prosperous town, having '160 warriors, and eight or nine times that number of women and children' (Boyd, 1935:83). The Miccosukee had fertile fields planted with many crops, herds of cattle, hogs, and horses. Foul Town and Oka-tiokina were smaller, having forty and sixty warriors, respectively. The Uchee had only one town which was located

near the Miccosukee. The Creek had seventeen towns which were smaller than the Hitchiti towns.

Young's observations on language were more accurate than some later studies, namely those of Gallatin (1826) and Brinton (1859), who thought that the Seminole spoke only Muskogee. Young's accuracy may be due to the fact that he made his observations in the field, while Gallatin and Brinton depended on the observation of others for their information.

1.5.2.2 Albert Gallatin--1826

Gallatin, a language teacher and Secretary of the Treasury under Thomas Jefferson, published, in 1836, 'the first systematic comparative study of the native languages of North America' (Hoijer, 1973:660). This included a vocabulary of Hitchiti obtained by Mr. Ridge, a Cherokee, in 1825-6 from a 'chief of that tribe (Hitchittee) who was in Washington as part of a Muskhogee delegation' (Gallatin, 1836:377). It contains forty-five words, and is the first known vocabulary in the language. Many of the forms are recognizable; it is not known whether Mr. Ridge had access to John Pickering's essay on uniform orthography for Indian languages, published in 1818. The words collected seem to follow a standard format, however; kinship terms, body parts, weather and other nature words, food items, and the numbers one through ten, and twenty, were obtained from the vocabulary. Similar sets of words also occur in later vocabularies.

Gallatin described the Creek Confederacy as being made up of seven tribes speaking five languages. The Muskhogees were the majority and spoke Muskhogee. The Hitchittees,

> . . . who reside on the Chatahoochee and Flint rivers, though a distinct tribe, speak a dialect of the Muskhogee. . . . The Seminole (or Isty-semole) are pure Muskhogees, who have gradually detached themselves from the Confederacy. . . . A vocabulary is wanted in order to prove conclusively the entire identity of their language with the Muskhogee. (Gallatin, 1836:94-95)

The Natches and the Uchee spoke languages altogether different from Muskhogee (mentioned in the introduction to Benjamin Hawkin's letters, which were edited by William B. Hodgson, 1848:13). The Alabama and Coosada spoke dialects related to Muskhogee.

In these statements Gallatin is not entirely correct. Hitchiti does belong to the same language family as Muskogee, but the two languages are not closely enough related to be called dialects of each other. Gallatin said correctly that Alabama and Coosada (Koasati) are related to Muskogee, while Natchez and Yuchi are not, but again Alabama and Koasati are not dialectically related to Muskogee. Gallatin apparently confused the political importance of Muskogee in the Confederacy with its linguistic affiliation to the other Muskogean languages.

1.5.2.3 Daniel G. Brinton--1859

Brinton was a medical doctor whose interest in American Indian languages won him an appointment as a professor of American archeology and linguistics at the University of Pennsylvania in 1866. His principal interest was in the Mesoamerican languages, but in 1859 he published 'Notes on the Florida peninsula, its literary history, Indian tribes and antiquities.' Lacking knowledge of the rules of language change, he quoted C. Swan (Schoolcraft, 1851-57, vol. 5:260),

who stated that 'a comparison of the Seminole with the Muskhogeh vocabulary affords a most instructive lesson to the philologist. With such rapidity did the former undergo a vital change that as early as 1791 it was hardly understood by the Upper Creeks.' Both men apparently thought that the language of the Seminole had developed from Creek during the Seminole's period of formation.

1.5.2.4 Buckingham Smith--1866

Buckingham Smith's comparative vocabulary, containing Seminole, Mikasuki, and Hitchiti forms, is the earliest vocabulary of Mikasuki found to date. This vocabulary is also noteworthy because the sources of the data are well described, and because the Mikasuki speaker, unlike many of the Indians who gave vocabulary lists, apparently did not speak much English. As Smith says, his sources were three Seminole from Arkansas--'Foosharjo, an educated Indian, and Johnson, a Black, speaking the Muskoke, and Chocot-Harjo, the Mikasuke, the last communicating through the Muskoke, and sometimes himself writing out the words in his own tongue. The Indians were born in Florida, the Negro in Alabama' (Smith, 1866a:239). Smith also recognized the similarity of Hitchiti and Mikasuki; 'they (the Hitchitis) are near of kin to the Mikasukis to judge from the words of a small vocabulary taken by Mr. Gallatin . . .' (Smith, 1866a:239).

The strengths of Smith's vocabulary are several. It contains not only noun forms, but also unconjugated verbs, pronouns, and adverbs of time and direction. Smith attempted to render the suprasegmentals of Mikasuki by means of accent marks; in this way he distinguished at

least one subminimal pair by a stress contrast, although he missed the distinction of vowel length:

eté	/ìtī/	[ɪ̄ tɨʔ]	'eye'
été	/ī:tī/	[i: tɨ̄ʔ]	'fire'
ebé	/ìbī/	[ɪ̄ bɨʔ]	'nose'
efé	/ìfī/	[ɪ̄ fɨʔ]	'dog'

However, just as modern researchers have been misled by the close links between vowel quality, vowel length and pitch, he misinterpreted the distinction between 'mouth' and 'deer':

eichi	/ìčī/	[ɪ̄ čɨʔ]	'mouth'
eché	/ī:čī/	[i: čɨ̀ʔ]	'deer'

The weaknesses of Smith's analysis of Mikasuki are due to the lack of a phonetic alphabet and the bias introduced by his first language, English. For example, he symbolized the lateral fricative /ƛ/ as 'thl,' 'sl,' and 'hl' in different words. As noted above, he also did not hear the contrast between long and short vowels, and contrastively nasalized vowels.

In addition to the vocabulary, Smith also published the Lord's Prayer in Mikasuki (Smith, 1866b:288), given by the same Mikasuki collaborator. The translation was 'sent to Washington to be verified, and is now printed as it comes, rewritten by the competent ability of

George Gibbs, Esq.' (Smith, 1866b:288). Gibbs had his difficulties with it, for he said that 'I tried to get something approaching a literal translation, but it was beyond the comprehension of Indian, Negro, or white man' (Smith 1866b:288). Smith does not analyze the text, but gives an interlinear translation for the first two lines.

1.5.2.5 Clay MacCauley--1880

MacCauley was one of the first anthropologists to visit the Seminole. His report, made just after the Third Seminole War, describes the physical characteristics of the people, Seminole agriculture, arts, religion, and environment, but only a little of the language. He learned some Muskogee during his three-month stay, and compiled a 'Seminole' vocabulary for the Bureau of Ethnology.

Some Muskogee words are included in the report, such as the names of the months of the year (twelve), and scattered terms like 'tchat-to ko-na-wa' 'money' (literally 'stone beads'). Also included is a loan from English, 'ma-tchi' 'matches'; /m̄a:č̄i/ is still used in Mikasuki today. MacCauley did not put down the Muskogee forms for color words, but his remarks on his efforts at elicitation indicate the familiar outlines of the system.[8] Black and white are primary; blue-green, red and yellow cover a wider range in Muskogee than in English. Brown was given by the compound 'yellow-black' and gray by the compound 'white-black.'

In the course of taking a census, MacCauley found that the 208 Florida Seminole, living in five settlements, were divided into two groups, each with a different name. The northern group, the people

living at the Cat Fish Lake and Cow Creek settlements northwest of Lake Okeechobee called themselves the 'Tallahassee Indians.' The southern group, the people of Fish Eating Creek, Big Cypress, and the Miami River, were the Kăn-yuk-sa Is-ti-tcha-ti, the 'Peninsula Indians' (I-kan-ka 'ground,' i-yuk-sa 'point,' is-ti 'people,' tcha-ti 'red'; the compound kăn-yuk-sa meant 'Florida'). It is interesting to speculate that these groups may have differed by language als, presaging the split between Mikasuki and Creek speakers today. The northern group lived in the vicinity of the present-day location of the Brighton Reservation, where Creek is spoken now. But, unfortunately MacCauley gives no linguistic evidence on this point. None of these people called themselves 'Seminole,' which had the pejorative connotations of a wanderer or a coward. Rabbits, deer, cattle, and Indians who were transported to Indian Territory after the war, were Seminole; Indians who stayed in Florida were not (MacCauley, 1887:509).

1.5.2.6 Albert S. Gatschet--1884

Gatschet was one of the first linguists to study Creek and Hitchiti thoroughly. His 'Migration Legend of the Creek Indians' (1884, 1888) contains the first extended and analyzed text in Hitchiti, and the first grammar and glossary of that language. The text is based on the migration legend of the Kasihta, which was told to Governor Oglethorpe of Georgia in 1735 by Tchikilli, the head chief of the Upper and Lower Creeks (Gatschet, 1888:26). After the speech, the interpreter presented the British with a copy written on a buffalo skin in red and black characters (Gatschet, 1884:235). This 'text' was

lost, but D. G. Brinton, Gatschet's editor, found the legend written in German in 1735 in the pamphlets of a German Protestant community. Brinton translated this into English; his text was given to Judge J. W. Stidham by Gatschet. Stidham, a Hitchiti, translated the legend back into Creek and Hitchiti. Thus the legend comes full circle in its history: Creek, English, German, English, Creek, Hitchiti.

Gatschet's analysis of Hitchiti covers both phonology and morphology. His 'phonetic' system of Creek and Hitchiti is as follows (1884:54)

	Explosives			Breaths		
	-aspirated	+aspirated		spirants	nasals	trills
Gutterals	k g		χ	h		
Palatals	tch,ts	dsh,ds		y	ń	'l
Linguals	k′	g′		sh		l
Dentals	t	d		s	n	
Labials	p	b	f	w	m	

Vowels i,e,ä,a,o,u, with their long and nasalized sounds

Note: χ represents [γ] or [h]; 'l represents [ɬ]; ń represents [ñ]; a represents [æ]; it is not clear what k′ and g′ represent. Sounds which modern analysis has shown to be allophonic variants are circled.

Although Gatschet did not have access to a phonemic theory, he recognized that certain sounds alternated without affecting meaning. 'Spontaneous permutations' of sounds involved ä and e; i and i, e or iy; o and y; t and d; g and k or γ; b and p; dsh and ds, tch or ts; s and sh; and 'l and

1 (Gatschet, 1888:72). However, he attributed this to the fact that Hitchiti was not written; 'it will be well to remember that in Indian and all illiterate languages the sounds of the same organ class are interchangeable; thus a word may be correctly pronounced and written in six, ten, or twelve different ways' (Gatschet, 1884:57).

The pitch-accent system gave Gatschet trouble in both Creek and Hitchiti. 'The frequent occurrences of homonymous terms form a peculiar difficulty in the study of the dialects' (Gatschet, 1884:54). The 'homonymous forms,' of which there are no examples, probably had different pitch patterns. Gatschet did, however, use a set of diacritics which apparently indicates stress placement, possibly high pitch, and vowel length. In the glossary, the (´) and (-) diacritics occur on verbs on the syllable which carries significant pitch and stress (for further discussion of the 'prominent syllable,' see Section 6.4.2).

an-hítchkas 'I obtain, get'

/ān-hīč-k-a-š/ 'to me-see- intrans'

hitchlídschalis 'I engender, bring forth'

/hic-l-ī-:č-a-li-š/

'see-trans.-stem v.-caus.-transition-1st sg'

But Gatschet does not explain his use of these two diacritics, which may co-occur on the same syllable, or which may occur on different syllables of the same word:

hásī 'sun' /hā:šī/

ánālī 'myself' /ā:nālī/

In the light of later studies Gatschet's pitch/length marking on inflected verbs is generally accurate, but his perception of these suprasegmentals on the noun forms is deficient, and not as accurate as Smith's. Furthermore the transcriptions of the Mikasuki forms taken from Smith's vocabulary for use in Gatschet's comparative Muskogean vocabulary have been changed, either by Gatschet himself or his editor, Brinton; the changes improve the rendering of consonants and vowels, but have destroyed Smith's somewhat more accurate presentation of pitch and length. Some examples are shown below:

Smith (1866a) Mikasuki	Smith in Gatschet, 1884:57	Gatschet (1884) Hitchiti	Derrick (1978) Mikasuki	
etḗ	---	---	/ìtī/	'eye'
ḗtḗ	íti	íti, î́ti	/ī:tī/	'fire'
echḗ	itchi	itchi	/ī:čī/	'deer'
eichi	---	idshi	/ìčī/	'mouth'
oclḗ	ókli	ókli,úk'li	/òklī/	'town'
talḗ	tale	tálī	/tàlī/	'rock'

Smith's Mikasuki forms have been 'corrected' in the direction of Gatschet's Hitchiti forms. However, Smith's perception of stress on the final syllables of 'eye,' 'town' and 'rock' was correct. As

mid-pitch syllables following low syllables, these do indeed have stress, although the pitch, and not the stress, is the contrastive feature. Gatschet's interpretation of Smith's forms for 'town' and 'rock' obscures the fact that they have the same stress patterns, and Gatschet's own versions of these two words have stress on the wrong syllable. Finally, Smith's perception of 'deer' and 'mouth' differing by vowel quality and stress placement is correct, while Gatschet's analysis of consonantal difference is not.

Gatschet's study of morphology and syntax is more extensive and accurate than his phonology, especially the sections on verbal inflections and sentential enclitics. He recognized that 'no thorough distinction exists between the different parts of speech, none especially between the nominal and verbal element' (1884:54). He classified adjectives and numerals as verbals and showed that verbs with certain suffixes can take nominal sentence suffixes. His verb paradigms include three past tenses, immediate, medial, and remote; a future tense; imperative; two participles referring to objects, and three referring to agents; negatives; and questions.

/i:s-/	ísilis	/i:šomli/	'I take'
'take'	í'hsilis	/í,h,šomli/	'I took a short time ago'
	ísānis	/i:ši:li/	'I took several days ago'
	ísiliktas	/i:šilikta/	'I have taken many years ago'
	isilālis	/i:šilá:li/	'I shall take'

He also included a paradigm of a verb with singular and plural forms, which shows the plural used with plural objects, and with multiple occurrences of the action. Stative verbs, which take pronominal prefixes rather than pronominal suffixes, are entered with their prefixes in the glossary.

Entries in the Hitchiti glossary include not only roots, but also affixes, enclitics, conjugated verbs, and verb phrases. More study of this section is needed to glean out all of the grammatical analysis hidden here. An example of an entry is given below:

> ú́mmilis 'I do or act so.' This verb is extensively used to form periphrastic conjugations with verbals and a number of particles, and comes nearer than any other Hitchiti verb to our own substantive verb 'to be'; but the function of 'being such' or 'so' is always perceptible. Very frequently the idea of habitude, custom, permanence is embodied in its use. (Gatschet, 1888:175)

In conclusion, Gatschet's presentation of Hitchiti grammar and phonology is the first extensive treatment of the language. The outline of the analysis follows the structure of the language itself, rather than trying to compress the data into an idealized mold borrowed from English or the classifical grammatical tradition. Despite its occasional deficiencies in analysis and the scattering of grammatical comments throughout the glossary, it is worthy of study by present-day Muskogean scholars.

1.5.3 The Twentieth Century

Advances in linguistic science, and more easy access to the Seminole in the twentieth century, resulted in more thorough study of

Mikasuki than ever before. Much remains to be studied, however. Extensive grammatical descriptions and historical-comparative work have just begun to appear, and dialectal studies have not yet begun.

1.5.3.1 Frank Speck--1907

In this treatment the general characteristics of the Muskogean languages are given, using data from Gatschet's 'A Migration legend . . .' (1884), Cyrus Byington's 'Choctaw Grammar' (1870), and field work by the author with the Creek in Tuskigi and the Chickasaw in Indian Territory. Speck discusses the phonology, morphology and some of the syntax shared by Creek, Seminole, Hitchiti, Mikasuki, Apalachee, Alabama, Koasati, Choctaw, and Chickasaw.

Phonologically the Muskogean languages show considerable similarity in their phonemic systems. Clusters of consonents are rare; the canonical form of the syllable is primarily CV. Two regular phonetic changes are noted: the assimilation of vowels in some prefixes and initial stem vowels to the phonetic quality of the longer one, and the assimilation of /m/ to /n/ before certain consonants. Nasalization, aspiration, accentuation and lengthening are also discussed.

Affixation is a major grammatical process. Prefixing is used for pronominals, and verbal features such as locative, reciprocal, reflexive and instrumental. Suffixes mark the subjects of active verbs, modal and temporal qualities, noun and verb derivation, and nominal syntactic cases. Infixing expresses modification in mood and tense in Creek, and voice and aspect in Choctaw and Chickasaw.

Reduplication appears in Creek on some adjectives and verbs to express distribution or frequency.

There are three person paradigms: the subjects of active verbs; those which express the subject of stative verbs (called the 'neutral subject'), direct objects, and inalienable possession; and those which indicate alienable possession and indirect objects. The basic forms of the pronouns are first, second, and third person singular, and first person plural. There is also a set of negative subject pronouns.

With regard to stems, 'there is a lack of any real difference between many of the verb and noun stems. . . . The unmodified base is interpretable as either an imperative verb or an abstract noun' (Speck, 1907:478). Such bases may take either verbal or nominal endings.

Some verb stems undergo radical change according to the singularity, duality or plurality of the subject, or the singularity or plurality of the object. Number stems are formed by suffixation or suppletion. The verbalizing of adjectives is accomplished by adding a personal pronoun and a certain verbal suffix.

Two syntactic suffixes mark subject and object nouns. Word order in sentences tends to be subject, object, verb, but position in the sentence is not an important syntactic device.

1.5.3.2 Alanson Skinner--1910

The experiences of Skinner during his visit to south Florida on behalf of the American Museum of Natural History were similar to those of MacCauley in 1880, and the type of information he recorded is also similar. Both men were forced to depend on observation for they

did not speak the language. The two linguistic comments made by Skinner are quoted in full below:

> The following notes were obtained largely through observation rather than conversation, since none of our party understood the language, except the jargon, and the Indians strongly objected to the taking of written notes. (1913:64)

> Not more than two or three members of all the several bands can speak English well, but all the men make use of a trade jargon composed of Seminole, Spanish, and English, and this nondescript speech has a wide vogue among the white settlers, or 'crackers,' who dwell in the pinelands. (1913:63).

1.5.3.3 John R. Swanton--1912

Swanton's 'Sketch of the Hitchiti Language' was written in 1921 and 1922, based on Gatschet's published work, and on 'a long card-catalogue of Hitchiti words and a single Hitchiti text obtained from Judge G. W. Stidham in February, 1887' that Gatschet left at his death (Swanton, 1921-22:2). The material is supplemented by Swanton's own field work in 1912 among a Hitchiti-speaking group. He was aided by W. E. Haney, 'a Hitchiti Indian able to use the Creek alphabet' (Swanton, 1921-22:2).

The grammar consists of several parts: a short phonology, an extensive morphology with numerous examples, a chart of the order classes of affixes found on conjugated verbs, and a text with interlinear translation and a morphological analysis of each word. Swanton was not especially interested in phonology; 'this . . . leaves very much to be desired, as I have always treated the phonetics involved as a means to an end and not as an end in itself' (Swanton, 1921-22:4). The

phonemic inventory is presented only in terms of the alphabetic conventions, based on Creek, which Haney used to transcribe the data. Phonological analysis, with no examples, covers the syllabic structure of stems, possible consonant clusters, and word-initial and word-final consonants. Vowel length and nasalization are seldom marked, and are often incorrect when they occur. No suprasegmentals at all are indicated in the text. Stress is more commonly marked, but it is also incorrect in many instances, particularly in nouns.

The description of affixal morphology takes its organization from the structure of Hitchiti itself, rather than from a grammatical model derived from classical tradition. The verbal morphology is arranged according to the various classes of prefixes, infixes and suffixes. Within each class, which is determined by semantic domain and by position within the conjugated verb, all the affixes falling in that class are listed.

An important omission in the presentation is the lack of any discussion of the tense system. Several tense suffixes are listed--/-kta-/ 'remote past'; /-ti-/ 'recent past or immediate future'; /-hon-/ 'referring to a previously mentioned action or habit'--but the time spans covered by each of these are not compared. Swanton also did not recognize the role of stress and pitch in the tenses.

A task for the future is an extensive comparison of Swanton's Hitchiti forms with modern Mikasuki forms. This may afford insights into the possible distinctions between Hitchiti and Mikasuki. For example, there are differences in the examples of independent main verbs, and similar Mikasuki forms more recently collected:

opa´hkalis	'I wash myself	/opãhkomli/	'I wash'
nuka´tcus	'it hurts'	/in-nokã:com/	'it hurts her'
mi´kolis	'I am a chief'	/miko:nli/	'I am a chief'

It would be interesting to go through Swanton's grammar and text with a Mikasuki speaker in order to elicit comments and to try to record the pitch and stress omitted from his examples.

1.5.3.4 M. R. Haas--1938-1940

'On the basis of a few days' work with a speaker of Hitchiti in 1937, Haas has prepared a manuscript containing Hitchiti notes and a vocabulary (N. D. C., 1938-40)' (Haas, 1973b:1214). The speaker was Willie Haney from Seminole, Oklahoma, who may have been the same person with whom Swanton worked in 1912. The study includes a list of roots, with some compounds and derived words; a grammatical sketch covering nominal, adjectival and verbal morphology; and a set of verb paradigms exemplifying various tenses and verb types. Pitch and stress are not indicated.

The section on nouns is very brief, but it covers the distinction between alienable and inalienable possession on nouns more throughly than previous descriptions of the language. Although possession is usually shown by the person affixes only, two examples are included which have lengthened vowels in the possessed forms. This is not explained.

conosbi	'heart'	caco:nosbi	'my heart'
sili:ki	'intestines'	casi:li:ki	'my intestines'

A comparison of Haas's pluralized adjectives and those appearing in Swanton (1921) shows a process of apparent regularization. Most plurals of adjectives (and impersonal verbs) in Swanton's data are formed by partial reduplication. The first consonant of the root is added to -o:-; and the resulting syllable is infixed before the final consonant of the root. In Haas's data the pluralizing affix -ho:- is used in place of the reduplicative affix:

Swanton (1921)	Haas (1938)	
ba'tcki, batc-bo'-ki	packi, pac-ho:-ki	'long'
wala'tcki, walatc-wo'-ki	walacki, walac-ho:-ki	'round'

Four of Haas's examples retain the reduplicative process, and are identical to Swanton's forms:

lakni, lak-lo:-ni	'yellow'	kitisci, kitis-ko:-ci	'red'
kamoski, kamos-ko:-ki	'sweet'	losci, los-lo:-ci	'black'

One example is totally irregular. Swanton gives two forms and Haas's example differs from both of them:

Swanton	Haas	
patcakfi, patcak-po̲-fi	pacakki, pacak-fo:-ki	'flattened'
patcak-pa'-fi		

The discussion of the verbs centers on a comparison of the tenses and their inflections. Unlike the examples found in Swanton, Haas's examples are all main verbs; the former probably came from text material, while the latter were given as paradigms in isolation. Haas gives a present, a future, and these past tenses:[9]

Future:	stem + -la:- or -la:ka	pock-a-la:ka-s	'she will touch it'
Present:	stem + length + nasalization of the last stem syllable	p̃o:ck-a-s	'she is touching it'
Past 1:	stem unchanged	pock-a-s	'she touched it'
Past 2:	-h- or -ayh- infix before last stem consonant	cafo,h,k-i-s	'she chewed'
		poc,ayh,k-a-s	'she touched it'
Past 3:	-kta- suffix	pock-a-kta-s	'she touched it'

There are several differences between this set of tenses and the tenses and aspects found in the later analysis of Mikasuki. The first is the lack (in Haas's data) of a past tense formed by the lengthening and nasalization of the final stem vowel:

hi:č-i:-li 'I saw it a while ago'

Another difference is the fact that the /-h-/ past infix can occur in the Mikasuki data in several positions with relation to the verb root. The infix may occur within the root, as it does in the Haas material, or it may follow the root. The root is underlined twice below.

im,h,p-a-š	'she ate'	im,h,p-a-š[10]	'she ate'
patap,ayh,l-i-š	'she hit it'	toloh, ayh,k-a-š[11]	'she coughed three days ago'
		hi:č-ó,h,m-i-lih	'I looked at it a week ago'
		kabl-ó,h,m-a-lih	'I bit it many times a week ago'

Finally, in the Haas material there is only one set of examples which take the verbal suffix /-om-/, while in the current Mikasuki data this suffix is very common:

Haas-Hitchiti

pafaks-i-:c-i-li-s 'I'm smoking' (no -om-)

pafaks-i-:c-a-tey-m-a:-s 'I did not smoke' (-om- ?)

pafaks-i-:c-i-ti-m-a:-s 'She did not smoke'

Mikasuki

pafaks-ĩ-:c-om-li	'I'm smoking'
pafaks-i-:c-a-tàyk-om-i-s	'I did not smoke' or 'I don't want to smoke'

This may be a dialectal difference between the two languages, or perhaps an as-yet-unexplained tense or aspect difference.

1.5.3.5 William Sturtevant--1951

This study of Mikasuki phonology is noteworthy in that it is the first study of Mikasuki to appear since Buckingham Smith's article in 1866. It is also the first recorded study of the language collected from the Florida Seminole.

Sturtevant worked principally with a seventeen-year-old boy on the Dania reservation near Fort Lauderdale (Sturtevant, 1951:1). The analysis covers the phonemes and their phonetic variants. For the first time the pitch patterns of the language are also extensively studied.

This term paper was written for B. Bloch, who at the time ascribed to a narrow theoretical position which did not permit the complete neutralization of contrast between phonemes. Because of this situation, Sturtevant was compelled to postulate a phoneme of suspiciously limited occurrence in his description of the fricative and affricate consonants. Furthermore, in his description of consonant clusters of nasals plus /y/ and /h/, and in the description of the vowels /a/ and /e/, Sturtevant had to assign one allophone to two

separate phonemes. This also was not permitted in Bloch's strict interpretation of theory. Sturtevant was not satisfied with these solutions, but had no alternatives in explaining the data.

If neutralization of phonemic contrasts is allowed, the explanation of /š/ and /č/ is simplified. These two phonemes may be distinguished in slow, careful speech when they occur as the first consonant in a two-consonant cluster with the obstruents /š/, /č/ and /t/:

/hîčtìh/	[hiˈč tīh]	'she can't see'
/kìtìščī/	[kī tīš ˈčiʔ]	'red'

In normal, rapid speech, the distinction between /s/ and /c/ is neutralized in this environment:

/hîštìh/	[hiˈš tīh]~[hiˈš tīh]	'she can't see'
/kìtìššī/	[kī tīs ˈsiʔ]~[kī tīš ˈšiʔ]	'red'

There is no need to postulate a separate /s/ phoneme, which occurs only in this position.

Bound by a strict interpretation of phonemic contrast, which did not allow neutralization, Sturtevant had to postulate three phonemes, /š/, /č/, and /s/, the latter of which was limited in occurrence to clusters with itself and /t/:

/š/ < [s̬] (prepalatal spirant), occurs after /t/
/š/ < [š] (mediopalatal spirant), occurs elsewhere (/šč/ clusters in slow speech are /ss/ in normal speech)

/č/ [č̬] (mediopalatal afficate), in all positions (/čt/ in slow speech is /st/ in normal speech)

/s/ [s̬] (post-palatal spirant), of limited distribution, only occurs before /t/ or when geminate in normal-speed speech

Sturtevant was not satisfied with this solution, but felt it was the only possible one (Sturtevant, 1951:9).

A similar problem occurs in three-consonant clusters with nasals, /y/, and /h/. Clusters such as /knk/, /knb/, and /nhk/ are not permitted in Mikasuki (for further discussion, see Section 2.2.2.2). When these clusters occur as a result of compounding or infixation, they are 'reduced' to two-consonant clusters conforming to accepted syllable structure. The sequence of /n/ and /h/ is realized as a voiceless nasal:

//no:čónhkà// → /no:čóhkà/ [nō: čo̥ŋ kā] 'she was sleeping a while ago'

Sturtevant's solution was to assign the voiceless nasal phones [y̥], [n̥], [m̥], and [ŋ̥] to the phonemes /y,n,m, and ŋ/, respectively, and at the same time to the phoneme /h/. Clusters of the nasals and /y/ plus another consonant were represented phonetically by the voiceless phones (Sturtevant, 1951:11). This accounts for the data, but at the price of assigning the same phones to two different phonemes.

Finally, the analysis of /a/ and /e/ again results in the assignment of one phone, [æ], to two different phonemes. In this case, however, the solution is allowed by the theory, because [æ] as a phoneme of /a/ occurs in a different environment than [æ] as a phoneme of /e/. In the first case, [æ] is unstressed, short, and often is found before word-final /k/. In the second, [æ] is stressed, usually followed by /y/, and is nasalized:

/a/		/e/	
/hĩ:čak/	'to see'	/lẽyhkak/	'to lap, lick'
/ĩnčakĩ:lik/	'to choke (on food)'	/hilẽyhkak/	'to cry'

However, the distribution of the phoneme /e/ itself is limited and therefore suspicious. In five of seven examples, /e/ precedes a three-consonant cluster of /yhk/, while /a/ precedes a two-consonent cluster of /y/ plus a consonant:

/e/		/a/	
/hakẽyhki/	'boy's name'	/kihãyki/	'hawk'
/lẽyhkak/	'to lap, lick'	/kãylik/	'to dig'

This suggests that [e] should be considered an allophone of /a/ occurring in three-consonant clusters before /y/, with [a] occurring in two-consonant clusters before /y/. In data collected in 1972, /a/ in the latter environment is also represented by [e]:

/kaylik/	[key lik]	'to dig'
/ayyik/	[ey yik]	'to go about'
/kihayki/	[kĩ hẽy gĩʔ]	'hawk'

It appears in this data that the environment in which /a/ is raised to [e] has been expanded to include two-consonant as well as three-consonant clusters.

In the discussion of pitch, the data are presented in great detail, but no conclusions are reached. There are three tone levels--high, mid, and low; each of these has rising, falling and level modes. These nine possibilities are all classified as contrastive. In addition, two tone levels may combine to form contour tones with greater range than that exhibited by the rise or fall of a single tone. Sturtevant could not discover conditioning factors for these tone patterns.

1.5.3.6 David and Virginia West--1960

'Learning Mikasuki" is a set of ten lessons at the beginning level intended for English speakers who want to learn conversational Mikasuki. Each lesson consists of a list of useful phrases, a frame drill which presents examples, a discussion of grammatical or pronunciation points, and directions for more practice with a native speaker.

The orthography is based on the English alphabet. Consonant symbols are the same, with the addition of ł to represent the lateral fricative. The three vowel qualities are written as a, e, and o; the long vowels are represented by the doubling of these symbols. Nasalized vowels are underlined. There are three diphthongs--ay, ao, and oy.

There are four contrastive pitches; high /ˊ/, mid /-/, and downglide /^/ are marked, and low is unmarked. There are also a mid-low glide /¬\/, and an extra high /ˊˊ/. The latter are not lexically contrastive, but they are marked in the phonemic representation when they occur in utterances such as questions or negations. At least one stressed syllable is marked in every word; stress may occur on different syllables in words that are identical in syllable structure and pitch, and on low pitch syllables:

West	Derrick		West	Derrick	
'ahe	[ā hɨ?]	'tree'	'ee'che	[i: cɨ?]	'deer'
e 'che	[ɪ cɨ?]	'mouth'	'pooshe	[po: sɨ?]	'cat'
eele'pachcha		'sit down (pl.)'			

In longer utterances, the final syllables of the last word have special characteristics. 'There is little or no stress, a given tone is lower than it would be elsewhere, and vowel quality may be different than elsewhere' (West and West, 1960:17).

Because these are introductory lessons the grammar presented is fairly simple:

1. Sentences with one main verb; sentences with two verbs having the same subject
2. Negative and affirmative sentences; word order
3. Two command forms
4. Various types of questions

5. Singular, dual and plural forms of verbs; person prefixes and suffixes
6. Nominal sentence suffixes
7. Words with the /-om-/ and /-o:tom-/ verbal suffixes
8. Compound nouns

Grammatical explanations are also simple and brief. In the discussion of questions, this brevity becomes a liability because there are more variants in the data than are explained. The three question suffixes and their connotations given in West's grammatical discussion are:

1. /-o/--used when an affirmative answer is expected
2. /-om?/--used when either 'yes' or 'no' is expected in the answer
3. /-oko/--used to indicate potential or possibility

Question formation also includes pitch changes on the verb, and a change of the suffix on a noun object from /-$\bar{o}$n/ to /-$\tilde{\bar{i}}$:/:

yalaahon	chabaanom	'I want an orange'
yalaahẽẽ	chibaanõ	'Do you want an orange'

Examination of all the question forms found in the lessons reveals three additional methods of question formation, the use of four nominal suffixes on objects, and numerous variations in pitch on the verbs. Furthermore, some questions are included which could not have yes-or-no answers, although they take the yes-or-no suffixes.

/-o/--affirmative answer

[^] chebaano 'Do you want it?' (p. 9)

[/] chepaashhohko 'Are you thirsty?' (p. 9)

[–] pashhohko 'Is he thirsty?' (p. 9)

[//] cheehantaamo 'How are things with you?' (p. 11)

[¬] yaathatkaponkee ataa]ek chebaano 'Do you want to learn English?' (p. 28)

/-om /--yes or no answer

[^] ennaakaapom? 'How much does it cost?' (p. 22)

[–] pashhohkom? 'Is he thirsty?' (p. 11)

/-oko/--potentiality

[–] eefee chemee]eko 'Do you have a dog?' (p. 18)

[//] pooshee cheehee]oko 'Do you like the cat?' (p. 18)

No verbal suffix

[//] pooshee cheehee]e 'Do you like the cat?' (p. 18)

/-om-o/

[–] chema]aalomo 'Are you afraid?' (p. 12)

/-oklo/

[/] cheewantoklo 'Is it difficult for you?' (p. 28)

[//] cheehee/oklo 'Are you well?' (p. 8)

There is no mention and no explanation of the last three question types, nor of the possible differences caused by pitch changes.

The suffixes found on noun objects in question sentences in West's data are the following:

/-i:/	maachee chemee/o	'Do you have matches?' (p. 22)
/-i?/	ponche? chebaano	'Do you want some soda pop?' (p. 21)
/-on/	naakon chebaano	'What do you want?' (p. 8)
/-ot/	naakot chemee/o	'What do you have?' (p. 21)

It is possible that /-i:/ and /-i?/ are variants of each other. The distinction between the pair of /-i/ suffixes and the pair of /-o-/ suffixes may be that the former occur in yes/no questions and the latter in information questions. the /-on/ suffix appears to be used when the object is unspecified, and the /-ot/ suffix, which also occurs on the subjects of sentences, when the object is specified. None of these possibilities is discussed in the lessons.

The problems associated with the discussion of the negative sentences are similar; not all the examples are explained. What is given is the list of the four negative suffixes, and the statement that

the pitch of the syllable preceding the negative suffix is high. The variants of the negative suffix /-tik-/ are phonologically and morphologically conditioned. The forms with a final /k/ occur before vowels, and the remaining forms before consonants or word-finally. The first two variants given below are the forms used only with first person singular; the latter are used in all other persons. Note that if the first person singular is realized by a person prefix, the regular negative allomorph, rather than the special first person negative allomorph is used.

/-tay/	ataa/tay	'I don't understand'
/-tayk-/	(no examples)	
/-ti-/	chapaashohketesh	'I'm not thirsty'
/-yik-/	aahee/teekom	'I don't like it'

Contrary to the explanation, in these examples, both high and mid pitches occur on negative verbs; furthermore the significant pitch is not always found on the syllable immediately preceding the negative suffix. Significant pitch occurs on the syllable designated as the prominent syllable. The location of the prominent syllable depends on the tense and aspect of the verb (see Section 6.4.2 for further discussion). In the examples below the syllable carrying significant pitch is underlined twice.

chapaashohketesh	'I'm not thirsty'

chabaatesh	'I don't want it'
heeʔot amataaʔkateekom	'I don't understand it very well'
ataaʔtay	'I don't understand'

Finally, variation of the nominal suffix in negative sentences must also be reexamined. According to West, /-ĩ:/ is the more 'acceptable' form, although other suffixes may occur (West, 1960:11).

/-ĩ:/	kowaayẽe pomayteekom	'We don't have a horse'
/-on/	naakenchaoktapatkon ebaatesh	'He doesn't want a book'
/-ot/	kowaayot amayteekom	'I don't have a horse'

In summary, this set of lessons, while constructed to build up the student's knowledge of basic grammar and phonology gradually, may cause confusion because of the many examples which do not follow the rules. Exceptions should be eliminated, or more complete explanations given.

1.5.3.7 David West--1962

'The Phonology of Mikasuki' describes the segmental and suprasegmental phonemes of Mikasuki, and is arranged hierarchically. Phonetic variation and phonemic contrast are the 'lowest' level. Syllable structure, including syllabic restrictions on pitch occurrence and

the categorization of syllables as long or short, form the next level. The rhythm group or phonological word governs stress placement, intonation, consonant cluster restrictions, and further restrictions on the occurrence of pitch. Finally the pause group, the 'sentence,' which is made up of one or more rhythm groups, governs tonal downstep and special intonation patterns such as those found in questions, imperatives, negatives, and emphatic sentences.

West is the first researcher to discuss the conditioning of phonetic pitch variation. In his system there are four lexically contrastive pitches: high /ˊ/, mid /-/, low /ˋ/, and mid-low /¬/. The first three are level pitches and the last is a contour pitch. Pitch occurrence is governed to some extend by the type of syllable in which it is found. This is shown in Figure 1.6. In the examples in Figure 1.6, V: stands for a long vowel, V for a short vowel, C for any consonant, L for any sonorant consonant, and K for any obstruent consonant. The mid-low pitch does not occur in CVK or CV syllables.

In the course of the article, West gives five criteria which influence both contrastive and non-contrastive pitch. These are syllable shape, position of the syllable within the word, influence of the pitch of contiguous syllables, morphological criteria, and stress. These are summarized below.

1. Syllable shape. There are two types of syllables; those which contain a long vowel, or end in a voiced consonant or /h/, are long; those which contain a short vowel or end in a voiceless consonant are short. Syllable shape influences both the distribution of contrastive pitch and allotonic variation.

	/low/		/mid/		/high/		/mid-low/	
V:	/à:bī/	'picture'	/ā:bī/	'castrated'	/á:šī/	'sour'	(no examples given in the article)	
CV	/hà:čī/	'deaf'	/hā:čī/	'tail'	/àhàhánó:pī/	'guava'	/wā:čī/	'mother'
CVL	/hìnàlī/	'squirrel'	/čīntī/	'snake'	/wántī/	'strong'	/hāmpòlī/	'morning'
CVK	/hàtkô:tom/	'It's white'	/yolbakni/	'worm'	/ìškàlafkô:tom/	'It's a knife'	(does not occur)	
CV	/nòkòšī/	'bear'	/pošô:tom/	'she's a grandmother'	/àyikčómô:tom/	'She's a doctor'	(does not occur)	

Figure 1.6 Tone and Syllable Shape (after West, 1962)

Contrastive pitch and syllable shape:

A. 'Low tone occurs for the most part on short syllables and mid tone on long syllables' (p. 83)

B. 'The mid-low glide occurs only on long syllables' (p. 83)

C. 'The occurrence of the high toneme is infrequent . . . , but it occurs about equally on either long or short syllables' (p. 83)

Allotonic variation:

A. Level tonemes have higher allotones in word-initial short syllables than in word-initial long syllables (p. 83)

/ò̗kī̗/ 'water' versus /à̗:bī̗/ 'picture'

B. A word-initial V syllable has a higher allotone than a word-initial CVC syllable (p. 83)

/ò̗kī̗/ 'water' versus /c̗̆̀okfī̗/ 'rabbit'

2. Position of the syllable within the phonological word. This criterion affects allotonic variations only.

A. The tone in a CV syllable is higher than a preceding long syllable with mid tone when the CV syllable is the penultimate syllable in a rhythm group (p. 87)

/h̗̄alp̗̄at̗̄ot̗̄/ 'alligator'

B. A CV syllable with mid tone which is not penultimate has the same allotone as a preceding long syllable with mid pitch (p. 88)

/ā:hkāmōškō:tōm/ 'It is a sweet potato'

C. A word-initial mid tone syllable is higher than a mid tone syllable which follows a low tone syllable (p. 83)

/kō:wōsōn/ 'bobcat'

3. Influence of the pitch of the contiguous syllables. This criterion involves both neutralization of contrast between phonemic pitches, and allotonic variation.

Effect on contrastive pitch:

A. The mid-low glide never precedes high tone (p. 83)

B. 'A low tone on a short syllable or group of syllables may be replaced by mid, especially after a long mid syllable' (p. 88)

/kāmōškī/ 'sweet'

/ā:pkāmōškī/ 'sugar cane'

/ā:pī/ 'cane'

Effect on allotonic variations:

A. When two mid-low glides are contiguous, the second begins lower than the first (p. 83)

/pačiho:ho:tom/ 'It is a mourning dove'

B. 'Following high tone, a mid-low glide starts only a little higher than low . . .' (p. 88)

/čayho:tom/ 'It is tall'

4. Morphological criteria. Some tones occur only with respect to the pause group, the highest unit of analysis in the article. This level encompasses one or more phonological words. Tones occurring on this level are indicated by superscript numbers. The tones are 'extra high' /^{4}/, 'high-low glide' /$^{3-1}$/, and 'mid-high glide' /$^{2-3}$/. They are found on questions, imperatives, negative and emphatic statements.

/čo::^{4}bo:tom/ 'It is very big'

/nàknó:čo:$^{3-1}$tom?/ 'Is it a boy?'

/ma:$^{2-3}$tih/ 'No, on the contrary'

There are also two morphological 'uses' for the plain high tone (West, personal communication). It is used on verb roots to derive agentive nouns.

/hopā:nīk/ 'to sing' /hopá:nī/ 'singer'

It is also used on the penultimate syllable of compound nouns.

/šanikči/ 'toad'

/šanikčilampi/ 'cantaloup'

/lampī/ 'stomach'

5. Stress. Stress is non-contrastive. Its location is usually determined by pitch, although there are some words in which stress placement varies.

A. 'Stress tends to occur in the syllable with the highest tone and on non-final syllables' (p. 85)

/wa:kaknot/ 'beef'

/kona:won/ 'money'

/ibihkot/ 'front'

/manti:lot/ /manti:lot/ 'flag'

B. 'Syllables with extra high tone or the high-low glide are stressed more than syllables with other tones' (p. 90)

/yaktat lo:4vco:som/ 'That is very black'

C. 'The allotones occurring on some pause-group final morphemes seem to be dependent on the pitch of the preceding stressed syllable. Following a mid, the mid tones(s) at the end of the rhythm group are clearly mid. Following a low or down glide, the mid tone(s) sound almost as low as low' (p. 89)

/tapaŋkom/ 'He is pushing'

/hi:lo:tom/ 'It is good'

West's five criteria for determining pitch are very similar to the criteria which affect pitch in Creek (Haas, 'Tonal Accent in Creek,' 1977). They include:

1. Syllable shape
2. Function of the syllable (key syllables take one of the three contrastive pitches; non-key syllables have determined pitch)
3. Position within the phonological word (the pitch of non-key syllables is determined in part by their position as word-initial, medial, or final)
4. Position of a key syllable with respect to other key syllables
5. Morphological criteria such as verb inflection, or the inherent pitch of some affixes

An important difference between Haas's analysis of Creek and West's analysis of Mikasuki is that in the former not every syllable is marked for significant pitch.

The inflected verbs of Mikasuki have been found in this study to have contrastive pitch on one 'key' syllable, here called the prominent syllable, and to have non-contrastive pitch on the other syllables of the root or stem. Some of the verbal affixes have their own inherent pitch, and others acquire pitch from the syllables around them. The result is that an inflected verb will have one or more syllables with contrastive pitch. This analysis is similar to the pitch system of Creek verbs.

1.5.3.8 David West--1974a

'Mikasuki Verb Prefixes' is the first twentieth-century linguistic publication dealing with Mikasuki syntax. It presents the six order classes of prefixes, their co-occurrence restrictions, their cross-references with the clause, and a subclassification of verbs based on the person affixes. Pitch is not indicated in the examples.

The six classes of prefixes occur in the following order with respect to the verb stem:

Destination, direction, instrument, indirect obj., direct obj., place, STEM

Co-occurrence of two prefixes is common; West gives examples involving place and object, and instrument and object. Three prefixes may occasionally co-occur. Either direction or destination may be found preceding instrument and object.

Cross-reference of a prefix and a clause-level word suffixed by /-o̅n/ is found with place, object and instrumental prefixes. If one of these suffixes occurs on the verb stem, the presence of a clause-level referent is optional. If a word realizing place, object or instrument is found on the clause level, the corresponding prefix is obligatory. The latter situation seems to depend on the verb involved, however, becaue the verb /hi̅:c̆i̅k/ 'to see' does not take object prefixes in the third person, and the verb /aƛ-i:y-/ 'to go' does not take place prefixes:

/nàkno̅:c̆i̅ lok-Ø-hi̅:c̆-om/ 'The little boy is looking at them'

/òkl-o̅n̅ Ø-aƛ-i̅:y-om/ 'She went to town'

/òkli̅/ 'town'

Verb subclassification is based on the types of affixes found on a verb. Subjective verbs take pronominal suffixes; referential verbs take cross-referencing prefixes. On this basis, West distinguishes four principal classes of verbs (adapted from West, 1974a:71):

Referential Prefixes	Subject Suffixes: +	Subject Suffixes: -
+	Direct transitives Indirect transitives Intransitives	Direct statives Indirect statives
-	Equationals Descriptives	Impersonals

(Note: There is an ambiguity concerning the classification of 'intransitive verbs.' They have been placed with the referential verbs because they do take referential prefixes of direction, location, and place, although they do not take object prefixes. However, in examples given later in the article, the criterion of classification shifts to the occurrence of verbs with the direct and indirect object prefixes, together with the person suffixes. In this case the intransitives should be classified together wtih the non-referential descriptive and equational verbs, which do not take object prefixes.)

These verb types, with examples, are given below, classified according to the person referential affixes only. The chart is an adaptation of the information given on pages 72 and 73 (West, 1974a).

	Direct Object Prefixes	Indirect Object Prefixes	Subjectival Suffixes
Direct transitive	obligatory	optional	obligatory
Indirect transitive	X	optional	obligatory
Intransitive	X	X	obligatory
Equational	X	X	obligatory
Descriptive	X	X	obligatory
Direct stative	obligatory-- realize subject	X	X
Indirect stative	X	obligatory-- realize subject	X
Impersonal	X	X	X

(Note: 'X' indicates 'not permitted')

Direct transitive verbs In some examples, the third singular object is not realized.

/lok-ča-hí:č-om/ 'He looked at me' /-lok-/ 'directional prefix'

/i:f-on Ø-hí:č-om/ 'She saw the dog'

Indirect transitive verbs

Optional ind. obj. prefix: /Ø-hákl-om/ 'She heard'

Obligatory ind. obj. prefix: /ām-í:k-om/ 'She gave it to me'

Intransitive verbs

/ókl-ōn aχ-ī:y-om/ 'She went to town'

Equational verbs No verb prefixes; 'incorporated noun'

/tāyk-ō:t-om-li/ 'I am a woman'

Descriptive verbs No verb prefixes; 'incorporated modifier'

/čó:b-ō:t-om/ 'It is big'

Direct stative verbs The subject is realized by the /-čā-/ series of person prefixes.

/čā-bā:n-om/ 'I want it'

Indirect stative verbs The subject is realized by the /-ān-/ series of person prefixes.

/hā:l-ōt čīm-í:χ-o/ 'Do you have a cup?'

Impersonal verbs No person affixes at all.

/ok-ō:b-om/ 'It is raining'

On the basis of person affixation the equational, descriptive, and intransitive verbs should all belong to the same class. To differentiate them, West has introduced another criterion--that of root--noun root, verb root or modifier. While this is a valid distinction, it should not be added without comment to the classification by affixal morphology.

1.5.3.9 David West 1974b

'Number in the Mikasuki Verb Stem' details the formation and use of the verbs which have stems marked for number. There are two types of number-marking verbs, those which have singular and multiple stems, and those with singular, dual and plural stems (West, 1974b:133). In this article 'multiple' refers to the non-singular form of two-stem verbs; 'dual' and 'plural' refer to the non-singular stems of three-stem verbs.

The multiple stems and dual stems are formed in two ways:

Suppletion

/īl-om/ - /ōkš-om/	'die'
/čokō:l-om/ - /wī:k-om/ - /ī:ƛ-om/	'sit'

Affixation

/ƛanā:č-om/ - /ƛanā,š,š-om/[13]	'remove something'
/čiyāhl-om/ - /čiyah,čō:,l-om/	'walk'

The occurrence of the /-š-/ infix, or the infix composed of the first consonant of the verb root followed by /-o:-/ is phonologically conditioned. /-š-/ occurs if the singular stem ends in one consonant, and the partially reduplicative form is used if the stem ends in two consonants.

The plural stems are formed in three ways:

Suppletion

/χiniː-k-om/ - /palāː-k-om/ - /matāː-k-om/ 'run'

Addition of the pluralizing suffix /-:č-/ to the singular stem

/iːl-om/ - /itonk-om/ - /iːl-ā-:č-om/ 'come'

Addition of the pluralizing suffix /-:č-/ to the dual stem

/hačāː-l-om/ - /lokōːk-om/ - /lokoːk-ā-:č-om/ 'stand'

Two-stem and three-stem verbs may be grouped into eight classes based on the formation of their non-singular stems. The chart in Figure 1.7 represents a simplification of West's (1974b:133); non-occurring forms and one-stem-verbs, which are not marked for number, are eliminated. To the left of the vertical double line are the two kinds of two-stem verbs. To the right of the double line are the various types of three-stem verbs. Three-stem verbs in which the dual is a suppletive form are found below the horizontal line; three-stem verbs in which the dual is formed by affixation are above the horizontal line.

Figure 1.7 Dual, Multiple and Plural Stems of Verbs

Dual/multiple:

sg. + /-š-/	sg. + /-:č-/	du. + /-:č-/	suppletion
/ɬana:č-/, /ɬana,š,š-/ 'remove'	/aɬ-i:y-/, /aɬ-i,š,y-/, 'go' /aɬ-a-:č-/	/čiyahl-/, /čiyah,čo:,l-/, /čiyah,čo:,l-i-:č-/ 'walk'	
		/apo:n-/, /apo,š,n-/, /apo,š,n-i-:č-/ 'talk'	(no ex.)
(2 ex.)	(1 ex.)	/ata:ɬ-/, /ata,š,ɬ-/, /ata,š,ɬ-a-:č-/ 'know'	
		(8 ex.)	

suppletion

/i:š-/, /a:w-/ 'pick up'	/i:l-/, /ito:k-/, /i:l-a-:č-/ 'come here'	/ayy-/, /yowk-/, /yowl-i-:č-/ 'be around'	/ɬinitk-/, /pala,š,k-/, /mata:k-/ 'run'
/ill-/, /okš-/ 'die'	/ont-/, /ala:w-/, /ont-i-:č-/ 'come'	/tala:k-/, /šalk-/, /šalk-a-:č-/ 'lie down'	/čoko:l-/, /wi:k-/, /i:ɬ-/ 'sit'
/čo:b-/, /ho:t-/ 'big'		/hača:l-/, /loko:k-/, /loko:k-a-:č-/ 'stand'	
/ta-ɬa:l-/, /ta-pila:k-/ 'fall'		/i:l-/, /ito:k-/, /it-i-:č-/ 'come here'	
/wink-/, /pišk-/ 'small'			
(5 ex.)	(2 ex.)	(6 ex.)	(2 ex.)

The numbers in parentheses give the total number of examples of each type of stem formation found in Derrick's data.

Not all verbs fit neatly into this system. Several verbs have more than one dual or plural form. These variations have been given for the same verb by one speaker, or by two different speakers. The following is a list of such verbs found to date:

'come here' /i:l-om/ - /itonk-om/ - /it-i-:-čom/ ~ /ot-i-:č-om/

~/ila-:č-om/

'lie down' /tala:k-om/ - /šalk-om/ - /šalk-a-:č-om/ ~ /tala,š,k-a-:č-om/

'run' /ɣini:k-om/ /ɣini,š,k-om/ - /ɣini,š,k-a-:č-om/

/pala,š,k-om/ - /mata:k-om/

'sit' /čoko:l-om/ - /wi:k-om/ - /wi:k-a-:č-om/ ~ /i:ɣ-om/

The final part of West's paper deals with the uses of the non-singular stems. The number of the subject of an intransitive verb governs the number of the verb stem. The number of subject or object of a transitive verb governs the number of its stem. Cloth-like objects or subjects take multiple or dual stems, and liquids or aggregates take the plural stem. Repeated actions also take the dual.

1.5.3.10 S. Boynton and M. T. Derrick--1974

'Number in Mikasuki' is a brief review of number marking on verbs, pronouns, and nouns. /-a:ɣ-/ is the nominal plural suffix. If

both the subject and the object of a sentence are plural, only the subject is marked for number. Plural nominals are also formed by compounding with such roots as /àčōnk-ī/ 'many,' /làlàpk-ī/ 'all,' or the numerals.

In this article a four-person verbal suffix system was postulated: first person singular, second person, third person, and fourth person 'I-in-a-group.' This has since been revised to a three-person system. First person is the most highly marked, having a singular and two plural forms. Second person is intermediate, with only two forms, singular and plural. Third person is the unmarked person; it has no separate singular or plural forms:

	Singular	Plural	
first	-li-	-i:ka-	(exclusive: 1st and 3rd but not 2nd)
		-o-	(inclusive: 1st and 3rd)
second	-ička-	-ačka-	
third	Ø		

The markedness of the first person over second and third in terms of plurality extends to the person prefixes, two classes of which also mark possesion:

	Suffix:	Prefix:	Possessive:
1st	-li (sg.) -i:ka (pl.) -o (pl.)	-čā- (sg.) -pō- (pl.)	-čā-,-ān- (sg.) -pō- (pl.)
2nd	-ička- (sg.) -ačka- (pl.)	-čī- (sg. and pl.)	-čī- (sg. and pl.)
3rd	ø	-ī-,ø	-ī-

The types of plural formation of number-marking verbs and their uses are also discussed.

1.5.3.11 K. Kruse--1975

'The Preparation of Beginning English Reading Materials for Mikasuki Speakers' contains a contrastive analysis of the phonologies of English and Mikasuki, a review of the methods used to teach reading to elementary school children, and the author's suggested outline for teaching English phonology and sound-spelling correspondences to children learning to read first in English rather than in Mikasuki. The outline of lessons for teaching English phonology and spelling are reviewed in Section 1.4.2 of this chapter. The phonological analysis of Mikasuki, used as background to the outline, is reviewed below.

The contrastive analysis covers the segmental phonemes, their distribution, the syllable structure, and the consonant clusters found in Mikasuki. Pitch and stress were not included. The presentation of

the consonantal phonemes is adequate but the analysis of the vowels is not. Examples of the vowels are given in phonemic transcription, and later in phonetic transcription, but it is not made clear in the second instance which vowel qualities realize which phonemes. The examples mix different vowel qualities and confuse the long and short vowels. In the examples below, only the phonetic transcript is supplied by Kruse.

[e] [tegaʔkigəm] /tàkàʔkí:kóm/ 'that job'; [pahe] /pàhí/ 'grass'

[u] [upagi] /ó:pá:kí/ 'owl'; [yukci] /yòkǒ́ci/ 'turtle'

[ə] [pəkti] /pàkti/ 'mushroom'; [tegaʔkigəm] /tàkàʔkí:kóm/;

[nəgnə] /nàknî/ 'man'

In summary, the portion of this thesis dealing with phonology is a brief sketch rather than an investigation extending beyond West's earlier study of the language. The complexities of the vowel allophones necessitate a broader investigation, one which includes a study of the pitch and stress system.

1.5.3.12 Mary T. Derrick--1975

'Causative Constructions in Mikasuki' examines the relationships among non-causative and the related causative sentences, from the point of view of case grammar according to Fillmore (1971) and Chafe (1970).

In Mikasuki, the causative suffix /-:č-/, preceded by one of two stem vowels, has several functions. In one set of examples, it

forms the 'classical' causative construction, in which the subject of an intransitive verb becomes the object of a transitive verb:

/hamp-/ 'be broken' (Object case (O); Beneficiary case (B))

/issinihki ã:-hamp-om/ 'My car is wrecked'
O B B O

/hamp-a-:č-/ 'wreck' (Object (O); Agent (A); Beneficiary (B))

/issinihki ã:-hamp-a-:č-om-Ø/ 'He wrecked my car'
O B A A B O

The /-:č-/ suffix also has a derivative function; the derived form is related semantically but not syntactically to the underived form. In this instance the number of cases may or may not change. This is shown in the second example set:

/apo:n-/ 'talk' (Agent case)

/apõ:n-om-Ø/ 'He's talking'
A A

/apo:n-i-:č-/ 'gossip about' (Agent; Object)

/ač:apo:n-ĩ-:č-om-Ø/ 'He's gossiping about me'
O A A O

In the final set of examples, no new cases are added. In the sentence containing the causative suffix, the agent case must be the subject of the sentence.

/maɬa:l-/ 'fear' (Instrumental (I); Experiencer (E))

/halpáti in-maɬa:l-om-li/ 'I'm afraid of the alligator'
I I E E I

(Experiencer is the subject of the Mikasuki sentence.)

/ča-maɬa:l-om-Ø/ 'It scares me'
E I I E

(Instrumental is the subject of the Mikasuki sentence.)

/halpáti ča-maɬa:l-ĩ-:č-om-Ø/ 'The alligator scares me'
I E I I E

The above analysis is Fillmorean in its emphasis on the cases accompanying the verbs. Chafe's model focuses on the verb itself. Verb forms are classified as basic or derived. Basic forms are of five types--state, process, action, action-process or ambient. Classification depends on semantic and syntactic information.

/tabankš-om/ 'It is straight' (state)

/nõ:h-om/ 'It is cooking' (process)

/šawã:k-om/ 'She's moving' (action)

/sokóči witã:l-om/ 'She's opening the door' (action-process)

/ĩmpt-om/ 'It is snowing' (ambient)

Derived verbs are created by the action of derivational units, which are applied to a specified basic verb type. The derivational unit inchoative, for example, derives a process from a state verb. The derivational unit causitive derives an action-process verb from a process verb. The fact that the cases accompanying the derived verb may differ from those accompanying the basic verb is of secondary importance in Chafe's model.

Data collected since this paper was written show that verbs derived by the causative suffix are all action-process, regardless of their basic forms:

State	Action-process
/hāmp-om/ 'It is bad; wrecked'	/hamp-á-:č-om/ 'She destroved it'
	/want-á-:č-om/ 'She turned it up
/wānt-om/ 'It is strong'	/want-á-:č-om/ 'She turned it up (the radio)'
/hā:lī ayikon čokō:l-om/ (0 L)	/hā:lī ayikon čoko:l-ī-:č-om-li/ (0 L A)
'the cup is on the table' (0 L)	'I put the cup on the table' (A 0 L)

Process	Action-process
/fāyhn-om/ 'It is flowing'	/fayhn-ī-:č-om/ 'She is draining it'
/ill-om/ 'He is dying'	/ill-ī-:č-om/ 'She is killing (him)'

Action		Action-process	
/ĩmp-om/	'She is eating'	/imp-ã-:č-om/	'She is feeding (her)'
/ƛan-ĩ:y-om/	'She is going'	/ƛan-á-:č-om/	'She took (it) out'

Another set of pairs of verbs shows the same relationship. Verbs with the intransitive suffix /-k-/ may be state, process or action; verbs with the /-l- transitive suffix are always action-process:

State		Action-process	
/witã:-k-om/	'It is open'	/witã:-l-om/	'She is opening (it)'
/fáč-k-om/	'It is sharp'	/fãš-l-om/	'She is sharpening (it)'

Process		Action-process	
/yĩƛ-k-m/	'It is burning'	/yĩƛ-l-om/	'She is burning (it)'

Action		Action-process	
/opãh-k-om/	'She is bathing'	/opah-l-ĩ-:č-om/	'She is bathing (it)'
/čawã:-k-om/	'She is moving'	/čawa:-l-ĩ-:č-om/	'She is moving (it)'

There are a few verbs which show derivation from state to action. This is accomplished by adding the progressive affix, which is indicated by nasalization on the prominent syllable:

State	Action
/fisahk-om/ 'She's alive'	/fisahk-om/ 'She's breathing'
/big sa:pon cokō:l-om-li/ 'I live at Big Cypress'	/ayon on-cokō:l-om-li/ 'I'm sitting on the table'

1.5.3.13 K. Booker--1977

'Some Common Elements of Muskogean Verb Morphology' examines the verbal morphology of the extant Muskogean languages in order to speculate on the verbal system of proto-Muskogean (Booker, 1977a:99). To this end pronominal affixes, tense markers, process of stem formation, the suffixes /-ka-/, /-li-/ and /-:č-/, instrumental and locative prefixes, and prefixed verb stems are compared in Creek, Mikasuki, Hitchiti, Choctaw and Alabama. Additional Mikasuki data are now available, and comment will be made on those sections of the paper in which these data are useful.

Subjects of active verbs (p. 98). The /-hō-/ affix is found in both eastern and western Muskogean languages as a pluralizer (Booker, 1977a:98). In Mikasuki it is used on both nouns and verbs. As an optional pluralizer on nouns, it occurs as a prefix, and is used on human nouns alone:

/hō-tayk-i/ 'girls' /hō-posk-ō:č-a?-i/ 'children'

On verbs it indicates the plurality of either subject or object on those verbs which do not have separate stems for number. It occurs as an infix preceding the last consonant of the stem, and thus

may become the prominent syllable of the verb in certain tenses. Stem-forming suffixes into which the /-ho-/ infix may be inserted are /-:č-/ 'causative,' /-:č-/ 'plural,' /-i:p-/ 'completive,' and /-a:l-/ (function unknown).

/hi:,hõ:,č=ikt-awa/ 'They looked at it a long time ago'

In this example, the subject is pluralized by /-ho-/; the infix is the prominent syllable of the verb, and carries significant pitch and nasalization.

/ičči:-potĩ:,ho:,č=om-i:ka/ 'We're thinking of you-all'

The object is pluralized by /-ho-/; it is not the prominent syllable.

/pafakš-i-:,hõ:,č=i-š/ 'They are smoking'

The subject is pluralized by /-ho-/; it is infixed into the stem-forming causative suffix, and functions as the prominent syllable.

Negative pronouns (p. 103). In Choctaw, Creek, and Alabama the subject pronouns have special negative forms. In Mikasuki no special negative subject pronouns are used except for the first person singular. The negative form of the pronoun is /-tay-/ (word-final) or /-tayk-/ (before vowels) (West and West, 1960:27). The /ay/ may be realized as [æ], [ɛ], or [ey], and the /k/ may be lost in a word-final, unstressed, reduced syllable.

/čā-wan-i:p-ink apon-tam/ [čə wə̃ ni: pĩŋk ə pun tæm]

//apo:n-tayk-om// 'I'm not talking because I'm tired'

/a:n-ik-šī: hič-teh/ 'I didn't see it either'

/pafakš-i-š-tay-m-i-š/ - //pafakš-i-:č-tayk-om-i-š//

[pə fək šīš tey mīš]

'I'm not smoking right now'

First person singular, future tense (p. 104). In addition to the special form of the first person in the negative, there is also a special contraction of the future suffix /-á:laka-/ used for the first person active suffix. According to Haas (1938-40:15), 'the form /-la:-/ is used only in the first person, and stands between the stem and the personal ending' in Hitchiti:

/počk-ala:-li-š/ 'I shall touch it'

/počk-ala:ka-š/ 'He shall touch it'

In Mikasuki the /-alá:-/ form is used in the first person singular, and optionally with verbs in any person when person is indicated by the person prefixes rather than by the person suffixes. The long form /-á:laka-/ is used for the (unmarked) third person on verbs which take the person suffixes:

/òpakš-on takalk-alá:-li/ 'I'll work tomorrow'
1st suffix

/takalk--i-li-k-a:y-i čā-wan-i:p-alá:/ 'I'll be tired after I work'
1st
prefix

/afn-i:y-a:č-ik-a i-wan-i:p-alá:/ — 'She'll be tired after she sews' (2 variants)
(3rd prefix)

/afn-i:y-a:-č-ik-a i-wan-i:p-á:laka/ — (3rd person prefix)

/opaks-on ča-hi:č-á:laka-Ø/ — 'He'll see me tomorrow' (1 variant) (3rd person suffix)

The past (p. 110). In the past tense, a form apparently similar to the /-ti-/ of Hitchiti also occurs in Mikasuki. It is used with the immediate future tense, and the second and fourth past tenses:

/čayahl-ik o:ɬ-ik a:y-á:-m-li-ti/ 'I'm going to go take a walk'

/a:ɬ-á:-li-t/ 'I'll be leaving'

/ay-ik-on tala:-k-í:-ti/ 'It was lying on the table' (second past tense)

/tala:-l-i-:č-í:-li-kta-ti/ 'I laid it down a long time ago' (fourth past tense)

Another pair of suffixes which occurs in Mikasuki and in other Muskogean languages is /-to:-/ and /to:ka/. Booker postulates that in pre-Muskogean there were two verbs 'to be,' one of which was *to:. The /k/ of /to:-k-a/ may be associated with a past tense marker. /-to:-/ is used in its metathesized form in Mikasuki as a verbalizer on noun roots, enabling them to be conjugated for tense and aspect:

/čik-o:t-om/ 'It is a house'

/-to:-k-a/ is apparently used in inferential statements or when the speaker is in doubt:

/i:po-poti:c-om-to:-k-a-h/	'They're thinking of us (I assume)'
/ok-opahk-ik-cik-on ayy-om-to:-k-a/	'She's in the bathroom'
/ma:ti ma:m-to:-k-a/	'Then I guess it's true?' (said in a questioning way in English)
/oso:l-ot yat-hi:l-o:t-om-ik-to:-k-a/	'Osceola was a good person;

In the last example, both suffixes co-occur. This is reminiscent of the co-occurrence of the two modern reflexes of pre-proto-Muskean *ka (intransitive) in Hitchiti, Mikasuki and Creek (Haas, 1969:55).[14]

Internal modifications of the stem (p. 113). Added to the suffixes which indicate tense and aspect in the Muskogean languages are internal modifications of the stem, including vowel length, infixation, and pitch changes, which also characterize various tenses and aspects. Booker presents a comparative chart of modified verb stems (pp. 114-115), in which the Mikasuki data are (unavoidably) incomplete. Because analysis of the Mikasuki tense/aspect system is also not complete, the following supplement to Booker's chart must be considered speculative. In the examples, the stem is underlined once, and the prominent syllable, which carries significant pitch, is underlined twice. The stem boundary is indicated by =.

Form: Plain stem (no significant pitch)

Uses:	Future:	/imp=á:-m/	'She's going to eat' (immediate future)
		/imp-á:laka/	'She will eat' (remote future)
	Past:	/hi:č=óm/	'She has looked at it a moment ago' (present completive)
		/hi:č=í:/	'She looked at it a while ago' (second past tense)
		/hi:č=ó,h,m-i/	'She looked at it a week ago' (third past tense)
		/hi:č=í:-kta/	'She has looked at it before a long time ago' (fourth past tense)

Form: Lengthened vowel in the prominent syllable of the stem; mid pitch or high pitch

Uses:	Present incompletive:	/ay-ik-on čoko:l=om/	'It is (sitting) on the table'
		/fisahk=om/	'She's alive'
	Present completive:	/hi:č-=om/	'She looked at it just now'
	Past:	/an-kaba:l-o:t=í:/	'I was cold yesterday'
		/an-kaba:l-o:t=o,h,m-i/	'I was cold three days ago'
		/an-kaba:l-o:t=í:-kta/	'I was cold last year'

Form: Infixed /-N-/ realized as nasalized vowel; lengthened vowel; mid pitch or high pitch

Uses: Present incompletive progressive: /ay-ik-on čokõ:l=om/ 'She is sitting on the table'

/fisãhk=om/ 'She's breathing'

Past: /hĩ:č=i-kta/ 'He looked at it a long time ago'

/ill-ĩ:p=om/ 'She died'

/ač-atã:ɬ=o,h,m-i/ 'I learned it last year'

Adjectives: /patk-i/ 'fast'; /pãntk=o:n/ 'It is fast'

Form: /-h-/ infix; high pitch

Uses: Past: /im,h,p=a-š/ 'She ate three days ago'

/honl-a-:č=om-á:,h,l-itĩ/ 'They buried him last week'

/hi:č=ó,h,m-i/ 'She looked at it a week ago'

Imperative: /ón,h,t-i/ 'Come here!'

/ām-í,h,k-i/ 'Give it to me!'

Form: Epenthetic vowel, either copied or not

Uses: Sometimes the longer form indicates a repeated action and sometimes not

/põ:čk=om-li/ 'I'm feeling it'

/poč,õ:,k=om-li/ 'I'm touching it'

/kõšl=om/ 'She's cutting with a knife'

/kalã,š,l=om/ 'She's cutting with scissors'

/kã:š=om/ 'He's giving a ritual scratch'

/oho:n-ko:š-i/ 'skirt' ('dress'-'cut')

/kãmbl=om/ 'He's biting many times'

/kabã:l=om/ 'He's biting once'

/šakw=om/ 'It's dried up'

/šokõ:k=om/ 'It's getting dry'

The /-h-/ past tense infix is said to have two variants, /-hayh-/ or /-ayh-/ when the syllable within which it is infixed ends in two consonants, and /-h-/ when it ends in one consonant (West, 1975, in Booker, 1977a:117). Booker suggests that these may be separate morphemes which can co-occur. Examples in which both morphemes occur in stems ending in one consonant and in two consonants seem to support Booker's statement:

Stem ends in one consonant:	/pafakš-i-:,h,č=a-š/	'She smoked three days ago'
		/pafakš-i-:č=/ 'smoke'
	/ča-tolo:,h,ayh,k=a-š/	'I coughed three days ago'
		/tolo:k=/ 'cough'
Stem ends in two consonants:	/im,h,p=a-š/	'He ate three days ago'
		/imp=/ 'eat'
	/poč,h,ayh,k=a-š/	'She felt it three days ago'
		/počk=/ 'feel'
	/hot,h,ayh,m=ih/	'Shut (it)!'
		/hotm=/ 'shut'

Another use of the /-h-/ infix in Mikasuki is in conjunction with the suffixes /-ka-/, /-li-/, and /-:č-/ (causative), to form compound nouns or dependent verbs. In these constructions the suffixes retain their meanings as intransitive, transitive or causative. The vowel preceding the /-h-/ is one of the two stem vowels.

/no:č-i-h-č-ot talā:-k-om/ 'She's sleeping' (literally: She's lying down sleeping)

/nòt-š-òkš-à-h-k-ī/	'toothpaste'	/nō:t-i/	'tooth'
		/-iš-/	'instrumental'
		/-okš-/	'wash'
/nòt-š-òkš-à-h-l-ī/	'toothbrush'		

1.5.3.14 K. Booker--1978

'On the Origin of Number Marking in Muskogean' reviews the marking of verbal number in the modern Muskogean languages in order to determine the form and use of the plural affixes in proto-Muskogean. Fully suppletive verbs, with separate singular, dual, and plural stems are not included. The investigation shows that the two plural morphemes in proto-Muskogean, *ho 'dual' and *či 'plural,' have three modern reflexes--/-ho-/, /-či-/, and /-š-/ ~ /-s-/.

/-ho-/ is found in all the modern languages and has the widest use of all the plural morphemes, being found with both pronouns and verbs (p. 101). As a pronominal pluralizer it occurs with the third person in many of the Muskogean languages, with the second person object pronouns in Mikasuki, and on the first person multiple pronoun in Choctaw. As a predicate pluralizer in Creek, it keeps its proposed proto-Muskogean function as the number marker on dual stems. In Mikasuki and Choctaw it 'represents the generalization of the dual as a non-singular marker' (Booker, 1978:103), and is used in the multiple stems of predicates with only one non-singular stem.

/-či-/ is also found in all the modern Muskogean languages. In Creek, Hitchiti and Mikasuki it is used in the plural stems of

three-stem verbs. Both intransitive and transitive verbs in Creek are pluralized by /-č̬i-/, but, according to Booker, only intransitive verbs in Mikasuki have /-č̬i-/ forms (1978:103). A few verbs, however, have been found in Mikasuki which take /-č̬i-/, and can also be considered transitive:

/atā:ɬ-om/ - /atā,š̬,ɬ-om/ - /ata,š̬,ɬ-ā-:č̬-om/ 'know'

/hopā:n-om/ - /hopā,š̬,n-om/ - /hopa,š̬,n-ā-:č̬-om/ 'sing'

/apō:n-om/ - /apō,š̬,n-om/ - /apo,š̬,n-ā-:č̬-om/ 'talk'

These verbs may be only marginally transitive, however. Similar verbs in Spanish are classified by Aid (1973:134) as Action verbs, a particular subclass of transitives. Their objects differ from those of other transitive verbs in that 'the complement merely further narrows the semantic specification of the verb root' (Chafe, 1970:156, in Aid). For example, the verb 'sing' implies that the object must be some kind of song.

There are two other transitive verbs with non-singular stems, but there are also anomalous, in that they have only two stems, rather than three. The multiple stem is formed by the /-š̬-/ infix, and not the /-:č̬-/ suffix.

/yatāb-l-om/ - /yatā,š̲,p-om/ 'hit'

/ɬanā:č̬-om/ - /ɬanā,š̲,č̬-om/ 'remove'

These five transitive verbs may represent the first step in the spread of pluralization to the transitive verbs, beginning with those which are

only marginally transitive or which form the non-singular stems in an irregular way.

The third affix which indicates plurality is the /-š-/ or /-s-/ infix. It is most widely used in Mikasuki, appearing in both the dual and the plural (Booker, 1978:105). There are only a few examples of it in Alabama/Koasati. In Choctaw it is used only with a restricted class of noun-incorporating verbs. The affix does not occur in Creek.

Phonological evidence shows that /-š-/ is a modern development of /-či-/, and not a separate affix. It occurs as an infix before the final consonant of the root. This position, as the first consonant of a two-consonant cluster, is a position of neutralization for /č/ in Choctaw and Alabama: //č// ⟶ /š/ or /s/. In Mikasuki 'synchronic morphophonemic alternations suggest that at one point č > š before all consonants but k . . . ' (Booker, 1978:107). This rule has now been relaxed in Mikasuki, but č has remained š as the pluralizing infix. The other piece of evidence linking č to /š/ is the fact that /-š-/ and /-:č-/ are in complementary distribution; /-š-/ occurs preconsonantally, and /-:č-/ elsewhere (Booker, 1978:107).

1.6 Notes

[1]This resume of Seminole history is based on three main sources: Fairbanks, 1957; Fairbanks, 1978; and Sturtevant, 1971. For a fuller account of the development of the Seminole, the reader is referred to these works. The first two time periods of the history are the author's own; the last five follow Fairbanks, 1978.

[2]In anthropological usage, the people of the Confederacy, whatever their language, are referred to as the Creek. This term dates from late seventeenth-century English usage, when the people living

along the upper Ocmulgee River in Georgia were called the people of Ocheese Creek, shortened to Creek. 'Ocheese' is from the Hitchiti /oči:ši'/ 'Muskogee speakers.' The dominant language of the Creek is Muskogee (/ma:sko:ki/) (Sturtevant, 1971:97).

[3]'Talwa' has often been incorrectly translated as 'town,' which implies a place of residence or a population center. This concept is expressed in Muskogee as /talo:fa/. As can be seen in the following discussion, the ties of an individual to the talwa were lifelong and stronger than those implied by the English translation (Sturtevant, 1971:93).

[4]The following five divisions of Seminole history are from Fairbanks's 'The Ethno-archeology of the Florida Seminole' (1978).

[5]No language or census data were available for the Miccosukee Tribe of Indians of Florida.

[6]'Bilingual Approach to Seminole Education' (1975-76), Ahfachkee Day School.

[7]'A Plan for the Implementation of a Bilingual Education' (1973), Miccosukee Corporation Education Program.

[8]Primary colors: /lō:čī/ 'black'; /hàtkī/ 'white'; /kitiščī/ 'red'; /làknī/ 'yellow'; /hònotbī/ 'dark blue~dark green'; /sòpatfī/ 'gray~light blue~light green.' Secondary colors: /lān-kitiščī/ 'orange'; /kitiš-lō:čī/ 'maroon'; /bàłb-okčī/ 'dark purple'; /if-lāykī/ 'light purple'; /loč-làknī/ 'brown'; /hònotb-ì-tàlákčī/ 'green'; /kitiš-hátwī/ 'pink.'

[9]The presentation of Haas's tense system corresponds to the analysis of tense given in Section 6.4.2.

[10]Sylvia Boynton, M.A. (anthropology), 1976, personal communication.

[11]A further anomaly is that the /-h-/ form of the suffix occurs following a vowel, as in /čafo,h,k-i-š/ 'she chewed,' while the /-ayh-/ form is supposed to occur following a consonant, as in /poč,ayh,k-a-š/ 'she touched it.' However, in the past tense of /imp-/ 'eat,' the /-h-/ occurs where the /-ayh-/ is expected.

[12]Morphophonemic representation is indicated by // //, phonemic representation by / /, and phonetic representation by [ ].

[13]The morphophonemic representation of this form is //łana:N,š,č-om//. See Section 2.2.1 for a discussion of syllable structure, and section 2.2.3 for a discussion of the realization of //N// and the neutralization of //šč// clusters.

[14]Some verb stems in pre-proto-Muskogean were conjugated with an auxiliary, either /-ka-/ 'intransitive' or /-li-/ 'transitive.' This auxiliary system developed into the present-day pronoun systems of Creek and Hitchiti. Today in Hitchiti all verb stems are conjugated with the pronouns originally used only with the /-ka-/ verbs. Some verb stems also contain /-k-/ and /-l-/ intransitive and transitive suffixes, also developed from the pre-proto-Muskogean auxiliaries, so that some verbs now have two morphs derived from the same source, although 'through reinterpretation and analogic leveling they now have completely different functions' (Haas, 1969:55).

CHAPTER 2
PHONEMIC INVENTORY AND DISTRIBUTION

2.0 Introduction

This chapter presents the most basic elements of Mikasuki phonology, the segmental and suprasegmental phonemes, their distribution within syllables and words, and their positions of contrast and neutralization.

2.1 Phonemic Inventory and Phonetic Variation

The phonemic system of Mikasuki contains fourteen consonants, three vowel qualities, three contrastive pitches, nasalization and vowel length:

Consonants

p	b	t	k
		č	
f		s	ʃ
m		n	
		l	
w		y	h

Vowels

i	o
a	
i:	o:
a:	

Pitch

/high/ /mid/ /low/

Figure 2.1 Phonemic Inventory of Mikasuki

2.1.1 Phonetic Variants of the Consonants

Allophonic variation of the consonants is described in terms of classes of consonants. In some environments, certain generalizations may be made concerning the phonetic realization of certain subclasses of consonants. The first subclass of consonants divides them into groups based on the manner of articulation:

Stops:	p	b	t	k
Fricatives:	f	ɣ	s̬	
Affricate:			c̬	
Nasals:		m	n	
Lateral:			l	
Semivowels:	w		y	h

The second subclass of consonants divides them into sonorants and obstruents based on their sonority. The sonorants are all non-contrastively voiced, while most of the obstruents are not. In addition, sonorants are produced with less restriction of the passage of air through the oral cavity; obstruents with more. For these reasons syllables with sonorants in coda position behave like syllables with long vowels and like open syllables in terms of pitch restrictions. Distributionally obstruents may occur only on the 'outer edges' of the syllable, in onset-initial or extreme final position. Sonorants occur within the vocalic 'core' of the syllable, adjacent to the vowel. Thus (1) and (2) below are possible Mikasuki three-consonant clusters, but (3) is not. (K - obstruent; L - sonorant. A syllable boundary is represented by a space.)

1. KV<u>LL KV</u>
2. KV<u>LK KV</u>
3. *KV<u>KL KV</u>

The sonorant/obstruent subclass is used in the description of three-consonant clusters (Section 2.2.2.2) and in the discussion of the distribution of the three contrastive pitches (Section 3.1).

The third subclass of consonants is based on the amount of closure necessary in their articulation.

Closed	Non-closed
p b t k č	f š χ
m n l	w y h

<u>Closed</u> consonants are produced with a greater degree of contact between the articulators than are the non-closed consonants. This subclassification is used in the discussion of the realization of the abstract nasal morphophoneme //N// (Section 2.2.3.2).

The fourth subclassification of consonants ranks them according to their 'resistance' to influence from various phonetic environments. There is one type of <u>strong</u> consonant and two types of <u>weak</u> consonants:

Strong	Weak
š f χ č	Weak 1: p t b
w y h	Weak 2: k h
m n	

This is the most complex of the consonant subclasses and is important in more situations than the other classes. Furthermore, it produces not a two-way classification, but a hierarchical ranking of the consonants along a 'strong-weak'continuum. The labels 'strong' and 'weak' refer to the relative resistance to voicing changes, neutralization and potential for elimination from a syllable.

There are two major distinctions between the strong and weak consonants. First, the strong consonants do not vary in voicing; the weak consonants have both voiced and voiceless variants. (Notice that this produces a neutralization of the phonemic distinction between /p/ and /b/, but is only an allophonic variation for /t/ - [t] - [d], and /k/ - [k] - [g].) The second difference is that weak consonants may be dropped under certain conditions when they occur intervocalically, producing a reduced syllable composed of the remains of two previously independent syllables. Single strong intervocalic consonants in similar environments are not dropped. (For discussion of syllable reduction, see Section 5.3.)

There is a further subdivision of the weak consonants into the weak 1 and weak 2 types. The weak 2 consonants are subject to more allophonic variation than are the weak 1 consonants. Weak 2 consonants are voiced intervocalically, while weak 1 consonants are not. Secondly, only the weak 2 consonants are subject to progressive voicing assimilation in two-consonant clusters. Finally, only the weak 2 consonants have nasal allophones when they occur in clusters with nasals.

The differences between the strong, weak 1 and weak 2 consonants are summarized as follows:

Environment:	Strong	Weak
Intervocalic	No voicing change	Weak 1--no voicing change Weak 2--voiced in this position
Reduced syllables:	Never dropped	Weak 1 and 2--dropped
2-consonant clusters:	No voicing change	Weak 1--subject to regressive assimilation Weak 2--subject to regressive and progressive assimilation

In addition to these subclasses among consonants, certain generalizations concerning allophonic variation may be made which apply to all consonants regardless of classification. As the final consonant in the coda position of a syllable preceding another consonant, all consonants are lengthened and/or unreleased:

[ˈhə̄l̥̄ˑ̫ bɨ̄ʔ] /hālbī/ 'skin'

[šō̥ gī hə̄lp̱ˑ̚ kə̄ ˈfāɦˑbɨ̄ʔ] /šǒkìhàlpkàfáhbī/ 'armadillo' (lit. 'pig-skin-rough')

All consonants are laxer in intervocalic position than in other positions. For the consonants which do not change their voicing in this environment, that is, all the consonants except /k/ and /h/, laxing will be indicated by C̬.

Because consonants which belong to the same strong or weak class show similar allophonic variation in specified environments, and

because of the importance of this classification to other parts of the phonological system, the consonants and their variants will be discussed with reference to their strong/weak classification in the next section.

2.1.1.1. Strong voiceless consonants: /f,š,χ/

These consonants are always voiceless, but are lax intervocalically or in consonant clusters with voiced consonants. /š/ is the only consonant of this group which occurs word-finally.

1. /f/--labiodental fricative. The labiodental fricative is used by younger bilingual speakers; in its place older monolinguals use the bilabial fricative [ɸ].

Word-initial--[f]

[fõ: nɨʔ] /fo:ni/ 'bone'

[fə̃.š· kɨʔ] /fãški/ //faNški// 'sharp'

Intervocalic--[f]

[či yá:fɨʔ] /čiyá:fi/ 'ax'

[pə fək· šɨʔ] /pafákši/ 'smoke'

Consonant cluster--[f], [f]

[f] [pə̃ŋk· fəm] /pãkfom/ //paNkfom//

'It's swelling up'

[ɪ̄ čɨ̄f̱· kɨ?] /ìčìfkī/ 'name'

[f̬] [ə̃̄·f̬̱· n̄əm] /ã̄fnom/ //āÑfnom// 'She's sewing'

2. /š/--palatal fricative

Word-initial--[š]

[š̱ī tã̄: γə̄m] /šitã̄:kom/ 'four'

[š̱ῡ gu: gə̄m] /šokó:kom/ 'It's dry'

Intervocalic--[ẓ̌]

[fȭ:ẓ̱̌o: čɨ̄?] /fò̃:šō:čī/ 'baby bird'

[ī· ẓ̱̌õ̌: γə̄m] /išõ̌:kom/ 'Two people are doing it'

[hə̄ lã̄: ẓ̱̌əm] /halã̄:šom/ //halaÑšom// 'he's lying'

Consonant cluster--[s], [ẓ̌], [š]

[s]~[š] [kɪ̄ tɨ̄s̱ s̱ɨ?]~[kɪ̄ tɨ̄š̱· š̱ɨ?]~[kɪ̄ tɨ̄s̱ čɨ?]

/kìtìššī/ ~ /kìtìščī/ //kìtìščī//

'red' Variants 1 and 2 are given in normal conversational style; variant 3 is used in careful speech

[pə̄ ləs̱· tɨ?]~[pə̄ lə̄š̱· tɨ?]

/pàlàštī/ //pàlàŠtī// 'bread'

[ʂ̆] [ɪ̄] bɨ̄ʂ̆ bə̄ ˈnā: gɨ̄ʔ] /īlbišbànā:kī/ 'bracelet'

[h̄ə pə̄ʂ̆· ˈnā̆: čʊŋ·gā] /hapašnā̆:čonka/

//hapašnāNčonka// 'They are singing'

[š̆] [ɨ̄š̆· kōʂ̆· ˈlā: mī γā] /iškošlá:mika/ 'We're going to cut'

[ʊ̄š̆· ˈtey gɨ̄ʔ] /oštāykī/ //o:čtāykī// 'daughter'

Word-final--[š̆]

[ī ʂ̆ō ˈlī: čə̄ mʊš̆] /išolī:čomoš̆/ 'They are wandering around' (dependent verb)

3. /ɬ/--dento-alveolar lateral fricative. The tongue tip is placed about midway between the alveolar ridge and the back of the teeth to produce this sound.

Word-initial--[ɬ]

[ɬə̄ ˈbəŋ gɨ̄ʔ] /ɬàbānkī/ 'leech'

[ˈɬa: mə̄m] /ɬā:mom/ 'one'

Intervocalic--[ɬ]

[čə̄ mə̄ ɬá:ˈlɨ̄·n cə̄m mīc kā] /čāmaɬa:lī:nčomička/

//čāmaɬa:līNčomička// 'You're scaring me'

[ˈni: ɬə̄ gɨ̄ʔ] /nī:ɬàkī/ 'night'

Consonant-cluster--[χ]

[yĩ·χ· kəm] /yĩχkom/ //yiNχkom// 'It's burning'

[yĩ·ᴺχ̥· ləm] /yĩχlom/ //yiNχlom// 'She's burning it'

2.1.1.2 Strong-voiced consonants: /w,y,l/

These consonants are always voiced. None of them occurs word-finally. They are nasalized in syllables with nasalized vowels.

1. /w/--bilabial continuant

Word-initial--[w]

[wa: čɨʔ] /wa:či/ 'mother'

[wi: gəm] /wi:kom/ 'Two people are sitting'

Intervocalic--[w]

[ə wi: ləm] /awi:lom/ 'Someone is coming closer'

[ə wʊon· təm] /awontom/ 'She vomits'

Consonant cluster--[w], [w̃]

[w̃] [čɤow· ləm] /čawlom/ 'She's writing'

[w] [šɤw ya: tɨʔ] /šawya:ti/ 'monkey'

2. /y/--palatal continuant

Word-initial--[y]

[ya: tɨ li: cɨʔ] /ya:tili:či/ 'murderer' (lit. 'people killer')

[yi təmb ləm] /yitamblom/ //yitaNblom//

'She's hitting'

Intervocalic--[y]

[či yãɦ· ləm] /čiyãhlom/ 'He's walking'

[ko wa: yɨʔ] /kowa:yi/ 'horse'

Consonant cluster--[ỹ], [y]

[ỹ] [hẽy yo:n] /hãyyo:n/ //haNyyo:tom// 'It's hot'

[ki hẽyŋ·gɨʔ] /kihãyki/ //kihaNyki//

'red-shouldered hawk'

[y] [ə mey tim] /amaytim/ 'I don't have any'

3. /l/--alveolar lateral continuant

Word-initial--[l]

[lə ləp·kɨʔ] /lalapki/ 'all'

[lʊ gu ga: čəm] /loko:ka:čom/ 'Several people standing'

Intervocalic--[l]

[kə bə lɪ̃:ⁿ cəm] /kabalĩ:čom/ //kabaliNčom//

'He's grabbing it with pliers'

[hə lã: ləm] /halã:lom/ //halaNlom//

'She's pulling'

Consonant cluster--[lʷ]: Velarized 'dark' /l/ occurs as the first consonant of a consonant cluster; [l] occurs in other positions

[lʷ] [əŋ gə bəlˑʷ tɨm] /ankabáltìm/ 'I'm not cold'

[həlˑʷ bɨʔ] /halbi/ 'skin'

[l] [fəbˑlihˑčɨʔ] /fàblìhčì/ 'wind'

[hə ləd ləm] /halatlom/ 'She's holding'

2.1.1.3 Strong voiceless consonant: /č/

Two varieties of /č/ are used by some Big Cypress speakers of Mikasuki, a more forward alveolarized palatal affricate [c], narrowly transcribed as [tˢ], and a more back palatal affricate [č], narrowly transcribed as [tʃ]. [c] and [č] occur in word-final and intervocalic positions, and in consonant clusters. Only [č] occurs word-finally.

Word-initial--[č]

[čɪ γɨʔ] /čiki/ 'house'

[čo gə la: šɨʔ] /čokola:ši/ 'tongue'

Intervocals--[č]~[c]

[c] [ʊ pos̆· kʊ ca: ƛɨʔ] /opos̆koča:ƛi/ 'children'

[čin· wa: cɨʔ] /činwa:či/ 'your mother'

[c]~[č] [si: çɨʔ]~[si: čɨʔ] /ši:či/ 'fog' (given by the same speaker on two different occasions)

[č] [o γɨ čo: bɨʔ] /okičo:bi/ 'Lake Okeechobee' (lit. 'Big Water')

[ha: čən] /ha:čon/ 'tail' (objective form)

[no: čəm] /no:čom/ 'She's sleeping'

[i čʊk čɨʔ] /ičokči/ 'saliva' (lit. 'mouth-juice')

Consonant cluster

/č/ + C : [hək čə bɨʔ] /hakčab-i/ 'ear'

[im bə̃nč ko:n] /im-banck-o:n/ 'It's long'

/š/ + /č/ : [ki tis sɨʔ] /kitišš-i/ //kitišč-i// 'red'

[ha: čɨš čɨʔ] /ha:čišč-i/ 'deaf person'

nasal + /č/: [lō gən čəw li: pəm] /lok-an-čawl-í:p-om/

'She already wrote to me'

Word-final

[c] [po mĩ·ŋə mic] /pom-ĩ:k-om-ič/ 'Are you giving it to us?'

[č] [na: gun o: mə mač] /na:k-on ó:m-om-ač/

'What were you (all) doing?'

2.1.1.4 Strong voiced consonants: /m,n/

The nasals have syllabic variants, indicated by [m̩], [n̩], when they occur word-finally in unaccented syllables with short vowels. They are especially short when these syllables also have low pitch.

1. /m/--bilabial nasal

Word-initial--[m]

[ma: tɨʔ] /ma:ti/ 'no'

[mɪ· ɣən] /mikon/ 'king' (objective form)

Intervocalic--[m]

[ma: mʊ sm̩] /ma:mošom/ 'That's all'

[šə mo: cɨʔ] /šamo:či/ 'sand'

Consonant cluster--[m]

[hō ˈləm gəm] /holamkom/ 'She's hiding'

[ˈhɨm nih tə gɨʔ] /himnihtaki/ 'today'

[ˈam ho: bɤt] /amho:bot/ 'high' (plural)

Word-final--[m] ~ [m̩]

[ī lɨ·ˈpa:m] /i:li:pa:m/ 'He's dying'

[kə ˈlə̃·š· ləm] /kalãšlom/ //kalaNšlom//

'She's cutting (with scissors)'

[kə ləš· lm̩] /kalašlom/ //kalašlom//

'She's just cut (with scissors)'

2. /n/--dento-alveolar nasal

Word-initial--[n]

[no: ˈto:n] /no:to:n/ 'It's a tooth'

[nʊg·ˈbo:n] /nokbo:n/ 'It's a neck'

Intervocalic--[n]

[ə ˈna: šɨʔ] /ana:šī/ 'egg'

[bə ˈnã: ləm] /banã:lom/ //banaNlom// 'She's tying (it)'

[ə põ: nm̥] /apõ:nom/ //apoNnom// 'He's talking'

Consonant cluster--[ŋ]~[n]~[n̥]

[nõ: čuŋ ga] /nõ:čonka/ //noNčonka// 'She's sleeping'

[ən nəŋ nɨʔ] /annàknī/ //aNnàknī// 'my husband'

[hõn wəm] /hõnwom/ //hoNnwom// 'She's smelling (it)'

[hi: čõŋ̊· kōh] /hi:čohkoh/ /hi:čonhkoh//

'Was she looking?'

Word-final--[n]~[n̥]

[nəŋ nī du:ɣ lī čī ya: fn̥ ã:wm̥]

/nàknītokłī čiya:fon ã:wom/

'men' '2' 'axe' 'hold'

'Two men are holding axes'

[hən tən no: ča:m] /hantoN no:ča:m/

'Where's she going to sleep?'

[hɨɣ tɨ čə pɨk co:n] /hiɣticapikco:n/

'It's real bad'

2.1.1.5 Weak 1 voiceless consonants: /p,t/

The weak 1 consonants are lax intervocalically, but are not voiced in this position. Voicing contrast is neutralized when the weak consonants occur as the first consonant of a two-consonant cluster. The only weak consonant to occur word-finally is /t/.

1. /p/--voiceless bilabial stop

Word-initial--[p]

[pu lʊč fɨʔ] /polóčfi/ 'round'

[pɨ̃·ɣ· bəm] /pĩɣbom/ //piNɣbom//

'She's dropping (small objects)'

[pə fək·šɨʔ] /pàfàkši/ 'smoke'

Intervocalic--[p]

[a: pɨʔ] /a:pi/ 'stem, stalk'

[tə pə̃·ŋəm] /tapã:kom/ //tapaNkom// 'He's pushing'

[hə pəŋ·gɨʔ] /hàpanki/ 'far'

[ə pã·g̊·kəm] /apãhkom/ //apaNhkom// 'She's swimming'

Consonant cluster--[p], [b]

[həl·ᵐpə tɨʔ] /hálpati/ 'alligator'

[ip· tã: səm] /iptã:čom/ //iptaNčom// 'It's freezing'

[tʊɻ· pɨʔ] /toɻpi/ 'knee'

[ni·h·tə gɨš ɻok· pən] /nihtakišlokpon/

'every day'

[tʊb· bəč· kɨʔ] /tobbački/ //to:pbački//

'bench' (lit. 'long chair')

(Notice that in the last example the distinction between /p/ and /b/ is neutralized.)

2. /t/--voiceless dento-alveolar stop

Word-initial--[t]

[tə lɨʔ] /tali/ 'stone'

[tʊ gʊ sɨʔ] /tokosi/ 'hair'

[tʊ čɨ· nəm] /točɨ:nom/ 'three'

Intervocalic--[t]

[ši tã: ɣəm] /šitã:kom/ 'four'

[ə tã: ɻəm] /atã:lom/ //ataNlom// 'She knows'

[ta: tɨʔ] /ta:ti/ 'father'

Consonant cluster--[t], [d]

[hə ləd ləm] /halatlom/ 'she holds'

[kɪ tɬs həd wɬʔ] /kitishatwi/ //kitischatwi//
[kɪ tɬs nəd wɬʔ] /kɪtɪsnatwɪ/ //kɪtɪscnatwɪ//

'pink'

[hʊt heyh mih] /hothayhmih/ 'shut it'

[hət· kɬʔ] /hátki/ 'white'

Word-final--[t]

[ča: yɤt] čʊm· bò:n] /ča:yot čó:bo:n/

'My foot is big'

[lə bən· gɬt] lə bʊŋ· gò:n] /labonki labónko:n/

'The mud is thick'

2.1.1.6 Weak 1 voiced consonant: /b/

Intervocalically /b/ is lax but retains its voicing contrast. When /b/ occurs as the first consonant of a two-consonant cluster, the voicing contrast between it and /p/ is suspended.

Word-initial--[b]

[bo: lɬʔ] /bo:li/ 'bream'

[bənč kəm] /bačkom/ //baNčkom// 'It's long'

[bə nã: ləm] /banã:lom/ //banaNlom// 'She's tying (it)'

Intervocalic--[b]

[à: bɨ̄]	/à:bī/	'picture'
[tə̄ bəŋk· šɨ̄ʔ]	/tabáǩšī/	//tabáNkšī//
		'It's straight; she's sober'
[lə̄ bəg nə̄m]	/labáknom/	'It's full'
[əŋ gə̄ bā: lò:n]	/ānkabā:lō:n/	'I'm cold'

Consonant cluster--[b], [p]

[həl̆·bɨ̄ʔ]	/hālbī/	'skin'
[bəɣ̄· bɨ̄ʔ]	/baɣ̄bī/	'grape'
[nʊ̄g· bɨ̄ʔ]	/nǒkbī/	'neck'
[čʊp· tɨ̄m]	/čóptìm/	//čó:btikom//
		'It's not big'

The p-b contrast is suspended in the last example.

2.1.1.7 Weak 2 voiceless consonants: /k,h/

The weak 2 consonants are voiced intervocalically. /k/ may be an approximate rather than a stop in this position. Voicing of these consonants is neutralized whether the weak 2 consonants occur in the first or the second position of a two-consonant cluster; this feature

distinguishes them from all other consonants. Both occur in word-final position.

1. /k/--voiceless velar stop

Word-initial--[k]

[kẽy ləm] /kãylom/ //kaNylom// 'He's digging'

[kɪ lɨʔ] /kili/ 'cat'

[χa:χi o·gʊn ka yo: lɪ̃: çəm] /χa:χi okon ka:yo:lĩ:čom/

/χa:χ-/ 'fish'; /ok-/ 'water'; /ka-/ 'in the water'; /yo:l-/ 'move around'; /-l-/ 'stem vowel'; /-:č-/ 'plural'; /-om/ 'verbal suffix'

'The fish are moving around in the water'

Intervocalic--[g], [ɣ], [ŋ]

[g] and [ɣ] occur in non-nasal intervocalic environments, apparently in free variation with each other. When /k/ is preceded by a long nasalized vowel, it is realized as either the voiced stop [g] or as the velar nasal [ŋ]. In the latter case, the vowel also changes quality, becoming short. This phenonemon occurs in verbs inflected in the progressive aspect. No factors have been discovered to date to predict when /k/ will occur as [g] or [ŋ] under these conditions.

[wa: γo:n] /wa:ko:n/ 'It's a cow'

[həl·pə ti o γʊn ka: čɪ šã: γm̩]

'alligator' 'water' 'floating around'

/halpati okon ka:čisã:kom/

'The alligator is floating around in the water'

[tə lə̃· ŋəm] /talã:kom/ //talaNkom//

'He's lying down'

<u>Consonant cluster</u>--[g], [k], [γ], [ŋ]

The voicing of /k/ depends on the voicing of the other consonant in the cluster; [g] occurs with voiced stops and [k] with voiceless stops. Either [g] or [γ] occurs with voiced sonorants. [ŋ] occurs preceding nasal consonants or in syllables with nasalized vowels.

[nʊg bɨʔ] /nokbi/ 'neck'

[ʊk šãɬ· ləm] /okšãhlom/ //okšaNhlom//

'He's washing (it)'

[og· lɨʔ] /okli/ 'town'

[šə̃l· γəm] /šãlkom/ 'Two people are lying down'

[tey gɨʔ] /tayki/ 'girl'

[šʊk̲ šaˑhˑkɨʔ] /šokšahki/ 'soap'

[lʊk̲ hɛ̃ˑnˑ səm] /lokhĩ:čom/ 'She's looking this way'

[nəŋ̲ˑ nɨʔ]~[nəg̲ˑ nɨʔ] /nakni/ 'man'

Word-final--[k]

[wẽy lɨk̲] /wãylik/ 'selling'

[tā gə̃ˑɣ kɨk̲] /takə̃ɣkik/ 'working'

2. /h/--voiceless glottal continuant

Word-initial--[h]

[hək̲ čə bɨʔ] /hakčabi/ 'ear'

[hə̲ ča: ləm] /hača:lom/ 'One person is standing'

[hĩ:n səm] /hĩ:čom/ 'She's looking'

Intervocalic--[ɦ]

[o pək sn̥ ča ɦiˑ ča: la ɣə] /opakson čahi:ča:laka/

'She'll see me tomorrow'

[a ɦɨʔ] /ahi/ 'wood'

Consonant cluster--[h], [ɦ], [x]

/h/ is voiced, [ɦ], in clusters with voiced consonants, and voiceless [h] in clusters iwth voiceless consonants.

Following /i/ it is fronted to [x], a front velar fricative. It is nasalized following nasalized vowels. In the coda position of a syllable with a nasalized vowel, and preceding a voiceless obstruant it is a voiceless homorganic nasal [n̥].

[ə̄ čah̃ bɨ̄ʔ] /ačáhbī/ 'young'

[am h̃u: bʊ̄t] /āmhō:bōt/ 'high' (plural)

[teyk hə̄ moh čɨ̄ʔ] /tāykhomóhčī/ 'old woman'

[him nɨx tə̄γɨ̄ʔ] /hīmnīhtàkī/ 'today'

[kõh̃ ləm] /kõhlom/ //kõNhlom// 'She is scratching'

[ə̄ pãŋ̥· kəm] /apãhkom/ //apãNhkom// 'He's bathing'

[nō: čõ·ŋ̥ kā] /no:čõhka/ //no:čõnhka//

'He was sleeping'

Word-final--[h]

[im· pʊŋ· gah] /īmponkah/ 'She's eating'

[im pih] /īmpih/ 'eat'

[im pʊŋ· goh] /impónkòh/ 'Was she eating?'

2.1.2 Phonetic Variants of the Vowels

There are three contrastive vowel qualities in Mikasuki: /i, /o/, and /a/. These may be long--/i:/, /o:/, /a:/--or short. The numerous phonetic vowel qualities found in the data illustrate the generalization that where there are fewer phonemic contrasts there is 'room' for a greater amount of allophonic variation. The abundance of vowel allophones is created by changes caused by position within a word, nasalization, pitch, stress, syllable structure, free variation and surrounding consonants.

Some generalizations can be made about all the vowels. They are longer and more open in word-initial position, or in open word-initial syllables. They are shorter and laxer when they are not stressed.

The symbols used for the vowel qualities found in the data are presented in the vowel diagram of Figure 2.2. Many of the symbols are those suggested in the handbook 'The Principles of the International Phonetic Association' (1967 reprint). [ɯ] and [ɤ] represent the unrounded variants of [u] and [o], respectively. [ə] and [ʌ] are both unrounded central vowels; [ə] denotes the unstressed lax vowel and [ʌ̈] the stressed tense vowel. [i] is a high front vowel longer and tenser than [ɪ]. [i̞] is about the same length as [ɪ] but is more central; both are lax. [ʊ] falls between [u] and [o] in height. The vowel qualities which occur on lengthened vowels are [i:, e:, a:, ɔ:, o:, and u:]. Short vowel qualities are [ɪ, ɛ, i̞, ə, ʌ, ʊ, ɯ, and ɤ]. A shortened /long/ vowel or a lengthened /short/ vowel are represented

as half-long: [V·]. The distinction between /long/ and /short/ vowels is neutralized in closed syllables. For discussion of the length neutralization see Sections 2.2.4.1, 4.2.3 and 5.3.

Vowels which are lowered in point of articulation are indicated by [V˅]; raised vowels are shown by [V^].

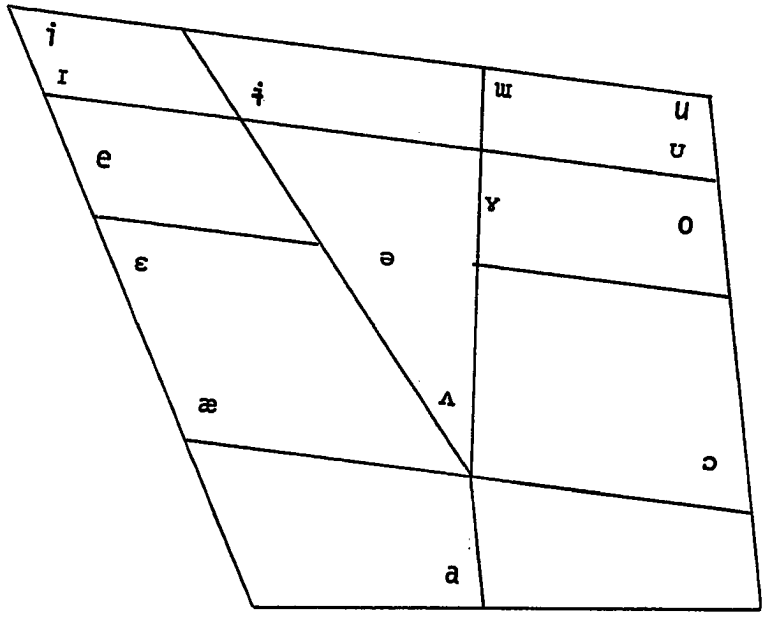


Figure 2.2 Vowel Allophones

2.1.2.1 High front long vowel: /i:/

Word-initial--[i:]

[i: ˅ci?]	/i:˅ci/	'deer'
[ĩ˅: ha: yo:n]	/ĩ:ha:yo:n/	'It's fruit'

Word-medial--[ĩ˅:], [ɛ̃:], [i·], [i:]

/i:/ is lowered to [ĩ˅:] or [ɛ̃:] when it is nasalized. It is shortened, [i]~[i·] when it is not stressed.

[ĩ˅:] [i: lĩ˅: čəm] /i:lĩ:čom/ 'She kills'

[ɛ̃:] [hɛ̃: səm] /hĩ:čom/ 'She sees'

[i·] [ə·mɨm pək fi· či:əm] /amimpakfi:či:m/

//amimpakfi:či:pom//

'She already put (air) in it for me'

[i:] [bi: ɲo:n] /bi:ho:n/ 'They're red mulberries'

[ni: χəγɨʔ] /ni:laki/ 'night'

2.1.2.2 Mid back long vowel: /o:/

Word-initial--[o:], [u:] in free variation

[o: čən] /o:čon/ 'son' (objective form)

[u: pa: gən] /o:pa:kon/ 'owl' (objective form)

Word-medial--[o^:], [ɔ:], [o], [o:], [u:]

/o:/ is raised to [o^:] following /y/, and is lowered to [ɔ:] when it occurs with /low/ pitch and nasalization. Unstressed /o:/ is shortened to [o].

[o^:] [yo^: ˈšo:n] /yo:šo:n/ 'It's a head'

[ɔ:] [fɔ̃: ˈšo:n] /fõ:šo:n/ 'It's a bird'

[tɔ: ˈpo:n] /to:po:n/ 'It's a chair'

[o:] [ĩ: ʀo· ˈtã: čəm] /ĩ:ho:tã:čom/

'They're making them big'

[o:]~[u:] [ˈhũ: to:n] /hõ:to:n/ 'They're big'

[ˈčõ: bo:n] /čõ:bo:n/ 'It's big'

[ˈnõ: cəm] /nõ:čom/ //noNčom//

'She's sleeping'

[ˈi: go: šən] /i:ko:šon/

'Mother's sister' (objective form)

2.1.2.3 Low central long vowel: /a:/

Word-initial--[a:]

[ˈa: pɨʔ] /a:pi/ 'stem, stalk'

[ˈã: šɨʔ] /ã:ši/ 'sour'

Word-medial--[a·], [a:]

/a:/ is shortened to [a·] in unstressed positions. [a:] occurs elsewhere.

[a·] [o ša· nɨʔ] /oša:ni/ 'otter'

[u: pa· ɣo:n] /o:pa:ko:n/ 'It's an owl'

[a· bã:n cəm] /a:bã:čom/ 'She's taking a picture'

[ĩ: ho· ta· ča:m] /ĩ:ho:ta:čá:m/

'He will make them bigger'

[ã:] [hã: ba· čɨʔ] /hã:ba:či/ 'mockingbird/

[hə šã: yɨk] /hašã:yik/ 'envious, resentful'

[a:] [ha: lɨʔ] /ha:li/ 'cup'

[hi ba: lɨʔ] /hiba:li/ 'sting'

2.1.2.4 High front short vowel: /i/

Word-initial--[i·], [ɨ·], [i], [ɛ]

/i/ is lengthened in open syllables, in syllables closed by sonorants, and when nasalized. It is shorter in syllables closed by obstruents. [ɪ] occurs in free variation with [ɨ] in open syllables word-initially; [ɪ], [ɛ] occur in word-final position. [ɨ] and [ɛ] occur in closed syllables.

[ɪ]~[ɨ] [ɪ· tɨʔ] /iti/ 'eye'

[ɨ· čɨʔ] /iči/ 'mouth'

[ɪ tʊ ʧɨʔ] /itoʧi/ 'kidney'

[ɨ]~[ɨ·] [ɨ·l bɨk· ʧo: bɨʔ] /ilbikʧo:bi/ 'thumb'

[ɨ̃·š· kəm] /iškom/ 'She's drinking'

[ɨp· tɨʔ] /ipti/ 'ice'

Word-medial--[ɨ·], [ɨ], [ɛ] in closed syllables

[ʧɨ·n· tɨʔ] /ʧinti/ 'snake'

[hɨ·h tɨʔ] /hihti/ 'shoulder'

[hə ʧɨf· kɨʔ] /haʧifki/ 'name'

[ʧə yo: šɨt ən no γã: ʧəm] /ʧayo:šit annokã:ʧom/

'My head hurts'

Word-final--[ɪ], [i], [ɛ]

[ha: cɪ· ɨm bə̃nʧ ko:n] /ha:ci imbãnʧko:n/

'Its tail is long'

[ʧəl· bɨ wə ša: gɯt ə·n·nə γə̃s·so: to mɛ]

/ʧalbiwasa:kot annakasso:tomi/

'My fingers hurt'

2.1.2.5 Mid back short vowel: /o/

/o/ is lengthened to [u·], or [o·] when it occurs word-initially in open syllables or when nasalized. It is higher, [ʊ], in syllables closed by obstruents and lower, [o], in syllables closed by sonorants. In unstressed word-final /mid/ or /low/ pitch syllables in inflected verbs, /o/ is realized as [ə].

Word-initial--[o]~[ʊ] in open syllables; [ʊ] in syllables closed by an obstruent; [o] in syllables closed by a consonant

[ʊ̃ čã: põ:n]	/ǒča:po:n/	'It's a field'
[õ wã: čõ:n]	/ǒwa:co:n/	'It's milk'
[ʊ̃k· ʔõ:n]	/ǒkʔo:n/	'It's sofkee'
[ʊ̃š tã: põ:n]	/ǒšta:po:n/	'It's the lower leg'
[on tèy hɨ̃ʔ]	/ontàyhi/	'bridge'

Word-medial--[u], [o], [ʊ]

[čũ nʊ̃š bən]	/čonǒšbon/	'heart' (object form)
[hõ nʊ̃d bõ:n]	/hònǒtbo:n/	'It's dark blue' or 'It's dark green'
[čũ wã: tõ:n]	/čowa:to:n/	'It's a goat'
[kõ wa: yõ:n]	/kowa:yo:n/	'It's a horse'
[kə tʊ̃g nõ:n]	/katokno:n/	'It's thick'

[čo lont ko:n] /čolontko:n/ 'It's a cricket'

[čoh·yən] /čohyon/ 'Woman's name' (object form)

[ho·n· čəm] /hončom/ 'They've broken up'

[tũ·f· kəm] /tõfkom/ 'She's spitting'

Word-final--[ɯ], [ɤ], [o], [ə]

[ɯ] or [ɤ], the unrounded forms of [u] and [o], respectively, occur in word-final syllables closed by /t/. [ə] occurs in word-final, unstressed /mid/ or /low/ pitched syllables at the end of an inflected verb.

[ka: pi ən·čɨ ɣɯt i· muŋ gəm]

'jacket' 'wearing' 'keep on doing'

/ka:pi ančɨ:kot imonkom/ 'He still has his jacket on'

[čɨ̃ hĩ: ɣo ti mo] /čĩ:hĩ:ɣo:timò/

'Are you well?'

2.1.2.6 Low central short vowel: /a/

/a/ is lengthened word-initially, before sonorants and when nasalized. The more open allophones, [a] and [ʌ], occur in syllables closed by sonorants, especially /h/. /a/ is raised to [e] in syllables closed by /y/.

Word-initial--[ə]~[a·]

[ə] occurs word-initially in open syllables

[ə· ša: wo:n]	/asa:wo:n/	'It's a cypress tree'
[ə šey go:n]	/asayko:n/	'It's an acorn'
[ə· na: ši?]	/ana:si/	'egg'
[əš· pi?]	/aspi/	'corn'
[ən· ti?]	/anti/	'pot'
[ãf· nəm]	/afnom/	'She's sewing'

Word-medial--[ə], [ʌ], [a], [e]

[tə li?]~[ta li?]	/tali/	'rock'
[tʌ fo:n]	/tafo:n/	'It's a grasshopper'
[yə la: hi?]	/yala:hi/	'orange' (fruit)
[ča: čʌ gi?]	/ča:čaki/	'flicker' (bird)
[fi ša·h·kəm]	/fišahkom/	'She's alive'
[fi šã·h·kəm]	/fišãhkom/	'She's breathing'
[la·h·kāh·či?]	/lahkahči/	'season'
[ha·l· bi?]	/halbi/	'skin'
[wə·n·to:n]	/wanto:n/	'She's strong'

[tey go:n] /tayko:n/ 'She's a woman'

[pe·y· ləm] /paylom/ 'She's rubbing'

[feyn nə tɨʔm] /fayhnatim/ //fayhnatikom//

'It doesn't flow'

[fəb· lɨh co:n] /fablihco:n/ 'It's the wind'

[nək·fɔ: nɨʔ] /nakfó:ni/ 'jaw'

[so pət fo:n] /sopatfo:n/ 'It's light blue (or) light green; it's gray'

Word-final--[a], [ə]

[a] occurs under stress, even in closed syllables; [ə] or [a] occur elsewhere.

[yɨk ta·ʔ] /yikta/ 'over there!' (pointing)

[cɨ lɨt kɨk ša·h] /cilitkikšah/ 'shut up!'

[ho pəš· nʊŋ gi: ga] /hopašnonki:ka/ 'We're singing'

[kə lək· šə gə] /kalakšaka/ 'adjective describing a person with a space between the front teeth'

2.1.3 Suprasegmentals

2.1.3.1 Pitch

There are three contrastive pitches in Mikasuki--low /ˋ/, mid /-/, and high /ˊ/. Contrastive /low/ and /mid/ pitch are found most

frequently on noun roots, and /mid/ and /high/ on inflected verbs. The occurrence of the three pitches is also conditioned by syllable type. All three pitches occur on long syllables, that is, syllables of the form CV: or CVL, where L may be any of the sonorants /w,y,h,m,n,l/. Only high and low pitch occur on short syllables, CV or CVK, where K may be any of the obstruents /p,b,t,k,f,š,ɬ,č/. For further discussion of these and other matters concerning pitch, see Chapters 3 and 6.

Long Syllables

Low Pitch		Mid Pitch		High Pitch	
/lò:pō:n/	'It's liver'	/ī:kī/	'mother'	/hí:ɬō:n/	'it's good'
/nà:tō:n/	'It's a chin'	/yā:tō:n/	'It's people'	/tá:tō:n/	'He's a father'
/à:bī/	'picture'	/ā:bī/	'castrated'	/čó:bī/	'big'
/hìhtō:n/	'It's a shoulder'	/fāytī/	'turkey'	/hȁyyī/	'hot'
/hìnɬō:n/	'It's a squirrel'	/hālkō:n/	'She's a wife'	/hȁhkī/	'bogeyman'
		/čīntō:n/	'It's a snake'	/wántī/	'strong'

Short Syllables

Low Pitch		High Pitch	
/talo:n/	'It's a rock'	/kilo:n/	'It's a cat'
/hofo:n/	'It's a bee'	/tafo:n/	'It's a grasshopper'
/ʔokfi/	'arm	/taksi/	'not sweet'
/tolpi/	'knee'	/tikbi/	'bitter'
/yakni/	'ground'	/hokni/	'heavy'

2.1.3.2 Length

There are two degrees of vowel length--long, /V:/, and short, /V/. These contrast in open syllables, syllables with no final consonant (see Section 4.1 for further discussion). In closed syllables the distinction is neutralized and only short vowels occur. See Section 4.2.3 for further discussion of the length neutralization, and Section 4.3 for examples of phonetic variation in the length of both long and short vowels.

Long Vowels		Short Vowels	
/i:ci/	'deer'	/ici/	'mouth'
/i:ti/	'fire'	/iti/	'eye'
/ta:li/	'swamp cabbage'	/tali/	'rock'

/a:hi/	'potato'	/ahi/	'tree, wood'
/lo:pi/	'liver'	/soki/	'pig'
/na:ti/	'chin'	/pahi/	'grass'
/co:bi/	'big'	/koti/	'frog'
/hi:ʔi/	'good'	/kili/	'cat'
/po:si/	'cat' < 'pussy' (English)	/posi/	'grandmother'
/ona:si/	'egg'	/onasi/	'mudfish'
/kolo:pi/	'paint'	/kolopi/	'underbasket for sifting corn'

2.1.3.3 Nasalization

Both long and short vowels may be nasalized. Nasalization of noun roots is lexical, while nasalization of inflected verbs is morphological, indicating the progressive aspect. Nasalized vowels arise from a morphophoneme, //N//, whose occurrence is morphologically conditioned. See Section 2.2.3.2 of this chapter for discussion of the reasons for proposing this origin of nasalized vowels. See Section 4.1 for the phonetic details of vowel nasalization.

Nasalized Vowels		Non-nasalized Vowels	
/wã:ki/	'toddler'	/wa:ki/	'cow'
/fõ:si/	'bird'	/fo:si/	'grandfather'

/hã:čí/	'deaf'	/hà:čí/	'tail'
/hãhkí/	'bogeyman'	/hàhčí/	'river'
/fisãhkom/	'She's breathing'	/fisàhkom/	'She's alive'
/čokõ:lom/	'He's sitting'	/hà:lí àyíkon čokò:lom/	'The cup is (sitting) on the table'
/pãnkfom/	'It's swelling up'	/pákfom/	'It swelled up'

2.2 Syllable and Word Level Phenomena

2.2.1 The Structure of the Syllable

The Mikasuki syllable has three principal parts--onset, peak, and coda; the coda may have one or two positions. Phonological elements which fill these positions to produce all acceptable canonical forms of syllables are given in Figure 2.3:

Figure 2.3 The Structure of the Syllable

The peak position is obligatorily present and is filled by a vowel. The onset and coda are optional; they may be filled by any single consonant. If a phoneme can be freely assigned to either onset

or coda position, the latter is preferred. In monomorphonemic words (= roots) the syllable coda is usually simple; position 1 may contain either a consonant or the second mora of a long vowel, represented by :. Possible syllables in monomorphemic roots are: V, VC, V:, CV, CV:, CVC, and rarely CVLC. Syllables lacking a consonant in onset position only occur in word-initial position.

Monomorphemic words

V	[ī ˈˇčɨʔ]	/ˈˇičī/	'mouth'
CV	[hʊ̄ ˈfɨʔ]	/ˈhofī/	'bee'
V:	[ˈo:ˈˇčɨʔ]	/o:ˈˇčī/	'male offspring'
CV:	[ˈlo: ˈˇčɨʔ]	/lo:ˈˇčī/	'black'
CVC	[tʊ̄f ˈˇčɨʔ]	/ˈtofˈˇčī/	'mother's brother'
VC	[ʊ̄kˑ ˈˇčɨʔ]	/ˈokˈˇčī/	'juice, sap'
CVLC	[ˇčo ˈlont kɨ̄ʔ]	/ˇcólóntkī/	'cricket'

Polymorphemic words (verb stems, compounds composed of two or more roots, and words containing reduced syllables) contain all of the above syllables. In addition they may contain syllables with complex codas of the form CV:C. CVLC syllables are also common.

Polymorphemic words

CVCC	[teyk hə moh čɨʔ]	/taykhomohčɨ/	'old woman'
	[ləmp kɨ tɨs sɨʔ]	/lampkitissɨ/	'bluebird' (lit. 'red belly')
	[tə la: li: čoŋm lɨt]	/tala:li:čohmlit/	'I have buried him'
CV:C	[fə̃·š ko:n]	/faško:n/	'It's sharp'
	[pʊ mo· ma:č]	/pomo:ma:č/	'Will you make (it) for us?'

2.2.2 Consonant Clusters

As can be seen in the above examples, both two-consonant and three-consonant clusters occur in Mikasuki, with the three-consonant clusters appearing in polymorphemic words. To understand the assimilations, neutralizations and eliminations which affect consonant clusters, two classifications of consonants are important, the sonorant/obstruent class and the strong/weak class. (These are discussed in detail in Section 2.1.1 of this chapter.) The first divides consonants into obstruents, represented by K, and sonorants, represented by L. The restrictions as to which three-consonant clusters may occur are based on this division. The second classification divides the consonants into strong and weak; strong consonants do not vary in voicing, while the weak ones do. Voicing assimilation in both two- and three-consonant clusters is determined by this classification.

2.2.2.1 Two-consonant clusters

In these clusters there is no restriction on combinations of sonorants and obstruents; all four possibilities occur: KK, KL, LK and LL. Clusters may occur within or across morpheme boundaries.

Obstruent-obstruent

[lə ləp·kɨʔ]	/lalapki/	'all'
[ʊk· χɨʔ]	/okχi/	'sofkee'
[yə·tʰət·tey gɨʔ]	/yathattayki/	'white woman'
	/ya:t-/	'people'
	/hatk-/	'white'
	/tayk-/	'woman'
[həš·χa: məm]	/hašχa:mom/	'month'
	/ha:š-/	'moon'
	/χa:m-/	'one'

Obstruent-sonorant

[kʊ̃·š· ləm]	/kõšlom/	'He's cutting'
[ləg· nɨʔ]	/laknɨ/	'yellow'
[yoš·təg·wɨʔ]	/yoštakwɨ/	'ironhead (lit. 'head dried up') Wood Ibis'

	/yo:s-/	'head'
	/takw-/	'dried up'

Sonorant-obstruent

[pihɣi?]	/pihɣi/	'boat'
[həlbi?]	/halbi/	'skin'
[tey gi?]	/tayki/	'woman, girl'

Sonorant-sonorant

[cey hi?]	/cayhi/	'tall'
[ahhəlbi?]	/ahhalbi/	'potato skin'
[kõn ləm]	/kõhlom/	'He scratches'

The patterns of voicing assimilation in these clusters depend on the strong/weak classification and position in the cluster. Assimilations are as follows:

1. Weak-weak; weak-strong--Regressive assimilation; the voicing of the second consonant takes precedence in the cluster.

Weak-weak

[tobəcki?]	/tobbacki/	//to:pbacki//	'bench (lit. long chair)'
	/to:p-/		'chair'
	/back-/		'long'

[ə čaⁿ·bɨʔ] /ačahbi/ 'young'

[yət hət kɨʔ] /yathátki/ 'white people'

[nʊg bɨʔ] /nokbi/ 'neck'

Weak-strong

[yəd·nəⁿ·no: šɨʔ] /yatnákno:ši/ 'old man'

[paⁿ yɨʔ] /pahyi/ 'woman's name'

[og lɨʔ] /okli/ 'town'

2. Strong-strong--No voicing assimilation

Strong-strong

[ki nɨš wi lɨʔ] /kiniswili/ 'Gainesville'

[if ley gɨʔ] /iflayki/ 'light purple'

/i:f-/ 'dog'

/layk-/ 'excrement'

[lah kəč na: yə pi: čə mɨč] /lahkačna:kapi:comič/

'How old are you?'

/lahkač-/ 'season'

/na:ka:p-/ 'how many'

/-i-/	'stem vowel'
/-:č-/	'plural'
/-om-/	'verbal suffix'
/-ič-/	'2cd subject suffix'

3. Strong-weak. Here the distinction between weak 1 and weak 2 consonants is important. If the strong consonant precedes a weak 1 consonant, there is no voicing assimilation. However, if a strong consonant precedes a weak 2 consonant, voicing assimilation is progressive; that is, the weak 2 consonants are susceptible to being voiced even when they occur as the second consonant in a cluster, usually the position of precedence in voicing assimilation.

Strong-weak 1

[čū nūš bɨ?]	/čonošbi/	'heart'
[həl pə tɨ?]	/halpati/	'alligator'
[həl bɨ?]	/halbi/	'skin'
[kun tɨ?]	/konti/	'coontie root'

Strong-weak 2

[təl·ɲɨš kɨ?]	/talhiški/	'sugarcane leaves'
[həl·gɨ?]	/halki/	'wife'

[iŋ gə ba: ləm] /inkaba:lom/ 'She's cold'

/-in-/ 'person prefix'

/kaba:l-/ 'cold'

/-om/ 'verbalizer'

2.2.2.2 Three-consonant clusters

In these clusters, restrictions on permitted sequences are based on the sonorant/obstruent opposition. Clusters beginning with sonorants are permitted, while those beginning with obstruents are not.

Permitted Clusters	Non-permitted Clusters
LKL	KLK
LKK	KKL
LLK	KKK
LLL	KLL

Figure 2.4 Permitted and Non-permitted Three-consonant Clusters

LKL

[teyk yə hey gɨʔ] /taykyahayki/ 'whore'

[teyk hə moh cɨʔ] /taykhomohci/ 'old woman'

LKK

[ləmp ki tɨs sɨʔ] /lampkitissi/ 'bluebird'

[čo lont kɨʔ] /čolontkɨ/ 'cricket'

There is a restriction on consonant clusters which have two contiguous sonorants; the first sonorant may not be a nasal. However, nasals are permitted in other positions in the cluster.

LLK

*NLK [no: čoŋ kā] /no:čonka/ //no:čonhka//

'She was sleeping'

[nih təkhun čo: bɨʔ] /nihtakhonco:bi/

//nihtakhonlčo:bi// 'Christmas'

LLK [čəowl təs šɨ na: waʔ] /čawltassina:wa/

'I can't write'

[iš leyh kɨʔ] /išlayhki/ 'spear'

LLL

LNL [tə la· li: čoñm lit] /tala:li:čohmlit/

'I have buried him'

LLN [ĩ: feyã ni: pm̥] /ĩ:fayhni:pom/ 'It drained'

Voicing rules, based on the strong/weak opposition, operate mostly in the same way in the three-consonant clusters as they do in the two-consonant clusters. Voicing is regressive, with the consonant in the last position exercising voicing influence. Strong consonants are immune to voicing changes. A strong consonant preceding a weak l consonant, the latter being the third consonant, does not affect the voicing of the weak consonant.

Strong-weak l-weak 2: regressive assimilation...

[so gɨ həlp·kə faɲ·bɨʔ] /sokihalpkafahbi/

//sokihalbkafahbi// 'armadillo'

Weak 2-strong-strong: regressive assimilation...

[tə la· li: comm lɨt] /tala:li:cohmlit/ 'I have buried him'

Strong-strong-strong: no assimilation...

[leyc lo lɨt kɨʔ] /laycolitki/ 'anus'

Strong-strong-weak l: no assimilation...

[keyl tɨm] /kayltim/ 'She's not digging'

These examples show the operation of the same voicing rules governing the two-consonant clusters. A special rule operating only in three-consonant clusters is found in strong-weak-strong clusters. We would expect that the weak consonant would be voiced by the final

strong consonant, but this is the case only if the weak consonant is /h/. The other weak consonants /p,t,k/ are not voiced.

Strong-weak-strong: regressive assimilation

[ĩ: feyñ ni: pm̃] /ĩ:fayhni:pom/ 'It drained'

Strong-weak-strong: no assimilation

[teyk yə hey gɨʔ] /taykyahayki/ 'whore'

[ənt ləg nɨʔ] /antlakni/ 'yellow pot'

Both the permitted and non-permitted three-consonant clusters arise morphologically, either from compounding or from affixation. When a morphological process produces an 'unacceptable' cluster, it is 'adjusted' by the insertion of an epenthetic vowel, or by the loss of one of the consonants. The consonant lost is usually the first or second. The insertion of epenthetic vowels occurs more often in inflected verbs, while consonant dropping is found more often in compound nouns.

*KLK

(LK) [lən·kɨ tɨs· sɨʔ] /lankitissi/

//laknkitiščɨ// 'orange'

/lakn-i/ 'yellow'

/kitisč-i/ 'red'

(KK) [ĩ: hə ləṭ· ṭim] /i:halaṭṭim/

//ĩ:halaṭlṭikom// 'He's not holding her (arm)'

/-ĩ:-/ 'third person indirect object'

/halatl-/ 'hold'

/-tik-/ 'negative'

/-om-/ 'verbal suffix'

*KKL

(KL) [ki tiš· həd wɨʔ] /kitishatwi/

//kitischatwi// 'pink'

/kitisc-i/ 'red'

/hatw-i/ 'faded'

(KL) [yoč·ləg nɨʔ] /yočlakni/

//yokčlakni// 'yellow turtle'

/yokc-i/ 'turtle'

/lakn-i/ 'yellow'

*KKK

(KK) [pə ləs· šu gu: gɨʔ] /palassoko:ki/

//palaštsoko:ki// 'crackers'

/palašt-i/ 'bread'

/soko:-ki/ 'dried'

(KKvK) [buč·kɨ tɨk· ša?] /bočkitikšá/

↑

//bočktikšá// 'Don't touch!'

/boč-/ 'touch'

/-tik-/ 'negative'

/-šá/ 'imperative'

*KLL

(KL) [lūk· sə̃s· yəm] /loksãsyom/

//loksaNsyyom// 'Two people are driving'

/-lok-/ 'toward the speaker'

/-is-/ 'instrumental'

/ayy-/ 'move'

/-š̌-/ 'plural infix'

/-om-/ 'verbal suffix'

2.2.3 Neutralization of Consonant Articulations

2.2.3.1 /š̌/ and /č̌/

The distinction between /š̌/ and /č̌/ is neutralized when they occur together in a two-consonant cluster, and before the dento-alveolar stop /t/. The opposition is not neutralized before other alveolar or palatal consonants.

Positions of neutralization:

1. //š̌č̌// ⟶ /š̌š̌/

//taNtiya:hi ʎana:čikšah// //-š̌-//

'chicken' 'make to leave' 'plural inflix'

/ta:tiya:hi ʎanaššikšah/

[ta: ti ya: hɛʔ ʎə nəs sik šah]

'Get the chickens out here!'

/ʎan-/ 'go out'

/-a-/ 'stem vowel'

/-:č̌-/ 'causative'

/-ik-/ 'infinitive'

/-ša/ 'imperative'

2. //čč// and //čš// The only examples of //čč// and //čš// clusters are in careful speech. The expected neutralizations were not made.

//čč// //hā:cco:bi// /hacco:bi/

[hat^{s} tʃo: bɨʔ] 'big tail'

/hā:č-/ 'tail'

/co:b-/ 'big'

//čš// //fo:csakapo:ni// /focsakapo:ni/

[foč šə gə po: nɨʔ] 'goose'

/fo:č-/ 'duck'

/sakapo:n-/ 'buzzard'

3. //čt// ⟶ /št/

//o:ctayki// /ostayki/ [uš tey gɨʔ]

'daughter'

/o:č-/ 'offspring'

/tayk-/ 'female'

//a:ba:čtikom// /a:baštim/ [a: bəš tiᵊm]

'She's not taking a picture'

//palaSti// /palasti/ [pə ləs tiʔ] 'bread'

Positions of contrast:

1. //čl//, //šl//

//lo:člakni// /loclakni/ [loc ləg niʔ] 'brown'

/lo:č-/ 'black'

/lakn-/ 'yellow'

//koNšlom// /kõšlom/ [kʊ̃·š· ləm] 'He's cutting'

2. //čn//, //šn//

//lahkačna:kapi:čomič// /lahkačnna:kapi:čomič/

[lah kəč na: γə pi: čə mitˢ]

'How old are you?'

//hopa:naNconka// + //-š-// → //hopa:šnaNconka//

/hopašnã:čonka/ [hə pəš·nã: čʊŋ· ga]

'Many people are singing'

/hopa:n-/ 'sing'

/-s̬-/	'plural infix'
/-a-/	'stem vowel'
/-:c̬-/	'causative'
/-onka/	'progressive'

2.2.3.2 Nasals

The relationships among the nasals, both nasal consonants and nasalized long and short vowels, are quite complex. There are three nasal segments on the morphological level--//m//, //n//, and the morphophoneme //N//; on the phonological level there are two nasal segments, /m/ and /n/, and nasalized vowels, /Ṽ:/ and /Ṽ/. In syllable coda positions //N// is sometimes neutralized with //m// and //n//, and sometimes remains distinct. Furthermore, the realization of //N// is also affected by morphological criteria.

In the syllable initial position the contrast between //N// and //m// is neutralized; //N// is realized as /m/. /n/ is distinct from //N// in this position.

//ana:s-i//	/ana:s-i/	[ə na: sɨʔ]	'egg'
//samo:c-i//	/samo:c-i/	[sə mo: cɨʔ]	'sand'
//aN-a:b-i//	/am-a:b-i/	[ə ma: bɨʔ]	'my picture'

In roots, //m//, //n//, and //N// contrast when they occur as the only consonant in the coda, preceding a stop which is the onset of

the next syllable. //N// is realized as a long nasalized vowel in this environment. In the phonetic realization there may be a nasal transition segment between the nasalized vowel and the following consonant, but this nasal segment is shorter than a phonemic nasal consonant (see Section 4.1.4).

//m//	//n//	//N//
//holamkom// 'She's hiding'	//cafonki// 'my sister' (man speaking)	//waNki// 'toddler'
/holamkom/	/cafonki/	/wã:ki/
[hõ ləm gəm]	[cə fʊn gɨʔ] ~ [cə fʊn gɨʔ]	[wã: gɨʔ]
	//hinɣ-i// 'squirrel'	//hiNɣ-i/ 'good'
	/hinɣ-i/	/hĩ:ɣ-i/
	[hin ɣɨʔ]	[hĩ:ⁿ ɣɨʔ]
	//tapint-i// 'fern'	//hoNt-i// 'big' (pl.)
	/tapint-i/	/hõ:t-i/
	[tə pin tɨʔ]	[hũ:ⁿ tɨʔ]

Contrast between /m/ and /n/ in this position is rare, however. Within roots, in most cases, the nasal is homorganic in point of articulation with the following consonant:

/lamp-i/	'stomach'	/toɬamb-i/	'charcoal'
/want-i/	'strong'	/ca-fonk-i/	'my sister' (male speaker)
/sanc-i/	'basket'	/hinɬ-i/	'squirrel'

In at least one example //N// has a similar realization; in this case the morphophoneme is realized either as a long nasalized vowel, or as a short vowel plus homorganic nasal consonant:

//taNtiya:h-i// /tã:tiya:h-i/ ~ /tantiya:h-i/ 'chicken'

//taNtiya:h-i// /tã:tiya:h-i/ ~ /tantiya:h-i/ 'chicken

Other noun roots with long nasalized vowels on the phonemic level have not been found with similar variants:

//foNs-i// /fõ:s-i/ 'bird //iNha:y-i// /ĩ:ha:y-i/ 'fruit'

//haNba:c-i// /hã:ba:č-i/ 'mockingbird'

In syllables having two consonants in the coda position there is no distinction among any of the nasal segments. Their realization depends on the second coda consonant. If it is closed, then the preceding nasal is a nasal consonant hormorganic in point of articulation. If the second consonant is a non-closed consonant, then the nasal is realized as a short nasalized vowel:

//ant-lakn-i//	/ant-lakn-i/	[ənt ləg nɨʔ]	'yellow pot'
//colontk-i//	/colontk-i/	[čo lont kɨʔ]	'cricket'
//hanhk-i//	/hãhk-i/	[hãŋ̊ kɨʔ]	'bogeyman'

//kihanyk-i// /kihãyk-i/ [kĩ hẽy gɨʔ] ~

[kĩ hẽyŋ gɨʔ] 'red-shouldered hawk'

//tanškil-i// /tãškil-i/ [tãš kĩ lɨʔ] 'bluejay'

In active verbs in the progressive aspect and on adjectives with verbal suffixes, the prominent syllable is nasalized. Realization of the nasalizing morpheme //N// follows the rules outlined above. If the prominent syllable consists of a long open syllable, CV:, //N// is represented by a long nasalized vowel. If the CV: syllable is followed by a stop or affricate as the onset of the next syllable, the //N// is optionally realized as a short vowel with homorganic nasal. This option is usually taken if the onset consonant is /k/:

//čawl-i,N,p-om// /čawl-ĩ:p-om/ [čəw lĩ: pəm] ~

[čəw lĩm pəm] 'She's writing'

//hi,N,č-om// /hĩ:č-om/ [hĩ:n čəm] ~

[hẽn čəm] 'She's looking'

//tala,N,k-om// /talã:k-om/ [tə lã: gəm] ~

[tə lẽŋ gəm] 'It's lying down'

If the prominent CV: syllable is followed by an open consonant, i.e., a fricative or sonorant, then the nasal is represented by a long nasalized vowel:

//a,N,s-o:t-om//	/a:s-o:n/	[a: so:n]	'It's sour'
//ata,N,ɹ-om//	/atã:ɹ-om/	[ə tã: ɹəm]	'She knows'
//apo,N,n-om//	/apõ:n-om/	[ə põ: nəm]	'She's talking'
//tala,N,l-om//	/talã:l-om/	[tə lã: ləm]	'She's laying (it) down'
//aha,N,y-om//	/ahã:y-om/	[ə hã: yəm]	'She's teaching'
//aso,N,w-om//	/asõ:w-om/	[ə sõ: wəm]	'She's chasing (something)'

If the prominent syllable is of the CVK or CVL shape, nasalization occurs as part of a complex coda and is realized as a nasal segment before stops and as a short nasal vowel plus nasal segment before fricatives and sonorants. As was the case above, the distinction among all the nasals is neutralized in this position. This is shown in the examples below, in which //m//, //n// and //N// do not contrast:

//n//		//N//	
//no:conhka//	'He was sleeping'	//ciyaNhlom//	'She's walking'
/no:cõhka/		/ciyãhlom/	
[no: cõŋ kə]		[ci yãn·ləm]	

//colontki// 'cricket'

/colontki/

[co lont kɨʔ]

//tanskili// 'bluejay'

/taskili/

[tas kɨ lɨʔ]~[tans kɨ lɨʔ]

//m//

//lamp-kitisc-i// 'bluebird'

/lamp-kitiss-i/

[lamp ki tis sɨʔ]

//ciliNtkom// 'She's quiet'

/ciliNtkom/

[ci lint kəm]

//koNslom// 'He's cutting (with a knife)'

/kos lom/

[kus·ləm]~[kuns·ləm]

//N//

//yita,N,bl-om// 'She's hitting'

/yitambl-om/

[yi təmb ləm]

When //N// occurs in coda position as part of the possessive person prefix set //-aN-,-ciN-,-iN-,-poN-// on noun roots, its realization before open consonants is as a long nasalized vowel. This is the same realization that it had as the progressive marker on inflected verbs; conditioning here is purely phonological.

//aN-foNs-i//	/a:-fo:s-i/	[a: fo: sɨʔ]	'my bird'
//aN-sok-i//	/a:-sok-i/	[a: so gɨʔ]	'my pig'
//aN-χakf-i//	/a:χakf-i/	[a: χək fɨʔ]	'my brother' (female speaking)

//aN-wa:č-i//	/ã:-wa:č-i/	[ã: wa: čɨ?]	'my mother'
//aN-ya:t-i//	/ã:-ya:t-i/	[ã: ya: tɨ?]	'my people'
//aN-hišt-i//	/ã:-hišt-i/	[ã: hɨš tɨ?]	'my cornmeal'

However, if the root begins with a stop, the prefix must be realized as a short vowel plus homorganic nasal:

//aN-po:š-i//	/am-po:š-i/	[əm po: šɨ?]	'my cat'
//aN-ta:t-i//	/an-ta:t-i/	[ən ta: tɨ?]	'my father'
//aN-kil-i//	/an-kil-i/	[əŋ ki lɨ?]	'my cat'
//aN-čik-i//	/an-čik-i/	[ən či gɨ?]	'my house'
//aN-nakn-i//	/an-nakn-i/	[ən nəŋ nɨ?]	'my husband'

This set of examples introduces a complication into the discussion of //N//. The morphophoneme is realized in two different ways in the same phonological environment. As a nasal within a noun or adjective root in coda position before a stop, it is a long nasalized vowel. As a nasal in coda position within the person prefix, it is realized as a short nasalized vowel plus homorganic nasal:

Noun root		Prefix	
//haNba:č-i//	'mockingbird'	//aN-baɣb-i//	'my grapes'
/hã:ba:č-i/		/am-baɣb-i/	
[hã: ba: čɨ?]		[əm bəɣ bɨ?]	

//hoNt-o:t-om//	'They're big'	//aN-ta:t-i//	'my father'
/hõ:t-o:n/		/an-ta:t-i/	
[hũ: to:n]		[ən ta: tɨʔ]	

Likewise, as the progressive infix in an open syllable, //N// is represented by a long nasalized vowel, while it is realized as a short vowel plus nasal segment in the same phonological environment as part of the person prefix:

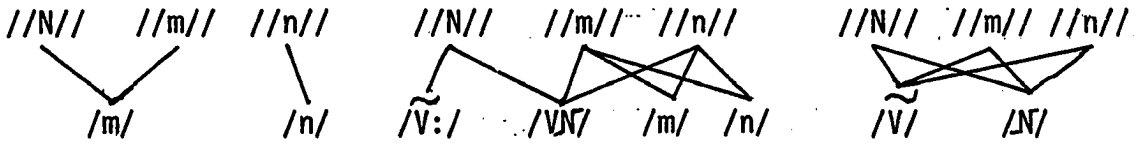
Progressive		Prefix	
//no:h-a,N,č-om//	'She's cooking	//aN-čik-i//	'my house'
/no:h-ã-:č-om/		/an-čik-i/	
[no: hã:ⁿ čəm]		[ən čɪ gɨʔ]	
//labo,N,k-om//	'It's getting thick'	//aN-kil-i//	'my cat'
/labõ:k-om/		/an-kil-i/	
[lə bũ: gəm]		[əŋ ki lɨʔ]	

In order to account for this morphological influence on phonological realization, a special condition will apply to the person prefixes, stating that //N// must be realized as a short nasalized vowel plus nasal segment when it occurs before a closed consonant. Other instances of //N// are realized as long nasalized vowels, with

the option of the other realization, under the same phonological circumstances.

In summary, //N// contrasts with //m// and //n// in simple syllable codas. The distinction among the three nasals is neutralized when they occur as the first consonant of a complex coda. In syllable onset position, //N// is distinct from //n//, but not from //m//. These generalizations are summarized below. /N/ represents the archiphoneme of neutralization, a homorganic nasal.

Onset



In the previous discussion an abstract nasal morpheme was proposed to account for nasalization on vowels. An alternative solution would have been to propose nasalization as a suprasegmental feature on a syllable: //Ṽ://. However, there are structural and phonetic reasons to prefer the //N// explanation.

First, there is a difference in phonemic pitch restriction on syllables closed by an obstruent and syllables closed by a sonorant. The former have only /high/ or /low/ pitch, but the latter may have in addition /mid/ pitch. If a syllable closed by an obstruent has an oral vowel, again it may have only /high/ or /low/ pitch. But if this syllable has a nasal vowel, it can take /mid/ pitch, as if it had a sonorant in coda position.

closed syllable; oral vowel

/low/ and /high/only:	//nakbiški//	/nakbiški/	[nəg bɨš kɨʔ]	'rib'

closed syllable; nasal vowel

/mid/ pitch:	//kalaNšlom//	/kalãšlom/	[kə lãš· ləm]	'He's cutting (with scissors)'

closed syllable, nasal segment

//anti//	/anti/	[ən tɨʔ]	'pot'
//cinti//	/cinti/	[cɨ·n tɨʔ]	'snake'

Second, there is the connection between long nasalized vowels and short vowels plus nasal segment, as in the alternate forms /tã:tiya:hi/ and /tantiya:hi/ 'chicken.' If nasalization were considered a strictly suprasegmental phenomenon, the /Ṽ:/~/Vn/ alternation would be an arbitrary one. The abstract nasal segment sequence //VN// as a source of both /Ṽ:/ and /Vn/ is an explanation of the association of these two sequences.

Third, nasalized vowels may be somewhat longer than their non-nasal counterparts, again leading to the conclusion that nasalized vowels are not simply oral vowels with an added suprasegmental feature.

Nasalized Vowel		Oral Vowel	
//ʃa:ciNcom//	'He's starting'	//ʃa:ci:com//	'He just started'
/ʃa:ci:com/		/ʃa:ci:com/	
[ʃa: ci: cəm]		[ʃa: ci: cəm]	
.185 centiseconds		.16 centiseconds	
//kalaNslom//	'She's cutting (with scissors)'	//kalaslom//	'She's cut (with scissors)'
/kalaslom/		/kalaslom/	
[kə lə·s·ləm]		[kə lə·s·ləm]	
.17 centiseconds		.16 centiseconds	

Fourth, there is a difference in phonetic pitch patterns on nasalized and non-nasalized vowels with /high/ pitch. Non-nasal vowels have a falling pitch contour while nasalized ones have level or rising pitch, as do other syllables with sonorants in coda position.

Nasalized Vowel		Oral Vowel	
//aNso:tom//	'It's sour'	//ta:to:tom//	'He's a father'
/a:so:n/		/ta:to:n/	
[a: so:n]		[ta: to:n]	

Nasalized Vowel		Syllable Closed by Sonorant	
//iNha:yi//	'fruit'	//ilbi//	'hand'
/ĩ:ha:yi/		/ilbi/	
[ĩ: ha: yɨʔ]		[il bɨʔ]	

In all of the preceding examples the behavior of syllables with nasalized vowels is similar to that of syllables with sonorants in coda position. This evidence supports the decision to predict the occurrence of nasalized vowels on the phonological level from a nasal morphophoneme on the morphological level.

2.2.4 Neutralizations of Vowels

There are three situations which lead to vowel neutralization: syllable shape constraints, stress, and loss of contrast preceding certain consonants. The first condition leads to the neutralization of the length contrast, the second and third to neutralization of articulation features such as rounding and height.

2.2.4.1 Syllable shape constraints: //V:// and //V//

The distinction between long and short vowels is lost in closed syllables, with short vowels appearing in the position of neutralization. The actual length of the vowel varies depending on the consonant found in syllable-final position. This is discussed in Section 4.2.3.

A further constraint on vowels is that the peak of a syllable may contain no two-vowel clusters. If these arise morphologically, the

cluster is usually reduced, and the quality of the first vowel is realized in the position of neutralization.

//ča + i:yi// /ča:yi/ [ča: yɨʔ] 'my foot'

//po + i:yi// /po:yi/ [poʌ: yɨʔ] 'our feet'

//hi:č + á: + om + li// /hi:čá:mli/ [hi·ča:m lɪ] 'I will see'

//halpatit ókon ka + ayyyom// /halpatit ókon kayyom/

[həl pə tɨt ó ɣən key yəm] 'The alligator is in the water'

Merging of vowel quality may occur across syllable boundaries on the phonetic level. Here the [æ] represents the fronting of [i] and the tongue height of [a].

//sokihátki ančána:ko:tom// /sokihátki ančána:ko:n/

[so ɣɨ hət kæn čə na: go:n] 'It's my white pig'

There remain examples of vowel clusters which are not 'adjusted'; the explanation for this awaits further morphological investigation.

[ɪh kɨc kɳ cɪəŋg lʊŋ gó] /ihkickon cianklonkó/ 'Does he want you to say it?'

[ə ɣa:ʊŋ gə lɛ] /ala:onkali/ 'I want to go' (child begging for permission)

[hən tãɪŋk fóʔ ú: ɣi ləc ko ɣó] /hantãikfo o:ɣi:lackoko/

'When will you come back?'

2.2.4.2 Neutralization due to lack of stress: //a// and //o//

In unstressed syllables the distinction between the short lax vowels /o/ and /a/ may be neutralized by the loss of the rounding feature of /o/ and the loss of the tongue position of /a/. [ə] represents the archiphoneme of neutralization. This often occurs in noun phrases or verbal affixes which are adjacent to syllables stressed for morphological reasons.

[pʊlʊč· kɨʔ] /polocki/ 'round' (in isolation)

[a:h·pə lʊc ko: cɨʔ] /ahpOlocko:ci/ 'white potato' (lit. 'little round potato')

[o ca: pɨʔ] /oca:pi/ 'garden, large field' (in isolation)

[to ma: tɨ ɨ·mə ca: pɨʔ] /toma:ti imOca:pi/ 'tomato field'

[hi: co maɦ lə waʔ] /hi:comahlOwa/ 'They looked at it a week ago'

[hɨ̃·n· cəm] /hĩ:cOm/ 'She's looking'

This neutralization differs from the neutralization of length discussed above in that it is subject to sociolinguistic and paralinguistic influences and is not purely phonological in origin. Factors such as speech rate, speech register (casual, careful, etc.) and individual variation among speakers influence its occurrence. The following example was given by one speaker. The first utterance was the translation of 'song.' The second and third utterances are repetitions elicited to check pronunciation; they were given more slowly and carefully than the first.

[hə̄ pəŋ gɨ̄ʔ] ~ /hOpanki/ //hopa:nki// 'song'

[hō pəŋ kʰɨ̄ʔ] ~

[hə̄ pən gɨ̄ʔ]

Neutralization of the distinction between unstressed /i/ and /a/ does not occur. In fact two sets of examples given by one speaker to illustrate differences in the way of speaking of several individuals were based on this distinction. The dialects represented by these examples are not known at present.

[wə̄ ta: ləm]	/wata:lom/	(speaker 1)	'She opened it'
[wɪ̄ ta: ləm]	/wita:lom/	(speaker 2)	
[ā lɪn· cɨ̄ʔ]	/alinci/	(speaker 1)	'blanket'
[ā lən· cɨ̄ʔ]	/alanci/	(speaker 3)	

2.2.4.3 Neutralization due to Assimilation: //aw// and //ay//

The distinction between /a/ and /o/ is neutralized when /w/ occurs in syllable-final position; the archiphoneme of neutralization /O/ is realized as [ɤ] (unrounded [o]), [ᵊo] or [o]. Again this assimilation does not always occur, and is noticed as difference in pronunciation among speakers" "She says [fawhoŋgɨ̄k] (/fawhonkik/ 'They threw them away') and I say [fohoŋgɨ̄k] (/fOwhonkik/)." Another speaker gave three variants for the compound noun 'monkey': /sa:wi/ 'raccoon' and /ya:ti/ 'people.' She prefers the third form, which contains the assimilated vowel [o].

[sᵊow ya: tɨʔ] /sawya:ti/

[sa: wi ya: tɨʔ] /sa:wiya:ti/

[sow ya: tɨʔ] /sOwya:ti/

Other examples are:

[hoʔ]~[hʌw] /ho/~/hOw/ 'okay' (given by the same speaker on two occasions during one session)

[yᵊow li·cɨk] /yOwli:čik/ 'They (three or more) are going around'

[ɣa: ɣi o ɣn̥ ka yo li: čəm] /ɣa:ɣi okun kayoli:čom/

'There are fish in the water' (given by the same speaker on two different occasions; the stem is //yawli:č-//)

/a/ and /o/ usually contrast when /w/ follows as the onset of the next syllable, but even in this position some raising and rounding of /a/ may occur.

Contrast: [ə wi: ləm] /awi:lom/ '(someone) is coming closer'

[o wa: čən] /owa:čon/ 'milk' (objective form)

Variation: [čə wa: nɨʔ]~[čᵘ wa: nɨʔ] /čawa:ni/ 'housefly' (speaker 1, 30 years old)

[čᵘ wa: nɨʔ] /čowa:ni/ 'housefly' (speaker 2, 14 years old)

Analogous to the raising and rounding of /a/ before /w/ is the raising and fronting of /a/ to [e] before /y/, with the difference that in the latter case the distinction between /a/ and /i/ is not neutralized. The raising of [a] to [e] is a phonetic phenomenon; [e] occurs before /y/, [a] elsewhere.

//i:ylakni//	/iylakni/	[i: ləg nɨʔ]	'yellow feet' (name of a dog)
//paNylom//	/paylom/	[pey ləm]	'She's rubbing'

Other examples of [e] include

[tun tey nɨʔ]	/tontayhi/	'bridge'
[a ˇsey go:n]	/ˇasayko:n/	'It's an acorn'
[ki ñe·y gɨʔ] ~ [ki heyŋ gɨʔ]	/kihayki/	'red-shouldered hawk'
[keyl· tim]	/kayltim/	'He's not digging'

In inflected verbs if the plural infix /-ˇs-/ is added to the root, taking over the coda position of the final root syllable from /y/, then /a/ is represented by [ə]:

[ˇsey yəm]	/ˇsayyom/	//ˇsaNyyom//	'One person is driving'
[ˇsə·ˇs· yəm]	/ˇsasyom/	//ˇsaNˇsyyom//	'Two people are driving'

There is some variation is the realization of /a/ before /y/; it is sometimes raised but not fronted:

[hẽy yo:n] ~ [hʌ̃y yo:n]	/hãyyo:n/	'It's hot' (same speaker on different occasions)

In addition /a/ may be raised by a syllable-initial /y/ in the following syllable:

[ā yɨʔ] ~ [ʌ̄ yɨʔ]	/ayi/	'table'

CHAPTER 3
PITCH

3.0 Introduction

The prosodic system of Mikasuki is the pitch-accent type, in which contrastive pitch is found on specified syllables in a word. Syllables which take one of the three contrastive pitches, high /◌́/, mid /-/, or low /◌̀/, are called key syllables. Non-key syllables are those for which pitch is non-contrastive (Haas, 1977:1).

The occurrence of key syllables is governed by morphological class. Noun roots contain only key syllables, and uninflected verb roots contain no key syllables. Inflected verbs have a minimum of one key syllable, called the prominent syllable, which carries the prosodic features of contrastive pitch, vowel length, and/or nasalization which are characteristic of the various verbal tenses and aspects. Adjectives, a subclass of verbs, also have one prominent syllable. Contrastive pitch may or may not occur on an affix. This is lexically determined and does not depend on the classification of an affix as verbal or nominal.

The distribution of the three contrastive pitches on key syllables is governed by morphological root class and by canonical syllable shape. All of the three contrastive pitches are found on noun roots, although /high/ is relatively infrequent. In contrast, the prominent syllable of an inflected verb carries only /high/ or /mid/; the prominent syllable of an adjective has only /high/ pitch.

Canonical syllable shape is the second major influence on pitch distribution. Three classifications of syllable types are necessary to the discussion of pitch: the long/short classification, the heavy/light classification and the open/closed classification. Long syllables are those with a sonorant in the coda position; the coda may be a long vowel or one of the sonorant consonants, which are symbolized as L. Short syllables are those with an obstruent (K) or nothing in coda position. (For further discussion of obstruents and sonorants see Section 2.1.1.) Heavy syllables have vowel length or a consonant in coda position, while light syllables have nothing in that place. Closed syllables end in a consonant, while open syllables do not. In the following listing of the various syllable types, the one with the subscript $\ddot{x}$ is not found in roots. It occurs in larger constructions such as inflected verbs or compounds and is the end product of syllable reduction (see Section 3.3.3) or affixation.

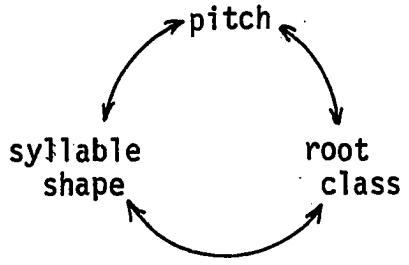
Long	Short	Heavy	Light	Open	Closed
CV	CV	CV:	CV	CV	CVC
CVL	CVK	CVL		CV:	CVCC
CVLK		CVK			CV:$C_{\ddot{x}}$
CV:$C_{\ddot{x}}$		CVLK			
		CV:$C_{\ddot{x}}$			

Each of these sets of syllable types affects pitch in Mikasuki. The long/short classification governs the distribution of contrastive pitch on noun roots, as well as affecting the phonetic

realization of pitch height on key and non-key syllables in any word, noun or verb. The heavy/light classification governs the permitted sequence of syllables in verbs and adjectives. Every verbal must contain at least one heavy syllable. If there is a syllable preceding the heavy syllable, it may be light or heavy, but a light syllable in this position is more frequent.

The open/closed classification also affects the phonetic realization of pitch. Closed syllables have a higher phonetic pitch than open syllables.

The interaction of pitch, canonical syllable shape and root class ties together the phonological and morphological systems of the language. This mutual dependence can be depicted as a circle:



Each is influenced by the other two. Contrastive pitches are distributed in terms of syllable shape and root class. Noun roots and verb roots are distinguished by the contrastive pitches found on each, and the types and sequences of syllables which may occur. The syllabic structure of verbs is predicated on the pitches which will occur on the prominent syllable when the verb is inflected. (For a more extensive discussion of the interaction of these three factors, see Section 6.1.) The effects of syllable shape on the distribution of contrastive pitch are discussed in section 3.1 of this chapter.

The phonetic realization of pitch on both key syllables and non-key syllables is governed by the shape of the syllable and by the pitches of the adjacent key and non-key syllables in the word. The influence of these two factors on the actual pitch contour of an utterance is discussed in Sections 3.2 and 3.3.

3.1 Pitch and Syllable Shape

Syllable shape is a very significant factor influencing pitch. It affects not only the distribution of the contrastive pitches in key syllables, but also affects the realization of those pitches on the key syllables, and the pitch of non-key syllables as well. The discussion in this section precedes from the simple to the complex. The morphemes containing inherent pitch are presented first in Section 3.1.1. Pitch on uninflected verbs, which is non-contrastive, is given in Section 3.1.2. Acoustic data on the influence of syllable shape on the phonetic realization of pitch in key and non-key syllables are given in section 3.2.

3.1.1 Distribution of Pitch on Key Syllables

Noun roots, the person prefixes, and certain other nominal and verbal affixes have contrastive pitch. The verbal tenses and aspects also have contrastive pitch; these are discussed in Section 6.4.2.

3.1.1.1 Noun Roots

The distribution of pitch on noun roots is governed by the long/short syllable classification. /High/, /mid/, and /low/ pitches

occur on long syllables, but only /high/ and /low/ occur on short syllables. In the examples below, the /-ī/ suffix is the citation suffix for nouns (and adjectives).

Long Syllables: high, mid and low pitch

CV:

[ta: tɨ̄ʔ]	/ta:t-ī/	'father'
[ya: tɨ̄ʔ]	/ya:t-ī/	'people'
[a: bɨ̄ʔ]	/a:b-ī/	'castrated'
[wa: gɨ̄ʔ]	/wa:k-ī/	'cow' < 'vaca' (Spanish)
[w̃a: gɨ̄ʔ]	/w̃a:k-ī/	'young child'
[ĩ: gɨ̄ʔ]	/ĩ:k-ī/	'buttocks'
[nà: tɨ̄ʔ]	/nà:t-ī/	'chin'
[à: bɨ̄ʔ]	/à:b-ī/	'picture'
[l̃à: c̬ɨ̄ʔ]	/l̃à:c̬-ī/	'crow'

CVL

[c̬oh yɨ̄ʔ]	/c̬ohy-ī/	'girl's name'
[h̃ah kɨ̄ʔ]	/h̃ahk-ī/	'bogeyman'
[lam pɨ̄ʔ]	/lamp-ī/	'stomach'

[hal gi?]	/halk-i/	'woman'
[hin χi?]	/hinχ-i/	'squirrel'
[an ti?]	/ant-i/	'pot'
[hah ci?]	/hahc-i/	'river'

Short Syllables: high and low pitch

CVK

[čiš ki?]	/čisk-i/	'cheese' < 'cheese' (English)
[nʊg bi?]	/nokb-i/	'neck'
[ʊk ci?]	/okc-i/	'juice, sap'

CV

[tə fi?]	/taf-i/	'grasshopper'
[bə ti?]	/bat-i/	'butter' < 'butter' (English)
[hu· fi?]	/hof-i/	'bee'
[i· ci?]	/ic-i/	'mouth'

The sequence of permitted syllable types is unrestricted in three-syllable nouns, although the long syllable CVLK is rare. Thus there are sixteen possible combinations of the four basic syllable types, CV, CV:, CVK, and CVL, with a few examples added in which the

CVLK syllable occurs. Examples of each type are given below. Theoretically, several different combinations of pitch should occur on each different combination of canonical syllable shapes. For example, since three pitches can occur on long syllables, if a three-syllable root contains two long syllables, nine different pitch combinations are expected:

CV̄: CV̄:	CV́: CV̄:	CV̀: CV̄:
CV̄: CV́:	CV́: CV̀:	CV̀: CV́:
CV̄: CV̀:	CV́: CV́:	CV̀: CV̀:

Not all of these possibilities have been found on actual words; the reasons for this must be investigated further.

CV CV:	[o wa: čɨ?]	/òwā:č-ī/	'milk'
	[a šo: wɨ?]	/àšò:w-ī/	'clump of cypress trees'
CV CVK	[pə ləš tɨ?]	/pàlàšt-ī/	'bread'
	[šə nik čɨ?]	/šaníkč-ī/	'toad'
CV CVL	[lə bəŋ gɨ?]	/làbānk-ī/	'mud'
	[lə bəŋ gɨ?]	/labánk-ī/	'muddy' (adjective)
CV: CV:	[u: pa: gɨ?]	/ō:pā:k-ī/	'owl'
	[ha: ba: čɨ?]	/hā:bā:č-ī/	'mockingbird'

CV CV	[no go ši?]	/nokos-i/	'bear'
	[i fi ti?]	/ifit-i/	'prune'
CVK CV	[ič ki ni?]	/ičkin-i/	'bug'
	[tã·š ki li?]	/tãškil-i/	'blue jay'
CVL CLV	[on tey hi?]	/ontayh-i/	'bridge'
	[lah kah či?]	/lahkahč-i/	'summer, season'
CVK CV:	[ũš ta: pi?]	/ošta:p-i/	'lower leg'
	[fõk ši: gi?]	/fokši:k-i/	'shirt'
CVK CVL	[ok čah ni?]	/okčahn-i/	'salt'
	[fab lih či?]	/fabl-i-h-č-i/	'wind'
		/fabl-/	'blow'
		/-i-/	'stem vowel'
		/-h-/	'completive'
		/-č-/	'nominalizer'
CVL CVK	[yul bəg ni?]	/yolbakn-i/	'worm'
CVL CV	[həl pə ti?]	/halpat-i/	'alligator'
	[həm pō li?]	/hampol-i/	'morning'

CV: CVK	[tu: təg wɨʔ]	/to:takw-i/	'swamp apple'
CV: CV	[u: lə gɨʔ]	/o:lak-i/	'blueberry'
CVL CV:	[ah no: pɨʔ]	/ahno:p-i/	'guava'
	[mən ti: lɨʔ]	/manti:l-i/	'flag' < 'mantilla' (Spanish)
CVK CVK	[nəg biš kɨʔ]	/nakbišk-i/	'rib'
CV CVLK	[čo lont kɨʔ]	/čolontk-i/	'cricket'
CV: CVL	[ču: čəm pɨʔ]	/čo:camp-i/	'cucumber'

3.1.1.2 Person prefixes

The two orders of person prefixes, the direct object/inalienable possession order, and the indirect object/alienable possession order, occur on nouns as possession markers and on verbs as indicators of objects (for a fuller explanation of the uses of the person prefixes, see Section 6.3).

	Direct object/inalienable		Indirect object/alienable		
1st sg.	/-ča-/	/-ač-/	1st sg.	/-an-/	/-ã:-/ ~ /-am-/
2nd	/-či-/	/-ič-/	2nd	/-čin-/	/-čĩ:-/ /-čim-/
3rd	/-i-/	ø	3rd	/-in-/	/-ĩ:-/ /-im-/
4th	/-po-/	/-ip-/	4th	/-pon-/	/-põ:-/ /-pom-/

The contrastive pitch found on both sets of prefixes is /mid/, but their phonetic pitch height varies according to the root class of the word on which they occur, and according to their actual syllable shape when they are prefixed. As verb prefixes, their phonetic pitch height ranges between [high] and [mid]; these are also the contrastive pitches found on inflected verbs. As possessive markers on nouns, their phonetic pitch range is lowered to [mid] and [low]. Thus their pitch is compatible with the pitches of the roots on which they occur.

[ã: ỹĩ·ɣ ləm]	/ã:-ỹĩɣ-l-om/	'She's burning something of mine'
[šə čey ym]	/(i)š-ač-ayy-om/	'She drove me (in a car)'
[ã: ɣək fɨʔ]	/ã:-ɣakf-i/	'my brother'
[ən ta: tɨʔ]	/an-ta:t-i/	'my father'
[ə ma: hɨʔ]	/am-a:h-i/	'my potato'

The allomorphic variants of the prefixes are conditioned by the shape of the initial syllable of the following word. If the first syllable of the root begins in a consonant, the CV set of inalienable prefixes, and the VN set of alienable prefixes will be used. The final //N// segment of the latter set of prefixes assimilates to the point and/or manner of articulation of the following consonant, if that consonant is a stop, the affricate /č/ or a nasal. Before the sonorants and the fricatives, the prefix becomes Ṽ:. Preceding a word-initial vowel, the Vm form of the alienable prefixes and the VC form of the

inalienable prefixes are used. The examples below show the syllable shape of the prefix and the phonetic pitch associated with each.

VN~Ṽ:, [mid]

[ən to: pɨʔ]	/an-to:p-i/	'my chair'
[ən čɨ gɨʔ]	/an-čik-i/	'my house'
[ən nəŋ nɨʔ]	/an-nakn-i/	'my husband'
[am pu sɨʔ]	/am-pos-i/	'my grandmother'
[əŋ ki lɨʔ]	/an-kil-i/	'my cat'
[ã: ya: tɨʔ]	/ã:-ya:t-i/	'my people'
[ã: ɣək fɨʔ]	/ã:-ɣakf-i/	'my brother'
[ã: fõ: sɨʔ]	/ã:-fõ:s-i/	'my bird'
[ã: wa cɨʔ]	/ã:-wa:c-i/	'my mother'
[ã: hiš tɨʔ]	/ã:-hist-i/	'my cornmeal'

CV, [mid], [low]

[čə lɔ: pɨʔ]	/čalo:p-i/	'my liver'
[čə čʊk cɨʔ]	/ča-cokc-i/	'my saliva'
[čə ləm pɨʔ]	/ča-lamp-i/	'my stomach'
[čə ɣa: lɨʔ]	/ča-ɣa:l-i/	'my back'

Vm, [low]

[ə̄ ma: pɨ̄ʔ] /ām-ā:p-ī/ 'my cane'

[ə mà: bɨ̄ʔ] /ām-à:b-ī/ 'my picture'

[ə̄ ma: hɨ̄ʔ] /ām-ā:h-ī/ 'my wood'

[ə̄ mīf čɨ̄ʔ] /ām-ìfč-ī/ 'my gun'

VC, [low]

[ə̆ cà: bɨ̄ʔ] /āč-à:b-ī/ 'like me'

/à:b-ī/ 'picture'

[ə̄ čǔš ta: pɨ̄ʔ] /āč-òšta:p-ī/ 'my lower leg'

Similar processes occur when the person prefixes are used on inflected verbs. The VN,Ṽ:, or CV forms with [high] pitch are used on verbs with word-initial consonants; the Vm or VC forms with [mid] pitch occur on verbs with word-initial vowels.

VN or Ṽ:, [high]

[ə̄ŋ gə ba: lō:n] /ān-kabā:l-o:n/ 'I'm cold'

[čə hīh tut ən nō gã̄: čəm] /čā-hìht-ōt ān-nokā̃:č-om/

'My shoulder hurts me'

/hìht-ī/ 'shoulder'; /-ōt/ 'nominal subject suffix';

/-noka:č-/ 'hurt' (intransitive); /-om/ 'verbal suffix'

[ã: hẽy yĩ: ˈčo: tə mɛ̃] /ã:-hãyy-ĩ-:č-o:t-omi/

'I'm too hot'

/hãyy-/ 'hot'; /-i-/ 'stem vowel'; /-:č-/ 'causative'; /-o:t-/ 'verbalizer'; /-omi/ 'verbal suffix'

CV, [high]

[čə hãy yi: go:n] /ča-hãyy-i:k-o:n/

'I'm getting a fever'

/hãyy-/ 'hot'; /-i:k-/ 'nominalizer'; /-o:n/ 'verbal suffix'

[čə ni: ho:n] /ča-ni:h-o:n/ 'I'm fat'

/ni:h-/ 'be fat'

[čə ha: ci: pə mi] /ča-ha:č-i:p-omi/ 'I'm deaf'

/ha:č-/ 'deaf'; /-i:p-/ 'completive'; /-omi/ 'verbal suffix'

VM, [mid]

[yu: bə li· gən ə mə ɣey hi: čĩ:]

/yo:bali:k-on am-aɣayhi-i-:č-ĩ:/

'He hit me in the rear (of my car)'

/yo:bali:k-/ 'back, rear'; /-on/ 'nominal object suffix';

/a)ayh-/ 'hit'; /-i-/ 'stem vowel'; /-:c-/ 'causative';

/-i:-/ 'past tense suffix'

VC, [mid]

[hi· məŋ go· šən əf ni: gi: ə cə ta:)əm]

/hi:manko:š-on afn-i:k-i: ac-ata:)-om/

'I learned to sew not long ago'

/hi:manko:š-/ 'recently'; /-on/ 'adverbial suffix';

/afn-/ 'sew'; /-i:k-/ 'nominalizer';

/-i:/ 'objective suffix'; /ata:)-/ 'learn';

/-om-/ 'verbal suffix'

3.1.1.3 Affixes

The pitch and syllable shapes of affixes correspond to the pitch and syllable shapes of the words to which they are affixed. Nominal affixes, like nominal roots, have inherent pitch. Furthermore, these affixes have /low/ or /mid/ pitch, as do most noun roots. Nominal affixes include the case suffixes, which indicate the subjects and

objects of verbs, the diminutive suffix /-o:č-/, and the plural suffix /-a:ɣ-/. All of these affixes have /mid/ pitch:

/-ot/ 'subject marker; /-on/ 'object marker'

[ən ɣək fut iš ši nih kun a: həm pa: či: ši?]

/an-lakf-ot iš-šinihk-on a:-hamp-a-:č-i:-ši/

'My brother wrecked my car'

/lakf-i/ 'brother'; /-iš-/ 'instrumental prefix';

/-šinihk-i/ 'something that rolls';

/-a:-/ '1st sg. indirect object';

/hamp-/ 'bad, broken'; /-a-/ 'stem vowel';

/-:č-/ 'causative'; /-i:-/ 'past tense';

/-ši/ 'attitudinal suffix'

/-o:č-/ 'diminutive suffix'

[fo: so: čɨ?] /fo:s-o:č-i/ 'baby bird' /fo:s-i/ 'bird'

[i: co: čɨ?] /i:č-o:č-i/ 'fawn' /i:č-i/ 'deer'

/-a:ɣ-/ 'plural suffix'

[ə mə lah ka: ɣɨ?] /am-alahk-a:ɣ-i/ 'cousins belonging to the clan of the speaker, who is female'

/am-álahk-i/ 'my relatives'

The suffixes which derive nominals from verbs have /low/ and /mid/ pitch.

[nó: hah čɨʔ] /nó:h-á-h-č-i/ 'ripe'

/no:h-/ 'cook' (intransitive); /-a-/ 'stem vowel';

/-h-/ 'completive'; /-č-/ 'nominalizer';

/-i/ 'citation suffix'

[šuk šah kɨʔ] /(i)š-okš-á-h-k-i/ 'soap'

/(i)š-/ 'instrumental prefix'; /-okš-/ 'wash';

/-a- 'stem vowel'; /-h-/ 'completive';

/-k-/ 'nominalizer'; /-i/ 'citation suffix'

[not šuk šah lí: gɨʔ] /not-š-okš-á-h-l-i:k-i/ 'toothbrush'

/no:t-i/ 'tooth'; /-iš-/ 'instrumental'; /okš-/ 'wash';

/-a-/ 'stem vowel'; /-h-/ 'completive';

/-l-/ 'nominalizer'; /-i:k-/ 'nominalizer';

/-i/ 'citation suffix'

The pitch of verbal affixes depends on their function within the inflected verb and their position with respect to the prominent

syllable. Affixes associated with tense and aspect are the most restricted in syllable shape and pitch. Stem-forming affixes, and other affixes which may become the prominent syllable of an inflected verb, have no inherent pitch of their own, and they contain or form heavy syllables when they are attached to the verb; this is the syllable shape associated with the prominent syllable. A few tense affixes do contain inherent pitch; they also may become the prominent syllable of a verb.

/-:č-/ 'causative' (stem-forming)

[im pək fi: čəm] /im-pakf-i-:č-om/ 'She's putting air in it'

/-im-/ '3rd indirect object'; /pakf-/ 'swell';

/-i-/ 'stem vowel'; /-:č-/ 'causative';

/-om/ 'verbal suffix'

/-i:p-/ 'completive' (stem-forming)

[ə mim pək fi: či: pəm] /am-im-pakf-i-:č-i:p-om/

'She already put (air) in it for me'

/am-/ '1st sg. indirect object';

/-im-/ '3rd indirect object'; /pakf-/ 'swell';

/-i-/ 'stem vowel'; /-:č-/ 'causative';

/i:p-/ 'completive'; /-om-/ 'verbal suffix'

/-:č-/ 'plural' (stem-forming)

[ī čə pō·tī: čə mi gə] /īč-apo:t-ī-:č-om-ika/

'We're thinking of you all'

/-īč-/ '2nd direct object'; /apo:t-/ 'think about';

/-i-/ 'stem vowel'; /-:č-/ 'plural';

/-om-/ 'verbal suffix'; /-ika/ '1st pl. person suffix'

/-á:-/ 'immediate future

[hī· ča:m īi] /hi:č-á:-m-li/ 'I'll see'

/hi:č-/ 'see'; /-á:-/ 'immediate future';

/-om-/ 'verbal suffix'; /-li-/ '1st sg. person suffix'

3.1.2 Distribution of Pitch on Non-key Syllables

The pitches which occur on the citation forms of verbs are non-contrastive. /Mid/ pitch is found on the citation suffix /-īk/. Pitch on the last full syllable of the root, the heavy syllable, is determined by the long/short syllable classification. [Mid] pitch occurs on CV: and CVL syllables; [high] pitch is found on CVK syllables:

CV:; [mid]

[o: mik]	/o:m-ik/	'to do, make'
[i: šik]	/i:š-ik/	'to get'
[hi: čik]	/hi:č-ik/	'to see'
[ka: šik]	/ka:š-ik/	'to scratch ritually'

CVL; [mid]

[il lik]	/ill-ik/	'to die'
[im pik]	/imp-ik/	'to eat'
[čaw lik]	/čawl-ik/	'to write'
[təl wik]	/talw-ik/	'to dance'

CVK; [high]

[əf nik]	/afn-ik/	'to sew'
[iš kik]	/išk-ik/	'to drink'
[kuš lik]	/košl-ik/	'to cut'
[pək fik]	/pakf-ik/	'to swell'

The sequence of syllables in three-syllable verb roots is restricted. The final full syllable is heavy, as it is in the two-syllable verbs above. The syllable preceding the heavy syllable may be

light or heavy, but is light in the majority of examples. Pitch on the heavy syllable of three-syllable verbs follows the rule given above for two-syllable verbs; [mid] pitch occurs if the syllable is long, and [high] pitch occurs if the syllable is short. The syllable preceding the heavy syllable takes [mid] pitch if it is long and [low] pitch if it is short.

Adjectives are a subclass of verbs, and as such have the same restrictions on the permitted sequences of syllables. They differ from verbs in that the pitch of the heavy syllable is morphologically conditioned; it is always /high/. In the examples below, the adjectives take the citation suffix /-ī/, the same that occurs on nouns.

CV CV:

[tə̄ la: lik]	/tala:-l-ik/	'to lay down'
[hū pa: nik]	/hopa:n-ik/	'to sing'
[ə̄ po: nik]	/apo:n-ik/	'to talk'
[lī ba: tɨ?]	/liba:t-ī/	'weak'

CV CVL

[fō loh kik]	/folohk-ik/	'to be around'
[pə̄ sah kik]	/pasahk-ik/	'to sweep with a broom'
[hō ləm gik]	/holamk-ik/	'to hide'

[hō pin ɣik]	/hopinɣ-ik/	'to tap on'
[hə moh čɨʔ]	/hamohč-i/	'old' (female)

CV CVK

[či lit kik]	/čilitk-ik/	'to be quiet'
[tə gəɣ kik]	/takaɣk-ik/	'to work'
[tə bək šɨʔ]	/tabakš-i/	'straight'

CVK CVL

[uk šah lik]	/okšahl-ik/	'to wash'

CVL CV:

[hʊn la: čik]	/honla:č-ik/	'to bury'

CVK CV:

[nəŋ no: šɨʔ]	/nakno:š-i/	'old' (male)

By far the most common pattern for verb roots is the one in which a light syllable is followed by a heavy syllable. This has the result of maintaining the greatest possible perceptual difference between the final full syllable, which may carry contrastive pitch, and the syllable preceding the heavy syllable, which never has contrastive pitch. The fact that the language favors this distinction between the potentially prominent syllable and the potentially pre-prominent

syllable is shown by a random sample of fifty-nine three-syllable verb and adjective roots. Of these, fifty-six will have a light syllable as the first syllable preceding the heavy syllable. Only three had a heavy syllable in the word-initial position:

Sequence of Syllables	Number in Sample
CV CV:	33
CV CVL	15
CV CVK	8
CVK CVL	1
CVL CV:	1
CVK CV:	1

3.2 Effects of Syllable Shape on the Phonetic Realization of Pitch

In order to add another dimension to the study of pitch in Mikasuki, a number of wide and narrow band spectrograms were made of materials which were taped in the field. This corpus included 128 two- and three-syllable nouns and adjectives which were elicited in frame sentences and word lists for the purpose of studying pitch, 22 compound nouns and noun phrases, and 69 inflected verbs occurring with and without person prefixes and in various tenses and aspects. All of the examples chosen for spectrographic analysis were picked for their utility in an investigation of pitch.

Pitch levels were determined from the narrow band spectrograms by tracing the tenth harmonic; the figures given in the examples in this section are in Hertz (cycles per second). Because the majority of

the examples used were recorded by women, it was fairly easy in most instances to trace the tenth harmonic. The bands on the spectrograms were widely spread because of the relatively high pitch of the speakers' voices.

3.2.1 Non-level Pitches on Key Syllables

Non-level pitches found on key syllables are variants of /high/, /mid/, and /low/ pitch in long, non-nasalized syllables. If a syllable is nasalized or short, the pitch is usually level. This is shown in the following examples:

Long, non-nasalized; falling pitch

CV: CVL	[ta: to:n]	/ta:t-o:n/	'He's a father'
	1900-1600 1700-1600		
	[ɣa: ci: cəm]	/ɣa:ci:c-om/	'She started'
	1300 1500-1400 1300		

Long, nasalized; no falling pitch

CV:	[hũ: to:n]	/hõ:t-o:n/	'They're big'
	1900 1600		
CVL	[hẽy yo:n]	/hãyy-o:n/	'It's hot'
	1900 1800-1400		

Short; no falling pitch

CV	[tə	fo:n]	/taf-o:n/	'It's a grasshopper'
	1800	1800-1400		
CVK	[kuš	ləm]	/košl-om/	'She cut'
	1500	1100		

In inflected verbs a falling high pitch is apparently optional when the open syllable occurs in the penultimate position of the word. If the high-pitched syllable is word-final the falling pitch is obligatory.

[šo	gu:	gəm]	/sokó:k-om/	'It's already dried up'	
1500	1600	1400			
[šo	gu:	gi:	pm]	/soko:k-í:p-om/	'It's already dried up'
1350	1500	1700	1400		
[əŋ	guš	li:	pm]	/an-košl-í:p-om/	'She already cut it for me'
2100	2200-2100	2150-1800	1600		
[a:	ba:	ča:m]	/a:b-a-:č-á:-m/	'She will take a picture'	
1700	1750	1900-1700			

[ĩ:	ho:.	ta:	ča:m]	/ĩ:-ho:t-a-:č-á:-m/
2300-2350	2200-1900	2000	2200-1800	'She will make them bigger'

/Mid/ pitch is distinguished from /high/ and /low/ pitch on the phonetic level by the pitch contours found on each in open syllables. /Mid/ stays level or rises in this environment, while /high/ and /low/ may fall.

/Low/				/Mid/			
[to:	po:n]	/tò:p-ō:n/		[lo:	čo:n]	/lō:č-ō:n/	
1800-1700	1900-1500		'It's a chair'	1700-1850	1800-1400		'It's black'
[nà:	to:n]	/nà:t-ō:n/		[ya:	to:n]	/yā:t-ō:n/	
1500-1400	1700-1600		'It's a chin'	1500-1700	1800-1400		'They're people'
[a:	bɨ?]	/à:b-ī/		[ā:	bɨ?]	/ā:b-ī/	
1800-1700	2000-1900		'picture'	1700	1800-1700		'castrated'
[fa:	yɨ?]	/fá:y-ī/		[fā:	yīk]	/fā:y-īk/	
1800-1650	1200		'hunter'	1700	1700		'to hunt'

[tal	wɨʔ]	/talw-ī/		[tal	wik]	/talw-ik/	
1800-1650	1300		'dancer'	1900-1700	1700		'to dance'

Evidence that this distinction between falling and rising phonetic pitches is used as a disambiguating device by Mikasuki speakers is shown by the following pair of sentences. Normally when a root is verbalized by the causative suffix /-:č-/, it loses its contrastive pitch, and takes on the non-contrastive pitch of a pre-prominent verbal syllable. However, when the roots /à:b-ī/ 'picture' and /ā:b-ī/ 'castrated' are verbalized, the loss of contrast causes confusion. A distinction is made between the two verbs by exaggerating the pitch fall in /a:b-ā-:č-om/ 'take a picture' and the pitch rise in /a:b-ā-:č-om/ 'castrate':

[wa:	gun	a:	bã:	čəm	lī]	/wà:k-on a:b-ã-:č-om-li/
1500-1700	1700	1600-1400	1600	1500	1450	'I'm taking a picture of the cow'

[wa:	gun	a:	bã:	čəm	lī]	/wà:k-on a:b-ã-:č-om-li/
1600-1800	1800	1600-1800	1700-1600	1500	1500	'I'm castrating the yearling'

3.2.2 Phonetic Pitch Height and Syllable Shape on Key Syllables

As was shown in Section 3.1, syllable shape imposes restrictions on the distribution of the three contrastive pitches on key syllables. Syllable shape also affects the realization of phonetic

pitch, either by producing a contour pitch as explained above, or by affecting the height of the phonetic pitch. In order to quantify this effect a corpus of ninety-five two-syllable noun and adjective roots was selected from the list of 128 roots appearing in the frame sentences. They were subclassified into groups based on the pitch and shape of the first syllable. From the narrow band spectrograms of the examples, an average pitch value was computed for each syllable type with each of the three contrastive pitches.

The results are given in Table 3.1, ranked by syllable shape and pitch from the highest average pitch to the lowest for each of the three contrastive pitches. Of interest is the fact that some of the average values of /low/ pitch overlap those of both /mid/ and /high/ pitch. These syllables are classified as having /low/ pitch not because of the absolute height of the syllable in Hertz, but because of the relative height of the syllable as compared to the following /mid/ pitch syllable. For example, the /low/ syllable of /hàhč-ī/ 'river' and the /mid/ syllable of /hā:č-ī/ 'tail' have the same absolute frequency values in cycles per second. Yet the /low/ syllable of /hàhč-ī/ is low relative to the /mid/ pitch on the syllable following it in the same word:

[hāh	čɨ?]	/hàhč-ī/	'river'	[hà:	čɨ?]	/hā:č-ī/ 'tail'
1000	1200			1000	1000	

This example suggests that the data presented in Table 3.1 should be revised to show the average pitch height of both syllables in a word,

Table 3.1 Average Pitch Values of Various Syllable Types Having /Low/, /Mid/, and /High/ pitch

/low/	/mid/	/high/
VK $\bar{x}$ = 1830 Hz. n = 5 s = 83 Hz. /ipt -o:n/ 'It's ice' 1850 2000-1800	V: $\bar{x}$ = 1800 Hz. n = 8 s = 119 Hz. /i:c -o:n/ 'It's a deer' 1900 2000-1500	CVL $\bar{x}$ = 1880 Hz. n = 5 s = 83 Hz. /want -o:n/ 'It's strong' 1800-1900 1800-1400
CVK $\bar{x}$ = 1758 Hz. n = 6 s = 66 Hz. /yokc -o:n/ 'It's a turtle' 1800 2000-1900	VL $\bar{x}$ = 1750 Hz. n = 2 s = 70 Hz. /ilb -o:n/ 'It's a hand' 1700-1800 1700-1500	CVK $\bar{x}$ = 1871 Hz. n = 7 s = 160 Hz. /patk -o:n/ 'It's fast' 2000-1800 1700-1600
V: $\bar{x}$ = 1750 Hz. n = 2 s = 70 Hz. /a:b -o:n/ 'It's a picture' 1800-1700 2000-1900	CV: $\bar{x}$ = 1729 Hz. n = 12 s = 121 Hz. /ta:l -o:n/ 'It's swamp cabbage' 1750-1800 1900-1500	CV: $\bar{x}$ = 1800 Hz. n = 3 s = 100 Hz. /hi:ɣ -o:n/ 'It's good' 1700-1800 1900-1500
V $\bar{x}$ = 1750 Hz. n = 3 s = 1866 /it -o:n/ 'It's an eye' 1700-1600 1700-1500	CVL $\bar{x}$ = 1714 Hz. n = 7 s = 94 Hz. /cint -o:n/ 'It's a snake' 1700 1700-1500	VK $\bar{x}$ = 1725 Hz. n = 2 s = 35 Hz. /afn -i/ 'person who sews' 1700 1400-1300

Table 3.1--Continued

/low/	/mid/	/high/
CVL $\bar{x}$ = 1741 Hz. n = 6 s = 182 Hz. /hahc -o:n/ 'It's a river' 1650 1900-1700		CV $\bar{x}$ = 1700 Hz. n = 4 s = 115 Hz. /kot -o:n/ 'It's a frog' 1600 1500-1200
CV: $\bar{x}$ = 1550 Hz. n = 4 s = 128 Hz. /lo:p -o:n/ 'It's a liver' 1600 1850-1500		
CV $\bar{x}$ = 1466 Hz. n = 6 s = 121 Hz. /tal -o:n/ 'It's a rock' 1700 1900-1500		

Note: $\bar{x}$ = mean pitch value; n = number in sample; and s = standard deviation from the mean.

and the relative degree of difference in pitch between them. This revision appears in Table 3.2 and in graphic form in Figure 3.1.

Figure 3.1 clearly demonstrates a further way in which the three contrastive pitches are differentiated on the phonetic level. /Low/ pitch is characterized by a large rise in pitch on the following syllable. /Mid/ pitch is followed by a more modest rise in pitch, and /high/ is followed by a precipitous drop in pitch on the next syllable. This is also true when the pitch heights of all syllable types having the same contrastive pitch are averaged:

/low/ pitch: Average difference between /low/ and following /-o̅:n/ = +174 Hz.
Average pitch of all /low/ syllables = 1647 Hz. (31 examples)
Average pitch of /-o̅:n/ syllables = 1848 Hz.

/mid/ pitch: Average difference between /mid/ and following /-o̅:n/ = +110 Hz.
Average pitch of all /mid/ syllables = 1775 Hz. (28 examples)
Average pitch of all /-o̅:n/ syllables = 1885 Hz.

/high/ pitch: Average difference between /high/ and following /-o̅:n/ = -154 Hz.
Average pitch of all /high/ syllables = 1840 Hz. (15 examples)
Average pitch of all /-o̅:n/ syllables = 1686 Hz.

Table 3.2 Relative Pitch Height in Two-syllable Nouns and Adjectives

/low/	/mid/
VK C-o:n Pitch of 1st syll. = 1830 Hz. Pitch of 2nd syll. = 1920 Hz. Pitch difference = 110 Hz. /ás p-ō:n/ 'It's corn' 1900 2000- 1700	V: C-o:n Pitch of 1st syll. = 1800 Hz. Pitch of 2nd syll. = 1925 Hz. Pitch difference = 125 Hz. /ī: t-ō:n/ 'It's a fire' 1900- 2000- 2000 1600
CVK C-o:n Pitch of 1st syll. = 1758 Hz. Pitch of 2nd syll. = 1975 Hz. Pitch difference = 217 Hz. /čok s-ō:n/ 'It's a pumpkin' 1650 1850- 1500	CV: C-o:n Pitch of 1st syll. = 1780 Hz. Pitch of 2nd syll. = 1853 Hz. Pitch difference = 27 Hz. /ɣā: ɣ-ō:n/ 'It's a fish' 1700- 1800- 1800 1400
V: C-o:n Pitch of 1st syll. = 1750 Hz. Pitch of 2nd syll. = 1950 Hz. Pitch difference = 200 Hz. /á: b-ō:n/ 'It's a picture' 1800- 2000- 1700 1900	VL C-o:n Pitch of 1st syll. = 1750 Hz. Pitch of 2nd syll. = 1900 Hz. Pitch difference = 150 Hz. /il̄ b-ō:n/ 'It's a hand' 1700- 1700- 1800 1500
V C-o:n Pitch of 1st syll. = 1750 Hz. Pitch of 2nd syll. = 1800 Hz. Pitch difference = 50 Hz. /i t-ō:n/ 'It's an eye' 1700- 1700- 1600 1500	CVL C-o:n Pitch of 1st syll. = 1687 Hz. Pitch of 2nd syll. = 1875 Hz. Pitch difference = 100 Hz. /hąl̄ k-ō:n/ 'She's a wife' 1600- 1700- 1700 1400

Table 3.2--Continued

/low/	/high/
CVL C-o:n Pitch of 1st syll. = 1730 Hz. Pitch of 2nd syll. = 1900 Hz. Pitch difference = 210 Hz. /hin ɣ-o:n/ 'It's a squirrel' 1500 1800-1300	CVK C-o:n Pitch of 1st syll. = 1975 Hz. Pitch of 2nd syll. = 1637 Hz. Pitch difference = 338 Hz. /pat k-o:n/ 'It's fast' 2000-1800 1700-1600
CV: C-o:n Pitch of 1st syll. = 1525 Hz. Pitch of 2nd syll. = 1760 Hz. Pitch difference = 238 Hz. /lo: p-o:n/ 'It's a liver' 1600 1850-1500	CVL C-o:n Pitch of 1st syll. = 1916 Hz. Pitch of 2nd syll. = 1750 Hz. Pitch difference = 183 Hz. /hay y-o:n/ 'It's hot' 1900 1800-1400
CV C-o:n Pitch of 1st syll. = 1466 Hz. Pitch of 2nd syll. = 1666 Hz. Pitch difference = 200 Hz. /ci k-o:n/ 'It's a house' 1400 1600-1300	CV: C-o:n Pitch of 1st syll. = 1850 Hz. Pitch of 2nd syll. = 1750 Hz. Pitch difference = 100 Hz. /hi: ɣ-o:n/ 'It's good' 1700-1800 1900-1500
	VK C-o:n Pitch of 1st syll. = 1725 Hz. Pitch of 2nd syll. = 1600 Hz. Pitch difference = 125 Hz. /am b-o:n/ 'It's high' 1750 1700-1500

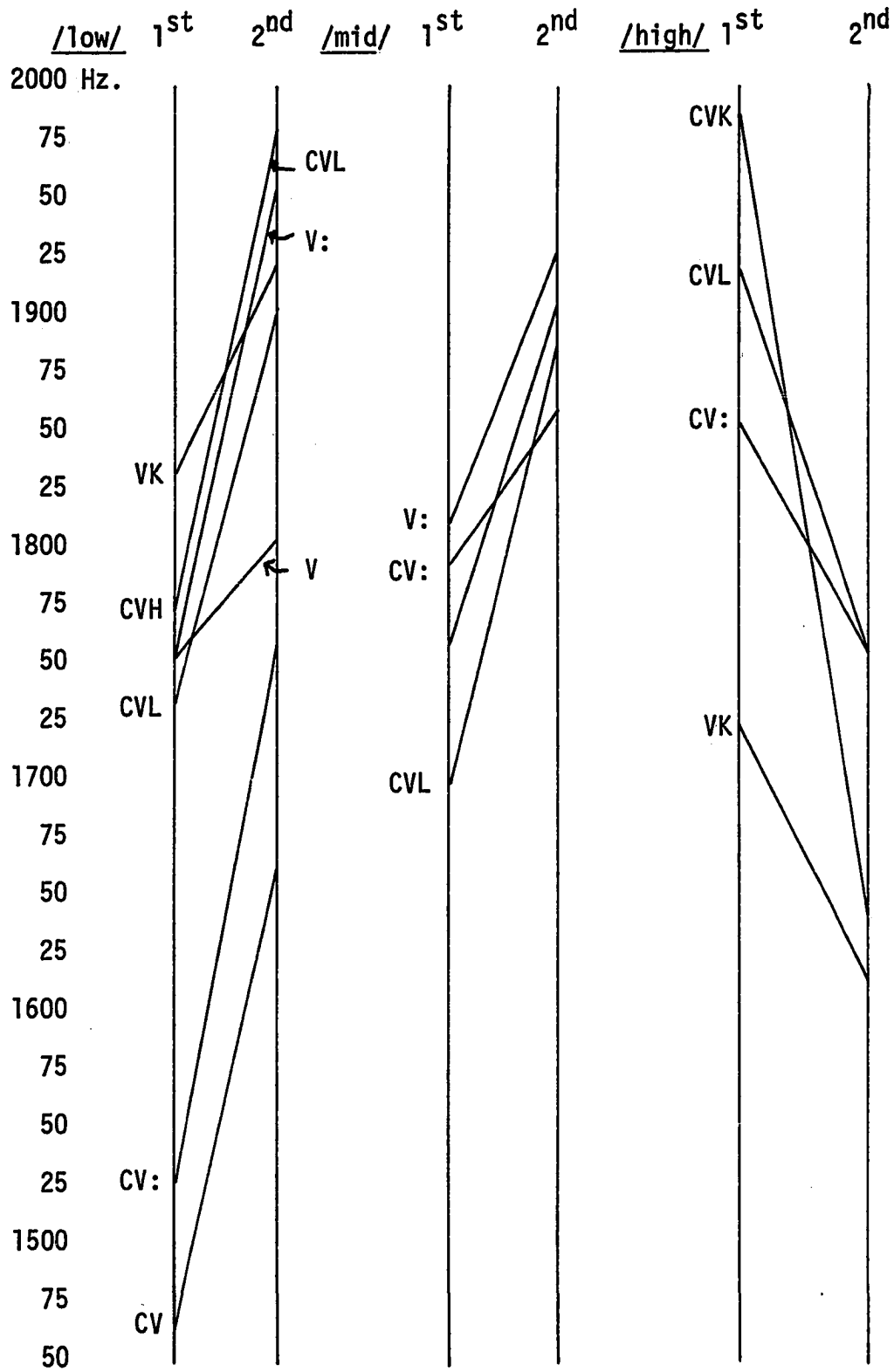


Figure 3.1 Relative Pitch of the First and Second Syllables of Two-syllable Nouns and Adjectives

The relative pitch heights of the first and second syllables of words with /low/ and /high/ pitch on the first syllable are shown in Figure 3.2. The data in Figure 3.1 suggest that syllable shape does affect phonetic pitch height to some extent. The distinctions among the three contrastive pitches are maintained, however, by the relative difference in pitch between the syllable in question and its neighboring pitches, in these examples, the immediately following pitch. Furthermore, the direction of the pitch drop or rise on the next syllable serves to distinguish /low/ and /mid/ pitch from /high/ pitch.

The long/short syllable classification also has an effect on phonetic pitch height. The shape of a syllable and its contrastive pitch together influence the realization of pitch. West (1962:83) states that a word-initial short syllable will have a higher allotone than a word-initial long syllable. This statement is confirmed by the two-syllable noun and adjective data, but only when the contrastive pitch of the word-initial syllable is /low/. If the contrastive pitch is /high/ on the other hand, then long word-initial syllables are higher in phonetic pitch than short word-initial syllables. This is shown in Figure 3.3.

/low/:	Word-initial short syllable	Final syllable /-o̅:n/
	1683 Hz. (20 examples)	1842 Hz.

/v̌\cok f-o̅:n/ 'It's a rabbit'

1800 1900-1600

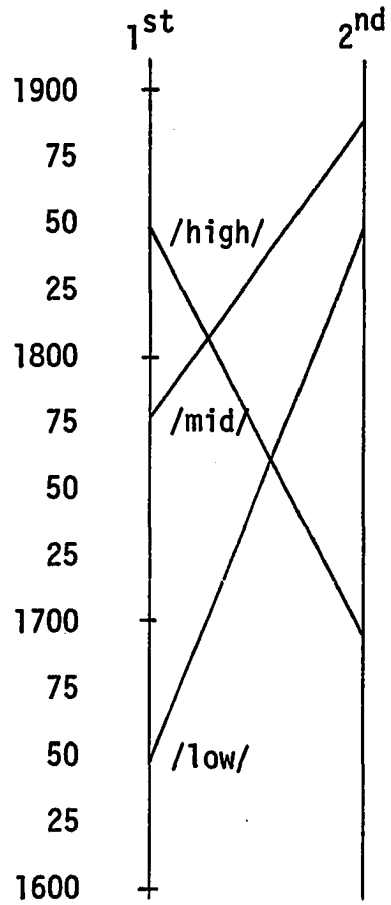


Figure 3.2 Relative Pitch of the First and Second Syllables of Two-syllable Nouns and Adjectives When the Values for all /low/, /mid/, and /high/ Pitch First Syllables are Averaged

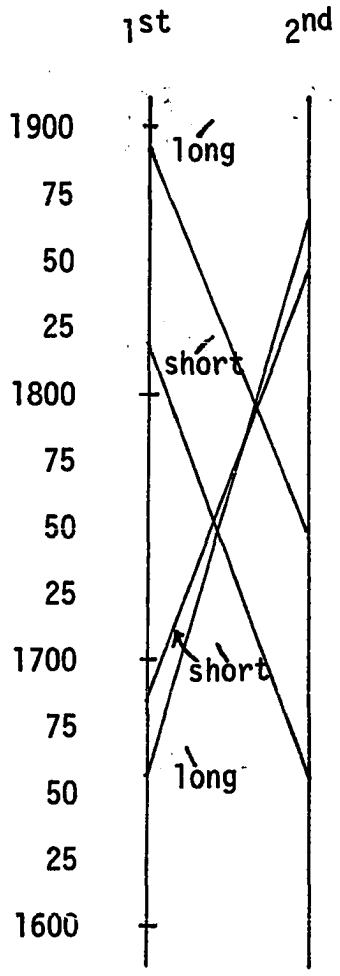


Figure 3.3 Relative Pitch Height of Long and Short Syllables with /high/ and /low/ Pitch

/ok c-o:n/ 'It's juice'

1900 2100-1800

/-o:n/

Word-initial long syllable	Final syllable
1659 Hz. (11 examples)	1859 Hz.

/a: b-o:n/ 'It's a picture'

1800-1700 2000-1900

/fo: s-o:n/ 'It's a bird'

1400 1600-1300

/high/:

Word-initial short syllable	Final syllable
1815 Hz. (10 examples)	1655 Hz.

/pát k-o:n/ 'It's fast'

2000-1800 1700-1600

/kó t-o:n/ 'It's a frog'

1600 1500-1200

Word-initial long syllable	Final syllable
1890 Hz. (5 examples)	1750 Hz.

/a: s-o:n/

1700-1800 1600-1500

/hay y-o:n/ 'It's hot'

1900 1800-1400

In summary, the acoustic data concerning pitch height and syllable shape confirm that syllable type has an influence on absolute phonetic pitch realization. However, the fact that the pitch of the suffix /-o̅:n/ varies regularly depending on the pitch of the syllable preceding it, and the fact that /low/ and /mid/ pitch induce a raised pitch on the following key syllable, while /high/ induces a lowered pitch on the same syllable, indicate that relative pitch, rather than absolute pitch, is the more important factor in pitch perception in Mikasuki. This effect of contiguous pitches on each other will be explored more fully in the next section.

3.3 Effect of Adjacent Pitches on the Realization of Phonetic Pitch

The data given above show the influence of the pitch of one key syllable on the pitch of another key syllable. But many words have only one or two key syllables; the surrounding non-key syllables acquire pitch according to their syllable shape, proximity to the key syllables, and position within the word. Inflected verbs, which have one prominent syllable, and perhaps a person prefix with contrastive pitch, are prime examples of this type of word.

3.3.1 Effect of the Pitch of Key Syllables on the Pitch of Adjacent Non-key Syllables

The first set of verbs to be examined has only one key syllable, the prominent one, which may have /mid/ or /high/ pitch. The pitch of post-prominent non-key syllables is determined by the pitch on the prominent syllable. /Mid/ is followed by a slightly lowered pitch,

while /high/ is followed by an extremely low pitch. This is shown graphically in Figure 3.4.

/mid/: Average pitch of prominent syllable: 1650 Hz. (10 examples)
Average pitch of post-prominent syllable: 1535 Hz.
Average difference in pitch between these two syllables: 115 Hz.

[cəow	ləm]	/cawl-om/	[kuš	ləm]	/kosl-om/
1650	1450	'She's writing'	1400	1350	'She's cutting'

/high/: Average pitch of prominent syllable: 1458 Hz.[1]
Average pitch of post-prominent syllable: 1216 Hz.
Average difference in pitch between the two syllables: 208 Hz.

[cəow	ləm]	/cawl-om/	[kuš	ləm]	/kosl-om/
1400	1100	'She wrote'	1500	1100	'She cut'

[ey	yə	mi	šī]	/ayy-om-isi/
1700	1400	1400	1300	'She was around'

The first syllable of a three-syllable inflected verb shows a similar relationship in phonetic pitch to the prominent syllable as does the post-prominent syllable. A light or heavy pre-prominent syllable is relatively lower in pitch before a /high/ pitch than it is before a /mid/ pitch (see Figure 3.5).

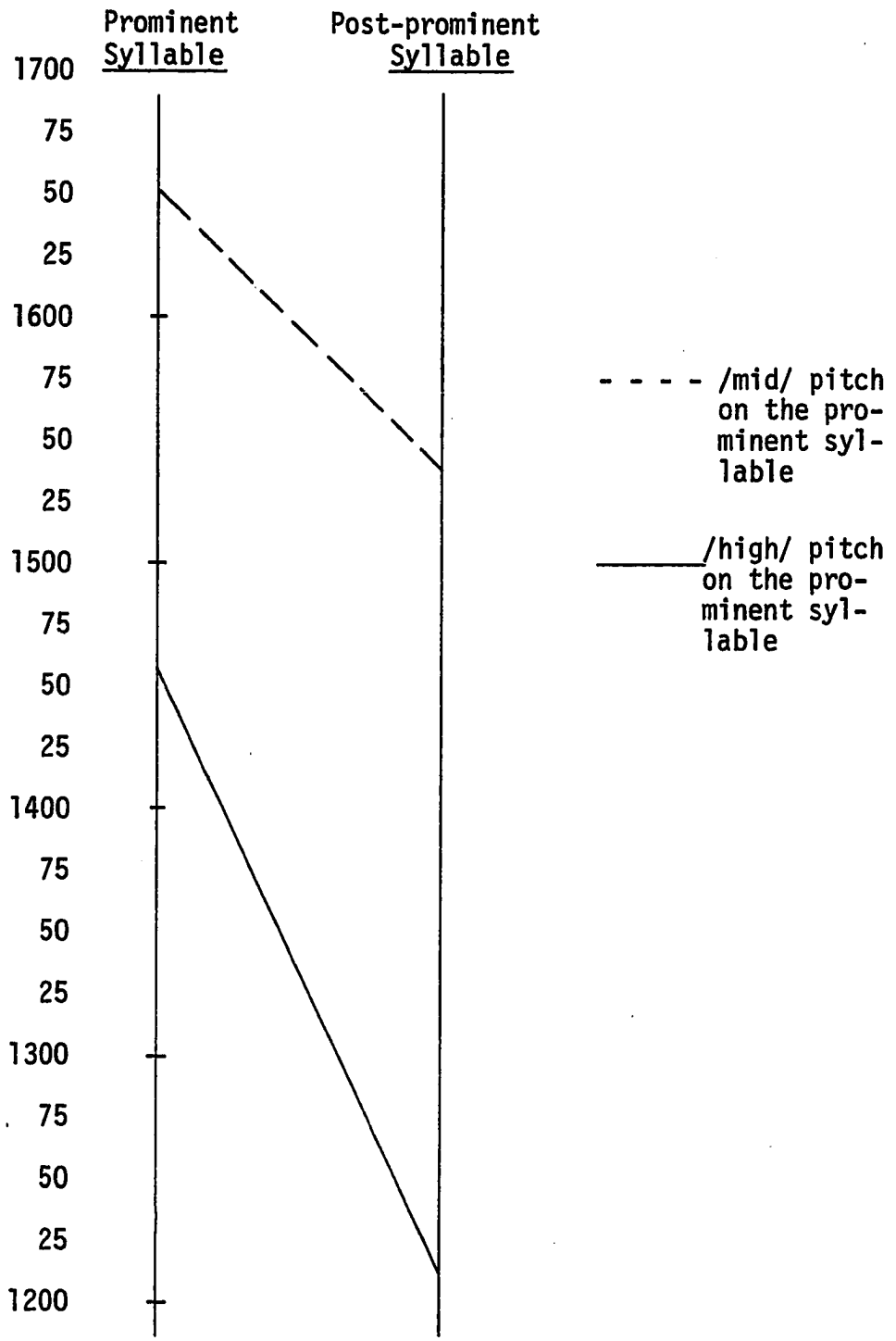
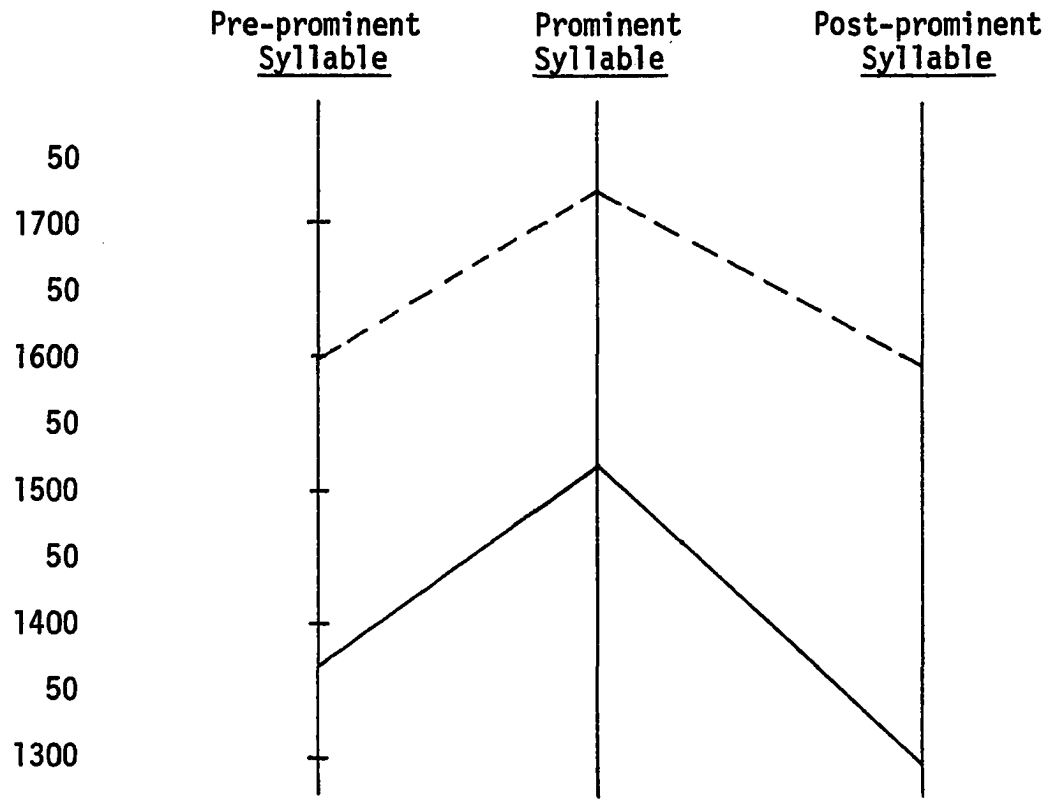


Figure 3.4 Pitch on the Post-prominent Syllable Following /mid/ and /high/ Pitch on Two-syllable Verbs



- - - - /mid/ pitch on the prominent syllable

_____/high/ pitch on the prominent syllable

Figure 3.5 Pitch on Three-syllable Verbs with /mid/ and /high/ Pitch on the Prominent Syllable

/mid/: Average pitch of pre-prominent syllable: 1600 Hz. (7 examples)

Average pitch of prominent syllable: 1707 Hz.

Average pitch of post-prominent syllable: 1571 Hz.

Average difference between 1st and 2nd syllable: 107 Hz.

Average difference between 2nd and 3rd syllable: 136 Hz.

[ˇsu gũ: gəm] /ˇsokõ:k-om/ [ʃa: ˇci: cəm] /ʃa:ˇci:c-om/

1800 1800 1600 1500 1600 1400

'It's drying 'She's starting'

/high/: Average pitch of pre-prominent syllable: 1366 Hz. (3 examples)

Average pitch of prominant syllable: 1500 Hz.

Average pitch of post-prominent syllable: 1300 Hz.

Average difference between 1st and 2nd syllable: 134 Hz.

Average difference between 2nd and 3rd syllable: 200 Hz.

[ˇso gu: gəm] /ˇsokó:k-om/ [ʃa: ˇci: cəm] /ʃa:ˇci:c-om/

1500 1600 1400 1300 1500 1300

'It dried' 'She started'

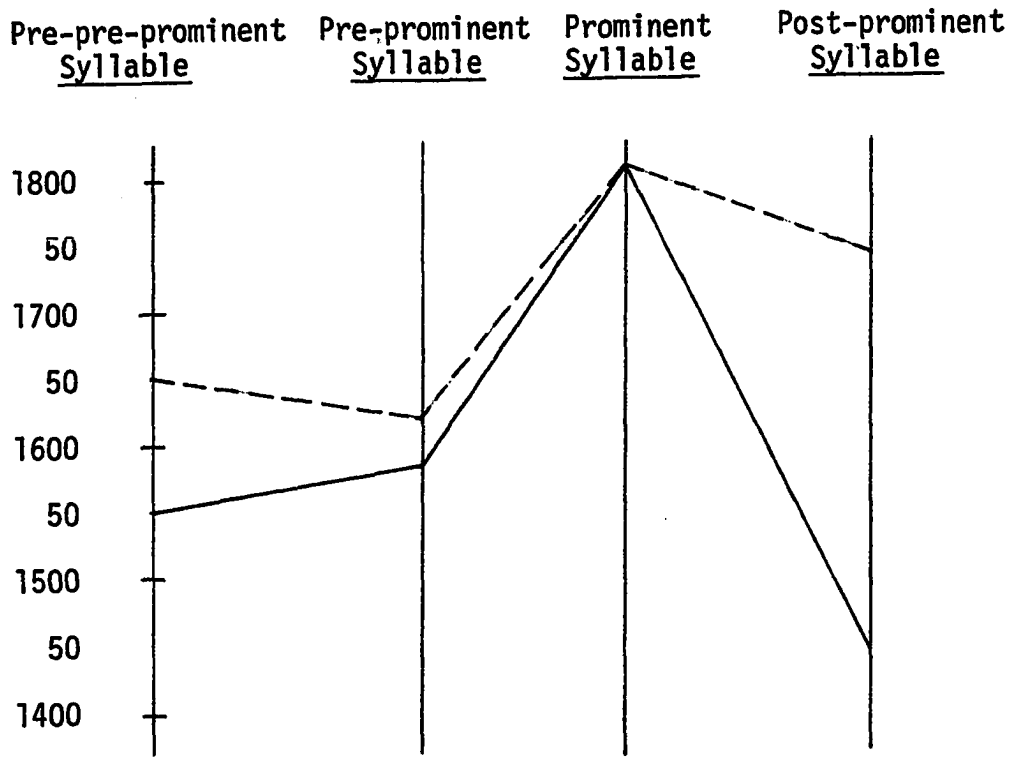
The same is true if there are two non-key syllables preceding the prominent syllable (see Figure 3.6).

/mid/: Average pitch of the pre-pre-prominent syllables 1650 Hz. (2 examples)

Average pitch of the pre-prominent syllable: 1625 Hz.

Average pitch of the prominent syllable: 1800 Hz.

Average pitch of the post-prominent syllable: 1725 Hz.



- - - - /mid/ on the prominent syllable

_____/high/ on the prominent syllable

Figure 3.6 Pitch on Four-syllable Verbs with /mid/ and /high/ Pitch on the Prominent Syllable

Average difference between the 1st and 2nd syllables: 25 Hz.

Average difference between the 2nd and 3rd syllables: 175 Hz.

Average difference between the 3rd and 4th syllables: 75 Hz.

[hop ɣə nã: cəm] /hop-ɣa:nã:c-om/ 'She's making him leave'

1800 1850 1900 1850

/high/: Average pitch of the pre-pre-prominent syllable: 1550 Hz.
(4 examples)

Average pitch of the pre-prominent syllable: 1587 Hz.

Average pitch of the prominent syllable: 1800 Hz.

Average pitch of the post-prominent syllable: 1450 Hz.

Average difference between the 1st and 2nd syllable: 37 Hz.

Average difference between the 2nd and 3rd syllable: 213 Hz.

Average difference between the 3rd and 4th syllable: 350 Hz.

[su gu: gi: pəm] /soko:k-i:p-om/ 'It's already dry'

1350 1500 1700 1400

The non-key syllables in an inflected verb are subjected to a different influence when the person prefixes are added. In this case the pre-prominent syllables are located between contrastive pitches which differ in pitch height. Before looking at the effect of these two key syllables on the intervening non-key syllables, the effect of the two key syllables on each other must be examined.

The two factors affecting the phonetic pitch of the person prefixes are syllable shape and the contrastive pitch found on the

prominent syllable of the inflected verb. The allomorphic variants of the prefixes have been classified as long (CV:, VN or V:) and short (CV or VC). The pitch of the prominent syllable is /mid/ or /high/. First, when the syllabification of the prefix produces a long syllable, its phonetic pitch is higher than if the prefix is realized as a short syllable. Secondly, the relative pitch of prefixes preceding a /high/ prominent syllable is higher than the pitch of prefixes preceding a /mid/ prominent syllable. Finally, when the prefix is a long /mid/ syllable and the pitch of the prominent syllable is also /mid/, there is a downstep in pitch from the prefix to the prominent syllable of the verb. In other words, the prominent syllable does not always have the highest pitch in an utterance. In the examples below only the pitches of the prefixes and the prominent syllable have been considered; intervening non-key syllables will be presented in subsequent discussion.

Prefix-short	Prom. Syll. /mid/	Prefix-short	Prom. syll. /high/
1900 Hz.	1950 Hz. (2 examples)	2025 Hz.	2250 Hz. (2 examples)
Prefix-long	**Prom. syll. /mid/**	**Prefix-long**	**Prom. syll. /high/**
1950 Hz.	1841 Hz. (7 examples)	2100 Hz.	2140 Hz. (5 examples)

Prom. syll. /mid/:	[hōp	č̄ə	ɣ̄a:	ˈnã:	čə̄m]	/hop-čā-ɣa:nã:č-om/
	1800	1900	2000	1800-1700	1700	'She's making me go out'

[ən yĩ·ɣ lə̄m] /ān-yĩɣ-l-om/ 'She's burning something of mine'
1900 1700 1600

[ə̄ ča: bā̃: čəm] /āč-a:b-ā̃-:č-om/
2000 2100-2000 2100 2100 'She's taking my picture'

Prom. syll. /high/:

[in tən nəm lī] /īn-tann-om-li/ 'I'm mad at her'
1900 1900 1500 1300

[ə čə ɣa: či: čoñ mī] /āč-ala:č-i-:č-o,h,mi/
2000 2100 2100 2300-2100 2000 1700 'She already sent me'

Having established the effect of the person prefixes and the prominent syllables on each other, we can now turn to their effect on the non-key syllables between them. The governing principle is that the pitch heights of the two key syllables relative to each other determine the pitch of the intervening non-key syllables. If the first key syllable is phonetically higher than the second, then the medial non-key syllables will show a downstep in pitch directed toward the pitch of the second key syllable. If the first key syllable is lower in phonetic pitch than the second, then the medial non-key syllables will step up in pitch toward the second. This is true regardless of the number of medial syllables without contrastive pitch.

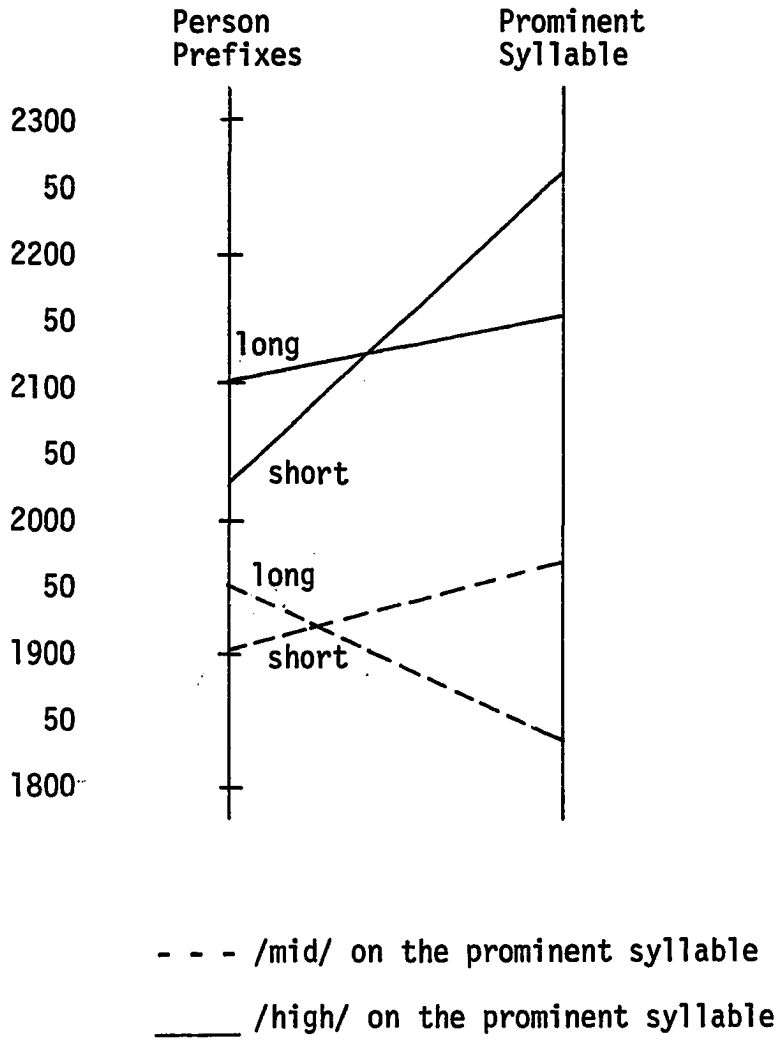
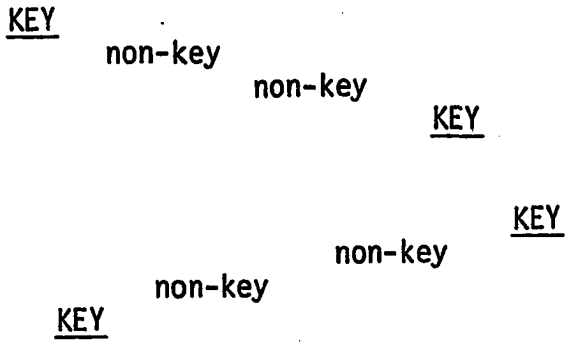


Figure 3.7 Relative Pitch of Person Prefixes and the Prominent Syllable



The first set of verbs includes those with only one non-key syllable between the person prefix and the prominent syllable. The key syllables are underlined twice, the non-key syllable only once. Average pitch values are given for each syllable of the verbs.

Prefix-long	Non-key Pre-prominent syll.	/mid/ Prominent syll.	Final
1950 Hz. (4 examples)	1875 Hz.	1775 Hz.	1750 Hz.

Prefix-long	Non-key Pre-prominent syll.	/high/ Prominent syll.	Final
2033 Hz. (3 examples)	2150 Hz.	2133 Hz.	1733 Hz.

Prom. syll. /mid/:

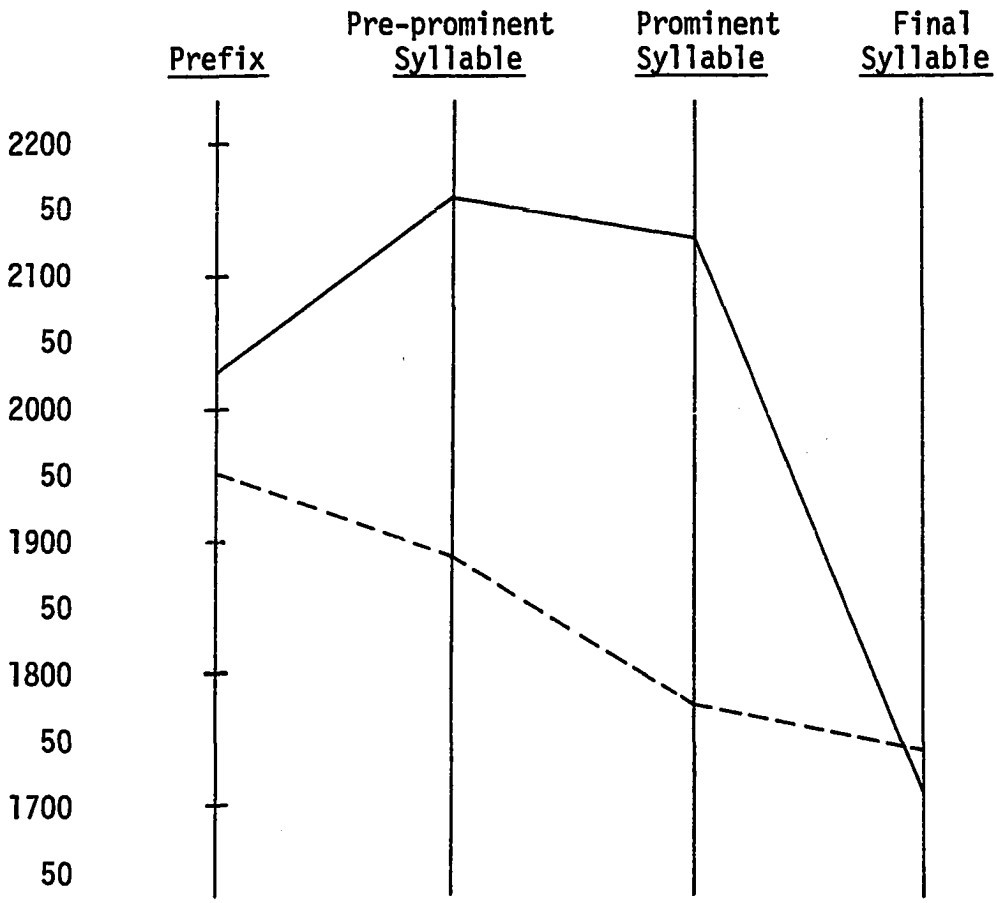
[in čo: bã: čəm] /ĩn-čo:b-ã̃-:č-om/

2100-2200 2100 1800 1900-1800 'She's making it bigger'

Prom. syll. /high/:

[ĩ: feyh ni:ə̃ m] /ĩ:-fayhn-i:-m/

2000 2100 2100-1700 'It drained'



- - - /mid/ on the prominent syllable

_____ /high/ on the prominent syllable

Figure 3.8 Relative Pitch of Verbs with Person Prefixes and One Pre-prominent Syllable

The second set of verbs includes those with two non-key syllables between the prefix and the prominent syllable. Here each of the non-key syllables takes its pitch from that of the key syllable closest to it. The prefix affects the first non-key syllable, and the prominent syllable affects the second (see Figure 3.9).

Prefix-short	Non-key Pre-pre-prom.	Non-key Pre-prom.	/high/ Prom.	Final
2025 Hz. (2 examples)	2000 Hz.	2100 Hz.	2250 Hz.	2000 Hz.

Prefix-long	Non-key Pre-pre-prom.	Non-key Pre-prom.	/high/ Prom.	(no final)
2200 Hz. (2 examples)	2150 Hz.	1900 Hz.	2150 Hz.	

Prefix-long	Non-key Pre-pre-prom.	Non-key Pre-prom.	/mid/ Prom.	Final
1950 Hz. (3 examples)	2033 Hz.	1766 Hz.	1866 Hz.	1666 Hz.

Prom syll. /high/:

[ə čə ɣa: či: čoñ mi] /ač-aɣa:č-i-:č-o,h,mi/

2050 2100-2000 2100-2200 2300-2100 2000-1900 1700

'She already sent me'

[in čo: ba: ča:m] /in-čo:b-a-:č-a:-m/

2100 2100-1900 1800-2000 2100-1900

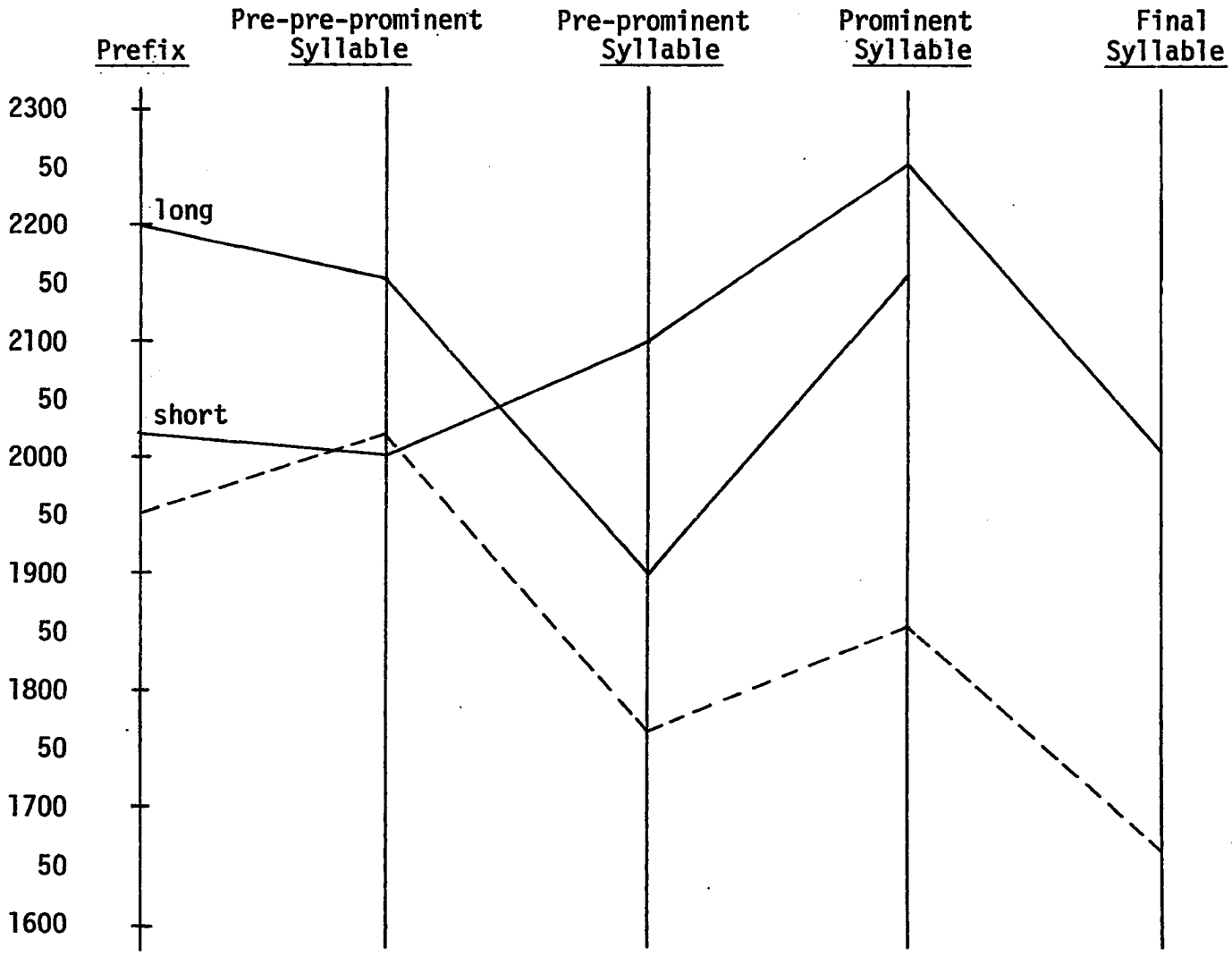
'She will make it big'

Prom. syll. /mid/:

[iŋ gə tūg nã: čəm] /in-katokn-ã-:č-om/

1950 1800 1700 1900 1800

'She's making it thicker'



- - - /mid/ on the prominent syllable ; _____ /high/ on the prominent syllable

Figure 3.9 Relative Pitch of Verbs with Person Prefixes and Two Pre-prominent Syllables

In this section the phonetic pitch patterns of inflected verbs of different types have been discussed. These include verbs with one key syllable, and either one or two pre-prominent non-key syllables, and verbs with two key syllables and one or two pre-prominent syllables. The generalizations made concerning phonetic pitch may be summarized as follows.

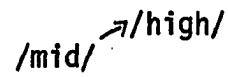
3.1.1.1 Verbs with one key syllable

1. /Mid/ pitch on the prominent syllable moderates the pitches of the non-key syllables to values near /mid/. The average difference in pitch between the key and non-key syllables is relatively small.
2. /High/ pitch on the prominent syllable exaggerates the difference in relative pitch between it and adjacent non-key syllables. The average difference in pitch between key and non-key syllables is relatively large, especially in the case of the non-key post-prominent syllables.

3.1.1.2 Verbs with two key syllables

1. Relation of the pitches of the two key syllables to each other:

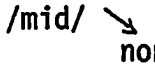
/mid/ ↘ /mid/ •If both key syllables have /mid/ pitch, there will be a downstep in phonetic pitch from the first to the second, regardless of the number of medial non-key syllables



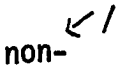
•If the first key syllable is /mid/ and the second /high/, there will be an upstep in relative pitch from the first to the second

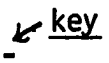
•/High/ pitch on the prominent syllable raises the absolute phonetic pitch of the person prefixes, and /mid/ on the prominent syllable lowers the absolute phonetic pitch of the person prefixes.

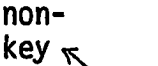
2. Effect of the two key syllables on the non-key syllables:



•If there is one non-key medial syllable, its phonetic pitch is determined by the phonetic pitch of the higher of the two key syllables.







•If there are two medial non-key syllables, their pitch is governed by the phonetic pitch of the closest key syllable. The person prefix governs the pitch of the first non-key syllable, and the prominent syllable governs the pitch of the second non-key syllable.

3.3.2 Effect of the Pitch of Key Syllables on Each Other

The pitch patterns found on three-syllable nouns are more varied than those found on inflected verbs, because of the relative freedom of occurrence of the three contrastive pitches and the less

rigid rules governing the sequence of syllable types in nouns. Nonetheless, some of the same generalizations concerning pitch found for two-syllable nouns and inflected verbs are also true for three-syllable nouns.

The first generalization states that downstep from the pitch of the first syllable to the pitch of the second will occur if the two syllables have the same contrastive pitch and the same long/short syllable classification.

/low/:	Syllable 1--Short	Syllable 2--Short	/-o:n/ Final	Average Difference between 1 and 2
	1780 Hz. (5 examples)	1690 Hz.	1900 Hz.	90 Hz.
	[no go so:n]	/nokos-o:n/	'bear'	
	1700-1600 1700 1900-1700			

	Syllable 1--Long	Syllable 2--Long	/-o:n/ Final	Average Difference between 1 and 2
	1700 Hz.	1650 Hz.	1900 Hz.	50 Hz.
	[lah kah co:n]	/lahkahc-o:n/	'season'	
	1800 1700 2100-1700			

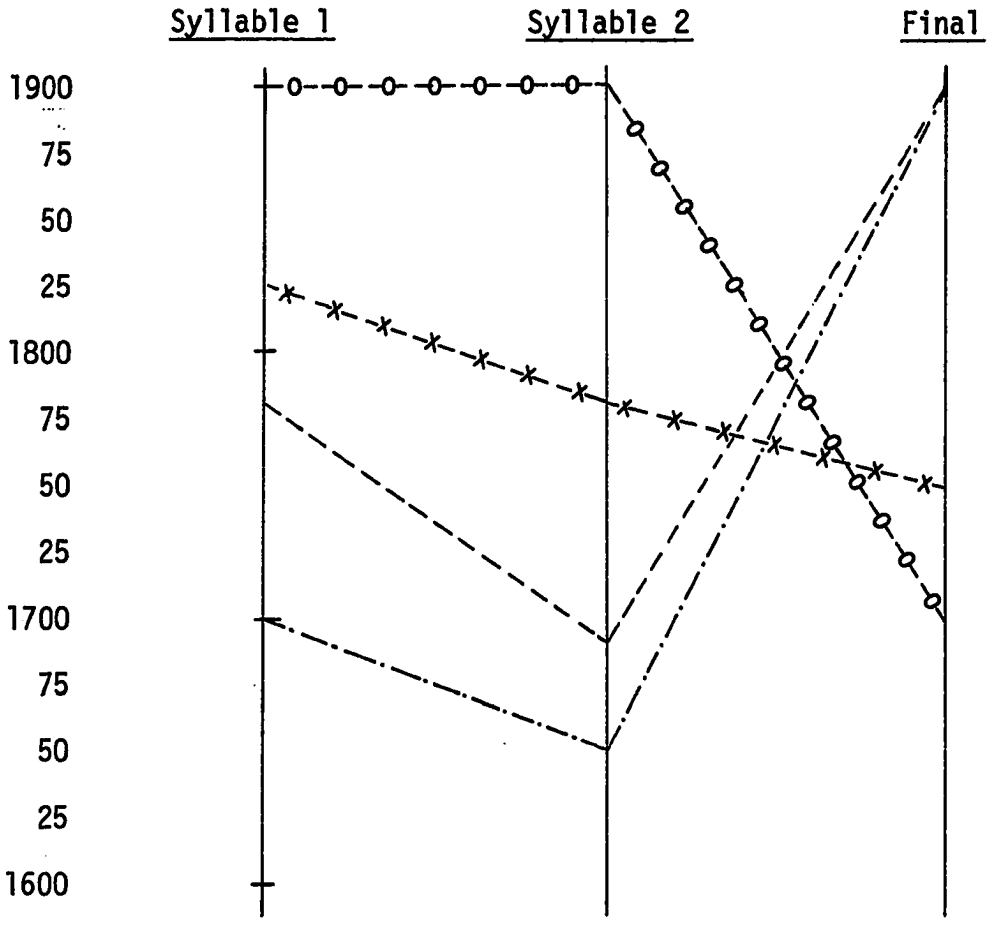
/mid/:	Syllable 1--Long	Syllable 2--Long	/-o:n/ Final	Average Difference between 1 and 2
	1825 Hz.	1781 Hz.	1750 Hz.	44 Hz.
	[i: go: so:n]	/i:ko:s-o:n/	'mother's sister'	
	1750-1650 1500-1600 1500-1400			

/high/:	Syllable 1--Short 1900 Hz. (2 examples)	Syllable 2--Short 1900 Hz.	/-o:n/ Final 1700 Hz.	Average Difference between 1 and 2 0
	[i tu co:n]	/itoc-o:n/	'It's a kidney'	
	1800 1700 1600-1500			

Figure 3.10 also reaffirms two other principles found for two-syllable nouns concerning contiguous pitches. First, the final syllable following a /low/ is raised, and the final syllable following a /high/ is lowered. Second, a short /low/ syllable has a higher phonetic pitch than a long /low/ syllable.

The second generalization found for three-syllable nouns concerns the relative pitch of long and short syllables. The phonetic pitch of two syllables of the same classification is closer in average value than the phonetic pitches of two dissimilar syllables. Figure 3.11 shows this. Syllables are ranked from the smallest to the greatest average difference between two syllables of the same word. Figure 3.12 shows the pitch contours of three-syllable words of various combinations of syllable types and with various contrastive pitches.

/mid/ Syllable 1 short: 1766 Hz. (3 examples)	/high/ Syllable 2 short: 1833 Hz.	/-o:n/ Final 1566 Hz.	Average Difference between 1 and 2 67 Hz.
[kə tug no:n]	/katokn-o:n/	'It's thick'	
1800 1900 1600			

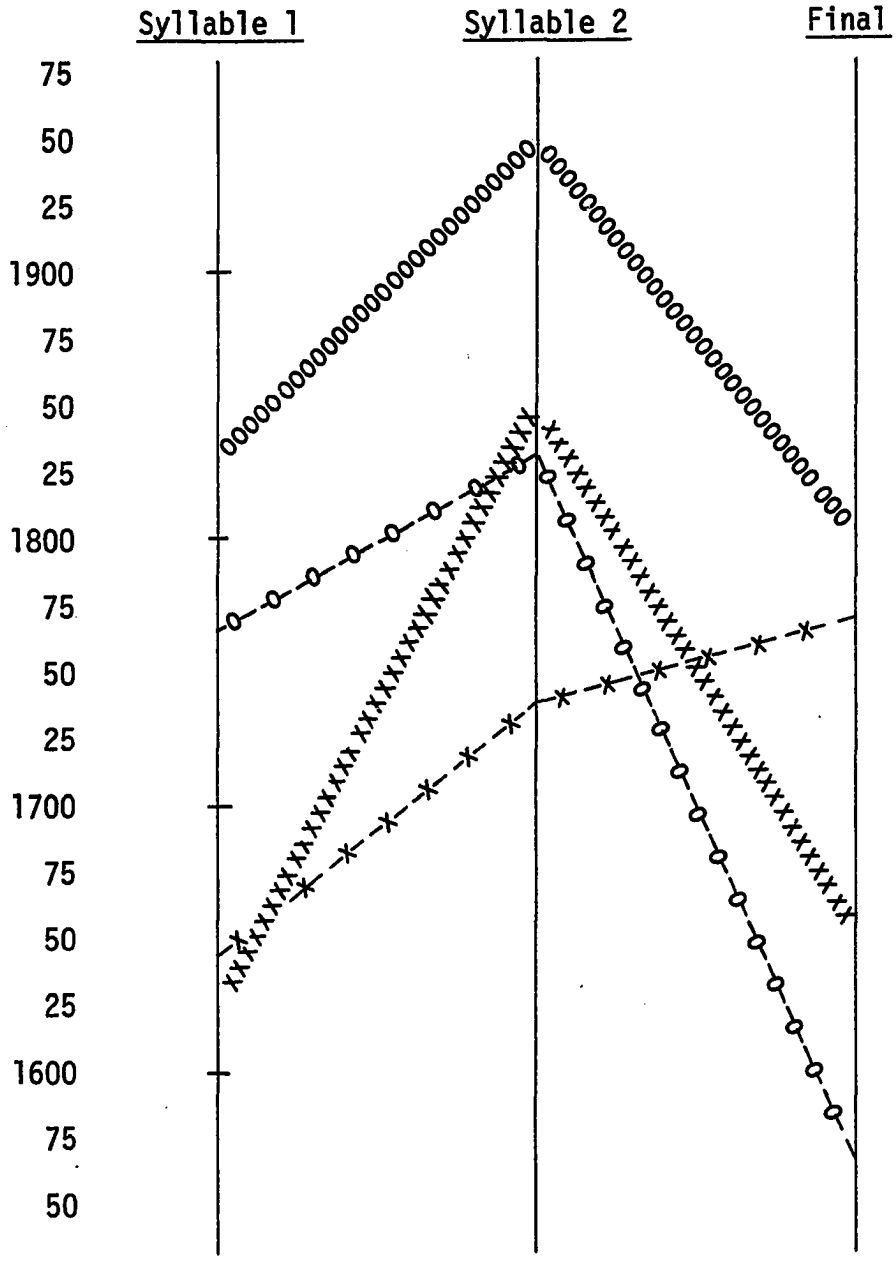


	Syllable 1	Syllable 2
- - - -	shòrt	shòrt
0-0-0-0	shórt	shórt
-.-.-.-	lòng	lòng
-x-x-x-	lōng	lōng

Figure 3.10 Relative Pitch of Three-syllable Nouns and Adjectives

Same Syllable Type Same Pitch on Both		Same Syllable Type Different Pitches		Different Syllable Types Different Pitches	
				short-long	225 Hz.
				long-short	117 Hz.
				short-long	93 Hz.
short-short	90 Hz.				
		short-short	67 Hz.		
long-long	50 Hz.				
long-long	44 Hz.				
short-short	0				

Figure 3.11 Relative Pitches of Various Combinations of Long and Short Syllables



	Syllable 1	Syllable 2
-o-o-o	short	short
-x-x-x	short	long
o o o	long	short
x x x	short	long

Figure 3.12 Relative Pitch of Three-syllable Nouns and Adjectives with Long and Short Syllables

/low/ Syllable 1	/mid/ Syllable 2	/-o:n/ Final	Average Difference between 1 and 2
short: 1645 Hz. (10 examples)	long: 1738 Hz.	1772 Hz.	93 Hz.

[ko wa: yo:n] /kowa:y-o:n/ 'It's a horse'

1800 1850-1900 1900-1600

/mid/ Syllable 1	/high/ Syllable 2	/-o:n/ Final	Average Difference between 1 and 2
long: 1833 Hz. (3 examples)	short: 1950 Hz.	1800 Hz.	117 Hz.

[ca: ce go:n] /ca:cak-o:n/ 'It's a flicker'

1800 1950 1800-1500

/low/ Syllable 1	/high/ Syllable 2	/-o:n/ Final	Average Difference between 1 and 2
short: 1625 Hz. (4 examples)	long: 1850 Hz.	1650 Hz.	225 Hz.

[co lont ko:n] /colontk-o:n/ 'It's a cricket'

1800 1900-1700 1700-1400

In the examples in Figure 3.12 of words with different contrastive pitches on the first and second syllables, the syllable with the highest phonetic pitch is the penultimate. This syllable seems to be pivotal to the determination of the pitch of the entire word, because it

affects the phonetic pitch of both the preceding and following syllables. A /high/ on the penultimate syllable raises the phonetic pitch of a preceding long syllable, and lowers a preceding short syllable. It also lowers any final syllables. A /mid/ pitch moderates the pitches of the preceding and final syllables.

The effect of the penultimate key syllable on the pitches of the surrounding key syllables in these three-syllable nouns is similar to the effect of the penultimate key syllable on surrounding non-key syllables in the inflected three-syllable verbs discussed in Section 3.3.1. The phonetic pitch contours found on both sets of words are also similar. This suggests that the same factors are affecting the realization of phonetic pitch, regardless of whether the syllable in question has contrastive pitch or not.

With regard to the pitch of the three-syllable nouns discussed in this section, the following generalizations may be made concerning the effects of the pitches of key syllables on each other:

1. If the word-initial and penultimate syllables have the same contrastive pitch and the same long/short syllable classification, then there will be a downstep in pitch from the phonetic pitch of the first toward the phonetic pitch of the second.
2. Within a word, syllables with the same contrastive pitch and the same syllable classification will be close in phonetic pitch. Syllables with the same classification but different contrastive pitch will

be moderately similar in phonetic pitch. Syllables which differ in both contrastive pitch and syllable type will be very different in phonetic pitch.

3. In words in which the word-initial and penultimate syllables differ in contrastive pitch and syllable type, the penultimate syllable establishes the phonetic height of the other syllables in the word. A /high/ penultimate syllable lowers the final syllable; it raises a long word-initial syllable and lowers a short word-initial syllable. A /mid/ penultimate syllable moderates the pitches of both the word-initial and final syllables toward [mid].

3.3.3 Pitch and Reduced Syllables

Reduced syllables are those which result from the contraction of two syllables into one. The conditions for syllable reduction include a stressed /mid/ or /high/ pitch syllable in the utterance and a single weak consonant as the onset of the second syllable (see Section 5.3 for further discussion). When the prominent syllable of an inflected verb is involved in syllable reduction, the pitch of the reduced syllable is a falling contour beginning at the level of the pitch of the unreduced prominent syllable. High-low falling contours occur if the pitch of the prominent syllable is /high/, and mid-low contours are produced when the pitch of the prominent syllable is /mid/.

High falling:

[šo gu: gi:əm] /šoko:k-i:-m/ 'It's already dry'

(derived from /šoko:k-i:p-om/ 'It's already dry')

/šoko:k-/ 'dry'; /-i:p-/ 'completive suffix';

/-om/ 'verbal suffix'

[ā: ba: ča:m] /a:b-a-:č-á:-m/ 'She will take a picture'

(derived from //a:b-a-:č-á:-om// 'She will take a picture')

/à:b-/ 'picture'; /-a-/ 'stem vowel'; /-:č-/ 'causative';

/-á:-/ 'immediate future'; /-om/ 'verbal suffix'

Mid falling:

[tēy gō: čō:n] /tāyk-ō:č-ō:n/ 'She's a little girl'

(derived from /tāyk-ō:č-ō:t-om/ 'She's a little girl'

/tāyk-/ 'woman'; /-ō:č-/ 'diminutive'; /-o:t-/ 'verbalizer';

/-om/ 'verbal suffix'

These examples reveal the importance of pitch in the Mikasuki system. Despite the fact that the structure of the syllable is modified in syllable reduction to produce a syllable shape, CV:C, which is only

found in grammatical constructions larger than a root, the pitches characterizing the original form are maintained. Furthermore, the relations of the two syllables to each other, their relative pitch heights, are also retained, although a two-step downstep has been transformed into a one-step falling pitch contour. Pitch is an essential part of these morphemes, and is not lost during changes in syllable structure.

3.4 Note

[1]The average pitches of the /high/ syllables are lower than the average pitches of the /mid/ syllables in these examples because the verbs were elicited in pairs in order to compare their pitch heights. The present progressive forms with /mid/ pitch were given first, followed by the immediate past forms with /high/ pitch. Because of downstep in pitch, the ending pitch of the first form became the beginning pitch for the second, although all the examples retained the relative pitch height of each syllable within the word.

[cəw ləm] [cəw lm] /cawl-om/ 'She's writing'

/cawl-om/ 'She wrote'

CHAPTER 4
LENGTH AND NASALIZATION

4.0 Length

4.0.1 Introduction

There are two degrees of contrastive vowel length in Mikasuki: long /V:/ and short /V/. These contrast in open syllables. Vowels in closed syllables are short, with some exceptions which will be discussed in Section 4.0.3.2 of this chapter. The actual length of vowels in both open and closed syllables is affected by the following consonant, whether this consonant is a coda in the same syllable, or the onset of the next syllable. Vowel length is also affected by pitch.

Vowel length is easily measured in both wide band and narrow band spectrograms. For this study a measuring device was made from a wide band spectrogram of an artificially produced one-hundred Hertz tone. Since each spectrogram is 2.3 seconds long, one second could be counted off and divided into hundredths. The resulting 'ruler' measures vowel length in centiseconds. The length of a vowel was measured for the voiced portion of the vowel only. The fricated, aspirated or silent transition between a vowel and an adjacent consonant was not included in the measurement of vowels.

4.0.2 Contrastive Length

As was discussed in Chapter 3, Mikasuki roots may be classified as nouns or verbs on the basis of the pitch patterns occurring

with the roots. Pitch is closely tied to syllable shape. Noun roots and verb roots then are also distinguished by syllable shape, and by extension, by patterns of occurrence of long and short vowels.

4.0.2.1 Roots

Long and short vowels contrast in open syllables in noun roots. Only short vowels occur in closed syllables. There are no restrictions on the positions of occurrence of any syllable type within noun roots.

Short Vowels			Long Vowels		
[ī čɨʔ]	/ič-i/	'mouth'	[i: čɨʔ]	/i:č-i/	'deer'
[tā [illegible]]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[i fi tɨʔ]	/ifit-i/	'prune'	[hã: bà: čɨʔ]	/hã:ba:č-i/	'mockingbird'
[i fi tɨʔ]	/ifit-i/	'prune'	[hã: bà: čɨʔ]	/hã:ba:č-i/	'mockingbird'

Short and Long Vowels in Roots

[tū šaː lɨʔ]	/tošaːl-i/	'elbow'
[niː ɣā gɨʔ]	/niːɣak-i/	'night'
[pī čīk čɨʔ]	/pičikč-i/	'blood'
[ā līn čɨʔ]	/àlinč-i/	'blanket'
[waː gāč bɨʔ]	/waːkačb-i/	'patterned with small print' (said of cloth)

[man ti: lɨʔ] /mantí:l-i/ 'flag' < 'mantilla' (Spanish)

[nag biš kɨʔ] /nákbíšk-i/ 'rib'

Verb and adjective roots, in contrast to noun roots, are limited in the type of syllables which may compose them. The last syllable of the verb root, which potentially carries contrastive pitch, must be heavy (cf. Section 6.1.2). If this syllable is open, the vowel is long. If the syllable has a sonorant or obstruent in coda position, the vowel is short. The pre-prominent syllable found in an uninflected verb root may be light or heavy, but the vowel found in that syllable is usually short (cf. Section 6.1.2 for further discussion of verb roots). Verb stems are distinguished from verb roots by the fact that stems have more than one heavy syllable. When stems are inflected, in some tenses or aspects prominence falls on the last heavy syllable of the stem; in this case, pre-prominent syllables in a verb stem may have long vowels. Examples of this are given below in the third example set.

In the examples given below, the syllable which receives prominence in the present tenses is underlined twice, and all heavy syllables are underlined once. /-ɨk/ is the verbal citation suffix.

2-Syllable

Adjectives			Verbs		
[â: šɨʔ]	/â:š-i/	'sour'	[o: mik]	/o:m-ik/	'to do, make'
[tig bɨʔ]	/tikb-i/	'bitter'	[pak fik]	/pakf-ik/	'to swell up'
[am bɨʔ]	/amb-i/	'high'	[im pik]	/imp-ik/	'to eat'

3-Syllable

Adjectives			Verbs		
[li ba: tɨʔ]	/liba:t-i/	'weak, floppy'	[ta la: lik]	/tala:l-ik/	'to lay down'
[o čah bɨʔ]	/očahb-i/	'young'	[uk šah lik]	/okšahl-ik/	'to wash'
[pu luč kɨʔ]	/polučk-i/	'round'	[ho čiš fik]	/hočišf-ik/	'to read'

Verb and Adjective Stems

Adjective: [čo: ba: č-] /čo:ba:č=/ 'to make bigger' < /čo:b-/ 'big'

[ta bak ši: č-] /tabakši:=/ 'to unfold, to take out dents'

< /tabakš-/ 'straight'

Verb: [pək fi: č-] /pakfi:č=/ 'blow up, case to swell'

< /pakf-/ 'swell'

[pək fi: či: p-] /pakfi:či:p=/ 'have already blown up'

4.0.2.2 Affixes

Both nominal and verbal affixes may contain either long or short vowels. In addition, some affixes contain no vowel at all.

Nominal Affixes:

/-ā:χ-/ 'plural' [fõ: so: ča: χi?] /fõ:so:ča:χi/ 'all those little birds'

[ug li ho: ta: χi?] /okliho:ta:χi/ 'Big Town Clan people'

[fõ: sa: χi?] /fõ:sa:χi/ 'Bird Clan people'

[tā la: χi?] /tala:χi/ 'rocks'

/-ot/ 'subject suffix' [ta: lut luk ta: pi ləŋ gəm]

/ta:lot lokta:pilankom/ 'The rocks fell off'

[ča hih tut an no: gã: čəm]

/čahihtot anno:kã:čom/ 'My shoulder hurts (it's been that way for a long time)'

Verbal Affixes:

/-ha:-/ 'in' [a: fuk sik ha: ča: ləm] /a:foksik ha:ča:lom/

'She's standing inside (something)'

/-lok-/ 'near the speaker'

/-ta:-/ 'on the ground'

[lūk tā: ʔa: ləm] /loktā:ʔa:lom/

'He fell off (something) (near the speaker)'

/ka:-/ 'in the water'

[o gi gey gā gān wa: gut ka: ča: ləm]

/okikaykakān wā:kot ka:ča:lom/

'There's a cow standing in the canal'

/okikayki/ 'canal'; /wā:kī/ 'cow';

/-ča:l-/ 'be upright'

/-h-/ 'past tense infix/

[hi: čoh mi līh] /hi:čohmilih/ 'I looked at it a week ago'

/hi:č=/ 'see'; /-om-/ 'tense suffix';

/-li/ '1st sing. subj.'

[hi: čoŋ kā] //hi:čohnka// 'She was looking at it a week ago'

/hi:č=/ 'see'; /onka-/ 'continuous aspect'

In one instance, two of the suprasegmentals, length and nasalization, together with the suffix /-kta/, form the inflection of the remote past tense. The vowel of the first syllable following the stem boundary is lengthened and nasalized. This occurs even if the syllable

in this position is closed (CVK), thus producing a long vowel in a closed syllable as in the second example below. (Cf. Section 4.0.2.3.2 of this chapter for more discussion of this point.)

[hi: čoŋk ta wa?]	/hi:č-o:-kta-wa/	'We (inclusive) looked at it a long time ago'
[hi: čã·č kɨk tã wa?]	/hi:č-ã:-čki-kta-wa/	'You (pl.) looked at it a long time ago'

/hi:č=/ 'see'; /-o:-/ 'we (inclusive)'; /-kta-/ 'remote past suffix';

/-wa/ 'knowledge gained by inference and not direct knowledge'

/-a-/ 'plural of second person suffix'; /-čki-/ 'second person suffix'

4.0.2.3 Vowel length in closed syllables

Long vowels in noun and verb roots occur contrastively only in open syllables; the vowels in CVK and CVL syllables are classified as short. However, long vowels occur in closed syllables in two situations in Mikasuki: in certain verb inflections (as above) and in syllables which are the result of collapsing two syllables into one. The distinction between long and short vowels is neutralized when noun roots having long vowels in an open syllable are compounded.

4.0.2.3.1 Morphophonemic neutralization of vowel length in closed syllables.

Compound nouns are formed in two ways. Two noun roots may be joined by a transition vowel /i/, which is always short,

unstressed and with /low/ pitch. Or the two roots may be juxtaposed with no intervening vowel. In this second case the final root consonant will become the coda of the last full syllable, closing that syllable; if the vowel of this syllable is /long/ in the uncompounded form, it will become /short/. (Cf. Section 4.0.3.1 of this chapter for details on the actual length of these neutralized vowels. Cf. Section 5.2.1 for a discussion of pitch and stress in compounds.

Compounds with Transition Vowel

[ki tis si lo: cɨʔ] /kitisc-i-lo:c-i/ 'maroon'

/kitisc-i/ 'red'; /lo:c-i/ 'black'

[o gi co: bɨʔ] /ok-i-co:b-i/ 'Lake Okeechobee'

/ok-i/ 'water'; /co:b-i/ 'big'

[sa nik ci lam pɨʔ] /sanikc-i-lamp-i/ 'cantaloup'

/sanikc-i/ 'toad'; /lamp-i/ 'stomach'

In the following examples of compounds without transition vowels, the /long/ vowel of the last root before the stressed syllable is shortened if it occurs in a closed syllable. If it does not occur in a closed syllable, as in the last example, the vowel remains long.

Compounds without Transition Vowel

[yat ki tis sɨʔ] /yat-kitisc-i/ 'Indian'

/ya:t-i/ 'people'; /kitisc-i/ 'red'

[il bik čo: bi?]	/ilb-ikčo:b-i/	'thumb'
	/ilb-i/ 'hand'; /i:k-i/ 'mother'; /čo:b-i/ 'big'	
[ap hal bi?]	/ap-halb-i/	'sugarcane bark'
	/a:p-i/ 'sugarcane'; /halb-i/ 'bark, skin'	
[ã: sũk či?]	/ã:s-ikč-i/	'tea'
	/ã:s-i/ 'sour'; /-ikč-i/ 'sap, juice'	

The same vowel shortening rule occurs in verb roots with long vowels in the last root syllable. If a suffix beginning with a vowel is added to the verb, the preceding root vowel remains long. If the suffix begins with a consonant, the preceding vowel is shortened. If the verb contains a sonorant in coda position in the syllable preceding the final syllable, the syllable is shortened somewhat but the sonorant is not dropped.

/-ti-/ 'negative'	[čõ: pəm]	/čõ:p-om/	'She's buying it'
	[čup tim]	/čop-ti-m/	'She's not buying it'
	[ta nã: ləm]	/tanã:l-om/	'He's bending over'
	[ta nal tim]	/tanal-ti-m/	'He's not bending over'
	[pẽy ləm]	/pãylom/	'She's rubbing'
	[peyl tim]	/payl-ti-m/	'She's not rubbing'

The vowel-shortening rule is overridden for semantic reasons in at least one example. /fã:yom/ 'he's hunting' does not become */faytim/ in the negative, but /fá:yitìm/ 'he's not hunting.' The reason given by two Big Cypress people is that */faytim/ sounds too much like /fāytī/ 'turkey.'

4.0.2.3.2 Long vowels in closed syllables. /Long/ vowels in syllables closed by a consonant in coda position occur in two circumstances, as a result of syllable reduction or in certain verbal inflections. Long vowels in closed syllables do not appear in roots.

A reduced syllable is one which is the result of the collapsing of two adjacent syllables. The product is a syllable with a long vowel in the nucleus and either an obstruent or a sonorant in coda position. When the two original syllables contain two vowels of different qualities, the vowel of the reduced syllable will be the long analogue of the first vowel.

/hamp-í:p-om/	~	/hamp-í:-m/	[hām pi:m]	both variants of these forms occur
'It got broken'				
/kòwa:y-ō:t-om/	~	/kòwa:y-ō:n/	[kō wa: yo:n]	
'It's a horse'				
//čà + ī:y-ī//		/čà:y-ī/	[čà: yɨʔ]	
'my foot'				

//pō + ī:y-ī// /pō:y-ī/ [pō: yɨʔ]

'our feet'

//čī + ī:y-ī// /čī:y-ī/ [čī: yɨʔ]

'your feet'

Certain tenses are indicated by vowel lengthening. When verbs are conjugated in these tenses, long vowels occur in closed syllables in some persons. In the examples below, the verb /hi:č=/ 'see' has been conjugated in the 'remote past tense' (translated 'a long time ago'). This tense is formed by lengthening and nasalizing the vowel of the first syllable following the stem boundary (with the exception of the third plural form with the plural affix /-ho:-/) and the addition of the suffixes /-kta-/ and /-wa-/. In the second person forms, the vowel of the closed syllable VC is lengthened.

//hi:č=Ṽ:-li-kta-wa// /hi:čĩ:liktawa/ [hī:čĩ:liktəwāʔ]

'I looked at it a long time ago'

//hi:č=Ṽ:-i-čki-kta-wa// /hi:čĩ:čkiktawa/ [hī:čĩ:nčkɨktəwāʔ]

'you' (sg.)

//hi:č=Ṽ:-kta-wa// /hi:čĩ:ktawa/ [hī:čĩŋktəwāʔ]

'she, he, it' (sg.)

//hi:č=V:-i:ki-kta-wa/ /hi:či:kiktawa/ [hi:či:giktəwā?]

'we (exclusive)'

//hi:č=V:-o:-kta-wa/ /hi:čõktawa/ [hi:čõŋktawā?]

'we (inclusive)'

//hi:č=V:-a-cki-kta-wa// /hi:ča:ckiktawa/ [hi:ča·ⁿckiktəwā?]

'you' (pl.)

//hi:,hõ:,č=ktawa// /hi:hõ:čiktawa/ [hi:hõ:čiktəwā?]

'they'

In the first person singular and in the third person singular form the person affix does not contain a vowel in the proper position for lengthening. In these cases the stem vowel /-i-/ is the vowel which undergoes the specified changes.

4.0.3 Variations in Vowel Length

4.0.3.1 Range of variation in length of /V:/ and /V/

Lehiste (1970:34) states that, on the average, long vowels are about 50% longer than short vowels in languages with significant vowel length, but that this average length may vary depending on such factors as the position of the test vowels within the word. The average length of long and short vowels in Mikasuki was tested in the first syllable of fifty-two two-syllable words. Long vowels occurred in CV: syllables

and short vowels in CV, CVL, and CVK syllables. The average length of long vowels is eighteen centiseconds (in 24 examples), and the average length of short syllables was ten centiseconds (in 28 examples). These data show long vowels to be about 55% longer than short vowels. In these and all subsequent examples length is given in centiseconds.

Long Vowels		Short Vowels	
/a: ho:n/	'It's a potato'	/à ho:n/	'It's a tree'
.22		.15	
/ta: lo:n/	'It's swamp cabbage'	/tà lo:n/	'It's a rock'
.21		.12	
/i: to:n/	'It's fire'	/ì to:n/	'It's an eye'
.16		.07	

The actual length of vowels (as opposed to their systematic classification as /long/ or /short/) is not fixed, but varies over a range of values. Indeed there is an overlap in the lengths of various long and short vowels. This is shown in Figure 4.1. Length is given in centiseconds. Causes of this variation will be discussed in the three parts succeeding this section.

Figure 4.1 shows that absolute length alone cannot distinguish between vowels which the language classifies as /long/ or /short/. Some /short/ vowels are as long as /long/ vowels and vice versa. Furthermore, there is also variation in the length of neutralized long vowels. The distinction between /long/ and /short/ vowels is neutralized

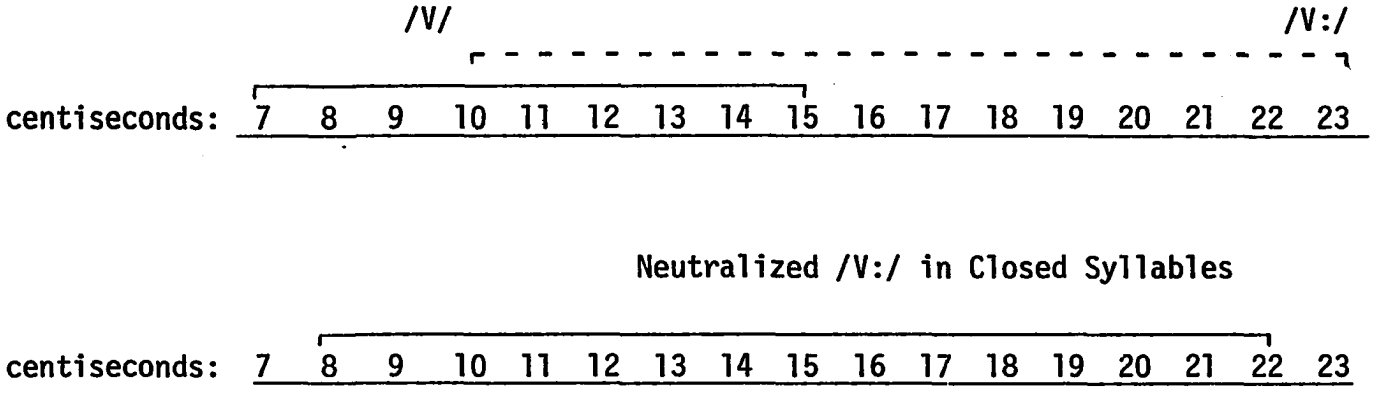


Figure 4.1 Range of Vowel Lengths for /V:/,/V/, and /V:/ in Closed Syllables

when the /long/ vowels are found in closed CVK or CVL syllables as a result of compounding or affixation. In this environment some shortened /long/ vowels remain longer than /short/ vowels; others become as short as any contrastively short vowel.

On the average, neutralized long vowels lose about 28% of their length when they are compared with /long/ vowels; these shortened vowels are about 24% longer than /short/ vowels. Examples of length neutralization in closed syllables are shown below. The first column gives the length of the /long/ vowel in an open syllable, and the second column the length of that same vowel in a closed syllable.

Open Syllable	Difference in Length	Closed Syllable
/a:pi/ 'sugarcane' .23	.09 csec.	/aphiski/ 'sugarcane leaves' .14
/co:yi/ 'pine tree' .20	.04 csec.	/coyhiski/ 'pine needles' .16

These examples raise the question of what factors condition the actual length of a vowel under various circumstances. This analysis shows that the manner of articulation of an intervocalic consonant (Section 4.0.3.2), the pitch of the vowel (section 4.0.3.3) and compensatory lengthening at the word level (Section 4.0.3.4) all affect vowel length.

4.0.3.2 The effect of intervocalic consonants on vowel length

In Mikasuki the length of a vowel is affected by the voicing or voicelessness of the consonant which follows (Lehiste, 1970:26). In this study two-syllable noun roots with /mid/ pitch and a single intervocalic consonant were used. Voiced consonants included the voiced obstruents /b/ and [g], /k/, the nasals /m/ and /n/, the liquid /l/ and the sonorants /w/, /y/, and /h/. Voiceless consonants included the rest of the obstruents: /p,t,č,š,ɣ, and f/.

An inverse relationship between the length of a consonant and the length of the vowel preceding it was found. Voiceless consonants are longer than voiced consonants. Therefore, when the consonant is relatively short (voiced) the vowel preceding it is long. Conversely, when the consonant is long (voiceless), the preceding vowel is shortened. The measurements given below which detail these relationships are in centiseconds.

Voiceless Consonant	Voiced Consonant
Average consonant length	Average consonant length
.138 (10 examples)	.09 (9 examples)
/lo: co:n/ 'It's black'	/ta: lo:n/ 'It's swamp cabbage'
.19 .16	.21 .10
Average vowel length before voiceless consonants	Average vowel length before voiced consonants
.18 (10 examples)	.20 (9 examples)
/i: co:n/ 'It's a deer'	/a: ho:n/ 'It's a potato'
.19 .13	.22 .08

The length of /long/ vowels when they occur in closed syllables in compound nouns is affected in the same way as the vowels discussed above. If the consonant in coda position is voiceless the vowel preceding it is shorter than if the consonant in coda position is voiced.

Vowel-Length in Isolation	Vowel-Length in Compound
Before voiceless consonants	Before voiceless consonants
.19 (5 examples)	.13 (5 examples)
/yā: tō:n/ 'They're people'	/yāthátkī/ 'They're white people'
.13	.08
Before voiced consonants	Before voiced consonants
.207 (4 examples)	.137 (4 examples)
/cō: yō:n/ 'It's a pine tree'	/cōyhátkī/ 'It's an Australian pine'
.20	.10

4.0.3.3 Effect of contrastive pitch on vowel length

The pitch of a syllable affects the (phonetic) length of the vowel of that syllable. In two-syllable noun roots with a CV: syllable word-initially, those with /mid/ pitch are the longest. Those with /high/ pitch are the shortest; /low/ pitch syllables are longer than /high/ and shorter than /mid/. Two-syllable roots with a short light (CV) syllable word-initially also have longer values for /low/ pitched syllables than for /high/ pitched syllables. (CV syllables do not take /mid/ pitch). The average lengths are given as follows from longest to shortest.

Average Length of CV: Syllables

/mid/	.298 csec. (12 examples)	/bi:ho:n/	'They're mulberries'
/low/	.217 csec. (4 examples)	/lo:po:n/	'It's liver'
/high/	.203 csec. (3 examples)	/ho:to:n/	'They're big'

Average Length of CV Syllables

/low/	.151 csec. (6 examples)	/ciso:n/	'It's a mouse'
/high/	.105 csec. (4 examples)	/poso:n/	'She's a grandmother'

Thus in open syllables /low/ pitches are longer than /high/ pitches. The opposite is true in closed syllables (CVL, CVK). In these two cases /high/ pitch syllables are longer than /low/ pitch syllables. CVL syllables with /mid/ pitch are shorter than those with /high/ pitch and longer than those with /low/ pitch.

Average Length of CVL Syllables

/high/	.316 csec. (3 examples)	/wanto:n/	'He's strong'
/mid/	.291 csec. (6 examples)	/halbo:n/	'It's skin'
/low/	.256 csec. (5 examples)	/hinlo:n/	'It's a squirrel'

Average Length of CVK Syllables

/high/ .331 csec. (6 examples) /tákho:n/ 'It's wide'

/low/ .260 csec. (5 examples) /tò̀po:n/ 'It's an elbow'

Agent nominals may be derived from verb roots by replacing the pitch of the potentially prominent syllable in the root with a /high/ pitch. Verb roots take /mid/ pitch if the potentially prominent syllable is long (CV: or CVL). These /mid/ pitch syllables are longer than the corresponding /high/ pitch syllables in the derived noun forms.

	Infinitive Form		Derived Agent Nominal	
Vowel length:	/talwik/	'to dance'	/tálwi/	'dancer'
	.13		.11	
	/fa:yik/	'to hunt'	/fá:yi/	'hunter'
Vowel length:	.22		.17	

4.0.3.4 Word-level variation in length

Compensatory adjustments in length similar to those discussed above in reference to vowels and following consonants also are made at the word level. For example, word-initial vowels in the first syllable of a word (V:) are longer than vowels which are not word-initial (CV). It seems that there is an 'ideal' length for the first syllable of a

two-syllable word; in the absence of an initial consonant segment, the word-initial vowel is lengthened somewhat to approach the idea. This adjustment does not, however, equalize the length of the two types of syllables. CV: syllables are still longer than V: syllables.

	CV:		V:	
	/wa: ko:n/	'It's a cow'	/a: ho:n/	'It's a potato'
Length of first vowel:	.21		.22	
Length of first syllable:	.425		.22	
	/ʔa: ʔo:n/	'It's a fish'	/a: po:n/	'It's sugar-cane'
Length of first vowel:	.21		.23	
Length of first syllable:	.43		.23	

If we turn to the second syllables of words like the above we see a second kind of length compensation. The second syllable of words like /a:ho:n/ is on the average longer than the second syllable of words like /wa:ko:n/. In both types of words the second syllable contains the same number of elements (-Co:n/). The extra length of the second syllable of /a:ho:n/-type words is apparently due to compensation for the lack of length caused by the absence of a word-initial consonant.

Average Length of /-Co:n/

CV: initial words:	.392 (12 examples)	/no:to:n/ 'It's a tooth'
		.40

V: initial words: .425 (4 examples) /i:to:n/ 'It's fire'

.45

There is not much difference in length between the second syllable of the V: words and the second syllable of the V words.

Average Length of /-Co:n/

V: initial words: .425 (4 examples) /i:to:n/ 'It's fire'

.45

V initial words: .43 (3 examples) /ito:n/ 'It's an eye'

.51

Figure 4.2 shows the relative lengths of the first and second syllables of two-syllable words; it also shows the length of the entire word. In the diagram the length of each line is proportional to the length of the word in centiseconds; each centisecond of time is represented by two millimeters of length.

Figure 4.2 also demonstrates that while shortening of one syllable can result in the lengthening of the other syllable, there is no absolute 'ideal' length for a two-syllable word. Words containing more segments, those with CV: and CVL syllables in word-initial position, are longer than words containing fewer segments, those with CV word-initial syllables. However, within word types, there does seem to be some agreement in the length appropriate to words having the same number of consonants and vowels.

4.1 Nasalization

4.1.1 Introduction

Nasalization, like pitch and vowel length, is contrastive on the phonemic level in Mikasuki. (For discussion of the morphophonemic aspects of nasalization, see Section 2.2.3.2.) Nasalization is found on both nouns and verbs. In nouns only rarely does it serve as the sole difference between two lexical items. Nasalization on verbs is a morphological marker of the progressive aspect. As such it is not unusual to find it, together with pitch in many cases, as an important distinguisher between two tenses or aspects. On inflected verbs nasalization occurs contrastively only on the prominent syllable. Its position of occurrence in noun roots is unpredictable. In all positions of occurrence nasalization only appears on heavy syllables.

4.1.2 Contrastive Nasalization

4.1.2.1 Noun and adjective roots

Nasalization may occur in conjunction with any of the three pitches. Interestingly, a large number of names for birds contain a nasalized syllable.

CV:	[ĩ: gɨ̄ʔ]	/ĩ:k-ī/	'buttocks' (child language)
	[ī: gɨ̄ʔ]	/ī:k-ī/	'mother'
	[wā: gɨ̄ʔ]	/wā:k-ī/	'cow'
	[w̃ā: gɨ̄ʔ]	/w̃ā:k-ī/	'young child'

Average Lengths of First and Second Syllables

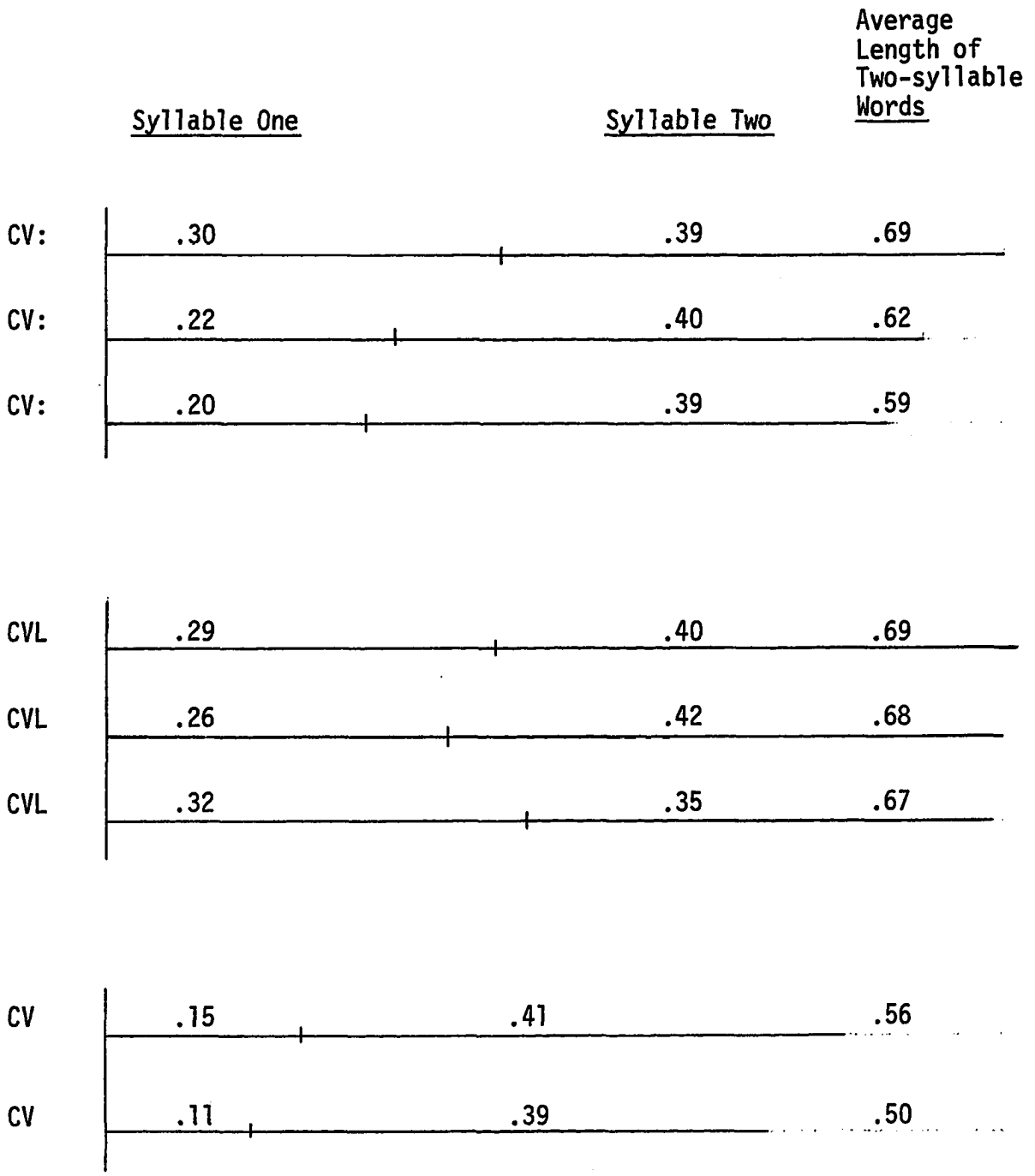


Figure 4.2 Effect of Pitch on Syllable Length (Note: two millimeters equals 1 centiseconds)

	[lã: čɨʔ]	/lã:č-ĩ/	'crow'
	[fõ: šɨʔ]	/fõ:š-ĩ/	'bird'
	[fo: šɨʔ]	/fo:š-ĩ/	'grandfather'
	[hã: bà: čɨʔ]	/hã:bà:č-ĩ/	'mockingbird'
	[čã: ča gɨʔ]	/čã:čak-ĩ/	'flicker'
CVL	[hãh kɨʔ]	/hãhk-ĩ/	'bogeyman'
	[kĩ hẽy gɨʔ]	/kihãyk-ĩ/	'red-shouldered hawk'
CVK	[ĩ čõš kɨʔ]	/ičõšk-ĩ/	'whiskers'
	[tã·š kĩ lɨʔ]	/tãškil-ĩ/	'bluejay'

Adjectives in citation form take nasalization on the prominent syllable.

CV:	[hũ: to:n]	/hũ:to:n/	'They're big'
	[ã: šo:n]	/ã:šo:n/	'It's sour'
CVL	[hẽy yo:n]	/hãyyo:n/	'It's hot'
CVK	[pa^{n}t ko:n]	/pãtko:n/	'It's fast'

4.1.2.2 Inflected verbs

The presence or absence of nasalization marking the progressive aspect occurs only on verbs classified as active or non-stative in Mikasuki. Stative verbs do not take the progressive aspect. Some roots may be used both as stative and as active verbs. Verb inflection and stative and active verbs are further discussed in Sections 6.4.2 and 6.4.14, respectively.

Stative (non-nasalized)	Active (nasalized)
[fī ˈsah kəm]	[fī ˈsãh kəm]
/fisahkom/	/fisãhkom/
'She's alive'	'She's breathing'
[wī ˈta: ləm]	[wī ˈtã: ləm]
/wita:lom/	/witã:lom/
'She's wearing it'	'She's opening it'
[ˈha: lī ā yī gən ču ˈgo: ləm]	[ču gũ: ləm]
/ha:lī ayīkon čoko:lom/	/čokõ:lom/
'The cup is (sitting) on table'	'She's sitting'

[hā: lī ā yī gən hā ca: ləm] [hā cã: ləm]

/ha:li ayikon haca:lom/ /hacã:lom/

'The glass is (standing) on the table' 'He's standing'

4.1.3 Morphophonemic Variation in Nasalization

In certain morphemes in Mikasuki, the distinction between long nasalized vowels and short vowels followed by a nasal segment is neutralized. The person prefixes, when they are used as possessives on noun roots, are an example of this. The final nasal in its realization varies depending on the first consonant or vowel of the word to which it is prefixed. The vowel plus nasal segment is used with roots beginning with stops, the affricate, nasals, or with vowels. The nasalized long vowel form is used with roots beginning with open consonants: (the sonorants, vowels and fricatives). (Cf. Section 2.2.3.2 for further discussion of nasalization on possessives.)

/aN-/ 'my'	[an ta: tɨʔ]	/an-ta:t-i/	'my father'	/ta:t-i/
	[am po: sɨʔ]	/am-po:s-i/	'my cat'	/po:s-i/
	[aŋ ka: pɨʔ]	/an-ka:p-i/	'my jacket'	/ka:p-i/
	[an nãŋ nɨʔ]	/an-nakn-i/	'my husband'	/nakn-i/
	[a mã yɨʔ]	/am-ay-i/	'my table'	/ay-i/
	[a mãs pɨʔ]	/am-asp-i/	'my corn'	/asp-i/

/ã:-/ 'my'	[ã: sõ gɨʔ]	/ã:-sok-i/	'my pig'	/sok-i/
	[ã: ɣa: ɣɨʔ]	/ã:-ɣa:ɣ-i/	'my fish'	/ɣa:ɣ-i/
	[ã: hĩn ɣɨʔ]	/ã:-hinɣ-i/	'my squirrel'	/hinl-i/
	[ã: wa: cɨʔ]	/ã:-wa:c-i/	'my mother'	/wa:c-i/

The nasal segment agrees with the following closed or open consonant in point of articulation. If there is no following consonant, the nasal is realized as /m/.

There is also one example in the data of an alternation between a long nasalized vowel and a vowel plus nasal segment in two variants of the word 'chicken':

/tã:tiya:h-i/ 'chicken' (23-year-old Big Cypress woman)

/tantiya:h-i/ 'chicken' (mother of the above)

4.1.4 Nasalization--Spectrographic Data

The discussion in this section is supplemented by the wide band spectrograms appearing in Appendix II, 'Acoustic Evidence of Nasalization.'

4.1.4.1 Noun Roots

Unlike pitch and duration, which are readily measured from spectrograms, nasalization has no such quantifiable acoustic correlate. Fant (in Malmberg, 1968:183) states that nasalized vowels show a 'baseline formant below the first formant.' In vowels such as /a:/ and

/o:/ in which the first formant bar is above the baseline, nasalization is represented by a darkening of the area under the first formant bar. A second characteristic of nasalized vowels preceding unvoiced obstruents is the gradual 'trailing off' of voicing before the gap in voicing produced by the obstruent. The transition between the voicing of a non-nasalized vowel and a following obstruent is more abrupt. The length of this nasal transition between the vowel and the following obstruent varies from two to four centiseconds. Full nasal segments in coda position vary between eight to ten centiseconds. In the examples below, the nasal transition is represented by a raised 'n.' It is homorganic with the point of articulation of the following obstruent. The length of the nasal is given in each example.

[hĩ:ⁿ ɣo:n] /hĩ:ɣo:n/ 'It's good'

.02

[fõ:ⁿ so:n] /fõ:so:n/ 'It's a bird'

.04

[hĩn ɣo:n] /hinɣo:n/ 'It's a squirrel'

.11

Nasal spread from a nasal segment to adjacent vowels is more regressive than progressive. The influence of the nasal is heavier on the preceding vowel. In some words, however, there is a slight nasal transition from a vowel preceded by a nasal and followed by an obstruent.

[nõ:ⁿ to:n] /no:to:n/ 'It's a tooth'

[nã:ø to:n] /na:to:n/ 'It's a chin'

Compare the first example, in which there is a nasal transition, with the second having no nasal transition.

A further demonstration of progressive nasal spread to a consonant is found in words having a /k + nasal/ consonant cluster.

[yãg no:n] /yakno:n/ 'It's ground'

[ãg no:n] /akno:n/ 'It's meat'

In the above examples, the /k/ is voiced by the following nasal. But in the example below, with a nasal in the initial position in the syllable, the syllable-final /k/ is not only voiced but assimilates in manner of articulation to the following /n/.

[nãŋ no:n] /nakno:n/ 'He's a man'

4.1.4.2 Inflected verbs--nasalization in closed and open syllables

Inflected verbs in the progressive aspect take nasalization on the prominent syllable. The nasalization covers the entire syllable but its manifestations are different in CV:, CVL and CVK syllables.

In CV: open syllables, nasalization is characterized by either darkening of the area below the first formant, a nasal transition segment, or both. In addition nasalization may become stronger toward the end of the nasalized syllable, which is shown by an increase in the

darkness of the voicing striations. In the examples below this is indicated by an increase in the nasalization symbols (~).

[ta nãã ləm]	/tanã:lom/	'She's bending over'
[aa bãã^{n} səm]	/a:bã:čom/	'He's taking a picture'
[čõõ pəm]	/čõ:pom/	'He's buying it'

Syllables closed by a sonorant in coda position realize nasalization throughout the entire syllable.

[č^{ə}ow ləm]	/čawlom/	'She's writing'
[feyh nəm]	/fayhnom/	'It's flowing, draining'

In syllables closed by an obstruent, the transition between the vowel and the syllable final obstruent is a transitional nasal segment homorganic to the final consonant.

[pãŋk fəm]	/pãkfom/	'It's swelling up'
[ĩ: yi ta^{m}b ləm]	/ĩ:yitãblom/	'She's hitting (something) of his'
[ka la^{n}š ləm]	/kalãšlom/	'He's cutting (with scissors)'

CHAPTER 5
STRESS

5.0 Introduction

This chapter deals with stress and its interaction with the suprasegmentals of pitch and length. The distribution of stress within the phonological system and the acoustic characteristics of stress in Mikasuki are discussed.

5.1 Review of Literature on Stress and Pitch

Stress and pitch are the suprasegmental criteria used to classify languages into groups according to prosodic types. Thus 'stress' systematically is separate from 'pitch,' and there are 'stress' languages and 'pitch' languages, in which loudness or tone, respectively, are the bases for the organization of the prosodic systems. There are also 'pitch-accent' languages in which stress and pitch interact to form the skeleton of the suprasegmental system. In Section 5.1.1 various definitions of pitch languages, stress languages and pitch-accent languages are discussed, along with the criteria used by the authors to classify any particular language within one of these groups.

The linguistic analysis of stress and pitch leads us to believe that these phenomena are quite different in terms of their acoustic characteristics. Further, it is generally assumed that they are equivalent phenomena of approximately equal complexity. The

conventions used to indicate stress or pitch in some phonological rules, such as [1 stress] or [tone 3], strengthen these assumptions. They are, however, false.

The acoustic features frequency, duration and amplitude occur in all spoken language regardless of prosodic type and must be interpreted by the listener within the context of the suprasegmental system of the language. The acoustic feature frequency may be interpreted fairly directly as pitch and the feature duration as length; however, no one of these acoustic features alone is an indicator of stress. The perception of stress is based on a perception of the interrelationship of the various measurable acoustic cues. It is also based on such unquantifiable factors as a knowledge of the prosodic system of the language and a perception of the output of the muscular effort of the speaker by the listener. Thus stress perception is a more complex phenomenon than pitch perception. In addition, the three acoustic cues given above are not given equal weight in stress judgments. Amplitude is the least important of the three. In many languages raised frequency is the most important cue of stress. But frequency is also the cue to pitch. So while stress and pitch are distinct systematically, they may share the same frequency feature acoustically. In Section 5.1.2 the acoustic cues of stress and its distinction from pitch on the phonetic level will be considered.

The discussion in Sections 5.1.1 and 5.1.2 underlies the analysis of the Mikasuki data presented in the rest of the chapter. First an overview of the systematic distribution of stress is given in Section 5.2.

The effects of stress on the components of syllables, and on the syllable structure of short utterances is presented in Section 5.3. Finally with the outlines of the prosodic system in mind, the acoustic cues, frequency, duration, and amplitude, are examined in stressed and unstressed syllables in Section 5.4.

5.1.1 Typology of Language Based on Stress and Pitch; a Review of Various Theories

The discussion of typologies of language based on the characteristics and interrelationships of the suprasegmentals has been going on for some time in linguistic literature. Among those who have written on this matter are Pike (1947, 1967), Hockett (1955), Chomsky and Halle (1968), McCawley (1968), Woo (1969), and Hyman (1975). In all of these analyses languages like English and Aymara, with stress systems, are unambiguously separated from languages like Thai or Chinese, with tone systems. But the classification of languages like Norwegian, Japanese, Serbo-Croatian, and Mikasuki causes a problem. These languages are the pitch-accent languages, and dilemma is whether they resemble more the stress languages or the tone languages. Furthermore, the criteria used to make the classifications differ from linguist to linguist. In the following discussion the views in the articles referred to above will be summarized with particular focus on the handling of the pitch-accent languages.

Pike (1947:252) defines a tone language as 'a language with contrastive pitch on each syllable, and [which contributes] toward the innate lexical structure just as do consonants and vowels." There is no

discussion of pitch-accent languages or of stress languages as separate groups, but pitch-accent is defined as 'phonemic tone; especially of a type in which no more than one contrastive pitch occurs on a single word' (1947:247). It can be inferred from this that tone languages differ from pitch-accent languages only in degree; both have significant pitch, but the occurrence of contrastive pitch is more limited in pitch-accent languages.

In Pike (1967) the pitch-accent languages (now called word pitch languages) are reclassified as non-tonal. 'Pitch is significant lexically, but it is limited to certain types of syllables or to certain places in a word' (1967:14). The other type of non-tonal language is the phrase-pitch language, in which significant pitch is not confined to words, but is spread over an entire phrase. Pitch found on phrases in the latter type of language carries meaning, while pitch in word pitch or tone languages does not. In addition, the pitch over a particular phrase may change in a phrase pitch language without changing the meaning of the words in that phrase.

The tonal languages, as opposed to the non-tonal languages, have 'lexically significant, contrastive but relative pitch on each syllable' (1967:3). As in the 1947 analysis tone languages and word pitch languages seem to differ in the number of syllables in a word which are marked for pitch. However, in this more recent study, the word pitch languages have been reclassified as non-tonal. No reasons are given for the shift.

Pike bases his 1967 classification on the domain of pitch in a particular language; in tonal languages the domain is the syllable,

in word-pitch languages it is certain syllables within the word, and in phrase pitch languages it is the phrase. Hockett (1955) on the other hand grounds his classification on the relationships of the units of the prosodic system (whether pitch or stress or both) to each other. Two concepts are important to this analysis: 'linear' and 'zero.' Linear systems are those in which the prosodic units are degrees along a single scale. Languages of this type may have several contrastive pitch heights or several degrees of stress. Non-linear systems contain more than one scale. They may have both simple and contour pitches, or they may employ both stress and pitch contrastively. 'Zero' refers to the dependence or independence of the units of the system. The unit which occurs only in the presence of the other unit(s) is the dependent term. It appears in the absence of a specification for the independent form. The independent unit is the positive value of the scale; the zero unit is the negative value in the relationship.

Systems with zero units are always stress systems, while systems without zero are pitch systems (1955:69). Stress systems are relative; the intensity of one syllable can only be judged by comparing it with another syllable. In a pitch system, the pitch height of a particular syllable may be determined without reference to the surrounding syllables. In addition (except in two-pitch systems), one pitch cannot be said to represent the absence of the other. Both are positive.

In Hockett's typology there are four categories of languages. A <u>linear system with zero</u> is found in stress languages such as Spanish, English, or German. These languages contain two or more degrees of

of stress, and one of the degrees of stress may only occur in the environment of the other. A linear system without zero is found in some pitch languages. Here the degrees of pitch height are usually independent. Languages of this type are Mixteco, Mazateco, and Trique, languages spoken on the Oaxaca area of Mexico; and Loma, a West African language.

As remarked above, in non-linear systems the contrasts cannot be lined up along a single scale. Non-linear systems without zero again are tone languages, but those with both simple and complex tones. The simple tones form one scale and the complex tones the other. Tangsic, a Wu-type dialect of Chinese, is this type of language, with one level (simple) tone and two (complex) contour tones. Non-linear systems with zero are those with two or more prosodic scales; at least one of the scales includes a zero term which cannot occur independently. This category seems to be the catch-all for languages not fitting into the other three groups. Despite Hockett's statement that all languages with zero are stress systems, here he includes Burmese, which has both level and contour tones. The zero unit is represented by syllables having no tone; as stress is not given as a conditioning factor for toneless syllables, we have a tone language with an unexplained zero unit. Pitch accent languages such as Norwegian and Swedish also fall into this group. These two languages have three degress of stress and a primary stressed syllable may have one of two possible pitch contours.

Chomsky and Halle (1968) classify languages in a way very similar to Pike (1967). The criterion used is the domain of the

contrastive prosodic feature. Stress languages and pitch-accent languages are grouped together. In both a diacritic is associated with the lexical item; this diacritic specifies the placement of either main stress in stress languages or high pitch in pitch-accent languages. The pitch of the entire word is then derived by rule. Tone languages differ from accent languages in that each vowel of a lexical item in a tone language must be marked for pitch. Thus prosodic information is carried by the vowel (not the syllable!) in tone languages and by the lexical item in accent languages.

McCawley's 1968 classification is identical to those of Chomsky and Halle, and Pike: there are tone languages and accent languages; the latter include stress languages and pitch-accent languages. The criteria differentiating the types are: (1) the domain of the prosodic unit in the lexicon; and (2) the type of rules which derive surface forms from lexical formatives.

The type of prosodic unit market in the lexicon is not important to MacCawley's classification. Both tone languages and pitch-accent languages employ significant pitch but this characteristic is not sufficient to unite them. The stress languages and the pitch languages do form one group, although stress is the contrastive unit in the former and pitch in the latter. The criterion of significance is the domain of the prosodic information marked in each lexical item. In stress languages and pitch-accent languages one syllable per phrase is marked or accented. In tone languages on the other hand each syllable must be marked for contrastive pitch. In addition, the accent

languages contain accent reduction rules, each of which may apply more than once to a lexical item in a derivation. These rules affect the pitch or stress of the entire phrase, not just the one marked syllable. In tone languages, however, there are no accent reduction rules. There are instead rules of assimilation and dissimilation similar to those which apply to consonants and vowels. These rules affect only those syllables adjacent to the syllable in question. They do not operate 'long distance,' as do the accent reduction rules.

Woo (1969) disagrees in several important ways with McCawley's analysis. First, she does not agree that stress (as in English) and pitch-accent (as in Japanese) are similar enough phenomena to allow them to be grouped together. These types of languages differ too much in the information found in the lexicon. In pitch accent languages such as Japanese, lexical items must include information on the location of the prosodic diacritic which will later be interpreted as phonetic pitch. In stress languages like English, however, there is no prosodic information in the lexicon. The placement of the main stress is completely rule-governed.

Secondly, for Woo the type of prosodic information found in the lexicon is a more important classificatory criterion than the domain of that prosodic information. Thus she classifies pitch-accent languages and tone languages in the same subgroup, because both include pitch diacritics in lexical entries. That the domains of the pitch diacritics are different in the two types of languages is not as important to her typology. This is the opposite of McCawley, to whom

prosodic domain is primary and type of prosodic information is secondary.

Thirdly, Woo does not agree that tone languages have only assimilation-dissimilation rules while accent languages have only accent reduction rules. She gives evidence that tone languages also have stress, and that a lack of stress on a syllable of a tone language can cause a reduction of neutralization of tone, just as a lack of stress in a stress language causes reduction or neutralization of vowels. Woo states that stress rules operate in the same way in all languages, i.e., that when the syllable bearing primary stress has been located, the stress of other syllables is determined by cyclic rules.

A corollary to this third point is the contention that stress and pitch are two independent phonological features, not two manifestations of one phonological feature 'accent.' As alternate manifestations of one feature, pitch and stress would be mutually exclusive and could not co-occur in the same language. However, Woo gives evidence that pitch and stess both must be considered in all types of languages. In fact in her analysis of Mandarin Chinese, stress is assigned by rule before pitch is considered, and segments which are unstressed receive neutral tone. Conversely in Bambara, a Mande language of Africa, a pitch-accent system, pitch must be assigned before stress. 'Primary stress occurs on the last high toned syllable in the first sequence of high tones' (1968:16-17).

All of these considerations lead Woo to a prosodic typology distinct from those previously discussed. She classifies together the

lexical tone languages, in which tone is associated with each syllable of a lexical formative, and the tone harmony languages (formerly pitch-accent), in which tone is associated with the lexical formative as a whole. Together these two types are the tonal languages. Non-tonal languages are the stress languages, in which no prosodic information is given in the lexicon. As stated above, for Woo the characteristic separating the tonal and non-tonal languages is the presence or absence of contrastive pitch. The domain of that pitch is of secondary importance.

Hyman's approach (1970:229 ff.) to prosodic typology is distinct. The preceding analyses are based on the choice of one or two characteristics to distinguish between language types. Hyman uses four of the criteria described above: domain of the prosodic unit, interrelationships among the prosodic units of a system, type of derivational rules found in the system, and type of contrastive prosodic unit. Then, in the same way that a segmental phoneme can be described by reference to its distinctive features, he can describe the 'distinctive features' of each prosodic class. The greater number of criteria affords him greater precision in uniquely defining the prosodic system of a particular language.

The first criterion is domain of the prosodic unit. If there is only one prosodic unit per lexical item, the system is culminative. If there may be more than one prosodic unit per lexical item, the system is non-culminative. Stress is culminative while pitch is usually non-culminative.

The second criterion refers to the interrelationship among the prosodic units. If there is a dependency relationship among them, that is, if the occurrence of a mark on one syllable enables us to predict the values on the rest of the syllables of a lexical item, the system is syntagmatic. In a stress language the stress of any particular syllable is determined by comparing it with the stress of the other syllables in that word. If the syllable in question is plus stress, immediately we know that all the other syllables will be minus stress. In a paradigmatic system the fact that a syllable carries a prosodic marker does not give any information about neighboring syllables. It also does not tell what the value of the prosodic marker is. Thus in a tone system we must investigate which tone is to be found on each syllable independently. The third criterion is rule type. Stress reduction rules are found in stress systems and assimilation-dissimilation rules in tone systems. The fourth criterion is the type of contrastive prosodic unit. Typically pitch is contrastive, while stress may or may not be contrastive. In the pitch-accent languages both pitch and stress are contrastive.

The feature approach to prosodic classification leads Hyman to an interesting conclusion. Unlike the other theorists he does not subsume the pitch-accent languages under either the stress languages or the tone languages. 'While stress and tone represent the logical dichotomy within such typologies (of prominence), it is quite clear that many languages fall in one respect or the other midway between stress and tone' (emphasis added) (p. 230). This can be seen in

Figure 5.1. Thus pitch-accent languages are both culminative, like the stress languages, and paradigmatic, like the tone languages. This resolves the dilemma of deciding whether a single criterion, such as domain or type of prosodic unit is the 'more important' one. It also creates the possibility of describing languages which may not fit into any of the present categories.

Figure 5.2 summarizes the typologies and criteria used to arrive at those typologies for the theorists discussed above.

5.1.2 Acoustic Cues to Stress and Pitch

In the preceding section the term 'stress' was used without formal definition. This is an abbreviated way of referring to the phenomenon 'stress,' in the same way that /b/ is a short-hand reference to the characteristics that this sound may have in any particular language. But seen from the point of view of acoustic data, stress is not at all simple. Changes in pitch, in duration, in intensity, and in vowel and consonant segments are all involved in the perception of 'stressed syllables.' But 'there is no one-to-one correlation between any acoustic parameter and stress. Thus there is also no automatic way to identify stressed syllables' (Lehiste 1970:110). In addition to the clues which may be present in the physical signal, knowledge of the stress system of the language is also a factor in stress perception.

Stress is also interpreted by the listener in terms of the muscular effort exerted by the speaker (Lehiste 1970:117 ff.). To show this, a series of high and low vowels were recorded in which the

FEATURES:

I. DOMAIN of the prosodic unit: culminative / non-culminative

II. INTERRELATIONSHIPS among units: syntagmatic / paradigmatic

III. RULE TYPES: stress reduction rules / assimilation-dissimilation rules

IV. CONTRASTIVE PROSODIC UNIT: stress / pitch / stress and pitch

PROSODIC TYPOLOGY OF LANGUAGE:

	Feature	Stress Language	Pitch-Accent Language	Tone Language
I.	DOMAIN	culminative	culminative	non-cumulative
II.	INTERRELATIONSHIPS	syntagmatic	paradigmatic	paradigmatic
III.	RULE TYPES	stress reduction	both (?)	assimilation-dissimilation
IV.	PROSODIC UNITS	stress	stress; pitch	pitch

Figure 5.1 Classification of Languages according to Prosodic Information

Source: Hyman, 1970

Figure 5.2 Typologies of Language Based on Their Prosodic Organization

Pike, 1947

TONAL

1. True tone languages
2. Pitch-accent languages
(prosodic unit: tone)

NON-TONAL

3. Stress languages
(prosodic unit: stress)

McCawley, 1968

TONAL

1. Tone languages (domain of the prosodic unit: syllable)

NON-TONAL

2. Pitch-accent languages
3. Stress languages
(domain of the prosodic unit larger than one syllable)

Pike, 1967

TONAL

1. True tone languages
(domain of pitch: syllable)

NON-TONAL

2. Word pitch languages
3. Stress languages
(domain of pitch: larger than the syllable)

Woo, 1969

TONAL

1. Lexical tone languages
2. Tone harmony languages
(prosodic unit: tone)

NON-TONAL

3. Stress languages
(no prosodic unit marked on the lexical item)

Hockett, 1955

1. Stress languages--linear with zero
2. Tone languages without complex tones--linear without zero
3. Pitch-accent languages--non-linear with zero
4. Tone languages with complex tones--non-linear without zero

Hyman, 1970

1. Tonal languages
2. Pitch-accent languages
3. Stress languages
(for criteria, see Figure 5.1)

Chomsky-Halle, 1968

TONAL

1. Tone languages (domain of the prosodic unit: vowel)

NON-TONAL

2. Pitch-accent
3. Stress
(domain of the prosodic unit: the lexical item)

speaker tried to maintain equal effort during the entire production. These vowels were perceived as having equal stress. However, the amplitude values of the high vowels and the low vowels differed by about five decibels. Nonetheless, the measured difference in amplitude did not affect the stress judgments.

The same vowels were recorded a second time. In this case the speaker tried to maintain the same amplitude (measured by a VU meter) for all the vowels during the recording. Since high vowels intrinsically have a lower amplitude than low vowels, the high vowels required more effort in order to be maintained at the same decibel level. When this series of vowels was played back, the high vowels, produced with greater effort, were perceived as louder than the low ones, although the amplitude values were very similar. Here again the acoustic data do not correspond to the judgments of stress, while the perception of the effort expended by the speaker is correlated with the stress judgments.

Once the stressed syllable in an utterance is identified, a study can be made of the acoustic cues to stress which may be present there. Raised fundamental frequency is one of the important cues to stress. A second cue to stress in some languages is the increased duration of the stressed segments. Raised intensity may also in some cases be associated with stress. (Intensity is a physical characteristic of sound dependent on the amplitude and frequency of the sound waves. See Section 5.4.3 for further discussion of intensity.)[1]

Articulatory cues to stress are changes in vowel and consonant segments. Consonants may be tense or aspirated; vowels may be raised,

lengthened, or diphthongized. On the contrastive level, there may be a different distribution of vowels and diphthongs in stressed and unstressed syllables. In tone languages, there may be restrictions on which tones occur in stressed and unstressed syllables.

Note that increased duration and intensity are not necessarily associated with stress. Increased duration under stress is a language-specific fact; 'there is no physiological reason for (it) to be associated with greater stress' (Lehiste, 1970:125). Raised intensity is also not always a cue to stress for several reasons. Each vowel has a characteristic fundamental frequency and amplitude (both of which are components of intensity). Low vowels such as /a/ have higher amplitudes and lower fundamental frequencies; high vowels such as /i/ and /u/ have lower amplitudes and higher fundamental frequencies. Thus an unstressed low vowel may have a greater intensity than a stressed high vowel. Secondly, the amplitude of long vowels is greater than the amplitude of short vowels. For these two reasons when a vowel is stressed a correction factor for its inherent intensity and length must be supplied. Thirdly, the intensity of a vowel does not remain constant throughout its production. The voicing of adjacent consonants affects the frequency of vowels. Voiceless consonants raise the frequency of adjacent vowels and voiced consonants lower vocalic frequency. Moreover, the articulation shifts from consonants to vowels also affect pitch and amplitude, the components of intensity.

Perception experiments with speakers of various languages indicate that languages make differential use of the articulatory and

acoustic cues to stress. Raised pitch is most often correlated with stress; durational changes may or may not be present, while intensity is the least reliable indicator. So languages must be examined on a case-by-case basis to determine both the function of stress within the phonological system, and the physical manifestation of that stress.

Because change in fundamental frequency is an indicator of two linguistic features, stress and pitch, a way must be found to distinguish between them. Woo (1970), Eunice Pike (1974) and Hyman (1975) agree on the rule of thumb that in a stress system, raised pitch is accompanied by changes in adjacent segments, but that in a pitch system, (unstressed) high pitch does not change adjacent segments. Rather the adjacent segments affect the pitch level. Some tests for separating stress and pitch languages are outlined below. These are from Eunice Pike's 'Multiple Stress System versus Tone System' (1974).

1. Vowel Quality

Stress language: Phonetic vowel qualities are conditioned by appearance in stressed or unstressed syllables

Tone language: Tone does not affect vowel quality. Conversely, tone variants are conditioned by the quality of the vowel in the syllable in which they appear

2. Voiceless Vocoids

Stress language: Vowels may be voiceless in unstressed syllables

Tone language: Voiceless vocoids 'seldom occur' (p. 172), but if the segments of a syllable are lost the tone usually remains

3. Consonant Allophones (in either stress or tone languages)

High tone manifesting stress: Consonants may be fortis, lengthened, or have off-glides

High tone not manifesting stress: There is no effect on consonants. However, tone itself may vary, according to whether the syllable final segment is voiced or voiceless

4. Pitch Level of Unstressed Syllables

Stress language: Pitch levels may vary greatly, depending on the rate of speech or extra-linguistic factors such as anger or fear

Tone language: Less variation in the pitch of unstressed syllables

In summary, the linguistic feature stress cannot be 'read' unambiguously from spectrographic data, as there is no single acoustic cue for stress. Moreover, languages (and individuals) differ in their ways of physically realizing stress. Nonetheless, by examining a complex of acoustic and articulatory cues an investigator can discover the presence of stress.

5.2 Systematic Distribution of Stress in Mikasuki

In Mikasuki the phonological word is defined as one containing one stressed syllable. The placement of stress is rule-governed. In

nouns stress usually occurs on the first syllable with a rise in pitch; this may be on any syllable in the word. In inflected verbs stress is one of the characteristics of the prominent syllables (for discussion of the prominent syllable, see Section 5.22).

Two pitch levels are contrasted in stressed syllables: /mid/ and /high/. Unstressed syllables may have /low/, /mid/ or /high/ pitch. The stressed syllables are undermined twice, and the unstressed syllables once.

Stressed:	/labank-i/	[lə bəŋ gɨʔ]	'mud'
	/labánk-i/	[lə bəŋ gɨʔ]	'muddy'
Unstressed:	/cik-i/	[či gɨʔ]	'house'
	/an-tá:t-i/	[an ta: tɨʔ]	'my father'
	/ifít-i/	[i· fi tɨʔ]	'prune'
	/imp-om-ò/	[im pə mo]	'Is she eating"

5.2.1 Nouns

In nouns the location of the stressed syllable depends on the pitches found in the word. The first syllable from the beginning of the word with /mid/ or /high/ pitch which represents a rise in pitch will be stressed. When a prefix is added, the pitch of the prefix with respect to the pitches on the rest of the word determines whether or not

stress will shift. In the first set of examples, the addition of the person prefix with /mid/ pitch causes a stress shift. If the prefix has /low/ pitch, stress is not shifted. Thus the person prefix does not affect stress placement in the second set of examples.

1.	/ya:t-i/	[ya: ti?]	'people'
	/a:-ya:t-i/	[a: ya: ti?]	'my people'
	/to:p-i/	[to: pi?]	'chair'
	/an-to:p-i/	[ən to: pi?]	'my chair'
2.	/ta:t-i/	[ta: ti?]	'father'
	/an-ta:t-i/	[ən ta: ti?]	'my father'
	/a:p-i/	[a: pi?]	'sugarcane'
	/am-a:p-i/	[ə ma: pi?]	'my sugarcane'
	/a:b-i/	[a: bi?]	'picture'
	/am-a:b-i/	[ə ma: bi?]	'my picture'

In words in which two contiguous syllables have the same pitch, either both /mid/ or both /high/, the stressed syllable is usually the first one.

/o:ɣa:n-i/	[u: ɣa: nɨʔ]	'bamboo'
/ya:t-o:c-i/	[ya: to: cɨʔ]	'baby'
/i:ko:s-i/	[i: go: sɨʔ]	'mother's sister'
/to:tokw-i/	[tu: tug wɨʔ]	'swamp apple'
/lockot-i/	[luc ko tɨʔ]	'boil'

In one case, two speakers differed in whether stress fell on the first or second of the two potentially stressable syllables.

	Speaker 2			Speaker 2	
/itoc-on/	[i tu cən]	'kidney' (object form)	/itoc-o:n/	[i to co:n]	'It's a kidney'

West (1962:85) gives a similar example of variation in stress placement.

/manti:lot/	/manti:lot/	'flag' (subject form)

Further investigation is needed to determine if this type of stress variation is due to individual, stylistic or dialect variation.

While stress is non-contrastive on the noun root level, it does serve together with pitch, to distinguish noun phrases from compound nouns on the morphological level. Stress and /high/ pitch occur on the penultimate syllable of noun compounds, and on the final syllable of noun phrases, where a noun root is modified by an adjective or another noun.

/sok-i/ [so gɨ?] 'pig' /hatk-i/ [hat kɨ?] 'white'

Compound Noun: /sokihatki/ [so gi hət kɨ?] 'possum'

Noun Phrase: /sokihatki/ [so gi hət kɨ?] 'white pig'

/ok-i/ [o· gɨ?] 'water' /co:b-i/ [co:bɨ?] 'big'

Compound Noun: /okico:bi/ [o gi co: bɨ?] 'Lake Okeechobee'

/ant-i/ [ə·n· tɨ?] 'pot' /co:b-i/ [co:bɨ?] 'big'

Noun phrase: /antico:b-i/ [an ti co: bɨ?] 'big pot'

5.2.2 Inflected Verbs

As was explained in Section 3.1.3, every inflected verb has one prominent syllable. This syllable has significant pitch, it must be a heavy syllable, and it may be nasalized. The prominent syllable is also stressed.

Syllables in the verb root which never receive prominence in inflected forms usually contain a short vowel. There is no such restriction on the vowels of the potentially prominent syllable; they are long if the syllable is open, and short if the syllable is closed. The difference in the distribution of syllable types and the restrictions on the occurrence of long and short vowels are conditioned by prominence, and by stress as one of the components of prominence. In the examples that follow, the prominent syllable is underlined twice, and the first (never stressed) syllable of the root once.

/tanãhlom/	[tə nãh ləm]	'She's picking (it) up'
/iptã:com/	[ip tã: cəm]	'It's freezing'
/holã:som/	[ho lã: səm]	'He's telling a falsehood'

5.2.3 Affixes

Certain verbal affixes include stress as part of their manifestation. Either the suffix itself is stressed or stress is placed on a specific syllable of the verb form. Imperative forms, question affixes and the comparative and superlative forms of adjectives all contain stress.

There are at least two imperatives differing in degree of politeness. The more forceful one, and the one often used with children, has stress on the affix syllable /-sá/. When the imperative suffix is added, any other stress on the verb is lost.

/i:s-ik-sá/	[i: sik sa?]	'Hold it'
/-i:s-/	/-ik-/	/-sá/
'hold (in hand)' (root)	infinitive	imperative
/cilitk-ik-sá/	[ci lit kik sa?]	'Shut up!'
/-cilitk-/	/-ik-/	/-sá/
'be quiet' (root)	infinitive	imperative

The second imperative, the /-ih/ form, is stressed on the final syllable of the root. This is a more polite form and is used among adults as a first request. If the addressee does not respond, the speaker may escalate to the /-sa/ form.

/iss-ih/	[is sih]	'Get it'
/-iss-/	/-ih/	
'get' (root)	imperative	
/o,h,nt-ih/	[uhn tih]	'Come here'
/-ont-/	/-h-/	/-h/
'come (toward speaker) (root)	completive (?) (infix)	imperative

Associated with questions is a particular intonation pattern. It exaggerates the difference in pitch between the height of the prominent syllable and the /low/ pitch of the final syllable of the verb form. In instances in which the question suffix does not occur, this characteristic intonation pattern is the only indicator of the question form. If the prominent syllable immediately precedes the final syllable, the exaggeration of the distance in pitch between them is even more pronounced. The pitch of the prominent syllable falls from [high] to [low], especially if the syllable contains a long vowel. In the following examples the intonation of statements is contrasted with the intonation of the corresponding questions. The question suffix is underlined once

where it occurs. The prominent syllable is underlined twice. Extra stress and/or raised pitch is indicated by ".

Statement		Question	
/hiɣtim/	[hiɣ tim]	/hiɣtim/	["hiɣ tim]
'It's bad'		'Is it bad?'	
/koti halbot inkafahbo:n/	[ku ti həl but iŋ gə fah bo:n]	/koti halbi inkafahboh/	[ku ti həl bi iŋ gə "fah bo·h]
'A frog has rough skin'		'Does a frog have rough skin?'	
/imponkah/	[im puŋ gah]	/imponkoh/	[im puŋ: goh]
'She's eating'		'Is she eating?'	
/imponkah/	[im puŋ gah]	/imponkoh/	[im puŋ goh]
'She was eating'		'Was she eating?'	
/lockoti ĩ:feyhni:m/	[luc ko ti ĩ: feyh n+: əm]	/lockoti ĩ:feyhni:pom?/	[luc ko ti ĩ: feyh "ni: pm]
'The boil drained'		'Did the boil drain?'	

Several different affixes are used to form the comparative and superlative degree of adjectives; however, all of them involve stress on the prominent syllable, because adjectives are a subclass of verbs.

The stressed syllable is lengthened and the syllables following the stressed one are [low] in pitch. In the following examples extra length is indicated by ::.

	'big'		'wide'	
Adj.	/co:bon/	[co: bun]	/takho:tom/	[tə^{n}k^{h}o: tm]
Comp.	/co:bon/	[co: bn]	/ossintakhom/	[us sin ta· k^{h}m]
Sup.	/co:bo:n/	["cu:: bo:n]	/ossintakhom/	[us sin "tak: k^{h}m]

	'long' (one form)		'long' (another form'	
Adj.	/backon/	[bəc kn]	/backon/	[bə^{n}c kn]
Comp.	/backon/	[bə^{n}c kn]	/simbackon/	[sim bə^{n}c kn]
Sup.	/backom/	["bəc km]	/ossimbackon/	[us sim "bəc: kun]

5.3 Characteristics of Stressed and Unstressed Syllables: Syllable Reduction Caused by Stress Placement

Mikasuki is a stress-timed language. The rhythm of speech is based on the contrast of the stressed syllables to the unstressed ones. Contrast is heightened by the following means. Stressed syllables may have:

1. Extra length
2. Extra high pitch as a result of stress
3. A long fall in pitch from [high] to [low]

4. Contrastive /mid/ or /high/ pitch
5. Fortis consonants

Unstressed syllables may have

1. Reduced length
2. Extra [low] pitch following a syllable with heavy stress
3. /mid/ or /low/ pitch
4. Syllabic or lenis consonants
5. Loss of phonemic contrast in vowels or consonants

The rate of speech, style of speech (informal, careful, etc.) and variation among individual speakers account for the degree to which unstressed syllables may be shortened or eliminated. For example the first syllable of the adjective 'old (female)' is shortened, and the vowel is devoiced and reduced to shwa by some speakers when the adjective appears in a noun phrase.

/homóhč-ī/	[ho moh čɨ̥ʔ]	'old (female)'
/tayk-homóhč-ī/	[tey kʰə moh čɨ̥ʔ]	'old woman' /tayk-ī/ 'female'

In inflected verbs the contrast between the prominent, stressed syllable and the unstressed syllables is emphasized because the location of the prominent syllable with relation to the stem boundary is an important characteristic distinguishing the present tenses or aspects from the non-present (past and future) tenses or aspects.

1.	/hí:čomli/	[hí:: čəm lī]	'I'm looking now'
2.	/hí:čomli/	[hi: čm̩ lī]	'I saw (just now)'

3. /hi:čomli/ [hi· čum li] 'I saw (for the first time a while ago)'

In examples 1 and 2 the stressed vowel of the prominent syllable is longer and tenser than the same vowel in example 3, which is not stressed. Also in examples 1 and 2 the vowel of the suffix /-om-/ has lost its rounding and is reduced to shwa. However, the vowel of this suffix in example 3 retains its rounding when it occurs in the prominent syllable. In example 2 the pitch of the suffix /-om-/ is very low and the nasal has syllabified; both conditions are the result of immediately following a syllable with high pitch and stress.

Some unstressed syllables are not just weakened, but are eliminated entirely, especially in rapid speech.

[čuk fi la: šɨʔ] /čokf-i-hola:š-i/ 'Lying Rabbit' (the name of a character in a folk tale series)

/čokf-i/ 'rabbit' /hola:š-i/ 'tell a falsehood'

[loh hə ča: lik i: tun yo: gə ha: cə ba::]

/lohhača:lik i:ton yo:kaha:čik čo:ba::/

'After he got up he built a big fire'

/lohhača:lik/ 'get up' /i:t-i/ 'fire' /yo:kaha:čik/ 'build'

/čo:b-i/ 'big'

Another phenomenon, syllable reduction, is also a product of the contrast between stressed and unstressed syllables. Two contiguous

syllables may collapse to form one reduced syllable, which has elements of both the original syllables. One type of syllable reduction involves a stressed and an unstressed one. A second type has only unstressed syllables. An example of the former type is found in the inflected verb /hampí:m/ 'it's broken; it's bad.' The unreduced variant is /hampí:pom/. In the reduced variant the /p/ and the vowel of the unstressed syllable /om/ have been lost. The stressed vowel is retained. The pitches of both the original syllables are also retained.

The principal conditioning factor for syllable reduction is stress. In inflected verb forms unstressed syllables subject to reduction follow the prominent (stressed) syllable. Thus verbal affixes are affected by reduction while the verb root is left intact. In nouns reduction occurs in compounds of noun phrases. Since stress in these forms falls on either the penultimate or the ultimate syllable, the unstressed syllables preceding the stressed syllable are affected.

The second conditioning factor in syllable reduction is syllable shape. There may be no more than one consonant between the two vocalic portions of the syllables to be reduced. Furthermore the only consonants allowed in the intervocalic position are /p,t,k,b, and h/, the 'weak' consonants. These consonants all have both voiced and voiceless variants. The 'strong' consonants, which include the strong voiceless consonants /š,f,ɣ,č/ and the strong voiced consonants /w,y,l,m,n/ do not vary in voicing. If a strong consonant is found in intervocalic position no reduction results. (Cf. Chapter 2 for other discussion of the strong and weak consonants.)

There are two types of reduced syllables. One type results from the collapse of a stressed and an unstressed syllable. The vocalic portion of the syllable which is produced is a long vowel with [falling] pitch. This type occurs only in inflected verbs; the stressed syllable which results is always the prominent syllable. The second type is composed of two unstressed syllables. The vocalic portion of the resulting syllable is short and has /low/ or /mid/ pitch. In inflected verbs this type of reduced syllable follows but does not include the prominent syllable. In nominal forms it precedes the stressed syllable.

Type One Reduced Syllables (verb only)

/čó:bó:n/ [čó: bó:n] 'It's big' < /čó:bó:tom/[2]

/čofi:lihkitišiná:m/ [čú fi: lí kí tí ší na:ᵊm/

'I couldn't wake up' /čofi:likitišiná:bom/

Type Two Reduced Syllables (noun and verb)

/nampaká:l-i/ [nəm pə ga: lɨʔ] 'flower' < /na:kimpaká:l-i/

/na:ki/ 'thing'; /paká:l-i/ 'blossom';

/-im-/ 'pronominal prefix'

/hiɣtim/ [hiɣ tim] 'It's not good' < /hiɣtikom/

/hiɣ-/ 'good'; /-tik-/ 'negative affix';

/-om-/ 'verbal suffix'

Syllable reduction can also take place across word boundaries in longer utterances.

[χʊ kʰɛ mey γik šah]	/χokhima ihk-ik-šah/	'Say it again'
[noχ te yə mo?]	/no:χot a:y-om-o/	'Who was that?'

5.4 Acoustic Characteristics of Stress in Mikasuki

5.4.1 Introduction

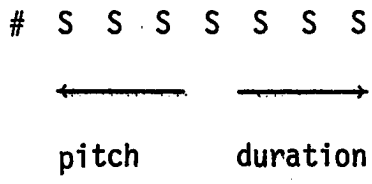
In Section 5.1.2 the fact was discussed that there is no necessary one-to-one correlation between any one of the acoustic phenomena of frequency, duration and intensity and the occurrence of stress. Nonetheless there have been many studies of how stress is manifested acoustically in various languages. The investigation may take two forms. In one, minimal pairs of words differentiated by stress are manipulated on a speech synthesizer to produce test tapes in which the acoustic cue under investigation is varied systematically while the other cues are held constant. These tapes are played to native speakers who must discriminate between the two members of the minimal pair. Studies of this type are Fry (1955, 1958, 1965), Bolinger (1958) and Morton and Jassem (1965) for English; Jassem, Morton and Steffan-Batóg (1968) for Polish; Rigault (1962) for French; and Westin, Buddenhagen and Obrecht (1966) for Southern Swedish.[3]

In the second type of investigation the acoustic characteristics of syllables which are known to be stressed are compared with those of unstressed syllables. Some studies of this type are Lieberman

(1967) for English; Lehiste and Ivic (1963) for Serbo-Croatian; and Woo (1969) for Chinese. This latter appraoch is used here to examine the Mikasuki data.

5.4.2 Frequency and Stress; Duration and Stress

Neither high pitch nor longer duration is alone the distinguishing feature of the stressed syllable in Mikasuki. Rather these two cues interact with each other to mark the stressed syllable. The following schematic indicates how the relative importance of raised pitch and increased duration varies over the length of a word. 'S' stands for a syllable of any shape. # is a word boundary.



Toward the beginning of a word a stressed syllable is more likely to have the highest pitch of any syllable. Toward the end of a word the stressed syllable is more likely to have the longest core (peak plus coda, if there is one) of any syllable. The decrease in the significance of pitch height at the end of the word seems to be the result of the downdrift in absolute pitch from the beginning to the end of utterances. Thus the syllable with the highest pitch in the word may not be the stressed syllable. Likewise, the syllable with the longest core may not be the stressed syllable either. The crucial

factor in determining which is the dominant cue of stress is the location of the stressed syllable with respect to the word boundaries.

These conclusions were reached by examining the acoustic characteristics of two- and three-syllable nouns with /mid/ pitch and inflected verbs. The noun forms are all stressed on the last syllable, the suffix /-o:n/. The syllable preceding the final syllable always has /mid/ pitch. Of the twenty-two examples only 41% had the highest pitch on the stressed syllable. In 59% of the cases either the unstressed syllable had the higher pitch, or was equal in pitch to the stressed syllable.

41%--stressed syllable has the highest pitch: [i: fo:n] /i:fo:n/ 'It's a dog'
1900 2000-1700- Hz.

59%

14%--unstressed syllable has the highest pitch: [bi: ho:n] /bi:ho:n/ 'They're mulberries'
2000- 2000-2300 1700 Hz.

45%--equal pitch on both syllables: [i: to:n] /i:to:n/ 'It's a fire'
1900- 2000-2000 1600 Hz.

Thus in the majority of cases with stress on the final syllable, that syllable does not have the highest pitch in the word.

However, when the duration of the core of the first syllable is compared to the duration of the peak of the suffix syllable (the final /n/ of the suffix is not measured, so as to compare two morae of

the first syllable with two morae of the second), length (given in centiseconds in examples) correlates a little more closely with stress than does pitch.

	55%--stressed syllable is longest:	[yā: tó:n]	/yā:tō:n/	'They're people'
		13 19		
45%	36%--unstressed syllable is longest:	[χā: χó:n]	/χā:χō:n/	'It's a fish'
		21 18		
	9%--stressed and unstressed the same:	[wā: gó:n]	/wā:kō:n/	'It's a cow'
		21 21		

Similar results were obtained from the three-syllable nouns. When the stress is word-final, duration is a slightly more reliable cue than pitch.

Pitch

	37%--stressed syllable has highest pitch:	[hə sō: tó:n]	/hasō:tō:n/	
		1600 1700 1900-1400 Hz.		'It's a cloud'
63%	50%--penultimate syllable has highest pitch:	[ĩ: ha: yó:n]	/ĩ:ha:yo:n/	
		1700-1900 1950-1900 1800-1500 Hz.		'It's a fruit'
	13%--word-initial syllable has highest pitch:	[í: gō: sǒ:n]	/i:kō:sǒ:n/	
		1750-1650 1550-1600 1500-1400 Hz.		'She's an aunt'

Length

50%--stressed syllable is longest:

[ya: to: co:n] /ya:to:co:n/

11 13 17.5

'It's a baby'

50%--unstressed syllable is longest:

[hã: ba: co:n] /hã:ba:co:n/

14 19 17

'It's a mocking-bird'

Verbs inflected with the imperfect /-onka-/ suffix, in which the distinction between the present and the past is the location of the prominent syllable, show the same relationship between pitch and duration as cues to stress. In the present tense, /'stem=onka/, the prominent syllable is closer to the beginning of the form, and pitch is the more reliable cue. In the past, /stem='onka/, the prominent syllable is closer to the end of the form, and duration is the more reliable cue. (= represents the stem boundary. The stressed syllable is underlined.)

Pitch

Present Tense

67%--stressed syllable has highest pitch:

[hu pã: nuŋ gã] /hopã:nonka/

1800 1500 1350

'He's singing'

33%--an unstressed syllable has pitch equal to that of the stressed syllable

[ho pãs nuŋ gi: gã]

1500 1600 1600 1500

/hopãsnonki:ka/ 'We're singing'

Past Tense

40%--stressed syllable has highest pitch:	[no:	čuŋ	ga]		/no:čonka/	
	1650	1700	1600		'She was sleeping'	
60%--an unstressed syllable has pitch equal to that of a stressed syllable	[hu pa:	nuŋ	ga]		/hopa:nonka/	
	1800	1800	1500		'He was singing'	

Duration

Present Tense

33%--stressed syllable is longest:	[ho	pǝš	nuŋ	gi:	ga]	/hopašnonki:ka/
	6	23	17	21	10	'we are singing'
67%--an unstressed syllable is longest:	[im	puŋ	ga]			/imponka/
	20.5	27	18			'She is eating'

Past Tense

60%--stressed syllable is longest:	[im	puŋ	ga]			/imponka/
	21	33	22			
40%--unstressed syllable is longest:	[ho	pǝš	nuŋ	gi:	ga]	/hopašnonki:ka/
	6	25	22	18	9	'We were singing'

5.4.3 Intensity and Stress

Because judgments of the comparative loudness of two sounds are based partially on their frequencies and amplitudes, a formula to measure intensity was devised. This was based on Lehiste's statement that 'the intensity of a sound wave is proportional to the square of the amplitude times the square of the frequency' (1970:112):[4]

$$n_1 - n_2 = 2(n_{A_1} - n_{A_2}) + 2(10 \log \frac{F_1}{F_2})$$

n_1 = the first syllable
n_2 = the second syllable
n_{A_1} = the amplitude of the first syllable
n_{A_2} = the amplitude of the second syllable
F_1 = the frequency of the first syllable
F_2 = the frequency of the second syllalbe

The value obtained by working through the formula is the difference (in decibels) between the intensities of the two syllablic nuclei being compared. If the value is positive, the first has a greater intensity than the second; if the value is negative, the second has a greater intensity than the first. So, for example,

/hahč-i/ 'river' [hāh ˈčɨ?] A_1 = 24 dB A_2 = 30 dB

1000 1200 Hz. F_1 = 1000 Hz. F_1 = 1200 Hz.
24 30 dB

$$n_1 - n_2 = 2(24 - 30) + 2[10 (\log 1000/1200)]$$

$$= 2(-6) + 2[10 (\log .833)]$$

$$= -12 + 2[10 (-0.079)]$$

$$= -12 + (-1.58)$$

$$n_1 - n_2 = -13.58 \text{ dB} \qquad n_2 > n_1$$

The second syllable is greater in intensity than the first syllable by 13.58 decibels.

Intensity is only a weak cue to stress in many of the languages cited in the literature. Therefore it was surprising to find that the distribution of intensity is similar to the distribution of duration with respect to the stressed syllable. If the stressed syllable is closer to the beginning of the word it is not likely to have the greatest intensity. But if the stress falls closer to the end of the word it is more likely to have the highest intensity. Raised intensity is correlated with stress to a greater degree than might be expected.

This can be seen in two- and three-syllable nouns with /mid/ pitch which have the unstressed object suffix /-o͞n/ instead of the stressed suffix /-o͞:n/. In the two-syllable nouns, in which the stressed syllable is only one syllable removed from the word final position, the stressed syllable is more often also the syllable with the highest intensity. In three-syllable nouns, in which the stressed syllable is farther removed from the word-final position, the stressed syllable is less likely to have the highest intensity. In the following

examples the /-on/ suffix is the objective case marker and the /-i/ suffix is the citation form suffix for nouns.

Two-syllable Nouns

66%--the stressed syllable has the highest intensity:	[ˈya:	tun]	/ya:ton/	'people'
	1700-1950	1950-1850 Hz		
	33-36	30-24 dB		

The first syllable is 12 dB greater in intensity than the second.

33%--the unstressed syllable has the highest intensity:	[ˈha:	tˢi?]	/ha:c-i/	'tail'
	1000	1000 Hz		
	35	36 dB		

The second syllable is 2 dB greater in intensity than the first.

Three-syllable Nouns

0%--the stressed syllable has the highest intensity

100%--an unstressed syllable has the highest intensity:	[ˈya:	to:	cən]	/ya:to:con/
	1800-2000	2000	1950 hz	'baby'
	30-35	34	30-24 dB	

The second syllable is 3.4 dB greater in intensity than the stressed syllable.

A comparison of nouns with related adjective forms reveals the same relationship. Adjective forms, with stress on the penultimate syllable, show a longer incidence of the highest intensity on the stressed syllable. As stress moves to the final syllable in the noun forms, there is a higher incidence of the stressed syllable also being the one with the highest intensity.

Adjective Forms (Penultimate Stress)

33%--the stressed syllable has the highest intensity:

[lə bəŋ go:n] /labanko:n/

1500 1800 1600 Hz
36 36 30 dB 'It's muddy'

The second syllable has the highest intensity.

67%--an unstressed syllable has the highest intensity:

[hə so: bo:n] /haso:bo:n/

1600 1850 1600-1300 Hz 'It's cloudy'
36 30 36 dB

The first and third syllables have equal intensity.

Noun Forms (Final Stress)

66%--the stressed syllable has the highest intensity:

[hə so: bo:n] /haso:bo:n/

1700 1750 1800-1500 Hz 'It's a cloud'
30 30 36 dB

33%--an unstressed syllable has the highest intensity:

[lə bəŋ go:n] /labanko:n/

1600 1700 1500 Hz
36 36 30 dB 'It's mud'

Another aspect of intensity which must be examined is a comparison of the relative intensities of syllables in the same position within two different words, one syllable being stressed and the other being unstressed.

/nõ:c-onka/ [nõ: cʊŋ gā] /no:c-onka/ [no: cʊŋ ga]

'She is sleeping' 'She was sleeping'

When pairs of words differing by stress placement are compared, the relative intensities of pairs of syllables in the same position of the word vary according to whether the syllables are word-initial, word-medial or word-final. Relative intensity as a cue to stress across words operates under the same principle that governs relative intensity within words; intensity is a better cue to stress at the end of a word than it is at the beginning of a word.

When word-initial syllables are compared, the stressed syllable may or may not have a higher intensity than the unstressed syllable.

/imp-onka/ [im poŋ ga]
1

'She is eating'

/imp-onka/ [im poŋ ga]
2

'She was eating'

Syllable 1 is 11 decibels higher in intensity than syllable 2.

/hi:c-onka/ [hi: con ga]
1

'She is looking'

/hi:c-onk-o/ [hi: con go]
2

'Was she looking?'

Syllable 2 is 1 decibel higher in intensity than syllable 1.

In word-medial positions stressed syllables may or may not be higher in intensity than unstressed syllables. The stressed syllable also may or may not be the syllable with the highest intensity within the word.

/haso:b-o:n/ [hə so: bo:n]
1

'It's the sun'

/haso:b-o:n/ [hə so: bo:n]
2

'It's sunny'

Syllable 2 is .5 decibels higher in intensity than syllable 1. (In /haso:bo:n/ the syllable with the highest intensity is the third; in /haso:bo:n/ the syllable with the highest intensity is also the third.)

/i:-ho:t-a-:c-om/ [i: ho: ta: cəm]
1

'She is making them bigger'

/ĩ:-ho:t-a-:č-á:-m/ [ĩ: ho: ta: ča:m]
2

'She will make them bigger'

Syllable 1 is .5 decibels higher in intensity than syllable 2. (in /ĩ:ho:tã:čom/ the syllable with the highest intensity is the third/ in /ĩ:ho:ta:ča:m/ the syllable with the highest intensity is also the third.)

In both of the preceding examples the stressed word-medial syllable has had a slightly higher intensity than the unstressed syllable. In the example which follows the unstressed syllable has the higher intensity.

/imp-onka/ [im poŋ ga]
1

'She's eating'

/imp-onka/ [im poŋ ga]
2

'She was eating'

Syllable 1 is 1 decibel higher in intensity than syllable 2. (In /imponka/ the second syllable has the highest intensity in the word. In /imponka/ the third syllable has the highest intensity.)

Word-final stressed syllables are usually higher in intensity than unstressed word-final syllables, because intensity is a more important cue to stress in the word-final position. However, a stressed word-final syllable may be lower in intensity than the immediately

preceding unstressed syllable. Apparently when the intensity of the final syllable is raised above the intensity it would be if not stressed, it is perceived to be stressed even though it is lower in intensity than the unstressed syllable preceding it. In the first two example sets, the stressed final syllable has the highest intensity across words; in the last set an unstressed final syllable has a higher intensity than a stressed final syllable.

/in-co:b-a-:c-om/ [in co: ba: cəm]
1

'She is making it bigger'

/in-co:b-a-:c-a:-m/ [in co: ba: ca:m]
2

'She will make it bigger'

Syllable 2 is 10 decibels higher in intensity than syllable 1. (In /inco:ba:com/ the penultimate syllable has the highest intensity in the word; in /inco:ba:ca:m/ the penultimate syllable has the highest intensity.)

/haso:b-o:n/ [hə so: bo:n]
1

'It's the sun'

/haso:bo:n/ [hə so: bo:n]
2

'It's sunny'

Syllable 1 is 1 decibel higher in intensity than syllable 2. (In /haso:bo:n/ the last syllable has the highest intensity

in the word; in /haso:bo:n/ the last syllable has the highest intensity in the word.)

/labank-o:n/ [lə bəŋ go:n]
1

'It's mud'

/labank-o:n/ [lə bəŋ go:n]
2

'It's muddy'

Syllable 2 is .5 decibels higher in intensity than syllable 1. (In /labanko:n/ the syllable with the highest pitch is the penultimate; the same is true in /labanko:n/.)

Despite the fact that intensity may indicate stress in some instances, pitch is still the primary cue to stress. A comparison of pitch curves and intensity curves for pairs of words differing in stress placement shows that a rise in pitch height is correlated with increased stress, while a rise in intensity may or may not indicate increased stress.

The following diagrams show the relative intensity of each syllable in a word, and the relative intensity of corresponding syllables in each pair of words. The pitch diagrams show the actual pitch levels found in each example, expressed in cycles per second (see Figures 5.3 through 5.5).

In summary, raised frequency is the primary indicator of stress toward the end of an utterance, whether syllables are compared

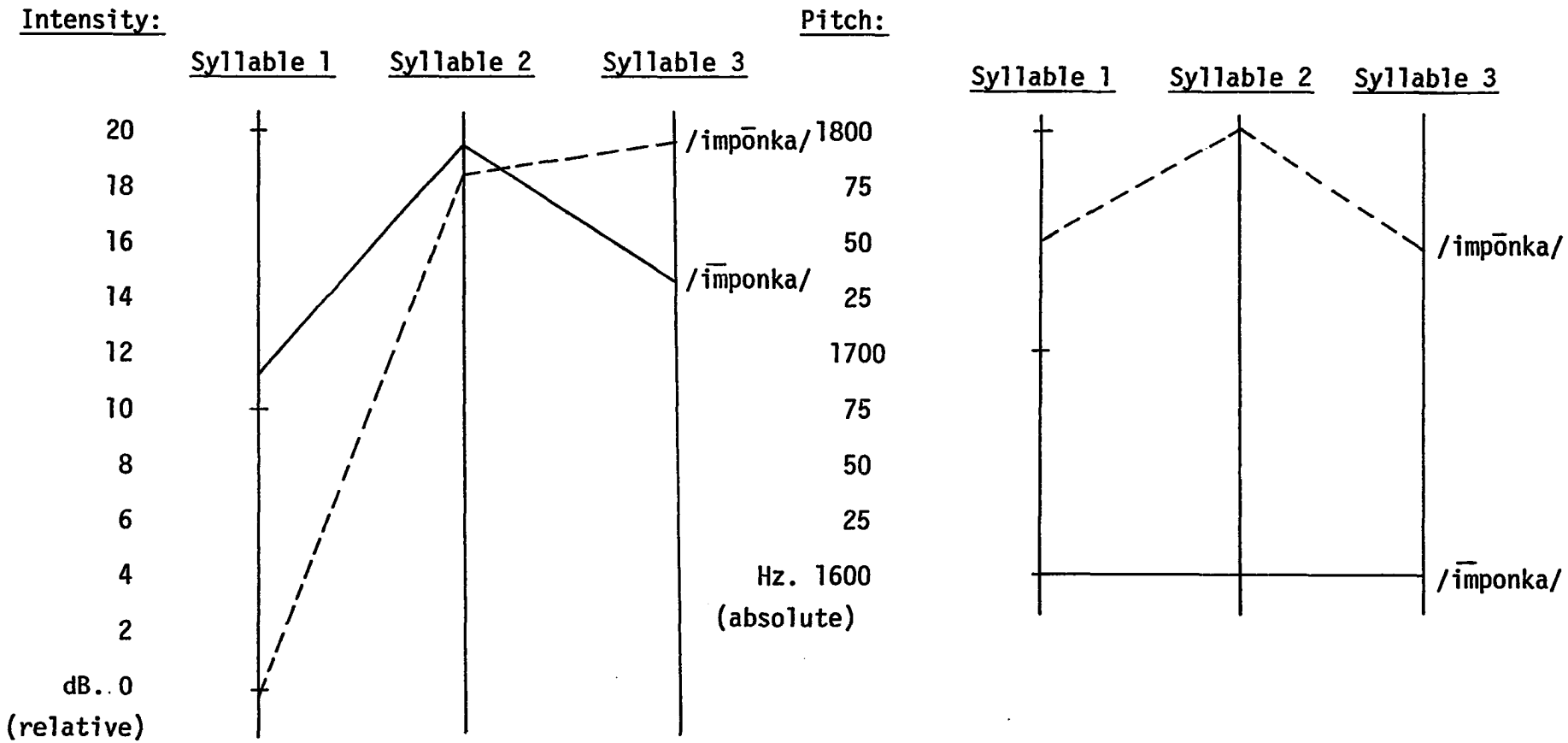


Figure 5.3 Intensity and Pitch of /īmp-onka/ 'She is eating' and /imp-ōnka/ 'She was eating'

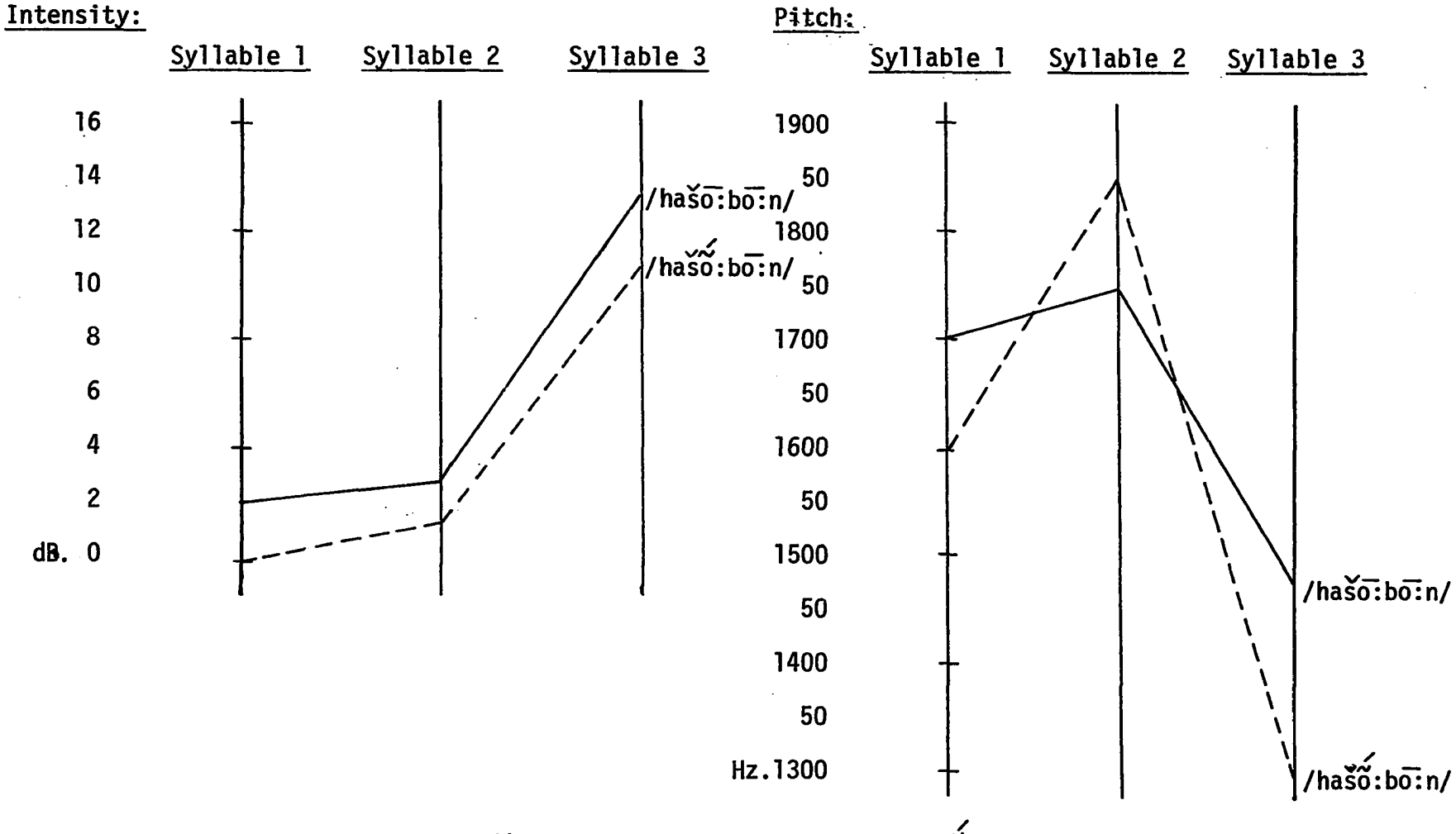


Figure 5.4 Intensity and Pitch of /haš̄o:bō:n/ 'It is the sun' and /haš̄̃o:bō:n/ 'It is sunny'

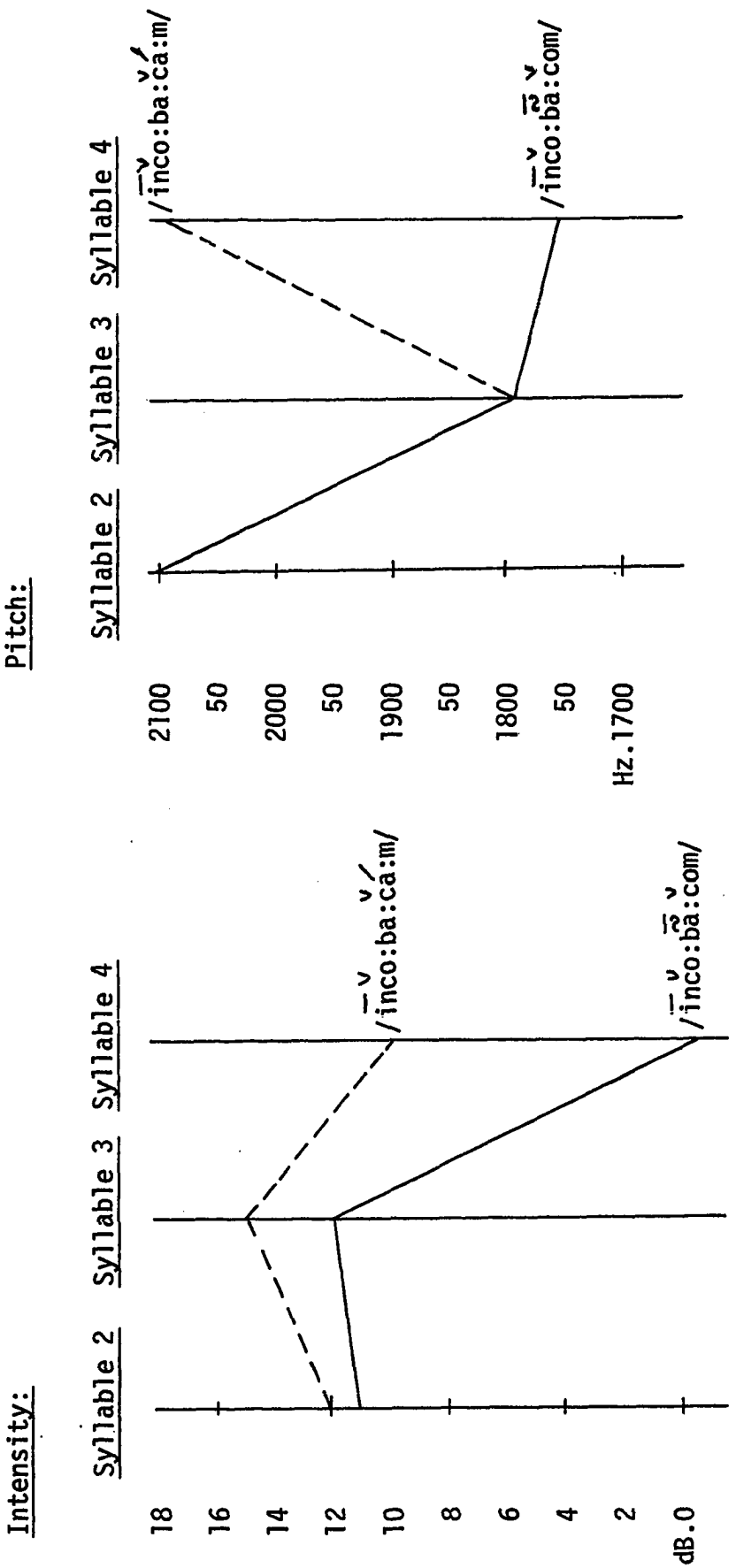
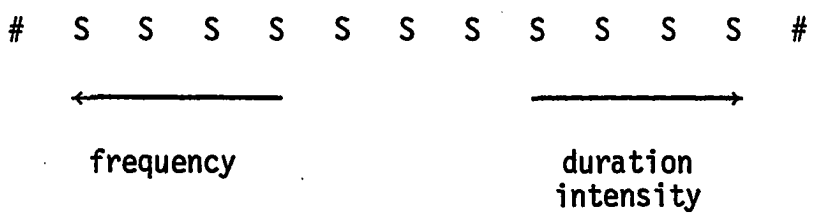


Figure 5.5 Intensity and Pitch of /(ĩn)čo:bã:čom/ 'She is making (it) bigger' and /(in)čo:ba:čá:m/ 'She will make (it) bigger'

within or across words. Toward the end of an utterance where raised pitch may be canceled out by downdrift in phonetic pitch, increased duration, and sometimes increased intensity, take over as cues to stress.

The schematic showing the relationship of stress and the three acoustic parameters can now be revised:



5.5 Notes

[1]Notice that loudness has not been mentioned as an acoustic cue of stress. Loudness is a perceptual characteristic of stress, not a physical one, as are frequency and duration. The perception of loudness depends on the listener's interpretation of all the acoustic and articulatory cues present in an utterance.

[2]See Section 3.1.4 for further discussion of /-o̅:n/ and /-o̅:tom/.

[3]The results of these studies are summarized in Lehiste (1970: 126-132).

[4]I am indebted to Dr. Jorge Mescua for the derivation of this formula.

CHAPTER 6
MORPHOLOGY

6.0 Introduction

This chapter is a sketch of Mikasuki morphology, which is intended to bring together information mentioned in previous chapters and to relate that information to the morphological system as a whole. As an outline, it is also a guide to future research. Gaps and tag ends in the analysis were included, rather than being suppressed in an attempt to make a neat and tidy, but misleading summary.

The organization of the material is from small to large. Section 6.1 presents the basic elements of the morphology, roots and affixes. Section 6.2 deals with the less complex area of morphology, namely the nouns and their affixes. The three sets of person affixes, in section 6.3, are not roots, but are treated on an equal basis to noun and verb roots because of their importance in the system.

Verbs, the heart of Mikasuki morphology, are examined from several different points of view in Section 6.4. First, subclasses of verbs determined by morphological criteria are presented (Section 6.4.1), and, secondly, the tense/aspect system (Section 6.4.2). With this overview the composition of a complex verb stem with prefixes (Section 6.4.3), infixes and suffixes (Section 6.4.4) can be appreciated. All the affixes are given in order of their occurrence with respect to the root and to each other. There are five order classes of verbal prefixes and thirteen order classes of infixes and suffixes.

Derivation is next discussed in Section 6.5 as a preliminary step to the presentation of syntactic data in the sentence in Section 6.6. Finally several texts (Section 6.7) give examples of the morphology 'in action.'

6.1 Elements of Morphology

The building blocks of the morphological system of Mikasuki are roots and affixes, which are hierarchically classified in the following way:

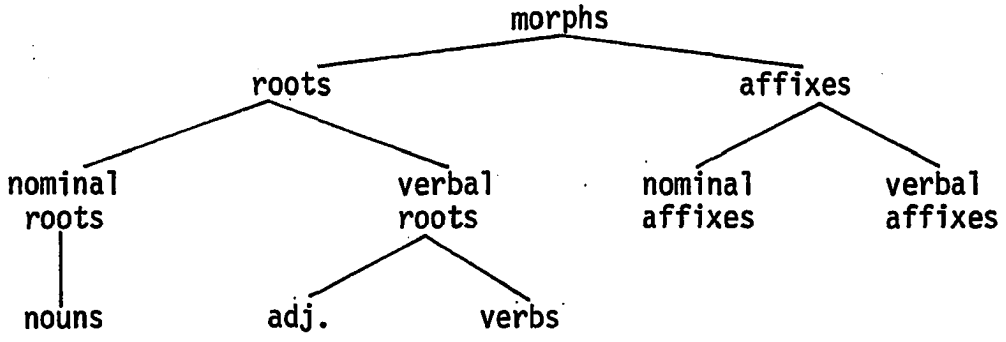


Figure 6.1 Classification of Morphs

This classification is based on both phonological and morphological criteria. Roots and affixes are distinguished phonologically; the three types of roots must be considered from the morphological as well as the phonological point of view.

6.1.1 Roots and Affixes

Morphs in Mikasuki vary in length from one segment (a consonant or a vowel) to four syllables. Affixes are restricted to the

lower end of this range, while roots may have any of the given canonical forms. Note, however, that one-segment roots are rare, and the few one-syllable roots found so far are interjections. No four-syllable verb roots and only a few four-syllable noun roots have been found to date.

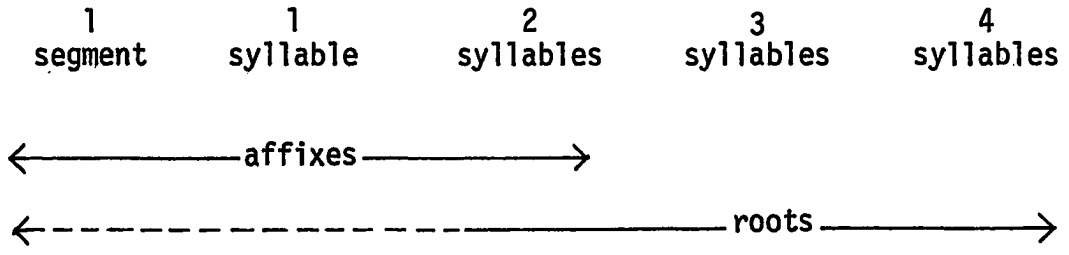


Figure 6.2 Canonical Forms of Roots and Affixes

Thus most affixes are shorter than two syllables, and most roots are two or three syllables in length. A further distinction is that the last element of most roots is a single consonant, to which the affixes are attached. The minimal root can be represented as S C-, where S stands for any of the five possible syllable types (discussed in the next section) and C for the single final consonant. All the roots have a final vocalic suffix.

	Affix		Root	
1 segment	/-h-/	'second past tense infix'	/-b-/	'nose' (always occurs with possessive prefix)
1 syllable	/-ho-/	'plural'	/hàw/	'okay' (interjection'

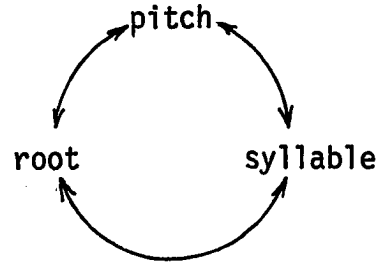
2 syllables	/-pik č-/ 'intensifier'	/-o: m-/ 'do, make'
3 syllables	_____	/à šo: w-/ 'clump of cypress trees'
4 syllables	_____	/t̃a: ˊtì ya: h-/ 'chicken'

6.1.2 Three Classes of Roots: Noun, Verb, Adjective

The root classes are distinguished by phonological morphological criteria.

6.1.2.1 Phonological distinctions

The criteria of pitch and syllable shape separate roots into nominals and verbals. Thus three strands of an interlocking whole which is pervasive throughout Mikasuki are joined--root class, syllable shape and pitch. The patterns of distribution of the three contrastive pitches, /high/, /mid/, and /low/, in uninflected roots divide these roots into nominals and verbals. The two broad root clases are further distinguished by restrictions on the type and ordering of the syllables which each root type may contain. (Adjectives, as a subclass of verbal roots, are separate from verbs mainly on morphological rather than phonological grounds.) The occurrence of significant pitch is also governed by syllable shape. Thus the chain of relationships is circular:



The discussion of this network of relationships will begin with the syllable, although any point on the circle could have been chosen. There are five possible syllable shapes in roots: CV, CV:, CVL, CVK and CVLC.[1] Two subclassifications of these syllable types are necessary to the discussion of nominal and verbal roots. The first divides syllables into long syllables and short syllables.[2]

Long	Short[3]
CV:	CV
CVL	CVC
CVLC	

Figure 6.3 Long and Short Syllables

Long syllables are those in which the peak and first coda positions are filled by long vowels or by sonorants, sounds which are normally produced with the vocal cords in the voicing position and with a relatively free passage of air through the nose or mouth. Short syllables are those with a short vowel in the nucleus. The coda position is filled by an obstruent (CVK) or is vacant (CV). The distinction between long and short syllables is based on the sonority of the coda. This, however, does not refer to the voicing or voicelessness of the final syllable element. /b/ is classified by the system as an obstruent, although it is voiced in most positions. Conversely, /h/ is classified as a sonorant, although it may be voiceless in syllable-final position (cf. Section 2.1.1 for further discussion of sonorants and obstruents).

The presence or absence of an onset consonant at the beginning of a syllable is irrelevant to the discussion of syllable types. In the preceding and following examples, canonical forms such as CV or CV: can be understood to subsume V or V: for word-initial syllables. Word-medial and word-final syllables always have an onset consonant.

In the second subclassification, syllables are divided into heavy and light syllables.

Heavy	Light
CV:	CV
CVL	
CVK	
CVLK	

Figure 6.4 Heavy and Light Syllables

Heavy syllables are those which contain a coda; the coda may be filled by vowel length, a sonorant or an obstruent. Light syllables are those with no coda.

Nominal roots contain any combination of the five basic syllable types, and the occurrence of contrastive pitch is governed by the long/short classification of syllables. Any of the three pitches, /high/, /mid/ or /low/, may appear in long syllables. Only /high/ and /low/ occur in short syllables. The correlation between pitch and syllable

shape in two- and three-syllable nouns is presented in Figures 6.5 and 6.6, respectively.

Two-syllable nouns:

Long syllable:	/high/	/mid/	/low/
CV:	/tá:t-ī/	/wā:k-ī/	/l̀ã̌:č-ī/
	'father'	'cow'	'crow'
CVL	/čóhy-ī/	/hālk-ī/	/hìnɣ-ī/
	'woman's name'	'wife'	'squirrel'
CVLK	/čó lónt k-ī/	//tānš kìl-ī//	
	'cricket'	/tãš kìl-ī/	
		'bluejay'	
Short syllable:			
CVK	/číšk-ī/	_____	/bàɣb-ī/
	'cheese' < 'cheese' (English)		'grape(s)'
CV	/táf-ī/	_____	/hòf-ī/
	'grasshopper'		'bee'

Figure 6.5 Pitch and Syllable Shape of Two-syllable Nouns

First Syllable: \ Second Syllable:	CV:	CVL	CVK	CV
CV:	/čo: ča: h-ī/ 'garfish' /hā: ba: č-ī/ 'mocking-bird'	/i: p-a-h č-ī/ 'eater' (derived noun) /čo: čam p-ī/ 'cucumber'	/to: tak w-ī/ 'swamp apple' /wa: kač b-ī/ 'patterned with small designs'	/o: la k-ī/ 'blueberry' /ni: ja k-ī/ 'night' /ko: wo š-ī/ 'bobcat'
CVL	/tal- co: b-ī/ 'palm tree' (compound noun) /wah ko: l-ī/ 'whippoor-will'	/on tay h-ī/ 'bridge' /lah k-a-h č-ī/ 'summer season' (derived noun)	/yol bak n-ī/ 'worm'	/hal pa t-ī/ 'alligator' /ham po l-ī/ 'morning'
CVK	/oš ta: p-ī/ 'lower leg'	/fap l-i-h č-ī/ 'wind' (derived noun)	/nak biš k-ī/ 'rib' /fošš- hat k-ī/ 'egret' (compound noun)	/loč ko t-ī/ 'boil' /ič ki n-ī/ 'bug' /hak ča b-ī/ 'ear'
CV	/ko na: w-ī/ 'money' /o wa: č-ī/ 'milk'	/a hal b-ī/ 'box' /to šoh m-ī/ 'cardinal' (bird)	/a čak p-ī/ 'eel' /ho not b-ī/ 'dark green or blue'	/no ko š-ī/ 'bear' (animal) /i fi t-ī/ 'prune'

Figure 6.6 Pitch and Syllable Shape of Three-syllable Nouns

Notice in Figure 6.6 that not all possible pitch patterns have been found for all the possible syllable combinations. For example, only three pitch patterns are given for CV: CV: roots where nine are theoretically possible.

Four-syllable nouns:

/šà kà pō: n-ī/	'buzzard'
/tã̄: tì yā: h-ī/	'chicken'
/ā: bā: hō: n-ī/	'chicken snake'

Figure 6.7 Four-syllable Nouns

Four-syllable noun roots such as the examples just given are relatively scarce; most four-syllable nominals are derived by the processes of affixation and/or compounding.

In contrast to the lack of restrictions on nominal roots, verbal roots (verbs and adjective) are constrained both in type and ordering of syllables. All verb roots are at least two syllables long, counting the final partial syllable. The final full syllable must always be heavy. This syllable, the prominent syllable, takes contrastive pitch when the verb is inflected in certain tenses. In three-syllable verb roots the syllable preceding the prominent syllable may be light or heavy. Thus the two-syllable verb root is represented as P C-, with P the obligatorily heavy syllable and C the final consonant.

Three-syllable roots are represented as S P C-, where S (the pre-prominent syllable) may be realized as CV, CVL or CVK. Adjective roots, as a subclass of verbals, are also governed by these syllable restrictions. The configuration of the verbals is dictated by the structure of the tense/aspect system (see Section 6.4.2).

Unlike the pitch of the nominal roots, the pitch of uninflected verbal roots is predictable. Only /mid/ or /high/ pitch are found on the heavy syllable. If this syllable is CV: or CVL then it has /mid/ pitch. If it is CVK it takes /high/ pitch. In three-syllable verbal roots the pitch of the first syllable is /low/ or /mid/--/low/ if the syllable is short (CV or CVK) and /mid/ if the syllable is long (CVL). Figures 6.8 and 6.9 give examples of two- and three-syllable verbals.

Adjective roots in citation form differ slightly from verb roots. They have only /high/ pitch on the prominent syllable. The pitch restrictions on the pre-prominent syllable of three-syllable adjectives are the same as those on three-syllable verbs. From the phonological point of view, therefore, verbs and adjectives are very close. For the morphological differences, see Section 6.1.2.2 below.

CV: C-	CVL C-	CVK C-
/i̱:l-i̱k/ 'come'	/hon̆ c̆-i̱k/ 'stop, quit'	/fáb l-i̱k/ 'blow'
/no̱: c̆-i̱k/ 'sleep'	/pa̱y l-i̱k/ 'rub'	/tóf k-i̱k/ 'spit'
/hó̱: t-i̱/ 'big' (plural)	/há̱y y-i̱/ 'hot'	/hók n-i̱/ 'heavy'

Figure 6.8 Two-syllable Verbal Roots

/-īk/ is the citation suffix on verb roots in the above examples, and /-ī/ is the citation suffix of adjective roots (and also of noun roots--as in Figures 6.5, 6.6, and 6.7).

First Syllable:	Second Syllable: CV:	CVL	CVK
CV	/wì tā: k-īk/	/ò pāh k-īk/	/čò náb l-īk/
	'be open'	'swim'	'shoot arrows'
CVK	/nàk nó: š-ī/	/òk šāh l-īk/	_____
	'old' (male)	'wash'	
CVL	/hōn lā: č-īk/	_____	_____
	'bury'		

Figure 6.9 Three-syllable Verbal Roots

In summary, noun roots differ from verbal roots in syllable shape, which includes both the sequence and type of syllable allowed, and in the pitches which may occur on these syllables. These phonological distinctions are presented in Figure 6.10 as follows.

Root Class	Permitted Combinations of Syllable Types	Subclasses of Syllable Types	Pitches Occurring in Citation Forms
Nominal	(S) S C-	Long/Short	/low,mid,high/
Verbal: Verb	$\left(CV \left\{\begin{matrix}\emptyset \\ C\end{matrix}\right\}\right) \quad CV \left\{\begin{matrix}: \\ C\end{matrix}\right\}$ C-	Heavy/Light	/high,mid/ (prominent syllable) /low,mid/ (pre-prominent syllable)
Verbal: Adjective	$\left(CV \left\{\begin{matrix}\emptyset \\ C\end{matrix}\right\}\right) \quad CV \left\{\begin{matrix}: \\ C\end{matrix}\right\}$ C-	Heavy/Light	/high/ (prominent syllable) /low,mid/ (pre-prominent syllable)

Figure 6.10 Phonological Distinctions between Noun, Adjective and Verb Roots

6.1.2.2. Morphological Distinctions

A root is classified as a noun, verb or adjective according to its affixal morphology, pluralization, and function in an utterance. These 'tests' of root classification supplement the phonological classification of the previous section. In the examples which follow, note that /-o̅:n-/ is related to /-o̅:t-om-/. See Section 3.1.4 for a discussion of the uses of /-o:t-om/ and /-o:n/.

	Verbal Inflection	Plural Affixes
Noun	-o̅:t-om-	prefix/suffix
	(-o̅:n-)	
Adjective	-o̅:t-om-/	infix/suppletion
	-om-	
Verb	-om-	infix/suppletion

Figure 6.11 Morphological Distinction between Noun, Adjective and Verb Roots

The first test is that of inflection in the 'neutral' tense (non-past, non-future). Verbs take the /-om-/ suffix. Noun stem formations must take the derivative suffix /-o̅:t-/ before /-om-/. Adjectives in this instance fall midway between verbs and nouns; they take

either suffix. Differences in meaning between adjectives with /-o:n/ and adjectives with /-om/ must be further investigated.

Noun

/wa:č-o:n/	[wa: čo:n]	'She's a mother'
/yat-fo:s-a:ɣ-o:t-om-li/	[yət fo: sa· ɣo: təm li]	'I'm a member of the Bird Clan'

Verb

/abašk-om-li/	[a bə·š kəm li]	'I'm gathering them (the vegetables)'
/čilintk-om/	[či li·nt kəm]	'She's quiet'

Adjective

/ča-čayh-om/	[čə čey həm]	'I'm tall'
/ča-čayh-o:n/	[čə čey ho:n]	'I'm tall'
/nàkn-o-t čayh-o:n/	'The man is tall'	
/pàh-o-t čayh-om/	'The grass is growing'	
*/nàkn-o-t čayh-om/	'The man is growing' (This sentence is not possible. It implies that the man is getting visibly taller while a person is watching.)	
/ča-wašiːl-o:t-om/	'I'm ticklish'	
/ča-wašiːl-om/	'I itch'	

/tákh-om/	[tə k^{h}ə̄m]	'It's wide'
/tã́kh-o:n/	[tə̃ŋk ho:n]	'It's wide'

The second test of root classification is how plurality is indicated. Noun roots take the /-ho-/ prefix or the /-ā:ɣ-/ suffix. The verbal roots- adjectives and verbs also may take /-ho-/, but as an infix. /-š-/ is another verbal plural infix. Verbals may also have suppletive plural forms.

Noun

/hō -pòšk-ō:č-ā:ɣ-ī/	[hō pūš kō· čā: ɣɨ̄ʔ]	'children'
/mìkšìk-ā:ɣ-ī/	[mɨ̄k šī ɣa: ɣɨ̄ʔ]	'Mexican' < 'Mexican' (English)

Verb

Infix:

/-ho:-/	/hi:,ho:,č-ó,h,m-ih/	[hī: hō: čom məh]	'They looked at it a week ago'
		/hi:č-/ (root)	
	/poč,hõ:,k-a-s/	[poč hõ: gəš]	'They are touching it'
		/počk-/ (root)	
/-š-/	/hopã̃,š,n-onk-a/	[hō pə̃·š nuŋ gā]	'They are singing'
		/hopa:n-/ (root)	

Suppletion:

/lok-ta:-pí:l-onk-om/	[lʊ̄k tá: pi·lə̄ŋ gə̄m]	'They fell off'
/lok-ta:-ɣá:l-om/	[lʊ̄k tā: ɣa: lə̄m]	'It fell off'
/ĩ:l-om/	[ĩ: lə̄m]	'She comes here'
/itõ:k-om/	[ī tũ· ŋm̄]	'They two come here'
/itĩ:č-om/	[ī tĩ:n čə̄m]	'They come here'

Adjective

Infix:

/-ho:-/	/ham,ho:,p-à-h-č-o:n/	[hə̄m hu: pāh čō:n]	'They're broken'

/hamp-/ 'broken'

/-š-/	/ã:-hí,š,ɣ-o:t-om-iš-i/	[ã: hɨš ɣò: tə̄ mī šī?]	

'I like them'

/hi:ɣ-/ 'like, good'

Suppletion:

/wĩkč-o:š-om/	[wĩŋk čō: šə̄m]	'It's small'
/pĩšk-o:š-om/	[pɨ̃š kò: šm̄]	'They're small'

Some roots are easily categorized as nominal or verbal. These are (1) and (2) in Figure 6.12 below. Others, which may be called the 'ambiguous roots,' are unspecified for root class on an abstract level. These are (3) and (4) below. Two types of ambiguous roots, and two non-ambiguous roots are shown in Figure 6.12.

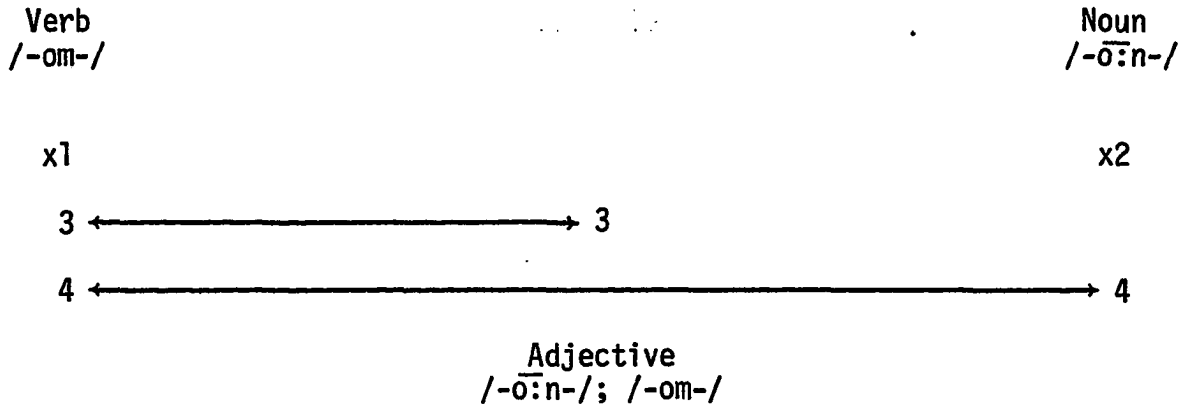


Figure 6.12 Ambiguous and Non-ambiguous Roots

Unambiguous noun roots (1) have contrastive lexical pitch, which is maintained when they are inflected with the verbalizing suffix /-o:t-/ followed by the suffix /-om-/.

/to̗:p-o̅:n/	[to̗: po:n]	'It's a chair'
/tá:t-o̅:n/	[ta: to̗:n]	'He's a father'
/halk-o̅:n/	[hə̗l go̗:n]	'She's a wife'

Unambiguous verb roots (2) have no lexical pitch; they acquire morphological pitch when they are inflected and always take the suffix /-om-/.

/witā:k-om/	[wi ta: gəm]	'It's open'
/apō:n-om/	[ə põ: nəm]	'He's talking'

The ambiguous roots take both /-ō:n-/ and /-om-/ as inflectional suffixes. Verb-adjective roots (3) seem very close in behavior to the adjective roots described above, as both take the same inflectional suffixes. Further investigation is needed to clarify the relationships between these two groups. A preliminary suggestion is that the /-ō:n-/ forms are stative and the /-om-/ forms active. However, there are also unambiguous verb roots with stative and non-stative forms, both of which take /-om-/. An example is /čā-nō:č-om/ 'I'm sleepy' (stative); /nõ:č-om-li/ 'I'm sleeping' (non-stative). This is further discussed in Section 6.4.1.4.

/-ō:n-/:

/an-kabā:l-ō:n/	'I'm cold'
/big šā:p-on im-on-čokō:l-ō:n/	'She's chairperson at Big Cypress'
/čalbi-wisā:k-ot an-noka-š-č-ō:t-om/	'My fingers hurt'
/hayóhk-ō:n/	'It's deep'

/-om-/:

/an-kabã:l-om/	'It's biting me'
/to:p-on on-čokō:l-om/	'She's sitting in the chair'

/čā-hiht-ōt ān-nokā:č-om/ 'My shoulder hurts'

/hayõhk-om/ 'It's getting flooded'

The last set of ambiguous roots are the noun-verb roots (4). On the morphological level they have no contrastive pitch; this they acquire only in context.

//-čokf-//	/čokf-i/	'rabbit'
	/čā:y-on ān-čõkf-om/	'My feet have cramps' (because eating rabbit meat is said to cause cramps)
//-alahk-//	/ām-alahk-i/	'my relatives'
	/bi:y-i ām-alahk-om/	'I've got some beer left'
//-layč-//	/layč-i/	'female genitals'
	/ti-layč-i:p-ik/	'have intercourse'
//-fišahk-//	/čā-fišahk-i/	'my life'
	/fišãhk-om/	'She's breathing'
//-pičikč-//	/pičikč-i/	'blood'
	/čā-pičikč-om/	'I'm bleeding'
//-a:b-//	/a:b-i/	'picture'
	/ã,m,b-om/	'It resembles'

6.2 Nouns

6.2.1 Noun Prefixes

6.2.1.1 Plural /hò-/

Plurality is marked optionally on nouns. If plurality is not indicated by an affix on the noun, it may appear as a plural stem on number-marking verbs:

/tayk-i čokõ:l-om/	'The woman is sitting' (singular form)
/tayk-i wĩ:k-om/	'Two women are sitting' (dual form)
/tayk-i ĩ:ɣ-om/	'Three or more women are sitting' (plural form)

Plural affixation may occur on nouns, but in different forms on animate and inanimate, human and non-human nouns. Human nouns have four plural forms (including as one form the unmarked plural):

/hò-tayk-i/	'women'
/hò-tayk-a:ɣ-i/	'women'
/tayk-a:ɣ-i/	'women'

The /hò-/ prefix is used only with human nouns. Nonhuman animates and inanimates have only two plural forms (including the unarked one), because the /hò-/ prefix cannot be used:

/kòwa:y-a:ɣ-i/	'horses'

/kowa:y-i ho:t-o:n/ 'The horses are big'

(/ho:t-/ is the plural form of /co:b-/ 'big')

/cik-a:ɣ-i/ 'houses'

/cik-i ho:t-o:n/ 'the houses are big'

6.2.12 Possession: person prefixes

Possession on nouns is indicated by two classes of person prefixes, the /ca-/ series and the /an-/ series, which are also used to indicate objects on verbs. The /ca-/ prefixes are used with the nouns belonging to the morphological class of inalienable possessions. This subset of nouns includes most (but not all) of the words referring to body parts, the spirit, and most (but not all) of the kinship terms. The /an-/ series of prefixes are used on nouns classified as alienable possessions, such as inanimate objects and animals. /an-/ prefixes are also used with body parts and kinship terms not appearing with /ca-/ prefixes.

The phonological rules which apply to person prefixes tend to maintain a CVCVCV syllable sequence. Metathesis operates in the direct object prefix series so that CV forms occur before nouns beginning in consonants and VC forms occur before nouns beginning in vowels. For example, the two dialectal forms for 'lower leg' would take the following forms of the first possession prefix:

/ac-osta:p-i/ [ə cos ta: pi?] 'my lower leg'

/ca-hosta:p-i/ [ca hos ta: pi?] 'my lower leg'

The final nasal segment of the indirect object prefixes also varies according to the initial sound of the following noun. Before closed consonants such as /p,č,m,l/ the final prefix nasal is assimilated in point of articulation to the following consonant. Before open consonants such as /f,x,h,w/ the nasal occurs as nasalization of the preceding prefix vowel. Before vowels the nasal is realized as /m/. (For further discussion of this see Sections 2.1.1 and 2.2.3.2).

/ča-/ series:

/ac-ósta:p-i/	'my lower leg'	/ca-cónosb-i/	'my heart'
/ic-ósta:p-i/	'your lower leg'	/ci-cónosb-i/	'your heart'
/po-ósta:p-i/[4]	'our lower leg(s)'	/po-cónosb-i/	'our heart(s)'

/an-/ series:

Closed Consonant	Open Consonant	Vowel
/an-čík-i/	/ã:-wá:č-i/	/am-áha:y-i/
'my house'	'my mother'	'my teacher'
/čin-čík-i/	/čĩ:-wá:č-i/	/čim-áha:y-i/
'your house'	'your mother'	'your teacher'
/pon-čík-i/	/põ:-wá:č-i/	/pom-áha:y-i/
'our house'	'our mother'	'our teacher'

/in-cik-i/ /i:-wa:c-i/ /im-aha:y-i/

'his, her, their house' 'his, her, their mother' 'his, her, their teacher'

Body Parts with /an-/:

/am-owa:c-i/ 'my breasts'

/an-tofk-i:k-i/ 'my saliva'[5]

/am-apon-k-i/ 'my language'

Body Parts with /ca-/:

/ca-halb-i/ 'my skin'

/ca-tokc-i/ 'my tears'

/ca-hocifk-i/ 'my name'

Kin Terms with /an-/:

/am-pos-i/ 'my mother's female kin' (man speaking)[6]

/am-posi-wa:c-i/ 'my father's sister' (man speaking)[8]

/an-nakn-i/ 'my husband' (woman speaking)

/am-o:c-o:c-i-tayk-i/ 'my sister's daughter' (woman speaking)

/am-o:c-o:c-i/ 'my sister's son' (woman speaking)

Kin Terms with /ca-/:

/ca-pos-i/ 'my father's female kin' (man speaking)[7]

/ca-kopa:n-i/ 'my father's brother' (man speaking)[9]

/ca-halk-i/ 'my wife' (man speaking)

/ac-oc-tayk-i/ 'my daughter' (woman speaking)

/ac-o:c-i/ 'my son' (woman speaking)

6.2.2 Noun Suffixes

6.2.2.1 Diminutive: /-o:č-/

This suffix is an extended use of the root /-o:č-/ 'male offspring,' as in the example /ač-o:č-i am-i:ɣ-owa/ 'I've got a son.' It may be used as a diminutive on any noun, animate or inanimate, even on itself (see /ač-o:č-o:č-i/ above).

/an-ya:t-o:č-i/	[ən ya: to· čɨʔ]	'my baby'
/kowa:y-o:č-i/	[kō wa: yo· čɨʔ]	'young horse'
/čik-o:č-i/	[či ɣo: čɨʔ]	'small house'

6.2.2.2 Plural: /-a:ɣ-/

As mentioned above in Section 6.2.1.1, this suffix may be used on any noun. It may also co-occur with the plural prefix /ho-/.

/tayk-a:ɣ-i/	[tey ga: ɣɨʔ]	'girls'
/ho-tayk-a:ɣ-i/	[hō tey ga: ɣɨʔ]	'girls'
/kowa:y-a:ɣ-i/	[kō wa: ya: ɣɨʔ]	'horses'
/fõ:s-o:č-a:ɣ-i/	[fõ: so: ča: ɣɨʔ]	'little birds'
/tal-a:ɣ-i/	[tə la: ɣɨʔ]	'rocks'

6.2.2.3 Loan Words from English: /-k-/

This suffix is found on some English loans. It occurs on both proper and common nouns. To date no meaning has been found associated with it.

/ri:ta-k-i/	[ri: ta gɨʔ]	'Rita' (name)
/jim-k-i/	[jim gɨʔ]	'Jim' (name)
/ti:vi:-k-i/	[ti: vi: gɨʔ]	'T.V.'
/čis-k-i/	[čis kɨʔ]	'cheese'

6.2.2.4 Vocative: /-a:/, /-i/, Ø

These suffixes are used when calling loudly to a person at a distance or in addressing them directly in a lower voice.

/ri: ta:-k-a:/	[ri: ta: χaʔ]	'Rita!'
/ta:t-i/	[ta: ti:ʔ]	'Father!'
/i:kos-Ø/	[i: go·š]	'Aunt' (from the referential /i:ko:š-i/)
/kasap-Ø/	[kə sa:p]	(calling to a woman named /kàsapíhč-i/)

6.2.3 Compounding

Mikasuki speakers are very creative in inventing compounds to refer to cultural borrowings. Any combination of the three root classes may be used. Verbal, nominal and derivative affixes also occur in compounds.

6.2.3.1 Noun/noun compound

/sanikc-i-lamp-i/	[sə nɨk čɨ ləm pɨʔ]	'cantaloup
/sanikc-/	'toad'	
/lamp-/	'stomach'	
/asp-i-halb-i/	[əs pɨ həl bɨʔ]	'cornflakes' (breakfast cereal)
/asp-/	'corn'	
/halb-/	'skin'	
/ok-i-wa:k-i/	[o gɨ wa: gɨʔ]	'sea cow, manatee'
/ok-/	'water'	
/wa:k-/	'cow' < 'vaca' (Spanish)	
/yakn-a:b-i/	[yəg nə: bɨʔ]	'map'
/yakn-/	'ground'	
/a:b-/	'picture'	

6.2.3.2 Noun/adjective compounds

/yos-takw-i/	[yos təg wɨʔ]	'ironhead' (wood ibis)
/yo:s-/	'head'	
/takw-/	'dried up'	

/ah-komosk-i/ [ah ku mus kɨʔ] 'sweet potato'

/a:h-/ 'potato'

/komosk-/ 'sweet'

/i:y-ik-co:b-i/ [i: yɨk co: bɨʔ] 'big toe'

/i:y-/ 'foot'

/i:k-/ 'mother'

/co:b-/ 'big'

6.2.3.3 Noun/nerb compounds

/ilb-is-bana:-k-i/ [il bis bə na: gɨʔ] 'bracelet'

/ilb-/ 'hand'

/-is-/ 'instrumental affix'

/bana:-/ 'tie'

/-k-/ 'intransitive marker on verb roots'

/has-akiɣ-k-i/ [hə sə gɨɣ kɨʔ] 'watch'

/ha:s-/ 'moon, month, time'

/akiɣ-/ 'measure'

/-k-/ 'intransitive'

/yat-hatk-apo:n-i/ [yə tʰət kʰə po: nɨʔ] 'English language'

/ya:t-/ 'people'

/hatk-/ 'white'

/apo:n-/ 'speak'

6.2.3.4 Verb/verb compounds

/anc-ik-s-oksah-l-i:k-i/ [ən cɨk suk sah li: gɨʔ] 'washing machine'

/anc-/ 'wear'

/-ik-/ 'infinitive affix'

} /anc-ik/ 'clothes'

/-(i)s-/ 'instrumental affix'

/-oksah-/ 'wash'

/-l-/ 'transitive affix'

/-i:k-/ 'infinitive affix'

/apon-k-hĩ:ɣ-a-ha:y-a-h-k-i/ [ə põŋk hĩ: ɣə ha· yah kɨʔ]

'preacher'

/apo:n-/ 'speak'

/-k-/ 'intransitive suffix (?)'

} /apon-k-i/ 'language'

/hĩ:χ-/ 'good'

/-a-/ 'with, to the benefit of'

/ha:y-/ 'tell'

/-a-/ 'stem vowel'

/-h-/ 'completive'

/-k-/ 'intransitive'

/poko-tokl-on-tocin-ik-sama:y-i/

[pu go tog lun to či nɨk šə ma: yɨʔ] 'twenty-three'

/poko:(l)-/ 'ten'

/tokl-/ 'two'

} /poko-tokl-/ 'twenty'

/tocin-/ 'three'

/-ik-/ 'infinitive affix'

/sama:y-/ 'enough'

6.3 Person Affixes

There are three sets of person affixes, the /-ča-/ series and the /-an-/ series, which are prefixes, and the /-li-/ series, which are suffixes. The use of the prefixes as possessives on nouns was discussed above in Section 6.2.1.2. These prefixes are also used to

indicate the direct and indirect objects of verbs, respectively. The /-li-/ suffixes act as the subjects of verbs which can also take objects. These are the basic uses of the person affixes. Their role in the subclassification of verbs will be discussed in Section 6.4.1.4.

1st sg.	-ča-,-ač-	-aN-,-a:-,-am-	-li-
2nd	-či-,-ič-	-čiN-,-či:-,-čim-	-čka-
3rd	-i-, ø	-iN,-i:-,-im-	ø
1st pl. (exclusive)	-po-,-ip-	-poN-,-po:-,-pom-	-i:ka-
1st pl. (inclusive)	(no plural inclusive prefixes have been found)		-o-

Figure 6.13 Person Affixes

6.3.1 Direct Object Prefixes: /-ča-/ Series

1st sg.

/ča-ka:č-onka/ [čə ga: ču ga] 'She told me'

/opakš-on ča-hi:č-a:laka/ [o pək šən ča hi· ča: lə gə]

'He'll see me tomorrow'

/ač-apo:t-i-:č-om-i/ [ə ča po ti: čə mi]

'She's thinking of me'

2nd

/čí-ká:č-onka-li/ [čí ga: čoŋ gə lɛ] 'I told you'

/opaks-on čí-hi:č-á:la:-li/ [o pək šən čí hi· ča: la· li]

'I'll see you tomorrow'

/ič-apo:t-ĩ:-ho-č-om-ika/ [i ča po tĩ: ho cə mi ga]

'We're thinking of you all'

3rd

/i-hakl-onk-i:ka/ [i· həŋ luŋ gi: gā] 'We ask him'

/Ø-hĩ:č-om-i:ká/ [hĩ: tsm i· gā] 'We see her/them'

1st pl.

/po-ká:č-onka/ [po ga: čoŋ ga] 'She told us'

/opaks-on po-hi:č-á:laka/ [o pək šən po hi· ča: lə gə]

'She'll see us tomorrow'

/ip-apo:t-ĩ-:č-om-toká/ [i pə po tĩ: čəm to ga]

'They're thinking of us'

6.3.2 Indirect Object Prefixes: /-an-/ Series

1st sg.

/an-ka:č-onka/ [əŋ ga: čuŋ ga] 'She told him for me'

/čá-lb-on ã:-yitabl-om/ [čəl bun ã: yi təb ləm]

'He hit my foot (to me)'

2nd

/čim-ahakn-i:p-om-li/ [čɪ mə həg ni: pəm li]

'I'm listening to you'

/či:-yitabl-om-li/ [či: yi tə^{m}b ləm li] 'I hit you'

3rd

/i:-hamp-i:m-towa/ [i: həm pi:m to wa]

'It got broken on her* just now'
(*maleficiary)

/i:f-it im-ik-ti-kšah/ [i: fɪt i mɪk tɪk šah]

'Don't give it to the dog'

1st pl. /pom-i:k-om-ič/ [po mi·ŋə mit^{s}] 'Are you giving it to us?'

6.3.3 Subject Suffixes: /-li-/ Series

1st sg.

/hi:č-om-li/ [hi: čəm li] 'I'm looking now'

/hopa:n-i-li-wa/ [hu pa: nɪ li· wa?] 'I can sing'

2nd sg.

/hi:č-om-i-čk-a/ [hi: čə mič ka] 'You (sg.) are looking now'

/hopa:n-i-čk-owa/ [hu pa: nɪč go wa?] 'You (sg.) can sing'

3rd	/hĩ̃:č-om-Ø	[hĩ̃: čəm]	'She, he, it, they are looking now'
	/hopã̃:n-Ø-owa/	[hu pã̃: no wã?]	'He,she,it can sing'
1st pl.	/hĩ̃:č-om-i:ka/	[hĩ̃: čə mi· gã]	'We (exclusive) are looking now'
	/hopã̃-š-n-i:k-owa/	[hu pəš ni· go wã?]	'We (exclusive) can sing'
	/hĩ̃:č-om-o/	[hĩ̃: čo mo]	'We (inclusive) are looking now'
2nd pl.	/hĩ̃:č-om-a-čk-a/	[hĩ̃: čə mač kã]	'You (pl.) are looking now'
3rd pl.	/hopã̃-š-n-Ø-owa/	[hu pə̃·š no wã?]	'They (du.) can sing'
	/hopa-š-n-ã̃-:č-Ø-owa/	[hu pəš nã̃: čo wã?]	'They (pl.) can sing'

6.4 Verbs

Verbs have developed a very complex inflectional system. The following is an overview of some aspects of verbal morphology, which may be considered a guide to future research, rather than a definitive statement on the subject. Section 6.4.1 classified verbals (verbs and adjectives) on the bases of plural formation, stem-vowel class and

transitivity. Section 6.4.2 presents the tense/aspect system. The order classes of verbal prefixes and suffixes on inflected verbs are given in Sections 6.4.3 and 6.4.4.

6.4.1 Subcategories of Verbs

6.4.1.1 Plural formation

Plurality may be indicated in four ways on verbal roots--by infixation, by suffixation, by suppletion, or by a combination of the preceding. In addition, some verbal roots do not have separate singular or plural forms. In the examples below, the root is underlined once, and the affixes twice.

Infixation:

/-ho-/	/kabl-om/	[kəmb ləm]	'It is biting many times'
	/kap-ho-l-om/	[kəp ho· ləm]	'They are biting many times'
/-š-/	/ɣanaːč-om/	[ɣə naː čəm]	'She is taking it out'
	/ɣana,š,š-om/	[ɣə nəš· šəm]	'She is taking them out'

Suppletion:

Three stems:
stem$_1$; stem$_2$; stem$_3$

/ɣiniːk-om/	[ɣi niŋ gəm]	'He's running'
/palaːk-om/	[pə ləŋ gəm]	'They (du.) are running'
/mataːk-om/	[mə təŋ gəm]	'They (pl.) are running'

Two stems plus fixation:
stem$_1$; stem$_2$; stem$_2$ + stem V + /-:č-/

/tala:k-om/	[ta la: gəm]	'She's lying down'
/šalk-om/	[šəl gəm]	'They (du.) are lying down'
/šalk-a-:č-om/	[šəl ga: čəm]	'They (pl.) are lying down'

stem$_1$; stem$_2$; stem$_1$ + stem vowel + /-:č-/

/i:l-om/	[i: ləm]	'She is coming here'
/ito:k-om/	[i to· ŋəm]	'They (du.) are coming here'
/i:l-i-:č-om/	[i: li:n čəm]	'They (pl.) are coming here'

Combination:

Stem$_1$; stem$_1$ + /-š-/; stem$_1$ + stem V + /-:č-/

/ata:χ-om/	[ə ta: χəm]	'He knows'
/ata,š,χ-om/	[a təš χəm]	'They (du.) know'
/ata,š,χ-a-:č-om/	[ə təš χa: čəm]	'They (pl.) know'
/apo:n-om/	[ə po: nəm]	'She's talking'
/apo,š,n-om/	[ə pə·š nəm]	'They (du.) are talking'
/apo,š,n-i-:č-om/	[ə puš ni: čəm]	'They (pl.) are talking'

No Change:

/hĩ:c-om/	[hĩ: cəm]	"She's looking; they're looking'

6.4.1.2 Stem vowels

Every verbal root has associated with it one of two possible stem vowels: /-a-/ or /-i-/. The stem classification of a root is determined by adding to the root one of the following stem-forming suffixes (which must be preceded by a stem vowel): the causative /-:č-/, the plural /-:č-/ or the nominal derivative /-hč-/. In the case of verbs with suppletive forms, the stem class of the singular stem may differ form that of the plural stem.

/-a-/ stem roots:

/paka:l-a-:č-i/	'blossom' (pl.)
/ha:y-a-:č-/	'raise' (pl.)
/takaʔk-a-hč-/	'work'
/folohk-a-hč-/	'be around'
/no:h-a-:č-/	'cook' (caus.)
/a:b-a-:č-/	'take a picture' (root: /à:b-/ 'picture')
/ipt-a-:č-/	'freeze' (root: /ìpt-/ 'ice')

/-i-/ stem roots:

/yaka,š,l-i-:č-/	'fly' (pl.)
/apo,š,n-i-:č-/	'talk' (pl.)
/apo:t-i-:č-/	'think about' (pl.)
/fa:y-i-hč-/	'hunt'
/tabakš-i-:č-/	'unfold, take out dents' (/tabakš-/ 'straight')
/fayhn-i-:č-/	'drain' (/fayhn-/ 'flow')

Suppletive stems:

	Singular	Dual	Plural
'sit'	/čoko:l-/	/wi:-k-/	/wi:-k-a:-č-/
	'sit'		'sit' (plural)
'set'	/čoko:l-i-:č-/	/wi:-l-/	/wi:-l-i:-č-/
	'set' (caus.)		'set' (caus. pl.)
'big'	/čo:b-a-:č-/	(no dual)	/ho:t-a:-č-/
	'cause to get bigger'		'cause to get bigger'

6.4.1.3 Intransitive /-k-/; transitive /-l-/

Some verbal roots have an overt indication of transitivity. /-k-/ marks intransitives and /-l-/ transitives, as in the examples /wi:-k-/ 'sit' and /wi:-l-/ 'set' in Section 6.4.1.2 above. Other roots are transitivized by the causative suffix /-:č-/, but are not otherwise shown to be transitive, as in the derivation of /a:b-a:-č-/ 'take a picture' from /á:b-/ 'picture.'

/fás-k-i/	'sharp'	/fás-l-om/	'She's making (it) sharp'
/yíɣ-k-om/	'It's burning'	/yíɣ-l-om/	'He's burning it'
/šokó:-k-om/	'It's dry'	/an-šokó:-l-om/	'She dried it for me'
/amb-om/	'It resembles'	/a:b-á-:č-om/	'She's taking a picture'

6.4.1.4 Stative and active verbs

Figure 6.14 shows the classification of inflected verbs in terms of person affixation, following West, 1974a, pp. 5-7. Statives are those inflected only with person prefixes to indicate the subject; actives take only person suffixes to mark the subject. Classification by person prefix, which indicates object on transitive verbs, is found on the vertical axis. Transitive active verbs occur with either direct object prefixes (the /-čá-/ series), indirect object prefixes (the

/-ān-/ series), or with both sets of prefixes. Intransitive active verbs are those which cannot take person prefixes. Statives likewise are classified by prefix. Direct statives take the /-ča-/ series of prefixes and indirect statives take the /-ān-/ series. Some statives can also take both sets.

6.4.1.4.1 Transitive active verbs. As can be seen in Figure 6.14, there are four types of transitive active verbs.

/-ča-/ series:

This group exemplifies the simple direct object with a verb (see Section 6.3.1 for further examples). If the direct object is third person, no prefix appears on the verb, although an overt third person may occur in the utterance. This is shown in the last example.

/ac-aɣ-a-:č-i-:č-om/	[ə cə ɣa: či: čəm]	'He sent me'
/s-ac-ayy-om/	[sə cey yəm]	'She's driving me'
/hop-ča-ɣa:n-ã-:č-om/	[hop cə ɣa: nã: čəm]	'She made me go out'
/horh-on ø-apo:t-i-:č-om-li/	[hor hən a· po· ti: čəm li]	'I am thinking of Jorge'

/-ān-/ series:

These verbs, like the previous ones, only take one object, which is realized by the /-ān-/ series of prefixes. On these verbs the prefixes may also realize the ideas of comparison or separation.

	/-čā-/ Prefixes	/-ān-/ Prefixes	Either Series of Prefixes	Both Series of Prefixes	No Person Prefixes
Actives + Subject Suffixes	/š-āč-ayy-om/ 'She's driving me'	/ā:-hasā:y-om/ 'She envies me' /in-čayh-om-li/ 'I'm taller than she is' /an-čoko:l-i:p-om/ 'She's been staying with me'	/čā-kohl-om/ 'It scratched me' /an-kohl-om/ 'She's scratching me'	/ač-im-banā:-l-om/ 'She's tying it for me'	/čokō:l-om-li/ 'I'm sitting down'
Statives - Subject Suffixes	/i-wan-î:-m/ 'She's tired' /čā-čayh-om/ 'I'm tall' /lok-čā-taɬa:l-om/ 'I fell off'	/im-ayō:b-om/ 'She's lonely'	/čā-hayy-i:k-o:n/ 'I'm getting a fever' /ā:-hayy-i-h-č-o:n/ 'I'm hot'	/an-čā-bakš-in-i:k-om/ 'I've got a cold'	/fabl-om/ 'It's windy' /ɬa:m-om/ 'one'

Figure 6.14 Verb Classification by Person Affixes, after West, 1974a:5-7

Object:

/ĩ:-witĩhk-om/	[ĩ: wi tĩŋ kəm]	'She's mad at her'
/s-am-aha:y-om/	[sə mə ha: yəm]	'He teaches me ; shows me how'
/ã:-hasã:y-om/	[ã: hə sã: yəm]	'She envies me'

Comparison:

/in-cayh-om-li/	[in cey həm li]	'I'm taller than she'
/an-cayh-om/	[ən cey həm]	'He's taller than I'
/ã:-hamohc-om/	[ã: hə moh cəm]	'She's older than I'

Separation:

/am-matã:k-om/	[əm mə tə̃·ŋəm]	'They're running from me'

'Either' series:

Either the /-ca-/ prefixes or the /-an-/ prefixes may occur with these roots. There are three subclasses of roots. In the first the distinctions between the root with the /-an-/ prefixes and the root with the /-ca-/ prefixes is apparently semantic and idiosyncratic to each verb. Further examples must be collected to determine the implied contexts of the examples. In the second the indirect object prefixes indicate a beneficiary or maleficiary (the recipient of some misfortune).

In the third usage the direct object prefixes show rather unspecified actions, such as 'She hit me (place unspecified).' Indirect prefixes are used when the act is more specific, for example, 'She hit my hand.' The second and third usages are very close. /an-ha:l-on s-ont-om/ can be translated as 'She brought me the cup (beneficiary)' or 'She brought my cup (possessive).'

1st usage:

	/-ca-/		/-an-/
/ca-kohl-om/	'It (an animal with claws) scratched me'	/an-kohl-om/	'She's scratching me (because I itch)'
/ca-hi:c-om/	'She's looking at me' (neutral--no special emphasis)	/an-hi:c-om/	'She's looking at me' (a startled reaction--where's she looking?)
/ca-ha:y-om/	'She teaches me' (context?)	/an-s-aha:y-om/	'She teaches me' (context?)

2nd usage: (/-an-/ only)

/am-poloc-l-i:c-om/ 'He made it round for me' (beneficiary)

/an-yiɣ-l-om/ 'She's burning my (papers)' (maleficiary)

3rd usage:

	/-ča-/	/-an-/
/ac-oksahl-om/	'She washes me'	/ča-tokos-on am-oksahl-om/ 'She's washing my hair to me'
/ča-payl-om/	'She's rubbing me'	/ča-lb-on am-payl-om/ 'She's rubbing my hand to me'
/ča-soko:-l-om/	'He dried me'	/a:-soko:-lom/ 'He dried it for me'

'Both' series:

Some transitive active verbs can take two objects which are both realized as person prefixes.

/ac-im-banã:l-om/ 'She's tying it for me'

/im-im-banã:-l-om-li/ 'I'm tying it for her'

6.1.4.1.4.2 Intransitive active verbs. These verbs do not take object prefixes. Person is indicated by person suffixes only.

/čoko:l-om-li/ 'I'm sitting down'

/no:č-ick-o/ 'Are you sleepy'

/i:l-ĩ:-li/ 'I arrived a while ago'

6.4.1.4.3 Stative verbs. Stative verbs are those realizing subject by person prefix only. Like the active verbs, they are of four types--those taking the /-v̆c̄a-/ prefixes, those taking the /-ān-/ prefixes, those which can take either set of prefixes, and those which take both sets at the same time. Semantically the stativesare set off from the actives; the former refer to bodily states such as hunger or cold, or to non-volitional mental conditions such as fright or anger. Possession is also expressed by statives.

/-v̆c̄a-/ series:

In this set of verbs, some require an overt third person prefix; others do not require the realization of third person on the syntactic level. This can lead to ambiguity. //no:v̆c̄-ī:p-om/ may represent either //Ø-no:v̆c̄-ī:p-om// 'He's sleepy' or //no:v̆c̄-ī:p-om-Ø// 'He's sleeping' (from West, 1974a:7).

/hā:l-ōn ī-bā:n-om/ 'He wants a cup' (West, 1974a:7)

/ī-wan-í:-m/ 'She's tired'

/s̆-ī-bī:v̆c̄-īk honv̆c̄-í:-m/ 'She got tired of that'

/Ø-ní:h-ō:n/ 'He's fat'

/Ø-wasṽ̆ī:l-om/ 'She itches'

/-ān-/ series:

These verbs express physical or mental condition, possession and the maleficient case.

/an-kaba:l-o:n/ 'I'm cold'

/im-ayõ:b-om/ 'He's lonely'

/ča-nokb-it an-no:k-a-:č-om/ 'I have a sore throat'

/ifč-i in-tala:-k-om/ 'She's got a gun'

/foksi:k-i ã:-salk-a-:č-om/ 'I've got some shirts left'

/ponč-i am-ay-ti-m/ 'I don't have any soda'

/is-sin-i-h-k-i ã:-hamp-om/ 'My car is torn up' (maleficiary)

'Either' series:

Like the transitive verbs in this category, these verbs have several usages. In the first the distinction in the use of the /-ča-/ prefixes and the /-an-/ prefixes is apparently semantic rather than syntactic. In the second usage, the distinction is syntactic; /-ča-/ prefixes are used in the absence of an overt object and /-an-/ prefixes occur if an object is present. Notice that the third person direct object prefix must be used with some verbs and must not be used with others.

1st usage:

/ča-hãyy-i:k-o:n/ 'I'm getting a fever'

/ã:-hãyy-i-h-č-o:n/ 'I'm hot'

2nd usage:

/ča-wasi:l-om/	'I itch'
/ča-ʔokf-ot a:-wasi:l-om/	'My arm itches'
/ø-wasi:l-om/	'She itches'
/in-lokf-ot i:-wasihl-om/	'Her arm itches'
/i-wan-i:-m/	'She's tired' (/-i-/ 3rd person /-ča-/ series)
/ʔokf-ot im-awan-i:-m/	'Her arm is tired'

'Both' series:

These stative verbs take both prefix series at the same time. Unlike the transitive verbs of this type, stative double-object verbs show reduplication of all persons except the third person.

/pom-po-na:k-o:n/	'It's ours'
/čin-či-na:k-o:n/	'It's yours'
/in-na:k-o:n/	'It's his,hers'
/an-ča-baks-in-i:k-om/	'I've got a cold'
/halpat-i-n an-ča-maʔa:l-o:t-om-isi/	'I'm afraid of alligators'

6.4.1.4.4 Impersonal verbs. These stative verbs take no person affixes. They occur only in the third person and describe meteorological events or are numbers.

/ok-õ:b-om/ 'It's raining'

/fabl-om/ 'It's blowing; it's windy'

/tókl-om/ 'two'

6.4.2 Tense/Aspect

Mikasuki has three tenses, present, past, and future, and at least three aspects, neutral, completive, and progressive. There are four degrees of past time, from the immediate past to the remote, and two degrees of future time, the immediate future and the remote future. At present three aspects are known. They apparently occur in all tenses, and may in some cases co-occur with each other.

The tense/aspect system is represented by Figure 6.15. Tense is located on the vertical axis and aspect on the horizontal. The present tense and the neutral aspect are the zero points of their respective continua.

Inflected verbs may be divided into present and non-present stems based on three morphological criteria. These are the location of the prominent syllable with respect to the stem boundary, the pitch of the prominent syllable, and the affixes found on the inflected verb. Every inflected verb has one prominent syllable, which carries the significant pitch and is stressed. In the present tense (any aspect) and in the neutral past tenses, the prominent syllable is the last full syllable before the stem boundary (which is indicated in the examples by =). In the future tenses and in the other past tenses, the prominent syllable is the first full syllable following the stem boundary. This

is shown in Figure 6.16 below, in which the portion of the verb which contains the prominent syllable is underlined and in capital letters.

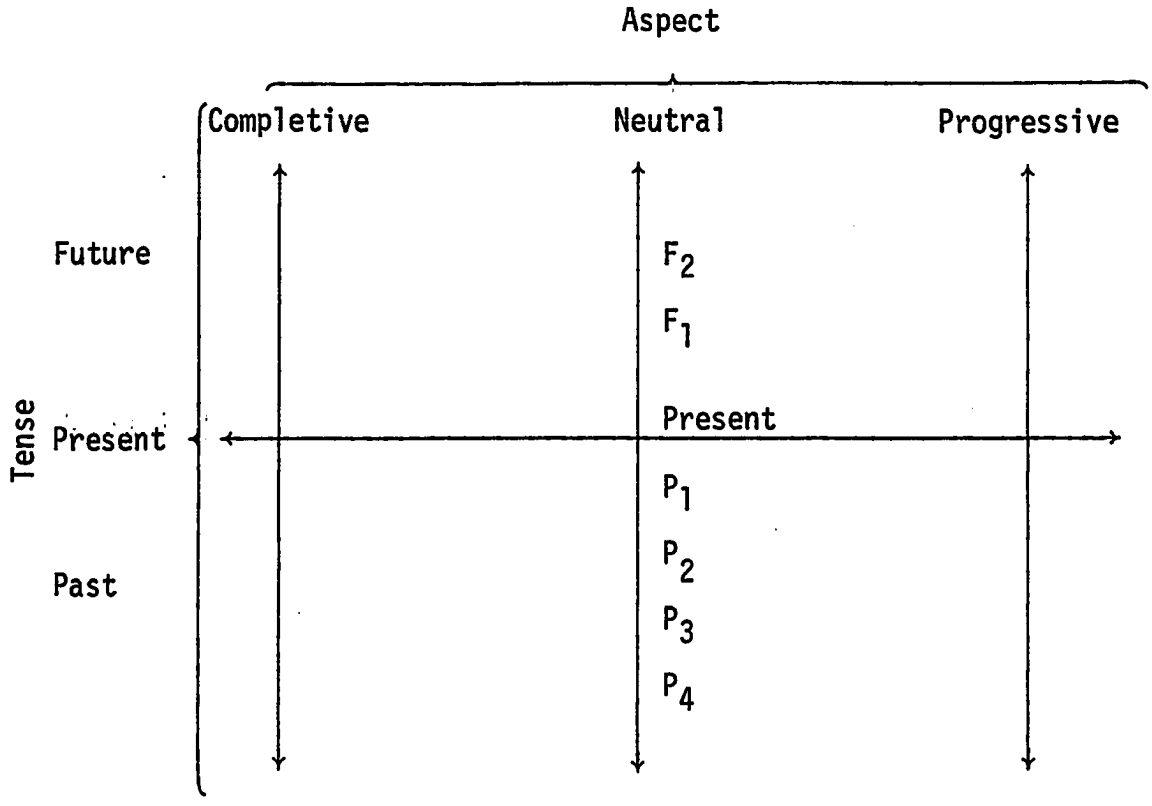


Figure 6.15 The Tense/Aspect System (Note: F = future; P = past; the higher the integer, the more remote the tense is in time)

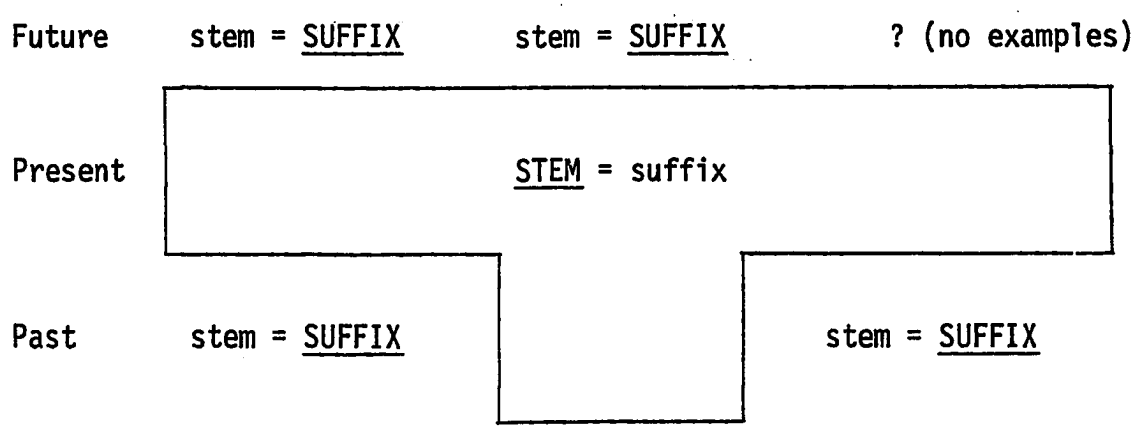


Figure 6.16 Location of the Prominent Syllable in Inflected Verbs

The prominent syllable may or may not contain the tense-marking affixes, as can be seen above, but it will always have either /high/ or /mid/ pitch. /mid/ pitch is found on verbs in the present and past neutral aspect and on present completive and present progressive forms. /high/ pitch occurs on all the other inflected verbs, namely the future, past-completive and past-progressive examples. Because the present tense and the immediate past tense both contain the suffix /-om-/, pitch height and pitch location are the only features distinguishing some of these forms. Several sets of near-minimal pairs illustrating this are given below. /-ó/ is the question suffix. /~/ indicates possessive.

Present-Progressive	Present-Completive	Past-Completive
/hi:c= om-li/	/hi:c=om-li/	/hi:c=om-li/
'I'm looking now'	'I looked just now'	'I have looked'
/takaɁk=om-li/	/takaɁk=om-li/	/takaɁk=om-li/
'I'm working now'	'I just started working'	'I worked six days ago'

	Statement	Question
Present:	/imp=onka/ 'She's eating'	/imp=onk-ó/ 'Is she eating?'
Past:	/imp=onka/ 'She was eating'	/imp=onk-ó/ 'Was she eating?'

6.4.2.1 Present tense

The present tense is characterized by the location of the prominent syllable before the stem boundary. Pitch on the prominent syllable is /high/ for the completive aspect, and /mid/ for the neutral and progressive aspects. Progressive is indicated by nasalization on the prominent syllable, by the suffix /-onka-/ or by both these means. Either /high/ pitch on the prominent syllable, the suffix /-i:p-/ or both of these indicate the completive aspect. The fact that completive and progressive morphemes may co-occur on inflected verbs must be studied further.

Neutral-present:

/ay-i:k-on čoko:l=om/ 'It's (sitting) on the table'

/fisahk=om/ 'She's alive'

/ka:f-on ča-ba:n=om/ 'I want some coffee'

/čim-ahakn-i:p=om-li/ 'I'm listening to you' (neutral-completive)

/čim-/ '2nd person indirect object'; /-a-/ 'to';

/-hakn-/ 'listen'' /-i:p-/ 'completive'; /-om-/ 'verbal suffix';

/-li/ 'first person singular subject suffix'

Progressive-present:

/to:p-on on-coko:l=om/	'She's sitting on the chair'
/fisahk=om/	'She's breathing'
/im-apt=om/	'He's waiting for someone'
/cawl-i:p=om/	'He's writing' (progressive completive)
/hi:c=om-li/ ~ /hi:c=onka-li/	'I'm looking now' (progressive-progressive'

Completive-present:

/honc=om/ ~ /honc-i:p=om/	'She's stopped; they've broken up' (completive-completive)
/cawl-i:p=om/	'He wrote'
/hi:c=om-li/	'I saw (it) just now'
/ill-i:p=om/	'He died' (completive-progressive)

It is not clear whether the above completive forms should be considered as present or immediate past. They have been called present because the prominent syllable precedes the stem boundary. However, this means that there are no examples of neutral past one forms.

6.4.2.2 Future tense

There are two future tenses, the immediate (future 1) and the remote (future 2). Future one is indicated by the /-a:-/ suffix and

future two by high pitch on the stem vowel and the /-laka-/ suffix. The prominent syllable has /high/ pitch and follows the stem boundary. There are two forms of the immediate future, one with the /-om-/ suffix and one without; this distinction must be explored further.

Neutral-Immediate future:

/fayhn=á:-m/	//fayhn=á:-om//	'(The water) is going to flow (because the dam is opening now)'
/hi:č=á:-m-li/ ~ /hi:č=á:-li/		'I will see'
/tolopk=á:-li/		'I'm going to jump (said standing on the edge of the table)'

Completive-Immediate future:

/čoko:l-i:p=á:-m-li/	'I'm going to stay'
/ill-i:p=á:-m/	'He's (in the process of) dying'

Neutral-Remote future:

/fayhn=í:laka/	'(The water) will flow (it's raining and soon the water will be rising here)'
/hi:č=á:laka/	'She'll see'

Completive-Remote future:

/ī-wan-i:p=alá:/ ~ /ī-wan-i:p=á:laka/	'They'll be tired (if they stay up late tonight)(said in the afternoon)'

/ci:-hi:c=ala:-li/ 'I'll see you (a leave-taking expression)

Notice in the last examples that /-ala:-/ and /-a:laka-/ are alternate forms of the remote future suffix. /-ala:/ is used with the first singular /-li-/ suffix and on verbs with person prefixes. /-laka/ occurs on verbs with the other person suffixes, including the unmarked third person.

6.4.2.3 Past tense

There are four degrees of past time, from immediate to remote. The range of time covered by each of these tenses must be explored and correlated with the time adverbials. What is presently known is given below:

Tense	Adverbial		Verb Form	
Present	/hi:mankon/	'just now'	/hi:c=om/	'She's looking now'
	/himaya:lon/			
Present-completive	/hi:mankon/	'just a little while ago'	/hi:c=om/	'She looked at it a minute ago'
	/aciptika:lon/	'a minute ago'		
Past one			/hi:c=om	'She has looked at it a minute ago'

Past two	/hi:manko:son/	'a while ago'		
	/hi:mankosa:lon/	'yesterday'	/hi:c=i:/	'She looked at it a while ago'
	/obyaco:sakon/	'yesterday'		
Past three	?		/hi:c=o,h,m-i/	'She looked at it a week ago'
Past four	/aci:bosa:laka/	'long ago'	/hi:c=i:-kta/	'She looked at it a long time ago'

Notice that the adverbial /hi:mankon/ is used with both present and past one forms.

In the neutral-past forms, the prominent syllable precedes the stem boundary; in the completive-past and progressive-past forms, the prominent syllable follows the stem boundary. The suffixes /-i:-/, /-h-/ and /-kta-/ given above realize past two, past three, and past four, respectively; they are used with any of the aspects. In the examples which follow, the prominent syllable is underlined twice, and the tense affixes once.

Neutral-past two:

/an-kaba:l-o:t=i:/ 'I was cold (yesterday)'

Neutral-past three:

/an-kaba:l-o:t=o,h,m-i/ 'I was cold (three days ago)'

Neutral-past four:

/an-kaba:l-o:t-i:-kta/ 'I was cold (last year)'

/hi:č=i-li-kta-š/ 'I saw it a long time ago'

Completive-past one:

/hi:č=óm-li/ 'I have seen (it)'

/yala,š,k-a-:č=óm-i:ka/ 'We went back (a week ago)'

Completive-past two:

/hi:č=í:-li/ 'I saw it a while ago'

/ill-i:p=í:/ 'He died (yesterday)'

Completive-past three:

/hi:č=ó,h,m-i-lih/ 'I looked at it (a week ago)'

/hak-l-i,h,pa-k/ 'To have heard' (completive) (in Booker, 1978:77, from West)

/kabl=ó,h,m-a-li/ 'I bit it many times (a week ago)

Completive-past four:

/hi:c=i:-kta/ 'He saw it before'

/hi:c=i:-li-kta-wa/ 'I looked at it a long time ago'

Progressive-past one:

/hi:c=onka-li/ 'I was looking at it a minute ago'

/takaʔk=om-li/ 'I worked (six days ago)'

Progressive-past three:

/hi:c=o,h,nka/ 'She was looking (yesterday)'

There are no examples to date of progressive aspect in past two or past four tenses.

Figure 6.17 presents a summary of the tense/aspect system using examples given above. The prominent syllable is underlined twice.

6.4.3 Verb Prefixes

Verb prefixes realize the semantic categories of instrumental, position, and person. They may occur on inflected verbs or on derived nominals. Figure 6.18 presents the order classes of verb prefixes.

	Completive	Neutral	Progressive
Remote Future	/i-wan-i:p=a:laka/ 'They'll be tired'	/fayhn=i:laka/ 'The water will flow' (It's raining)	
Immediate Future	/ill-i:p=a:-m/ 'He's dying'	/fayhn=a:-m/ 'The water will flow' (The dam is opening)	/ala:-onka-li/ 'I want to go'
Present	/hi:c=om-li/ 'I looked just now'	/fisahk=om/ 'She's alive'	/fisahk=om/ 'She's breathing' /hi:c=onka-li/ ~ /hi:c=om-li/ 'I'm looking'
Past One	/hi:c=om-li/ 'I have looked'		/hi:c=onka-li/ 'I was looking'
Past Two	/hi:c=i:-li/ 'I saw it a while ago'	/an-kaba:l-o:t-i:/ 'I was cold yesterday'	
Past Three	/hi:c=o,h,m-i-li/ 'I looked at it a week ago'	/an-kaba:l-o:t=o,h,m-i/ 'I was cold three days ago'	/hi:c=o,h,nka/ 'She was looking yesterday'
Past Four	/hi:c=i:-kta/ 'She saw it before'	/an-kaba:l-o:t-i:-kta/ 'I was cold last year'	

Figure 6.17 The Tense/Aspect System--Inflected Verbs

Directional: /oh-/, /šap-/, /hop-/, /ok-/, /lok-/	Instrumental: /-(i)š-/	Direct Object: /-ča-/, /-či-/, /-ī-/, -pō-/	Indirect Object: /-ān-/, /-čīn-/, /-īn-/, /-pōn-/	Locative: /-on-/, /-ta-/, /-ka-/	Root
/lok-/	/-š-/		/-ām-/		/lok-š-ām-í,h,k-i/ 'Hand (it) to me'
	/-š-/			[-om-]	/š-ōm-pàta:k-ī/ 'Woman's overblouse'
/oh-/				/-ta-/	/oh-ta-čokõ:l-om/ 'She's sitting on the ground'
/lok-/				/-ta-/	/lok-ta-pilá:-k-om/ 'They fell down on the ground'
		/-āč-/	/-īm-/		/āč-īm-banã:-l-om/ 'She's tying it for me'

Figure 6.18 Verb Prefixes

6.4.3.1 Positional prefixes: directional

The first class of positionals show motion with respect to the location of the speaker and addressee, and may be used in conjunction with the locative positionals. Their meanings are as follows:

/-oh-/ 'reference to a place which is not the same as the location of the speaker' (Booker, 1975:6)

/oh-haˇcā:l-om/ 'He's standing still'

/oh-ta-ɬ̃a:l-ik/ 'It fell down on the ground'

/-lok-/ 'motion toward the speaker'

/lok-iˇssi-h/ 'Get it (and hand it to me)' (Persons 1, 2, and 3 are sitting at a table. 1 asks 3 for the book on the table next to her)

/-hop-/; /-šap-/ 'near the addressee but far from the speaker' (these two prefixes are used interchangeably)

/šap-iˇssi-h/ 'Get (the book) from behind you' (Person 1 asks person 2 for the book off the bookshelf behind the table)

/šap-šawā,h,k-i/ 'Move over' (Person 1 asks person 2 to move over on a bench so 1 can sit)

/yikt-on hop-čika:y-ĩ:-li/ 'I went in over there (near you)'

/-ok-/ 'over there away from speaker and addressee'

/ok-čika:y-iksah/ 'go in (over there away from both of us)'

6.4.3.2 Instrumental

The /(i)s-/ prefix indicates instrument in the first three examples. In the last three examples the prefix seems to show focus on an inanimate and unspecified object.

/li:sa-k-ot ah-on ok-on is-tabank-l-om-isi/ 'Lisa is spanking the water with a stick'

/s-a:b-a:-c-ik-i/ 'camera'

/s-oksah-l-i:k-i/ 'washing machine'

/s-a-hiɬ-ti-h-c-i/ 'something ugly'

/is-hi:ɬ-o:s-i/ 'something beautiful'

/s-i:s-i:li/ 'I got it'

6.4.3.3 Person prefixes

The person prefixes follow the instrumental and may precede or follow the position prefixes. This ordering and the ordering of the person prefixes with respect to each other when both occur on the same root must be investigated further.

/s-im-palo:k-i/ ⟵ //is-cim-palo:k-i// 'your testicles'

/im-on-ok-ta-cokõ:l-ik/ '. . . sitting there on the ground . . .' (preceding positionals)

/hop-i:-wita:l-ik-on/ '. . . as he opened it . . .' (following positional)

/ac-im-banã:l-om/ 'She's tying it for me'

6.4.3.4 Positional prefixes: locative

These prefixes indicate location without motion.

/-on-/ 'on, on top of'

/to:p-on on-cokõ:l-om/ 'She's sitting on the chair'

/s-om-pata:k-i/ 'Woman's overblouse' (pata:k-/ 'spread out'

/-ka-/ 'in the water'

/ka-yissi-h/ 'Get it out of the water'

/ɣa:ɣ-i ok-on ka-yo:l-i-:c-om/ 'There are fish in the water all spread around'

/-ta-/ 'on the ground'

/ta-yissi-h/ 'Get it off the ground'

/yakn-i:k-on ta-cokõ:l-om-li/ 'I'm sitting on the ground'

6.4.4 Verbal Infixes and Suffixes

Affixes which follow the verb root indicate tense, aspect, transitivity, causation, plurality, person, negation, data source,

attitude and question. Figure 6.19 presents the thirteen order classes of verbal affixes. The classes are ordered as they are ordered within an inflected verb. Infixes are placed to the right of the position that they occupy in an inflected verb. Infixes are set off by comma; other affixes by hyphens. Three of the suffixes have two positions of occurrence. The locations of both the infixes and these variable suffixes are shown by arrows.

6.4.4.1 Class 1

The suffixes showing transitivity or intransitivity are suffixed to the verb root. /-k-/ is the intransitive suffix and /-l-/ the transitive suffix. Intransitive forms are stative and therefore are in complementary distribution with progressive aspect.

/-k-/ (intransitive)	/-l-/ (transitive)
/kil-i ay-ik-on tala:-k-om/	/kil-i ay-ik-on tala:-l-i-:c-om/
'The cat is lying on the table'	'She's putting the cat on the table'
/not-s-oks-a-h-k-i/	/not-s-oks-a-h-l-i:k-i/
'toothpaste'	'toothbrush'

The /-s-/ infix is used in the dual and plural forms of suppletive verbs. It occurs only in the root, not in the stem.

/lok-s-a:y=om/	/lok-s-a,s,y=om/	/lok-s-a,s,y-a-:c=om/
'One person drives'	Two people drive'	'Three or more people drive'

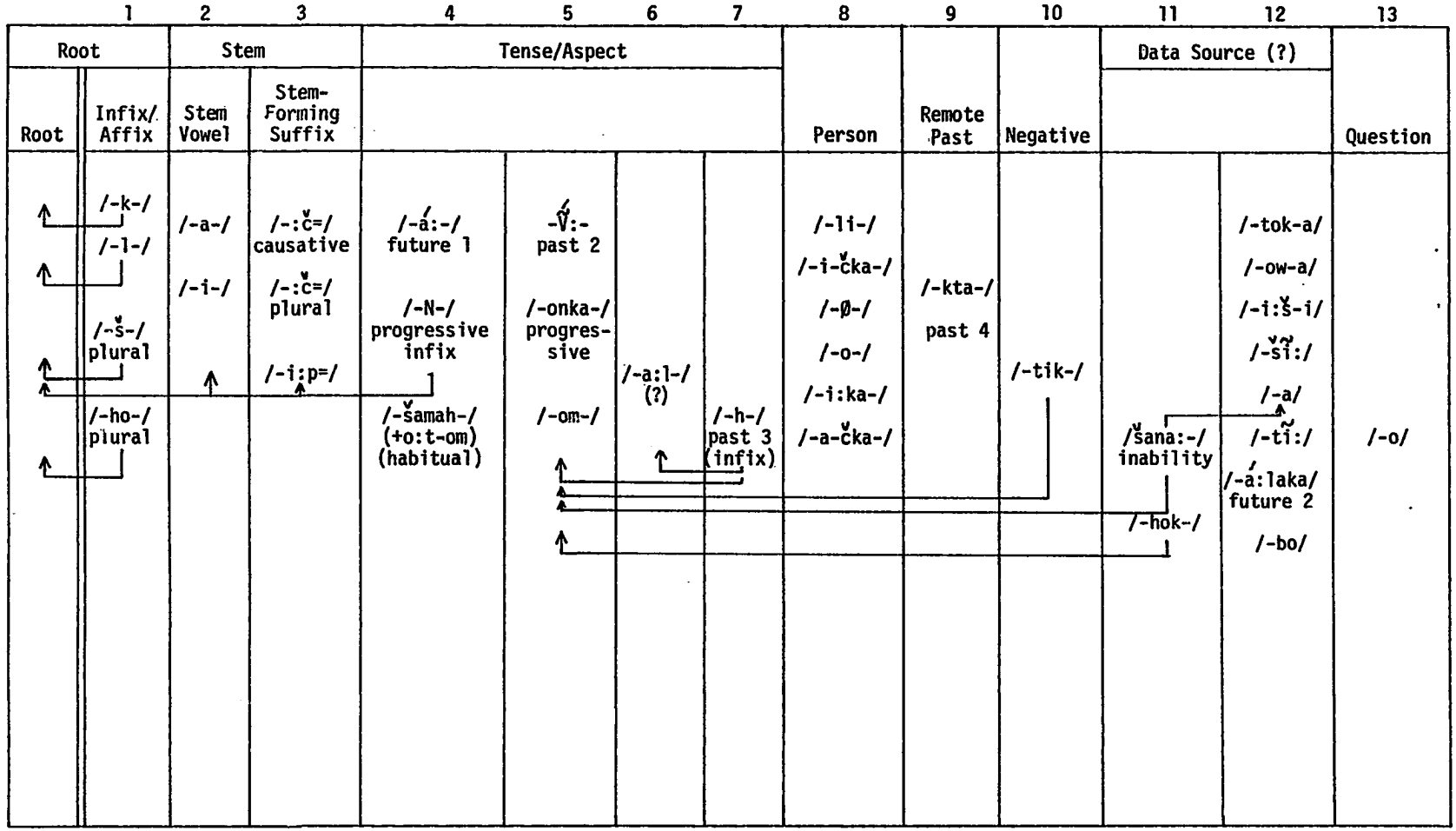


Figure 6.19 Verbal Infixes and Suffixes

/po-wa,s̆,n-i:=m-ik apo,s̆,n=i:ka-ti-m/ 'Because we're tired, we're not talking'

The plural infix /-ho-/ is inserted before the last consonant of the verb stem.

/hi:,ho,c̆=om-i/ 'They looked at it a week ago'

/tokl-ik ham,ho,p-a-h-c̆=o:n/ 'Those two things are broken'

6.4.4.2 Class 2

All verb roots take either the stem vowel /-a-/ or the stem vowel /-i-/. The stem vowels must co-occur with the causative suffix /-:c̆-/, the plural suffix /-:c̆-/ and the nominalizing suffix /-h-/. A-stem and i-stem verb roots are listed in Appendix III. Examples of roots with the stem-forming suffixes are given under class 3 suffixes in the next section.

6.4.4.3 Class 3

If the stem-forming suffixes are added to an inflected verb root, the stem vowel may take significant pitch in the present tense and become the prominent syllable. The stem-forming suffixes are the causative suffix /-:c̆-/ and the plural suffix /-:c̆-/. The completive suffix /-i:p-/ is also a stem-forming suffix, although it does not require a stem vowel.

/-:č-/ 'causative'

/im-poločf-a-:č=om/ } 'She made it round'

/im-poločl-i-:č=om/ } 'She made it round'

/in-feyhn-i-:č=om/ 'She's draining (oil) out of it'

/-:č-/ 'plural'

/hopa,š,n-a-:č-i:k-i ata,s,ʔ-a-:č=om/ 'They know how to sing'

/ič-apo:t-i:,ho,č=om-ika/ 'We're thinking of you all'

/-h-/ + /-č-/ 'nominalizer'

/kabā:l-i-h-č-i/ 'winter' /kaba:l-/ 'cold'

/yānt-an takaʔk-a-h-č-ot lok-folohk-om/ 'She's over there working'

/-i:p-/ 'completive suffix'

/takaʔk-il-ik-a:y-i ča-wan-i:p-alá:/ 'I'll be tired after I work'

/fred-k-i obyáco:sakan ill-i:p-i:-wači/ 'Fred died yesterday'

The affixes in classes four through seven are the tense/aspect suffixes.

6.4.4.4 Class 4

/-á:-/ 'immediate future'

/tolopk=á:-li/ 'I'm going to jump'

/aɁ=á:-m-ič/ 'Are you going?'

/-N-/ 'progressive infix' (occurs on the syllable preceding the stem boundary)

/lok-š-ã:y=om/ ⟵ //lok-š-a:,N,y=om// 'She's driving'

/lok-š-a,š,y-ã-:č=om/ ⟵ //lok-š-a,š,y-a ,N,:č=om//

'They're driving'

/pãkf=om/ ⟵ //pa,N,kf=om// 'It's swelling up'

/im-pakf-ĩ :č=om/ ⟵ //im-pakf-i ,N,:č=om// 'She's putting air in it'

/-šamah-/ 'habitual action' (occurs with /-o:t-/ + /-om-/)

/ah-on i:f-on iš-a-tabla-šamah-o:t-om-isi/

'She's always hitting the dog with a stick'

/hašã:y-i-šamah-o:t-om-i/ 'He's always getting upset'

7.4.4.5 Class 5

/-ĩ:-/ 'past two suffix'

/aɬ-a:-č=ĩ:ka/ 'We went a while ago'

/aɬ-ĩ:-čka/ 'You went a while ago'

/-onk-/ 'progressive'

/ĩ:-hak-l-onk-i:ka/ 'We asked him before and now we're asking him again'

/hopa,š,n-ã-:č-onka/ 'They are singing'

/-om-/ 'personal knowledge;,reportative' (see class 12 for contrast with other suffixes)

/čorkč-k-on tanahk-a:-m-a:l-i/ 'There will be a meeting at the church'

/hi:mank-on takaɬk-om-li/ 'I just started working'

/in-takaɬk-i:k-i-t im-onk-om-o/ 'Is he still working for him?'

/ča-taɬa:l-o,h,m-i/ 'I fell some time ago'

/ači:bal-on tala:l-ĩ-:č-om-a:l-i-kta-ti/

'They buried him a long time ago'

6.4.4.6 Class 6

The meaning and use of the suffix /-a:l-/ are not clear at present. It usually, but not always, occurs in the plural. It follows the stem boundary and can function as the prominent syllable of an inflected verb.

/kap,hó,l=om-a,h,l-ih/ 'They bit it many times a week ago'

/hi:č=í:-li-kta-wa/ ~ /hi:č=om-á:l-li-kta-wa/

'I looked at it a long time ago'

/hi:,ho,č=óm-i/ ~ /hi:č=om-á,h,l-owa/

'They looked at it a week ago'

/hi:č=om-á:l-l/ 'They looked at it a minute ago'

/hí:č=om-a:l-i/ 'They are looking now'

6.4.4.7 Class 7

/-h-/ is the infix indicating past three.

/tala:l-i-:č-ó,h,m-li-t/ 'I have buried him'

/lahkač-a:m-ahm-on is-sin-i-h-s-eyy-i:k-i-t

ač-ata:-o,h,m-i/

'I learned how to drive last year'

6.4.4.8 Class 8

The position of the person suffixes will be shown by paradigms in the present and in the four past tenses using the root /hi:č-/ 'see.'

	/-li-/ 1st sg.	/-i-čka-/ 2nd sg.
Present	/hi:č=om-li/	/hi:č=om-ička/
Past 1	/hi:č=onka-li/	/hi:č=onk-ička/
Past 2	/hi:č=i:-li/	/hi:č=i:-čka/
Past 3	/hi:č=o,h,m-a-li/	/hi:č=o,h,m-ička/
Past 4	/hi:č=om-a:l-li-kta-wa/	/hi:č=i:-čki-kta-wa/

	Ø 3rd sg.	Ø 3rd pl.
Present	/hi:č=om-Ø/	/hi:č=om-a:l-Ø-i/
Past 1	/hi:č=onka-Ø/	/hi:č=om-a:l-Ø-i/
Past 2	/hi:č=i:-Ø/	/hi:č=i:-Ø/
Past 3	/hi:č=o,h,m-Ø/	/hi:,ho,č=o,h,m-Ø-i/
Past 4	/hi:č=i:=Ø-kta-wa/	/hi:,ho,č=i:-Ø-kta-wa/

	/-i:ka-/ 1st pl. exclusive	/-o-/ 1st pl. inclusive
Present	/hi:č=om-i:ka/	/hi:č=om-o/
Past 1	/hi:č=onk-i:ka/	/hi:č=onk-o/
Past 2	/hi:č=i:ka/	/hi:č=o:/ (?) (unattested)
Past 3	/hi:č=o,h,m-i:ka/	/hi:č=o,h,m-o/
Past 4	/hi:č=i:k-ikta-wa/	/hi:č=o:-kta-wa/

	/-a-čka-/ 2nd pl.
Present	/hi:č=om-a-čka/
Past 1	/hi:č=onk-a-čka/
Past 2	/hi:č=a:-čka/
Past 3	/hi:č=o,h,m-a-čka/
Past 4	/hi:č=a:-čk-i-kta-wa/

6.4.4.9 Class 9

/-kta-/ is the past four tense marker. It occurs with at least four types of inflected verbs; these different usages must be explored.

/hi:č=ikta/ 'He saw it a long time ago' (statement of fact)

/hi:č=ĩ:-kta/ 'He has seen it before' (answer to the question: 'Has he seen this already?')

/aci:ba:l-on yat-kitiss-a:χ-i čik-o:m-i:k-i

ata,š,χ-ã-:č=om-ikt-owa/

'The Indians learned how to make houses a long time ago'

/afn-i:k-ĩ aci:ba:l-on ač-ata:χ=ĩ:-kta/

'I already learned how to sew a long time ago'

6.4.4.10 Class 10

/-tik-/ is the negative suffix. When it occurs on verbs in the present tense with overt person suffixes, i.e., with non-third person suffixes, the order of the person suffix and the /-om-/ suffix is changed, as can be seen in the first example. /-tik-/ also undergoes syllable reduction, with the following /-om-/ and /-owa/ suffixes.

/apõ:n-om-i-čka/ 'You're talking'

/apo:n-i-čki-ti-m-o/ ← //apo:n-i-čki-tik-om-o//

'Why aren't you talking?

/ataχ-ti:-onka/ //ata:χ-tik-onka// 'She doesn't know'

/aχ-ik ča-ba:-ti-h/ 'I don't want to go'

/ponc-i am-ay-ti-m/ //ponc-i aN-ayy-tik-om/

'I don't have any pop'

/an-nakn-i am-ay-t-owa/ //aN-nakni aN-ayy tik-owa//

'I don't have a husband'

6.4.4.11 Class 11

/sina:-/ is the suffix indicating inability. It is used in conjunction with the negative suffix /-tik-/.

/cilitk-i-ti-sina:-m/ 'She won't shut up'

/hopa,s,n-a-:c-i:ki-ti-sina:-wa/ 'We can't sing'

/-hok-/ is an attitudinal suffix showing surprise.

/ic-ataɣ-ti-ho-m-o/ //ic-ataɣ:-tik-hok-om-o//

'Oh, you don't know how?'

/na:k-ot tayɣa-ho-wa ãkl-ick-is-o wilantan-i/

'What did you expect, bananas?'

6.4.4.12 Class 12

The suffixes in this group show the attitude of the speaker and whether the data were obtained from personal observation or by inference. The remote future suffix also occurs in this group.

/tok-a/ (meaning?)

/hasã:y-om-tok-a/ 'She's upset'

/o-pãh-k-ik ãyy-om-tok-a/ 'He's taking a bath'

/-ow-a/ 'inference' (contrasts with /-om-/, which indicates direct knowledge)

/ã:-wa:c-i in-coko:l-ik-on no:c-i-h-c-ot tala:k-om/

'She's at my mother's house sleeping' (I've just come from there and I saw her)

/ã:-wa:c-i in-coko:l-ik-on no:c-i-h-c-ot talãnk-owa/

'She's at my mother's house sleeping' (I haven't seen her, but this is her nap time so she must be asleep now)

/ata,s,ɣ-a-:c=om-ikt-owa/ 'They learned (that) a long time ago'

/-owa/ is also used to express ability or inability.

/toma:t-on hã:y-a-:c-owa/ 'He raises tomatoes'

/toma:t-on ha:y-a-:c-owa/ 'He can raise tomatoes'

(The difference between the preceding two examples is unclear. Note the contrast in pitch and nasalization.)

/yat-hatk-apon-k-i apon-li-wa/ 'I can speak English'

/hopa:n-i-li-wã/ 'I can sing'

/hopan-ti-sina:-wa/ 'I can't sing'

/-owa/ is also used on possessive stative verbs.

/ac-o:c-i am-i:ɣ-owa/ 'I've got a son'

/i:f-i am-i:ɣ-owa/
/i:f-i am-i:ɣ-om/ } 'I have a dog'

/-a/ indicates reference to something already mentioned in a conversation.

/hi:ɣ-apikc-on hopa:n-om-i-ck-i/ 'You sing really well' (statement of fact--no previous comment on the subject)

/hi:ɣ-apikc-on hopa:n-om-i-ck-a/ 'You sing really well' (response to her comment that she doesn't sing well)

/o:ɣ-a-:c=i:k-is-a/ 'We're back'

/-is/ ~ /i:s-i/ ~ /-i-/ perhaps indicate the indicative. They are optionally present.

/o:ɣ-a-:c=i:k-is-a/ 'We're back'

/ah-on i:f-on is-atabl-om-i:s-i/ 'He hit the dog with a stick'

/no:c-i-h-c-i tala:k-om-is/ 'She's lying down sleeping'

/as-sin-i-h-k-i ã:-hamp-a-:č-om-á:l-išši/ 'They tore up my car'

/-šš:/ indicates a derisive or derogatory attitude on the part of the speaker toward the addressee.

/tãk-o:n/ 'It's empty'

/tãk-o-šš:/ 'It's empty, stupid'

/-tĩ/ is used to refute a previous statement or to deny a supposition. This was classified by two examples involving conversations between two people.

Situation 1: /aĩ-á:-m-ič/ 'Are you going?' (person 1)

/mã:tĩ čoko:l-i:p-á:-m-li/ 'No, I'm going to stay' (person 2)

Situation 2: (A group of friends and I have planned to go somewhere. At the last minute I change my mind and decide not to go. My response is given without my having been specifically asked about it.)

/čoko:l-ĩ:p-á:-m-li-tĩ/ 'I'm going to stay' (contrary to previous supposition)

Another example involves refutation of another person's statement.

person 1: /ásp-i čã-nã:k-o:n/ 'It's my corn'

person 2: /mã:ti-m-tĩ čã-nã:k-o:n-tĩ/ 'No, it's not! it's mine!'

/-bo/ seems to show the feeling on the part of the speaker that a request will be denied.

(Person 1 has asked person 2 if she can borrow the car. Person 1 does not respond at all and person 2 says:)

/ma:ti-bo/ 'No?' ('I can't have it?')

/-a:laka/ is the remote future suffix.

/opaks-on ci:-hi:c-i:k-alaka/ 'We'll see you'

/hi:c-i-ck-a:laka opaks-on/ 'You'll see him tomorrow'

6.4.4.13 Class 13

The question suffixes occur at the very end of an inflected verb. There are three question suffixes; a fourth type is indicated by the absence of the final syllable of the second person suffix.

/-o/ ~ /-om-o/

/a:s-o/ 'Is it sour?'

/ci -wan-i:-m-ik apo:n-i-cki-ti-m-o/

'You're not talking because you're tired?'

/ci-/ 'second person direct object person prefix';

/-wan-/ 'tired'; /-i:(p)-/ 'completive';

/-(o)m-/ 'verbal suffix'; /-īk/ 'infinitive marker';

/apo:n-/ 'talk'; /-i-/ 'indicates a singular second

person suffix'; /-čki-/ 'second person suffix';

/-tì-/ 'negative'; /-(o)m-/ 'verbal suffix';

/-ò/ 'question'

/-ōkō/

/hìnì-hānt-ō-n àɣo:k-ō-t kìnìswìl-ĩ: õ:ɣ-ōkō/

'What road do you go on to get to Gainesville?

/hìn-ī/ 'road'; /hānt-/ 'which'; /-ō-n/ 'object

marker'; /aɣo:k-/ 'go'; /-ō-t/ 'subject suffix';

/kìnìswìl-/ 'Gainesville'; /-ĩ:/ 'object suffix';

/o:ɣ-/ 'go'; /-ōkō/ 'question suffix'

/-(suffix)ʔ/

/čīm-ī:kō:s-ī cṍ:b-ò:tʔ/ 'Is your aunt big?'

/čīm-/ 'second person possessive prefix'; /ī:kō:s-/

'mother's sister'; /-ī/ 'subject suffix'; /čṍ:b-/

'big'; /-ō:t-/ 'nominalizer'; (/low/ pitch on the

suffix plus ʔ) 'question suffix'

Loss of final syllable of second person suffix

/hantã:-ik kiniswil-i i:l-om-i-č-Ø/ 'How do you come to Gainesville?'

/hantã:-ik kiniswil-i i:l-om-i-č-Ø/ 'How do you come to
/hantã:-ik/ 'how'; /kiniswil-/ 'Gainesville';

/-i/ 'object suffix'; /i:l-/ 'come'; /-om-/ 'verbal

suffix'; /-i-/ 'singular second person suffix

marker'; /-č-/ 'second person suffix (short form)

(long form is /-čka-/)'

These data support West's statement (1960) that /-ó/ is used when an affirmative answer is expected, and that /-oko/ indicates the possibility or potentiality of something happening. The /-(suffix)ʔ/ suffix has been found on information questions, which ask 'why,' 'when,' 'where,' etc., so that West's statement that this question suffix is used when either an affirmative or negative answer is expected must be extended. In fact, all of the question suffixes except /-ó/ have been found on both yes/no and information questions.

In the examples below, the suppositions underlying the use of the question suffixes are compared:

/iš-šapa,š,k=á-čk-oko/ 'Did you all find any (oranges)? (I assume that you did)

/iš-/ 'instrumental'; /šapa:k-/ 'find'; /-š-/ 'plural infix'; /-a-/ 'indicates plurality of the second person suffix'; /-čk-/ 'second person suffix'; /-oko/ 'question'

/na:ka:p-o-n iš-šapá,š,k=om-a-č-Ø/ 'How many did you all find?' (Supposition connected with this question type unknown)

/na:ka:p-/ 'how many'; /-o-n/ 'object suffix'; /-iš-/ instrumental'; /šapa:k-/ 'find'; /-š-/ 'plural infix'; /-om-/ 'verbal suffix'; /-a-/ 'second person plural suffix'; /-č-/ 'second person'; Ø 'question marker'

/kót-ī labánk-o:t?/ 'Is the frog muddy?' (yes or no possible)

/kót-/ 'frog'; /-ī/ 'subject suffix'; /labánk-/ 'muddy'; /-o:t-/ 'verbalizer'; /-(suffix)?/ 'question'

/kót-ī hālb-ī īn-kafáhb-oh/ 'Does a frog have rough skin?'

/kót-/ 'frog'; /-ī/ 'subject suffix (?)'; /hālb-/ 'skin'' /-ī/ 'object suffix (?)'; /īn-/ 'third person indirect object'; /kafáhb-/ 'rough'; /-oh/ 'question'

Another factor influencing the choice of question suffix seems to be the relative time of occurrence of the question and the event being asked about. More examples are needed to clarify the operation of this factor.

/nō:χ-o:t?/ 'Who is that?' (person is in sight when the question is asked)

/nōχ-t-áyy-om?/ 'Who was that?' (asked after the person in question has left)

/nō:χ-/ 'who'; /-(o)-t/ 'subject suffix'; /-ayy-/ 'be around'; /-om?/ 'question'

/no:ɣ-o-t ayy-onk-o/ 'Who was that?' (The speaker has never seen the person before)

The final set of examples illustrates the use of the various question suffixes with the interrogatives:

/hantã:-ik kiniswili i:l-om-ic-Ø/ 'How do you come to Gainesville?'

/hantã:-ik-fo o:ɣ-i:l-ack-oko/ 'When will you come back?'

/na:n-om-in ledarkraf oɣ-ti-k honc-iy-i:-m-o/

'Why doesn't he go to leathercraft (class) any more?'

/na:n-om ci-witi:k-om/ 'Why are you mad?'

/opaks-on opaks-i: hant-on aɣ-a:-m-ic-Ø/

'Where are you going day after tomorrow?'

/hini-hant-on aɣ-o:-k-ot kiniswili o:ɣ-oko/

'What road do you go on to get to Gainesville?'

/no:ɣ-o:t-Ø/ 'Who is that?'

6.5 Derivation

Derivation is an important process in Mikasuki. Dependent verbs in complex sentences are nominalized forms of verb roots; some causative verbs are derived from noun roots. Affixes may also be

derived from roots, and both the original form and the derived form not only co-exist, but may co-occur in the same utterance.

6.5.1 Verb → Noun

Two processes are used to derive nominal forms from verbs--pitch change and suffixation.

6.5.1.1 Pitch change only

An agentive noun is derived from a verb root by placing high pitch on the final full syllable of the verb (West, personal communication). The instrumental prefix is sometimes also added.

/čo:p-ik/	'buy'	/is-čó:p-i/	'storekeeper'
/wayl-ik/	'sell'	/wáyl-i/	'seller'
/hopa:n-ik/	'sing'	/hopá:n-i/	'singer'
/áfn-ik/	'sew'	/áfn-i/	'seamstress, tailor'

6.5.1.2 /-h-/

Forms derived by the /-h-/ suffix together with the appropriate stem vowel and one of three suffixes--/-k-/ (intransitive), /-l-/ (transitive), and /-č-/ (causative (?))--may be used as dependent verb phrases in complex sentences, or as nouns describing cultural borrowings.

Stem vowel	+ /-h-/ +	suffix
/-a-/		/-k-/
/-i-/		/-l-/
		/-č-/

/noːč-i-h-č-ot talaːk-om/ 'She's (lying down) sleeping'

/noːč-/ 'sleep'; /-i-/ 'stem vowel'; /-h-/ 'completive'; /-č-/ 'causative'; /-o-t/ 'sentence suffix-subject'; /tala:-/ 'lie'; /-k-/ 'intransitive'; /-om/ 'verbal suffix'

/oksahk-a-h-č-o-t aƛ-iːy-iːp-ik aːy-iːp-omi-hont/ 'She went off to take a bath'

/oksahk-/ 'bathe'; /-a-/ 'stem vowel'; /-h-/ 'completive'; /-č-/ 'causative'; /-o-t/ 'sentence suffix-subject'; /aƛ-/ 'go'; /-iːy-/ 'verbal suffix'; /-iːp-/ 'completive'; /-ik/ 'infinitive'; /aːy-/ 'move around'; /-iːp-/ 'completive'; /-omi-/ 'verbal suffix'; /-hont/ (?)

/lok-iːl-oːƛ-ik talaːk-a-h-č-om-li-s-k-i-t/ 'And so after coming back, I lay down'

/lok-/ 'toward the speaker'; /-i:l-/ 'come here'; /-o:ɣ-/ 'come there'; (/-i:l-o:ɣ-/ 'make a round trip beginning at a point far from the speaker' (West, 1974a:70); /-ik/ 'infinitive'; /tala:-/ 'lie'; /-k-/ 'intransitive'; /-a-/ 'stem vowel'; /-h-/ 'completive'; /-č-/ 'causative'; /-om-/ 'verbal suffix'; /-li-/ '1st person singular suffix'; /-š-/ (?); /-k-/ (?); /-i-t/ (?).

/apon-k-hiːɣ-aha:y-a-h-k-i/ 'preacher' (language-good-teacher)

/apon-/ 'speak'; /-k-/ 'intransitive'; /-hiːɣ-/ 'good'; /aha:y-/ 'teach'; /-a-/ 'stem vowel'; /-h-/ 'completive'; /-k-/ 'intransitive'; /-i/ 'citation suffix'

6.5.1.3 /-i:k-/, /-ik/

The infinitive suffix /-i:k-/ derives nominals from verb roots. The long form /-i:k-/ is used when the suffix is followed by a vowel. The short form /-ik/ is used word-finally.

/anč-/ 'wear'

/anč-i:k-i/ 'clothes'

/im-anč-i:k-on anč-ik ayy-om/ 'She's putting on her clothes'

/-im-/ '3rd person alienable possession'; /im-anc-i:k-o-n/ 'her clothes (object form)'; /anc-ik/ 'to wear'; /ayy-/ 'moving around'; /-om/ 'verbal suffix'

/ka:p-i anc-i:k-o-t im-onk-om/ 'He still has his jacket on'

/ka:p-/ 'jacket'; /-i/ 'subject'(?)sentence suffix'; /anc-i:k-o-t/ 'wearing' (subject suffix); /-im-/ '3rd person indirect object prefix'; /-onk-/ 'keep on doing'; /-om/ 'verbal suffix'

/lok-cayahl-ik i:l-om-i-cØ/ 'Did you come walking?'

/lok-/ 'toward the speaker'; /-cayahl-/ 'walk'; /-ik/ 'infinitive'; /i:l-/ 'come'; /-om-/ 'verbal suffix'; /-i-/ 'second person singular suffix'; /-c/ 'second person suffix'; Ø (loss of -ka syllable on second person) 'question marker'

/coko:l-ik imp-ih/ 'Sit down and eat'

/coko:l-/ 'sit'; /-ik/ 'infinitive'; /imp-/ 'eat'; /-ih/ 'imperative'

6.5.2 Verb ⟷ Noun

Ambiguous roots are those which may function as nouns or verbs without suffixation. Their nominal or verbal status is shown only by pitch. For more examples, see section 6.1.2.2 of this chapter.

//čokf-//	/čokf-ī/	'rabbit'
	/čā:-y-ōn ān-čokf-om/	'My legs have cramps' (Eating rabbit meat is said to cause cramps)

6.5.3 Noun ⟶ Verb

Verbs may be derived from noun roots by means of the causative suffix. When this happens, their nominal pitch is lost.

/à:b-ī/	'picture'	/a:b-ã-:č-om/	'She's taking a picture'
/ìpt-ī/	'ice'	/ipt-ã-:č-om/	'It's freezing'

6.5.4 Root ⟶ Affix

Roots may become affixes whose meaning is an extension of the original root meaning. Derived verbal affixes lose their significant pitch.

/ō:č-ī/	'male offspring'	/ō:č-ō:č-ī/	'sister's son' (woman speaking)
/-ō:č-/	'diminutive suffix'	/fõ:s-ō:č-ī/	'baby bird'
/o:m-/	'do, make'	/õ:m-om-li/	'I'm doing it'
/-om-/	'verbal suffix'	/tãlw-om/	'She's dancing'

/onk-/	'make a repetitive noise; keep doing'	/kǒcōnfát-ī-t ōnk-om/	'The bell is ringing'
/-onk-/	'progressive suffix'	/īn-takaʔk-ī:k-ī-t īm-ōnk-om/	'She's still working for him'
		/kǒcōnfát-ī-t ōnk-onk-a/	'The bell is ringing'
		/yā:t-ō:c̆-ō-n hī:c̆-onka/	'She's looking at the baby'

6.6 The Sentence

A 'sentence' in Mikasuki is an utterance containing an inflected verb. It may also contain nominal forms affixed with sentence suffixes. The usual order of sentence elements is (subject)-(adverbial)-(indirect object)-(direct object)-verb.

6.6.1 Sentence Suffixes

Sentence suffixes indicate the functions of the nominals in a sentence. Much work is needed to clarify their uses, because many factors appear to influence the choice of suffix for any particular noun. These factors include:

1. Sentence type--Is the sentence affirmative, negative or interrogative?
2. Verb type--Is the verb stative, intransive or intransitive?

3. Number of sentence suffixes used in one utterance--If there are several nouns in one utterance, does the choice of one suffix influence the occurrence of subsequent suffixes?
4. Noun functions--Are the nominals functioning as subject, object, locative, temporal, instrumental or manner adverbial?
5. Discourse function--What is the function of the nominals with reference to the larger context? Is a particular noun the focus, topic, or comment?

The following discussion of the sentence suffixes is a brief beginning of the application of these factors to the analysis of sentences.

Sentence suffixes are made up of two parts, a vowel (either /-o-/ or /-i-/, and a consonant (either /-t/ or /-n/). They combine to create the following suffixes: /-o̅-t/, /-o̅-n/, /-i̅/, /-i̅-t/, /-i̅-n/ /-i̅ː/.

The terms 'subject' and 'object' in this section are understood to refer to the grammatical subjects and objects of verbs. On active verbs the grammatical subject is realized as a person suffix and the grammatical object as a person prefix.

/ákn-o̅-n i̅mp-om-li/ 'I'm eating meat'

object subject

/ákn-/ 'meat'; /-o̅-n/ 'sentence suffix'; /-imp-/ 'eat'; /-om-/ 'verbal

suffix'; /-li/ 'first person singular suffix'

/čiyãhl-om-li/ 'I'm walking'
subject

/čiyahl-/ 'walk'; /-om-/ 'verbal suffix'; /-li/ 'first person singular suffix'

In stative verbs the same person prefixes which realize the objects of transitive verbs function as the logical subjects of the sentence. Other nouns in the sentence are the logical objects, but the grammatical subjects.

/wil-i ã:-wi:k-om/ 'I've got one pair of shoes'
(Lit. 'Shoe are sitting (dual) to me')
subject object

/wil-/ 'shoe'; /-ã:-/ 'first person singular prefix'; /wi:k-/ 'dual stem of /čoko:l-/ 'sit'; /-om/ 'verbal suffix'

Figure 6.20 briefly summarizes what is known about the sentence suffixes in terms of the five factors listed above. Examples of each suffix are then given in Sections 6.6.1.1 through 6.6.1.5.

Suffix	Sentence Type: Affirmative Negative Interrogative	Verb Type: Stative Intransitive Transitive	Number of Nouns in Sentence: N = Noun; Suffix on Each is Indicated	Noun Functions: Subject Object Adverbial	Discourse Function:
/-ō-t/	Affirmative Negative Interrogative	Stative Intransitive Transitive	N-1 N-2 N-3 -ōt -ōn -ōn	Subject	Focus
/-ō-n/	Affirmative Negative Interrogative	Stative Intransitive Transitive	N-1 N-2 N-3 -ōt -ōn -ōn -ōn -īt -ōn	Subject Object Adverbial	?
/-ī-/	Affirmative	Stative Intransitive Transitive	N-1 N-2 N-3 -ī -īt -ī	Subject Object	(Any relation to the noun citation suffix?) No special focus?
/-ī-t/	Affirmative Interrogative	Stative Intransitive Transitive	N-1 N-2 N-3 -ī -īt -īt	Subject Object	?
/-ī-n/ ~ /-ĩ:/	Affirmative Negative Interrogative	Stative Intransitive Transitive	N-1 -īn	Subject Object	?

Figure 6.20 Sentence Suffixes

6.6.1.1 /-o-t/: Subject marker

This suffix occurs on subjects only.

/ča-hiht-o-t an-no:k-a-:č-om/ 'My shoulder hurts'
Verb: affirmative, stative
Noun: subject

/ča-/ 'first person inalienable possessive prefix';

/hiht-/ 'shoulder'; /-an-/ 'first person indirect object prefix functioning as the subject of a stative verb';

/no:k-/ 'hurt'; /-a-/ 'stem vowel'; /-:č-/ 'causative';

/-om/ 'verbal suffix'

/labank-o-t wil-o-n am-alihk-om/ 'I've got mud on my shoes'
Verb: affirmative, stative
Noun 1: subject (?)
Noun 2: object (?)

/labank-/ 'mud'; /wil-/ 'shoes'; /-am-/ 'first person indirect object, and logical subject of the sentence;

/-alihk-/ 'possession'; /-om/ 'verbal suffix'

/cint-o-t kaba:l-om/ 'The snake bites'
Verb: affirmative; intransitive
Noun: subject

/cint-/ 'snake'; /kaba:l-/ 'bite'; /-om/ 'verbal suffix'

/bil-k-o-t ah-o-n i:f-o-n is-yitambl-omi-si/

'Bill hit the dog with a stick'
Verb: affirmative, transitive
Noun 1: subject
Noun 2: instrumental
Noun 3: direct object

/-k-/ 'suffix on English borrowed words'; /ah-/ 'stick';

/i:f-/ 'dog'; /is-/ 'instrumental prefix'; /yitabl-/ 'hit';

/-omi/ 'verbal suffix'; /-si/ 'attitudinal suffix'

/kowa:y-o-t am-ay-ti:k-om/ 'I don't have a horse' (from West, 1960:11)
Verb: negative, stative
Noun: subject (?)

/kowa:y-/ 'horse'; /am-/ 'first person indirect object

prefix'; /-ayy-/ 'be around'; /-ti:k-/ 'negative'; /-om/

'verbal suffix'

/na:k-o-t cim-i:ɣ-o/ 'What do you have?' (from West, 1960:11)
Verb: interrogative, stative
Noun: object (?)

/na:k-/ 'thing'; /cim-/ 'second person indirect object

prefix'; /-i:ɣ-/ 'have'; /-o/ 'yes/no question suffix'

/ca:-y-o-t co:b-o:n/ 'My foot is big'
Adjective: equational
Noun: subject (?)

/ča-/ 'first person inalienable possessive prefix';

/-i:y-/ 'foot'; /co:b-/ 'big'; /-o:n/ 'verbalizing suffix'

6.6.1.2 /-o-n/: Object marker

This suffix occurs on direct and indirect objects, and instrumental, locative, manner and temporal adverbs.

/a:-ʔokf-o-t is-sin-i-h-k-o-n a:-hamp-a-:c-i:-si/

'My brother wrecked my car'
Verb: affirmative, transitive
Noun 1: subject
Noun 2: object

/-a:-/ 'first person possessive prefix'; /ʔokf-/ 'brother';

/-is-/ 'instrumental'; /-sin-/ 'roll'; /-i-/ 'stem vowel';

/-h-/ 'completive'; /-k-/ 'nominalizer'; /a:-/ 'first person

indirect object prefix'; /-hamp-/ 'bad, break'; /-a-/

'stem vowel'; /-:c-/ 'causative'; /-i:-/ 'past tense';

/-si-/ 'attitudinal suffix'

/bil-k-o-t ah-o-n i:f-o-n is-yitambl-omi-si/

'Bill hit the dog with a stick'
Verb: affirmative, transitive
Noun 1: subject
Noun 2: instrumental
Noun 3: direct object

/bil-/ (name)' /-k-/ 'suffix on borrowings from English';

/ah-/ 'stick'; /i:f-/ 'dog'; /is-/ 'instrumental';

/yitambl-/ 'hit'; /-omi/ 'verbal suffix'; /-si/ 'attitudinal

suffix'

/halpat-o-t ok-o-n ka-cisa:k-om/ 'There's an alligator floating in the water'
Verb: affirmative, intransitive
Noun 1: subject
Noun 2: locative adverb

/halpat-/ 'alligator'; /ok-/ 'water'; /ka-/ 'in the water';

/cisa:k-/ 'float'; /-om/ 'verbal suffix'

/na:k-in-caw-k-tapatk-o-n i-ba:-ti-s/ 'She doesn't want a book' (from West, 1960:11)
Verb: negative, stative
Noun: object

/na:k-/ 'thing'; /-in-/ 'indirect object prefix'; /-caw-/

'write'; /-k-/ 'intransitive suffix'; /tapatk-/ 'stuck

together'; /-i-/ 'third person direct object prefix';

/-ba:-/ 'want'; /-ti-/ 'negative'; /-s/ 'attitudinal

suffix'

/nakn-a:ɣ-i-t pihɣ-o-n o:m-om/ 'The men are making a boat'
Verb: affirmative, transitive
Noun 1: subject
Noun 2: object

/nakn-/ 'man'; /-a:ɣ-/ 'plural'; /pihɣ-/ 'boat'; /o:m-/

'do, make'; /-om/ 'verbal suffix'

/akn-i-hi:ɣ-o-n a:-hi:ɣ-o:n/ 'I like good meat'
Verb: stative, affirmative
Noun: subject (?)

/akn-/ 'meat'; /-hi:ɣ-/ 'good'; /a:-/ 'first person in-

direct object'; /-hi:ɣ-/ 'good'

6.6.1.3 /-i/: Subject or object

This suffix can occur on both subjects and objects.

/wil-i a:ɣ-i:k-i-t im-onk-om/ 'She still has her shoes on'
Verb: affirmative, stative
Noun 1: subject (?)
Derived noun 2: object (?)

/wil-/ 'shoes'; /a:ɣ-/ 'wear'; /-i:k-/ 'nominalizer';

/im-/ 'third person indirect object'; /-onk-/ 'keep on

doing something'; /-om/ 'verbal suffix'

/akn-i no:h-om/ 'The meat is cooked'
Verb: affirmative, intransitive
Noun: subject

/akn-/ 'meat'; /no:h-/ 'cook'; /-om/ 'verbal suffix'

/akn-i no:h-a-:c-om-li/ 'I'm cooking the meat'
Verb: affirmative, transitive
Noun: object

/ákn-/ 'meat'; /no:h-/ 'cook'; /-a-/ 'stem vowel'; /-:č-/ 'causative'; /-om-/ 'verbal suffix'; /-li/ 'first person subject suffix'

6.6.1.4 /-ī-t/: Subject or object

The difference between this suffix and the immediately preceding one is not known.

/čā-yo:š-ī-t ān-no:k-ā-:č-om/ 'My head hurts'
Verb: stative, affirmative
Noun: subject

/čā-/ 'first person inalienable possession'; /-yo:š-/ 'head'; /ān-/ 'first person indirect object prefix'; /-no:k-/ 'hurt'; /-a-/ 'stem vowel'; /-:č-/ 'causative'; /-om/ 'verbal suffix'

/hiŋǰ-ī hā:č-i-bačk-ī-t ām-i:ǰ-om/ 'I have a squirrel with a long tail'
Verb: affirmative, stative
Noun 1: subject (?)
Noun 2: (?)

/hiŋǰ-/ 'squirrel'; /hā:č-/ 'tail'; /-bačk-/ 'long'; /-ām-/ 'first person indirect object'; /-i:ǰ-/ 'have'; /-om/ 'verbal suffix'

/ya:t-aconk-i-t no,s,c-i-:c-om/ 'Many people are sleeping'
Verb" affirmative, intransitive
Noun: subject

/ya:t-/ 'people'; /-aconk-/ 'many'; /no:c-/ 'sleep';

/-s-/ 'plural infix'; /-i-/ 'stem vowel'; /-:c-/ 'plural

suffix'; /-om/ 'verbal suffix'

/jayn-k-i-t hi:c-i-ck-i-la:k-o opaks-aka/

'Will you be seeing Jane tomorrow?'
Verb: transitive, interrogative
Noun: object

/jayn-/ (name); /-k-/ 'English borrowing suffix'; /hi:c-/

'see'; /-i-/ 'singular'; /-ck-/ 'second person suffix';

/-i-/ 'stem vowel'; /-la:k-/ 'remote future'; /-o/ 'yes/no

question'

/patak-katokn-i-t a:-hi:ɣ-o:n/ 'I like a thick bed'
Verb: affirmative, stative
Noun: subject (?)

/pata:k-/ 'bed'; /katokn-/ 'thick'; /a:-/ 'first person

indirect object prefix'; /hi:ɣ-/ 'good'; /-o:n/ 'verbal-

izing suffix'

6.6.1.5 /-i-n/: Subject or object

/halpát-ĩ: an-ča-maɬa:l-o:n/ 'The alligator scares me'
Verb: affirmative, stative
Noun: subject (?)

/halpát-/ 'alligator'; /an-/ 'first person indirect object'; /-ča-/ 'first person direct object'; /maɬa:l-/ 'scare'; /-o:n/ 'verbalizing suffix'

/sokóč-ĩ: wita:k-om/ 'The door is open'
Verb: affirmative, intransitive
Noun: subject

/sokóč-/ 'door'; /wita:k-/ 'open'; /-om/ 'verbal suffix'

/witã:l-om-li sokóč-ĩ:/ 'I'm opening the door'
Verb: affirmative, transitive
Noun: object (?)

/kówa:y-ĩ: pom-áy-ti:k-om/ 'We don't have a horse' (from West, 1960:11)
Verb: negative, stative
Noun: subject (?)

/kówa:y-/ 'horse'; /pom-/ 'first person plural indirect object'; /-ayy-/ 'be around'; /-ti:k-/ 'negative'; /-om/ 'verbal suffix'

/ma:č-ĩ: čim-i:ɬ-o/ 'Do you have matches? (from West, 1960:22)
Verb: interrogative, stative
Noun: subject (?)

/ma:č-/ 'matches'; /čim-/ 'second person indirect object';

/-i:ɣ-/ 'have'; /-o/ 'yes/no question suffix'

6.6.2 Plurality

On verbs which one marked for number, plurality of the subject or object calls for a plural (or dual) verb stem. Plurality is a feature of the entire sentence, rather than just of the subject alone.

/tã:tiya:h-i ɣan-a-:č-iksah/ 'Get the chicken out here!'

/tã:tiya:h-i ɣan-a,š,š-iksah/ 'Get the chickens out here'

/tã:tiya:h-/ 'chicken'; /-i/ 'sentential suffix';

/tan-/ 'go'; /-a-/ 'stem vowel'; /-:č-/ 'causative';

/-iksah/ 'imperative'; /-š-/ 'plural infix'

Note that the form of the noun /tã:tiya:h-i/ does not change; the plurality of the object is only indicated by the plural infix /-š-/ in the verb.

/in-co:b-ã-:č-om/ 'She's making it bigger'

/ĩ:-ho:t-ã-:č-om/ 'She's making them bigger'

Shape is also a sentential feature. If a subject or an object is cloth-like, the verb must be dual. If the subject or object is a liquid or an aggregate, the verb must be plural.

/fóksi:k-i áy-i:k-on sálk-om/ 'The shirt is on the table' (dual form of /tala:k-/ 'lie')

/fóksi:k-/ 'shirt'; /áy-/ 'table'

/fóksi:k-a:ɣ-i áy-i:k-on sálk-a-:c-om/ 'The shirts are on the table' (plural form of /tala:k-/ 'lie')

/-a:ɣ-/ 'plural suffix'

/fóksi:k-i áy-i:k-on sãk-l-om-li/ 'I lay the shirt on the table' (dual form of /tala:l-/ 'lay')

/fóksi:k-/ 'shirt'; /áy-/ 'table'

/làbank-i-t sa,s,w-i:-m/ 'The mud is almost dried up' (plural form of /sakw-/ 'dry up'

/làbank-/ 'mud'

/samo:c-i ã:w-om/ 'She's holding sand' (plural form of /i:s-/ 'hold')

/samo:c-/ 'sand'

/wil-i ã:-wi:k-om/ 'I've got one pair of shoes' (dual form of /coko:l-/ 'sit')

/wil-/ 'shoes'; /ã:-/ 'first person indirect object prefix'

6.7 Texts

Each text will be presented in four parts: a phonemic transcription, a phonetic transcription, a morphological transcription with interlinear translation, and a free translation.

6.7.1 Text 1

This text was given by a twenty-eight-year-old woman.

6.7.1.1 Phonemic transcription

/čahičhaykàhči làhkàčpòkòtoklihin tòsnapa:waykik šima:yimptokah.

o:mihin oča:pon čahickomiktowa. ma:hin a:wa:ča:ɣit oča:ponton yawkik,

o:mihin oča:pon čahickomiktowa. a:ɣakfa:ɣit šita:kihin, čača:ya:ɣot

toklon. o:mihin čahičhaykàkà àciptika:lon ha:liwotkon òsɣa:čik

yawli:čikan. isko:loka čika:yik ayyik. čanakno:sihpahan ɣok

šowaška:či:kakat big sa:pon i:la:či:kihin ɣokmanɣok isko:lit

alahkaka čika:yi:littah. ma:hin isko:ɣoka honciptik čaka:cimonkikma

isfilohkik honcik o:malitta. o:mihin himaya:ka:yit naknawaykomlihin

àco:ciposkot honaknot toklon, o:mihin isko:lon takaɣkik ayyomlih./

6.7.1.2 Phonetic transcription

[ča hɨč hey kāh čɨʔ lāh kəč pū gu: du·g lə həṅ tʊš ñə pa:

wey gɨk šɨ ma: yimp to gāʔ. u: mə həṅ o: ča: pun cə hɛnč kō mik to

wa?. ma: ən ã: wa: ča: ɣit o: ča: pun tun yᵊow gək o: mə hən mun,
o: ča: pun čə hɛnč ko mik to wa?. ã: ɣək fa: ɣi? si: ta: gə hən,
čə ča: ya: ɣut tu:g lən. o: mə hən čə hɨc hey kə gə? ə čɨp ti ga:
lən nəŋ gah mɨ? ha: li wud kən uš ɣa: cɨk yəw li· či: gən. mu·n,
ɨš ku: lo ga? či gã: yɨk ey yɨk. čə nəŋ no: sih pə hən, ɣuk so wəs
ka: či: gᵊ gət big sa: pun i: la· či: gə hən ɣuk mən ɣuk iš ku: li?
ə lah kə gə či ga· yĩ· lit tah. ma: hən ɨš ku: lo gah hon čɨp tɨk
čə ga: čə məŋ gɨk ma?, ɨš fi lõh kək hõ·n cɨk o:m mə lit tah..
o: mɛ hən hi mə ya: ga: yɨ? nəŋ nə wey gəm li· hĩn? ə co: či puš kut
ho: nəŋ nut tu:g lən, o: mə hən ɨš ku: lən ta gã·ɣ kɨk ey yəm lih.]

6.7.1.3 Morphological transcription

čə-hič,hay,k-a-h-č-i lahkač-pokõ-tokl-ihin tosnapa:wayk-ik
I was born year ten two eight
twenty-eight

šima:y-ĩmp-toka. o:mihin oča:p-on čə-hick-om-ik-towa. ma:hin
then in Ochopee I was born.

ã:-wa:c-a:ɣ-i-t oča:p-ont-on yawk-ik, o:mihin oča:p-on čə-hick-om-ik-towa.
my parents in Ochopee were then in Ochopee I was born.

a:-ʔakf-a:ʔ-i-t sita:k-ihin, ca-ca:y-a:ʔ-o-t tokl-on.o:mihin

my brothers four my sisters two then

ca-hic,hay,k-ak-a aciptika:l-on ha:liwotk-on o,s,ʔ-a:-c-ik

(when) I was born not long after Hollywood (we) went

yawl-i-:c-ik-an· isko:l-oka cikã:y-ik ayy-ik. ca-nakno:s-i,h,p-ihin

we were there to school went (in) After I got older

ʔok sowa,s,k-a:-c-i:ka-kat big sa:p-on i:l-a-:c-i:ka-hin ʔokmanʔok

then we moved to Big Cypress we came

isko:l-i alahkaka cika:y-ĩ:-li-tta. ma:hin isko:l-oka honc-ip-ti-k

school the rest I went. school not quit

ca-k-a-:c-im-onk-ik-ma, is-filohk-ik honc-ik o:m-a-li-tta. o:mihin

they kept telling me, but going quit I did it

himaya:ka:y-i nakna-wayk-om-li-hin ac-o:c-iposk-o-t ho-nakn-o-t

right now I'm married my children boys

tokl-on. o:mihin isko:l-on takãʔk-ik ayy-om-li-h.

two in school working I am.

6.7.1.4 Free translation

I was born twenty-eight years ago. I was born in Ochopee. My parents were in Ochopee and I was born there. I have four brothers and two sisters. Not long after I was born we moved to Hollywood. Then I went to school. After I got older we moved to Big Cypress. We arrived and then I kept going to school. They kept telling me not to quit school but I did stop going. Right now I'm married and have children--two boys. And I am working at the school.

6.7.2 Text 2

6.7.2.1 Phonemic transcription

/incawantki mari:ki hi:calika:yi, glendaki incikon

folohkoniskon hi:comli. jo frankot no:ɬonka:yi pomaha:yahkonka.

tã:tiya:hon no:ha:cĩ:pak folohkĩskit. pomimpihpak aɬi:siya:hacko,

inkonkan. haw ka:cik imimpi:pah wĩ:kiskik aɬĩ:si o:mi:ka. Mon

incawantki amaponki imaha:yik sontomlih. yawlĩ:comi:ka ɬok,

ã:wa:ci incoko:likan yala:kak o:ɬontamlitĩ acacakaɬi:sik yawkak

ohla:wa:hacko, inkonkan. haw ka:cohki:kã. satoti hampali

eytkalatkafo:kan su:ceynkon eldi:nkon mari:kon a:non yã:ĩk

geynsvilon a:ɬa:comi:ka. sasyã:cik sasya:comi:ka ca:yin impi:kon

pomacasfi:comikon o:min. no:cik ayyik yaknot ihliskon impi:pak

i:χiskat. aχa:či:kakat ašsiya:čomi:kakan. nihtak lapkoš komihči:n.

ašsiya:čikan obyahin,i:wa:či incoko:li:koka: ošχa:či:kin. inčawantki

mari:ki i:wa:či hi:či:kaka, mamon hi:čomi:ka, ma:yin yathiśχika:χo:tomi./

6.7.2.2 Phonetic transcription

[in čə̃ wə̃nt kɨʔ mə̃ ri: gɨʔ hĩ: čə̃ li ga: yĩʔ, glɛn də̃ kɨʔ

in či gʊn fo loh kə̃ niš kə̃n hĩ: čᵘm lĩ. jo: fræ̃ŋ kʊt no: χo ga: yɨʔ

pu mə̃ ha: yah kʊŋgah. tə̃: ti ya: hun no: ha: čĩ: pək fo loh kɨ̃·š kit,

po mim pih pək ə χi· si. ya: hə̃č koʔ. iŋ gʊŋ gə̃n, həwʔ ka: čik i mim pi:

pəh wɪŋ gɨš kɨk ə χĩ: si om mi gə̃. mun in čə̃ wənt kɨʔə mə̃ puŋ gɨʔ

i mə ha: yɨʔ sʊn tʊm lih. yəw lĩ: čom mi: gə̃: χuk ə̃: wa: cɨʔ

in cʊ gu: lĩ gə̃n yə̃ la: gək ũ: χun ta:m lĩ tĩʔ. ə̃ ča: čə̃ gəχ χi: sɨk

yᵊow gək uh lə̃. wa: hə̃č koʔ. iŋ gũŋ gə̃n, hə̃wʔ ka: coh kĩ: gə̃:.

šə to tɨʔ həm pō li eyt kə̃ lət kə̃ fo: gə̃n su: jeyn gə̃n ɛl di:n gun mə

ri: gũn a: nun yə̃: iŋk geyns vɨ̃ lun ə̃: χa: čom mi gə̃, šəš yə̃: čɨk šəš

yə̃: čom mi gə̃ ča:yɨn im pi: gə̃n pu mə̃ čə̃š fi: čom mi gə̃n o: min.

no: čɨk ẽy yɨk yəg nᵘt i: χo mɛ hɛn im pĩᵛ: pək ĩ: χiš kət.

ə χa: či: gə gət əš ši ya: čo mi: gə gə̃n. nih tək ləp kuš ko mih či:ᵊn.

əs si ya: či gən ob yə hɨn, i: wa: či in cu go: li: go ga: us χa: či:
gɨn, in cə wənt kɨʔ mə ri: gi i: wa: cɨʔ hɛ·či: gə gaʔ mə mʊn
hi: com mi ga:, ma: yin yət hɨs χi ga: χo tom mɛ.]

6.7.2.3 Morphological transcription

incawantk-i mari:-ki hi:c-a-li-k-a:y-i, glenda-k-i in-cik-on
the first time Marie I saw Glenda's house

folohk-on-i-s-k-on hi:c-om-li. jo frank-o-t no:χ-onk-a:y-i
were around there Ihave seen Joe Frank who she was

pom-pom-aha:y-a-h-k-onk-a. ta:tiya:h-on no:h-a:-č-i:p-a-k folohk-i-s-k-i-t.
told us. chicken was cooking she was there.

pom-imp-i,h,p-a-k aχ-i:-s-i-ya:h-a-ck-o, in-k-onk-on. haw k-a:-c-ik
eat with us you all can come? (she) said O.K. said

im-imp-i:p-a-h wi:k-i-s-k-ik aχ-i:-s-i om-i:ka. mon incawantki
eat it (we) sitting coming we did. then the first time

am-apon-k-i im-aha:y-ik s-ont-om-li-h. yawl-i:-c-om-i:ka χok, a:-wa:c-i
my language teaching her i began my parents

in-ocko:l-ik-on yala:k-ak o:lont-a:-m-li-ti. ac-acak-l-i:-s-ik yawk-ak
their house there I'm going accompany me going

oh-la:wa:h-a-ck-o, in-k-onk-on. haw k-a:-c-o,h,nk-i:ka. satot-i

you all will (go) she said O.K. we said Saturday

hampal-i eyt-kalatka-fo:k-on su:jeyn-k-on eldi:n-k-on mari:-k-on

morning eight o'clock Sue Jane Eldean Marie

a:n-on ya:-ik geynsvil-on a-a:-c-om-i:ka. s-a,s,y-a:-c-ik

I there Gainesville be started. driving

s-a,s,y-a:-c-om-i:ka ca:yin imp-ik-on pom-acasf-i-:c-om-ik-on o:min.

we were driving good we got hungry.

no:c-ik ayy-ik yakn-o-t i,h,-i-s-k-on imp-i:p-a-k i:-i-s-k-a-t.

sleep around ground came to were eating (we) came.

camp ground

a-a-:c-i:ka-k-a-t assiy-a:-c-om-i:ka-k-an. nihtak lapk-os komihc-i:n.

we started we drove day all

assiy-a-:c-ik-an obya-hin, i:-wa:c-i in-coko:l-i:k-oka o,s,-a-:c-i:k-in,

driving afternoon her parents' place we came to

incawantk-i mari:-k-i i:-wa:c-i hi:c-i:ka-ka, ma:mon hi:c-om-i:ka,

the first time Marie's parents we saw we saw

ma:yin yat-hi,s,l-ik-a:ɣ-o:t-om-i.

they were nice people.

6.7.2.4 Free translation

The first time I met Marie was at Glenda's house. Joe Frank told us who she was. She was cooking chicken, so she invited us to eat with them. That's how I started teaching her my language.

One day Marie invited us to go down to her mother's place. So we said O.K. So we took off one Saturday about eight o'clock in the morning. Sue Jane, Eldean, Marie and I started for Gainesville. So we drove and drove until we got hungry, so we stopped to eat at a camping place and we drove again, and it almost took us all day to get there. When we got there we met Marie's parents for the first time. They were very nice people.

6.8 Notes

[1]The other occurring syllable type is CV:C. This syllable is the result of compounding, affixation or syllable reduction and is discussed in Section 2.2.1.

[2]After West, 1962:81.

[3]C = any consonant; V = any short vowel; V: = any long vowel; L = any sonorant /m,n,l,w,y,h/; K = any obstruent /p,b,t,k,s,c,ɣ/.

[4]This form does not follow the metathesis rule. According to West, 1975:2, the form should be /-ip-/. The person who gave me the form felt there was something 'funny' about it, but could not think of another way to say it.

[5]Dialectal variation appears to be at work; another person gave /ca-cokc-i/ 'my saliva' for this form.

[6]From West, personal communication

[7]From West, personal communication.

[8]From West, personal communication.

[9]From West, personal communication.

APPENDIX I
THE MIKASUKI ALPHABET

The West alphabet, which is presently being used for written Mikasuki in the bilingual project of the Miccosukee Tribe of Florida, needs to be somewhat revised. The current alphabet is as follows:

Consonants

p	b	t	k
f		ɬ sh	
		ch	
		l	
m		n	
w		v	h

Vowels

ee	e
aa	a
oo	o

Nasalized: ee e , etc.

Diphthongs

ay oy ao

Pitch

high /ˊ/; low /ˋ/

high-low /ˆ/; mid (unmarked)

When an alphabet is being devised, two factors must be considered--the phonemic system of the language, and the cultural conditions surrounding the proposed use of the alphabet (Pike, 1947:208). Decisions concerning alphabetic symbols are made by balancing the importance of accuracy in phonemic representation with the ease of

learning for monolinguals, for example. One of the primary uses of West's alphabet is the teaching of reading and writing to elementary school children whose first language is Mikasuki, but who must eventually also become fluent and literate in English. It seems that this aim was an important factor in the choice of the symbols for the above alphabet. Digraphs for /š/ and /č/, the vowel symbols, the diphthongs and the representation of vowel length seem to have been chosen on the basis of the ease of transfer to English. However, these symbols do not accurately represent the syllable structure of Mikasuki. In addition, the vowel qualities represented by the vowel symbols may cause interference with the transfer from Mikasuki to English.

One of the constraints on syllable structure in Mikasuki concerns the permitted sequence of consonants in consonant clusters. The consonants are divided into two groups:

Obstruents				Sonorants		
p	b	t	k	m	n	l
f	š	ɬ	č	w	y	h

Any combination of sonorants and obstruents is permitted in two-consonant clusters, but three-consonant clusters may not have an obstruent as the first consonant. Four-consonant clusters are not permitted, and no consonant clusters occur word-initially (for discussion, see Section 2.2.2).

The use of digraphs for /š/ and /č/ visually interferes with these cluster constraints. A two-consonant sequence may appear to be

a non-permitted three-consonant cluster, and a three-consonant sequence an impossible four-consonant cluster. A non-permitted cluster may be implied word-initially.

eshkom	/ĩ̃s̃̃kom/	'He drinks'	(shk is an impossible three-consonant cluster)
banchkom	/bãnc̃̃kom/	'It is long'	(nchk cannot occur)
shopatfe	/s̃̀opàtfĩ̃/	'gray'	(sh as a cluster cannot occur word-initially)

Furthermore, the use of h in these digraphs leads to the misinterpretation of the sequence th, which may be thought to represent the /θ/ or /ð/ of English, when it really symbolizes a two-consonant cluster of /t/ and /h/.

yathatke	/yàthátkĩ̃/	'white person'
hothayhmeh	/hothãyhmih/	'shut (the door)'

These problems can all be avoided by using s and c for /s̃̃/ and /c̃̃/.

The 'diphthongs" ay, ao, and oy also misrepresent the syllabic structure of Mikasuki. Sequences of unlike vowels are not permitted. If morphological processes such as affixation produce such a sequence, it will be 'adjusted':

//hi:c̃̃-á:-om//	⟶ /hi:c̃̃-á:m/	'She will see'

Suggesting that ai, oi and ao are diphthongs violates this constraint. Furthermore, the sonorants /l,m,n, and h/ can occur syllable-final.

The principle of symmetry indicates that the sonorants /y and w/ should also occur in the same position. For this reason also, ao should be represented as aw.

/hal bi/	'skin'	/tay ki/	'woman'
/lam pi/	'stomach'	/ˇsaw ya: ti/	'monkey'
/ˇcin ti/	'snake'	/ˇcaw lom/	'She writes'
/hah ˇci/	'river'	/pay lom/	'She's rubbing'

Finally, the vowel digraphs ee, aa, and oo, which symbolize the long vowels, should be written as i:, a:, and o:, again by reason of syllablic structure constraints. In Mikasuki long vowels occur in open syllables. If because of affixation or compounding an open syllable is closed, especially by an obstruent, the distinction between long vowels and short vowels is neutralized. In this situation vowel length, written as :, behaves like an obstruent consonant. It cannot occur as the 'first consonant' of a three-consonant cluster, and so is dropped:

/yokˇc-i/ 'turtle' + /lakn-i/ 'yellow' → //yokˇclakni//

→ /yoˇclákni/ 'yellow turtle'

/o:c-i/ 'son' + /tayk-i/ 'female' → //o:ctayki//

→ /ostayki/ 'daughter'

The alphabetic representation of the vowels /i:/ and /i/ has been changed to i: and i, from ee and e. The purpose is to effect a smoother transition from the vowel quality symbolized by i in Mikasuki to the vowel quality symbolized by i in English. It is true that ee is a common spelling for /i:/ in English. However, e in English represents /ɛ/ more often than it represents /i/. A child who has learned that e stands for /i/ in Mikasuki must then learn that the same symbol often represents /ɛ/ in English. To compound the problem, [ɛ] and [i] are phonetic variants of /i/ in Mikasuki; the child who is learning to discriminate these two sounds aurally may confuse them even further if the symbol for them is the same in the two languages. For these reasons i is a better representation of /i/ for Mikasuki. The most common phonetic variant of /i/ in Mikasuki is [i]; likewise, a very common pronunciation of i in basic English readers is [i].

All of these suggestions are summarized in the revised Mikasuki alphabet given below. West's nasalization diachritics, and punctuation marks, including commas, periods, question marks and capital letters, are retained. Finally, a sample utterance is given in both systems for the purpose of comparison.

Consonants:	p	b	t	k
	f	š	ɣ	č
	m	n	l	
	w	y	h	

Vowels:	i:	i	i:	i,	etc.
	a:	a			
	o:	o			

West:

Taateyaahon noohaacheepak folohkeshket, pomempehpak

aʔeesheyaahacko enkonkan.

Derrick:

taʔ:tiya:hon no:ha:ci:pak folohkiskit, pomimpihpak

aʔi:siya:hacko inkonkan.

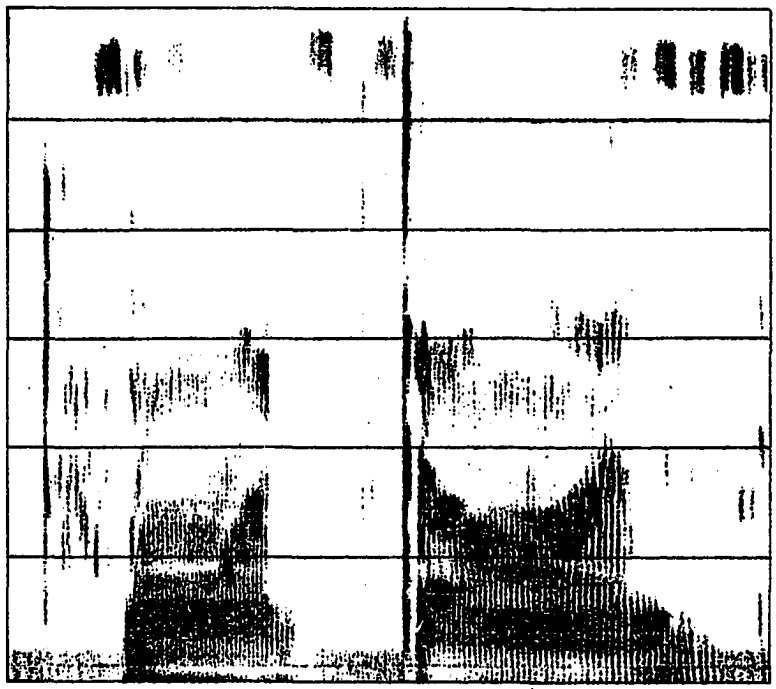
/taʔ:tiya:h-on no:h-a-:c-iʔ:p-a-k folohk-i-s-ki-t

pom-imp-i-h-p-a-k aʔ-i:s-iy-a:h-a-ck-o in-k-onk-on/

'She was cooking chicken so she invited us to eat with them.'

APPENDIX II
ACOUSTIC EVIDENCE OF NASALIZATION

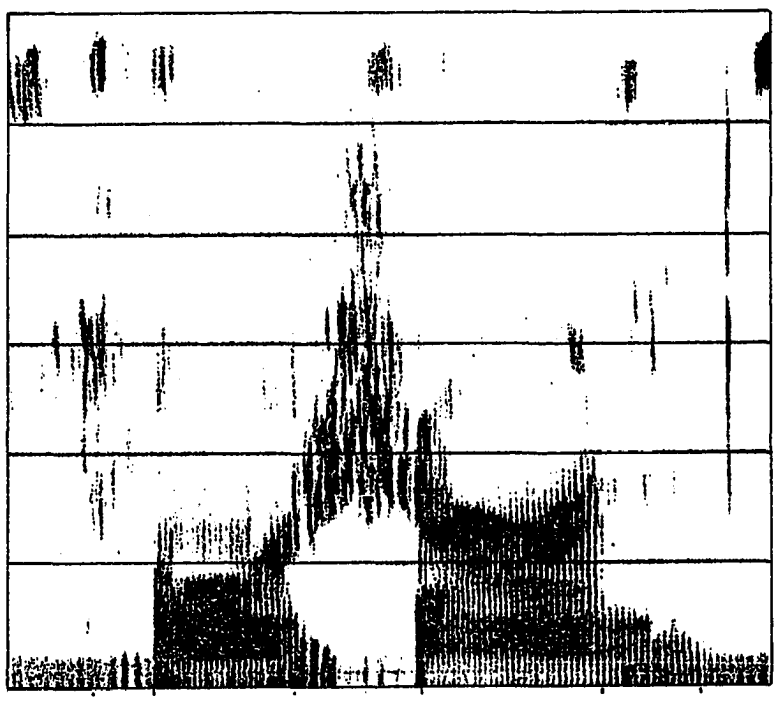
2.1 Nasalized Vowels



/hõ:to:n/

'They're big'
(adjective)

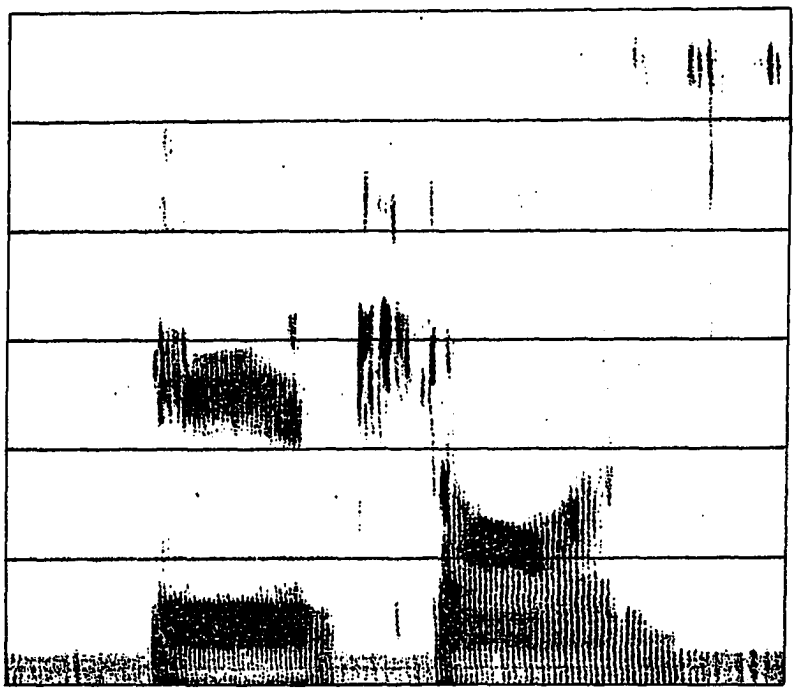
h	õ:	t	o:	n
.07	.15	.15	.21	.07



/fõ:so:n/

'It's a bird'
(noun)

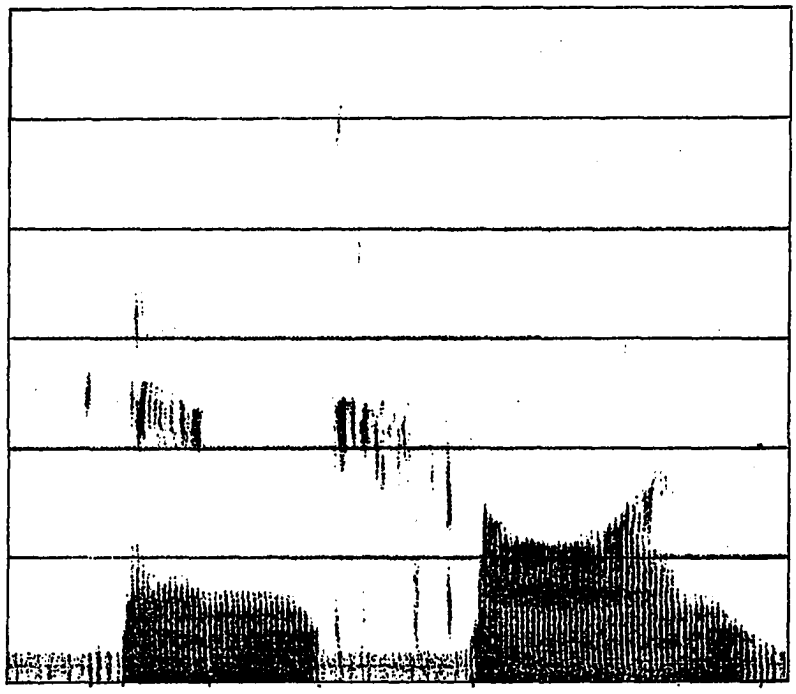
f	õ:	n	s	o:	n
.06	.14	.04	.13	.18	.10



/hĩ:χo:n/

'It's good'
(adjective)

h	ĩ:	n	χ	o:	n
.07	.16	.02	.125	.18	.065

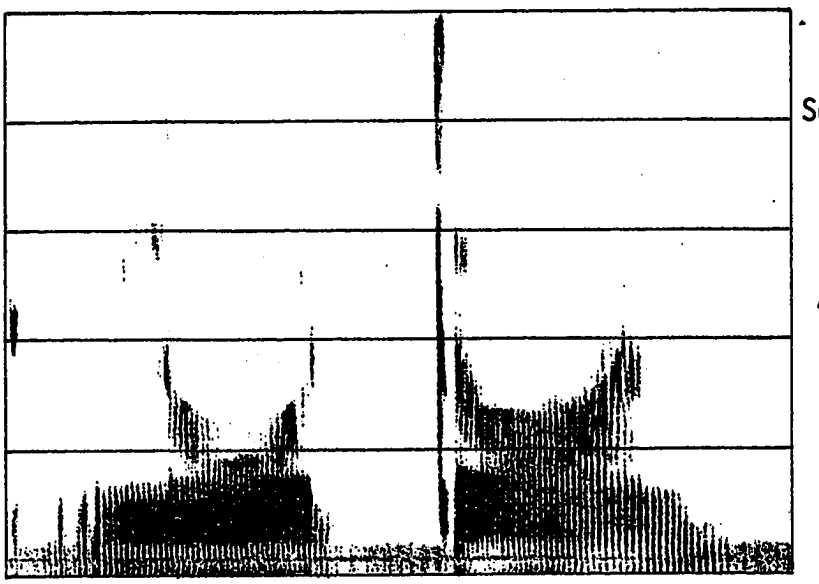


/hĩnχo:n/

'It's a squirrel'
(noun)

h	ĩ	n	χ	o:	n
.03	.085	.11	.15	.20	.08

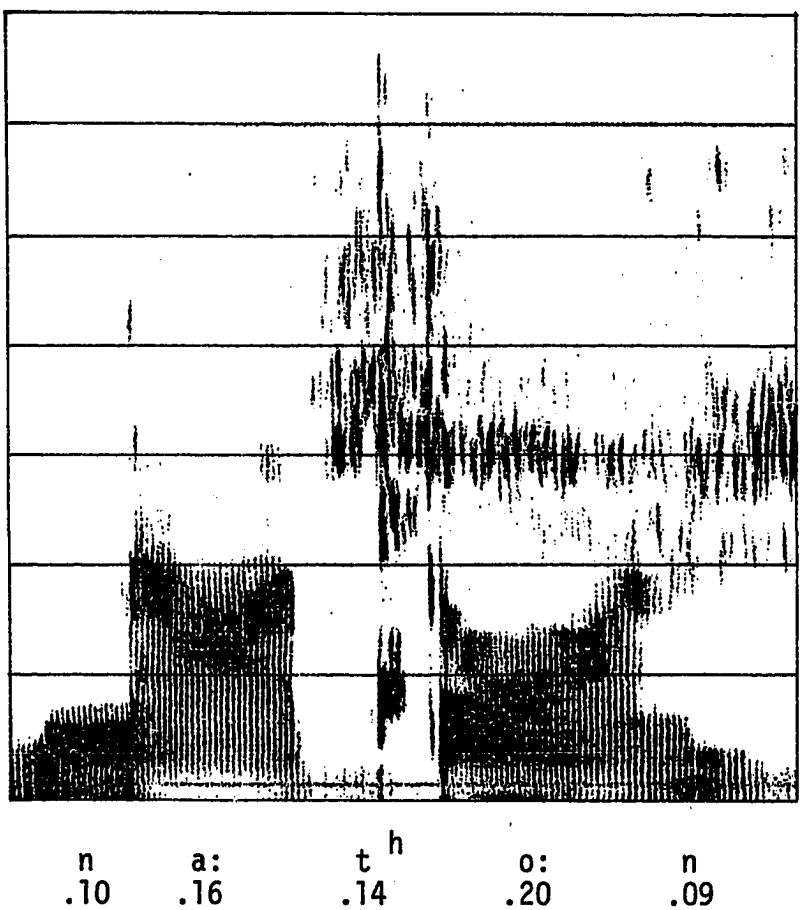
2.2 Progressive Nasal Spread from Initial Nasal



Some nasal spread:

/nõ:tõ:n/

'It's a tooth'

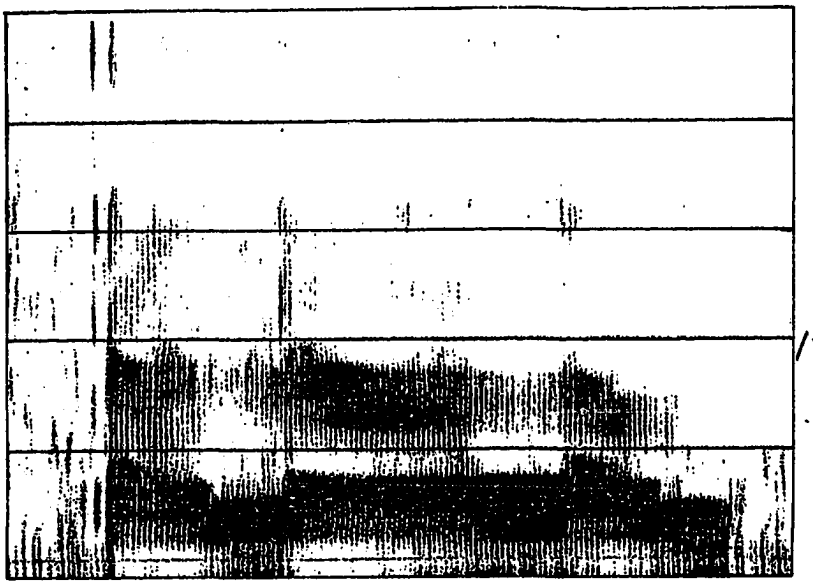


No nasal spread:

/nà:tõ:n/

'It's a chin'

2.3 Degrees of Nasalization

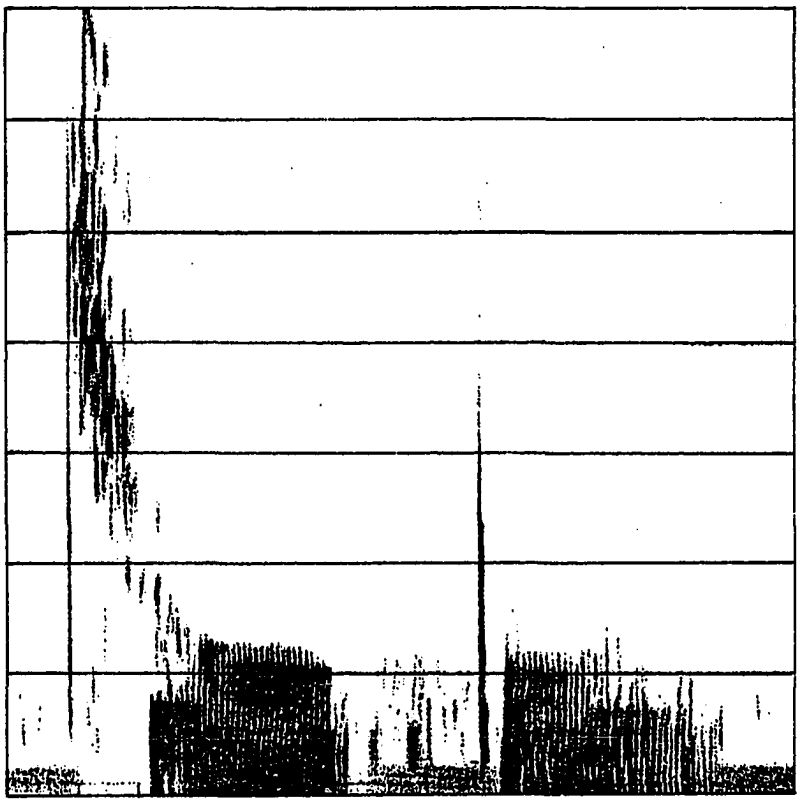


Partial nasalization
on last part
of long vowel

/tanã:lom/

'She's bending over'

t ə n a ã l ə m
.02 .085 .08 .105 .08 .10 .08 .08



Full nasalization
on long vowel

/c̃õ:pom/

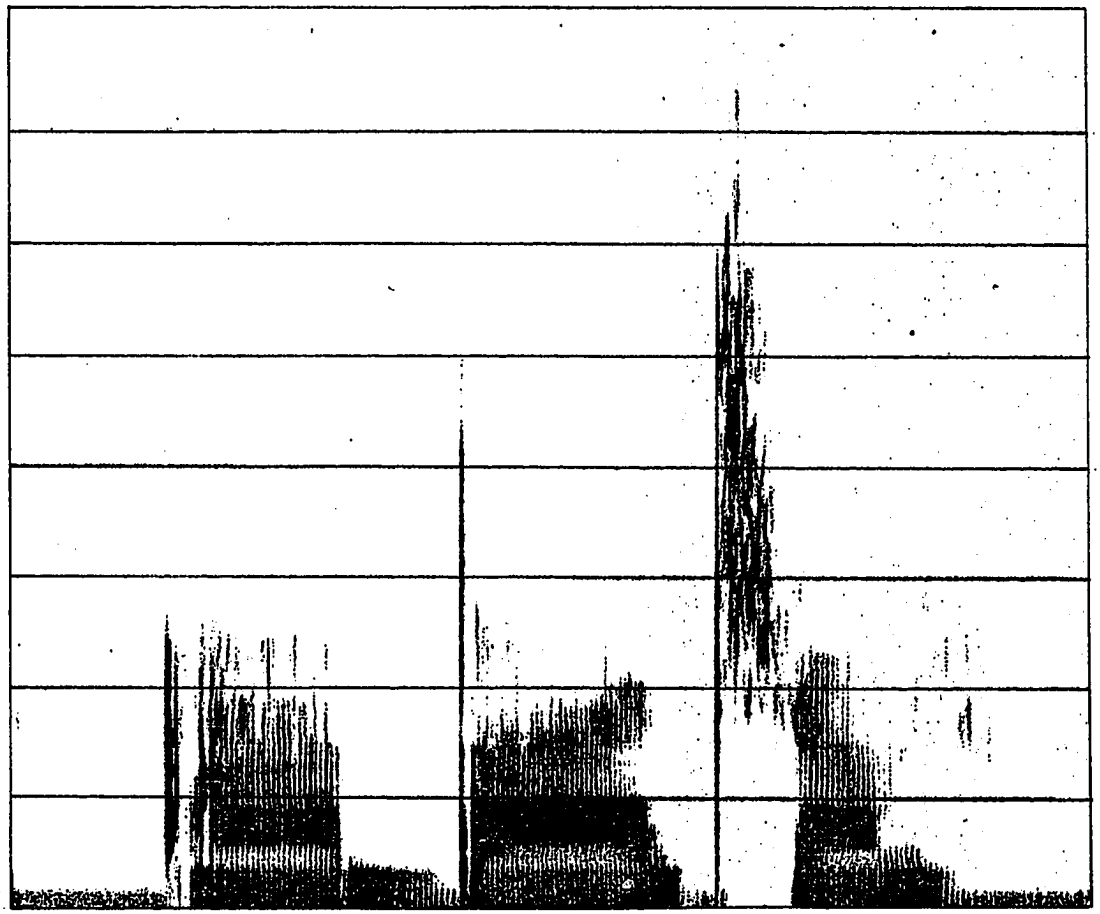
'He's bending over'

c̃ u õ: p ə m
.07 .04 .15 .16 .10 .10

2.4 Inflected Verbs: Nasalized and Non-nasalized

/a:b̃a:v̌com/

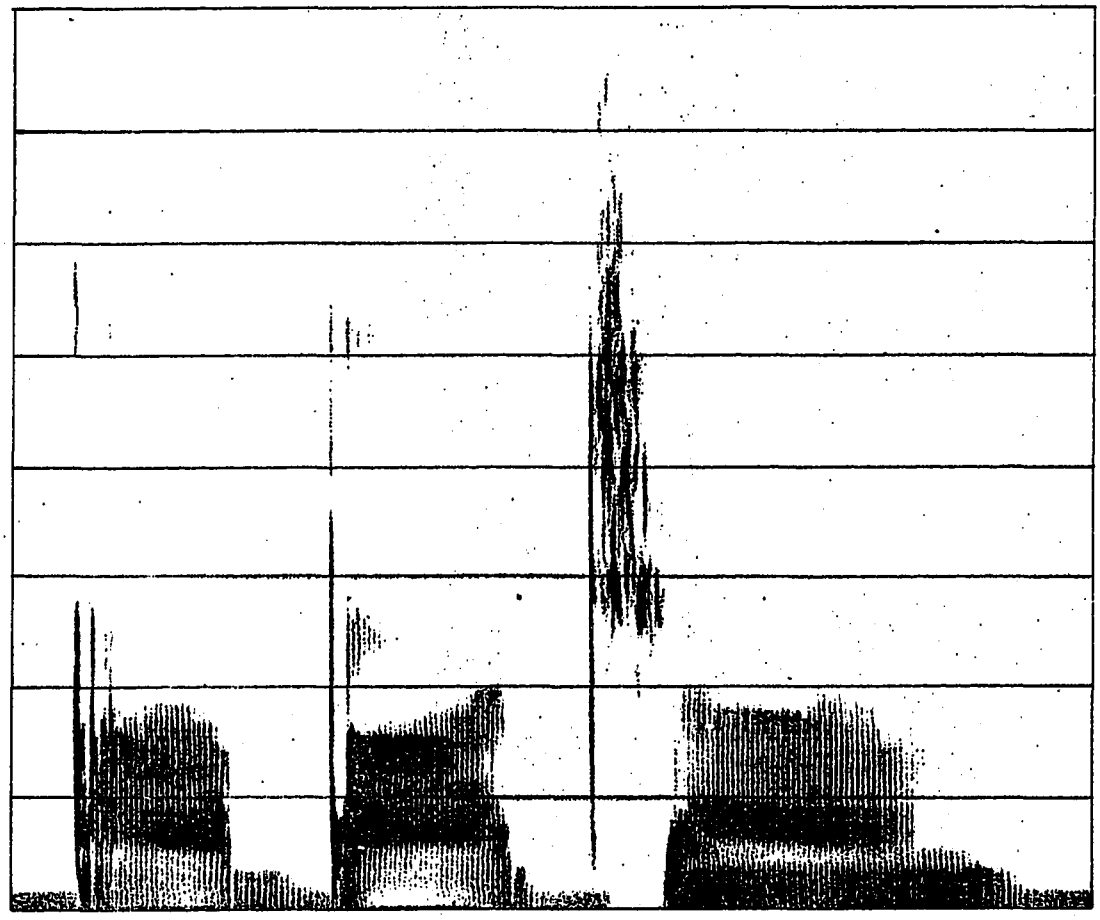
'She's taking a picture'



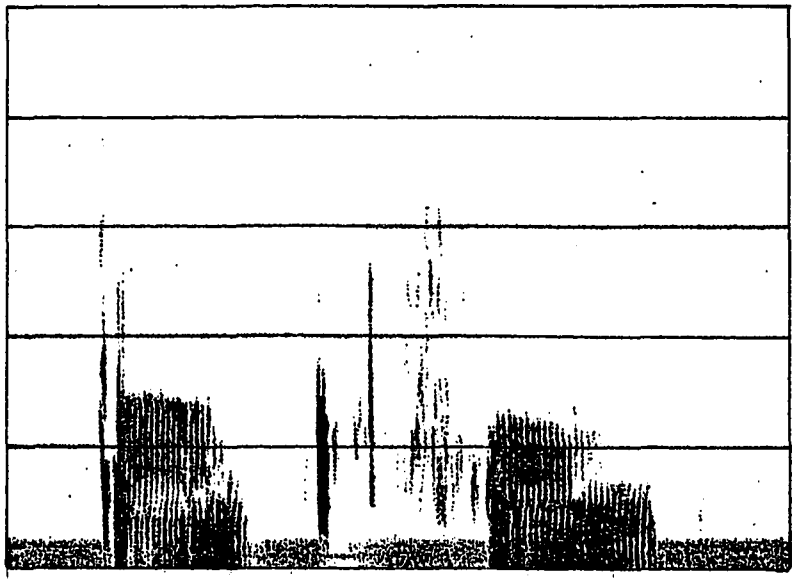
a:	b	ã:	n	v̌c	ə	m
.15	.13	.19	.02	.11	.09	.06

/a:ba:ča:m/

'She will take a picture'



a·	b	a:	č	a:	m
.15	.11	.185	.115	.25	.09

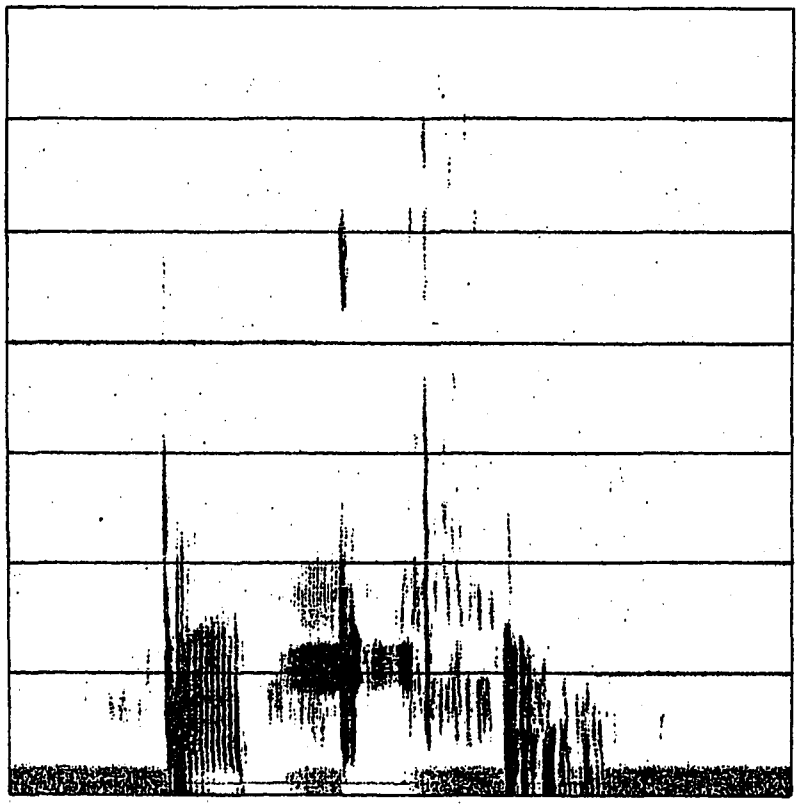


p ə̃ ŋ k f ə m

.02 .09 .03 .185 .15 .08 .08

/p̃ãkfom/

'It's swelling up'

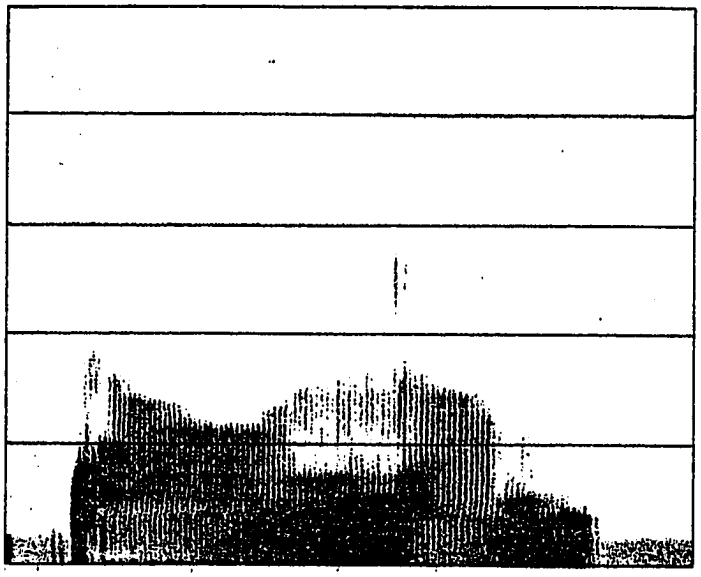


p ə k f m

.02 .07 .10 .15 .08

/pákfom/

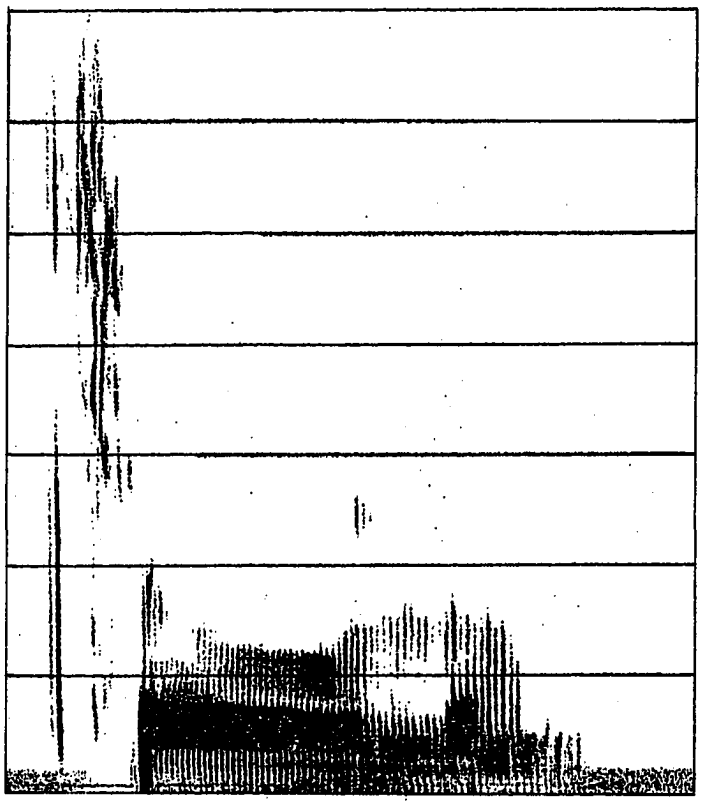
'It just swelled up'



c̆ ũ õ w̃ l ə m
.07 .04 .16 .12 .08 .05 .05

/c̆ãwlom/

'He's writing'



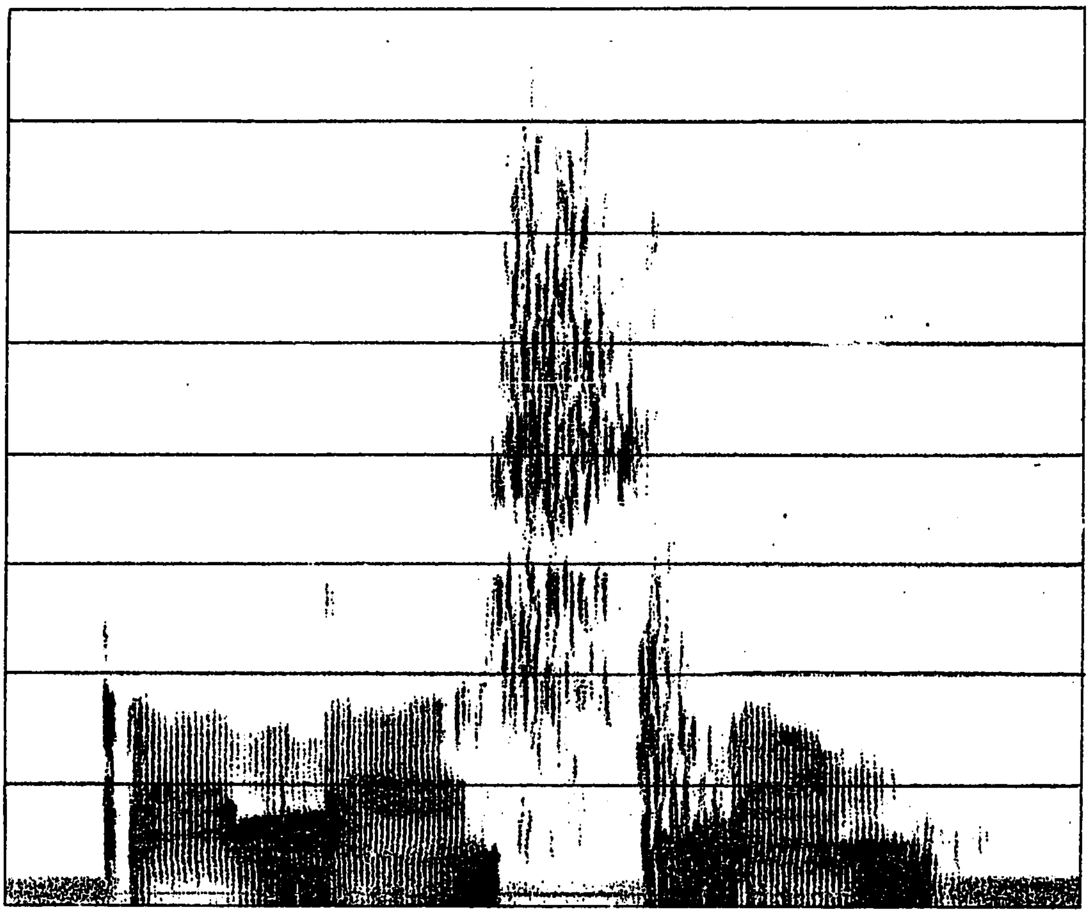
c̆ o w l m̩
.07 .22 .085 .07 .05

/c̆́awlom/

'He wrote'

/kalãšlom/

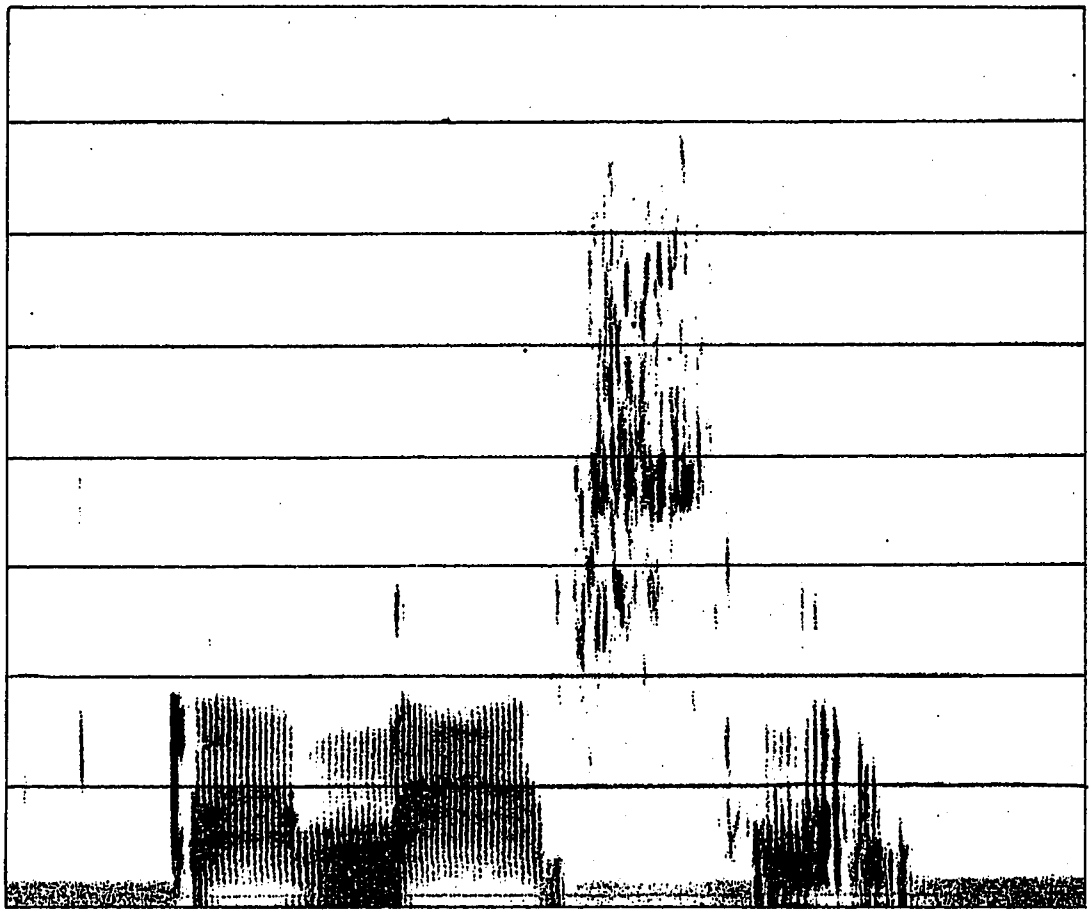
'He's cutting with scissors'



k	ə	l	ə̃	n	š	l	ə	m
.025	.10	.09	.13	.04	.15	.10	.10	.09

/kal*áš*lom/

'He just cut with scissors'



k ə l ə ṣ̌ l m̩

.02 .10 .10 .16 .20 .05 .05

APPENDIX III
A-STEM AND I-STEM VERBS

A-stem roots:

Plural forms:

/ata,š,ɬ-ā-:č-om-ik-towa/ 'They learned a long time ago'

/po-ba,š,n-ā-:č-om/ 'We want'

/šalk-ã̄-:č-om/ 'They lie down'

/im̄-paka:l-ã̄-:č-om/ 'It's blossoming'

/wi:k-ã̄-:č-om/ 'They are sitting'

/ata,š,ɬ-a-:č-om/ 'They know'

/há:y-ā-:č-owa/ 'He raises tomatoes'

/aɬ-ā-:č-om/ 'They go'

/hopa,š,n-ā-:č-om/ 'They sing'

/lok-š-a,š,y-ã̄-:č-om/ 'They are driving'

/o,š,ɬ-ã̄-:č-om/ 'They are coming'

/šowa, š,k-ã̄-:č-om/ 'They are moving'

Derived Nominals:

/takaλ-k-a-h-č-i/ 'drive'

/ham-ho,p-a-h-č-i/ 'They are bad'

/folohk-a-h-č-i/ 'be around'

/hič,hay,k-a-h-č-i/ 'was born'

/š-oks-a-h-k-i/ 'soap'

Causatives:

/λan-a-:č=/ 'get outside'

/či-k-a-:č-onka-li/ 'I told you'

/ĩ:-hamp-a-:č-om/ 'He tore them up'

/no:h-ā-:č-om/ 'He cooks'

/a:b-ã̄-:č-om/ 'She takes a picture'

/ipt-ã̄-:č-om/ 'It's freezing'

/pakf-ā-:č-om/ 'fill with air'

/poločf-ā-:č-om/ 'make round'

/katokn-ā-:č-om/ 'make thick'

/čo:b-ā-:č-om/ 'make bigger'

/ɬabakn-a̅-:č-om/ 'fill with liquid'

/labok-a̅-:č-om/ 'make a liquid thick'

/i:l-a̅-:č-om/ 'bring back'; plural of 'come back'

/talw-a̅-:č-om/ 'cause to dance'

I-stem roots:

Plural forms:

/iš-po̅-b-í-:č-om-i-čka/ 'We're tired of that noise you're making'

/apo:t-i̅-:č-om/ 'She's thinking'

/čiyahčol-i̅-:č-om/ 'He's walking'

/iše:l-ĩ̅-:č-om/ 'They are doing'

/apo,š,n-ĩ̅-:č-om/ 'They're talking'

/hopa,š,n-ĩ̅-:č-om/ 'They're singing' (also a-stem)

/it-ĩ̅-:č-om/ 'They are coming'

/ka-yawl-ĩ̅-:č-om/ 'They're moving around in the water'

/no,š,č-ĩ̅-:č-om/ 'They're sleeping'

/yaka,š,l-ĩ̅-:č-om/ 'They're flying'

Derived nominal:

/fa:y-i-h-č-i/ 'hunter'

Causatives:

/hača:l-i-:č-om/ 'set upright'

/čoko:l-i-:č-om/ 'set upright in a sitting position'

/ča-mala:l-i-:č-om/ 'It scared me'

/ill-i-:č-om/ 'He kills'

/oks-i-:č-om/ 'They kill'

/opahl-i-:č-om/ 'She gives a bath'

/ač-apo:n-i-:č-om/ 'He gossips about me'

/an-noka:č-i-:č-om/ 'She hurt me'

/kaba:l-i-:č-om/ 'She grabbed (it) with pliers'

/pakf-i-:č-om/ 'fill with air' (also a-stem)

/polačl-i-:č-om/ 'make round' (also a-stem)

/walačl-i-:č-om/ 'make round'

/bančl-i-:č-om/ 'make long'

/tabaks̆-i̲-:c̆-om/ 'unfold, take out dents'

/fayhn-i̲-:c̆-om/ 'drain out liquid'

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Mary Tyler Derrick-Mescua was born in Chicago, Illinois, on October 27, 1947. She attended the public schools in Gainesville, Florida, and spent her freshman and sophomore years at the University of Florida. She received a B.A. in Spanish literature in 1969, and an M.A. in linguistics and Hindi in 1970 from the University of Michigan in Ann Arbor. In 1971, she returned to the University of Florida to work for the Ph.D., specializing in anthropological linguistics. Her work since that time has been directed toward the completion of the Ph.D. During this time, she was also an instructor at the English Language Institute of the University of Florida, and the Director of the Bilingual Project of the Seminole Tribe of Florida on Big Cypress Reservation.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Program in Linguistics in the College of Liberal Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

March 1980

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