Mamaindê Grammar:

A Northern Nambikwara language
and its cultural context

VRIJE UNIVERSITEIT

Mamaindê Grammar: a Northern Nambikwara language
and its cultural context

ACADEMISCH PROEFSCHRIFT

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door

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geboren te Siguatepeque, Honduras

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copromotor: prof.dr. W.F.H. Adelaar

Dedication

To my son,

Micah David Eberhard,
1987-2007,

whose unexpected passing during the writing of this work has enabled me to finally understand that linguistics is simply one of my favorite unimportant things in life.[1] Thanks Micah, for pointing out the truly important things…

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[1] Adapted from the words of a friend, Keith Lango.

contents

acknowledgements

wa̱i juhak ankitanuʔwa

abbreviations

3Ref	3rd Party Referent		Inf	Inferred Evidential
Anc	Ancient		Int	Interrogative
Anim	Animate		I.Pst	Intermediate Past
Auth	Authentic		Inj	Interjection
Aux	Auxiliary Verb		Irr	Irrealis
Adv	Adverb		It	Iterative
Asm	Assume		Loc	Locative
Att	Attempt		L.R	Low Register
Bdy	Body Incorporation		Man	Manner
Cau	Causative		Mir	Mirative
Cmp	Completive		Ncl	Noun Classifier
Cn	Connective		Neg	Negative
Cnd	Conditional		Nom	Nominalizer
Cnt	Continuative		N.Int	Non-Interrogative
Com	Comitative		NVis	Non-Visual Evidential
Cop	Copula verb		O	Object (direct & indirect)
Decl	Declarative		O1/O2/O3	Objects - 1st/2nd/3rd
Dem	Demonstrative		OCP	Obligatory Contour Prin.
Des	Desiderative		OT	Optimality Theory
Dir	Directional		Obl	Oblique
Dnm	Denominalizer		Pat	Patient
D.Pst	Distant Past		Pl	Plural
DS	Different Subject		Pl.In	Plural Inclusive
Dub	Dubative		Pl.Ex	Plural Exclusive
Emo	Emotive		Pn1/Pn2/Pn3	Pronouns - 1st/2nd/3rd
Emp	Emphatic		Pot	Potential
End	Endearment		Prb	Probability
E.V.	Embedded Verb		Prs	Present
Evd	Evidential		Prm	Permissive
Fem	Female gender		Ps1/Ps2/Ps3	Possessives - 1st/2nd/3rd
FNS	Final Nominal Suffix		Ps1.Pl	Possessive, 1st person plural
Fut	Nominal Future Marker		Pst	Past (Recent Past)
Fut1	Future 1 – Strongest		Pt	Portuguese gloss
Fut2	Future 2 – Strong		Q	Quantifier
Gnd	Gender		Qw	Question Word
Gnt	Genitive		Rcp	Reciprocal
G.Kn	General Knowledge Ev.		Rfl	Reflexive
Hab	Habitual		Rpt	Repetitive
Hum	Human		RS	Reported Speech Ev.
Imp	Imperative		RS3	Reported Speech thirdhand
Inc	Incompletive		Rst	Restrictive
Incl	Inclusive		S	Subject

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S1/S2/S3	Subject - 1st/2nd/3rd		Ø	null morpheme
SEQ	Sequential		#	word boundary
SR	Switch Reference		+	morpheme boundary
SS	Same Subject		$ or (.)	syllable boundary
STA	Stative		]	root or stem boundary
TMP	Temporal		μ	mora
TNS	Tense		σ	syllable
TNS.M	Tense modifier		Ω	appendix
VIS	Visual Evidential		H	high tone
WNT	Want		L	low tone

i   preliminaries

i.i   goal, target and motivation of research

The goal of this research is to describe, as comprehensively as possible, the Mamaindê language as spoken by the Mamaindê people of southern Amazonia. The targets of this study are the approximately 250 Mamaindê speakers found in the four Mamaindê communities of Capitão Pedro, Cabixi, Tucumã, and Campo do Meio, all located in the northwestern corner of Mato Grosso state, Brazil.[2]

This description will be organized into four chapters. Since I believe that understanding language implies an understanding of culture, I will begin in chapter one with a description of the broader cultural, historical, and socio-linguistic contexts. This will then be followed by the language description per se, which will include a phonological description in chapter two, a morphological description in chapter three, and a syntactic description in chapter four. The syntax chapter will also include some elements of Mamaindê discourse.

An underlying curiosity about language and culture in general, and a personal enjoyment of this language and culture in particular are the main motivations behind this work. The fact that Mamaindê finds itself on the brink of endangered status has added impetus to the task of documenting it in a timely fashion. The reader is alerted, however, to the fact that numerous other Amazonian languages are in an even worse state of affairs, urgently requiring the attention of this generation of linguists to document them before they are gone.

i.ii   research data

The data upon which this work is based comes both in the form of elicited and un-elicited textual material gathered by the author in multitudinous trips to the Mamaindê language area between the years of 1994-2009. The data was gathered either in recorded form, transcribed form, or both.

Additional perceptions and insights into the language come from the simple fact that I have had the privilege of living within the Mamaindê community off and on over a span of 15 years, and have had the good fortune not only to learn about

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[2] The current state of the Mamaindê language community is best described as a merging of several traditional and related lects into one speech community. Although each of these lects existed as separate groups at one time, most of them suffered the decimation of their populations to the point that the survivors were obligated to join forces. The Mamaindê community today is the result of that merger, and thus the linguistic reality is quite complex. (See section 1.2.2, 'Merging of lects', for more details.)

their language, but also to acquire it in its living, spoken form. The experience of speaking Mamaindê and particularly of relating to the Mamaindê people and entering their cognitive world by way of their unique language has been one of the greatest joys of my life.

A significant amount of data, in particular an unfinished lexicon, was acquired from Peter Kingston, a previous researcher in this language to whom I am greatly indebted.

i.iii   theoretical assumptions

For the bulk of this work, no specific theoretical assumptions were made by the author, other than those generally considered to be part of Basic Linguistic Theory, a term now in vogue to describe the basic framework that is considered fundamental to all linguistic description (Dixon, 1999: xxvi). This will hopefully enable a greater variety of readers to benefit from the discussions, regardless of their theoretical background. At times, however, specific theories do add important insights to the arguments presented and will be employed when appropriate. The theoretical models to be mentioned in the following chapters will include Autosegmental Phonology (Goldsmith, Kenstowicz), Feature Geometry (Clements, Halle/Sagey), Syllable Theory (Steriade, Kiparksy), Metrical Stress Theory (Prince, Halle/Vergnaud, Hayes, Liberman), Reduplication Theory (Marantz, McCarthy/Prince), Lexical Phonology (Kiparsky), Optimality Theory (Prince, Smolensky, McCarthy), Relational Grammar (Postal and Perlmutter), Functional/Typological Grammar (Givón), and Role and Reference Grammar (Van Valin and Polla).

The general structure of the contents was guided in part by the basic research outline for descriptive grammars as set out by Payne (1997).

i.iv   limitations

This work is limited in many ways. First, there is the limitation of depth. This is a descriptive grammar, covering the basic components common to all languages, namely, the phonological system, the morphological system, and the syntax. Each of these areas has been treated here to the fullest degree possible, but the author makes no pretension that the treatment found here is comprehensive in any of these areas. An additional section on discourse has been added to the syntax chapter, although it has not been the focus of this research and thus it is the most limited in scope. New discoveries in each of these areas of Mamaindê structure still await the future researcher.

Secondly, there is the limitation of breadth. There are certainly other areas of the Mamaindê language which are not covered here. Issues such as Mamaindê semantics, Mamaindê conversational styles, and Mamaindê metaphor are not included. Neither are the more subjective, but nevertheless important topics such as

the beauty of this language, the experience of speaking this unique language, the incredible bank of local knowledge that it contains, and the various ways in which it constitutes the traditional identity of the people who speak it. These are all valid topics for future studies in Mamaindê language and culture. For now, however, we will limit ourselves to the aforementioned components of grammar, but with the recognition that they cannot provide the whole picture of the language.

Lastly, and perhaps most fundamentally, this work is limited by the numerous faults and shortcomings of the author, and by his only partial and fragmented understanding of the mysteries of language in general and of this one language in particular.

1 Mamaindê: Painting the Broader Picture

1.1 The Cultural Context

1.1.1 The Language-Culture Link

The starting point for studying any language is a study of the culture in which it is embedded. With that in mind, I offer here a brief description of the Mamaindê culture before tackling the language itself. Ever since the seminal writings of Boas, Sapir and Whorf, numerous scholars have sought to uncover the various connections between language and culture, and have demonstrated that the two are inter-related in very intimate ways (Pawley, 1987; Lucy, 1992; Perkins, 1992; Foley, 1997; Palmer, 1996; Enfield, 2002; Everett, 2005). The question of how much language affects culture and cognition has been a debated topic in linguistics since the original hypothesis eventually attributed to Edward Sapir and Benjamin Lee Whorf, and numerous variations on the theme (linguistic determinism/linguistic relativity) have been proposed. However, the inverse has not been discussed to the same extent – the question of how much culture constrains language. And there is evidence to suggest that this influence is not negligible.[3]

In light of the symbiotic language-culture relationship alluded to above, this brief overview of Mamaindê society is admittedly incomplete. Nevertheless, I will attempt to do some justice to this relationship within this first introductory chapter, as well as provide cultural information at pertinent times throughout the body of the text, offering some initial hypothesis of why certain constructions exist, particularly those that seem especially linked to culture. I have also included, in the last two chapters, specifically chosen examples that will give the reader a taste of the culture in a broader sense. My hope is that these small glimpses of culture throughout will suffice for the reader to grasp how important this specific culture is to this specific language.

While I will be mentioning elements of the traditional culture, I will also be including in this chapter numerous observations regarding cultural shift, stemming from a view of culture as dynamic, and not static. Thus, the ethnographic material

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[3] Although culturally motivated properties of language are not commonly discussed in descriptive grammars, a significant number of studies reveal that this culture-language relationship is critical in understanding linguistic structures. Givón (1979:306) shows that clause chaining without subordination is linked to preliterate 'societies of intimates'. In another study, Givón (1989:354-355) argues that culturally specific functions are grammatically encoded in Korean honorifics. Perkins' (1992) analysis on deixis demonstrates that the complexity of a society is related to the manner in which deixis is marked. Everett (2005) makes a case for a cultural trait regarding 'immediate experience' that constrains all facets of the Pirahã language.

that follows is not meant to provide a comprehensive reconstruction of the Mamaindê culture as it once was, but rather an ongoing picture, one that enables the reader to envision where this culture may be heading in the future.

1.1.2 Ethnic Denomination

The target group of this study are the speakers of the Mamaindê language of west central Brazil (this language has been referred to by some researchers, including the Ethnologue[4], as Northern Nambikwara). This ethnic group has been known for over a century to outsiders as the Mamaindê. Their name is not an autonym, but the Portuguese variation of a name assigned to them by a neighboring Northern Nambikwara tribe, presumably the Negarotê, with whom they traditionally warred. The original term was */mamãin-si-tu/*[5], 'the people of the */mamais-tu/* wasp', which is a feared insect in the region due to its habit of feeding on dead flesh, thus becoming a symbol of the Mamaindê's warring prowess. The word *'mamaindê'* first appears in its Portuguese form in the writings of Rondon and Farias (1910, 1922, 1946, 1947). The Mamaindê are also referred to as */waintʔesu/* by the Southern Nambikwara and */itamolo/* by the Sabanê (Price, 1972:70).

1.1.3 Environmental System

The Mamaindê describe much of their world in dualistic terms. The terms in question are related to three large areas of their environment: the physical, the climactic, and the social. The physical environment, and everything in it, both plant and animal, is described as belonging to either the forest, */taʔwen-tu/*, or savannah, */halo-tu/*. The climactic environment varies quite markedly from a wet season */mih-hen-tu/* 'rain-NCL.time-nom.suff' which lasts from October to April, to a dry season, */kamik-hen-tu/* 'dry.season-NCL.time-nom.suff', which spans the period from May to September. Their social environment is divided up into an Indian */nakajanʔ-tu/* world and a non-Indian */kajauki-tu/* world. These three dualistic systems frame the context of the Mamaindê, and thus have functioned to shape them into the people they are today.

The traditional habitat of the Mamaindê is located in west central Brazil, just east of the Guaporé River. This large waterway marks the Brazil-Bolivia boundary and flows north into the Madeira River, which in turn empties its waters into the Amazon. The area in question is also the border region between the Brazilian states of Mato Grosso and Rondônia, and is composed of the high grasslands to the east on the Chapada dos Parecis plateau, and the tropical forests to the west, which fill the river basin of the Guaporé and its tributaries. An abrupt escarpment, some 200 meters high in places, separates these two worlds. According

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[4] See www.Ethnologue.com

[5] Or */mamãin-si-ãni/* depending on which final nominal suffix is used.

to the accounts of the oldest speakers, the traditional Mamaindê territory stretched north along this escarpment to the savannah where the town of Vilhena currently is located, to the foothills just west and north of the Cabixi River, to the south as far as the Pardo River, and to the east as far as the savannah beyond the current Cuiabá-Porto Velho highway.[6] The extent of their occupation of this land can be proven by the use of traditional Mamaindê names for hunting grounds in the Vilhena area as well as hunting areas east of the current highway. To the north of the Cabixi River, they speak of traditional villages as well as a sacred hill. Interestingly, the Mamaindê never speak of the Guaporé River, nor do they have a name for this large waterway, showing that it was beyond the scope of their world. The escarpment ran through the center of this universe, and thus their traditional hunting and foraging domain included the highlands and lowlands on either side. Due to this dual ecology, the Mamaindê have become adept at living in both the savannah and the forest, able to take advantage of the resources found in each.

General location of the Mamaindê/Nambikwara territory

(map source: Instituto Socioambiental
http://mapas.socioambiental.org/website/TerraIndígenaNovo/viewer.htm
The location of the Nambikwara area was added by the author)

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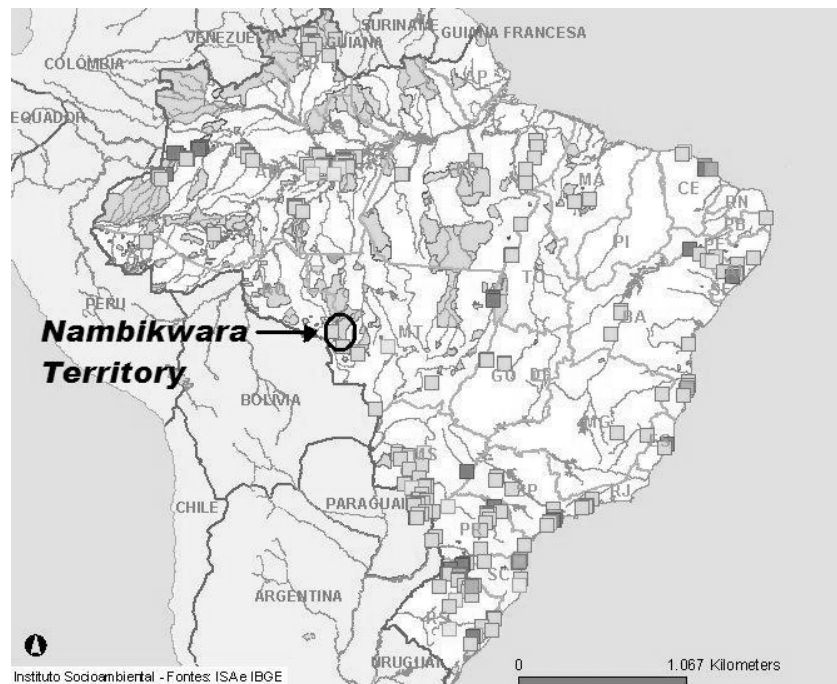
[6] The Pardo flows west into the Cabixi, which continues on this course until it reaches the Guaporé. Porto Velho is the state capital of Rondônia to the north, and Cuiabá the state capital of Mato Grosso to the south.

The current homeland of the Mamaindê has been reduced somewhat and is flanked to the north and west by the Cabixi river and to the south by the Pardo river. This land comprises the northwestern tip of the indigenous reserve known as the 'Terra Indígena Vale do Guaporé', created in 1984 by FUNAI (Fundação Nacional do Índio). This long, narrow reserve includes most of the original lands inhabited by the Mamaindê,[7] and is located just west of the interstate highway BR174 connecting Cuiabá, the capital of the state of Mato Grosso to the south, with Porto Velho, the capital of the state of Rondônia to the north. The reserve skirts north-south along the escarpment separating the Guaporé River basin from the Parecis plateau. Although it includes most of their original lands, the present reserve does not extend as far north or as far east as their traditional lands once did in the past. Particularly missing from the current reserve are their original hunting grounds north of the Cabixi, and a number of ancient villages sites and hunting grounds closer to the current Cuiabá - Porto Velho highway.

The reserve comprises some 242,593 hectares (ha) or the equivalent of 599,457 acres[8], and is the home of two Northern Nambikwara groups, the Mamaindê and the Negarotê, as well as a number of Southern Nambikwara groups further to the south, the Wasusu, Alãntesu, Waikisu, and Hahãintesu. Each of these groups has their traditional space within the reserve and, although their areas are contiguous, they typically do not venture into each other's territories.[9] The speakers of Mamaindê live in four communities at the very top of this reserve. Today, the reserve is surrounded on all sides by Brazilian farmers and ranchers, who are actually the immediate neighbors of the Mamaindê, closer to them geographically than any indigenous groups.

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[7] Although not included in the reserve, the hills just to the north of the Cabixi were once also considered traditional Mamaindê territory, known as the */taiʔka-kʰu-tu/* area (gloss unknown). This northernmost stretch of their homeland figures in some of their legends, most notably the legend which gives the rational for the seclusion of the pubescent girls during the time of her female puberty rite. In this legend, the whirlwind spirit kidnaps an unguarded pubescent girl and takes her to the */taiʔka-kʰu-tu/* land and turns her into one of the prominent hills of that region. This event is said to have triggered the practice of secluding the pubescent girls.

[8] See www.CIMI.org (Conselho Indigenista Missionaria) for a table indicating the sizes of Indian reserves.

[9] The exception here is between the Negarotê and the Mamaindê, who are now on peaceful terms and have inter-married for years and who will often visit each others villages unannounced. However, hunting and gathering in the other's land is not accepted without prior consent.

Map of the Vale do Guaporé Reserve

(map source: Instituto Socioambiental
http://mapas.socioambiental.org/website/TerraIndígenaNovo/viewer.htm.
Group names and locations, indicated by circles and polygons, were added by the author)
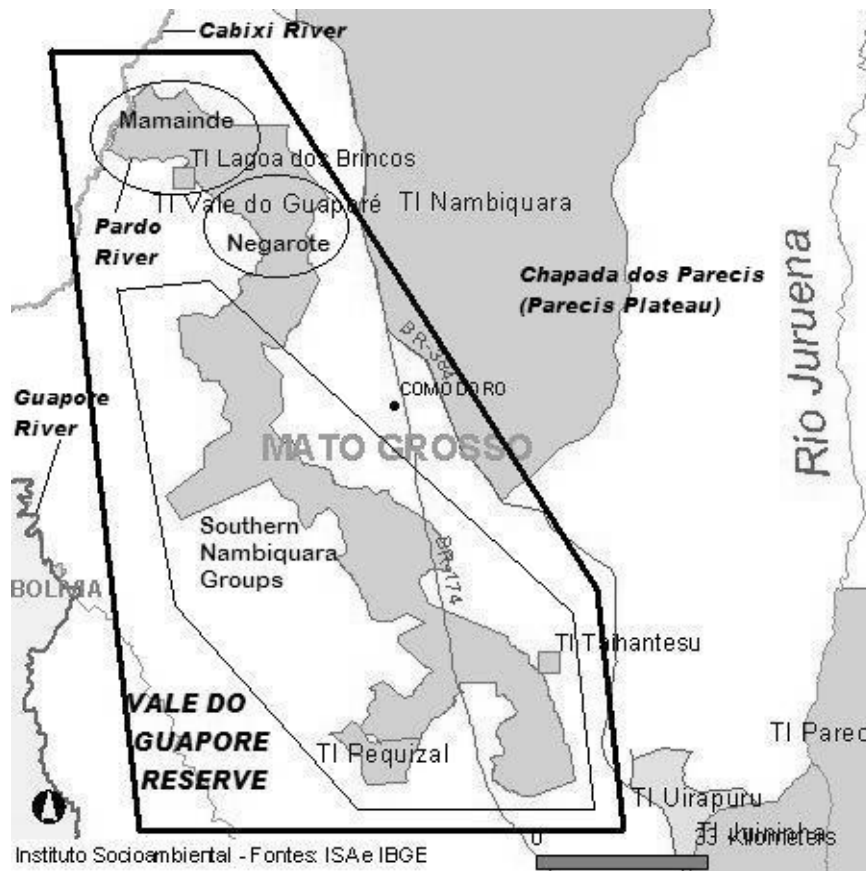
Mamaindê area of the Vale do Guaporé Reserve.

(map source: Instituto Socioambiental
http://mapas.socioambiental.org/website/TerraIndígenaNovo/viewer.htm
Village names were added by the author)
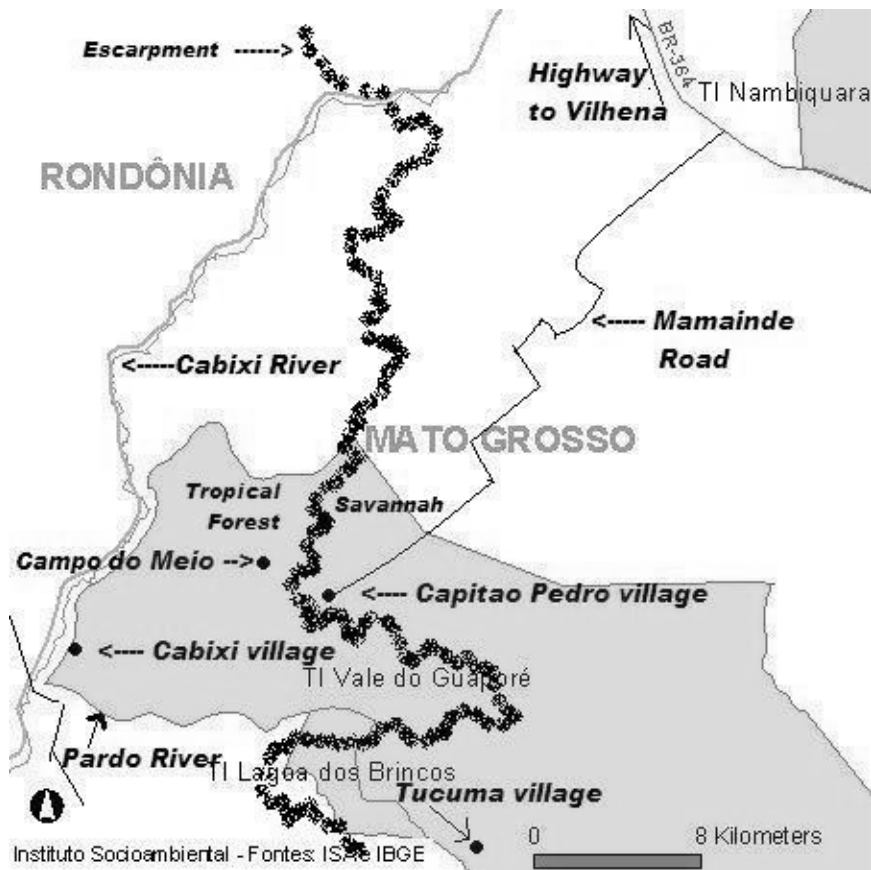
Below is the list of the reserves which are home to the various Nambikwara peoples, along with their comparative sizes. This information is based on Aconteceu (1981:21), Costa (2002:60), Miranda (2000:22.), and Miller (2007:42-43).

Terra Indígena Nambikwara   - 10,119 km^2
      Southern Nambikwara (savannah groups):

Terra Indígena Sararé   - 674 km^2
      Sararé

Terra Indígena Vale do Guaporé   - 2,425 km^2
      Mamaindê, Negarotê, and valley groups of the Southern
      Nambikwara

Terra Indígena Lagoa dos Brincos - 16 km^2
      Additional Mamaindê/Negarotê territory
      (area for gathering mother-of-pearl shells)

Terra Indígena Aikana/Latundê   - 1,160 km^2
      Latundê (including the unrelated Aikanã tribe)

Terra Indígena Pirineus de Souza   - 282 km^2
      Sabanê/Tawandê

Terra Indígena Tirecatinga   - 1,305 km^2
      Southern Nambikwara

Terra Indígena Pequizal   - 988 km^2
      Alantesu (valley group of Southern Nambikwara)

Terra Indígena Taihãtesu   - 536 km^2
      Wasusu (valley group of Southern Nambikwara)

Map of all Nambikwara reserves.

(map source: Instituto Socioambiental
http://mapas.socioambiental.org/website/TerraIndígenaNovo/viewer.htm
The circles indicating the reservations which are home to Nambikwara groups were added by
the author)
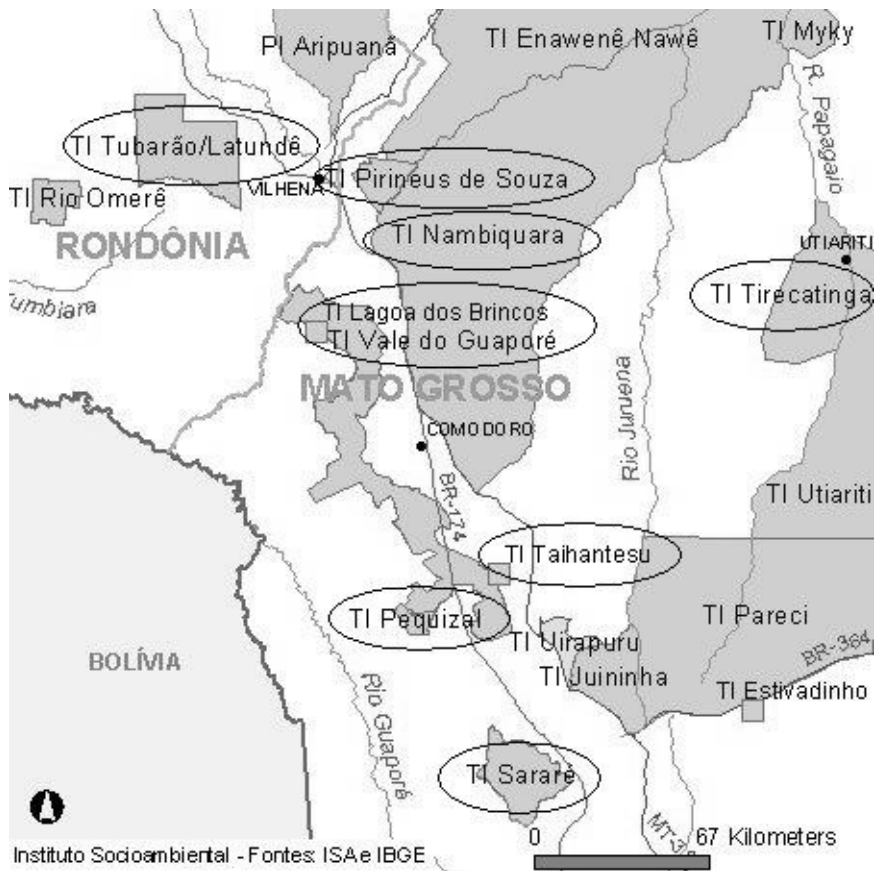
1.1.4 The Social System

1.1.4.1   Mamaindê Communities

As of this writing, there are four Mamaindê villages. The largest Mamaindê community is Capitão Pedro, which is also the oldest of the present villages. It is here that the Mamaindê have lived since 1981 when they, together with a number of other Nambikwara groups, were re-located to the newly created Guaporé reserve by FUNAI after several failed attempts at locating them further east on the savannah. This village is known as Capitão Pedro to all outsiders, and as Aldeia Central or [jukʰoʔtʰĩndu] to the Mamaindê themselves. The Mamaindê word means 'the village which hangs on the edge',[10] and refers to the village location, which was built on the top of the escarpment dividing the highlands of the Parecis Plateau (Chapada dos Parecis) from the Cabixi River basin below.[11] The population of Capitão Pedro was 196 as of the last census taken in 2006 by FUNASA, the Fundação Nacional de Saude (FUNASA, 2006:2), but this number has decreased somewhat due to fissioning and the establishment of newer villages.

In recent years, the Capitão Pedro village has suffered significant fragmentation as a community. In the late 90's, there were several families who moved a kilometer or so away from the rest and established various little groupings along the road leading to the village. Then, in 2005, larger dislocations began, resulting in a more drastic splintering of the Capitão Pedro community, and eventually to the establishment of three newer villages. The establishing of new villages is not something new among the Nambikwara. In fact, Price (1978:153) recorded that the Nambikwara traditionally had a pattern of living in one place for up to 10-15 years, then moving on and creating another village.

While this pattern of periodically moving a single village from one place to another may have been true of the Nambikwara at the time Price conducted his ethnographic research, the recent fragmenting of the Mamaindê community seems to suggest a different pattern.[12] This pattern is based not on any migratory tendency but on a number of other factors: land use issues, internal conflicts, and the desire for better access to the outside culture. Land use issues come into play when a village reaches a certain size which becomes difficult for the surrounding environment to support. The land close at hand is no longer producing what it once

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[10] This was also the name of an ancient Mamaindê village once located on the same spot.

[11] The Cabixi River flows west and empties into the Guaporé, which makes its way north to the Madeira, which eventually joins the Amazon, thus making the valley of the Cabixi a part of the larger Amazon drainage basin. Thus it is technically correct to refer to Mamaindê as an Amazonian language.

[12] The pattern of village fission recently demonstrated by the Mamaindê is more akin to that recorded by Napoleon Chagnon for the Yanomamo (Chagnon, 2000:119), where villagers live in a single location until that village breaks up in conflict and a number of new villages are founded.

did, and new gardens (as well as game) get further and further away.[13] Conflict, the second factor, is always a potential cause of community fragmentation, when factions within a village have a hard time getting along. The culturally appropriate manner the Nambikwara society provides to deal with such conflict is for the protesting party to remove itself from the main settlement. Finally, the desire for easier access to Brazilian towns for the purpose of acquiring outside material goods is growing. Adequate transportation is often voiced as the number one felt need within the Mamaindê community. This was certainly a factor in the case of one of the new villages, Tucumã, which is now located only two miles from a good road which provides a bi-weekly bus service to the town of Comodoro. It is probable that much if not all of the recent fissions among the Mamaindê have been a result of two, if not all three, of these factors. [14]

Capitão Pedro village - 1994

(*Photo by David Eberhard*)

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[13] It could be that the 10-15 year pattern that Price noted is simply the average time it takes for a given village in this region to have its territory so depleted that it no longer is able to support a growing population.

[14] To be fair, Price (1972:128, 169) also mentions both the land use issue and the conflict issue in regards to the fission of Southern Nambikwara bands.

Mamaindê families which founded the Cabixi village - November, 2005.

*(**Photo by David Eberhard**)*

The first of these new communities is the Cabixi village, begun on November 10th, 2005, when three families left the Capitão Pedro village and decided to start a new life for themselves in a new place (see photo sbove). This village is located on the southern bank of the Cabixi river, just a few miles upstream from the confluence of the Cabixi and Pardo rivers, and at the extreme western point of Mamaindê land. The Cabixi village is known as /tu-kwa̱-weh-nĩn-tu/ by the Mamaindê, 'the village of the river which brings', referring to the manner in which the Cabixi has traditionally brought life and food into this region. [15] This village is

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[15] Sadly enough, it was this same Cabixi River that also brought death to the inhabitants of the original /tukwa̱wehnĩntu/ village and other villages of the area with the arrival of the first white men. According to the elderly Mamaindê, these first white explorers paddled up the Cabixi bringing shiny presents, but also bringing measles and certain death for a huge percentage of the original inhabitants, who had no immunity to white mans diseases. A Mamaindê story tells of the Cabixi river making strange noises for a month before the arrival of the whiteman (noises which could have been the sound of firearms drifting upstream). To the Mamaindê, these noises were omens that death was soon to arrive. The white men in question were presumably men from Coronel Candido Mariano Rondon's military expedition, which built a telegraph line through Nambikwara territory between 1907-1914, and in the process made the first peaceful contact with Nambikwara peoples. Rondon's son-in-law, Emanuel Amarante, was also part of the expedition and established a port on the Cabixi river to supply the expedition and the telegraph atations with needed supplies. This Porto Amarante was located in the middle of Mamaindê territory and was one of the first places of sustained contact between the Mamaindê and the outside world. Not long after this contact a large number of Mamaindê died in a measles epidemic. For more information, see History section, 1.3.

actually founded on or near the spot of an ancestral village by the same name, which was decimated by measles after the arrival of Rondon and Amarante . The population of the Cabixi village grew to 25 people in 2006, a census taken by the author in a visit to the area (the Cabixi community was not included in the 2006 census by FUNASA).

Commemorative text written on wall in Cabixi village.

(*Photo by David Eberhard*)

A Portuguese text written in charcoal on a wall in the village of Cabixi commemorates the date of their arrival and the founding of this village, as well as mentioning those involved, "Chegamos no dia 10.11.005, meio dia.Tiao, Paulo, Juliano,Rafaela, Marilene, Marilza, Cida, Jandira, Carlo, Raquel, Aline, Gigi, Francieli, Dilei, Marlon".

The Tucumã village was started when Paulo Mamaindê, the Mamaindê school teacher, left the Capitão Pedro village in 2007. When he left, he took a good number of people with him, approximately 30 individuals, and started a new village on the edge of Negarotê territory. This village is situated south east of Capitão Pedro, and is still within the Guaporé Reserve, yet it is adjacent to a number of Brazilian ranches and small farms, and within a mile of a good road where a short bus ride provides bi-weekly access to the town of Comodoro.

Tucumã village - 2008

(*Photo by Cesar Ratier, used with permission*)

Campo do Meio, (also known as Aldeia do Meio), the latest village to splinter off of the main village, was founded in 2008 by Lucio, the most recent chief of Capitão Pedro. Constant conflicts there caused him to abandon the main village and retreat further into the forest, taking with him his rather large, extended family of some 25 individuals. This act has left the main village of Capitão Pedro with a leadership vacuum, a problem which they were still in the process of sorting out at the time of this writing.

Lastly, there is one extended family of Mamaindê not living in a village setting. This family consists of a Mamaindê woman married to a Parecis man, living in the São José suburb of the town of Vilhena, Rondônia. Most of their children are

married and live in the Cabixi village, but one daughter and three of their grandchildren live with them in town, where they attend a Brazilian school. These children are passive speakers of the vernacular. The home of this couple is also used by many Mamaindê, particularly those from the Cabixi village, as a temporary place of lodging when they are in town for various purposes.

According to FUNASA (2006:2), the total population of the Mamaindê people was 192 in 2006. If we add those not counted in that census, including the 25 individuals from the Cabixi village and the 5 individuals living in the town of Vilhena, we arrive at a total population of 222 in 2006. As health services continue to improve and they continue to grow rapidly in numbers, I would estimate that the total population today, at the end of 2009, is closer to 250.

In all of their communities, the Mamaindê now live in a mixture of dwelling styles. For years, they have abandoned the practice of living in the large, circular thatch houses, characteristic of their ancestors and shown in early photographs by Rondon (1948:25). Today, such thatch huts, in a much smaller version, are typically reserved for the reclusion of girls in the puberty ceremony. In Capitão Pedro, most of the homes are western-style wooden board structures covered by sheets of *'brasilite'*, asbestos based roofing material. These were built by Brazilian lumbermen as payment for wood extracted from the reserve, or by the few Mamaindê who have learned how to build simple variations of such dwellings. Some residents in this village even have brick homes, also built by the lumbermen. In contrast to the majority which have adopted the use of western style homes, a few families in Capitão Pedro have gone back to living in a more traditional thatch dwelling. In the Cabixi village, the homes are either of wooden boards or of split logs, roofed with either wooden shakes or a thatch roof. In the Tucumã village, some homes are wooden board structures, while a few families are living in circular thatch structures as a temporary measure until a more permanent western style house can be built.

A mixture of Mamaindê dwelling styles can be seen at Capitão Pedro village. 2007. A traditional cooking structure is on the left, with a more western style family dwelling on the right.

(*Photo by David Eberhard)*

A traditional Mamaindê female puberty hut - Cabixi village, 2008.

(*Photo by Cesar Ratier, used with permission)*

The map below shows the upper half of the Vale do Guaporé reserve, and the circle highlights the land within the reserve which is home to the four Mamaindê communities. Also included is the location of the single Negarotê village, and the Latundê, Sabanê, and Nambikwara reserves.

Map showing the four Mamaindê villages.

(map source: Instituto Socioambiental
http://mapas.socioambiental.org/website/TerraIndígenaNovo/viewer.htm)

1.1.4.2   Mamaindê Kinship and Descent

The Mamaindê exhibit a rather loose-knit social structure. Their community can be best described as a collection of a number of large extended families. There are no clans or moieties. Descent has been described as bilateral (Aspelin, 1975:32), and there is little emphasis or even interest in lineage beyond the adjacent generations represented in the grandparent-parent-child relationships. They have a bifurcate merging kinship terminology.[16] This kinship system, also known as the Iroquois system, is based on same-sex sibling groups, and refers to ego's father and father's brothers by the same term, and egos' mother and mother's sisters by a mutual term.[17] Such a kinship system is also the relational basis for the Mamaindê strong preference for bilateral cross-cousin marriage, although this norm can be violated when it becomes too impractical to implement.

Polygamy is not uncommon. The society is uxorilocal, being matrilocal without practicing matrilineal descent (see also Miller, 2007:130). Their preferred marriage is an endogamous one, even village endogamous if possible. But marriage outside of the village is not uncommon, particularly in situations when a suitable mate is not to be found in one's own village. Inter-marriage with other groups occurs mostly with the Negarotê, another Northern Nambikwara group. A few have ventured even further afield, marrying Southern Nambikwara and even Parecis. At the time of this writing, a Mamaindê has yet to marry a Brazilian.

1.1.4.3   Mamaindê Economy

Because of their location, the Mamaindê have become adept at living in two worlds, the savannah and the tropical forest. Traditionally, they are slash and burn agriculturalists as well as hunters and foragers/gatherers. Their main village is located on the edge of the high savannah. Yet, their planting and much of their hunting and fishing are done in the tropical forest below. To the Mamaindê, all animal and plant life is divided into two large categories: that which they can extract from the */taʔwen-tu/* 'forest' and that which is from the */halo-tu/* 'savannah'. The

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[16] The Mamaindê kinship system is described to a fuller extent by Aspelin (1975:32-35) and Miller (2007:130).

[17] All the major kinship terms are included here, in phonemic form: /mĩni-tu/ – father, and all his brothers; /natʰi-tu/ – mother, and all her sisters, /sũni-tu/ - grandfather; /hĩni-tu/ - grandmother; /sawis-tu/ - grandchild, /wet-tu/ - child; /kanĩnʔ-tu/ – daughter; /kihlanʔ-tu/ - son; /kanani-tu/ – brother. and all male parallel cousins, /watʰi-tu/ – sister, and all female parallel cousins, /sain-tu/ – oldest brother (a special relationship of responsibility); /toʔ-tu/ - brother-in-law and all male cross-cousins (if ego is a male); /toʔta-tu/ - sister-in-law and all female cross-cousins (if ego is female); /teʔ-tu/ - wife, and all female cross-cousins (if ego is male); /wetai-tu/ – husband, and all male cross-cousins (if ego is female); /tukwinʔni-tu/ – father-in-law and all his brothers; /wadeʔni-tu/ – mother in law, and all her sisters; /jais-tu/ - son-in-law; /sisata-tu/ - daughter-in-law; /kuʔtʰi-tu/ – cross-uncle (all of mother's brothers); /wadeʔni-tu/ – cross-aunt (all of father's sisters).

men prepare the gardens by felling the trees at the beginning of the dry season (June) and then burning the dried debris left over at the end of the dry season (September). Both men and women may do the planting, but while the men will weed and care for the gardens, the women are typically responsible for the harvesting. Their traditional crops include a number of tubers - various types of manioc, cará, peanuts, and sweet potatoes - plus a few other crops such as native squash, two types of string beans and native corn. The staple of their diet is manioc, which is eaten either fried as a spongy flat-bread or cooked and mashed into a sweet drink known as /ḻinʔḭa-tu/, 'chicha'. They have recently learned to plant pineapple and rice as cash crops. Hunting and fishing are the responsibility of the men, who mostly bring home small game, birds, rodents, monkeys, and small fish from forest creeks. Occasionally they are fortunate to encounter peccary or tapir, which provide meat that lasts for a longer period. Eating meat is a special event in the people's lives and is honored by two pairs of domain-specific verbs: /wḭ/, 'the act of eating meat' is distinguished from /jain/ 'the eating of any other food', and /eun/ 'hungry for meat' is contrasted with /hehsatoh/ 'hunger in general'. The women and children do most of the foraging for delicacies such as leaf-cutter ants, wasp larvae, grubs, etc. They also gather many types of wild fruit, nuts, berries and roots.

The Mamaindê material culture traditionally consisted only of items they made themselves. These included necessary utensils such as baskets, bows and arrows, clay pots, and drinking gourds, objects of sport such as rubber balls, ritual objects such as musical instruments, and objects used for corporal ornamentation such as necklaces, bracelets, rings, and other artifacts. The tools, balls and instruments were generally made by the men while all the bodily ornaments were the products of women's work. In the current culture, the baskets, musical instruments and necklaces are still being made in the community, but many of the other items are being replaced by the tools and gadgets of the ever encroaching Western world.

The changes in material culture are signs that the traditional economy is in a state of transition, undergoing rapid disintegration due to increased contact and dependence upon the outside world. A growing number of young men have been given jobs by national government agencies (FUNAI, FUNASA) or the local city government board of education. These jobs provide enough income for the younger men to support their families without planting fields. The elderly have been granted the right to a monthly retirement pension (known as 'aposentadoria' in Brazil). This pension is often used by the elders' children and grandchildren to acquire goods from town, and at times little is left for the grandparents themselves. This has resulted in some negative feelings within family units and reflects a growing dependency upon outside goods and the outside world in general. Unfortunately, it is likely that this dependency will only increase in the future, and thus the inherent difficulty in making this transition in a wise and careful manner is, perhaps, the major challenge the Mamaindê culture is facing today.

1.1.4.4   Mamaindê Rites and Ceremonies

Although the Mamaindê have undoubtedly lost part of their ceremonial traditions (the male rite of passage for instance), two major rites are still performed on a consistent basis: the female rite of passage, and the Sacred Flute Ceremony.[18] The female rite of passage consists of three distinct stages: the separation stage, where a young girl is separated from the rest of the community after her first menstruation, followed by the liminal stage, a three month long period of isolation in a round grass hut made for that specific purpose, and finally, the re-incorporation stage, where the girl is reunited with her people, and the entire community celebrates together in her honor.[19] The final ceremony of this rite is an all-night dance, bringing together the entire Mamaindê community as well as invited guests from neighboring Nambikwara groups. After this ceremony, the young girl is considered an adult woman and is eligible for marriage. As such, this festivity not only provides the society with the means of differentiating between unmarriageable girls and marriageable women, it is also one of the major social activities which repeatedly bind the Mamaindê into a cohesive unit, something akin to a strong cultural glue. Finally, this ceremony also strengthens ties of solidarity among all the Nambikwara groups.

The other significant rite still practiced is the Sacred Flute ceremony. This rite is exclusively performed by men. Women and children are shut up in their homes and forbidden to participate in or even witness the event. The Sacred Flute rite occurs at the beginning of each growing season. After new gardens are created by cutting down the trees and before the new crops are planted, this rite is practiced to ensure that the *[jamattu]*, 'Flute Spirit', will provide a good harvest in the coming growing season. The all night dance, accompanied by flutes specially made for that purpose, shows not only the Mamaindê desire to please the spirit of the gardens, but also to invoke this spirit to protect the people and their village throughout the upcoming year.

1.1.5 Worldview

The traditional Mamaindê worldview makes no distinction between the physical and metaphysical worlds. They are both equally real. This view allows for the possibility of accounting for otherwise inexplicable events by way of the spirit world. Certain animals and other natural phenomena are considered to have a corresponding spirit

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[18] The retention of these two rites goes against general expectations, as female puberty rites are often discouraged by representatives of majority cultures, and thus tend to be the first aspects of traditional culture to be abandoned.

[19] The many parallels between the Mamaindê female puberty rite and other rites of passage in other societies can be seen in the writings of Van Gennep (1960), and Victor Turner (1969). Their seminal research in this area has identified the three steps outlined above (namely, separation, liminality, and re-incorporation) as characterizing these events in a surprising number of cultures.

attached to them in some way. There are various categories of spirits, each with a specific name, and most are potentially dangerous and thus feared. The shaman is the specialist in this area and much of his time is spent conducting rituals to protect his people from any harm that may come from the spirit world, including healing ceremonies on behalf of individuals who are believed to have diseases caused by such spirits. He also is the one who contacts the ancestral spirits of former Mamaindê. Although considered capricious, the ancestral spirits are also viewed as helpful in some ways, and are often consulted for advice. Singing to the spirits is a large part of their shamanic practice. The only non-ancestral spirit that is looked upon as benevolent is the /jamat-tu/ spirit, also known as the Flute Spirit. This spirit is the guardian of the fields and crops, and is the one who ensures that the Mamaindê have sufficient food each harvest.

Identity is also tied into the meta-physical. The Mamaindê believe that all of them possess invisible 'spirit-things' within their bodies that explain certain attributes which they believe are fundamental to their Mamaindê identity. Each Mamaindê is claimed to have a jaguar's tooth, a cicada, and a hummingbird existing within them. These 'spirit' possessions account for, respectively, the hunger for meat, the beating of the heart, and the thirst for 'chicha', or sweetened drink. A fourth possession related to the spirit world is an internal string necklace; this is the most crucial of all, for it represents all of one's life and must never be broken or stolen. Certain sicknesses or mental states are considered to be signs that one's spirit necklace has broken or has been robbed by some other spirit.[20].

One can observe, however, that changes to this traditional worldview have also begun. Many of the young people no longer show interest in learning the stories and legends associated with their traditional belief system. Also, the shaman, approximately 60 years of age, is having a difficult time finding an apprentice to learn his trade and continue the shamanic tradition. The lack of a young person to take on this role is strong indication of cultural shift.

Changes in values lead to changes in behavior. Telling signs of such multiple cultural shifts abound among the Mamaindê. One such occasion occurred during a puberty ceremony at the Negarotê village in 2008 when the author was present. The Mamaindê were invited to attend, and, being the guests, were given roles of distinction in the ceremony. During the dance two Mamaindê young men were chosen to fulfill the honored role of being the girl's escorts. They wore macaw headdresses with large strands of black tucum beads criss-crossing their chests, combined with fashion jeans and imported t-shirts with English advertising. Suddenly, a final detail emerged - while participating with gusto in this traditional dance, one of them was recording the music on his cell phone.

While the mix of the old and the new is common to most cultures, it is generally at traditional ceremonies that one would expect communities to exhibit their most traditional behavior. But even this time-honored Mamaindê ceremony is not exempt from the influence of outside values. This highlights the reality of the modern Mamaindê world, a world of mixed values and mixed identities, which continues to shift at a rapid rate.

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[20] For further discussion, see Miller's (2007:176-182) excellent treatment of this topic in her dissertation on Mamaindê Body Ornamentation and personhood.

1.2 The Linguistic Context

1.2.1 The Nambikwara Language Family

The Mamaindê language belongs to the Nambikwara family[21], one of the smaller isolated families in southern Amazonia.[22] This language family has been recognized since the time of Rondon, who divided it into numerous languages, many of which were later found to be spurious names. For example, the Rondon and Faria "Glossario" (1947: 105) contains word lists from several Nambikwara languages, citing such suspect group names as the Tagnani, Taximendi, and Tauitelate, (these can be quite easily recognized as Northern Nambikwara terms for 'my brother' */ta-kanani/,* 'my grandchild' */ta-sawis-tu/,* and most notably, 'this is my child' */ta-wes-ta-latha-wa/.* Rondon was the first to mention the Mamaindê language, classifying it as a Nambikwara language (1947:20) being spoken by a group on the upper Cabixi river.[23]

The traditional view divides the Nambikwara family into three languages: Northern Nambikwara, Southern Nambikwara, and Sabanê. This view has been developed over the years through the work of numerous researchers, linguists and anthropologists, most notably Rondon and Faria (1947), Levi Strauss (1948), Roquette Pinto, Price, and Aspelin, and subsequently employed by more recent researchers of the Nambikwara languages. However, in this work, I will be taking a more detailed approach to this family, considering it to be comprised of two major language branches, Northern Nambikwara and Southern Nambikwara, with several languages in each, and one separate language, Sabanê, which is not a member of either of these groupings. By dividing the original Northern and Southern languages into branches of languages, I am agreeing with the proposal originally presented by Telles (2002:27) and developed further by Telles and Wetzels (forthcoming).

The Northern Nambikwara branch can be further divided into two language clusters based on their geographical area of origin, defined by the basins of local river systems.[24] The first is the Roosevelt River cluster, comprising the Latundê,

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[21] Reesink (2007:261-265) cautions us to view Nambikwara as a generic term only in the linguistic sense. Beyond that, he argues, and rightly so, that cultural and political differences among the various groups within the so-called Nambikwara nation have created a situation where a generic term is not appropriate. More importantly, the peoples involved do not embrace a common identity. The Mamaindê, for example, consider their identity to be unique and separate from the Latundê, the Sabanê, or any of the Southern Nambikwara groups, and wish to be considered so. I am therefore using the term Nambikwara family here in a broad sense only as it pertains to the obvious similarity between these speech varieties. No implications of shared identity are intended.

[22] The term */nambikwara/* is of Tupi origin, meaning 'hole in ear', where */nambi/=* ear, and */kwara/=* hole.

[23] The map Rondon gives in the same publication however, (Rondon, 1947:102) shows the Mamaindê located on the headwaters of the Tenente Marques River.

[24] The insight of classifying Nambikwara groups according to the river systems around which they tend to cluster comes from Price (1972:67). He further classifies the Southern

Lakondê, and Tawandê languages.[25] The second, the Guaporé River cluster, is made up of the Mamaindê, Negarotê and Tawendê.[26] Mamaindê, then, is best classified as a language within the Guaporé cluster of the Northern Nambikwara branch of the Nambikwara language family.

The latest data in the Ethnologue (http://www.ethnologue.com/) lists Negarotê and Mamaindê as dialects of Northern Nambikwara. This classification is based on four criteria: formal linguistic similarity, intelligibility, ability to share literature, and self-identity. As a strictly linguistic resource, the Ethnologue places more importance on the first three criteria than on the last one. It is true that Negarotê is much closer to Mamaindê structurally than any of the other Northern Nambikwara languages. Also, these languages enjoy a high degree of mutual intelligibility and could theoretically use the same literature. Nevertheless, I believe they need to be treated as two separate languages, based on the ethnic self-identity of each group, seeing themselves as distinct peoples speaking their own respective languages, Mamaindê and Negarotê, even though they will readily admit that their languages are extremely similar and mutually intelligible. Their feelings of separateness originate from the fact that they were at one time mortal enemies, in constant war with each other. These tribal wars are still fresh in the cultural memory of both groups, since the warring continued up until the youth of some of the elders living today.[27] In recent years the relationship between these two groups has improved significantly, starting from the time they were forced by the SPI (Serviço de Proteção aos Índios) to live together for a number of years. Since then they have begun to inter-marry, solidifying friendly relationships between them, even after they established separate villages. Due to these inter-marriages, there are now a number of Negarotê as well as Negarotê-Mamaindê descendents living among the Mamaindê, and visa-versa. Those who have married into the Mamaindê people still consider themselves to be Negarotê, while their offspring identify themselves as Mamaindê. Regardless of such alliances, memories of the past make it impossible for the Mamaindê and Negarotê peoples to consider themselves as a single ethnic group, or as sharing the same language. Language affiliation is much more than a strictly linguistic exercise, but one which involves cultural and political factors as

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Nambikwara groups according to their proximity to the drainages of the Juruena, Galera, and Sararé river systems.

[25] Telles (2002:12) also mentions the Yelelihre as another extinct Northern group, of whom nothing else appears to be known.

[26] Although possessing similar names, the Tawendê of the Guaporé cluster and the Tawandê of the Roosevelt group should not be confused with each other. The Mamaindê make a definite distinction between these groups, treating them as separate peoples, the former being considered a closer relation to Mamaindê than the latter. The Mamaindê also have distinct names for each, referring to the Tawendê as /taʔwensitu/, and the Tawandê as /taʔwanʔtu/.

[27] According the older Mamaindê, it was the current shaman, Jaci Mamaindê, and his friend Pedro Barbinho Mamaindê, who as young men stepped in front of a war party and put a stop to the cycle of violence. These men are in their late sixties today. Ironically, both of them had parents who were killed in a Negarotê raid.

well. In this situation, I believe this last factor of ethnic identity outweighs the other criteria, tipping the scales in favor of viewing these as two separate languages.[28]

Mamaindê spoken today consists of the traditional and majority Mamaindê lect, some noticeable influence from Negarotê, and isolated lexemes of the Tawendê lect, another Northern Nambikwara language. This last lect has been mentioned previously only by Price (1972:96-98) and Miller (2007:19).[29] Price did not attempt to classify it but simply included it on his map of the Nambikwara language area. According to the oldest Mamaindê speakers, Tawendê appears to have been a separate but closely related language (thus the Northern Nambikwara designation). The Mamaindê place the original land of the Tawendê in the thick forest close to the Cabixi river, as well as in the forested hill country immediately to the north of that river, just inside the state of Rondônia.[30] This hill country is named the */taiʔkakʰu-tu/*, home to a sacred hill which figures in Mamaindê mythology.[31] It is in the vicinity of the present-day Fazenda Martendal, south of the Colorado highway.[32]

Apparently the Tawendê, known as the */taʔwen-si-tu/* to the Mamaindê, became extinct as a language community before the first researchers (Rondon, Levi Strauss, etc.) arrived on the scene, since they were never mentioned by them. Price (1972:96-98) however, does mention a few survivors of what he terms a */taʔwente/* group, supposedly a Northern Nambikwara band originally from the headwaters of the Roosevelt River. As the name itself is a Mamaindê (and Northern Nambikwara) term for 'forest dwellers', it is possible that the same name could have been used as a generic term by the savannah Northern groups to refer to other related groups whose villages were typically found in the forest.[33] Whether Price's group is the same as the one the Mamaindê refer to is difficult to determine. Since the areas indicated for each of these two groups are somewhat distant from each other, either we have the case of a single group which inhabited a fairly large area (possibly by splintering into two groups which occupied both areas), or these are simply two distinct Northern bands which both happen to be named "forest dwellers" due to their similar environment. The extinction of this group presumably occurred as the result of the measles epidemics which repeatedly decimated large portions of the Nambikwara nation, after contact with the white man. According to the elderly

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[28] This argument for 'splitting languages' instead of 'lumping dialects' can be extended to all of the Northern Nambikwara speech varieties.

[29] The historian Costa also mentions this group, based on Price's information.

[30] The name Tawendê comes from a Mamaindê word, */taʔwen-si-tu/*, meaning "forest dwellers".

[31] This myth explains why the Mamaindê shut up young girls who reach their first menstruation into huts for the puberty ceremony. According to this myth, in some long ago mythological time, a young menstruating Mamaindê girl was outside her home at night crying, when the */wan-ta-tu/* spirit (the whirlwind spirit) came and stole her away and took her to the */taiʔkakhu-tu/* country where he turned her into a mountain. For this reason, the Mamaindê have always felt it safest to shut girls up during their first menstruation.

[32] Price (1972:96-98), however, places the Tawendê much farther to the east, in the Roosevelt River headwater area.

[33] This view is supported by a statement made by Price, who claims that the Southern Nambikwara also referred to all the Northern groups as */saʔwentʔesu/*, the cognate of */taʔwensitu/*, meaning 'forest dwellers' in Southern Nambikwara (Price:1972:98).

Mamaindê, some of the descendents of the Tawendê managed to survive by fleeing to live among the Mamaindê.[34] To this day, a few descendents of the Tawendê still live among the Mamaindê, and have integrated completely into Mamaindê life, considering themselves to be Mamaindê in all respects. They are adamant that they speak Mamaindê, although it is possible to detect some minor differences in their speech, mainly in the area of lexical items. While in the past these languages may have been more distinct, the Tawendê descendents living among the Mamaindê have assimilated to the majority Mamaindê lect to the extent that their own lect is not distinguishable as a separate speech variety. Only a handful of isolated words remain which are considered by the Mamaindê speaking community to be of Tawendê origin. The Tawendê descendents will typically deny that they even know these words, which are of lower social prestige. However, the fact that the Mamaindê consider the Tawendê to be a part of the history and cultural mix of their present culture and the fact that some Tawendê terms are still in use by their descendents gives us reason, albeit ever so tenuous, to consider Tawendê as a lect from the Northern branch of currently spoken Nambikwara languages.[35]

The oldest Mamaindê also speak of two other related groups which are mentioned briefly in the literature but of which we know very little. One they call the /jalapmũnʔ-tu/ (also known as the Alapmonde, Alapmunte, or Yalapmunde), and the other they refer to as the /jalakalo-tu/ (also known as Yalakalore), both of them traditionally considered as being from somewhere in the Roosevelt River basin area.[36] Price (1972:99-102) also places both of these groups near the Roosevelt

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[34] Antunes (2004:12-13) reports that a small group of Sabanê left their main village of Aroeira in 2002 and formed a new village called Sowainte, near the headwaters of the Roosevelt River (between the rivers Roosevelt and Tenente Marques, about 70 kilometers northeast of Vilhena). This is in what has been considered to be traditional Sabanê territory. The name of their village is in honor of their matriarch, Ivonne Sowainte, who married a Sabanê but apparently was from a distinct band called the Sowainte, of which she is now the sole survivor (Antunes, 2004:23). Antunes goes on to classify Sowainte as Northern Nambikwara. Interestingly, Price (1972:69-70) claims that the people referred to as /saʔwentʔesu/ by the Southern Nambikwara, and /taʔwensitu/ by the Mamaindê, were called the /saʔwaitih/ by the Sabanê, and that this is the word from which Levi Strauss gets his term 'sovainte'. It seems fairly certain that all these terms are cognates for 'forest dwellers', but due to the distance between their traditional territories, the Sowainte known to the Sabanê and the Tawendê known to the Mamaindê are either distinct Northern groups who happen to live in the forest, or a single forest group that split into two. In any case, it is yet to be determined whether there is a tribal affinity between the 'sole' survivor of Sowainte and the few descendents of the Tawendê living among the Mamaindê.

[35] Acknowledging the existence of this lect becomes even more meaningful if it is determined that the Sowainte survivor is of the same ethnic group as the Tawendê living among the Mamaindê.

[36] One of the older Mamaindê men, Pedro Barbinho Mamaindê, disagrees and puts the /jalakalo-tu/ in the area straight north of the Cabixi, just north of the Colorado highway and south of the Aikanã (Tubarão) territory. This, however, does not seem to agree with the data from Price and others. Another possibility is that the /jalakalo-tu/ is a Mamaindê term for the Lakondê, seeing as this is the one Northern group they appear not to have a name for.

River, coinciding with the opinions of most of the oldest Mamaindê speakers.[37] On the basis of this location, they presumably belonged to the Northern Nambikwara group of languages. Both of these groups and their languages are now extinct. Price supposes that the Alapmunte could have been a variation of a name for the Lakondê, as his informant (a Lakondê) calls his own people the Alakunde. But Telles (2002:12) contradicts that theory, as her informant, Tereza Lakondê, treats the Alapmonde as a distinct group from her own, but living in the same general area close to the Roosevelt River. Another hypothesis is that the Alapmunte and the Yalakalore are in fact the same group, since they supposedly occupied the same general area. But this hypothesis seems improbable as these were considered to be two distinct indigenous groups with separate names according to the oldest Mamaindê speakers.[38] Unfortunately, at this point we can only conclude that the Alapmunte and the Yalakalore were distinct groups living in the Roosevelt/Tenente Marques headwaters area, probably Northern Nambikwaran, and, like many other groups in this region, have become extinct, leaving not a single descendent.

A more emic way of classifying languages is by way of the vernacular terms already available in the languages in question. The Mamaindê classify the different Nambikwara languages, using their own designations, along the scale of intelligibility with Mamaindê provided below. We must keep in mind, however, that the original naming of groups, among the Nambikwara and among many other traditional peoples, is typically a behavior practiced by outsiders, not insiders (see Fiorini, 2000, and Reesink, 2007 for profitable discussions of Nambikwara naming practices).

Easily Understandable:

/mamãinsi-tu/ or /mamãins-ãni/ - 'the wasp people' - the Mamaindê.
/nakatos-tu/ - 'swollen headed ones'- the Negarotê.
/taʔwensi-tu/ - 'forest dwellers' - the Tawendê.

Rather Difficult to Understand (those who speak rapidly)

/leitʰo-tu/ - with no known meaning - the Latundê.[39]

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[37] An old undated FUNAI map shows the Yalakalore as being located to the east of the Tenente Marques River.

[38] There has even been one claim made by one of the Mamaindê elders, Pedro Barbinho Mamaindê, that the Yalakalore were the ancestors of a community to the north of the Cabixi known as Veado Preto. But this claim was proven false during a survey conducted by the author in the Veado Preto village in 2006. At that time there was only one family still living in Veado Preto - all the rest had assimilated completely into Brazilian society and moved to Vilhena. According to these last survivors, their groups are all monolingual in Portuguese, but consider themselves to be descendents of the Sabanê. Interestingly, they were all partly negroid, apparently the offspring of a Sabanê and an African Brazilian.

[39] A preliminary survey was conducted by the author and a colleague in 2005 as an attempt to establish the degree of intelligibility between Mamaindê, Negarotê and Latundê. The RTT (Recorded Text Test) method was used, playing recorded texts of each variety to each group, and then asking content questions about the text to determine the percentage of intelligibility

/taʔwanʔ-tu/ - with no known meaning - the Tawandê.

Very Difficult to Understand:

/waleksitu/ - 'the unitelligible people' - Southern Nambikwara groups.
/taʔmãini-tu/ - 'the weak ones' - the Sabanê.

Of Unknown Intelligibility:

/jalapmũnʔ-tu/ - 'grub-necked' or 'short-necked' ones - the Alapmundê.
/jalakalo-tu/ - 'flat-necked' ones - the Yalakalorê.
                    (supposedly refers to some necklace or body decoration)

As for the Lakondê, it is interesting that even the oldest Mamaindê have no name or even knowledge of them (although it is possible they could have at one time used either Yalakalodu or Yalapmundu to refer to them, since they are all from the same general area). They do, however, have vernacular names for some of the non-Nambikwara groups in the area. The Aikanã are known as the /mahalothi-tu/ (no known meaning), and the Cinta Larga are called the /saleun-tu/ (no known meaning). Surprisingly, the Mamaindê seem to have no term to refer to the Parecis, an Arawak people that have been neighbors of the Nambikwara groups for centuries, and with whom they share some areal features.[40]

By employing an emic classification, new discoveries can often be made. These next four terms are Mamaindê names for non-Nambikwara groups unknown

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between them. The results indicated that the Latundê understood from 50% to 84% of the Mamaindê, while the Negarotê understood from 84% to 95% of the Mamaindê. The lower scores may indicate the person didn't really understand the concept of testing. The higher scores may indicate the person had already learned some Mamaindê. In rough terms, the average of these tests showed 67% intelligibility between Latundê and Mamaindê; and 90% intelligibility between Negarotê and Mamaindê. A wordlist count was also conducted and showed Latundê and Mamaindê to be much closer structurally. A list of 111 lexical items in the two languages yielded an 89% cognate rate between Latundê and Mamaindê. One thing became certain, that the cognate rate between these 2 languages is much higher than the intelligibility rate, presumably due to differences in phonology, and to a focus on root morphemes at the expense of affixes, which is a weakness of most cognate studies. (The results of this survey are posted at www.sil.org)

[40] There has presumably been some contact between these groups in the past due to some lexical borrowing that has taken place between the Parecis and the Nambikwara groups. For example, the Mamaindê word for wild or jungle fig is /halohalo-tu/ which has the exact same root /halohalo/ in the Parecis language (Rowan 2001:55). Parecis also employs noun classifiers, and two of them are suspiciously similar to their Mamaindê counterparts. The Parecis noun classifier /-kate/ is used for any tree or stick shaped object, while /-khat/ is the equivalent classifier in Mamaindê. The Parecis noun classifier for liquid and speech is /-θa/, very similar to the Mamaindê classifier /-sa/, which covers the same dual semantic categories (Rowan, 2001:23). However, it would be expected that the Southern Nambikwara would have had more contact with the Parecis than the Mamaindê, as the Southern Nambikwara land borders the Parecis reserve, while the Mamaindê territory does not.

in any of the literature. I will classify them as non-Nambikwara simply because the Mamaindê refer to these as people who were completely unintelligible. They also consider them to be the tribes who were in the Cabixi river basin long before the Mamaindê ever arrived on the scene. Thus, according to the Mamaindê, these were the groups they originally had to war with, and eventually defeat in order to acquire their land. The names of these groups are: the /halan-tu/, the /tʰon-tu/ (or /tʰoh-tu/), the /kiwatunʔ-tu/, and the /eiʔnãntu/. The Halandu were said to be a warring tribe living in the Cabixi river valley. According to some Mamaindê, the late Benedito Mamaindê was supposedly the last descendant of that group. The Eiʔnãntu were said to be a friendly tribe in the Cabixi river valley, to the west of Capitão Pedro, from whom the Mamaindê acquired numerous skills and technologies. This tribe was supposedly wiped out by a flood in the Mamaindê flood epic. The Tʰontu lived in the Cabixi river valley, between the Continental stream and the Cabixi river, on the west side of the /katehwalantawehtu/ creek. They were known as the 'people of the black anuses'.[41] The Kiwatunʔtu, 'people of the thick penises', were said to have lived on the Rondônia side of the Cabixi, as far north as a savannah that bears their name, the /ki-watun-nã-tu/ 'penis-thick-place' savannah. Some of the older Mamaindê believe the very last remnants of these people were exterminated in the famous Corumbiara River massacre in 1984.[42] At this juncture, this connection is based on speculation.

Some of the above groups figure in Mamaindê legends. For example, the Eiʔnãntu are mentioned in a legend telling how the Mamaindê originally acquired corn from them. A Mamaindê visited the Eiʔnãntu, secretly stuffed a kernel of corn in his penis, and walked home with it, outwitting the Eiʔnãntu and becoming a hero of his people. This feat is told with great gusto by the Mamaindê elders, who view this as a legendary accomplishment. The Halantu are linked to the Mamaindê flood epic, as one of the various peoples annihilated by the great deluge. The fact that some are linked to legend makes them a part of Mamaindê traditional history. How that traditional history then corresponds to a more modern interpretation of history is difficult to determine, as these are very distinct ways of viewing time. Since the only information available on these groups is from conversations with the very oldest Mamaindê, this information will not be available for much longer. These groups could of course be tribes known to other researchers by different names. At this point, however, no such link has been discovered and we are simply left with four names of four groups, some of which may pre-date the entire Nambikwara ensemble.

The map below shows the traditional geographic location of the different languages within the Northern Nambikwara branch, as well as the relative distance of these from the other major Nambikwara groupings.

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[41] There is the possibility that these people were a group that split off from a *'quilombo'* (runaway African slave community) known as Aldeia Carlota, founded in the mid 1700's and located further to the south, near the Rio Piolho. See Price (1972:10-16) for more information on this quilombo.

[42] A few individuals actually survived the massacre and now live as an isolated group in Southern Rondônia. For a heartbreaking account of this dark episode, see Price (1989).

Index to Map of the Various Nambikwara Language Areas (next page)

Northern Branch:
   1 – Mamaindê
   2 – Negarotê
   3 – Latundê (moribund – live on Aikana reserve)
   4 – Lakondê (moribund - last survivor lives in Vilhena)
   5 – Tawandê (moribund - descendents live among Sabanê)
   6 – Tawendê (moribund - descendents live among Mamaindê)
   7- Yalapmunde (extinct)
   8- Yalakalore (extinct)

Southern Branch:
   9- Southern Nambikwara – savannah groups
   10- Southern Nambikwara – valley groups
   11 -Southern Nambikwara – Sararé

Sabanê Branch:
   12- Sabanê (moribund)

Major Rivers:
   A - Roosevelt
   B - Tenente Marques
   C - Cabixi
   D – Guaporé

Map of the Various Nambikwara Language Areas

(map source: Instituto Socioambiental
http://mapas.socioambiental.org/website/TerraIndígenaNovo/viewer.htm)
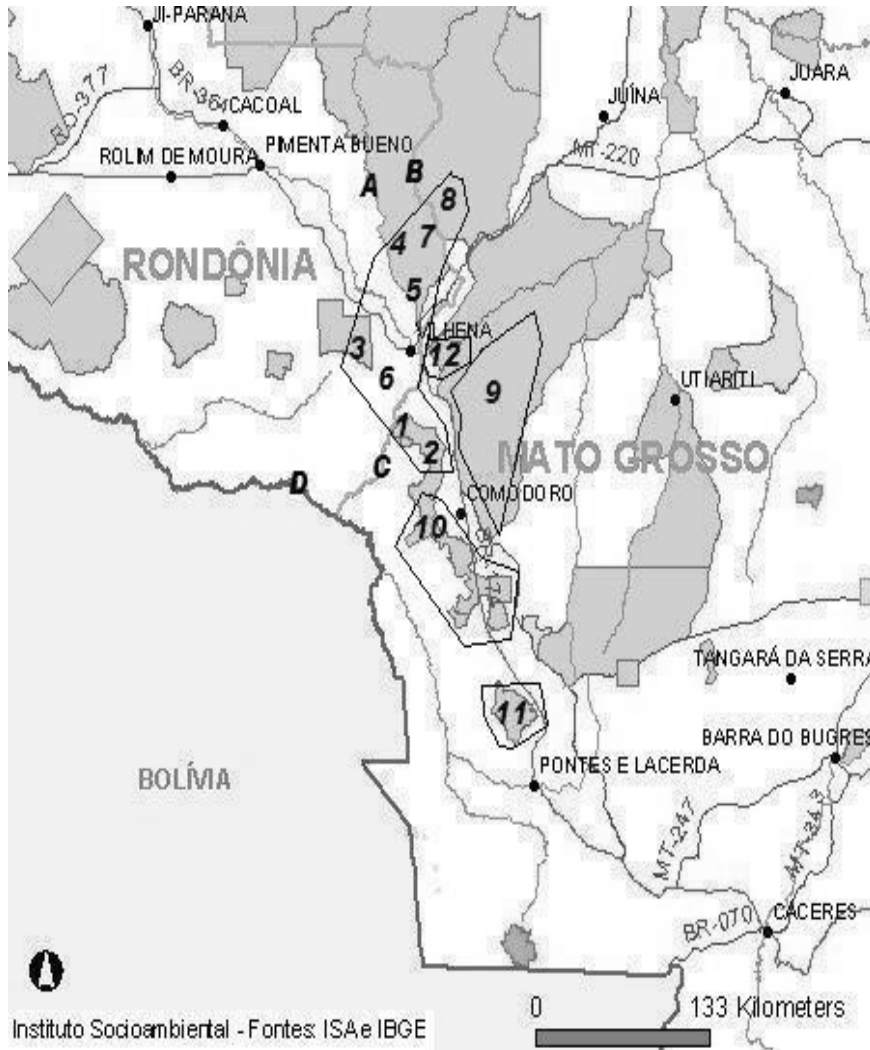
NAMBIKWARA LANGUAGE FAMILY
(Nambikwara languages with <u>living</u> descendents)

Nambikwara Family

(Sabanê)   **Nambikwara Complex**

Northern Nambikwara Branch   Southern Nambikwara Branch[43]

ROOSEVELT
CLUSTER
(Latundê)
(Lakondê)[44]
(Tawandê)
(Sowaintê)

GUAPORÉ CLUSTER
Mamaindê
Negarotê
(Tawendê) [45]

MANDUCA	CAMPO	GUAPORÉ	SARARÉ
Hukuntesu	Kithãulhu	Hahãintesu	Katitãulhu
Siwaisu	Wakalitesu	Waikisu	
Niyahlosu	Halotesu	Alantesu	
	Sawentesu	Wasusu	

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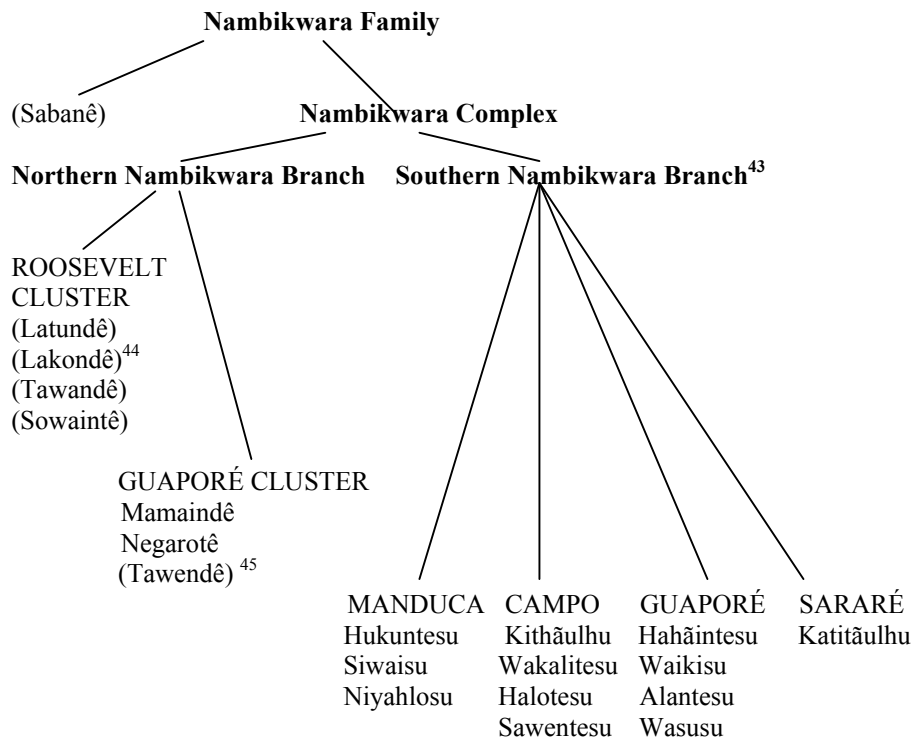
[43] The list of Southern Nambikwara languages here is taken from Telles and Wetzels (forthcoming:2). However, defining the exact number of Southern Nambikwara speech varieties is confusing, as the list tends to vary according to author. While Telles and Wetzels list 12 such varieties in 4 groupings, Price(1972:111) includes 18 speech varieties, grouped into 3 clusters (Juruena – 9 lects, Galera/Guaporé – 8 lects, and Sararé – 1 lect.), Lowe (1999: 269) lists 12 varieties without any subgroupings, and Kroeker (2001:1) gives a list of 11 varieties in 2 clusters, 5 Guaporé valley lects, and 5 Juruena lects.

[44] Moribund languages (those which do not have any children speakers) are listed in parenthesis.

[45] That the Tawendê (*/taʔwensitu/*) descendents are still living is not a well known fact, even among Nambikwara researchers, and subsequently, this group is not included in most listings of the Northern languages. There could very well have been more than one group by this name as it simply means forest dwellers. Price lists Tawendê as a language in the Roosevelt area, while the older Mamaindê put the traditional lands of this group just to the north of the Cabixi. Although not spoken anymore as a separate lect, some Tawendê terms are still used by their descendents living among the Mamaindê.

The preceding diagram shows the linguistic relationship holding between the various languages of the Nambikwara family, which is divided into Northern[46] and Southern branches, with a more remote Sabanê. Included in the listing are all the speech varieties still in use today. Also included are those languages which are moribund, as well as those which still have living speakers but which are not actively spoken in any community setting. These latter two groups are shown within parentheses.

1.2.2 The Merging of Lects

Within the Mamaindê community of today, there are descendents of five different speech varieties: Mamaindê, Negarotê, Tawendê, Sabanê, and Manduka (a Southern Nambikwara language). Until only a few years back, the community also included individual speakers of Kithãulhu (another Southern Nambikwara language) and Parecis (an Arawak language), each of which had married into the Mamaindê community, before eventually moving away. Besides the predominant speech variety, Mamaindê, which is spoken by all community members, the other lects are not spoken by any significant groups of people living together within the larger community. The descendents of these other lects are spread throughout the community, having married speakers of other lects, but having children who speak the more accepted Mamaindê speech variety. The adults who are descendents of non-Mamaindê groups have therefore lost much of their original dialect and most have assimilated into the larger Mamaindê culture, all of them acquiring their own variation of the predominant Mamaindê lect. Pressure from the majority has caused the descendents of different lects within the Mamaindê community to refuse to be recognized as separate groups and all insist on being considered Mamaindê speakers.

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[46] An unverified account of another possible Northen Nambikwara group comes from information given to the author in September of 2007 while visiting the Cinta Larga village Aldeia Roosevelt, on the Roosevelt River. Roberto Carlos Cinta Larga mentioned he had been on a Cinta Larga expedition 4 or 5 years earlier up to the headwaters of the Tenente Marques River to patrol that far edge of their reserve. On that expedition, they encountered an unknown village close to the headwaters of the Tenente Marques, Between this river and the Roosevelt River. It was a recently abandoned village – they said it looked like it had been occupied by about 30 people. His biggest impression from this sighting was that apparently these people slept on the ground, Nambikwara style. So it is possible we may have an eyewitness account of vestiges of an uncontacted Nambikwara related group between the headwaters of the Tenente Marques and the Roosevelt. Although there is no knowledge of any Nambikwara group inhabiting that area now, it was supposedly the original territory of several Northern groups, including the Yalapmundu (according to Mamaindê calculations) and the Sabanê, as well as the Sowaintê/Tawendê and even of the Tawandê (see Price for supposed traditional locations of each group). If this newly sighted group does exist, the interesting question will be to determine whether they represent one of the currently spoken varieties of Nambikwara, or an older, supposedly extinct variety.

Therefore, it is perhaps incorrect to say that there are still five distinct speech varieties actively spoken within the community. What we do have are individuals from other groups who have learned Mamaindê and yet have managed to retain their mother tongue (Negarotê and Manduka), others who are descendents of other groups and who only speak remnants of their mother tongue (Tawendê and Sabanê), all in the midst of the majority who are mother-tongue speakers of the more 'standard Mamaindê'. All of them, however, speak Mamaindê, or their own peculiar version of it. This means that defining variants as 'dialect A' or 'dialect B' is made more difficult, and sometimes all that can really be said is that we have many idiolects, the individual speech of 'person A' and 'person B'.

Dixon (1999:5), citing Tupari as an example, mentions this state of affairs as a typical scenario for Amazonian tribes reduced in number, where language communities are often composed of remnants of previous groups. Price (1972:174) also comments on the 'merger' tendency among Nambikwara groups.

A standard and more acceptable form of Mamaindê has emerged from this conglomerate picture, particularly among the younger speakers, but other variants are still recognizable in the idiolects of certain older individuals, as well as lexemes whose origin is now uncertain. Often, a speaker will claim that a specific term he has used is 'pure' Mamaindê, while others within the community will disagree, calling it Tawendê, Sabanê, or Negarotê. Such diversity within a single speech community adds a significant challenge to the task of language description.

In this work, I will therefore limit myself to describing the generic speech variety of the residents of the four Mamaindê villages as it is spoken and accepted by the majority, keeping in mind that the linguistic history here is quite complex and that individuals have remnants of other extinct lects evident in their speech from time to time. These vestiges will most likely not survive the current generation. Care has been taken to base this grammar on texts spoken by individuals whom the Mamaindê themselves considered to be the more prototypical speakers of the central Mamaindê lect.

1.2.3 The Mamaindê Sociolinguistic Situation

Looking at the Nambikwara languages in general, a fact of growing concern is the number of Nambikwara peoples beginning to reside outside of their homeland. According to data based on the FUNASA (Fundação Nacional de Saude) 2006 census, this number appears to be increasing. In 2006, ninety Nambikwara were living outside the reserve.[47] This included 65 Sabanê, 14 Northern Nambikwara, and 11 Southern Nambikwara. Out of a total Nambikwara population of 1633, this shows that 18% have taken the more radical step of dislocation to the majority culture (although it is common for these individuals, known as transnationals, to move back and forth between the diaspora community and their homeland.) This

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[47] It is not clear in the data whether this number refers to those living anywhere outside the reserve, or only those living in Vilhena, where the headquarters of the FUNASA is located.

picture also shows that in this regard, the Sabanê are certainly the most endangered of these three major groupings.[48]

To assess the gravity of the Mamaindê sociolinguistic situation in particular, I will adopt the three factors cited by Grenoble (1998:52) and echoed by many sociolinguists as some of the most influential causes of language shift: access/contact, economics, and attitudes.

The Mamaindê have had increasing contact with and access to Brazilian culture since the times of Rondon. This has naturally included increased contact with the Portuguese language. Interaction with the majority culture particularly accelerated after the Cuiabá - Porto Velho highway was finished, passing right beside the traditional Mamaindê territory and bringing with it a growing influx of settlers and pioneers. This influx of Brazilian settlers, which was part of a government program to encourage families to settle in the interior of the country, grew into a steady stream and resulted in the founding of cities, towns and communities in the areas surrounding the Mamaindê territory. Today the town of Vilhena, only 78 kilometers to the north of the main village of Capitão Pedro, has a population of some 68,000 and is growing rapidly. Comodoro, 134 kilometers to the south of Vilhena, has a population of roughly 18,000. Besides these urban centers, there are numerous small towns and rural communities dotting the area, not to mention the large number of farmers and ranchers whose lands neighbor the Mamaindê and who have frequent contact with them. The Mamaindê have also had contact with SIL missionaries (including the author) from 1961 to 1977, and then from 1994 to the present, who have been involved in various language related tasks, including language description, orthography development, vernacular literacy material preparation, and vernacular literacy teaching, as well as medical first aid. Finally, there have been waves of outsiders who have invaded their lands over the years for the purpose of making personal profit, first rubber trappers, then lumbermen, making deals with the Mamaindê, and exploiting them for the resources found on the reserve. All of this has resulted in significant contact with and access to the outside culture and language.

With this growing contact, the Mamaindê have been increasingly exposed to the material goods of the white man. Traditional crops and the benefits of hunting and foraging can still be maintained by way of the mother tongue. However, jobs and industrialized goods can only be had by way of Portuguese. This growing dependence on the majority culture for material goods, health care, transportation, and even certain food supplies (a direct result of the '*aposentadoria*', the Brazilian monthly welfare/pension system) is increasing their need for acquiring an adequate level of Portuguese. Their relationships with federal government agencies such as FUNAI (Fundação Nacional do Índio) and FUNASA (Fundação Nacional de Saude), as well as local municipal governments have added to their need for bilingualism. These relationships have further resulted in a small but growing group of elite Mamaindê young adults, who have had the fortune (or misfortune) of being given salaried positions thru these government agencies, jobs that require a high

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[48] Although if we were to look at individual groups, Lakondê is certainly the most endangered of all the living Nambikwara peoples, with only 1 survivor, while Latundê, Tawandê, Tawendê, and Sabanê are all close behind, having moribund languages (Telles 2002:20-24).

level of Portuguese fluency. This group of young people are looked up to and held in high esteem by the rest of the group. The economical picture certainly does not offer many compelling reasons for them to continue speaking the indigenous language.

One of the new Mamaindê villages that has been established in recent years, Tucumã, seems to be an intentional attempt to move closer to the white man's world. This village is now located less than two miles from a good road with a bus route that provides them with easy access to the town of Comodoro twice a week. This strategy of locating their village in a place where town becomes more accessible shows that the future intent of those who live there is to move towards the majority culture and not away from it.

Today, the levels of bilingualism vary according to age, sex, and according to village. All but a handful of Mamaindê continue to be most fluent in the vernacular. In general, the most proficient in Portuguese are the teenage and young adult males, particularly those who have been educated in the village school, administered by the municipal government of Comodoro and taught almost entirely in Portuguese. Then come the young adult females, the middle-age adults, and finally the very elderly and the very young, who speak very little or no Portuguese.

The village with the lowest level of Portuguese fluency would be Capitão Pedro, which is also the largest village in numbers, some 180 people, and has a larger critical mass of speakers to maintain the indigenous language for a longer time. This is followed by Campo do Meio (25 people) and then Tucumã (30 people). The village with the highest level of Portuguese is the Cabixi village (27 people). This village is a unique situation for it is comprised mostly of individuals who are the direct offspring of a bi-cultural marriage, a Mamaindê mother and a Parecis father. This original couple, now elderly, only spoke Portuguese in the home and raised their children in a variety of settings, including the town of Vilhena, where they have now been living for many years. Their children were originally bilingual in Portuguese and Mamaindê and moved to Capitão Pedro as teenagers. They are now married to Mamaindê and raise their own families. These siblings are the ones who eventually decided to move away from the rest of the Mamaindê community and start their own village on the banks of the Cabixi river. Some of the grandchildren of the Mamaindê – Parecis bi-cultural couple are the first Mamaindê to ever be monolingual in Portuguese. A rough estimate would be that one fifth of the children in the Cabixi village are now monolingual in Portuguese and only passive speakers of Mamaindê.

Attempts at literacy in the vernacular have been around for some 40 years. An orthography was originally developed by Kingston in the early 70's, and a literacy program begun. A large percentage of adults became literate in Mamaindê at that time. Since then, in the late 80's, the government school was built and staffed by a Brazilian teacher. The interest in Portuguese literacy began to grow, responding to the increasing pressures they were feeling from the outside world to conform. By the time the author arrived in 1994, there were more Mamaindê who could read Portuguese than their native language. Another indigenous literacy program was started, but it never achieved the success of the first one. Education had become the domain of Portuguese. Mamaindê literacy was a thing of the past.

Mixed cultural marriages are not uncommon among the Mamaindê. Due to the matrilocal residency patterns of all the Nambikwara cultures, it is typically the

Mamaindê woman who marries an outsider and brings him to live in her community. The men who have married outside the culture have gone away to live in the ethnic group of their wives. So the women are effectively the ones who have brought change into the culture. There are a good number of Mamaindê women who married and brought home Negarotê men, a few who married Southern Nambikwara (Manduka and Kithãulhu), one who married a Sabanê, and one who married a Parecis. In all these cases, except for one, the men who came to live among the Mamaindê eventually learned to speak the language of their wives. The one exception is the case of the Parecis fellow, whose original language is of the Arawakan family (unrelated to Mamaindê), and who was already fluent in Portuguese before he married. Instead of learning Mamaindê, he took his wife to the city and there she learned Portuguese.

Attitudes regarding language and culture are changing rapidly as well. Due to the growing need for Portuguese, those Mamaindê who speak it only increase in prestige. Children now say 'we are going backwards' when forced to read the vernacular in the school.[49] Attitudes regarding the traditional culture have been deteriorating as the Mamaindê gradually have lost cultural domains to the majority culture. The rubber balls for their indigenous sport of headball are not being made anymore, and are being replaced by soccer balls and soccer tournaments. The nose flutes which were made and played for personal enjoyment (as well as to make the pequi fruit ripen), are now made only by the very elderly, and are being replaced by radios and CD's playing Brazilian 'sertanejo' or country music. Instead of listening to the elders recite legends in the evening, the young people crowd around the digital games on their cell phones. Such signs of culture and attitude shift are perhaps most worrisome, as language shift never occurs in a vacuum, but is a result of deeper shifts in cultural values and cultural attitudes. As Fishman (2001:21) reminds us, "…the loss of a traditionally associated ethnocultural language is commonly the result of many long-ongoing departures from the traditional culture."

In light of the losses the traditional language has suffered in the three areas of access, economics, and attitudes, the Mamaindê are rapidly becoming bilingual in Portuguese, and signs of future language shift are on the horizon. Having established that, the language still appears viable for the present and near future, at least in most of the villages. This is mostly due to the fact that they have managed to assign separate domains to each language, thus allowing a small indigenous language like Mamaindê to survive for a time alongside Portuguese, a world language.[50] The domains of politics, education, and Brazilian economic activities are conducted in Portuguese, while the family domain, and anything related to their traditional culture, such as hunting/gathering, ceremonial activities, and everyday life, is still the exclusive domain of Mamaindê. How long this bilingual state will last is not known. For the Cabixi river dwellers, the first signs of language shift have already begun in the monolingual speech behavior of some of their children. If we adopt the language vitality scale developed by Wurm (1998:192), which recognizes weaker languages as either "potentially endangered/endangered/seriously

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[49] This comment was made to Paulo Nego Mamaindê, when he was a Mamaindê school teacher in Capitão Pedro.

[50] See Fishman (2001) for excellent discussions regarding domains and bilingualism.

endangered/moribund/or extinct", it would be safe to say that the Mamaindê language as a whole is certainly 'potentially endangered', while in certain areas, such as among the Cabixi group, it is moving towards actual 'endangered' status.

At the heart of these sociolinguistic changes is the issue of identity. Mamaindê identity now, at the beginning of the 21st century, is quite different from who they considered themselves to be at the turn of the past century. At that time, they viewed the surrounding Brazilian community as dangerous intruders and aliens in their territories. Over time, as the Mamaindê have continued to make small, yet more numerous adaptations to this outside world, not only has their language behavior been affected, but they also have begun to forge a new identity based on their improving perceptions of the Brazilians as 'the other'. It could be argued that the desire to take on a new identity is what drives the cultural and linguistic changes in the first place. In specific domains (such as 'going to town'), such changes are fueled by the desire to "be like the other." When they are in a Brazilian setting, not only do they dress like outsiders and talk like outsiders, but they, along with many indigenous groups in this country, now consider themselves to be the truly "legitimate Brazilians." This of course refers to the chronology of land possession, but the fact that it is linked to the word 'Brazilian' is insightful. Thus their identity is now a mixed one, holding on to a traditional Mamaindê identity when they are with their own kind, yet developing a growing sense of belonging to an outside world as soon as they step off the reservation. One could say that they not only are living in two worlds, but in a sense, they feel that they belong to them both.

A third identity is also starting to emerge; an identity that is pan-indigenous. As more and more gatherings and conferences and competitions among and between tribal peoples are funded and promoted by the government, and as the Mamaindê take increasing interest and more active roles in these encounters, slowly a sense of belonging to a larger group is beginning to become an interesting idea. Although this pan-identity is not developed in any sense, certainly not like it is among North American Indians, it may be a factor in the future. While many Amazonian groups still live in areas largely separated from one another, such a pan-indigenous identity can only go so far. Whether a broader indigenous identity will be the next step for some of these groups, time will tell.

1.3 The Historical Context

A number of authors have attempted to record the histories of the Nambikwara people as a whole. The first to do so was Roquette-Pinto (1935), followed by Rondon and Farias (1948), Levi Strauss (1948), Oberg (1953), Boglar and Halmos (1962), Aytai (1964), Price (1972) and Aspelin (1975). Recent researchers who have provided information on the histories of these peoples have included the anthropologists Fiorini (2000), Reesink (2007), and Miller (2007), the historian Costa (2002), and the linguists Telles (2002), and Antunes (2004), all of whom have mostly summarized what is found in the earlier works. The most comprehensive of these writers is Price, whose ethnographic research and extensive writings bring together a wealth of information on Nambikwara history and culture. Each of the

above writers, however, has valuable insights and the reader is encouraged to peruse their writings to hear slightly different accounts,

As for history pertinent to the Mamaindê in particular, the reader is directed to the work of Aspelin (1975) first, followed by Miller (2007). The only thing I can add that does not appear in any of the previous authors is information I have obtained from the Mamaindê themselves. I will offer then a very basic timeline of Nambikwara history based on the general works cited above, followed by a more specific ethnohistory of the Mamaindê people in particular, drawing from Aspelin, Miller, and more significantly, from the Mamaindê themselves.

1.3.1 A Brief Overview of Nambikwara History

The timeline below, unless otherwise noted, is a summary of Price (1972:2-43).

1737- Gold was discovered in the Chapada do São Fransico Xavier, a mountain range on the very western edge of Mato Grosso, close to the Guaporé River, just south of Nambikwara territory. A gold rush started and the town of Vila Bela was established.

1737-1800 – The Guaporé River, passing to the west of Nambikwara territory, became a major supply route for the town of Vila Bela in the 1700's, furnishing the miners with goods by way of boats from Portugal coming up the Amazon, Madeira, and Guaporé Rivers (Siqueira 2002:45).

1740's and 50's – With mining came slaves. In 1752 there were 70 miners and 1170 slaves, mostly African, reported in this area (Price, 1972:9). The lax control measures allowed a large number of slaves to escape and hide in the forests to the north, eventually establishing several '*quilombo*s', or runaway slave communities. Several of these communities were located in the heart of Nambikwara land, on the rivers Piolho, Galera, Sararé, Pindaituba, and others (Costa: 2002:44). As a result, the first contact the Nambikwara peoples ever had with the *'branco'* (or 'white man' in Portuguese, the term they now use for all non-Amerindian peoples) was probably with the 'black man' (which was most likely from the Bantu peoples of Angola).[51] Such is the irony of history.

1752 – Vila Bela da Santissima Trindade became the first capital of the Mato Grosso region (Siqueira, 2002:46).

1769 – João Leme do Prado led a military expedition which left Fort Bragança (a Portuguese military outpost located far to the north on the Guaporé) and headed

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[51]Most african slaves in Brazil originated from lusophone colonies, notably those in West Africa, particularly from the Bantu tribes of Angola and Congo (Castro, 1980:15). From 1731 to 1810, the number of slaves originating from Angola surpassed that of any other region of Africa. (http://www.ibge.gov.br/brasil500/negros/origem.html).

southward to Vila Bela, opening up a trail overland between the two posts for the purposes of cattle driving. Prado traveled south along the highlands of the water shed into what is now the Vilhena area, where he turned east (thus skirting around Mamaindê land), eventually turning south and making his way through the heart of Southern Nambikwara land before arriving in Vila Bela. He mentions encountering several indigenous peoples en route, including the Tamarés, Guaritérés, and Cabixi, between the headwaters of the Cabixi and Ique Rivers (in the current region of Vilhena), on the far northern border of Mamaindê territory. The first two groups mentioned were said to have slept on the ground, a rather telling description, as this is a defining traditional characteristic of all the Nambikwara peoples. According to Price (1983: 136), the term *'cabixi'* was used originally to refer to numerous hostile tribes of that region, eventually becoming used as a generic term meaning 'savage'. Due to hostile contacts between the Nambikwara and the mining community of Vila Bela, *'cabixi'* then became the common term applied to any and all Nambikwara peoples before the 1900's (see Price for several lengthy discussions of this term, 1972: 5-22, and 1983:129-144). Thus, Prado's chronicle gives us the first documented account of contact with indigenous peoples of the Nambikwara region. Price (1972:5) suggests this first contact may have been with the Sabanê group, since their original land was just north of that area. But as the territory in question is quite close to the traditional lands of most of the Northern Nambikwara groups, including the Mamaindê just to the south, this initial encounter by Prado could just as easily have been with any of the Northern groups. This supposition is strengthened by the fact that a *quilombo* of runaway slaves named Guaritere was later found near the Piolho river, in traditional Northern Nambikwara territory (Costa, 2002, 44-45; Siqueira, 2002:122-123). Since one of the tribal names Prado cites is the Guaritere, it seems plausible that this *quilombo* obtained its name by virtue of being in the territory of a Northern group known as the Guaritere. However, since there are no current groups in the region with any of the names Prado refers to, we may never know which Nambikwara group actually had the dubious distinction of being the first to have contact with the white-man.

1770 – A military expedition was formed to find a *quilombo* near the Galera River. 30 Indians were captured along with the 79 slaves. This event indicates that runaway slaves had started mixing with the indigenous communities before this date (presumably by kidnapping Indian women for their wives, as well as possibly trading with the local indigenous communities for food) The Rio Galera *quilombo* was fairly well established with crops, cotton, chickens, cloth, and blacksmiths.

1795 – Fransisco Pedro de Mello led a second military expedition to capture runaway slaves, this time targeting a *quilombo* known as 'Quilombo Quariterê',[52]

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[52] Also known as Quilombo Guaratirê (Costa: 2002:45). Any link between the name of this quilombo and the aforementioned Guaritéré people discovered by Joào Leme de Prado is unkown, but certainly not coincidental. It may indicate that the group mentioned by Prado actually resided on the Piolho, where the quilombo was later established. If this is true, it could very well have been a Northern Nambikwara people that Prado encountered, as the Piolho region is part of the traditional lands of the Northern groups.

near the Piolho River. The contingent of soldiers left by canoe from Vila Bela, traveling up the Guaporé, then up the Cabixi, and Pardo Rivers. From there they traveled southward overland to the Piolho River. On the other side of the Piolho they found the *quilombo*. This route took them right through both the Mamaindê and Negarotê territories, and we can probably assume that the Mamaindê would have known about this intrusion into their land by the strange white man, as well as being aware of the black peoples living just south of them. It is also probable that any Indian wives the *quilombo* men may have taken were from their nearest neighbors, the Negarotê and Mamaindê. The expedition found the *quilombo* run by a queen, Rainha Teresa de Benguela, widow of the recent king João Piolho.[53] The expedition captured the whole village, 54 people, 6 Africans men, 27 Indians (mostly women), and 22 cabores – children of negro and Indian blood. When they arrived back in Vila Bela, the Captain of the fort, João de Albuquerque de Melo, ordered most of them back to their native land, due to the large number of Indians among them. The *quilombo* on the Piolho was then renamed Aldeia Carlota in honor of Princess Carlota of Portugal. (Costa, 2002:44-45, Siqueira, 2002:122-123).

1820 – The prosperity of the Vila Bela gold mines diminished and the miners gradually left. The capital of the Mato Grosso territory was moved from Vila Bela to Cuiabá.

1825 –1845 – The French historian Conde de Castelnau traveled through the area and used the term *'cabixi'* to describe all the tribal peoples living in the savannah of the Chapada dos Parecis, as well as those found at the headwaters of the Guaporé, Sararé, and Galera rivers, all clearly Nambikwara territory. Castelnau made a distinction between the Nambikwara and Cabixi peoples, using the term Nambikwara to refer to a group on the Arinos River, now known as the Beiço de Pau. (Castelnau, 1828:1-3).

1905 – The first rubber tappers arrived in the Nambikwara area, and continued to harvest rubber thru the end of the 1960's. The most intense era in the rubber trade was in the period between 1943 to 1958, initiated by World War II demands for rubber products. Many of the older Nambikwara, including some of the oldest Mamaindê men recall being bribed into becoming the servants of the rubber tappers in the region.

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[53] Aspelin, on the other hand, cites Tereza as the queen of the Galera quilombo. According to popular legend, (see http://www.pnbonline.com.br/display.asp?id=24316) Rainha Tereza de Benguela was of Bantu origin, which seems probable, as Benguela is a coastal region of Angola, home to a number of Bantu groups which were used extensively as targets of the Brazilian slave trade (Oliveira and Silva, 2006:70-71). However, it still remains to be seen whether there are any vestiges of Bantu influence in the indigenous languages of the Guaporé valley, which would have had the most contact with the quilombos. One such possible connection is tone plateauing, which both Mamaindê and Bantu languages share (Hyman, 2000:6, Odden, personal communication). There may be other phonological features,such as the common use of oral/nasal contour segments (although these are typically analyzed as prenasalized oral consonants in most Bantu languages), that might also be shared in a non-trivial way.

1907 –1914 - Major Candido Mariano da Silva Rondon installs the telegraph line between Cuiabá and Porto velho. Major Rondon (later making the rank of Colonel and eventually General) was commissioned by the Brazilian government to build a telegraph line between the two cities and was also given the task of pacifying the indigenous peoples he came in contact with along the way. By the end of his military career, after many similar expeditions and years of exploring the interior of Brazil, he became legendary for his peaceful pacification methods with dozens of tribal groups.[54] Even though his finished telegraph line was hardly used due to the advent of radio, the path of the telegraph line changed the Nambikwara area forever. Rondon's telegraph line went thru the center of Southern Nambikwara land, bringing his expedition into direct contact with various Nambikwara speaking peoples. The initial contacts, between 1907 and1909, were not peaceful, and although Rondon made it a point not to retaliate, a number of his men lost their lives from Nambikwara attacks. After several years of hostility and tension, however, relations improved, and he eventually succeeded in pacifying most of the Nambikwara groups. The telegraph line he installed then provided a trail which would later be used to build a road, eventually bringing the rest of the world to the Nambikwara doorstep.

   Rondon and his scribe Faria were also the ones who first began using the term *'nambikwara'* to refer to these specific groups.[55] This word is a Tupi term meaning 'ear hole' *('nambi'* = ear, *'kwara'* = hole), and was apparently applied to the present day Nambikwara by Rondon's Parecis guide as a term to mean 'enemy'.[56] Rondon and Faria were also the first to employ the term 'Mamaindê'.

1909-10 - The first peaceful contacts recorded with the Nambikwara were made by Rondon's expedition. This is considered the beginning of official contact between the Brazilian government and the Nambikwara peoples. The honor, however, falls not to Rondon but to his men. The first peaceful encounter was supposedly made by a Julio Caetano Horta Barbosa sometime in 1909, but no reliable record survives.[57] The second encounter, based on the first hand written account, was made by Severiano Godofredo d'Albuquerque, on August 18, 1910, at the base camp of the telegraph line in Campos Novos. A record of this second encounter can be found in Price (1984: 34) who quotes a report sent by Albuquerque to Rondon.

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[54] It has been often noted however, that Rondon remains a volatile figure, since his presence and that of his soldiers brought epedemics and sure death to some of the very same peoples he was attempting to befriend, and since his techniques of pacification began a pattern of dependency still evident among a large portion of Brazilian indigenous peoples.

[55] Although the term Nambikwara had previously been used to refer to another un-related group, the Beiço de Pau (Price, 1972:31).

[56] The Beiço de Pau, previously known as Nambikwara, were actually enemies of the Parecis. Rondon's Parecis guide apparently assumed the meaning of this Tupi word was simply 'enemy', and therefore applied it to these other 'Nambikwara' as well. (Price, 1972:31)

[57] In some accounts his first name is recorded as Julio (Price, 1972:30) and in others it is Nicolau (Rondon and Faria, 1946:6).

1919 – The first SPI (Serviço de Proteção ao Índio) post was started in Pontes and Lacerda and later moved to Rio Galera.

1924 – The first missionaries, from the Inland South American Missionary Union, the Legters, Hay, and Tylee families, arrived in Nambikwara land, and began living in Southern Nambikwara territory on the Juruena River. Mr. Tylee, his daughter and a nurse were killed on November 2, 1930, in their home by Southern Nambikwaras seeking revenge for a Nambikwara who had died after receiving medical treatment by the missionaries.

1930's – Jesuits started a mission school for various tribes at Utiariti on the Papagaio river. Only a small number of Nambikwara ever studied there.

1938- The French anthropologist Claude Levi-Strauss lives for a year among a small group of Southern Nambikwara on the banks of the Juruena and becomes the first anthropologist/ethnographer to document the Nambikwara way of life.
1942 – The SPI post was moved to Corrego Espiro – closer to Vilhena – later becoming known as Pyreneus de Souza (now known as Aroeira). This became the principal point of contact between the SPI and the Nambikwara peoples for years.

1943 – The rubber boom, brought on by the extra demand for rubber in WWII, brings more rubber tappers and more contact between tappers and the Nambikwara peoples. The boom ends in 1958.

1945 – A large measles epidemic hits the whole Nambikwara area, with many deaths reported by officials of the SPI. No one knows how many died in this epidemic or how many villages it reached, but deaths of measles were reported that year in Pyreneus de Souza, Campos Novos, Juina, Mata de Canga, Camararé, and Juruena villages. In Juruena, 20 died, 4 were buried, the rest eaten by buzzards and dogs. Aspelin also mentions deaths among the Mamaindê that year.

1946-7 – Rondon and João Barbosa de Faria publish the first records of the Rondon Cuiabá-Porto Velho expedition.

1959-1960 – The first members of the Summer Institute of Linguistics (SIL) to begin working with Nambikwara speaking peoples, Menno Kroeker and Ivan Lowe, arrive among the Southern Nambikwara at Serra Azul village. They also become the first to begin the detailed linguistic description of a Nambikwara language.

1960 – The highway is completed between Porto Velho and Cuiabá – south of the telegraph line. The telegraph line was then closed.

1968, October 8 – The first Nambikwara reserve was created by Brazilian President Costa e Silva. This first reserve was between the Rio Juina and Rio Camararé, and the highway. The reserve was later expanded to its current size.

1970 – Another measles epidemic hits, with reports of deaths among the Sararé.

1970s – Anthropologist David Price began his ethnographic research of Nambikwara culture, publishing numerous titles and becoming one of its most authoritative voices.

1980 – The Cuiabá-Porto Velho highway is paved.

2001– Menno Kroeker completes the first descriptive grammar of any Nambikwara language when he publishes his Southern Nambikwara grammar in IJAL.

2002 – Stella Telles completes the first full linguistic description of a Northern Nambikwara language, the Latundê and Lakondê varieties.

2004 – Gabriel Antunes completes the first description of the Sabanê language.

2007 – Edwin Reesink completes the first ethnographic description of the Sabanê peoples.

1.3.2 The History of the Mamaindê

The Mamaindê have presumably lived in the land between the Cabixi and Pardo rivers for at least 3 centuries.[58] Prior to that, the only knowledge we have comes from stories told by the oldest Mamaindê. These stories unfortunately disagree, one account stating that they originally came from the north, migrating south along the Roosevelt or Tenente Marques Rivers from the Madeira, and the other version indicating that they came from the direction of the rising sun, crossing the great savannah from the east. At this late juncture, we have no way of making an informed decision between the two accounts.

   The older Mamaindê speak of the time of their ancestors as an era of constant inter-tribal fighting, at first fighting over the Cabixi valley territory with many neighbors, including the Halantu, Thontu and the Eiʔnãntu, and then, in the past two centuries, much fighting with their fiercest arch-rival to the south, the Negarotê. It was the Negarotê, during this time of conflict, who supposedly christened the Mamaindê with the name */mamãin-si-tu/,* "the wasp people."[59]

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[58] This estimate is based on the knowledge that indigenous peoples matching the Nambikwara description were encountered very close to the Mamaindê area by Joao Leme do Prado (1769) and later by Francisco Pedro de Mello (1796). Even if these initial contacts were not with the Mamaindê per se, the existence of several Nambikwara groups in the general area at that time would suggest the existence of the other groups as well.

[59] The /mamais-tu/ wasp is feared by these groups as a meat-eating insect, feeding on dead flesh. The name probably refers to the Mamaindê prowess in 'stinging' their adversaries, and in being capable of leaving their rivals as food for the insects. Although Rondon mentions that the Nambikwara were originally stereotyped as cannibalistic, he found no indications that any of the Nambikwara groups ever practiced anthropophagy (Rondon, 1922:80-81).

Like the other Nambikwara groups, the Mamaindê have also had contact with outsiders for several centuries, since about the mid 1700's. As already speculated, their first outside contacts were probably with African slaves escaped from the gold mines of Vila Bela in the south and hiding in 'quilombos' such as the famous Quilombo 'Quaritere' located on the Piolho River, just south of their territory. Later came the explorers and soldiers who passed by their land making roads for driving cattle or in search of the African slaves. Gradually, perhaps a bit later than the savannah groups, the Mamaindê experienced contact with the same types of outside forces that have entered all the Nambikwara lands over the years: Rondon and his military expedition, rubber tappers, settlers, farmers, missionaries, government agents, and most recently, lumbermen.

At the turn of the century the Mamaindê would have been much more numerous that today. Estimates vary wildly as to the combined population of all the Nambikwara speaking groups at that time, numbers varying from 5000 (Price,1972:84), to 10,000 (Levi-Strauss, 1948b:5) to 20,000 (Costa, citing Rondon, 2002:50). The only certainty is that these numbers fell sharply after contact, when outsiders brought into the area measles and other diseases which decimated each of the Nambikwara groups. In 1968, Aspelin (1975:26) reported a total population of 52 Mamaindê individuals. At relatively the same time, Price's 1969 census of the whole Nambikwara speaking area totaled 550 (1972:84). Thus we get a picture of a point in time when the Mamaindê made up approximately a tenth of the whole Nambikwara speaking ensemble. If this same percentage held fairly consistent over time, and if Price's prior estimate of 5000 has any validity, this would have put the Mamaindê population at roughly 500 people at the turn of the century, a figure which seems reasonable.[60] Whatever their pre-contact numbers, we know that they experienced a tremendous loss of life in the early half of this past century. The good news, however, is that with access to better health care, initially provided by missionaries and most recently by the Brazilian government (FUNASA), the Mamaindê are on the rebound and now number close to 250 people.

The first specific mention of the Mamaindê is by Rondon and Farias in their records of the various groups encountered by the telegraph line expedition. Two such publications, the pictographical documentation found in 'Índios do Brazil', vol 1, (1946:15-25), and the listing of indigenous vocabularies published in the "Glossario" (1947:20), cite Mamaindê as a Nambikwara group living in the vicinity of the headwaters of the Cabixi river. The first publication includes eleven well-preserved photographs of indigenous individuals (mostly women and children) it refers to as "Índios Nhambiquara Mamaindê do Rio Cabixi". Some of these photos were taken together with members of the expedition, including a picture of Rondon with the Mamaindê, and another with a certain Captain Amarante with several Mamaindê men.[61]

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[60] The census of 2006 shows a bit stronger picture, where the Mamaindê population totals 1/7 in relation to the population of the whole linguistic family: 217 Mamaindê out of 1633 Nambikwara speaking peoples.

[61] Similar pictures of Rondon's historical encounters with the Mamaindê, not found in his book, can be seen on display in the Museu do Índio, in Brasilia.

While the pictorial volume does not mention the specific purpose of these encounters, it does record that the photographs were taken at a spot on the River Cabixi known as Porto Amarante (Rondon, 1946:18). According to Aspelin (1975:23) and Batista (2007:325-326), Porto Amarante was a military outpost Rondon established in 1921 on the banks of the Cabixi to supply the telegraph station in Vilhena with goods. Supplies were brought in by boat up the Guaporé from Vila Bela and then up the Cabixi to Porto Amarante, where they were loaded on mules and carried the remainder of the way overland to the Vilhena telegraph station. For this purpose, the port was built as far upriver as navigation would allow, and was presumably kept in operation for as many years as the telegraph line was in existence. The leader of this outpost was Rondon's son-in-law, Captain Emanuel Amarante, who can be seen in one of the historical photographs in Rondon's book (1946:25).

Coincidentally, Porto Amarante happened to be in the very heart of Mamaindê territory. As far as we know, it was here that the first extended contact between the Mamaindê and the outside world began. Not long after this outpost was established (sometime in the late 20's), the Mamaindê tell stories of a huge epidemic that swept their territory, decimating them as a people. It apparently started when Mamaindê visiting Porto Amarante were contaminated and then took the disease to their respective villages. This infamous epidemic is remembered in Mamaindê history as the time when the "river growled." The Mamaindê claim the great death that was brought up the Cabixi by the white men in canoes was preceded by an omen, consisting of a strange growling sound that came up the Cabixi river before the arrival of the white man.[62] According to the oldest Mamaindê, their forefathers knew something was amiss. Their parents mentioned that this epidemic which started on the Cabixi wiped out entire Mamaindê villages, as well as the villages of related groups, particularly those in the valley. Two great ironies can be found here. The first is that, unbeknownst to Rondon and Amarante, efforts towards the pacification of indigenous peoples almost led to their complete annihilation. The second great irony is that the Mamaindê name for the Cabixi river is /tukwawehtu/ 'the river that brings',[63] referring to the fact that this waterway was traditionally seen as the source of life for the whole valley and for the Mamaindê people. The river that brought life also became the source of death.

The Mamaindê who escaped the white mans disease, as well as the survivors from other related Northern Nambikwara groups such as the Tawendê, later re-grouped in order to survive, forming villages of peoples of mixed descent. Thus we have the Tawendê descendants living among the Mamaindê of today. However, they were not left alone for long.

After Rondon, in the 40's and 50s', came the rubber tappers. In the eyes of the Mamaindê, these were the cruelest of the outsiders with whom they have had contact. The elderly tell many stories of a slave-like existence, being coerced to work as a servant for various tappers in the Cabixi and Pardo river valleys. One

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[62] It is possible that this 'strange growling' could have been the sound of gunshots of Amarante and his men hunting for food as they made their way up the Cabixi toward Mamaindê land.

[63] */tu-kwa-weh-tu/* = 'get-come-river-FNS'

rubber tapper that is mentioned by the elderly Mamaindê is the infamous 'Canguru', or Antônio Cezário Miguel Áschar. Canguru and the many men in his employ extracted latex from a large portion of the Nambikwara territory, including the Cabixi and Piolho river valleys. He sold his holdings to Sérgio Canongia, a rubber tapper and land speculator, who in the late 1960's sold a portion of land on the valley side of the highway to Morimoto, a Japanese rancher (Costa: 2002:136-137). It was this same Fazenda Morimoto that was found on Mamaindê land some 13 years later when the Guaporé Valley Reserve was established.[64]

Several other measles epidemics followed, in 1945 and in 1961 (Aspelin, 1975:24), These epidemics started at the SPI post Pyreneus de Souza, which was the hub of the rubber gathering activity, and then spread rapidly by the presence of the rubber gatherers to all the indigenous groups in the area. The Mamaindê population kept getting smaller.

In 1960, the highway BR364 was constructed from Cuiabá to Porto Velho, following for the most part Rondon's original trail. It bordered the east side of traditional Mamaindê territory, and when it was finished and opened for traffic in 1962, settlers poured into the Nambikwara region, including Mamaindê lands (Aspelin, 1976:26).

Soon after the highway was opened, the first members of the Summer Institute of Linguistics (SIL) arrived among the Mamaindê. David Meech and Peter Weisenberger made the first contact with them in 1962, and missionary work was then carried out by a succession of various SIL teams, starting with Cliff Barnard, then continued by David Meech, and later by Peter Kingston. Peter and Shirley lived among the Mamaindê from 1965 to 1977, being the first to conduct detailed studies of a Northern Nambikwara language. Mr. Kingston also developed an orthography for Mamaindê and began the first literacy program in the language. The presence of the Kingstons among the Mamaindê cannot be underestimated. Besides their linguistic, literacy and translation work, they administered much needed first aid and basic medical attention at a time when the Mamaindê population was at its lowest. There were only 50 Mamaindê surviving at the time when the Kingstons arrived (Kingston, personal communication). Many older Mamaindê credit the Kingstons with saving their lives. Their presence surely was a factor in keeping this people from utter annihilation, if not in turning around the cycle of death and beginning a new pattern of growth.

During this time, in 1965, a land colonizing company bought the rights to land in the middle of Mamaindê territory, and began selling property to settlers who poured in from the south. A small town was established by the settlers known as Gleba Padronal. These first colonizers began having an impact on Mamaindê culture, and tensions arose between the two groups (Aspelin, 1976:26).

As a result of their past exploitation by the rubber tappers, by the late 1960's there were reports of Northern Nambikwara, including some Mamaindê individuals, spread out and living in rubber tapping settlements throughout the region, as well as in the cities of Pimenta Bueno, Barra do Bugres, and as far as Porto Velho (Price, 1969:690).

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[64] Common knowledge among all the older Mamaindê.

In 1968, the anthropologist Paul Aspelin began his ethnographic work among the Mamaindê, studying the role of the artifact trade within their local economy. He arrived shortly after the Kingstons. It was after this time, in the 70's and particularly in the 80's that the Mamaindê population finally began to grow again (1972:26).

As was mentioned earlier in the outline of the history of the Nambikwara family, the first signs of government recognition of Nambikwara lands occurred on October 8th, 1968, when Brazilian President Costa e Silva created the first Nambikwara reserve. This reserve proved to become a part of Mamaindê history as well, as FUNAI (Fundação Nacional do Índio) moved the Mamaindê onto the Nambikwara reserve in June of 1973, presumably due to the growing potential for conflict due to the presence of Gleba Padronal on Mamaindê lands (Aspelin, 1975:270). They lived on the Nambikwara reserve for 8 years, establishing several villages during that time, always close to the BR364 highway. The land in the new reserve was not as fertile as the land where the Mamaindê were accustomed to planting gardens. However, while other groups who were also allocated to this reserve ended up walking back to their original lands, the Mamaindê stayed, apparently because this was at least land that they considered to be within the very eastern boundary of their own traditional territory.

It was not until December 4th, 1981 that the reserve known as the "Terra Indígena Vale do Guaporé was established by FUNAI for the Nambikwara valley peoples, including the Mamaindê, the Negarotê, and several Southern Nambikwara groups. This reserve measured some 243,000 hectares and included most of the traditional Mamaindê lands. At the same time, two other reserves were created, the Terra Indígena Pirineus de Souza reserve to the east for the Sabanê/Tawandê peoples with 30,000 hectares, and the Terra Indígena Sararé reserve to the south for the Sararé group, with some 68,000 hectares. (O Estado de Sao Paulo, 4/12/81).[65]

After the creation of the Guaporé Valley reserve, FUNAI expelled the previous landholder, Fazenda Morimoto, who had been occupying the heart of Mamaindê territory since acquiring it from rubber tappers.[66] Finally, in 1985, FUNAI relocated the Mamaindê back onto their own traditional land, at the northernmost tip of the Guaporé Valley reserve (Miller:2007:60). A single village was established and eventually named after the then chief of the Mamaindê, Capitão Pedro. This village was located on the very edge of the escarpment, on an ancient village site and was referred to in Mamaindê as /jukʰoʔtʰĩntu/ 'the village that hangs on the edge'. Here the Mamaindê enjoyed health care first by FUNAI and then by the Fundação Nacional de Saude (FUNASA) and their population began to grow.

On August 13, 1993 the long respected chief of the Mamaindê, Capitão Pedro, was killed by a gunshot to the chest during a hunting accident (*A Gazeta*, August 26, 1993, Cuiabá). Capitão Pedro was then succeeded as chief by his son Lucio Mamaindê, who continues to function as the chief of the village of Capitão Pedro. Although Brazilian lumbermen had begun to invade Mamaindê territory

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[65] Also cited in the journal Aconteceu: Povos Indígenas no Brasil/1981 (1982:21).

[66] The older Mamaindê remember their relocation as a time of tension between them and the owners of Fazenda Morimoto. Some of them still live in fear of reprisal from the owner of that ranch, who remains an influential figure in the city of Vilhena.

before this time, after the death of Capitão Pedro (who was opposed to such activity), the illegal extraction of valuable hardwoods was intensified and reached 'gold-rush' proportions. The Mamaindê, some of whom attempted to make deals with these intruders, were heavily exploited by the lumbermen in numerous ways during this period. This activity continued in some fashion through early 2004.

The author and his family, also members of SIL, arrived in 1994 and began living among the Mamaindê in the village of Capitão Pedro, taking over the work of Kingston in the areas of vernacular literacy and language description.

In 2005, the last researcher to study the Mamaindê, the anthropologist Joana Miller, spent some time in Capitão Pedro and completed her anthropological dissertation which focused on Mamaindê body ornamentation and how it relates to their sense of self.

The most recent chapter of Mamaindê history began in 2005 when the single Mamaindê village of Capitão Pedro began to suffer fragmentation due to the growing population of the village, a decreasing food supply, and inter-personal conflicts. On November 10th, 2005, the first families to leave Capitão Pedro, led by Paulinho Mamaindê (the chief's brother), traveled due west some 30 kilometers to the furthest north-west corner of the reservation, at the confluence of the Cabixi and Pardo rivers. There they established the Cabixi village, known in Mamaindê as */tukwawehnĩntu/,* 'the village on the water that brings'.[67] Three years later, the Mamaindê schoolteacher, Paulo Nego Mamaindê, also left Capitão Pedro, and taking some 25 people with him, moved south and established the third village, Tucumã. Later in that same year, the previous chief of Capitão Pedro, Lucio Mamaindê, left the main village and took his extended family with him. With this small group he established the village Campo do Meio, "the clearing in the middle", at a spot in the Cabixi river valley northwest from the central village, midway between the Capitão Pedro and Cabixi villages.

The FUNASA census in 2006 recorded 192 Mamaindê (FUNASA, 2006:2).[68] By now (2009) their numbers would be closer to 250. In forty years they have multiplied their numbers five times over. This should be seen as a remarkable comeback for a people with such a difficult and painful past.

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[67] Although they have indigenous names for two of their four villages, Capitão Pedro *[jukʰoʔtʰĩndu]* 'the village on the edge', and Cabixi *[dukwawehnĩndu]* 'the village on the water that brings', the Mamaindê will generally use the Portuguese names for these villages, even when speaking Mamaindê among themselves. The vernacular village names are reserved mostly for references to the ancient villages/burial grounds that were said to once have been located in these identical spots. The two newest villages, Tucumã and Campo do Meio, however, do not possess Mamaindê names at all. This shows that the traditional practice of establishing new villages on older village sites or burial grounds may be in the process of becoming less relevant, now giving way to more practical considerations such as the proximity of roads.
[68] This number did not include the 25 individuals living in the new village of Cabixi, nor the 5 Mamaindê living in the town of Vilhena.

2 Phonology

We now begin the description of the language proper.

Phonology, along with morphology, is recognized as one of the areas of greatest complexity within the languages of the Nambikwara family. And Mamaindê does not disappoint. Some of the highlights of the rich Mamaindê sound system include: contrastive aspiration on consonants; implosion as an allophonic variation of consonants; contrastive suprasegmental features on vowels including nasalization and creaky voice (resulting in a large set of vowel phonemes); the use of lexical tone which can be affected by tone plateauing; an intricate quantity sensitive stress system; coda licensing of [-continuants]; and various spreading processes including the spreading of place features from the nucleus to the coda. The phonological processes employed in the language include assimilation, insertion, deletion, metathesis, strengthening, weakening, and lengthening.

This chapter will describe the sound system. In the first section, the phonemes will be identified, beginning with the consonants and then the vowels, followed by a discussion of the phonotactics and the relevant allophones which belong to each phoneme. The next section will describe the Mamaindê syllable. Then we will look at the prosodic features of the language: first stress, then tone. Finally, the phonological processes involving these phonemes will be dealt with, including a complete listing of phonological rules and rule orderings.

2.1 The Mamaindê Phonemes

The number of phonemes posited for a given language is not always determined by a straightforward analysis. Often the researcher is faced with a plethora of decisions which influence whether or not a given segment is awarded the status of a phoneme. Many times these decisions could go either way. Some of the considerations which are pertinent to Mamaindê are: Should complex segments be treated as one or two phonemes? Is it better to posit a smaller phonemic inventory or a simpler syllable template? Are there other parts of the language which become clearer with a certain interpretation of the phonemes? Is a vowel on the edge of a syllable better understood as a vowel or a glide? In the description of the Mamaindê phonemes which follows, we will often find ourselves struggling with these types of questions. I include as much as possible of the discussion on either side of these issues.[69]

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[69] The inherent difficulties in defining the phoneme in ambiguous cases such as those just described begs the question whether or not the notion of 'phoneme' is a useful one. Certainly much recent work in phonology has tended to avoid the use of the term, in favor of more generic labels such as 'form' or 'segment.' Optimality Theory (OT) treats these underlying

My goal in this descriptive grammar is not to give an etic description of how Mamaindê could be organized, but to demonstrate as accurately as possible the way in which the language itself seems to organize its sounds, morphemes, and larger constituents. That is to say, the purpose in this endeavor is to approximate the actual phonological system found in the subconscious minds of native speakers of the language. And it is for the purpose of such an emic description that the notion of the phoneme becomes useful.

With that said, I will posit a system of 30 phonemes in Mamaindê. This includes 14 consonant phonemes and 16 vowel phonemes.[70] This number could be altered in various ways if we consider certain instances of complex segments (such as aspirated consonants) as two separate segments, or if we consider that other instances of two consecutive segments (such as diphthongs) are viewed as single complex ones. We will consider these matters in the sections that follow as we look at consonants and vowels individually.

The allophones of each phoneme will also be identified, including the contexts in which they each occur, and the phonological processes which derive them. While the allophonic processes encountered will be described in this chapter in an informal prose, later on in section 2.5, Phonological Processes, the complete set of all the rules will be given in a more formalized way, with similar processes being combined into one rule when appropriate. With an integrated prose/formal description of the phonology as our goal, each process discussed in prose form in this section will be cross-referenced to its formal representation found in section 2.5. This cross-referencing will include the rule name as well as information regarding domain and sensitivity to style/register, given in the following manner:

Cross-Reference to Section 2.5:
[Rule name; lexical/post-lexical; obligatory/optional].

Before beginning our detailed look at Mamaindê phonology, it may help the reader to have an idea of the larger phonetic context of this sound system. For that purpose I offer here the complete set of phones found in the language, including 33 consonantal phones and 20 vocalic phones. This somewhat large set of sounds will be reduced to a much smaller set of phonemes in the following pages.

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sounds as 'input' (Kager 1999:19). For descriptive grammars, however, phonemic analysis continues to provide a helpful means of identifying the contrastive sounds present in the lexicon of a given language.

[70] This contrasts in various ways with the phonemic inventories established for other languages in the broader Nambikwara family. Latundê (Telles 2002:34-35) has been analyzed as having 11 consonants and 16 vowels, Sabanê (Antunes 2004:27,43) as having 11 consonants and 5 vowels, and Southern Nambikwara (Kroeker 2001:78-80) has been described as having 29 consonants, 5 vowels, and 2 diphthongs. The large variance in these numbers reflects differing views of suprasegmentals on vowels and complex segments among consonants. In that regard, my description of Mamaindê phonemes in the following pages more closely resembles the Latundê analysis, viewing both nasality and creaky voice as contrastive on vowels, and viewing glottalized segments as phonetic and not phonemic.

The 33 Mamaindê Consonantal Phones

	LABIAL		ALVEOLAR		ALVEO PALATAL		PALATAL		PRE-VELAR		VELAR		GLOTTAL	
	vls	vd	vls	vd	vls	vd	vls	vd	vls	vd	vls	vd	vls	vd
Plosive	p	b	t	d					k̲ **		k	g	ʔ	
Aspirated Plosive	pʰ		tʰ								kʰ			
Implosive		ɓ		ɗ										
Fricative	ɸ		s		ʃ		j̥				ʍ		h	
Affricate					tʃ									
Nasal		m	n̥	n								ŋ		
Oral /Nasal*		bm		dn								gŋ		
Lateral Fricative			ɬ											
Lateral				l										
Flap			ɾ̥	ɾ										
Glide		w						j						

The 20 Mamaindê Vocalic Phones

	FRONT	CENTRAL	BACK
High	i, ĩ, i̠, ĩ̠		u, ũ, u̠, ũ̠ ʊ
Mid	e, ẽ, e̠	ə	o, õ, o̠
Low		a, ã, a̠, ã̠	

* Oral/nasal contours are combined phones.
** This is the symbol I am adopting for a fronted or pre-velar /k/.

2.1.1 The Consonants

Basic phonemic analysis is able to simplify large sets of phones into more
manageable and organized sets of phonemes by appealing to the notion of contrast.
Such an analysis is able to reduce the above set of consonantal sounds by more than
half. The table below shows the resulting 14 consonant phonemes of Mamaindê.

The Mamaindê Consonant Phonemes

	BILABIALS	ALVEOLARS	PALATALS	VELARS	GLOTTALS
Plosives	p	t		k	ʔ
Aspirated Plosives	pʰ	tʰ		kʰ	
Fricatives		s			h
Nasals	m	n			
Laterals		l			
Glides	w		j		

2.1.1.1   Phonemic Contrasts of Consonants[71]

/p/, /pʰ/

[ˈbauhnəlatʰwa][72]   she is patting
[pʰaˈpʰauptagu]   it is flattened

/t/, /tʰ/

[taˈjuːɾu]   my mouth
[tʰaˈkʰiːɾu]   squirrel monkey
[naˈtʰạːɾu]   his stomach
[ˈtʰọːlatʰwa]   it is black

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[71] All of the examples in this chapter will be written either in phonetic form, indicated by
brackets, or in phonemic form, indicated by slashes.
[72] The contrast here between /p/ and /pʰ/ is neutralized due to an obstruent voicing rule in
stressed syllables. As there are very few words with either the /p/ or /pʰ/ phonemes,
conclusive contrasts between them are not available. More convincing are the contrasts found
in the coronal and velar sets (between aspirated and unaspirated plosives), a contrast which by
extension can then be applied to the labials as well.

['do̰ːlatʰwa]   he is dying
['tʰãnlatʰwa]   it is open
['dãnlatʰwa]   it is bitter
[ta'la̰ɾu]   mahogany

/k/, /kʰ/

[kalaka'laːɾu]   chicken
[kʰalakʰa'laːlatʰwa]   it is hard
[tʰa'kʰiːɾu]   squirrel monkey
['kʰãnlatʰwa]   it is difficult
['gãumlatʰwa]   he is laughing
['kʰauptu]   drinking gourd
[kʰa'nihlatʰwa]   there are many
[ka'liktu]   banana
['gaiktʰatʰwa]   he is calling
[kʰa'kʰaiːdu]   parrot: type

/m/, /n/

['mãindu]   pet
['nã̰indu]   shell
['mḭːru]   sweet potato
['nḭːlatwa]   he is in pain
['mãnlatʰwa]   it burns
['nãnlatʰwa]   he cries

/n/, /l/

['niːlatʰwa]   it is like this
['liːlatʰwa]   it is cold
['nãnlatʰwa]   she is crying
['lãnlatʰwa]   it is hot

/s/, /t/, /tʰ/

[na'sa̰ːɾu]   his speech
[na'tʰa̰ːɾu]   her stomach
[na'daːɾu]   her mother

/m/, /p/, /w/

['mãnlatʰwa]   it is hot
['bãnlatʰwa]   there are two
['wãnʔlatʰwa]   he begs

/w/, /j/[73]

['weiktu]   child
['jeiktu]   nest
[waˈloːlatʰwa]   it is rotten
[jaˈloːlatʰwa]   it is dry
['waiᵍŋlatʰwa][74]   it is straight
['jaiᵍŋlatʰwa]   he is eating

/k/, /ʔ/, /h/

[naˈhoᵈndu]   water
[taˈgoᵈndu]   buttocks
[naˈʔoᵈnˌtʰãɾu]   his laziness
[haˈloːɾu]   land
[kaˈloːlatʰwa]   it stinks
[ʔai̯iːlatʰwa]   he is going
['gaiktʰatʰwa]   call
['haiʔgiɾu]   word
['ʔiksa]   wind
['hiktu]   hand
[ˌkihˈɬaᵈnʔdu]   son
['heiᵍŋdu]   time
['ʔeiᵍŋdu]   moon

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[73] There is no contrast between glides and the vowels /i/ and /u/. However, in word initial position, the syllable template is simplified by positing these sounds as onsets as opposed to nucleus segments. Not doing so would require a more complex nucleus. See section 2.2 on the Syllable. In the coda, the lack of contrast between the glides and the high vowels is much more difficult to analyze, resulting in ambiguous or suspicious segments. This will be discussed later under section 2.1.2.8.3 on Diphthongs.

[74] The superscripted voiced stops in sequences such as [ᵇm], [ᵈn], and [ᵍŋ] represent rapid oral onsets to pre-stopped or pre-oralized nasals. See further details in the discussion of the phoneme /n/.

2.1.1.2   *Unaspirated Plosives*

There are two series of plosives in Mamaindê: unaspirated stops, and aspirated stops. We will look first at the unaspirated series.

Unaspirated stops in Mamaindê can be realized as either voiced or voiceless segments. The voiced set of stops [b,d,g] is in free variation with the voiceless set [p,t,k] in the word initial, unstressed position. The voiced forms, however, are preferred in an onset position between two voiced segments[75], and obligatory when filling the onset position of a stressed syllable. [76] In the coda position, or following voiceless consonants[77], plosives are invariably voiceless.

These stops could of course be analyzed as either voiced or unvoiced underlyingly, depending on whether one posits a voicing or a devoicing rule. Although Kingston initially posited a voiceless aspirated set of plosives contrasting with a voiced unaspirated set (Kingston, 1974:1), more recent research in Mamaindê has generally opted for the voiceless set as underlying in both the aspirated and unaspirated series (Kingston 1994: personal communication; Eberhard 1995:14; Eberhard 2003:7). In related Nambikwara languages, where similar cases of variation between the voiced and voiceless plosives occur, the voiceless set has also been the one given phonemic status (see Kroeker 2001:78, for Southern Nambikwara and Telles 2002:34, for Latundê). Besides this support from within the language family, I will argue for the voiceless series as phonemic in Mamaindê based on three criteria; phonological symmetry, naturalness of contexts, and universal markedness.

Due to the presence of the aspirated set, which are clearly voiceless, the principle of phonological symmetry would favor positing the unaspirated series as voiceless. Tables 2 and 3 show the lack of symmetry in an analysis which opts for the voiced set.

Mamaindê unaspirated stops as voiced phonemes (asymmetrical)

	LAB		*ALV*		*VEL*		*GLOT*
	vls.	vd.	vls.	vd.	vls.	vd.	vls.
Plosives		b		d		g	
Aspirated Plosives	pʰ		tʰ		kʰ		

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[75] One exception to this is the /t/ which is realized as [ɾ] intervocalically when it occurs as the onset of an unstressed syllable (*/weit-ãni/* → *['weirãni]* 'child').

[76] The fact that stress will be appealed to by the phonology at various junctures gives support to the view that stress is a necessary part of this language, an important point when one is dealing with tonal languages such as Mamaindê. See section 2.4 on Tone for more details.

[77] Voicing of unaspirated plosives in stressed syllable onsets will generally occur even following voiceless consonants.

Mamaindê unaspirated stops as voiceless phonemes (symmetrical)

	LAB		*ALV*		*VEL*		*GLOT*
	vls.	vd.	vls.	vd.	vls.	vd.	vls.
Plosives	p		t		k		
Aspirated Plosives	p^h		t^h		k^h		

Observing the environments in which these voiced and voiceless stops occur, we find that, for the most part, the contexts of the voiced plosives (as well as the /t /➔ [ɾ] process) comprise a natural class, namely voiced segments. The environment of the voiceless stops, on the other hand, involves contexts which are not natural classes. Furthermore, the notion of markedness, or in this case unmarkedness, also favors the voiceless series since these tend to be the more unmarked stops cross-linguistically.[78]

Two of the plosives, /p/ and /t/, are in some environments realized as their imploded voiced variants [ɓ, ɗ] in the speech of the more mature speakers (over 40 years of age or so). The imploded forms usually occur as onsets to stressed syllables and mostly before back vowels. They also tend to occur word initially, although they may occur word internally after a glottal stop. The implosives seem to be limited to the elderly, however, as they have fallen out of use with the younger generation, which is being heavily influenced by Portuguese.

The complete lack of the imploded voiced velar [ɠ] is not surprising due to typological studies which have established a universal hierarchy for place of articulation of voiced implosives, whereby the most front position is the least marked and the most back position is the most marked (Croft 1990:147). This lack of symmetry in the Mamaindê implosives is therefore predictable from a cross-linguistic perspective, but it does raise some interesting questions as to the historical source of implosion in this language. When we look at the related languages, we find that implosion is found in other languages throughout the Nambikwara family. Latundê (Telles 2002:38) displays a full set of three imploded stops (labial, alveolar, and velar), Southern Nambikwara only has the imploded alveolar form (Kroeker 2001:78), while Lakondê (Telles 2002:38) apparently has none. Comparatively speaking, Mamaindê, with its two imploded forms, thus finds itself at a mid-point between Latundê, with three imploded stops, and Southern Nambikwara with one. This shift in the sound symmetry of these languages, from a fully symmetrical set of three imploded forms to less symmetrical inventories suggests that diachronically, we are looking at feature loss and not feature acquisition. Under this hypothesis, Mamaindê would have lost its velar imploded stop, Southern Nambikwara would have lost both its velar and bilabial forms, and Lakondê would have lost the full set. Both Kroeker and Telles cite the fact that, currently, the imploded forms which are

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[78] This point was also made by Telles (2002:38) in her treatment of Latundê phonemes.

left are used only be the elderly, which we have already noted as being true of Mamaindê as well. It is clear we are looking at a case of language loss, or more correctly, language feature loss, and that implosion may not be a characteristic of these languages much longer.

We will now look at the unaspirated plosives individually and give examples for each.

2.1.1.2.1   The /p/

2.1.1.2.1.1   Phonotactics

The /p/ is one of the more restricted phonemes within this sound system in terms of its distribution.[79] It is found almost exclusively in the onset of stressed syllables. As a phoneme, the /p/ is never found in the coda, although the phone [p] can occur in codas and word final positions. Every instance of the phone [p] in the coda can be analyzed as either the phonetic realization of an under-specified coda, or as an epenthetic segment (see the discussion of Vowel Place Feature Spreading, section 2.5.2.5, as well as the section on Epenthetic Consonants, 2.5.8.2). The phoneme /p/ is therefore restricted to word initial and syllable initial positions. In relation to other consonants, it does not occur in consonant clusters unless it follows the /n/.

The /p/ is also limited in the number of vocalic environments which follow it, more so than any other consonant except /m/. It never precedes the high back rounded vowel /u/. And although it does occur before the /o/, it is never followed by /iu/, or /eu/. The other labials are also restricted in similar ways. The /m/ occurs before /u/, but not before /o/, /au/, /iu/, or /eu/. The /w/ occurs only once before /eu/ (*/weu/* 'to store'), and never before /u/, /o/, or /iu/. It seems that the labial consonants as a class are limited both in regards to their place in the word, and in regards to the number of back, round vowels and diphthongs they may precede. One reason for this is simply that the rounded vowels and diphthongs are less frequent in Mamaindê, particularly the /o/, /iu/, and /eu/. But since most consonants do occur adjacent to all of these vowels at some point, I will posit a collocational constraint holding in the onset/nucleus where a consonant and its following vowel must differ in the labial feature ([CLabial] [VLabial*]. This doesn't hold for all of the labial consonants in all occasions, and thus can be violated, but it does appear to be a preference in the onset. Interestingly enough, we will see later on that there is an opposite tendency in the coda, where the labial feature of a vowel often spreads to the following coda consonant, demonstrating a preference for the sharing of the round/labial feature in the rhyme. This preoccupation with collocational restrictions of the [labial] feature is an interesting characteristic of the Mamaindê sound system.

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[79] This follows the universal place hierarchy established for voiceless plosives, which is dental/alveolar < velar < bilabial (Croft, 1990:148).

2.1.1.2.1.2   The Allophones

The allophones of /p/ are [p], [b] and [ɓ]. The latter two segments can be accounted for by allophonic rules. We will look at each of the allophones of /p/ in turn, giving a prose description of their distribution, followed by a discussion of the process necessary to generate each variant form.

       The voiced form [b] is preferred when filling the onset position of a stressed syllable (among elderly speakers the [b] can vary with the [ɓ] in this environment). And since all instances of /p/ occur as onsets of stressed syllables, the voiceless form is seldom heard. There are a few forms, however, where the [p]and [b] allophones may optionally occur in the onset stressed position.[80]

Cross-Reference to Section 2.5:
[Pre-Stress Obstruent Voicing Rule; Post-Lexical; Obligatory]

(01)	/japãnʔ-tu/[81]	[jaˈbãnʔdu]	tuber: taioba (Pt.)[82]
(02)	/jatapeiʔni-tu/	[jataˈbeiʔniɾu]	nut: pariri (Pt.)
(03)	/kopais-tu/	[koˈbaikdu]	armadillo: tatu 15k.
(04)	/tapan-tu/	[taˈbaⁿndu]	shoulder
(05)	/juboʔni-tu/	[juˈboʔniɾu]	tadpole
(06)	/m̥isapãnki-tu/	[m̥isaˈbãŋgiɾu]	sweet potato: type
(07)	/aũn-paʔ-kʰatoʔ/	[ˌaũm-ˈbaʔ-kʰaɾoʔ]	leave-place-then
(08)	/napa̱tʰi-tu/	[naˈpa̱tʰiɾu] ~ [naˈba̱tʰiɾu]	jungle wolf
(09)	/napeikti-tu/	[naˈpeiktʰiɾu] ~ [naˈbeiktʰiɾu]	slug
(10)	/pikʰi-tu/	[ˈpikʰiɾu] ~ [ˈbikʰiɾu]	bird: curió (Pt.)

       A separate process governs the occurrence of the imploded bilabial stop, [ɓ]. This allophone only occurs in the onset of a stressed syllable, preceded by a word boundary or a glottal stop and followed by a back vowel. The back vowel

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[80] A word about free variation: a number of the allophones of Mamaindê appear to be in free variation with other allophones in certain environments. I am using the term free variation to mean that internal to the sound system there is no means to predict the occurrence of one sound over another. This does not mean, however, that there may not be other factors outside the phonology, such as contextual, emotive or social considerations, which could influence the speakers choice of speech sounds. Admittedly, variation that is completely free of any such outside influences is hard to imagine.

[81] The nouns in the following lists are given with the final nominal suffix, *-tu* 'FNS', used for the listing of nominals. The verb roots, which are obligatorily fixed morphemes, are mostly shown with the third person present tense suffix string, *-latʰa-∅-wa/* 'S3-PRS-N.INT', or the first person present tense suffix string, */-aʔ-∅-wa/* 'S1-PRS-N.INT'.

[82] Portuguese glosses are labeled with (Pt.).

could include the /a/ or the /o/ (the /a/ in Mamaindê is a central low vowel and thus is considered as [+back]). Even though this would allow the imploded form to be used before the /u/ vowel, the sequence /pu/ has never been attested to in Mamaindê.[83] As was mentioned earlier, the imploded stops are falling out of use and are only employed by the more elderly speakers. The [ɓ] is accounted for by the Stop Implosion Rule.

Cross-Reference to Section 2.5:
[Stop Implosion Rule; Post- Lexical; Optional]

(11)	/paah/	[ˈpaah] ~ [ˈbaah] ~ [ˈɓaah]	two
(12)	/ponʔ-tu/	[ˈpoᵈnʔdu] ~ [ˈboᵈnʔdu] ~ [ˈɓoᵈnʔdu]	frog: type
(13)	/po-tu/	[ˈpoɾu] ~ [ˈboɾu] ~ [ˈɓoɾu]	bird: uirapuro (Pt)
(14)	/pau/	[ˈpau] ~ [ˈbau] ~ [ˈɓau]	to make dirty
(15)	/panʔ-tu/	[ˈpaᵈnʔdu] ~ [ˈbaᵈnʔdu] ~ [ˈɓaᵈnʔdu]	frog: type
(16)	/pauhna/	[ˈpauhna] ~ [ˈbauhna] ~ [ˈɓauhna]	to pat

2.1.1.2.1.3   The Special Case of the [ʙ]

An interesting labial sound related to the /p/ is the voiced bilabial trill [ʙ]. Although not part of their speech system, the Mamaindê still employ it for communicative purposes. An interjection used as an imperative, similar to the [ʃʃʃʃ] of English, this sound means "turn around!". The trill is used only in a very restricted domain - their circle dancing festivals (puberty festivals and sacred flute festivals), and it is used by the male dance leader as a signal to let the dancing participants know the precise moment to turn around and dance in the opposite direction[84]. Once the leader gives this bilabial signal, other male dancers may repeat it, thus emphasizing the signal. Women, although participants in the dances, never have been witnessed using the bilabial trill in any context. This signal is an interjection because it is only used for this one single purpose and never occurs in a sentence or enters into any relationship with other words. It can also be typified as an idiophone since it is comprised of a unique sound which never shows up elsewhere in the language. For these reasons we will not include it in the set of phonemes. However, it is definitely an additional

[83] The alveolar imploded form /ɗ/, on the other hand, may occur before /u/ in forms such as */ɗuːlatʰwa/* 'he gets'
[84] Not every instance of changing direction during a dance is accompanied by the bilabial trill signal. It seems there are other cues, the main one being when one of the male leaders simply changes direction and the others are obliged to follow suit. It also remains to be seen whether there is any cue in the music itself which would communicate this information to the dancers, or whether the change of direction is done simply at the whim of the dance leader. What does seem clear is that the trill is used as the most overt signal of all, in situations where the leader wants to emphasize the change of direction for dancers who may not be watching the leader or hearing any other cues.

sound which the Mamaindê have at their disposal for communicative purposes and which has been assigned a specific meaning.

(17)   [ʙ::]   turn around!

2.1.1.2.2   The /t/

The alveolar consonants in Mamaindê have the most allophones of any phonemes in the language, being realized with such surface variation that the underlying forms often remain hidden. This statement applies chiefly to the /t/, /n/, and /s/, although some interesting allophony can be seen with the /l/ as well. Such variation at the same place of articulation suggests that the alveolars as a class are weak or unstable consonants in Mamaindê, having their surface form altered more than most other consonants, typically getting their features from neighboring segments. This tends to hold true cross-linguistically, and depending on the theory used, one could consider the alveolars as the default or underspecified place of articulation not only in Mamaindê, but in many languages. Kenstowicz notes this seemingly universal characteristic of coronals, stating that 'coronals are the most frequent articulator choice' and that 'coronals are more susceptible to assimilation than noncoronals' (1994:516-517). Here we will consider the /t/.

2.1.1.2.2.1   Phonotactics

The phoneme /t/ has a much wider distribution than /p/. It can occur word-initially, word medially, and in word final position. It appears in consonant clusters either before or after other consonants. It may also occur before any vowel or diphthong (even though one combination, /tiu/, is very rare and only shows up once in my data; */atĩun/* - 'kindling'.)

2.1.1.2.2.2   The Allophones

The /t/ has five allophones: [t], [d], [ɖ], [ɾ], and [tʰ]. The [t] and [d] are always articulated in the alveo-dental position. The allophone [t] occurs optionally in the unstressed, word initial position. It is obligatory, however, in the coda after back vowels /a/, /u/ and /o/. Word medially, in the onsets of unstressed syllables preceded by voiceless consonants (excluding the glottal stop), one of the voiceless forms must be used, either the [t] or the [tʰ]. In essence, if a shared [-voice] feature is part of a consonant cluster, voicing cannot apply.[85] No rule is necessary for the [t] since we are positing this as the underlying form.

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[85] These consonant clusters could be analyzed in an Optimality approach by appealing to a consonant cluster constraint that requires voiceless unaspirated obstruents to occur adjacent to other voiceless consonants, sharing a single association to the [-voice] feature. Stated in the negative, voiceless unaspirated obstruents do not occur alone. If a voiceless obstruent does

(18)	/ta-jahon-tu/	[taja'hoᵈndu]	my old man
(19)	/taʔlohni-tu/	[ˌdaʔ'lohniɾu]	old woman
(20)	/taweis-latʰa-wa/	[ta'weiktʰatʰwa]	to cause to be fixed
(21)	/kamat̪-tu/	[ka'mat̪tu]	fava bean
(22)	/sis-tu/	['siktu]	grass
(23)	/taʔ'juk-tu/	[ˌtaʔ'juktu]	evil spirit
(24)	/jot-tu/	['jottu]	payment
(25)	/analot-latha-wa/	[ana'lottʰatʰwa]	too much
(26)	/hat-latʰa-wa/	['hattʰatʰwa]	he has
(27)	/ʔut-tu/	['ʔuttu]	weasel
(28)	/aat-siʔ/	['aatsiʔ]	a little
(29)	/tapistapin-latʰa-wa/	[taˌbikta'biᵍŋlatʰwa]	it is swinging
(30)	/litin-taku/	[li'digŋdagu]	he is jumping
(31)	/nis-taku/	['niktagu]	he is hoeing
(32)	/nakas̪-tu/	[naˌgat̪'du]	listen & grab hold of

The voiced alveo-dental variant, [d], is in free variation with the [t] in the word initial, unstressed position.. Between voiced segments, the [d] allophone is preferred, as in the form */san-taku/ → ['sadndagu]* 'to harvest'. However, in the intervocalic position, a further rule applies, the Coronal Weakening rule, which causes the [d] to be realized as the voiced flap [ɾ]. The only obligatory occurrence of the voiced form is when it fills the onset position of a stressed syllable. The distribution of [t] and [d] is therefore simply an expanded version of what we have already seen for the [p] and [b] segments, and will be handled by the same pair of rules in the Phonological Processes section in 2.5.

Cross-Reference to Section 2.5:
[Pre-Stress Obstruent Voicing Rule; Post-Lexical; Obligatory]
[Intervocalic Obstruent Voicing Rule; Post-Lexical; Optional]

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occurs alone in the input, this will cause a violation and a voiced candidate will be chosen instead. This view could be expanded to account for voiceless obstruents in word initial/word final positions. In such cases, the word boundary would count as the second voiceless segment in the cluster. When an obstruent precedes a stressed vowel, however, such as in the example */nakas-tu/ → [na'gat-'du]* above, a constraint preferring voiced obstruents in pre-stressed contexts would take precedence regardless of whether the [-voice] feature is shared or not. In such a constraint based approach, the Voiced Pre-Stressed Obstruent constraint would have to be ranked higher than the Voiceless Cluster constraint.

(33)	/tanu-lat^ha-wa/	[ta'nu:lat^hwa]~[da'nu:lat^hwa]	he gives
(34)	/jatan-tu/	[ja'da^dndu]	deer
(35)	/litin-taku/	[li'di^gŋdagu]	to jump
(36)	/tein-ta̰ʔ/	['dei^gŋ͜da̰ʔ]	to close and…
(37)	/teiʔ-tu/	['deiʔdu]	wife

Notice the voicing of the /t/ even when there is an intervening glottal stop in the environment. In Mamaindê, the feature [voice] can skip over the glottal and spread to non-adjacent segments. This may be accounted for by the fact that the glottal stop does not need the [voice] feature at all in order to be distinguished from the other phonemes of the language. The glottal can be identified by appealing to only two features, [-cont] and [+constrict larynx]. So if we do not assign any value for the feature voice to the glottal, this segment would be transparent to any voicing rule. This apparently is what occurs in Mamaindê. Due to this transparency of the glottal, when the /t/ occupies the onset of a syllable following a glottal in the coda of the preceding syllable, the voicing of the /t/ phoneme depends on the voicing of the segment preceding the glottal. If the segment before the glottal is a vowel or a nasal consonant, then the /t/ is voiced. If the preceding segment is a voiceless stop, then the /t/ remains voiceless. (Of course, if the /t/ is in the onset of a stressed syllable, it will be voiced regardless of its segmental environment)

Below are examples of this behavior of the /t/ following glottals, including some consonant/glottal sequences. For more on consonant/glottal sequences, see section 2.1.1.4, 'Glottalized Consonants'.

(38)	/suʔton-lat^ha-wa/	[suʔdo^dnlat^hwa]	he doesn't know
(39)	/naʔtun-lat^ha-wa/	[naʔdu^dnlat^hwa]	he is full
(40)	/t^heinʔ-tu/	[t^hei^gŋʔdu]	hammock
(41)	/mãnʔ-tu/	[mãnʔdu]	hill/mountain
(42)	/nakaja̰nʔ-tu/	[nagaja̰^dnʔdu]	person/indian
(43)	/ʔauʔti-tu/	[ʔauʔdiɾu]	arrow
(44)	/mãnʔ-tu/	['mãnʔdu]	hill
(45)	/wasainʔ-tu/	[wa'sai^gŋʔdu]	stuff
(46)	/jalinʔ-tu/	[ja'li^gŋʔdu]	bamboo flute
(47)	/k^hatʔ-tu/	[k^hatʔtu]	stick
(48)	/hukʔ-tu/	[hukʔtu]	bow

The imploded allophone, [ɗ], occurs in the onset of a syllable and is preceded by a word boundary or a glottal stop and followed by a back vowel.

Typically the syllable is also stressed.[86] This allophone is only employed by elderly speakers. The process which derives the [ɗ] is the same one which accounted for its labial counterpart [ɓ].

Cross-Reference to Section 2.5:
[Stop Implosion; Post-Lexical; Optional]

(49)	/tu-tein-aʔ-wa/	[ˈɗuːˌɗeiːnaʔwa] ~ [ˈɗuːˌɗeiːnaʔwa]	I am getting
(50)	/toh-latʰa-wa/	[ˈɗohɬatʰwa] ~ [ˈɗohɬatʰwa]	he wants
(51)	/suʔton-soʔki-tu/	[suʔˈɗoᵈnˌsoʔgiɾu] ~ [suʔˈɗoᵈnˌsoʔgiɾu]	doubting one
(52)	/mãnʔ-tu/	[ˈmãnʔdu] ~ [ˈmãnʔɗu]	hill

The alveolar flap [ɾ] occurs as an allophone of /t/ in intervocalic positions in unstressed syllables.[87] This is a typical case of coronal weakening.

Cross-Reference to Section 2.5:
[Coronal Weakening; Post-Lexical; Obligatory]

(53)	/weit-ãni/	[ˈweiːɾãni]	the child
(54)	/wa̱-kʰatoʔ/	[ˈwa̱ːkʰəˌɾəʔ]	come, then
(55)	/lit-a-hĩʔ/	[ˈliːɾaˌhĩʔ]	I arrived, then…
(56)	/nĩ-ta-tʰã-tu/	[ˈnĩːɾatʰãru/	that which hurts me / my pain
(57)	/la-ta-latʰa-wa/	[ˈlaːɾalatʰwa]	it's a macaw
(58)	/hiuti-tu/	[ˈhiuɾiɾu]	tree

The /t/ must be in an unstressed position for coronal weakening to apply. Distance from the stressed syllable, or the notion of feet, does not seem to be a factor, as both coronal consonants in the example for the word 'tree' above undergo the flapping rule. Notice that the flap does not occur if the intervocalic obstruent is in a stressed syllable.

(59)	/hos-a-ta-tu/	[ˈhoːsaˌdaːɾu]	spider monkey

The aspirated allophone [tʰ] occurs only as the second member of a consonant cluster. More specifically, it occurs optionally in the onset of an unstressed syllable when preceded by a voiceless coda consonant. The [tʰ] as an

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[86] The only exception found to this rule is the morpheme /-tu/ 'Final Nominal Suffix'. The initial obstruent in this nominal suffix can be imploded after a glottal even though the following back vowel is never stressed (as in [ˈmãnʔɗu]).

[87] A voiceless variant of the flap occurs following the /h/ (see section 2.1.2.2.3, 'Non-Allophonic Variants').

allophone of /t/ is accounted for by the process of onset strengthening, which causes alveolar consonants in the onset to be strengthened by aspiration in the environment of a voiceless consonant. This process does not apply when the /t/ follows a glottal, presumably because glottals are not marked for the feature [voice].

Cross-Reference to Section 2.5:
[Onset Strengthening; Post-Lexical; Optional]

(60)   /kajat-tu/   [kaˈjattʰu]   grasshopper

(61)   /jais-tu/   [ˈjaiktʰu]   son-in-law

(62)   /weit-tu/   [ˈweiktʰu]   child

(63)   /seit-ta-latʰa-wa   [ˈseiktʰalatʰwa]   he speaks to me

(64)   /hos-tu/   [ˈhottʰu]   monkey: macaco prego (Pt)

The need to appeal to stress is shown clearly in the form below, which contains two root forms, */kajat/* 'grasshopper' and */ta/* 'mother/large one'. As roots, both forms will receive stress, and in such a context the second /t/ does not undergo the aspiration rule. Instead, this environment calls for the /t/ to be voiced according to the obstruent voicing process which we have already discussed.

(65)   /kajat-ta-tu/   [kaˈjatˈda:ɾu]   female grasshopper = large
                                                 grasshopper[88]

The allophone [tʰ] should not be confused with the aspirated phoneme /tʰ/, since /t/ nd /tʰ/ contrast in other environments (see evidence of this contrast in section 2.1.1.1). This contrast is neutralized, however, when either /t/ or /tʰ/ follow a voiceless consonant in an unstressed syllable. In that environment, onset strengthening applies and only the [tʰ] will occur. (See section 2.1.1.1, 'Phonemic Contrasts of Consonants', for evidence of contrast between /t/ and /tʰ/.)

2.1.1.2.2.3   Non-Allophonic Variants

Besides the intervocalic environment mentioned above, the flap may also be conditioned by a preceding /h/. In the process, the original /h/ coalesces with the flap, resulting in a voiceless [ɾ̥], which is a non-allophonic variant of /t/. This requires two ordered processes, the first involving coronal weakening (the /t/ → [ɾ]), and the second involving onset devoicing and the subsequent coalescing of two

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[88] Stress is predictable by rule, but is also dependent on morphological category. In this case, the root and the first suffix are eligible for stress, while the last affix is not. See section 2.3 on Stress for more details

segments (where [hɾ] ➔ [ɾ̥]). The first process is allophonic and the second
phonological. Since coalescence cannot be seen as allophonic, the [ɾ̥] is not listed as
an allophone of /t/.

Cross-Reference to Section 2.5:
[Coronal Weakening; Post-Lexical; Obligatory]
[Onset Devoicing; Post-Lexical; Obligatory]

(66)	/jaih-ta-latʰa-wa/	[ˈjaiːɾalatʰwa]	it is sad to me
(67)	/sih-tu/	[ˈsiːɾ̥u]	house
(68)	/loh-taku/	[ˈloːɾagu]	vomit, then…
(69)	/loh-tu/	[ˈloːɾ̥u]	vulture

2.1.1.2.2.4   The Underspecified /T/ and its Allophones

An interesting and complex area of Mamaindê phonology is the behavior of coronal
consonants in the coda position. For instance, in many forms where we have
morphological reasons to believe there should be an underlying /t/ in the coda, a [k]
will surface. A look at the data reveals that the phonetic form of this coda consonant
seems to be determined by the preceding vowel. A pre-velar [k̪] is realized in the
coda when preceded by a high front vowel (/i/, /ai/, or /ei/) and followed by another
consonant. When preceded by /a/, /o/, /u/, the coda will be realized as a [t] segment.

(70)	/weit-tu/	[ˈweik̪tu]	a child
(71)	/seit-latʰa-wa/	[ˈseik̪tʰatʰwa]	he speaks
(72)	/wait-tu/	[ˈwa̠ik̪tu]	cerejeira: Brazilian cherry
(73)	/walit-tu/	[waˈlik̪tu]	cará: edible tuber
(74)	/lit-taku/	[ˈlik̪tagu]	arrive and…
(75)	/weitwainʔ-tu/	[ˌweik̪ˈwaiᵍʔŋdu]	adolescent girl
(76)	/kʰat-tu/	[ˈkʰattu]	stick
(77)	/analot-taku/	[anaˈlottagu]	enough and…

At first hand it seems that we are forced to posit an underlying /t/ for these
coda segments, even those which are realized as a [k̪]. Although considering the
velar stop as an allophone of /t/ is not a satisfactory prospect, the behavior of these
segments in intervocalic position would appear to call for such a drastic step.[89]

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[89] This was in fact the analysis defended in my earlier work (Eberhard, 1995:15), a position
that I have since abandoned.

(78)	/weit-tu/	[ˈweik̠tu]	a child (with final nominal suffix1)[90]
(79)	/weit-ani/	[ˈweiːɾãni]	a child (with final nominal suffix2)
(80)	/lit-taku/	[ˈlik̠tagu]	arrive, and…
(81)	/lit-a-taku/	[ˈliːɾaɾagu]	I arrive and…

Fortunately, there is another option. We will leave the full analysis of this interesting case to section 2.5 of this chapter, when we deal with the details of the Vowel Place Feature Spreading Rule. Here we will simply mention that the process involved is one of place feature spreading between the vowel and the consonant, or more specifically, the spreading of a VPlace node from the nucleus to the CPlace node of the coda consonant. This assumes that the vowel place features in Mamaindê can be underspecified and reduced to three features, Dorsal [+-back], Labial, and Aperture. Such underspecification will be argued for in section 2.5, a position that explains why there are a limited number of vowel place features which are available to spread to the following consonant. In the case of the [k̠], it is the Dorsal [-back] feature which is spreading from the high front vowel to the coda, creating a pre-velar plosive (ex:*/weit-tu/ → [weik̠tu]*). [91]

Since the same assimilation process results in radically different outputs depending on context, it is more intuitive to suppose that we are dealing here with an under-specified coda segment which gets its place features filled in by its environment, than to posit phoneme → allophone derivations in the coda.[92] Therefore, whenever the /t/ appears to be found in the coda, I will be re-analyzing it as a consonant underspecified for Place, and will be re-writing it as a /T/.[93] This analysis becomes even more appealing when we realize that the same process occurs with the other coronal codas, the /s/ and the /n/. The data below is rewritten with the /T/ as underlying.

Cross-Reference to Section 2.5:
[Vowel Place Feature Spreading; Post-Lexical; Obligatory]

| (82) | /weiTtu/ | [ˈweik̠tu] | a child |
| (83) | /seiTlatʰawa/ | [ˈseik̠tʰatʰwa] | he speaks |

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[90] The final nominal suffixes /-tu/ and /-ãni/ function mainly to mark lexical items as nouns. The subtle distinctions between them are discussed in the morphology chapter, section 3.4.1.3.9, 'Final Nominal Suffixes'.

[91] The [k] produced in this process is a pre-velar stop, or nearly a palatal [c].

[92] The idea of using underspecified coda consonants in Nambikwara languages was first hinted at by Price (1978:23), who employed a generic /C/ for certain coda consonants in reconstructed Proto-Nambikwara forms.

[93] This consonant must still retain its manner features, such as [±cont], [±nasal, [±strident], etc., in order for the phonology to differentiate this underspecified coda segment from other underspecified coda segments when the Maximization of Onset Principle forces them to appear intervocalically after suffixation occurs. See more on this issue under the other coronal phonemes, /s/ and /n/.

(84)   /wa̰iTtu/   [ˈwa̰ik̠tu]   cerejeira: Brazilian cherry

(85)   /waliTtu/   [waˈlik̠tu]   cará: type of tuber

(86)   /liTtaku/   [ˈlik̠tagu]   arrive, then…

(87)   /weiT'wainʔtu/   [ˌweik̠ˈwaiᵍŋʔdu] adolescent girl

2.1.1.2.3   The /k/

2.1.1.2.3.1   Phonotactics

The /k/ can occur word initially, medially, and finally. There appear to be no restrictions on its distribution.

2.1.1.2.3.2   The Allophones

The allophones of /k/ are [k] and [g]. As we mentioned in section 2.1.1.2, the imploded velar allophone [ɠ] is missing in Mamaindê, creating a gap in the sound inventory of this language.[94]

      The allophone [k] occurs optionally in the onset of unstressed syllables and obligatorily in the coda.

(88)   /kalai-tu/   [kaˈlaiːɾu]~[gaˈlaiːɾu]   tarantula

(89)   /juhak/   [juˈhak]   all

(90)   /jujuk-tu/   [juˈjuktu]   earthworm

(91)   /saseik-tu/   [saˈseik̠-tu]   scorpion

(92)   /kajat-tu/   [kaˈjattu]~[gaˈjattu]   corn

(93)   /kanaka-latʰa-wa/   [kaˈnaːgalatʰawa]~[gaˈnaːgalatʰawa]   it's one

(94)   /kanah-jeʔ-latʰa-wa/   [kaˈnahˈjeʔlatʰwa]~[gaˈnahˈjeʔlatʰwa]   it's dark

(95)   /kihlanʔ-tu/   [kihˈɬanʔ-du] ~ [gihˈɬanʔ-du]   son

      The voiced velar allophone, [g], is in free variation with the [k] in the word initial, unstressed position. The voiced velar, however, is preferred in the onset position between two voiced segments, or when filling the onset position of a stressed syllable. As we noted in the case of the /t/, a glottal stop may occur between the obstruent and the first voiced segment.

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[94] The lack of the imploded /ɠ/ is not unexpected. Typological studies have found that languages with a series of voiced implosives are more likely to display an inventory gap in the velar position, which is considered the most marked position, with the least marked position being the labial (Croft,1990□147).

Cross-Reference to Section 2.5:
[Pre-Stress Obstruent Voicing Rule; Post-Lexical; Obligatory]
[Intervocalic Obstruent Voicing Rule; Post-Lexical; Optional]

(96)	/mãn-kalo-tu/	[ˈmãŋgaˈloːɾu]	cloth
(97)	/kãun-latʰa-wa/	[ˈgãumlatʰwa]	he is laughing
(98)	/keun-latʰa-wa/	[ˈgeuᵇmlatʰwa]	he is mixing
(99)	/naʔka̱s-aʔ-wa/	[ˌnaʔˈga̱ːsaʔwa]	I am listening
(100)	/laka-latʰa-wa/	[ˈlaːgalatʰwa]	he knows
(101)	/onka-latʰawa/	[ˈoᵍŋgalatʰwa]	he does
(102)	/mãinki-tu/	[ˈmãiŋgiɾu]	cashew
(103)	/haiʔki-tu/	[ˈhaiʔgi-tu]	word/speech
(104)	/hoʔki-tu/	[ˈhoʔgidu]	match/kindling
(105)	/hauʔka/	[ˈhauʔga]	other
(106)	/nauʔkanãiʔ/	[ˌnauʔgaˈnãiʔ]	just
(107)	/na-soʔka/	[naˈsoʔga]	person

2.1.1.2.4   The /ʔ/

2.1.1.2.4.1   Phonotactics

The glottal stop in Mamaindê can occur word initially, medially, or finally. It can also occur freely between any vowels or before any consonants. Occasionally it will even occur in the second slot of the coda after a consonant, or in the first slot of the onset before a consonant, where it coalesces with the other consonant creating a glottalized consonant (arguments for analyzing these as two segments instead of one complex segment will be given in the section 2.1.1.4, 'Glottalized Consonants'). The main restriction on its distribution is at the syllabic level, where it is not allowed to occur in non-peripheral slots of either the onset or coda. This is due to the well-known Sonority Principle, which controls the well-formedness of Mamaindê syllables by enforcing a decrease in sonority from the nucleus to the peripheries of the syllable. This constraint effectively prohibits the glottal stop from occurring in the second slot of an onset with multiple consonants, or in the first slot of a coda with multiple consonants.

A second restriction on the glottal is that it may not occur in the onset of a syllable following a stop in the coda of the previous syllable. In that position it may only occur after sonorants. This restriction keeps sequences such as /V[stop]ʔV/

from being syllabified as [V[stop].ʔV], and motivates a repair strategy in these cases.[95]

2.1.1.2.4.2   The Allophones

The /ʔ/ is realized exclusively as [ʔ]. Below are examples of the glottal stop in various positions within the word.

(108)	/ʔa̪i-jeʔ-latʰa-wa/	[ˈʔa̪iːˈjeʔlatʰwa]	he is going
(109)	/ʔnuh/	[ˈʔnuh]	alone
(110)	/ʔwãn/	[ˈʔwãn]	however
(111)	/ʔmĩn-tu/	[ʔmĩn-du]	skin
(112)	/ʔut-tu/	[ˈʔuttʰu]	weasel
(113)	/ʔon-latʰa-wa/	[ˈʔoᵈnlatʰwa]	he is lazy
(114)	/ʔe̪ih-tu/	[ˈʔe̪ihɾu̪]	axe
(115)	/ʔaʔmuka-latʰa-wa/	[ˌʔaʔˈmuːgalatʰwa]	he trusts
(116)	/wa̪i-nã̪ʔã/	[ˈwa̪inã̪ʔã]	you (pl.)
(117)	/ʔauʔti-tu/	[ˈʔauʔdi-ɾu]	arrow
(118)	/naʔtun-latʰa-wa/	[ˌnaʔˈduᵈnlatʰwa]	he is full
(119)	/waʔnĩn-soʔki-tu/	[ˌwaʔˈnĩnsoʔgiɾu]	magic one/shaman
(120)	/kaʔjãin-hĩ̪ʔ/	[ˌkaʔˈjãinʔhĩ̪ʔ]	to write, then…
(121)	/wa̪i-soʔ/	[ˈwa̪iːsoʔ]	only you
(122)	/hajaʔ/	[haˈjaʔ]	enough
(123)	/kʰatʔ-tu/	[ˈkʰatʔ-tu]	stick
(124)	/mãnʔ/	[ˈmãnʔ]	hill
(125)	/tu-kʰijãnʔ/	[du-kʰijãnʔ]	get in the same way

        While glottals at word boundaries are often no more than phonetic phenomenon, this is not the case in Mamaindê. Support for the phonemic status of /ʔ/ in peripheral consonant clusters can be found in the following contrastive pairs.

(126)	/mãnʔ/	[ˈmãnʔ]	hill
(127)	/mãn/	[mãn]	hot
(128)	/tu-kʰijãnʔ/	[dukʰijãnʔ]	get in the same way
(129)	/tu-kʰijãn/	[dukʰijãn]	so as not to get

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[95] More on this under Phonological Processes, section 2.5.

(130)   /ʔwãn/   [ʔwãn/   however
(131)   /wãnʔ/   [wãnʔ]   ask, beg for

      The addition of a prefix to the edge of a root with a peripheral glottal gives further evidence for the phonemic nature of glottals in these contexts. Here the glottal is not simply a word boundary phenomenon, but a necessary constituent of the root that may not be deleted even when affixation is added. In this word medial or intervocalic environment, the glottal becomes much more evident.

(132)   /ʔmĩn-tu/   [ʔmĩn.du]   skin
(133)   /na-ʔmĩn-tu/   [naʔ.mĩn.du]   his skin
(134)   /ʔon-tʰã/   [ʔodn.tʰã]   lazy thing
(135)   /na-ʔon-tʰã/   [naʔ.odn.tʰã]   his lazy thing

      Finally, examples of contrast can be found between glottal initial roots and V initial roots. As in the above examples, this contrast becomes most clear when a prefix is added.

(136)   /ʔa̰in-tu/   [ʔa̰igŋdu]   fish
(137)   /aik-tu/   [aiktu]   field
(138)   /na-ʔa̰in-tu/   [naʔa̰igŋdu]   his fish
(139)   /na-aiktu/   [naaiktu]   his field

2.1.1.3   Aspirated Plosives

Besides the non-aspirated voiceless stops, Mamaindê also has a set of three aspirated obstruents (/pʰ, tʰ, kʰ/) in its phonemic inventory. Although aspirated stops play a part in Southern Nambikwara (Lowe,1999:271, Kroeker,2001:79), Telles (2002:34) records that they are absent in the Latundê language. These three aspirated stops create the disparity between the phonemic inventories of the two Northern Nambikwara languages, accounting for a total difference of three segments between the 14 consonants of Mamaindê, and the 11 consonants of Latundê. Why the linguistically 'closer' Latundê would differ from Mamaindê in regards to the aspirated stops, while the 'more distant' Southern Nambikwara shares this feature, is an interesting question for further comparative work.

      While the contrastive nature of these aspirated sounds has already been established in the first section of this chapter, there remains the issue of whether they should be considered one or two segments. (I will deviate somewhat from Lowe's analysis of Southern Nambikwara (1999:271-272), where he analyzed the aspirated stops in that language as simply consonant clusters involving an /h/. This

was done apparently to simplify the phonemic inventory of that language.) In Mamaindê, since these segments tend to behave more like other phonemes, we should accord them that status. The aspirated stops have a distribution similar to the non-aspirated stops, and since they are never split up by resyllabification, we will consider them to be single phonemes. The other benefit of viewing these aspirated segments as single phonemes is that this reduces the number of slots necessary in the onset of the syllable template.

The other aspirated segments in Mamaindê, the [lh] and [nh], call for a different analysis. They will be considered as two separate segments instead of single complex segments. This is due to their behavior, which is distinct from the behavior of the aspirated oral stops. The [lh] and [nh] can be separated at syllable boundaries by resyllabification, and their distribution is much more limited than other phonemes. They only occur in the onset of unstressed syllables, and unlike the aspirated stops, these sequences will never occur word initially, in the onset of a stressed syllable, or in the coda. In short, they do not behave like consonant phonemes of Mamaindê.

2.1.1.3.1 The /pʰ/

2.1.1.3.1.1 Phonotactics

The /pʰ/ is one of the rarer sounds of the language, occurring only in a very few words. When it occurs, it is found initially, and word medially. It does not, however, occur in the coda.

2.1.1.3.1.2 The Allophones

The /pʰ/ is realized as [pʰ] in all environments. It is found in only two words in my database. The second word is an obvious borrowing from Portuguese.

(140)	/pʰapʰaus-latʰa-wa/	[pʰapʰauptatʰwa]	it is flattened
(141)	/pʰatʰi-tu/	[pʰatʰiɾu]	duck (Pt. borrowing)

2.1.1.3.2 The /tʰ/

2.1.1.3.2.1 Phonotactics

The /tʰ/ is much more prevalent than the /pʰ/. It can occur word initially and medially. It does not, however, occur in the coda.

2.1.1.3.2.2   The Allophones

The /tʰ/ is realized as [tʰ] in all its environments.

(142)	/na-tʰa̱-tu/	[naˈtʰa̱ːɾu]	his stomach
(143)	/nahai-tʰã/	[nahaiˈtʰã̱ː]	where
(144)	/ta-onga-tʰã/	[taˈoᵍŋgaˈtʰã]	my doings
(145)	/tʰakʰi-tu/	[tʰaˈkʰiːɾu]	squirrel monkey
(146)	/jatʰapeiʔni-tu/	[jatʰaˈbeiʔniɾu]	nut: pariri
(147)	/itʰãnʔ-tu/	[iˈtʰãnʔdu]	money/leaf
(148)	/tʰeinʔ-tu/	[ˈtʰeiᵍŋʔdu]	hammock
(149)	/tʰi̱-latʰa-wa/	[ˈtʰi̱ːlatʰwa]	smooth
(150)	/tʰeiʔkatoʔ-tu/	[ˌtʰeiʔkaˈdoʔdu]	elbow
(151)	/tʰotʰon-latʰa-wa/	[tʰoˈtʰoᵈnlatʰwa]	it is black
(152)	/natʰauna/	[natʰauˈnaː]	the other side
(153)	/tʰana̱i-tu/	[tʰaˈna̱iːɾu]	mahogany
(154)	/tʰalaun-latʰa-wa/	[tʰaˈlauᵇmlatʰwa]	thick
(155)	/tʰaleunni-tu/	[tʰaˈleuᵇmniɾu]	red-crested woodpecker
(156)	/tʰuʔkija/	[ˈtʰuʔkija]	there
(157)	/tʰuktʰai/	[ˈtʰuktʰai]	to be nude

Some instances of the [tʰ], however, are not lexical, but are derived from other phonemes, namely the /t/ and the /l/. This neutralized [tʰ] occurs when certain consonants are juxtaposed in consonant clusters. See the sections covering the phonemes /t/ (section 2.1.1.2.2) and /l/ (section 2.1.1.7.1) for further discussion with examples of the allophonic [tʰ]. A few examples here will suffice to show their derived status.

(158)	/at-latʰawa/	[ˈattʰatʰwa]	he is fishing
(159)	/heit-ta-latʰawa/	[ˈheiktʰalatʰwa]	he is angry

2.1.1.3.3   The /kʰ/

2.1.1.3.3.1   Phonotactics

The /kʰ/ occurs in word initial and medial positions. Like the other aspirated stops, it does not occur in the coda.

2.1.1.3.3.2   The Allophones

The /kʰ/ is realized as [kʰ] in all its environments.

(160)	/kʰatʔ-tu/	[ˈkʰatʔtu]	stick
(161)	/kʰiu-tu/	[ˈkʰiuɾu]	coati
(162)	/kʰokʰi-tu/	[ˈkʰokʰiɾu]	harpy eagle
(163)	/kʰonʔ-tu/	[ˈkʰoᵈnʔdu]	tortoise
(164)	/kʰakʰos-latʰa-wa/	[kʰaˈkʰottʰatʰwa]	it is dangerous
(165)	/kʰakʰai-tu/	[kʰaˈkʰaiːɾu]	parrot: type
(166)	/kʰaus-tu/	[ˈkʰauptu]	gourd/cup
(167)	/kʰein-latʰa-wa/	[ˈkʰeiᵍŋlatʰwa]	he is detouring
(168)	/kʰeun-latʰa-wa/	[ˈkʰeuᵇmlatʰwa]	it is beside
(169)	/kʰɨ̃kʰɨ̃k-tu/	[kʰɨ̃ˈkʰɨ̃ktu]	cicada
(170)	/na-jau̯-kʰu-tu/	[naˈjau̯ːkʰuɾu]	the land he lives on
(171)	/walekʰan-tu/	[walekʰaᵈndu]	chief
(172)	/waikʰi-tu/	[waikʰiɾu]	peanut
(173)	/wakʰunʔ-tu/	[wakʰuᵈnʔdu]	cariraba fruit
(174)	/waloʔkʰi-tu/	[waloʔkʰiɾu]	cacao

It should be mentioned that two of the aspirated stops, the /tʰ/ and the /kʰ/, can be followed by the labiovelar glide /w/, creating a type of consonant cluster which occurs only in the onset and is found in a very small set of morphemes. In his manuscript 'Mamaindê Phonology' (1970: p.6-7), Kingston analyzed the sound sequence [kʰw] as the phoneme /kʷ/. But as we will see, the syllable template already requires two positions in the onset to account for glottalized onsets (ʔC), thus grouping sound sequences like [kʰw] into single segments doesn't simplify the syllabic template in any way.[96] By viewing them as complex underlying segments, all we would be doing is adding to the phonemic inventory. Furthermore, the obstruent-glide sequence obeys universal sonority constraints. Therefore we will regard them as sequences of an aspirated stop followed by a glide. A few examples are found below. Note that the second example involves the deletion of a vowel *(/-latʰa/ → [latʰ])* followed by the resyllabification of the resulting material *([-latʰ.wa] → [-la.tʰwa])*.

(175)	/kʰwanʔni-tu/	[kʰwaᵈnʔniɾu]	tarantula
(176)	/hain-latʰa-wa/	[haiᵍŋlatʰwa]	he is singing

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[96] See section 2.3, 'The Syllable', for a full description of the syllable template.

2.1.1.4   *Glottalized Consonants*

Glottals occur adjacent to other consonants quite readily. The contrastive nature of these [Cʔ] and [ʔC] sequences (contrasting with a single [C] in each case) has already been clearly established in the previous section dealing with the glottal. I will repeat a few of those examples here.

(177)	/tu-kʰijãnʔ/	[dukʰijãnʔ]	get in the same way
(178)	/tu-kʰijãn/	[dukʰijãn]	so as not to get
(179)	/ʔwãn/	[ʔwãn/	however
(180)	/wãnʔ/	[wãnʔ]	ask, beg for

     The more difficult question is whether these ambiguous sounds are composed of one or two segments. Previous work in Mamaindê phonology has analyzed these sounds as pre- and post-glottalized consonants. The sequences under consideration are [tʔ], [kʔ], [nʔ], [ʔd], [ʔg], [ʔn], [ʔm], [ʔs] and [ʔw]. The oral non-continuant forms ([tʔ], [kʔ], [ʔd], [ʔg]) never appear word initially, while the other forms do.[97] Such sequences were initially analyzed by Kroeker (2001:79) and the current author (Eberhard 1995:6) as single, complex phonemes in their own right. This analysis appealed to syllable structure, where only one consonant was felt to be necessary in the onset. However, further research has revealed that two positions are in fact needed in the onset to handle forms such as */kwãnʔni-tu/* 'tarantula' and */tukwinʔni-tu/* 'father-in-law'. This data takes much of the force out of the argument to consider the glottalized consonants as single segments. Since the two positions are already needed in the syllable onset, analyzing the glottal/C sequences as single glottalized segments doesn't make the syllable template any simpler. It only succeeds in making our set of phonemes more complex.
     The behavior of these consonant/glottal sequences is also suspect. To aid us in making a decision as to their phonemic status, we will appeal to Burquest's criteria (Burquest 2001:155) that unambiguous segments should be used to analyze ambiguous ones.
     First of all, these glottalized segments differ from both the aspirated and the unaspirated stops in that they do not display a symmetrical set of forms since the glottalized labial stop is missing. Secondly, unlike all the other phonemes of Mamaindê, most of them do not appear in word initial position (except for the variants [ʔn], [ʔm], [ʔs], and [ʔw]). Finally, when these glottalized segments occur intervocalically, they suffer deletion, separation by syllabification, or metathesis. If a prefix is added to a form with an initial glottal/consonant sequence, these two segments get separated by the syllabification process *(/ta-ʔmĩn-tu/ [daʔ.mĩn.du]* 'my skin'). They may also suffer metathesis in intervocalic environments, the oral and glottal portions thus switching places, and then once again becoming separated by

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[97] Interestingly, the pre-glottalized velar [ʔk] apparently does occur in the word initial position in the Latundê language (Telles, 2002□71-72).

resyllabification, (/*hukʔ-ãni/ [huʔ.gã.ni]* 'bow/gun'). When deletion occurs intervocalically, only the oral stop is elided, while the glottal remains /*kʰatʔ-ãni/ [kʰa.ʔã.ni]* 'stick'. Such processes never occur with other complex phonemes such as the aspirated stops. In fact, it would be hard to imagine just how the phonological processes of separation, metathesis, and partial deletion could manage to break up the two segments if these forms were truly single complex phonemes.[98] The simplest and most straightforward approach is to treat these consonant-glottal/glottal-consonant sequences as two separate phonemes which are allowed to occur adjacent to each other in the coda and in the onset.

(181)	/ˈhukʔ-tu/	[ˈhukʔtu]	bow
(182)	/hikʔ-tu/	[ˈhikʔtu]	hand
(183)	/jukʔ-tu/	[ˈjukʔtu]	foot
(184)	/sasikʔ/	[saˈsikʔ]	first
(185)	/juhakʔ/	[juˈhakʔ]	all
(186)	/jaḻikʔ-tu/	[jaˈḻikʔtu]	necklace/beads
(187)	/kʰatʔ-tu/	[ˈkʰatʔtu]	stick
(188)	/anawatʔ-tu/	[anaˈwatʔtu]	nose flute
(189)	/ʔmĩn-tu/	[ˈʔmĩndu]	skin
(190)	/ʔnĩu-latʰa-wa/	[ˈʔnĩuːlatʰwa]	he is returning
(191)	/ʔsḭn-latʰa-wa/	[ˈʔsḭᵍŋlatʰwa]	he is dragging
(192)	/ʔwãn/	[ʔwãn]	but

Part of the challenge in analyzing these sounds is that the glottalized sequences are sometimes hard to hear, particularly when they involve the velar stop, or when they occur word initially. The best way to test for the pre-glottalized segments in Mamaindê is to add a prefix which ends in a vowel, such as /*na-/* 'his' for nouns or /*ta-/* 'causative' for verbs. For the post-glottalized sequences, a suffix that begins with a vowel, such /*-ãni/* 'final nominal suffix', will also cause the glottal to become apparent, as well as show the process of metathesis in these cases. This metathesis rule is due to syllable constraints and will be discussed later in section 2.3 of this chapter, as well as in the 'Phonological Processes' section, 2.5.

A word should be said about the morpheme /*-tu/* 'final nominal suffix'. This morpheme was originally transcribed by Kingston (1976b:4) as /-txu/, the /x/ being a glottal stop. Although he used the /x/ for the full glottal stop elsewhere, in this morpheme he labels it a 'weak glottal'. (It is not clear to this writer what is meant by a weak glottal.) The glottalized nature of the /t/ in this morpheme appears to be gradually dying away with the older speakers of the language. The only time the /-tu/ suffix is heard with a remnant of the glottalized /tʔ/ is when it follows an

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[98] Of course there is always the possibility that we are not dealing with phonology here at all, but instead with phonetic implementation, or the articulatory mechanics of a glottal release.

obstruent-glottal sequence, such as in the form */hukʔ-tu/.* In such a context the Onset Strengthening rule will typically apply and an aspirated [tʰ] will occur in the suffix, *[hukʔ-tʰu].* However, in the speech of some of the more elderly, the glottalized [tʔ] occurs instead, *[hukʔ-tʔu].* What is actually articulated in such instances is not a true glottalized stop, but more akin to a laryngealized voiceless stop, similar to the laryngealized voiced stops mentioned by Ladefoged (1993:141). Following a voiceless consonant, the /t/ in the */-tu/* morpheme is held in a closure position for a longer time than usual, and then the stop is released slowly, while the larynx remains constricted, giving the impression of creaky voice during the articulation of the consonant, *[-tu].* Since this phenomenon is only found in a single morpheme, no extra phoneme seems to be warranted, and we will continue to write the final nominal suffix as */-tu/.* The reader, however, is alerted to the fact that this morpheme is articulated in a rather unique way in specific environments. The history of this special articulation of the */-tu/* can only be guessed at. It may be that there were more laryngealized consonants in the parent language, or that the /u/ vowel in this morpheme used to be laryngealized and has since passed its [+constricted larynx] feature on to the preceding consonant.

2.1.1.5   Fricatives

There are only two fricatives in Mamaindê, the /h/ and /s/. We will look at them individually. Although fricatives may occur in both the onset and coda positions in lexical representations, they may not be realized phonetically in the coda position due to coda licensing which requires that at least one of the coda segments be [-cont] (see syllable section, 2.2, for details on coda licensing). This constraint effectively lessens the number of places fricatives may be encountered in the language, giving the general impression of a language whose consonants tend to have more of a plosive quality as opposed to a fricative manner of articulation.

2.1.1.5.1   The /h/

2.1.1.5.1.1   Phonotactics

As a phoneme, the /h/ is found word initially, medially, and finally. Lexically, it occurs in both the onset and the coda of the syllable, and it is also the only segment allowed in the word final appendix position. In the word medial coda position, however, which only licenses [-cont] segments, the /h/ finds itself in violation of its licenser, and is subject to one of three repair strategies; a deletion rule, an epenthesis rule, or a coalescence process with the consonant in the following onset position (these strategies will all be described in section 2.2 covering the Mamaindê Syllable). The last option is quite common in Mamaindê, and since the onset has no licensing restrictions against [+cont] segments, the /h/ is able to satisfy syllabic constraints by coalescing with the following onset. An autosegmental representation of this process would simply involve adding an extra association line linking the /h/

to the following onset and deleting the association to the coda (for more on coda licensing and the role of the /h/ see section 2.2 'The Syllable').

Onset Devoicing [99]
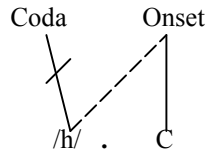
When /h/ precedes [ɾ], [n], [l], or [w], coalescence occurs and the result is [ɾ̥], [n̥], [ɬ] and [ɸ] respectively. These voiceless consonants are not allophones of the /h/, however, as they involve the coalescing of two phonemes into a single segment. For this reason, we must treat this coalescence rule as a phonological process separate from the allophonic rules. The [ɸ] is the rarest sound in the Mamaindê language, occurring only when an /h/ and a /w/ are juxtaposed across a morpheme boundary.[100] So far only a single word, the final form in the data set below, has been found with this sound. The following examples show the various results of this coda /h/ coalescence strategy.

Cross-Reference to Section 2.5:
[Onset Devoicing; Post-Lexical; Obligatory]

(193)	/kanih-latʰa-wa/	[kaniːɬatʰwa]	there are many
(194)	/wehna-latʰa-wa/	[weːn̥alatʰwa]	he is becoming
(195)	/ih-latʰa-wa/	[iːɬatʰwa]	he is running
(196)	/suhna-latʰa-wa/	[suːn̥alatʰwa]	he is afraid
(197)	/ʔjai̯h-latʰa-wa/	[ʔjai̯ːɬatʰwa]	he is sad
(198)	/ih-wi̱-kʰatoʔ/	[iːɸi̱kʰaɾoʔ]	run into, then (DS)…

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[99] A more detailed version of this coalescence rule is found in section 2.5.6.

[100] This appeal to morphology would suggest that the coalescence process itself is a lexical one. However, exceptions can be found where this process occurs within the root, such as in the listed examples */wehna/* 'become' and */suhna/* 'afraid'. There exists, of course, the possibility that we could consider the final */-na/* syllable in such roots as a fossilized suffix of some sort, for which a meaning is no longer recoverable.

2.1.1.5.1.2   The Allophones

The /h/ has two allophones, [h] and [ʔ]. The [h] allophone occurs in all onset positions, as well as in the word final appendix slot. [101]

(199)	/halo-tu/	[haˈloːɾu]	land
(200)	/hohotʰi-tu/	[hoˈhotʰiɾu]	owl
(201)	/hãi/	[ˈhãiː]	he
(202)	/heu-latʰa-wa/	[ˈheuːlatʰwa]	he is hiding
(203)	/hiuti-tu/	[ˈhiuːɾiɾu]	tree
(204)	/hiteinũn-latʰa-wa/	[hideiˈnũnlatʰwa]	he is worried
(205)	/hṵ̃-tu/	[ˈhṵ̃ːɾu]	wolf: lobo guara
(206)	/haunsi-tu/	[ˈhauᵇmtʃiɾu]	cloud
(207)	/nahajautʰi-tu/	[nahaˈjauptʰiɾu]	drinking water
(208)	/nahon-tu/	[naˈhoᵈndu]	water: generic term
(209)	/jahon-tu/	[jaˈhoᵈndu]	old man
(210)	/ta-hawas-latʰa-wa/	[tahaˈwattʰatʰwa]	he put it in
(211)	/juhak/	[juˈhak]	everyone
(212)	/naih/	[ˈnaih]	still
(213)	/nakah/	[naˈgah]	more/again
(214)	/ʔnũh/	[ʔnũh]	alone

      The [ʔ] allophone occurs when the /h/ appears in a word medial coda followed by an aspirated stop. As we have already noted, the /h/ cannot remain in a word medial coda since only [-cont] segments are licensed in that position. In this situation, the [ʔ] allophone occurs instead of the /h/. The typical strategy available to the /h/, that of coalescing with the following onset, is not possible when the following onset is already aspirated. The only options left to the phonology, then, are to delete the /h/, or change the value of its [+cont] feature to [-cont]. In the case we are discussing, the latter choice is made and the /h/ is realized as a [ʔ]. So far I have only found one instance of /h/ followed by an aspirated stop in my data, but this process is productive in instances where the other fricative found in the coda (the /s/) must also become [-cont] to satisfy coda licensing. (See section 2.2 for a detailed account of Mamaindê coda licensing.)

Cross-Reference to Section 2.5:
[Coda Licensing; Lexical; Obligatory]

(215)	/na-toh-tʰã-tu/	[nadoʔtʰãɾu]	what he wants

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[101] See section 2.2.5 on the Syllable for more detail regarding the Mamaindê appendix.

2.1.1.5.2   The /s/

2.1.1.5.2.1   Phonotactics

The /s/ occurs in word initial and medial positions. It is never found in the word final slot. Underlyingly it can occur in the onset and coda of a syllable. However, in the coda, it never is realized on the surface due to the coda licensing of [-cont] which we have already discussed.

The /s/ may occur before any vowel. In the coda, however, where it is realized as one of its many allophones, it has never been found following /iu/ or /eu/.

2.1.1.5.2.2   The Allophones

The /s/ exhibits two allophones, the [s] and the [tʃ], as well as a number of non-allophonic variants, [ʃ], [t], [k], and [p].

The [s] allophone occurs at the beginning of words and word medially in syllable onsets. The [s] variant is obligatory in the onset before low vowels, and it is optional before high vowels. It never occurs in the coda.

(216)	/saseik-tu/	[saˈseiktu]	scorpion
(217)	/san-latʰa-wa/	[ˈsaᵈnlatʰwa]	he harvests
(218)	/siu-tu/	[ˈsiuːɾu]	basket
(219)	/sih-tu/	[ˈsiːɾ̥u]	house
(220)	/wa̰i-soʔ/	[ˈwa̰iːsoʔ]	only you
(221)	/suni-tu/	[ˈsuːniɾu]	grandfather
(222)	/ʔa̰i-sein-tu/	[ˈʔa̰iːˌseiᵍndu]	container
(223)	/mãsa-latʰa-wa/	[ˈmãːsalatʰwa]	he is patient
(224)	/hos-a-ta-tu/	[ˈhoːsaˌdaːɾu]	monkey: spider
(225)	/nusi-tu/	[ˈnuːsiɾu]	lizard: type
(226)	/hos-a-kin-si-tu/	[ˈhoːsaˌkiᵍntʃiɾu]	monkey: woolly
(227)	/hain-sa̰-tu/	[ˈhaiᵍŋˌsa̰ɾu]	music
(228)	/tãnsa/	[ˈdãnsa]	that thing
(229)	/wasasatʰi-tu/	[wasaˈsaːtʰiɾu]	dragonfly

The [tʃ] allophone only occurs in the morpheme initial position and only when followed by high vowels ([i],[e], or [ei]) or preceded by high consonants ([k], [g], [ŋ]).[102] Its occurrence is optional, however, since it can also be found in free variation with the [s] in each of these cases.

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[102] Affrication before high front vowels is a behavior limited to the /s/, thus never occurring with the phoneme /t/, as it often does in many languages. This can be shown in forms such as

Cross-Reference to Section 2.5:
[Affrication; Lexical; Optional]

(230)	/sih-tu/	[ˈtʃiːɾu] ~ [ˈsiːɾu]	house
(231)	/siu-tu/	[ˈtʃiuɾu] ~ [ˈsiuɾu]	basket
(232)	/mamãin-si-tu/	[maˈmãinsiɾu] ~ [maˈmãintʃiɾu]	the Mamaindê
(233)	/tu-sihtaʔ/	[ˈɗuːsihɾaʔ] ~ [ˈɗuːtʃihɾaʔ]	get, in order to.
(234)	/ʔai-sein-tu/	[ˈʔai̯ˌtʃei̯ᵍndu] ~ [ˈʔai̯ˌsei̯ᵍndu]	car/go-container
(235)	/sun-latʰa-wa/	[ˈtʃuᵈnlatʰwa] ~ [ˈsuᵈnlatʰwa]	he hit

2.1.1.5.2.3   The Underspecified /S/ and its Allophones

Besides the allophonic variations of /s/, there are also a number of non-allophonic alternations. The non-allophonic [ʃ] segment occurs whenever /s/ precedes an /h/ in the environment of a high /i/ vowel. This is a purely phonological process instead of an allophonic variation due to the fact that it results in the coalescence of two phonemes, the /s/ and the /h/, into a single segment, the /ʃ/. Whenever these two sounds occur adjacent to one another, in the presence of the /i/, this rule is mandatory. The high vowel may either follow or precede the /s + h/ sequence.

Cross-Reference to Section 2.5:
[Post-Lexical Palatalization; Post-Lexical; Obligatory]

(236)	/wes-hĩʔ/	[ˈweːʃĩʔ]	to make, then (DS)…
(237)	/naʔgas̲-hĩʔ/[103]	[naʔˈgaːʃĩʔ]	to listen, then (DS)…
(238)	/nakʰakʰas-hĩʔ/	[nakʰaˈkʰaːʃĩʔ]	to be straight up, then (DS) …
(239)	/weis-hãn-kʰatoʔ/	[ˈweiːʃãnkʰətəʔ]	make completely, then (SS)…

In the coda, the /s/ does not appear on the surface, due to syllabic licensing which permits only [-cont] segments in that position. What we do find in the coda slot are a number of widely disparate variants, namely, the [p], [t], and [k]. However, such segments are not typically considered to be allophones of /s/. More careful examination of the facts allows us to posit an underlyingly underspecified consonant in these coda slots, which retains only its manner features. [104] We will

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/litin-taku/ → *[lidigŋdagu]* 'to jump', */katis-tu/* → *[kadiktu]* 'splinter', and */titik-taku/* → *[didiktagu]* 'to sand'.

[103] The glottal stop in the root */naʔkas̲/* 'listen/know' is being lost among the younger speakers, as well as the creaky voice of the vowel, particularly in fast speech. This is a very common verb and apparently Mamaindê speakers are simplifying it.

[104] Certain manner features, such as [strident], [nasal], etc., are still required in order to distinguish between the different phonetic realizations of the underspecified consonant when

refer to this underspecified /s/ in the coda simply as /S/. The individual place features which eventually surface in the coda are accounted for by features borrowed from the preceding vowels. This analysis frees us up from the need to derive these variant coda forms from the phoneme /s/. It also recognizes that the process occurring with the coda /S/ is the same as that which occurs with the other coronal codas, the /T/ and the /N/.

Here I offer data which gives the context of these coda forms, not as a means of describing the allophonic varieties of /s/, but as a way of better understanding phonological processes related to the underspecified /S/. The [t] variant of /S/ is found only after the back vowels [a], [o], or [u].

Cross-Reference to Section 2.5:
[Vowel Place Spreading Rule; Post-Lexical; Obligatory]

(240)	/hoS-tu/	['hottu]	monkey: mac. prego
(241)	/tajaS-ta-latʰa-wa/	[taˈjattʰalatʰwa]	he is passing it to me
(242)	/walo̲S-tu/	[waˈlo̲ttu]	gourd
(243)	/nũS-tu/	[ˈnũttu]	mortar
(244)	/na-hawa̲S-latʰa-wa/	[nahaˈwa̲ttʰatʰwa]	to learn
(245)	/nakʔa̲S-latʰa-wa/	[naʔˈga̲ttʰatʰwa]	he is listening
(246)	/kʰakʰoS-latʰa-wa/	[kʰaˈkʰottʰatʰwa]	he is dangerous
(247)	/halaS-tu/	[haˈlattu]	the back/middle
(248)	/katoS-latʰa-wa/	[kaˈdottʰatʰwa]	it is ripe
(249)	/tapaS-latʰa-wa/	[taˈbattʰatʰwa]	he covers (it)

There are, however, a few exceptions to this rule when the /S/ follows a /u/ vowel. Most often the [t] variant of the /S/ is used after a /u/, but there are a few forms where a [k] is found. Some of these are listed below.

(250)	/wainuS-taku/	[waiˈnuktagu]	confronting
(251)	/tahlakuS-taku/	[tałaˈguktagu]	comparing

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it is followed by a suffix and becomes intervocalic. For example, in some forms the /C/ is realized as an intervocalic [s], such as in the word /*hoC-ani*/ ➔ *[hosani]* 'capuchin monkey+FNS'. In other forms, however, the intervocalic segment is a /t/, as in /*weC-ani*/ ➔ *[wetani]* 'child-FNS', which then weakens to *[werani]*. (The coronal feature to all of these phonetic realizations of underspecified C is eventually supplied at the end of the phonology). For this reason I will assume that the manner features necessary to distinguish between the different coronal manifestations of the C will be specified lexically. I will indicate this in the data by using the shorthand symbols /S/, /N/, and /T/. /S/ will be used to designate an underspecified coda that is [+strident], /N/ for an underspecified coda associated to [+nasal], and /T/ for the underspecified coda associated to neither of the above.

(252)	/taʔnuS-taku/	[daʔˈnuktagu]	coughing
(253)	/janus-taku/	[jaˈnuktagu]	to have pity
(254)	/nũ-kanuS-tu/	[nũkaˈnuktu]	the middle

The [k] variant of /S/, disregarding the few exceptions noted above, occurs only in the coda after a high front vowel.

(255)	/weiS-latʰa-wa/	[ˈweiktʰatʰwa]	he/she makes
(256)	/taiS-latʰa-wa/	[ˈdaiktʰatʰwa]	he/she ties
(257)	/ta-wawaiS-latha-wa/	[tawaˈwaiktʰatʰwa]	he/she straightens it
(258)	/kateiS-tu/	[kaˈteiktu]	mangava rubber
(259)	/kaiS-latʰa-wa/	[ˈgaiktʰatʰwa]	he/she calls
(260)	/kaliS-ja-tu/	[kaˈlikjaɾu]	banana drink: chicha
(261)	/kaniS-latʰa-wa/	[kaˈniktʰatʰwa]	it shines
(262)	/haleiS-latʰa-wa/	[haleiktʰatʰwa]	he/she steps
(263)	/likteiS-latʰa-wa/	[likˈtʰeiktʰatʰwa]	it rises up
(264)	/nakiS-tu/	[naˈgiktu]	hair
(265)	/sawiS-tu/	[saˈwiktu]	grandchild
(266)	/siS-tu/	[siktu]	savannah grass

The [p] variant of /S/ occurs only in the coda after a diphthong ending in a high, rounded vowel, such as [au, iu, eu]. But since the /S/ has never been found following /eu/ or /iu/, the [p] form appears to be limited to following the /au/. A curious feature of this phonology is that the simple /u/ does not trigger variations. Only the /u/ of a diphthong is allowed to spread its [round] feature to other segments (This difference in behavior between these vowels can be accounted for by appealing to the underspecification of vowel features. See section 2.5 on Phonological Processes for a detailed discussion of this analysis).

(267)	/kʰauS-tu/	[kʰauptu]	cup
(268)	/hauS-tu/	[hauptu]	fog
(269)	/ʔauS-latʰa-wa/	[ʔauptʰatʰwa]	to break
(270)	/kãlalãuS-latʰa-wa/	[kãlalãuptʰatʰwa]	to be rough
(271)	/nakʰauS-latʰa-wa/	[nakʰauptʰatʰwa]	to encounter

Much of the interesting behavior of the fricatives which we have seen in the previous pages can be accounted for by the restrictions of the syllabic template. By considering the Mamaindê coda as a licenser for the [-continuant] feature,

effectively disqualifying [+continuant] segments from the coda, we discover a motivation for much of the processes outlined above.

2.1.1.6 Nasals

The nasal consonants of Mamaindê are /m/ and /n/.

2.1.1.6.1 The /m/

2.1.1.6.1.1 Phonotactics

The /m/ occurs only in the onset of the syllable. Thus it can occur in the word initial position but never word finally. It is never followed by the vowel /o/ or the diphthongs, /au/, /iu/, /eu/, or /ei/. Although it is allowed to precede /u/, it shows a marked dislike for the company of other rounded vowels. As we mentioned earlier in our discussion of the phonotactics of the /p/ morpheme, labial onsets tend not to occur before labial vowels in Mamaindê. The distribution of the /m/ thus gives us more evidence for the existence of a [CLabial] [VLabial]* constraint in this language.[105]

2.1.1.6.1.2 The Allophones

The /m/ is realized by the single allophone [m] in all environments.

(272)	/mãinki-tu/	[ˈmãiŋgiɾu]	cashew
(273)	/mamãinsi-tu/	[maˈmãintʃiɾu]	the Mamaindê people
(274)	/mãn-kalo-tu/	[ˈmãŋgaloɾu]	cloth
(275)	/mih-tu/	[ˈmiːɾu̥]	rain
(276)	/mũn/	[ˈmũn]	good
(277)	/mũnna/	[ˈmũnna]	spirit: generic term
(278)	/ʔm̰ĩn-tu/	[ˈʔm̰ĩndu]	skin
(279)	/mĩni-tu/	[ˈmĩːniɾu]	father
(280)	/malih-latʰa-wa/	[maˈliːɬatʰwa]	it pops
(281)	/mãn-latʰa-wa/	[ˈmãnlatʰwa]	it is hot
(282)	/mãin-tu/	[ˈmãindu]	pet
(283)	/kamaʔmaʔ-tu/	[kaˌmaʔˈmaʔtu]	butterfly
(284)	/jamakʔ-tu	[jaˈmaʔtu]	flute spirit

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[105] This constraint can be broken in the case of the /u/ vowel, as in /tamukʰitu/ 'bird: jacu do mato'

(285)	/jami-tu/	[jaˈmiːɾu]	nose
(286)	/samimi-latʰa-wa/	[samiˈmiːlatʰwa]	he whispers
(287)	/jamukʰi-tu/	[jaˈmuːkʰiɾu]	jungle fruit
(288)	/hamus-latʰa-wa/	[haˈmuktʰatʰwa]	it swells
(289)	/kamãn-latʰa-wa	[kaˈmãnlatʰwa]	he commands
(290)	/tamukʰi-tu/	[taˈmuːkʰiɾu]	jungle fowl: jacu
(291)	/amamas-latʰa-wa/	[amaˈmattʰatʰwa]	he appears suddenly

2.1.1.6.2   The /n/

The /n/ is undoubtedly the most phonologically complex consonant in the language, due to its many variants and the unique way that it acquires its features. Again we notice that the alveolar consonants as a group are unstable in Mamaindê and are readily affected by adjacent segments.

2.1.1.6.2.1   Phonotactics

The /n/ appears to be the most prevalent consonant in the lexicon, occurring before all vowels except /o/, /e/, /eu/.[106] The /n/ is found in the word initial, medial and final positions. It is allowed in both onsets and codas. Like other coronal consonants, it displays a large amount of phonetic variation in the coda.

2.1.1.6.2.2   The Allophones

While /n/ has many variants in the coda position, only the single [n] segment in the onset can be considered a true allophone (the reasons for this will become clear as we discuss the underspecified nasal coda). The [n] allophone occurs only in the onset position.

(292)	/nũʔki-tu/	[ˈnũʔgiɾu]	arm
(293)	/ni-latʰa-wa/	[ˈnilatʰwa]	it is like this
(294)	/naik-tu/	[ˈnaiktu]	root
(295)	/ʔnĩu-latʰa-wa/	[ˈʔnĩulatʰwa]	he returns
(296)	/kanaka-ãni/	[gaˈnaːgãni]	one
(297)	/tanu-latʰa-wa/	[daˈnuːlatʰwa]	he gives
(298)	/hanit-tu/	[haˈniktu]	fat

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[106] It occurs only once in the data before /ei/, but the example is suspect since it is in a compound word at the juncture between two root morphemes, /janãn-eiʔni-tu/ 'tawny jaguar'.

2.1.1.6.2.3   Non-Allophonic Variants

The voiceless [n̥] is a non-allophonic variant of the /n/. We have already mentioned this segment in relation to the /h/ phoneme, where it is included in a series of sounds which result from the coalescence of /h/ with other adjacent segments. This nasal sound occurs only in syllable onsets, and is conditioned by the presence of an /h/ in the coda of the preceding syllable. The coalescence of these two segments is predictable by phonological rule, the Onset Devoicing rule, giving us the voiceless [n̥]. As the merging of two separate phonemes, the [n̥] cannot be given allophonic status and must be treated simply as a phonetic variation. With such a limited distribution, this sound has a rather minor presence in the language.

Cross-Reference to Section 2.5:
[Onset Devoicing; Post-Lexical; Obligatory]

(299)	/weihna-latʰa-wa/	[weiːn̥alatʰwa]	she is pregnant
(300)	/suhna-latʰa-wa/	[suːn̥alatʰwa]	he is afraid
(301)	/jauhna-latʰa-wa/	[jauːn̥alatʰwa]	he loves

2.1.1.6.2.4   The Underspecified Nasal and its Variants

The extreme variation found in nasal place features in the coda calls once again for the underspecification of coronals. The coda nasal will be treated here as a segment underspecified for Place, or an 'empty' nasal segment, the /N/.[107] The variants of the /N/ in the coda are: [n], [m], [ŋ], [ᵈn], [ᵇm], and [ᵉŋ]. Because I am employing underspecification in the coda, these will be treated as variants of an underspecified nasal, and not as allophones of /n/.[108] In the coda, the first three segments above occur after nasal vowels, and the last three occur after oral vowels.

　　　　The place features of the coda /N/ are largely determined by the place features of the preceding vowel (see Vowel Place Feature Spreading in section 2.5.2.5 for details of this rule). The [m] variant of /N/ only occurs in the coda after nasal diphthongs which end with a rounded vowel; the [ãu], [ĩu], and [ẽu]. (In keeping with my treatment of the other coronal codas, I will be indicating the underspecified status of the nasal coda with /N/ in the underlying forms.)[109]

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[107] This segment is underspecified for Place, but still retains its other features, particularly its association with the nasal feature.

[108] One could of course not opt for the underspecification approach, and consider all of these forms as allophones of /n/. This, however, would require more complexity and less motivation in the rules required to derive these allophones, as well as a disregard for the striking difference between the behavior of coda coronals and other consonants in the language. An underspecification approach here not only adds motivation to the Place feature spreading process, but it allows us to posit a phonology that captures the uniqueness of coronal codas in this language.

[109] See also the previous analyses of the /t/ and the /s phonemes.

Cross-Reference to Section 2.5:
[Vowel Place Spreading Rule; Post-Lexical; Obligatory]

(302)	/kãuN-latʰa-wa/	[ˈgãumlatʰwa]	he is laughing
(303)	/ĩuNʔ-latʰa-wa/	[ˈĩumʔlatʰwa]	he is sleeping'
(304)	/sĩuNʔni-tu/	[ˈsĩumʔniɾu]	gnat/borrachudo
(305)	/nãuN-latʰa-wa/	[ˈnãumlatʰwa]	sweet
(306)	/tanãuN-latʰa-wa/	[taˈnãumlatʰwa]	he throws it
(307)	/jɑuleiNɲiNkãuN/	[ˈjɑu:leiᵍɲiŋgãum]	he stayed (humor)
(308)	/ãuN-latʰa-wa/	[ˈãumlatʰwa]	he is leaving
(309)	/tawanãuN-latʰa-wa/	[tawaˈnãumlatʰwa]	he is responding
(310)	/hĩuN-latʰa-wa/	[ˈhĩumlatʰwa]	he reaches water
(311)	/kãuNni-tu/	[ˈgãumniɾu]	hawk: large type
(312)	/tʰatãuNʔti-tu/	[tʰaˈdãumʔdiɾu]	praying mantis
(313)	/wãuN-nũN-latʰa-wa/	[ˈwãumnũnlatʰwa]	to cause to be tame
(314)	/kanĩuʔkanĩuN-latʰa-wa/	[kaˌɲĩuʔkaˈɲĩumlatʰwa]	it turns in circles

The coda [n] shown below is only found after the nasal back vowels, [ã, ũ, õ]. How this coronal variant surfaces in this particular environment will also be explained in section 2.5.2.5 when we discuss the Vowel Feature Spreading Rule.

(315)	/ʔwãN/	[ˈʔwãn]	however
(316)	/mũN/	[ˈmũn]	good
(317)	/wanũN-latʰa-wa/	[waˈnũnlatʰwa]	it is good
(318)	/kʰãN-latʰa-wa/	[ˈkʰãnlatʰwa]	it is difficult
(319)	/kʰõN-ta-tu/	[ˈkʰõndaɾu]	monkey: type

The [ŋ] typically surfaces when the /N/ occurs in the coda after the high front nasal vowel /ĩ/, or after nasal diphthongs which end with the high front vowel, such as /eĩ/ and /aĩ/.

(320)	/sanĩN-latʰa-wa/	[saˈɲĩŋlatʰwa]	he is happy
(321)	/waʔɲĩN-soʔki-tu/	[waʔˈɲĩŋsoʔgiɾu]	the shaman
(322)	/mãiNki-tu/	[ˈmãiŋgiɾu]	cashew
(323)	/wɑ-soʔkẽiN/	[ˈwɑ:soʔkẽiŋ]	going, suddenly…
(324)	/kaʔjãiNʔ-latʰa-wa/	[kaʔˈjãiŋʔtʰatʰwa]	he is writing
(325)	/nauʔkanãiNʔ/	[ˌnauʔgaˈnãiŋʔ]	just
(326)	/sakĩNʔki-tu/	[saˈgĩŋʔgiɾu]	rice

(327)	/sanĩNʔni-tu/	[saˈnĩŋʔniɾu]	sand flea/bicho-do-pé
(328)	/haʔtĩN/	[ˌhaʔˈɗĩŋ]	quickly
(329)	/tanu-tahĩN-wa/	[daˈnuːɾahĩŋwa]	give it!
(330)	/sawĩNʔni-tu/	[saˈwĩŋʔniɾu]	small parakeet: type
(331)	/nĩN-taku/	[ˈnĩŋdagu]	to smell strong

The most interesting variants of /N/ are those which involve an initial oral stop followed by a homorganic nasal. Mamaindê exhibits a full array of these pre-stopped nasals, [ᵇm], [ᵈn], and [ᵍŋ], which occur whenever an /N/ in the coda of the syllable is preceded by an oral vowel.[110] The pre-stopped nasals, or more accurately 'pre-oralized nasals', are abundant throughout the language and could arguably be regarded as one of the more salient features of the sound system. Such contour segments pose a number of questions, the most crucial of which have to deal with their segmental and phonemic status. Are these contours composed of one or two segments? If they are single complex segments, which portion is underlying, the nasal or the oral?

In the following pages I will be providing support for the position that contour oral/nasal segments in Mamaindê are single, complex variants of an underlying and underspecified nasal /N/. The oral onset of these complex segments is always spoken in a very rapid manner, a passing gesture reminiscent of a flap, with the articulation only coming to rest on the nasal segment. And whereas the nasal phase can be lengthened considerably in emphatic slow speech, the oral portion retains its rapid articulation and is never lengthened. These facts provide initial backing to the phonological position taken above, namely, that the nasal phase is underlying. I will thus represent these oral/nasal sequences as contour segments in the data, indicating this by the superscripted transcription of each oral onset; [ᵇm] [ᵈn], [ᵍŋ]. Transcribing these without making some visible distinction between the onset phase and the nasal phase might cause the reader to incorrectly interpret the oral portion to be equal in length and value to the nasal portion.

Contour oral/nasal segments (as well as their counterpart nasal/oral segments) have been documented in a large number of languages and language families around the world. They seem to be concentrated in four general areas; South America, Africa, Australia, and Austronesia (Ladefoged, 1993:165-166; Wetzels, 2009:1; see also Rosendall, 1992, and Mills, 1984 for data on the African languages Gwari and Senoufo respectively). However, other parts of the world are also represented. Chen and Clumeck give examples of post-stopped nasals in Cantonese (1975:128). In Borneo, the Bonggi language (Boutin 1993, 2000), as well as the Malayic and Land Dayak language families (Blust 1997; Court 1967, 1970, 1972; Scott; 1964) are reported to have this feature, which is termed *pre-plosion* in the literature.

Oral-nasal contours are also quite prevalent among Amazonian languages. Wetzels (2009), whose recent study focuses on nasal/oral contour consonants in

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[110] An intervocalic /n/ following an oral vowel will not be pre-oralized, as this behavior is limited to the coda position.

South America, gives examples from eight Amazonian languages with this feature: Yuhup, Dâw, Wari, Wansajot, Kaingang, Maxacali, Barasana, and Mebengokre. In Amazonia, the language families which have been most documented in terms of oral/nasal contour segments appear to be the Macro-Je family (specifically Apinaye, Kaingang, Maxacali, and Xokleng) and the Maku family (Yuhup and Dâw). To this list the Nambikwara family must also be added (specifically Southern Nambikwara and all the Northern Nambikwara lects, namely Mamaindê, Negarotê, Latundê and Lakondê), as it becomes evident that oral/nasal contours occupy a prominent place in the phonologies of Mamaindê, Lakondê (Telles, 2002:56-57), and Southern Nambikwara (Kroeker, 2001:79), as well as a minor role in Latundê (Telles, 2002:56-57).

In the Nambikwara languages, oral/nasal contours are the result of oralization, where the underlying segments are the nasal phase of the contour. These languages also limit the oralization of nasal stops to the coda position, and thus only the pre-oralized nasals are present. Post-oralized nasals, such as those found in Kaingang and Maxacali, are not a Nambikwara phenomenon, these being more characteristic of Macro-Je languages (See Wetzels 2009). Of the three possible pre-oralized nasal forms [^{b}m], [^{d}n] and [^{g}ŋ], Southern Nambikwara (Kroeker, 2001:79), Mamaindê (Eberhard, 2003a), and Negarotê[111] possess all three, while Latundê and Lakondê (Telles, 2002:56-57) have only the [^{b}m] and [^{d}n] varieties, apparently being without the velar counterpart.[112] Antunes (2004) does not mention any pre-oralized nasal variants for Sabanê. The Mamaindê pre-oralized nasal, however, can be distinguished from all the other Nambikwara pre-stopped nasals by the unique manner in which it acquires its place features (see Eberhard, 2003a). More will be said about this in section 2.5, 'Phonological Processes'.

In Mamaindê, the predictability of these contour oral/nasal segments allows us to analyze them as variants of an underlying /N/. The presence of the oral phase in these nasals is related to the fact that they occur only in the coda of the syllable and only after oral vowels. This defining characteristic can be accounted for in at least two ways. Autosegmentally, this could be done by way of an Oral Spreading Rule, outlined in section 2.5.2.7, which spreads an oral (or [-nasal]) feature from the preceding oral vowel to the following nasal coda.

A preferable analysis, which does not involve binary nasal features, is the Oral Vowel Enhancement approach proposed by Wetzels (2008:9-11). This view treats the oral phase of oral/nasal segments as a phonetic means of enhancing the contrast between oral and nasal vowels when these are followed by a nasal coda. A more detailed comparison of these two options, one phonological and one phonetic, will be provided in section 2.5.2.7, 'Oralization of Nasal Codas'.

The place features of these forms, however, is clearly a phonological issue. Although they display a number of possible points of articulation, their surface form can be predicted by the place features of the preceding vowel, as we have already

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[111] The Negarotê data comes from my own Mamaindê database. These two lects are very similar and there are a number of Negarotê living within the Mamaindê community who continue to use some Negarotê forms.

[112] Telles (2002:56-57) notes that the pre-stopped nasals, while common in Lakondê, are quite rare in Latundê.

noted is also the case for simple nasal codas which follow nasal vowels. (see the Vowel Place Feature Spreading Rule in section 2.5.2.5)

Cross-Reference to Section 2.5:
[Oralization of Nasal Codas; Post-Lexical; Obligatory]
[Vowel Place Spreading Rule; Post-Lexical; Obligatory]

The pre-oralized [ᵇm] variant of the /N/ occurs only after oral diphthongs which end with round vowels; the /au/ and the /eu/. This means that it will always precede another consonant, never occurring intervocalically, and never after nasal vowels. It has not, however, been documented following the oral /iu/.

(332)	/keuN-latʰa-wa/	[ˈgeuᵇmlatʰwa]	he mixes
(333)	/auN-latʰa-wa/	[ˈauᵇmlatʰwa]	he errs
(334)	/tauN-tu/	[ˈdauᵇmdu]	tail
(335)	/leuNʔ-tu/	[ˈleuᵇmʔdu]	tapir
(336)	/kateuN-ta-latʰa-wa/	[gaˈdeuᵇmdalatʰwa]	it is alive
(337)	/saʔkeuN-latʰa-wa/	[saʔˈgeuᵇmlatʰwa]	urinate
(338)	/euN-hã/	[ˈeuᵇmhã]	do you see?
(339)	/wauN-latʰa-wa/	[ˈwauᵇmlatʰwa]	it is red
(340)	/talauN-latʰa-wa/	[taˈlauᵇmlatʰwa]	it is thick
(341)	/hauN-si-tu/	[ˈhauᵇmtʃiɾu]	cloud

The [ᵍŋ] variant of /N/ occurs only in the coda of the syllable, and only after the high front oral vowel, /i/ (or after diphthongs which end with the high front oral vowel, such as /ei/ and /ai/).[113] This means that it will always precede another consonant, never occurring intervocalically, and never after nasal vowels.

(342)	/waninikʰeiN-tu/	[waniniˈkʰeiᵍŋdu]	bicycle
(343)	/siN-tu/	[ˈsiᵍŋdu] ~ [ˈtʃiᵍŋdu]	meat
(344)	/jaliNʔ-ya̠-tu/	[jaˈliᵍŋʔya̠ɾu]	puberty flute music
(345)	/jaleiNʔ-tu/	[jaˈleiᵍŋʔdu]	minnow
(346)	/heiN-tu/	[ˈheiᵍŋdu]	sound
(347)	/haiN-tu/	[ˈhaiᵍŋdu]	music
(348)	/waliNʔ-tu/	[waˈliᵍŋʔdu]	anteater: type 'miɾĩm'
(349)	/ki̠N-latʰa-wa/	[ˈki̠ᵍŋlatʰwa]	it itches
(350)	/seiN-tu/	[ˈseiᵍŋdu] ~ [ˈtʃeiᵍŋdu]	container

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[113] A few exceptions to this environment are dealt with at the end of this section.

(351)	/alaiN-latʰa-wa/	[aˈlaiᵉŋlatʰwa]	he crosses
(352)	/wakiNʔ-tu/	[waˈgiᵉŋʔdu]	owner
(353)	/waiN-si-tu/	[ˈwaiᵉŋtʃiɾu]	medicine

The [ᵈn] variant of /N/ occurs only in the coda of the syllable, and after all the other oral vowels not listed above (the back oral vowels, /a/, /u/, and /o/). The alveolar variant can thus be viewed as the unmarked or default place feature for simple nasals as well as for the pre-stopped nasals. It also must precede another consonant, never occurring intervocalically, and never after nasal vowels.

(354)	/ju̠N-tu/	[ˈju̠ᵈndu]	knife
(355)	/jalakwatuN-tu/	[jalakwaˈduᵈndu]	howler monkey
(356)	/nakajaNʔ-tu/	[nagaˈjaᵈnʔdu]	person/indian
(357)	/jataN-tu/	[jaˈdaᵈndu]	deer
(358)	/walaN-tu/	[waˈlaᵈndu]	termite
(359)	/jahoN-tu/	[jaˈhoᵈndu]	old man
(360)	/nahoN-sa̠-tu/	[naˈhoᵈnsa̠ɾu]	sweet beverage
(361)	/waloloN-si-tu/	[waloˈloᵈntʃiɾu]	fruit: type
(362)	/uN-latʰa-wa/	[ˈuᵈnlatʰwa]	it is far
(363)	/saN-latʰa-wa/	[ˈsaᵈnlatʰwa]	he is harvesting
(364)	/haN-latʰa-wa/	[ˈhaᵈnlatʰwa]	it is flopping
(365)	/suN-latʰa-wa/	[ˈtʃuᵈnlatʰwa]	he hit it
(366)	/oN-latʰa-wa/	[ˈoᵈnlatʰwa]	he is lazy
(367)	/takoʔtakoN-latʰa-wa/	[tagoʔtagoᵈnlatʰwa]	it is crooked

As illustrated in the examples above, the relationship between specific vowels and the place features of the nasal coda is clearly established and figures as a prominent characteristic of this language. There are however, a few notable exceptions to this relationship. In the examples below, which all involve the high front vowel, the nasal coda remains alveolar, instead of becoming velar, as would be expected from the discussion above. Interestingly, in each case the vowel is also nasalized (in diphthongs such as /ãi/, both vowels are nasalized). It may be that the nasal vowels are more apt to resist the spreading of their place features to the nasal coda.[114] Nevertheless, these exceptional forms are still very few and do not

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[114] Although one can find exceptions to this as well, such as the form /mainki-tu/ →
[mãiŋgiɾu] 'cashew'.

minimize the regularity with which the previously described patterns of coda place assimilation apply. [115]

(368)	/mãiN-tu/	[ˈmãindu]	pet
(369)	/ʔm̃ĩN-tu/	[ˈʔm̃ĩndu]	skin
(370)	/mamãiNsi-tu/	[maˈmãintʃiɾu]	a Mamaindê person
(371)	/suʔnãiN-latʰa-wa/	[tʃuʔˈnãinlatʰwa]	he is wise/skilled
(372)	/wa̱-jeʔ-nĩNta-wa/	[ˈwa̱ːˈjeʔnĩndawa]	he surely came
(373)	/nã̱iN-tu/	[ˈnã̱indu]	snail

Another type of exception to the basic rules of /N/ outlined above is demonstrated in the four forms that follow, where the nasal coda appears to be conditioned by the following velar consonant instead of by the preceding vowel. This influence by the following consonant only occurs when the velar is also part of the root, or part of a morpheme which has become fused to the root in such a way that it is treated as a single root in the language (such as the noun classifier */-kalo/* 'flat' in the form */mãn-kalo-tu/* 'cloth'). In such cases, the preceding vowel can be any oral vowel. These apparent exceptions will be accounted for by the Consonant Cluster Place Assimilation Rule, which requires an underspecified consonant to assimilate the place features of a following consonant if they both occur within the stem.[116]

Cross-Reference to Section 2.5:
[Consonant Cluster Place Assimilation Rule; Lexical; Obligatory]

(374)	/aNka-latʰa-wa/	[ˈaᵍŋgalatʰwa]	it is costly
(375)	/oNka-latʰa-wa/	[ˈoᵍŋgalatʰwa]	he/she is doing
(376)	/tãNki-tu/	[ˈdãŋgiɾu]	star/planet
(377)	/mãN-kalo-tu/	[ˈmãŋgaloɾu]	cloth/clothes
(378)	/hajãunʔki-tu/	[hajãuŋʔgiɾu]	flower[117]

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[115] Another possibility would be to posit two types of nasal codas, one underspecified for place, and the other specified as coronal. Due to the very small number of forms under consideration, however, I choose not to adopt that approach, but instead, simply view the forms listed here as true exceptions.

[116] Lexical Phonology would propose that the roots (and fossilized roots) of the language occur in a stratum with the Consonant Cluster Place Assimilation Rule. The Vowel Place Spreading Rule (which spreads place features from vowels to unspecified codas) applies in a later stratum. See section 2.5.2.5.

[117] Note that in this form a glottal comes between the nasal coda and the velar consonant. In 2.5 where I deal with the Consonant Cluster Place Assimilation, I argue that the glottal is transparent in such cases, acting as a C unspecified for place features, thus allowing for non-adjacent spreading to occur.

2.1.1.7 Liquids

2.1.1.7.1   The /l/

2.1.1.7.1.1   Phonotactics:

The phoneme /l/ has three allophones, the [l], [t] and [tʰ], and one non-allophonic variant [ɬ]. They are all limited to the onset position and able to occur before any vowel. The difference in their distribution is in what precedes them.

2.1.1.7.1.2   The Allophones:

The [l] allophone occurs in the onset following a sonorant, such as a vowel or a nasal coda.

(379)	/li-latʰa-wa/	[ˈliːlatʰwa]	it is cold
(380)	/alain-latʰa-wa/	[aˈlaiᵍŋlatʰwa]	he is crossing
(381)	/walalãn-latʰa-wa/	[walaˈlãnlatʰwa]	it is light
(382)	/leu-kʰatoʔ/	[ˈleuːkʰaɾoʔ]	he approaches, then…
(383)	/halo-tu/	[haˈloːɾu]	land
(384)	/walekʰan-tu/	[waleˈkʰaᵈndu]	chief
(385)	/kalis-tu/	[kaˈliktu]	banana
(386)	/luka-latʰa-wa/	[ˈluːgalatʰwa]	he/she chooses
(387)	/loh-tu/	[ˈlohɾ̥u]	vulture
(388)	/lau-tu/	[ˈlau̠ːɾu]	tree:red wood for bow-making

The [t] and [tʰ] allophones of the /l/ occur in the onset after a preceding oral obstruent. The [t] allophone may optionally be aspirated , resulting in the [tʰ] variant, indicating that the /l/ in this context has undergone several ordered phonological processes , namely, Onset Strengthening followed by Coronal Aspiration.

Cross-Reference to Section 2.5:
[Onset Strengthening; Post-Lexical; Obligatory]
[Coronal Aspiration; Post-Lexical; Obligatory]

(389)	/weis-latʰa-wa/	[ˈweiktatʰwa] ~ [ˈweiktʰatʰwa]	he makes
(390)	/lit-latʰa-wa/	[ˈliktatʰwa] ~ [ˈliktʰatʰwa]	he leaves
(391)	/seit-latʰa-wa/	[ˈseiktatʰwa] ~ [ˈseiktʰatʰwa]	he speaks
(392)	/amamat-latʰa-wa/	[amaˈmattatʰwa] ~ [amaˈmattʰatʰwa]	it appears

(393)   /at-latʰa-wa/   [ˈattatʰwa] ~ [ˈattʰatʰwa]   he fishes

(394)   /kʰakʰos-latʰa-wa/   [kʰaˈkʰottatʰwa] ~ [kʰaˈkʰottʰatʰwa]   it is dangerous

2.1.1.7.1.3   Non-Allophonic Variants

A non-allophonic variant of the /l/ is the [ɬ], which occurs in the onset after a
preceding /h/. The original /h/ is absorbed by coalescence, and due to this merging
of two phoneme segments, the process involved can not be considered an allophonic
rule.

Cross-Reference to Section 2.5:
[Onset Devoicing; Post-Lexical; Obligatory]

(395)   /toh-latʰa-wa/   [ˈdoːɬatʰwa]   she wants

(396)   /lah-latʰa-wa/   [ˈlaːɬatʰwa]   it is new

(397)   /ih-latʰa-wa/   [ˈiːɬatʰwa]   he is running

(398)   /jaih-latʰa-wa/   [ˈjaiːɬatʰwa]   she is sad

(399)   /tahlakut-taku/   [taɬaˈguttagu]   to compare

2.1.1.8   Glides

2.1.1.8.1   The /j/

2.1.1.8.1.1   Phonotactics:

The /j/ occurs only in the onset position, and may precede all vowels except /eu/ and
/iu/.[118] In the data available, it only occurs once before /i/ *([jihaˈmĩndu]* 'bird:type').
        The [j̥] is a voiceless, aspirated variant of /j/. This is a somewhat rare
segment which occurs only when the [j] in the onset follows an [h] in the coda of the
previous syllable. This is not an allophonic variation, however, since it results in the
coalescence of two phonemes, the /j/ and the /h/, into a single segment, the /j̥/.

(400)   /suh-jeʔ-latʰa-wa/   [ˈsuːʰj̥eʔlatʰwa]   he/she is certainly afraid

(401)   /ih-jãʔ-latʰa-wa/   [ˈiːˌj̥ãʔlatʰwa]   they run continually

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[118] The glides in Mamaindê can be viewed as segments whose phonological status depends on
their syllable position. In the nucleus they function as vowels, while in the onset position they
behave as glides. In the coda, however, alternative views will be discussed when we describe
the Mamaindê 'diphthong'.

2.1.1.8.1.2   The Allophones:

The allophones of /j/ are [j] and [tʃ]. The [tʃ] allophone is limited to the onset
position following plosive consonants, or non-continuant oral segments.

Cross-Reference to Section 2.5:
[Glide Strengthening; Post-Lexical; Obligatory]

(402)	/at-jeʔ-latʰa-wa/	[attʃeʔlatʰwa]	he is fishing
(403)	/seit-jeʔ-latʰa-wa/	[seiktʃeʔlatʰwa]	he is speaking
(404)	/h̲ik-ja-tu/	[h̲iktʃadu]	war music

The [j] allophone occurs in all other environments, namely, in onsets which
do not follow plosives or the /h/.

(405)	/hãnjeʔ-latʰa-wa/	[ˈhãnjeʔlatʰwa]	it is white
(406)	/jejeis-latʰa-wa/	[jeˈjeiktʰatʰwa]	he is ugly
(407)	/jein-tu/	[ˈjeiᵍndu]	face
(408)	/jahon-tu/	[jaˈhoᵈndu]	old man
(409)	/jalakwatun-tu/	[jalakwaˈduᵈndu]	howler monkey
(410)	/jautʰi-tu/	[ˈjauptʰiɾu]	spirit
(411)	/nahajautʰi-tu/	[nahaˈjauptʰiɾu]	water: for drinking
(412)	/jihamĩn-tu/	[jihaˈmĩndu]	bird: type
(413)	/jukatein-tu/	[jugaˈdeiᵍndu]	footprint
(414)	/joha-latʰa-wa/	[ˈjoːhalatʰwa]	he pays
(415)	/jainsi-tu/	[ˈjaiᵍntʃiɾu]	food

2.1.1.8.2   The /w/

2.1.1.8.2.1   Phonotactics:

The /w/ occurs only in the onset, in either word initial or word medial positions. It is
more limited in its distribution than the /j/, never occurring before /u/ or /iu/, and
only very rarely before /eu/ and /o/. In the data available, it only occurs once before
/eu/ *([w̥eulatʰwa]* 'he stores'), and once before /o/ *([juʔkwogŋkweihɾu]* 'stream:
proper name'). This reduced environment is consistent with the limits the language
places on all its labial consonants. The /p/, /m/, and /w/ phonemes are all restricted
from co-occurring with certain rounded vowels. Although the specific restrictions
differ for each phoneme, the overall tendency in Mamaindê is to prefer onsets which

differ from the nucleus in their value for the [Labial]/[round] feature. Thus if the vowel is round, a well-formed onset in Mamaindê would typically not be [Labial] (see the Phonotactics section of /p/ and /m/ as well).

2.1.1.8.2.2 The Allophones:

The /w/ has a single allophone, the [w]. The [w] allophone occurs in the onset after all consonants except /h/.

(416)	/wa̱-latʰa-wa/	[ˈwa̱:latʰwa]	she comes
(417)	/weit-tu/	[ˈweiktʰu]	child
(418)	/taʔwein-tu/	[daʔˈweiᵍndu]	jungle
(419)	/wi̱-latʰa-wa/	[ˈwi̱:latʰwa]	he eats (meat)
(420)	/waun-latʰa-wa/	[ˈwauᵇmlatʰwa]	it is red
(421)	/waikni-tu/	[ˈwaikniɾu]	dog
(422)	/anawat-tu/	[anaˈwattʰu]	nose flute
(423)	/nawih-latʰa-wa/	[naˈwihɬatʰwa]	she tells
(424)	/sawawe-latʰa-wa/	[sawaˈwe:latʰwa]	it growls
(425)	/wainsi-tu/	[ˈwaiᵍŋtʃiɾu]	medicine
(426)	/wanaka-latʰa-wa/	[waˈna:galatʰwa]	it is close

2.1.1.8.2.3 Non-Allophonic Variants

The voiceless variants of /w/, the [ʍ] and [ɸ], both occur in the onset after an /h/. The [ʍ] is a voiceless variant of the /w/, while the [ɸ] is not only voiceless, but also lacks lip rounding. The [ʍ] occurs after the /h/ and before a non-high, non-front vowel. The [ɸ] occurs after the /h/ and before the /i/ vowel. This latter sound is seldom found in the language and has not been documented by previous researchers. The only instance of this sound in my own data is found in the first example below. Due to the coalescent process involved in both these cases, [ʍ] and [ɸ] will not be regarded as allophones.

Cross-Reference to Section 2.5:
[Onset Devoicing; Post-Lexical; Obligatory]
[UnRounding Rule; Post-Lexical, Obligatory]

(427)	/ih-wi-latʰa-wa/	[iɸi:latʰwa]	she runs inside
(428)	/ihwaun-latʰa-wa/	[iʍauᵇmlatʰwa]	he returns running
(429)	/katehwalan-tu/	[kadeʍalaᵈndu]	snake: bico-de-jaca
(430)	/jaih-wa̱-kʰatoʔ/	[jaiʍa̱kʰaɾoʔ]	to be continually sad

(431)	/toʜwaih-tu/	[toʌaihɾu]	bee: ground type
(432)	/kaloh-ʜaiki-tu/	[kaloʌaikiɾu]	bat: small type
(433)	/kayauka-ʜaih-ʜeih-tu/	[kayaugawaiʌeihɾu]	Estivo river
(434)	/kaloh-ʜeis-tʰãnʔ-tu/	[kaloʌeiktʰãnʔdu]	'lixeira' tree leaves

2.1.2 The Vowels

There are 18 simple vowel phonemes in Mamaindê. They are organized below into three tables, according to the manner in which they are articulated.

2.1.2.1   Oral Vowels

The Mamaindê oral vowels are patterned after the typical five vowel system. The most prevalent of these in the lexicon is by far the central /a/. The /i/ is also very common. The oral vowel which is used the least is the /o/, followed by the /e/, and then the /u/.

Mamaindê oral vowels:

	FRONT	CENTRAL	BACK
High	i		u
Mid	e		o
Low		a	

2.1.2.2   Nasal Vowels

Besides the 5 simple oral vowels, Mamaindê also has 5 phonemic nasal vowels, as shown in the chart below. In the broader linguistic family, nasality is shown to be contrastive in Southern Nambikwara (Lowe 1999:271; Kroeker 2001:80), and in Latundê/Lakondê as well (Telles 2002:80). [119]

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[119] According to Telles (2002:95), however, only stressed nasal vowels are phonemic in Latundê, while nasality on unstressed vowels is predictable by rule, assimilating to a following nasal consonant. This dual approach, which at face value seems to result in an overly powerful and complex analysis, actually serves to highlight the fact that nasality in these languages is fraught with difficulties, for there are some nasal vowels which appear to be predictable, and others which cannot be predicted. These difficulties are present in Mamaindê as well, although we will conclude that lexical nasality best fits the Mamaindê data.

Mamaindê nasal vowels

	FRONT	CENTRAL	BACK
High	ĩ		ũ
Mid	ẽ		õ
Low		ã	

The contrastive nature of Mamaindê nasal vowels is evident throughout the data (see the contrastive evidence in section 2.1.2.5). They may occur just as easily in environments where there are no nasal consonants, as in environments where they are adjacent to a nasal consonant. Nasal vowels may also occur in unstressed syllables just as easily as in stressed positions. Such distribution is characteristic of phonemic nasals and not derived nasals.

It should be noted, however, that although Mamaindê has five contrastive nasal vowels, they are not all used to the same extent within the sound system. The mid vowels, which are already less frequent than the other vowels, are seldom nasal. The nasalized /ẽ/, for instance, will only appear when followed by a high vowel, and occurs in few words, such as in the forms *[nasoʔgẽiŋ]* 'person', and *[saʔgẽumʔlatʰwa]* 'he urinates'. In environments where the /e/ is not part of a vowel sequence, it is never nasalized. The other mid vowel, the /õ/, is even rarer as a nasal and has only been attested to in two forms in my data; *[ˈkʰõndaru],* 'monkey□ large type', and *[naʔˈhõndoh],* 'much'.

The other Nambikwara languages also show this tendency for less nasalization on mid vowels. Kroeker (2001:80) points out that the mid vowel /o/ is never nasalized in Southern Nambikwara, thus leaving a set of four contrastive nasals /ĩ, ẽ, ũ, ã/. For Latundê, Telles posits only three nasal vowel phonemes, /ĩ, ũ, ã/, signifying that neither of the mid vowels have nasal counterparts that are contrastive (Telles 2002:80).[120]

The rare occurrence of nasalized mid vowels in Mamaindê, including the fact that these few forms precede nasal codas, raises the issue as to whether these two nasal variants should be considered phonemic. I will show the need, however, of granting phonemic status to all nasal vowels in the section 2.1.2.5, "The Phonemic Contrast of Vowels'. These mid nasal vowels, although very rare, are not conditioned by stress as in Latundê, nor should they be seen as the product of a nasal spreading rule, since, as we shall see in section 2.5, 'Phonological Processes', it is not nasality but orality that spreads in Mamaindê (see section 2.5.2.7, 'Oralization of Nasal Codas'). Positing a nasal spreading rule to account for the nasality of some vowels (the mid vowels), while at the same time granting phonemic status to all the other nasal vowels, is equivalent to using two opposing strategies to account for one phenomenon. For that reason I will take the position that all nasal vowels are

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[120] This does not mean, however, that there are no nasalized mid vowels in Latundê. One example is the form *[kõːˈbajˌre]* where the /o/ vowel is nasalized (see Telles 2002:95). This appears to be the only such case of a nasalized mid vowel in her descriptive grammar, and according to Telles' analysis, it can be accounted for by allowing nasal vowels in unstressed positions to be predicted by rule and therefore not underlyingly nasal.

phonemic in Mamaindê, including the mid vowels. This position accounts for all the data and avoids resorting to a dual approach.

Having established this, however, one might still ask why the mid vowels are nasalized on such few occasions in comparison to the other vowels. A partial answer to this question can be found in the typology of nasal vowel inventories. Generally, low/high vowels are the most likely to be nasalized, while the mid vowels are the least likely to be part of nasal vowel systems (Crothers, 1978:124). Beyond this cross-linguistic tendency, language family data actually points to the fact that Mamaindê has been able to retain the mid nasal vowels longer than other languages within the Nambikwara family. We noted earlier that Southern Nambikwara allows for the nasal [ẽ], but not the [õ]. Latundê apparently allows for only the [õ] in special situations. This would indicate that, in keeping with cross-linguistic tendencies, the Nambikwara languages as a whole are losing their mid nasal vowels, where Latundê has lost both mid nasal vowels, Southern Nambikwara has lost one, and Mamaindê, although still employing these two sounds in a few forms, appears to be in the gradual process of losing both of them as well.

2.1.2.3   Creaky Voice Vowels

Another prosodic feature common to the Nambikwara languages is creaky voice. Like nasalization, creaky voice in Mamaindê is phonemic in nature. But unlike the more limited distribution of nasal vowels, creaky voice can be found just as frequently on any of the five basic vowels in Mamaindê. As for the other languages in the family, Lowe mentions that laryngealization (creaky voice) is contrastive in Southern Nambikwara (1999:271). For Latundê, Telles (2002:80) also posits the creaky voiced vowels as underlying.

Mamaindê creaky voice vowels

	FRONT	CENTRAL	BACK
High	ḭ		ṵ
Mid	ḛ		o̰
Low		a̰	

Although creaky voice is a contrastive feature of the traditional Mamaindê sound system, it is beginning to become less distinct in its articulation among the younger generation. While the elderly Mamaindê speakers tend to emphasize the creaky voice feature in vowels, pronouncing it strongly and clearer, this distinction is often minimized in the speech of their children and grandchildren, leaving the uninitiated listener in considerable doubt as to whether a particular vowel is creaky voice or not. This is especially true when minimal pairs are not involved, or when context makes the possible choice of words clear. Elderly informants are quite adamant about the presence or absence of creaky voice in a given word, while the younger speakers are not nearly so concerned about this feature. This lessening of the degree and importance of creaky voice in Mamaindê is undoubtedly directly

related to their increasing contact with Portuguese, which does not employ the feature.

2.1.2.4   *Nasal / Creaky Voice Vowels*

In a language which allows its vowels to be articulated in various manners, from standard voice to nasal voice to creaky voice, it is a simple step to then ask whether or not it is possible for vowels to be articulated with both nasal and creaky voice prosody simultaneously. Once again, Mamaindê does not disappoint. Although found less frequently than any of the other manners of articulation, the most interesting vowels in Mamaindê are those which are articulated with a simultaneous mix of both nasalization and creaky voice. I will refer to these from now on as nasal/creaky voice vowels, and they will be represented by a tilde both over and under the vowel. Like both their nasal and their creaky voice counterparts, these nasal/creaky voice vowels are phonemic, used by the language to add yet another level of contrast to the already rich inventory of vowel sounds. Note that neither of the mid vowels are found with the dual nasal/creaky voice feature, an example of the general principle that the loss of features starts with the more highly marked cases, before moving on to the more common or least marked ones. Thus, as we note that the dual nasal/creaky voice feature has already been lost on the mid vowels, we can reasonably speculate that the loss of simple nasality on the mid nasal vowels may follow.

Mamaindê nasal/creaky voice vowels

	FRONT	*CENTRAL*	*BACK*
High	ḭ̃		ṵ̃
Mid			
Low		ã̰	

The other languages in the family also display a limited set of nasal/creaky voiced vowels. Latundê, like Mamaindê, is limited to just three of these; the /ḭ̃ ṵ̃ ã̰/ (Telles 2002:80), while Southern Nambikwara (Kroeker 2001:80) has four vowels with both nasal and creaky voice features; /ḭ̃ ḛ̃ ṵ̃ ã̰/.

As is the case with creaky voice, the nasal/creaky voice vowels are becoming obsolete as well. In fact, the nasal/creaky voice vowels are less common that their creaky voice counterparts, and are almost non-existent among the younger generation, while the elderly still hang on to them as contrastive vowels of the language. Although the nasal/creaky voice vowels can be found in minimal pairs with either oral vowels, nasal vowels or creaky voice vowels, they have never been found in a set of minimal pairs which show a clear contrast between all four types of vowels. Thus the younger speakers who have abandoned the use of dual nasal/creaky voice features on vowels can always rely on one or the other of the single features to enable them to make the contrasts necessary. I predict that within a generation this dual feature of the language will be lost. Once again, we see signs of

deterioration of the very fabric of this language in the face of a much larger and prestiguously stronger national language, Portuguese, which employs contrastive nasality without any creaky voice.

2.1.2.5   The Phonemic Contrasts of Vowels

/i/, /ĩ/, /i̱/, /ĩ̱/

[ˈnĩːlathʰwa]	it hurts
[ˈniːlatʰwa]	it is like this
[ˈnĩ̱nlatʰwa]	it smells
[ˈmĩ̱hɾu]	sweet potato
[ˈmihɾu]	cloud/rain
[sihɾu]	house
[si̱hɾu]	ant: tocanguira
[ˈtʃi̱uːru]	basket
[ˈtʃĩ̱umʔniɾu]	biting gnat: borrachudo
[ˈwiːlatʰwa]	he enters
[ˈwi̱ːlatʰwa]	he eats (meat)
[naˈhĩ̱ʔ]	then…
[ˈnaahĩʔ]	always
[ˈwiʔ]	slowly
[kĩ̯ˈkĩktu]	cicada
[kaˈmĩ̱ktu]	year/dry season
[ˈmĩ̱ʔniɾu]	bird:type
[ˈmĩ̱ːniɾu]	father
[kaˈnĩ̱nʔdu]	daughter
[kaˈdeikkaˈnĩndu]	rubber ball
[saʔˈnĩ̱nʔniɾu]	flea:bicho de pe
[saˈgĩnʔgiɾu]	rice
[ˈnĩːlatʰwa]	it hurts
[kani̱ktatʰwa]	he erases it
[kaniktatʰwa]	it shines
[kanĩhɬatʰwa]	they are many
[ˈduɾĩ]	get, and…
[ˈwaːtʰi]	sister

[kʰĩˈkʰĩktu]   cicada
[kʰiˈniktu]   wasp larva
[liktʰatʰwa]   he arrives
[l̪iktʰatʰwa]   he avenges

/e/ /e̯/ /ẽ/

[waleˈkʰaᵈnʔdu]   chief
[waˈdeːlatʰwa]   he disappears
[kaˌdehwaˈlaᵈndu]   rattlesnake: bico-de-jaca
[ˈdeihr̥u]   road
[ˈd̯eihr̥u]   snake
[eiᵍŋˈgũnlatʰwa]   he gets better
[ˈe̯iᵍŋdu]   cashew of the campo
[nasoʔˈgẽiŋ]   suddenly
[ˈnaːˈjeʔˌdeinaʔwa]   I will surely drink
[saʔgẽumʔlatʰwa]   he urinates
[ˈdeuːnalatʰwa]   he is lost
[ˈweiːhalatʰwa]   it is changing
[ˈwe̯ihalatʰwa]   she is pregnant
[ˈheiᵍŋlatʰwa]   it is noisy
[ˈhe̯iᵍŋlatʰwa]   she is washing

/i/ /e/

[ˈtʃeiᵍŋdu]   container
[ˈtʃiᵍŋdu]   meat
[haˈleiktʰatʰwa]   he is stepping
[haˈliktʰatʰwa]   it is dripping
[waˈdeːlatʰwa]   it disappears
[waˈdihr̥u]   your wife
[kadeʌaˈlaᵈndu]   rattlesnake
[kaˈdiktu]   splinter
[wadiwaˈdiktʰatʰwa]   it is shiny

/i̯/ /e̯/

[ˈe̯i̯ᵍndu]	cashew:jungle type
[ˈi̯ᵍndu]	stingray
[tʰe̯i̯ᵍŋʔdu]	hammock
[li̯ᵍŋʔdu]	manioc
[de̯ihɾu]	snake
[si̯hɾu]	ant: tocanguira

/u̯/ /ũ̯/ /u̠/ /ũ̠/

[ˈduᵈndu]	flute: puberty festival type
[ˈdu̠ᵈndu]	cutia
[ˈnũ̠sa]	our
[ˈnuːsiɾu]	lizard:type
[ˈhũ̠ːɾu]	wolf: lobo guara
[ˈhu̠kʔdu]	bow
[ˈhuʔgiɾu]	tree: palm type
[ˈnuktʰatʰwa]	he divides
[ˈnũkkʰiɾu]	arm
[ˈnũ̠nʔgiɾu]	breast
[ˈnũnʔdaɾu]	tapir
[gãlalãũptʰatʰwa]	it is rough
[halauptʰatʰwa]	it is broken (in the middle)
[halokʰũ̠ɾu]	land area
[kʰuːlatʰwa]	it is soft
[nãumtʰũ̠ɾu]	sweet powder – sugar
[nãumtʰuᵈnnawa]	it will be sweet

/o/ /o̠/ /õ/

[ˈdo̠ːlatʰwa]	he dies
[ˈdoːhalatʰwa]	he wants
[kaˈdo̠ːlatʰwa]	it is circular
[kaˈdottatʰwa]	it is ripe
[kaˈloːlatʰwa]	it is rotten
[kaˈlo̠ːlatʰwa]	it grows
[ˈlo̠ɾu]	tree: jungle type

['loɾu]   rat
['kʰõndaɾu]   monkey: type
['kʰoᵈnʔdu]   tortoise
[naʔ'hõndoh]   a lot
[na'hoːna]   water

/u̱/ /o/

['duhɬatʰwa]   it spreads
['dohɬatʰwa]   he wants
[ka'luːlatʰwa]   he folds
[ka'loːlatʰwa]   it stinks

/ũ/ /õ/

[kʰõndaɾu]   monkey: type
[kʰũndu]   pineapple: type

/u̯/ /o̱/

do̱latʰwa   she wants
[du̯ᵈnlatʰwa]   he is sucking
[lo̱ʔtʰiɾu]   tree:type
[gu̯tʰiɾu]   father-in-law

/a/ /ã/ /a̱/ /ã̱/

['laːɾu]   macaw
['la̱ːɾu]   small bird:type of
['da̱ːlatʰwa]   he is sitting/lying down
['daːlatʰwa]   he is born/he falls
[ka'ma̱ttu]   bean:type of
[ka'mattu]   tree:type of
[ka'jattu]   grasshopper
[ka'ja̱ttu]   corn
['haːnãni]   fish:type of
['hãnlatʰwa]   it is white
['hã̱nlatʰwa]   he clears a trail
['tʰã̱]   there

[naˈtʰa̰ɾu]   his stomach
[ˈtʰa̰ːlatʰwa]   it is smooth
[tʰaˈla̰iɾu]   mahogany
[tʰaˈlaihɾu]   bird: type
[tʰa̰ˈda̰hlatʰwa]   he is leaving bones
[tʰaˈda̰nsiɾu]   bird:type
[tʰaˈdaʔtʰatʰwa]   he is causing it to burn
[ˈhãi]   he
[ˈhaiʔkiɾu]   word
[nalatʰwa]   it is
[ˈnãːlatʰwa]   he/she drinks

2.1.2.6   Oral Vowels: Phonotactics and Allophones

Before we address each of the oral vowels in turn, we must first mention an issue that applies to all the oral vowels.

One of the more obvious facts about oral vowels in Mamaindê is that they are limited in their distribution in relation to nasal consonants. Oral vowels may follow nasal onsets without any hesitation and without suffering any modification, but they may not precede nasal codas, at least not without some major alternation taking place. In the underlying forms of words, oral vowels do in fact precede nasal codas, but in each of these cases either the coda must be resyllabified as the onset of the following syllable (maximization of onset), or if that fails (due to the prior presence of an onset in the following syllable), a homorganic oral stop must be inserted between the oral nucleus and the nasal coda. In each case something has come between the oral vowel and the nasal consonant – either a syllable boundary, or a stop. A third possibility, that of nasalizing the underlying oral vowel, never occurs.

Examples of these two strategies abound in the language, and the chart below shows how they can apply to the same forms depending on the suffix that is being added. (I have added the syllable boundary [.] to the examples below to highlight the cases where resyllabification and maximization of onset occurs.)

Oral vowels and Nasal codas - two strategies

root **Lexical form with oral vowel and nasal coda**	*addition of /-ãni/ suffix* *(Final Nominal suffix1)* **Strategy 1** **resyllabification**	*addition of /-tu/ suffix* *(Final Nominal suffix2)* **Strategy 2** **insertion of pre-stop**
/han/ fish:type	[ha:.nã.ni]	[ha^{d}n.du]
/tun/ flute	[du:.nã.ni]	[du^{d}n.du]
/jahon/ old man	[ja.ho:.nã.ni]	[ja.ho^{d}n.du]
/sin/ meat	[si:.nã.ni]	[si^{g}ŋ.du]
/hein/ pineapple	[hei:.nã.ni]	[hei^{g}ŋ.du]
/taun/ tail	[dau:.nã.ni]	[dau^{b}m.du]
/kaleun/ bird:type	[ga.leu:.nã.ni]	[ga.leu^{b}m.du]

This apparent tendency of avoidance, where the oral vowels and the nasal codas are kept at a distance from each other, either by changing syllable structure or by inserting a stop, would seem to suggest that the difference between nasal and oral vowels can be predicted by rule. However, the present state of the language does not allow such a simple approach due to the contrastive nature of oral and nasal vowels in a significant portion of the vocabulary (already demonstrated in section 2.1.2.5, 'Phonemic Contrasts of Vowels'). It may be the case, however, that these avoidance strategies are the remnant of older, diachronic processes, of a previous state of the language when nasality did spread from codas to vowels, such that oral vowels and nasal codas were never adjacent. This interesting feature of the language will be fully addressed under the heading 'Oralization of Nasal Codas' in section 2.5.2.7.

2.1.2.6.1   The Oral /a/ and /a̠/

2.1.2.6.1.1   Phonotactics

The /a/ vowel is by far the most frequent vowel in the language. Both the /a/ and the /a̠/ can occur after any consonant, as well as in open or closed syllables, including open syllables which consist solely of a single vowel. When /a/ or /a̠/ is followed by a coda which cannot be resyllabified as an onset, there is a preference for a coronal or glottal coda (/ʔ/ or /h/), with velar consonants being much less frequent in that position. Labials never occur as codas after the /a/or the /a̠/.

One of the environments where the /a/ is preferred to other vowels is in the syllable prior to the stressed syllable of poly-syllabic noun and verb roots. This tendency was first pointed out by Price ('Southern Nambikwara Phonology', 1975:2) and Kingston ('Morpheme Boundary Phenomenon', 1976:2). Note that the

initial vowel of each of the verb and noun roots below is the /a/. This
(C)[a](C)V[+stress] pattern is common for many bi-syllabic roots in the language, of
which the examples below are only a small subset.

verbs

(435)   /waˈte-latʰa-wa/   it disappears

(436)   /saˈnĩn-latʰa-wa/   he is happy

(437)   /taˈnu-latʰa-wa/   he throws it

(438)   /kaˈsuh-latʰa-wa/   he is spitting

(439)   /kʰaˈkʰot-latʰa-wa/   it is dangerous

(440)   /kaˈteun-latʰa-wa/   it is alive

(441)   /haˈleik-latʰa-wa/   he is stepping

nouns

(442)   /aˈlai-tu/   sloth

(443)   /jaˈmaʔ-tu/   flute spirit

(444)   /kaˈjat-tu/   corn

(445)   /saˈmãnʔ-tu/   ant: leafcutter

(446)   /jaˈlik-tu/   necklace

(447)   /kaˈleun-tu/   bird:type

(448)   /taʔˈjuk-tu/   evil spirit

(449)   /haˈlo-tu/   land

(450)   /jaˈhon-tu/   old man

        The /a/ also seems to be preferred in the syllable after the stressed vowel of
poly-syllabic verb roots. The pattern here becomes CV[+stress]C[a], and it can be
seen below.

verbs

(451)   /ˈjoha-latʰa-wa/   he/she is buying/trading

(452)   /ˈweha-latʰa-wa/   he/she is placing it

(453)   /ˈlaka-latʰa-wa/   he/she knows

(454)   /waˈnaka-latʰa-wa/   it is close

(455)   /ˈwãha-latʰa-wa/   he/she is waiting

(456)   /ˈsiha-latʰa-wa/   he/she is building

        This preference for the /a/ after the stressed syllable does not, however,
carry over to nouns. In noun roots, the preferred post-stress vowel is the /i/ vowel.

Neither does the /a/ ever occupy the second vowel slot of a branching nucleus (the second sound of a diphthong) unless it involves a simple lengthening process of the main vowel and not a diphthong at all. The only two vowels that can occur in the second V slot of a diphthong following /a/ are the /i/ and the /u/, producing the diphthongs /ai/ and /au/.

The creaky voice /a̰/ occurs in the same wide variety of environments as the /a/, although it is found most often in stressed positions. This is probably due to the fact that contrasts in voice quality such as creaky voice are best heard when the vowel in question is spoken with more force and amplitude. It also appears to be the case that the voice quality of creaky voice is heard best on this /a̰/ vowel than on any other vowels in the language, presumably because of the more open vowel space within which the creaky voice can resonate.

2.1.2.6.1.2   Allophones

The allophones of /a/ are two: [a] and [ə].[121] The [a] allophone occurs in all stressed positions (both primary or secondary stress) and in the suffix *-latʰa,* '3ʳᵈ person'[122]. The [ə], a product of vowel weakening, occurs optionally in all other unstressed positions. The [a̰] is the only allophone of /a̰/.

Cross-reference to section 2.5:

[Vowel Weakening; Post-Lexical; Optional]

(457)	/kanah- latʰa-wa/	[gəˈnahlatʰwə]	it is dark
(458)	/sanĩn-taʔ/	[səˈnĩŋˌdaʔ]	happy and ...
(459)	/katehwalan-tu/	[kədeʍəˈlaᵈndu]	rattlesnake
(460)	/jamakʔ-tu/	[jəˈmaʔtu]	flute spirit
(461)	/kamaʔmaʔ-tu/	[kəˌmaʔˈmaʔtu]	butterfly
(462)	/halohalo-tu/	[həˌlohəˈloːɾu]	tree: jungle fig
(463)	/kalakala-tu/	[gəˌlagəˈlaːɾu]	chicken
(464)	/jawan̰ʔ-tu/	[jəˈwa̰ᵈnʔdu]	possum
(465)	/la̰kʰakʰa̰-tu/	[la̰kʰəˈkʰa̰ːɾu]	bird:type

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[121] This differs quite a bit from the allophones posited for /a/ in Latundê. While Mamaindê only has two allophones for this phoneme, Latundê apparently employs nine allophones of /a/, each conditioned by stress and vowel harmony (Telles 2002:88). Mamaindê, on the other hand, shows little evidence of vowel harmony.

[122] The vowel quality of this morpheme suggests that it is also stressed. According to the stress system, which is quantity sensitive, stress on the first syllable of this morpheme could only be accounted for if there were a coda involved. It may be that the best transcription of this morpheme is *-lattʰa.* See section 2.3, 'Stress'.

(466)	/taʔwein-tu/	[ˌdaʔˈweiᵍdu]	forest/jungle
(467)	/alai-tu/	[əˈlaiɾu]	sloth
(468)	/haunsi-tu/	[ˈhauᵇmtʃiɾu]	cloud/fog
(469)	/te̯iha-ta/	[ˈde̯ihəda]	anaconda

2.1.2.6.2   The Oral /o/ and /o̯/

2.1.2.6.2.1   Phonotactics

The /o/ and /o̯/ are more limited in their distribution than most vowels, which is to be expected since they are much less frequent as well. They never occur after the /n/. These vowels also are restricted from following the labial consonants /m/, /pʰ/, and /w/, although one instance of /o/ after /w/ has been documented *([juʔkwogŋkweihɾu]* 'stream: proper name') . They also never form a diphthong by preceding another vowel or glide, nor by following another vowel (they can, however, follow the glide /j/). This differs from Latundê where /o/ has a wider distribution and is reportedly able to occur quite readily before and after the /w/ glide, resulting in the sequences /wo/ and /ow/ (Telles 2002:99).

In Mamaindê, both the /o/ and the /o̯/ typically occur in stressed positions in the root, only being found in unstressed syllables if the stressed syllable has been reduplicated, such as we find in the noun *[hoˈhottʰiɾu]* 'owl'. These vowels are also excluded from the second vowel slot of diphthongs. If they are followed by a coda, the coda will always be an alveolar or glottal segment (/ʔ/ or /h/), never a labial or velar.

2.1.2.6.2.2   Allophones

The allophones of /o/ are [o] and [ə]. The [o] is found in all stressed positions, while the [ə] occurs optionally in unstressed environments (unless it precedes a stressed /o/, in which case it will remain [o]). The /o̯/ is less frequent and has the single allophone [o̯].

Cross-reference to section 2.5:

[Vowel Weakening; Post-Lexical; Optional]

(470)	/hajo/	[haˈjoː]	yes
(471)	/to̯-kʰatoʔ/	[ˈd̯o̯ːkʰərəʔ]	die, then...
(472)	/ʔn̯iu-satoʔni/	[ˈʔn̯iusərəʔni]	return, if
(473)	/nakatos-tu/	[nəgəˈdottu]	Negarotê
(474)	/kʰo-kʰi-tu/	[ˈkʰoːkhiɾu]	harpy eagle

(475)	/onka-soʔki-tu/	[ˈoᵍŋgəˌsoʔgiɾu]	the doing one
(476)	/kʰakʰot-tʰã/	[kʰəˈkʰotˌtʰã]	the dangerous thing
(477)	/ʔǫn-latʰa-wa/	[ˈʔǫᵈnlatʰwa]	he is lazy
(478)	/hohottʰi-tu/	[hoˈhottʰiɾu]	owl

2.1.2.6.3   The Oral /u/ and /y̰/

2.1.2.6.3.1   Phonotactics

The rounded vowels /u/ and /y̰/ can occur after any consonant except the labials /w/, /p/, or /pʰ/. This shows that the language prefers to avoid sequences of rounded or labial segments in the onset and nucleus of the syllable.[123] The only labial allowed to precede the round vowels is the /m/. Both /u/ and /y̰/ can begin or end a word. These vowels, along with /i/ and /ḭ/, are the only vowels permitted in the second vowel slot of the nucleus, and when they are combined with other vowels in the first nucleus position, we get a set of three possible falling diphthongs which end with /u/ - /au/, /eu/, and /iu/. The vowels /u/ and /y̰/, however, never occur in the first position of a diphthong, thus we will not find them followed by another vowel in the same syllable or by /w/ or /j/. If the /u/ or /y̰/ occurs as a single vowel (not part of a diphthong), and if it is followed by a coda, the coda consonant will be alveolar, glottal, or velar, but never labial. If, however, these rounded vowels are located in the second vowel position of a diphthong, they can be followed only by a labial coda.

2.1.2.6.3.2   Allophones

The /u/ has two allophones, the [u] and the [ʊ]. The /u/ occurs in stressed environments and the [ʊ] occurs optionally elsewhere. The /y̰/ is rather rare and only has the single allophone [y̰].

Cross-reference to section 2.5:
[Vowel Weakening; Post-Lexical; Optional]

| (479) | /ʔuh-latʰa-wa/ | [ˈʔuhɬatʰwa] | it is deep |
| (480) | /un-hḭʔ/ | [ˈuᵈnhḭʔ] | far, then... |

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[123] Interestingly, such a restriction against a sequence of round or labial segments in the onset/nucleus domain is completely reversed at the other end of the syllable, the nucleus/coda domain, where an opposite tendency is in effect. If there is a round vowel in the second position of the nucleus, the language actually requires that roundness be shared between the nucleus and the coda (see 'Phonological processes', section 2.5). Thus the spreading of the feature [round] is restricted in one domain, but required in another.

(481)   /tu-tʰunna-wa/   [ˈɗuːtʰʊᵈnnawa]   he will get it

(482)   /jṳn-tu/   [jṳᵈndu] ~ [jṳᵈndʊ]   knife

(483)   /hamuk-latʰa-wa/   [həmuktʰatʰwa]   it is swollen

(484)   /kʰṳhni-tu/   [kʰṳhniɾu] ~ [kʰṳhniɾʊ]   uncle

2.1.2.6.4   The Oral /e/ and /ẹ/

2.1.2.6.4.1   Phonotactics

The /e/ vowel is unusual in that it seldom appears as a single vowel in Mamaindê. In the vast majority of cases, it is followed by the /i/, forming the complex vowel sequence /ei/. In the past, this has caused this author and others to view the [e] and the [ei] as two allophones of /e/ (Eberhard 1995:14). At first, the assumption was that these forms were in free variation with each other. Then a pattern seemed to be emerging where the stressed form surfaced as [ei], while the unstressed form remained [e]. However, as more and more exceptions to this rule were found, such as */ihleu-latʰa-wa/ [ihˈɬeulatʰwa]* 'he/she runs and approaches'; */wate-latʰa-wa/ [waˈdeːlatʰwa]* 'it disappears'; and */ikate-latʰa-wa/ [igaˈdeːlatʰwa]* 'he/she likes it', it became apparent that not all instances of one could be derived from the other, nor could they be freely interchanged with one another. Another difficulty with the allophone approach was that it necessitated viewing diphthongs as single complex segments, a position which I have since discarded in favor of a two vowel approach, which, besides being simpler, helps to account for a number of other thorny problems in the phonology. Lastly, a better understanding of place feature spreading revealed that we must posit an underlying /ei/ instead of /e/ in most of these cases so that the correct V-place features are available to spread the feature [+high] to the following coda segment (see section 2.5.2.5 for a detailed treatment of vowel place feature spreading). For these reasons we will view the /e/ as a phoneme of the language, sometimes standing alone in the nucleus, but most often being followed by a second vowel, the /i/, forming the two vowel sequence /ei/. This diphthong, like the other diphthongs of the language, fills two slots in the syllable, specifically two positions in a branching nucleus. (see "Complex Vowel Sounds" for a full treatment of diphthongs, glides, and the branching nucleus).

         The /e/ and /ẹ/ can be preceded by any non-nasal consonant. The few times it is not followed by /i/, it either does not have a coda, or it is followed by a /ʔ/ in the coda. The /e/ and /ẹ/ can also occur at the beginning or middle of a word, but are not found word finally.

2.1.2.6.4.2   Allophones

The /e/ and /ẹ/ phonemes are composed of the single allophones /e/ and /ẹ/ respectively.

(485)	/we̥ihna-latʰa-wa/	[ˈwe̥ihn̥alatʰwa]	she is pregnant
(486)	/walekʰan-tu/	[waleˈkʰaᵈndu]	chief
(487)	/teihni-tu/	[ˈdeihniɾu]	woman
(488)	/teiʔ-tu/	[ˈdeiʔdu]	wife
(489)	/ih-leu-latʰa-wa/	[ihˈɬeulatʰwa]	he runs and approaches
(490)	/hain-tein-aʔ-wa/	[ˈhai� de	I will sing
(491)	/ʔa̰i-jḛʔ-latʰa-wa/	[ˈʔa̰iᵗˈjḛʔlatʰwa]	he is surely going
(492)	/wate-latʰa-wa/	[waˈdeːlatʰwa]	it is gone/disappeared
(493)	/hitei-latʰa-wa/	[hiˈdeilatʰwa]	he is hurried
(494)	/wetai-tu/	[weˈdaiɾu]	husband
(495)	/weit-tu/	[ˈweiktu]	child
(496)	/ikate-latʰa-wa/	[igaˈdeːlatʰwa]	he likes it
(497)	/seit-leʔ-latʰa-wa/	[ˈseikˌteʔlatʰwa]	he spoke to us
(498)	/kateis-taʔ/	[kaˈdeiktaʔ]	divide and...
(499)	/katehwalan-tu/	[kadeʌaˈlaᵈndu]	rattlesnake
(500)	/hḛinʔ-tu/	[ˈhḛiᵉŋʔdu]	tongue
(501)	/jejeis-latʰa-wa/	[jeˈjeiktʰatʰwa]	it is ugly
(502)	/einkṵn-latʰa-wa/	[ˌeiᵉ ̃ŋˈgṵnlatʰwa]	he is getting better

2.1.2.6.5   The Oral /i/ and /ḭ/

2.1.2.6.5.1   Phonotactics

The /i/ and /ḭ/ can occur after any consonant, although my data shows only one occurrence of /i/ after /j/ (in the form *jihamĩn-tu/* 'bird:type'). When these vowels are part of a closed syllable, the coda will invariably be a velar consonant or a glottal segment (/ʔ/ or /h/). Labial and alveolar codas never follow the /i/ or /ḭ/. When part of a diphthong, these vowels can fill either one of the two slots in the nucleus. When they occur in the first nucleus position of a diphthong, the second nucleus position may only be filled with /u/, thus producing /iu/ or /ḭu/[124]. When filling the second slot, the first vowel must be either an /a/ or /e/, combining to create the falling diphthongs /ai/, /ei/, /a̰i/, /ḛi/.

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[124] The creaky voice variant /ḭu/ is very rare, represented in the data by a single form, *[ʔnḭuɾu]* 'fire/kindling'.

The /i/ is also the preferred vowel in the syllable after the stressed vowel in poly-syllabic noun roots.[125] Examples like these abound in the language.

(503)	/wa̱insi-tu/	[ˈwa̱iᵍntʃiɾu]	family/group
(504)	/haiʔki-tu/	[ˈhaiʔgiɾu]	word
(505)	/sḭunʔni-tu/	[ˈtʃḭumʔniɾu]	gnat/borrachudo
(506)	/hiuti-tu/	[ˈhiuɾiɾu]	tree: generic
(507)	/mamã̱insi-tu/	[maˈmã̱intʃiɾu]	Mamaindê
(508)	/nahajautʰi-tu/	[nahaˈjauptʰiɾu]	water: for drinking

2.1.2.6.5.2   Allophones

The allophones of /i/ and /i̱/are [i]and [i̱] respectively.

(509)	/i̱n-tu/	[ˈi̱ᵍndu]	stingray
(510)	/ih-latʰa-wa/	[ˈihɬatʰwa]	he runs
(511)	/ʔi̱ʔka-latʰa-wa/	[ˈʔi̱ʔgalatʰwa]	he plants
(512)	/we̱inni/	[ˈwe̱iᵍŋni]	now
(513)	/ta̱i/	[ˈda̱i]	I
(514)	/si̱u-tu/	[ˈsi̱uɾu]	basket
(515)	/nit-latʰa-wa/	[ˈniktʰatʰwa]	he is angry
(516)	/mi̱hsapã̱nki-tu/	[ˌmi̱hsaˈbã̱ngiɾu]	sweet potato: type
(517)	/litin-latʰa-wa/	[liˈdi̱ᵍŋlatʰwa]	he jumps
(518)	/kalik-tu/	[kaˈliktu]	banana
(519)	/jihamĩ̱n-tu/	[jihaˈmĩ̱ndu]	bird: type
(520)	/kʰinisi-tu/	[kʰiˈniːsiɾu]	wasp: generic

2.1.2.7   Nasal Vowels: Phonotactics and Allophones

The other major group of vowels in Mamaindê is the set of nasal vowels. As we have already established by means of contrasting forms, nasal vowels are phonemic in this language, able to occur with or without adjacent nasal consonants. These nasal vowels can either be simple nasals (i.e. /ã/), or nasal vowels which have the additional prosodic quality of creaky voice, which are referred to as nasal/creaky voice vowels, and transcribed with a tilde both over and under the vowel (i.e. /ã̱/).

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[125] Kingston mentions this feature of the language in his manuscript 'On the status of morpheme final consonants' , 1979, p.1.

When nasal vowels occur within a diphthong, both vowels of the diphthong are nasalized, although by convention I will place the tilde on the first member of the diphthong only, i.e. /ãu/.

Although simple nasals and nasal/creaky voice vowels often occur in similar environments, the nasal/creaky voice variants are found predominantly in stressed syllables within the root, whereas the basic nasal vowels occur equally in stressed positions within the root or in unstressed positions outside the root. Within the Mamaindê root however, any prosodic feature such as nasalization or creaky voice prefers the stressed syllable position. These features occur in unstressed positions in the root only if there has been reduplication involved. As we noted earlier, the preference of prosody such as nasalization and creaky voice for the stressed position may be due to the fact that greater amplitude allows certain prosodic features to be articulated more easily, as well as the related fact that such variations of vowel quality draw more prominence and attention to the stressed syllable, facilitating perception by the listener. Nasalization and creaky voice, however, are not conditioned by stress in Mamaindê. As the phonemic contrasts of Mamaindê vowels have already shown, these sounds are phonemic and their occurrence cannot be predicted by rule. However, when they appear in the root, they will tend to occur in the stressed position. The following sections describe each nasal vowel in detail.

2.1.2.7.1   The Nasals /ã/ and /ą̃/

2.1.2.7.1.1   Phonotactics

The /ã/ vowel can occur after any consonant, can begin or end a word, and can occur in open or closed syllables. The /ą̃/ is more restricted and does not occur after /p,t,k,kh,ph/.

2.1.2.7.1.2   Allophones

The allophones of /ã/ are [ã] and [ɔ̃]. The [ã] occurs in stressed environments while the weakened [ɔ̃] occurs in unstressed positions. There is a tendency, however, for the [ɔ̃] to also be used in free variation with the [ã] in stressed environments before a nasal coda. The /ą̃/ has a single allophone, [ą̃].

[ã]

(521)	/japãnʔ-tu/	[jaˈbãnʔdu] ~ [jaˈbɔ̃nʔdu]	cará: type of tuber
(522)	/hãʔwa/	[ˈhãʔwa]	here
(523)	/hi̱k-thã/	[ˈhi̱kˈthã]	revenge-thing (war)
(524)	/khãh-latha-wa/	[ˈkhãhlathwa]	he opens
(525)	/mãinki-tu/	[ˈmãingiɾu]	cashew

(526)	/hãi-nã?ã/	[ˈhãinə̃?ə̃]	they
(527)	/seit-nãn-wa/	[ˈseiktʰə̃nwa]	he spoke
(528)	/na?ka̰s-nnu-hã/	[ˌna?ˈgaᵈnnuhə̃]	do you understand?
(529)	/ãlot-latʰa-wa/	[ə̃ˈlottʰatʰwa]	it is sinking, getting stuck
(530)	/ãn-latʰa-wa/	[ˈãnlatʰwa] ~ [ˈə̃nlatʰwa]	he is hunting

[ą̃]

(531)	/?są̃n/	[ˈ?są̃n]	to drag
(532)	/jã̰u?ni-tu/	[ˈjã̰u?niɾu]	monkey: nocturnal
(533)	/kamą̃i?ni-tu/	[kaˈmą̃i?niɾu]	beetle: *genus 'oncideres'*
(534)	/ka?jã̰is-a?-wa/	[ka?ˈjã̰isa?wa]	I write
(535)	/hą̃n-latʰa-wa/	[ˈhą̃nlatʰwa]	to hoe/clear path
(536)	/itʰą̃n?-tu/	[iˈtʰą̃n?du]	leaf/paper
(537)	/lą̃un?-tu/	[ˈlą̃um?du]	bee: black type
(538)	/mamą̃insi-tu/	[maˈmą̃intʃiɾu]	the Mamaindê
(539)	/ną̃ih/	[ˈną̃ih]	still
(540)	/ną̃in-tu/	[ˈną̃indu]	snail
(541)	/kaną̃i?ni-tu/	[kaˈną̃i?niɾu]	feces
(542)	/są̃n-tu/	[ˈsą̃ndu]	meat
(543)	/su?ną̃in-latʰa-wa/	[ˌsu?ˈną̃inlatʰwa]	he is an expert
(544)	/tʰą̃-latʰa-wa/	[ˈtʰą̃:latʰwa]	it is smooth
(545)	/?wą̃h/	[ˈ?wą̃h]	but
(546)	/wą̃nna-kalai-tu/	[ˈwą̃nnakaˈlaiɾu]	beetle: type
(547)	/jã̰ih-tu/	[ˈjã̰ihɾu̥]	medicine/contraceptive

2.1.2.7.2   The Nasals /ĩ/ and /ḭ̃/

2.1.2.7.2.1   Phonotactics

The /ĩ/ occurs after any consonant, can begin or end a word, and appears in both open and closed syllables. The /ḭ̃/ is found mostly after nasal consonants, although forms such as *[nahḭ̃?]* 'then' show that it may follow other consonants as well.

2.1.2.7.2.2   Allophones

The /ĩ/ and /ḭ̃/ have a single allophone each: [ĩ] and [ḭ̃] respectively.

[ĩ]

(548)	/ĩ-lon-teʔ-ãun/	[ĩˈloᵈndeʔãum]	his forehead will pop (humor)
(549)	/tu-ĩ/	[ˈɗuːĩ]	to get, and…
(550)	/kĩkĩs-tu/	[kĩˈkĩktu]	cicada
(551)	/mĩʔni-tu/	[ˈmĩʔniɾu]	bird: type
(552)	/kateik-kanĩn-tu/	[kaˈdeikkaˈnĩndu]	rubber ball
(553)	/kanĩh-latʰa-wa/	[kaˈnĩhlatʰwa]	there are many
(554)	/ĩunʔna-latʰa-wa/	[ˈĩunʔnalatʰwa]	he sleeps
(555)	/nahhĩʔ/	[ˌnahˈhĩʔ]	always
(556)	/sakĩnʔki-tu/	[saˈgĩnʔgiɾu]	rice
(557)	/sĩhna-latʰa-wa/	[ˈsĩhn̩alatʰwa]	he is stretching
(558)	/nĩ-latʰa-wa/	[ˈnĩːlatʰwa]	it hurts

[ḭ̃]

(559)	/kamḭ̃s-tu/	[kaˈmḭ̃ktu]	year/dry season
(560)	/ʃḭ̃unʔni-tu/	[ˈtʃḭ̃umʔniɾu]	borrachudo
(561)	/mḭ̃h-tu/	[ˈmḭ̃hɾ̥u]	sweet potato
(562)	/kanḭ̃nʔ-tu/	[kaˈnḭ̃nʔdu]	daughter
(563)	/jamḭ̃-tu/	[jaˈmḭ̃ːru]	nose
(564)	/mḭ̃ni-tu/	[ˈmḭ̃ːniɾu]	father
(565)	/na-hḭ̃ʔ/	[naˈhḭ̃ʔ]	then
(566)	/saʔnḭ̃nʔni-tu/	[saʔˈnḭ̃nʔniɾu]	sand flea/bicho do pe
(567)	/nḭ̃n-latʰa-wa/	[ˈnḭ̃nlatʰwa]	it smells

2.1.2.7.3   The Nasals /ũ/ and /ṵ̃/

2.1.2.7.3.1   Phonotactics

The /ũ/ and /ṵ̃/ occur after any consonant except /w/, /p/ or /pʰ/. This collocational restriction, which applies to all rounded vowels, has already been discussed in the section describing the oral variants of these vowels. While the /ũ/ is almost invariably either preceded or followed by a nasal consonant, the /ṵ̃/ also occurs non-adjacent to nasals.

2.1.2.7.3.2   Allophones

The allophones of /ũ/ and /ṳ̃/ are [ũ] and [ṳ̃] respectively.

[ũ]

(568)	/nũnʔtu/	[ˈnũnʔdu]	animal/meat
(569)	/einkũn-latʰa-wa/	[ˌeiᵍŋˈgũnlatʰwa]	he is getting better
(570)	/tanũhni-tu/	[taˈnũhniɾu]	humming bird
(571)	/tawanũ-kʰatoʔ/	[tawaˈnũːkʰaɾoʔ]	to respond, then…
(572)	/johũnʔ-ta̰ʔ/	[joˈhũnʔda̰ʔ]	to bring down and…
(573)	/kʰutũn-soʔki-tu/	[kʰuˈdũnsoʔgiɾu]	lame person
(574)	/hamũ-kʰatoʔ/	[haˈmũːkʰaɾoʔ]	to swell, then…
(575)	/kʰũn-tu/	[ˈkʰũndu]	pineapple: type
(576)	/sũni-tu/	[ˈsũniɾu]	sun
(577)	/ʔũt-latʰa-wa/	[ˈʔũttʰatʰwa]	he/she gives

[ṳ̃]

(578)	/ʔṳ̃nʔka-teih-tu/	[ˌʔṳ̃nʔgaˈdeihr̥u]	spirit road
(579)	/wa̰-kṳ̃hna-latʰa-wa/	[ˈwa̰ˌgṳ̃hnalatʰwa]	he comes with (him)
(580)	/nṳ̃sa/	[ˈnṳ̃ːsa]	our
(581)	/hṳ̃-tu/	[ˈhṳ̃ːɾu]	wolf: lobo guara
(582)	/hṳ̃nʔ-latʰa-wa/	[ˈhṳ̃nʔlatʰwa]	to carry
(583)	/halo-kʰṳ̃/	[haˈloːkʰṳ̃]	land/area
(584)	/mṳ̃n/	[ˈmṳ̃n]	good/well
(585)	/toh-nṳ̃-tu/	[ˈɗohnṳ̃ɾu]	honey powder
(586)	/jajṳ̃kʔ-tu/	[jaˈjṳ̃kʔtʰu]	worm
(587)	/nãun-tʰṳ̃/	[ˈnãumtʰṳ̃]	sweet powder (sugar)

2.1.2.7.4   The Nasal vowel /ẽ/

2.1.2.7.4.1   Phonotactics

The /ẽ/ is very rare and occurs exclusively as a member of a diphthong. It has been found only in the two forms listed below. Note that there is no nasal/creaky voice counterpart to this vowel.

2.1.2.7.4.2   Allophones

The single allophone of /ẽ/ is [ẽ].

(588)	/wa̱-soʔkẽin/	[ˈwa̱ːsoʔgẽiŋ]	he came, then suddenly…
(589)	/saʔkẽunʔ-latʰa-wa/	[ˌsaʔˈgẽumʔlatʰwa]	he/she urinates

2.1.2.7.5   The Nasal vowel /õ/

2.1.2.7.5.1   Phonotactics

The /õ/ is another rare vowel which appears in very few words. Unlike the /ẽ/, however, it only occurs alone in the nucleus and never within a diphthong. Note that this vowel also does not have a nasal/creaky voice counterpart.

2.1.2.7.5.2   Allophones

The /õ/ vowel represents the single allophone [õ].

(590)	/kalik-lõnki-tu/	[kaˈlikˌlõŋgiɾu]	banana: type
(591)	/nahõntoʔ/	[naˌhõnˈdoʔ]	a lot
(592)	/sõn-ta-tu/	[ˈsõndaɾu]	tree: type
(593)	/kʰõn-ta-tu/	[ˈkʰõndaɾu]	monkey: type

2.1.2.8   Vowel Sequences

The vowels described above can be combined into a total of 17 vowel sequences or diphthongs; 9 of them being oral, and 8 of them being nasal. Each of these Mamaindê diphthongs are falling diphthongs, ending with a high vowel, /i/ or /u/.[126] Within the root, diphthongs will always be found in a primary or secondary stressed syllable. Unstressed diphthongs are rare, and only occur outside the root.

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[126] The diphthong /ei/ was not included in previous treatments of Mamaindê (Kingston, Eberhard) because it was traditionally regarded as an allophone of /e/. The case for the diphthong analysis of/ei/ is argued for in section 2.1.2.6.4 which describes the /e/ phoneme.

2.1.2.8.1 Oral Diphthongs

Of the nine oral diphthongs, four of them are of the creaky voice variety: /au̲/, /ai̲/, /ei̲/, /iu̲/. Note that the creaky voice vowel sequence /eu̲/ is absent in the language.

Oral Diphthongs

	FRONT	*CENTRAL*	*BACK*
High	iu/iu̲		
Mid	ei/ei̲, eu		
Low		ai/ai̲	au/au̲

Pure Oral vowel sequences:

(594)   /einkũn-latʰa-wa/   [eiᵍŋˈgũnlatʰwa]   she is getting better

(595)   /kateik-kanĩn-tu/   [kaˈdeikkaˈnĩndu]   rubber ball

(596)   /nahajautʰi-tu/   [nahaˈjauptʰiɾu]   water: for drinking

(597)   /hiuti-tu/   [ˈhiuɾiɾu]   tree: generic

(598)   /wetai-tu/   [weˈdaiɾu]   husband

(599)   /hain-tein-aʔ-wa/   [ˈhaiᵍŋdeinaʔwa]   I will sing

(600)   /eu-nnu-hã/   [ˈeuᵇmnuhã]   do you see?

Oral Creaky voice vowel sequences:

(601)   /hei̲nʔ-tu/   [ˈhei̲ᵍŋʔdu]   tongue

(602)   /jau̲-latʰa-wa/   [ˈjau̲latʰwa]   he/she lives

(603)   /ʔai̲-je̲ʔ-latʰa-wa/   [ˈʔai̲ˈˈje̲ʔlatʰwa]   he is surely going

(604)   /tʃiu̲-tu/   [ˈtʃiu̲ɾu]   basket

(605)   /wei̲nni/   [ˈwei̲ᵍŋni]   now

(606)   /wai̲nsi-tu/   [ˈwai̲ᵍŋtʃiɾu]   family: group

(607)   /tʰaˈlai̲-tu/   [tʰaˈlai̲ɾu]   mahogany

2.1.2.8.2 Nasal Diphthongs

Of the eight nasal vowel sequences, three of them belong to the nasal/creaky voice variety: /ãũ̲/, /ãĩ̲/ and /ĩũ̲/. There are even fewer of these than there are of the creaky voice diphthongs, since neither /ẽĩ/ nor /ẽũ̲̃/ are present in the language.

Nasal Diphthongs

	Front	CENTRAL	BACK
High	ĩũ/ḭ̃ṵ̃		
Mid	ẽĩ, ẽũ		
Low		ãĩ/ã̰ḭ̃ ãũ/ã̰ṵ̃/	

Pure Nasal diphthongs:

(608)	/wa̰-soʔkẽin/	[ˈwa̰ːsoʔgẽĩŋ]	he came, suddenly…
(609)	/saʔkẽunʔ-latʰa-wa/	[ˌsaʔˈgẽũmʔlatʰwa]	he/she urinates
(610)	/ĩunʔna-latʰa-wa/	[ˈĩũmʔnalatʰwa]	he sleeps
(611)	/mãinki-tu/	[ˈmãĩŋgiɾu]	cashew
(612)	/ãun-latʰa-wa/	[ãũmlatʰwa]	he/she leaves it

Nasal/Creaky Voice diphthongs:

(613)	/s̰̃unʔni-tu/	[tʃḭ̃ũ̃mʔniɾu]	sand flea: borrachudo
(614)	/mamã̰insitu/	[mamã̰ĩntʃiɾu]	the Mamaindê
(615)	/jã̰ih-tu/	[ˈjã̰ĩh̰ɾu]	medicine/contraceptive
(616)	/suʔnã̰in-latʰa-wa/	[ˌsuʔˈnã̰ĩnlatʰwa]	he is an expert
(617)	/kanã̰iʔni-tu/	[kaˈnã̰ĩʔniɾu]	feces
(618)	/jã̰uʔni-tu/	[ˈjã̰ṵ̃ʔniɾu]	monkey: nocturnal
(619)	/lã̰unʔ-tu/	[ˈlã̰ṵ̃mʔdu]	bee: black type
(620)	/kamã̰iʔni-tu/	[kaˈmã̰ĩʔniɾu]	beetle: *genus 'oncideres'*
(621)	/kaʔjã̰is-aʔ-wa/	[kaʔˈjã̰ĩsaʔwa]	I write
(622)	/nã̰in-tu/	[ˈnã̰ĩndu]	snail

     As might be expected, the nasal diphthongs, the creaky voice diphthongs, and the nasal/creaky voice diphthongs are nasalized and/or laryngealized throughout both vowels (i.e. /ãũ/). In the section above I have indicated nasality and creaky voice on both members of the diphthongs for the sake of clarity, although elsewhere in this work the diacritics are placed only on the first member of the diphthong. Since we have already shown that nasality, creaky voice, and nasal/creaky voice can be contrastive on all five vowels, it is a mute point whether the second vowel of a falling diphthong is underlyingly nasalized or laryngealized, or whether it gets these features from a simple spreading rule. Either way, the OCP (Obligatory Contour Principle) convention would insure that the surface form of diphthongs would only have a single occurrence of the nasal or creaky voice feature shared by the two vowels.

2.1.2.8.3   Excursus on Diphthongs: VV or VG?

All of the Mamaindê diphthongs, both the oral and nasal forms, are falling diphthongs, meaning that the point of minimal aperture is at the end of the sequence instead of the beginning. Furthermore, they each begin with a front or central vowel. This means that in the first position of a diphthong, only /a/, /e/, and /i/ are possible, while the second position is restricted to /i/ and /u/.[127] The table below shows this distribution.

Vowel positions in Mamaindê Diphthongs

	Position 2	/i/	/u/
Position 1			
/**a**/		ai	au
/**e**/		ei	eu
/**i**/			iu

        Diphthongs are typically analyzed as either a sequence of two vowels, VV, or a sequence of a vowel and glide, VG. Within feature geometry, it is also possible to posit a third possibility, that of a single vowel position with two separate nodes for V-place. This last option has been the choice of various authors, including the present author in former publications, in dealing with both Southern Nambikwara diphthongs and Mamaindê diphthongs. Kroeker (2001:82), while allowing for the possibility of two separate vowels in the nucleus of the Southern Nambikwara syllable template (presumably to account for lengthened vowels), prefers a single complex vowel analysis of diphthongs.[128] Kingston (Mamaindê Syllable, 1970:25) and Eberhard (1995:9) also made use of the single vowel position approach, where diphthongs have the length of one mora. The main reasoning behind this analysis was that it attempted to account for the auditory impression that open syllables with diphthongs in these languages are not perceivably any longer than open syllables with simple vowels. When they occur in stressed syllables within the root, both the simple vowels and the diphthongs appear to be lengthened to the same degree. This led to the idea that the diphthongs were being treated as single complex vowel segments, taking up the same amount of syllabic space as a single vowel, and being lengthened by stress in the same manner as a single vowel.

        But other factors besides length must be taken into account. First of all, the problematic fact that these diphthongs can be broken up by processes of deletion, reduplication, and resyllabification points to the conclusion that the phonology views them as separate segments, enabling rules to access the different members of

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[127] This differs from Latundê (Telles, 2002:99) where falling diphthongs can begin with the back vowel /o/ as well.

[128] Southern Nambikwara employs only two diphthongs, the /ai/ and the /au/, which can then be modified with nasalization, creaky voice, or both. (Kroeker, 2001:80)

diphthongs in an individual manner. Many instances of diphthong disintegration exist in the language. Below are just a few exemplary forms:

elision (due to contracted morphemes):

(623)   /tu-tein-aʔ-wa/   [ˈɗuːdeinaʔwa] →[ˈɗuːdeʔwa]   I will get

diphthong simplification:

(624)   /nĩu-latʰa-wa/   [nĩulatʰwa] →[nĩːlatʰwa]   he/she returns

reduplication:

(625)   /pʰaus-taku/   [pʰaˈpʰauptagu]   to flatten
(626)   /mãinsi-tu/   [maˈmãintʃiru]   the Mamaindê

        Secondly, the single vowel position approach gives phonemic status to each diphthong, increasing greatly the number of phonemes in the language, an outcome which is best to avoid if at all possible.
        More recent treatments of Nambikwara languages, such as Telles (2002:99) for Latundê and Antunes (2004:41) for Sabanê, have opted for the use of vowel-glide sequences instead of diphthongs. This has the advantage of avoiding a complex nucleus, although at the cost of adding complexity to the coda. The vowel-glide, or VG, analysis is preferable to the single vowel approach in that it makes explicit the important fact that syllables with diphthongs are typically heavy in these languages, and therefore attract stress. This view also has the added benefit of reducing the number of phonemes considerably.
        There are a few drawbacks, however, in adopting the VG approach to Mamaindê diphthongs. First, glides in the coda would have to be allowed to bear prosodic features which are typically associated with the nucleus position, features such as nasality, creaky voice, and tone, whereas glides in the onset would not be allowed to do so.
        Secondly, the VG approach would lose sight of the underlying motivation which unites two of the most productive processes within the language – the pre-oralization of nasal codas, and the spreading of vowel place features to the coda. Both of these phenomenon are linked by the fact that the source of these coda alternations is a preceding vowel. In particular, the pre-oralization of nasal consonants has been identified in a number of languages by Wetzels (2008) as 'oral vowel enhancement', an articulatory strategy by which the orality of oral vowels is enhanced before nasal codas, thus aiding comprehension in systems where oral and nasal vowels are contrastive. If the oral VV sequences in Mamaindê were analyzed as VG, the pre-oralization of a following nasal coda could not be accounted for in such an insightful manner, for the preceding segment would be a glide and not a

vowel.[129] Thus, in both the vowel place spreading process and in the pre-oralization process, the second segment of a VV/VG sequence consistently behaves more like a part of the nucleus than a part of the coda.

The last argument against the VG analysis is that it complicates coda licensing. It has been demonstrated in the previous pages that Mamaindê has a strong restriction against continuant segments surfacing in the coda. The VG approach could handle that restriction only by positing a complex coda that allows the [+continuant] feature in the first coda slot, while prohibiting that same feature in the remainder of the coda positions. While this scenario is common in languages with complex codas, it certainly complicates the grammar in a way that is not necessary with the VV approach.

For these reasons I will opt for a VV or two vowel approach to the diphthongs of Mamaindê. This will require positing a branching nucleus, and thus has the drawback of adding complexity to the nucleus again. But it has the advantage that all the segments which act like vowels are treated as vowels, and, more importantly, it is able to account for vowel feature spreading in a more insightful and unified way than the VG approach, while at the same time not adding any new phonemes to the phonology. The reader is reminded, however, that on this point the author is making a choice between two possible analysis, VV or VG, both of which are quite capable of describing the Mamaindê diphthong.

2.1.2.8.4   Simplified Diphthongs

The most common case of a simplified diphthong is the useful suffix string */-tein-aʔ-Ø-wa/* 'DES-S1-PRS-N.INT', which surfaces in fast speech as *[-deʔ-wa]*.

(627)   /ãn-tein-aʔ-wa/   [ˈãndeʔwa]   I will shoot/hunt

Notice that the first two morphemes of the suffix string have been coalesced into one syllable *[-deʔ]*. This involves a contraction which deletes the nucleus of the second syllable, the coda of the first syllable, and the last half of the diphthong. This reduced form is preferred in fast or normal speech, whereas the full form is only heard in careful speech.

There are also occasions when Mamaindê simplifies or modifies falling diphthongs which involve /u/ as the second member. The /iu/ diphthong can optionally be realized as a lengthened /iː/. At times the /eu/ diphthong will not only drop the final /u/, but it can then be realized as another diphthong, the /ei/.[130]

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[129] Pre-oralization will be discussed at length in section 2.5.2.7.
[130] This may be a case of palatalization preceding a velar consonant. Further research is necessary to confirm this.

Simplified or modified diphthongs

(628)   /nĩu-latʰa-wa/   [ˈnĩulatʰwa] →   [ˈnĩːlatʰwa]   he/she returns

(629)   /hiuti-tu/   [ˈhiuɾiɾu] →   [ˈhiːɾiɾu]   tree

(630)   /ĩunʔ-latʰa-wa/   [ˈĩumʔlatʰwa]→   [ˈĩːmʔlatʰwa]   he/she sleeps

(631)   /eu-kʰatoʔ/   [eukʰaɾoʔ]→[eːkʰaɾoʔ]→[eikʰaɾoʔ] see, then…

        Such simplified or modified versions tend to be the preferred pronunciation
among the Mamaindê in fast speech.[131] The original diphthong only becomes
apparent during a slow or emphatic utterance, as well as during certain phonological
processes where vestiges of the underlying /u/, in the form of the [labial] feature, are
still evident. One example of this would be the verb *ĩunʔ-latʰa-wa* 'he/she sleeps',
which undergoes the obvious spreading of the [labial] feature before the /iu/
diphthong is simplified to /iː/, and finally surfaces as *[ĩːmʔlatʰwa]* (see vowel place
feature spreading at the end of this chapter, specifically the spreading of the [labial]
feature).
        The Negarotê dialect, on the other hand, does not possess these simplified
variants of the /u/ diphthongs, and therefore the full pronunciation of /iu/ and /eu/
becomes an identifying trait of the Negarotê lect. A comparison of some of these
lexical variations between these two dialects is presented below.

Pronunciation of /iu/ in Mamaindê and Negarotê

UF	Mamaindê	Negarotê	
/hiuti-tu/	[ˈhiːɾiɾu]	[ˈhiuɾiɾu]	tree
/sĩunʔni-tu/	[ˈtʃĩːmʔniɾu]	[ˈtʃĩumʔniɾu]	gnat: borrachudo
/siu-tu/	[ˈtʃiːɾu]	[ˈtʃiu-tu]	basket
/ĩunʔ-latʰa-wa/	[ˈĩmʔlatʰwa]	[ˈĩunʔ-latʰa-wa]	he is sleeping
/atĩun-tu/	[aˈđĩmdu]	[aˈđĩumdu]	kindling
/nĩu-latʰa-wa/	[ˈnĩːlatʰwa]	[ˈnĩulatʰwa]	he is returning

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[131] According to Telles (2002:95, 100-101), Latundê is able to simplify both falling glides and
rising glides, as well as coalesce a glide with another vowel or with a nasal coda into a single
vowel segment. Mamaindê diphthongs, on the other hand, do not coalesce with any other
segments.

2.2 The Syllable

2.2.1 The Syllable Template

The Mamaindê syllable has the following structure:

Mamaindê syllable template: [132]
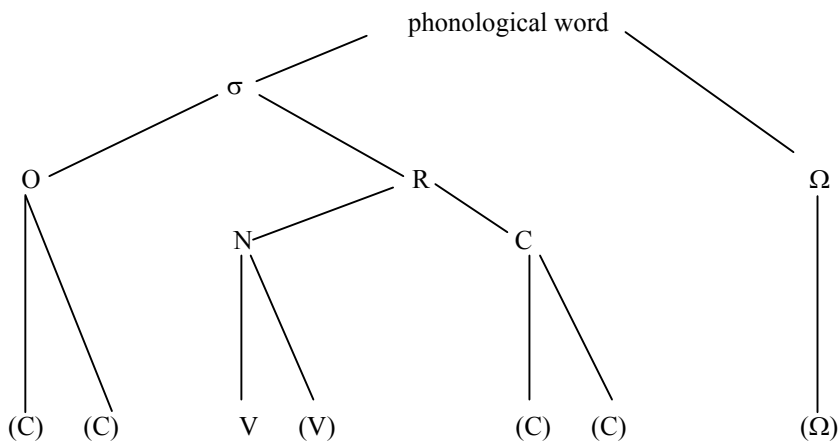
     The only obligatory element in the syllable is the nucleus V position. The Ω represents a syllable appendix, which will be discussed shortly. The above template translates into 18 possible combinations for the Mamaindê syllable (not including syllables with an appendix). Of the 18 possibilities, all 18 have been documented in the language.

     By far the most common syllables in the language are CV for the unstressed syllables, and CVC for the stressed syllables. Below are representative examples of all the possible syllable types (the syllable under consideration is in bold face).

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[132] This template is a major revision of the template found in Eberhard, 1995:5,21. It differs significantly from the 1995 version in that the onset, nucleus, and coda now have two positions each. This complexity was found to be needed to account for some of the less common syllables.

Open syllables

V

(633) [**a**.ˈlai.ru] sloth

(634) [da.**i**.ka.ˈn͂ĩŋ.du] my eye

(635) [**ã**.ˌsuʔ.ˈdoⁿ.la.tʰwa] he/she does not know

(636) [ˈɗuː.**ĩ**] get, and…

(637) [nũ̥.sa.ˈwi̯ː.**ã̰**.ni] our tooth

(638) [**ã**.**i**.ˈoᵍŋ.ga.dah] wake up!

CV

(639) [**hi**.ˈdoⁿn.**la**.tʰwa] he/she dreams

(640) [**na**.ˈwaiᵍŋ.**tʰã**] his group/family

(641) [**ka**.ˈnaː.**ni**.**ru**] brother

(642) [**kʰu**.ˈdũn.ˌsoʔ.**gi**.**ru**] lame person

(643) [**wa**.**si**.**wa**.ˈsiᵍŋ.**la**.tʰwa] it is pale

(644) [**ha**.**lo**.**ha**.ˈloː.**ru**] jungle fig tree

(645) [**da**.ˈsiː.**hã**.**ni**] my house

(646) [**wa**.**le**.ˈkʰaⁿn.**du**] chief

(647) [ˈsuh.**nḁ**.la.tʰwa] he/she is afraid

(648) [**ji**.**ha**.ˈm͂ĩː.**nã**.**ni**] bird: type

CCV

(649) [ja.la.**kwa**.ˈduⁿn.du] howler monkey/macaco barrigudo

(650) [ˈj̰au.la.**tʰwa**] he/she is/lives

VV

(651) [ˈ**eu**.la.tʰwa] he/she sees

(652) [ˈ**au**.ru] the other one

(653) [ˈ**iu**.latʰwa] it bites

CVV *(including both diphthongs and lengthened vowels)*

(654) [ˈ**nau**.la.tʰwa] it is correct

(655) [ˈ**la̰u**.ru] tree: type

(656) [ˈ**wei**.la.tʰwa] he/she places

(657) [ˈ**heu**.la.tʰwa he/she is lost

(658) [ˈ**leu**.la.tʰwa he/she draws near

(659)   [ˈsiu.ɾu]   basket
(660)   [ˈkʰiu.ɾu]   coati
(661)   [kʰa.ˈkʰai.ɾu]   parrot: type
(662)   [tʰa.ˈnai̯.ɾu]   mahogany tree
(663)   [a.ˈlai.ɾu]   sloth
(664)   [ˈliː.la.tʰwa]   it is cold
(665)   [ˈɗuː.la.tʰwa]   he/she gets
(666)   [ˈwaː.la.tʰwa]   he/she comes

CCVV

(667)   [ã.jo.jo.ˈkwei.kʰa.ɾoʔ]   to be in many parts
(668)   [du.ˈkwa̰ː.kʰa.ɾoʔ]   get and come, then…
(669)   [du.ˈkwiː.kʰa.ɾoʔ]   get and enter, then…
(670)   [ˈʔñĩu.la.tʰwa]   he/she is returning

Closed syllables

VC

(671)   [ˈãn.la.tʰwa]   he/she shoots/hunts
(672)   [ˈik.tʰa.tʰwa]   he/she grabs (it)
(673)   [ˈoh.la.tʰwa]   it stings/punctures
(674)   [ˈʔai̯ː.aʔ.wa]   I am coming
(675)   [ˈuᵈn.la.tʰwa]   it is far

VCC

(676)   [ˈãŋʔ.ga.la.tʰwa]   he/she wraps it up
(677)   [ˈũnʔ]   no! (ejective)

CVC

(678)   [ˈhãn.la.tʰwa]   it is white
(679)   [ˈlah.la.tʰwa]   it is new
(680)   [ˈlaᵈn.la.tʰwa]   it is full of water
(681)   [ˈlãn.la.tʰwa]   it is hot
(682)   [i.ˈsuᵈn.la.tʰwa]   he/she is cold
(683)   [li.ˈdiᵍŋ.la.tʰwa]   he/she jumps
(684)   [ˈsiᵍŋ.du]   meat

(685) [hi.ˈdoᵈn.la.tʰwa]   he/she dreams
(686) [ja.ˈlah.ɾu̥]   body ornamentation: buriti
(687) [ˈli̤h.ɾu̥]   porcupine
(688) [da.ˈsih.n̥a.ˈˈjeʔ.la.tʰwa] they are surely sending (him)
(689) [ˈmũn]   good
(690) [ja.ˈnãn.du]   jaguar
(691) [ˌnaʔ.ˈduᵈn.la.tʰwa]   he/she is full
(692) [ˈwiʔ]   slowly
(693) [ˈdoʔ.tʰi.ru]   armadillo: tatu bola
(694) [ˈhuʔ.gi.ru]   palmwood tree
(695) [ˈhot.tʰu]   monkey: macaco prego

CCVC
(696) [juʔ.ˈkwoᵍŋ.kweih.ɾu̥]   stream: proper name of
(697) [ˈʔmĩn.du]   skin
(698) [ˈʔsiʔ.siᵍŋ.la.tʰwa]   he/she is dragging
(699) [ˈʔwãn]   but
(700) [ˈʔnũh]   alone
(701) [ˈʔjãh]   come here! (ejective)

CVCC
(702) [ˈmãnʔ.du]   hill/cliff
(703) [sa.ˈgĩŋʔ.gi.ru]   rice
(704) [saʔ.ˈn̠ĩŋʔ.ni.ru]   flea: bicho do pe
(705) [i.ˈtʰãnʔ.du]   leaf/paper/money
(706) [ka.ˈn̠ĩŋʔ.du]   daughter
(707) [ˈli̠ᵍŋʔ.du]   manioc
(708) [ˈkʰoᵈnʔ.du]   tortoise
(709) [na.ga.ˈjaᵈnʔ.du]   indian/person
(710) [ˈkʰatʔ.tu]   stick
(711) [ˈjukʔ.tu]   foot

CCVCC
(712) [ˈkʰwãnʔ.ni.ru]   tarantula
(713) [du.ˈkwi̠ᵍŋʔ.ni.ru]   father-in-law

VVC

(714)   ['e̯iᵍŋ.du]   cashew of the savannah

(715)   ['auh.kʰa.la.tʰwa]   he/she is bathing

(716)   [auᵇm.la.tʰwa]   it is wrong

(717)   [ãum.la.tʰwa]   he/she leaves it

(718)   ['a̯iʔ.kʰi.ru]   bird: mutum

(719)   ['aik.tu]   field

(720)   ['aiᵍŋ.la.tʰwa]   he/she cuts (w/ sawing motion)

(721)   ['euʔ.ni.ru]   name

VVCC

(722)   ['e̯iᵍŋʔ.d̯u]   termite queen

(723)   ['ĩumʔ.latʰwa]   he/she sleeps

CVVC

(724)   [a.'dĩum.du]   kindling

(725)   [ka.'deuᵇm.kʰa.roʔ]   to be alive, then

(726)   ['jaiᵍŋ.tʃi.ru]   food

(727)   ['haiʔ.gi.ru]   words/speech

(728)   ['dauᵇm.du]   tail

(729)   ['ɓauh.n̥a.la.tʰwa]   he/she is patting (refers to a child's hand)

(730)   ['seik.tʰa.tʰwa]   he/she speaks

(731)   ['weik.tu]   child

CVVCC

(732)   ['nã̯inʔ.du]   shell

(733)   ['tʃĩumʔ.ni.ru]   gnat: borrachudo

(734)   [saʔ.'gẽumʔ.ˌdei.naʔ.wa]   I will urinate

(735)   ['lã̯umʔ.du]   bee: black type

(736)   [ha.'jãuŋʔ.gi.ru]   flower

(737)   [wa.'saiᵍŋʔ.du]   stuff/goods

(738)   ['waiᵍŋʔ.na.la.tʰwa]   he/she spies

CCVVC

(739) [ˌjuʔ.ˌkwoᵍŋ.ˈkweih.r̥u]   stream: proper name of

(740) [da.ja.ˌlok.ˈkweik.tʰa.tʰwa] to stick into

(741) [ˈʔjaih.la.tʰwa]   he/she is sad

(742) [ˈʔjauh.na.latʰwa]   he/she loves

CCVVCC

(743) [ˌweik.ˈkwainʔ.du]   young girl

There are six open syllable types and twelve closed syllable types. Open syllables, or those without codas, such as V, CV, CCV, are found only in unstressed positions, and can occur both in the root and outside of the root. Syllables that begin with vowels such as V and VV are mostly found at the beginning of the word, although instances of word medial and word final V initial syllables do exist.

Closed syllables, or syllables with codas, such as VC, VCC, CVC, CVCC, CCVC, CCVCC, VVC, VVCC, CVVC, CVVCC, CCVVC and CCVVCC are almost always found in primary or secondary stressed positions, which in Mamaindê means that they will occur in the root, or in morpheme classes which occur adjacent to the root. The only closed syllables found in unstressed position are VC, CVV, CVC, and CVCC types.

Syllables with a branching nucleus, even those without a coda, such as VV, CVV, and CCVV, have the same distribution as the closed syllables, being found almost exclusively in the stressed position of the root.[133]

Syllables starting with vowels are less common than those beginning with consonants, and syllables which have two consonants in the onset are less frequent that those with a single consonant. This means that V, VV, VC, VVC, VCC, and VVCC are infrequent, as are CCV, CCVV, CCVC, CCVCC, CCVVC, and CCVVCC. The most common syllables are those that begin with a single consonant in the onset, CV, CVC, CVCC, CVV, CVVC, and CVVCC. Mamaindê seems to prefer syllables which begin with consonants, to syllables that begin with vowels, and it prefers syllables that begin with one consonant to those which begin with two consonants.

Due to the Sonority Sequencing Principle which has already been discussed, there is a preference for an increase in sonority throughout the onset and a decrease in sonority throughout the coda (excluding segments inserted at the phonetic level, such as the pre-stopped nasals). Since the least sonorant of all the consonants is the glottal, the majority of the onsets with two C positions begin with a glottal, and all of the codas with two C positions end with a glottal. Overall, however, there is a noticeable preference for glottals in the coda position as opposed to the onset position, so that syllables that begin with a glottal are less frequent than

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[133] This was the original impetus for assigning the lengthened vowel to the coda position in Eberhard 1995. Since then, however, I have reanalyzed VV syllables as being composed of a branching nucleus, which is also considered heavy by the stress system. See section 2.3 on Stress.

those that end with a glottal. This is related to a restriction on /Cʔ/ sequences, which will be discussed in section 2.2.7 and section 2.5. These sequences will always be broken up by metathesis or deletion when found intervocalically. Such repair strategies are motivated by a constraint which prefers, when possible, a glottal in the coda to a glottal in the onset. Since this constraint is quite active in the language, the end result is that fewer syllables start with a glottal.

2.2.2 The Onset

The onset in Mamaindê is not obligatory. However, the majority of the syllables in the language have some type of onset. The first C position in the onset is filled only by oral stops or glottal consonants. This includes the phonemes /p,t,k,pʰ,tʰ,kʰ,ʔ,h/.

The second (C) slot of the onset is filled only by sonorants or continuants, such as the nasals /n/, /m/, the glides /j/ and /w/, the /l/, and the /s/. These segments can occur alone in the onset without first position segments being present. This in fact is the most frequent situation in which they are found.

When both positions in the onset are filled, however, the options are reduced considerably, In the case of CC onsets, the first position will only be realized by /ʔ/, /kʰ/, /tʰ/, /k/ or /h/. The second position can be filled by any of the second position segments listed above if the first segment is a /ʔ/, or it can be filled by /l/, /n/, /j/, /w/, or /s/ if the first position is an /h/. Otherwise, the second position is limited to the /w/. This gives us 13 possible complex onset sequences.

Complex Onset Sequences

First Onset position	Second Onset position					
	/l/	/n/	/m/	/j/	/w/	/s/
/kʰ/					/kʰw/	
/tʰ/					/tʰw/	
/k/					/kw/	
/ʔ/		/ʔn/	/ʔm/	/ʔj/	/ʔw/	/ʔs/
/h/	/hl/ = [ɬ]	/hn/ = [n̥]		/hj/ = [j̥]	/hw/ = [ɸ]	/hs/ = [ʃ]

Note that when /h/ is syllabified in the onset with other segments, it tends to coalesce with the following onset creating a single aspirated, voiceless sound. This will be treated more fully in section 2.2.4. Although most of the onset sequences can occur word initially as well as medially, the /tʰw/, as well as the sequences involving the /h/, never occur word initially.

2.2.3 The Nucleus

The template outlined above is similar to the templates proposed for other Nambikwara languages. It differs, however, in several crucial ways. The most significant difference is in the use of two V slots in the nucleus. This is a result of viewing diphthongs as a sequence of two vowels instead of a vowel-glide sequence, or instead of a single V position.

The first V position in the nucleus is the only mandatory position in the syllable, and it can be filled by any vowel. In surface representations, however, this position can also include another sonorant segment, the /n/, which in special cases is syllabic. Thus we must make a distinction between a lexical template and a surface template, the latter employing an X in the place of the first V, representing any vowel as well as the syllabic /n/.

Mamaindê Syllable Template – Lexical level

(C) (C) V (V) (C) (C) - (Ω)

Mamaindê Syllable Template – Surface level

(C) (C) X (V) (C) (C) - (Ω)

Below are some examples of X being filled by the /n/. Notice that each one of these cases of a syllabic nasal involve a contraction where the vowel of the syllable is lost, forcing the /n/ to serve in that position.

(744)	/ʔa̰i-teiʔnataʔ/	[ʔa̰i.deʔ.n̩.daʔ]	in order to go
(745)	/na-latʰa-wa/	[n̩.la.tʰwa]	it is (fast speech only)
(746)	/weihna-latʰa-wa/	[weih.n̩.la.tʰwa]	she is pregnant
(747)	/johna-latʰa-wa/	[joh.n̩.la.tʰwa]	it is low
(748)	/tanu-ʔna-tein-aʔ-wa/	[da.nuʔ.n̩.dei.naʔ.wa]	I will give it to you

The second V position in the nucleus is reserved for the second part of a diphthong or a lengthened vowel.

(749)	/ja̰u-latʰa-wa/	[ˈja̰u.la.tʰwa]	he/she is there
(750)	/leu-latʰa-wa/	[ˈleu.la.tʰwa]	he/she draws close
(751)	/wi-latʰa-wa/	[ˈwiː.la.tʰwa]	he/she enters
(752)	/du-latʰa-wa/	[ˈɗuː.la.tʰwa]	he/she gets
(753)	/aat-sokʔi-tu/	[ˈaat.ˌsoʔ.gi.du]	a big person
(754)	/waan-taku/	[ˈwaan.da.gu]	to return

The last two forms, */aat/* 'big' and */waan/* 'return', show the difficulty in representing the Mamaindê syllable without using a branching nucleus. Such roots have two vowel positions in their lexical form as well as a coda segment. The extra vowel length is contrastive in these forms and would be a challenge to analyze with a single V position in the nucleus unless we were willing to treat the second /a/ as a coda consonant or glide.

(755)   /at-soʔki-tu/   [ˈat.ˌsoʔ.gi.du]   the fisherman
(756)   /aat-soʔki-tu/   [ˈaat.ˌsoʔ.gi.du]   a big person

Evidence from the stress system, which is quantity sensitive, also shows that these VV sequences should be considered bi-moraic.

(757)   [tʰa.ˈnai̯-]   mahogany tree
(758)   [ja.ˈlau-]   bracelet
(759)   [kʰa.ˈkʰai-]   parrot: type
(760)   [ˈdeu.na-]   to be lost
(761)   [ˈkeu.ga-]   to wait for
(762)   [ˈai̯.kʰi-]   bird: mutum
(763)   [ˈhiu.ɾi-]   tree (generic)
(764)   [ka.ˈjau.gi-]   white man
(765)   [wa.ˈlai.kʰi-]   spirit: specific type
(766)   [sa.ˈgai.ga-]   to swing

2.2.4 The Coda

The coda position is a crucial one in the Mamaindê language. It will always add a second mora to a syllable and thus make it heavy and eligible to receive stress. Thus a majority of the stressed syllables in the language have codas. The coda is also the locus of the majority of the phonological processes in the language, since there are more restrictions that apply to segments in the coda than in any other position in the syllable. The most rigorous restriction in the Mamaindê coda is due to coda licensing which specifies that non-continuants are the only segments allowed to surface in this position.

This restriction requiring segments in the coda to be [-continuant] is very strict and is responsible for a number of phonological processes. Continuants, such as the /h/ and the /s/, are thus restricted from surfacing in the coda. Word medially, this restriction results in several strategies to resyllabify these segments as part of

the following onset if possible. Note the manner in which these codas coalesce with the following onsets (bold face under focus).

Cross-Reference to Section 2.5:
[Coda Licensing; Lexical; Obligatory]

(767)	/si**h-t**u/	[siː.r̥u]	house
(768)	/mi**h-t**aku/	[miː.r̥a.gu]	raining
(769)	/wei**s-h**į̃ʔ/	[wei.ʃįʔ]	to make, then…
(770)	/nakʔa̧**s-h**į̃ʔ/	[naʔ.ga̧ː.ʃĩ̧ʔ]	to listen, then…

In autosegmental theory this would be analyzed as the disassociation of the coda segment, and the subsequent reassociation of that segment to the following onset, creating a complex onset with a double association to the segmental string.

Cross-Reference to Section 2.5:
[Onset Devoicing; Post-Lexical; Obligatory]

Disassociation of [+continuant] segments in the coda
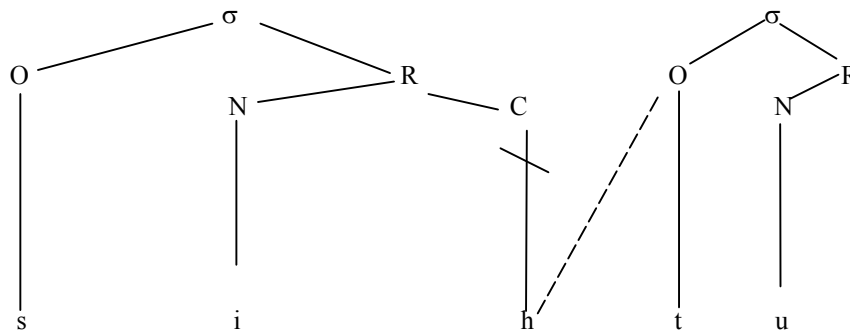
A last strategy used by the phonology to avoid the presence of the /h/ in the coda is the epenthesis of an unspecified V. When a root final /h/ is followed by an affix beginning with a consonant, the /h/ may coalesce with the following C as demonstrated above, or an epenthetic V may be inserted after the /h/, allowing the /h/ to be resyllabified as an onset of a new syllable. After epenthesis, the specific features of the epenthetic vowel are then borrowed from the previous vowel.

(771)

/mih-tu/ →   [ˈmiːhVru]   →   [ˈmiːhiru]   rain
rain-FNS

Phonology 134

(772)

/kanah-ta-tu/   →   [gaˈnaːhVdaɾu]   →   [gaˈnaːhadaɾu]   tomorrow
night-large-FNS

Cross-Reference to Section 2.5:
[Underspecified V Epenthesis; Lexical; Optional]

        The [-continuant] restriction also causes some coda segments to be deleted.
This can occur to /s/ when it appears in the coda. In the following form we see the
/s/ being deleted from the coda so as not to violate the [-cont] restriction.

(773)   /nakʔas̱-tahĩn-wa/   [naʔ.gaː.dahĩŋ.wa]   Listen!

        The important thing to appreciate in all these examples is the amount of
influence that coda licensing has on the surface representations of Mamaindê forms.
        Note that the Mamaindê coda may branch and contain two segments,
forming a consonant cluster at the end of the syllable. The first (C) position in the
coda can be filled by the alveolar nasal or any other [-continuant] stop. It can stand
alone or it may occur jointly with the second position glottal.

(774)   /ʔwãn/   [ˈʔwã**n**]   but
(775)   /mãnʔ-tu/   [ˈmã**n**ʔ.ɗu]   hill/cliff
(776)   /weis-tu/   [ˈwei**k**.tu]   child
(777)   /at-tein-aʔ-wa/   [ˈa**t**.dei.naʔ.wa]   I will fish
(778)   /hukʔ-tu/   [ˈhu**k**ʔ.ɗu]   bow/gun

        The second (C) position in the coda is the most restricted position in the
syllable (outside of the appendix) and is reserved for the glottal. No other consonant
is allowed to occur in that slot. This glottal can stand alone or come after a first
position stop.

(779)   /wiʔ/   [ˈwiʔ]   slowly
(780)   /kanĩnʔ-tu/   [ka.ˈnĩŋʔ.ɗu]   daughter
(781)   /haʔ/   [ˈhaʔ]   just
(782)   /juhakʔ/   [ju.ˈhakʔ]   all/everything

2.2.5 The Appendix

The appendix position is described by Goldsmith (1990:127) as a special word-final segment which cannot be syllabified in the coda. This position is technically not a syllable position at all, as it is linked directly to the phonological word, and not to the syllable node. The important distinction then, between a coda and an appendix, is that the appendix may only appear word-finally (and thus is linked to the word), whereas the coda appears syllable finally (and is thus linked to the syllable). Appendices are, however, similar to codas in the sense that they are filled in by a more restricted set of segments than are found in the onset or nucleus.

In Mamaindê the appendix is restricted to [+continuant, +spread glottis] segments alone. This means that only the /h/ may occur in this slot.[134] Thus we have the /h/ appearing at the end of words without any restrictions or modifications whatsoever.

(783)	/ʔnũh/	[ʔnũh]	alone
(784)	/sih/	[sih]	house
(785)	/natʰoh/	[natʰoh]	but
(786)	/naih/	[naih]	still

2.2.6 The Licensers

The restrictions mentioned so far in the syllable can be dealt with in an insightful way by evoking the notion of licensing as described by Goldsmith. He claims that

> *...all segments must be part of a higher-level organization, such as the syllable, each segment is licensed... by being part of a larger unit, referring to the general condition as prosodic licensing* (*Goldsmith 1990:108*).

Licensing is thus based on the idea that higher levels of structure govern whatever structures occur beneath them, including such things as features and prosody. According to Goldsmith (1990:123), the syllable only has three possible licensers: the syllable node, the coda node, and the appendix node. The syllable node, which governs the features found in the onset and the nucleus, is considered a primary licenser because it can typically license all of the features in a language, while the coda and appendix nodes are known as secondary licensers, which typically license only a subset of the overall set of features available.

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[134] These various strategies will be discussed in section 2.5. Also see Eberhard, 1995:15-18 for a similar discussion of these processes.

The crucial issue in this discussion is that the different Mamaindê syllable positions license different features. The syllable node, which governs the onset and nucleus, licenses all the features of the language, including tone and mora.[135] The coda node licenses only [-continuant] segments, as well as one tone and one mora. Other segments (namely, those which are continuants) are not allowed to surface in the coda, being either deleted, modified, or resyllabified (see section 2.5). For a fuller treatment of Mamaindê coda licensing, the reader is referred to Eberhard, 1995:12-20. The appendix licenses only [+continuant, +spread glottis] segments, namely, the /h/. Thus the notion of licensing is able to account for the restrictions present in the Mamaindê syllable by linking these restrictions to higher hierarchical structures. A final syllable template is given here with the licensers added.

Completed Mamaindê syllable template with licensers:

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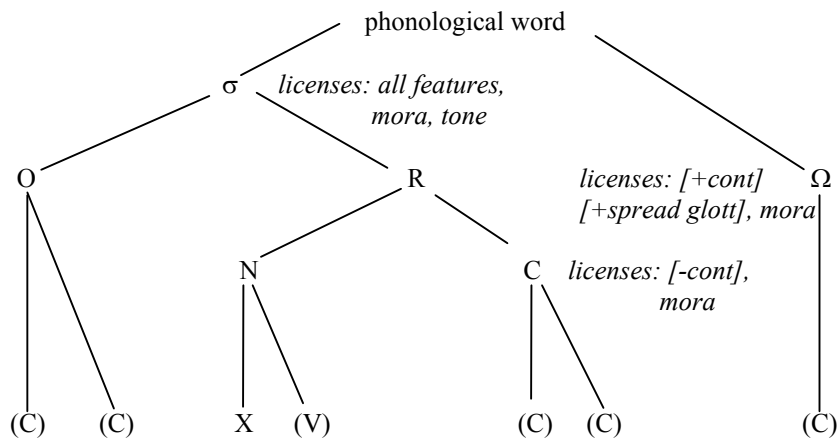
[135] Typically, the syllable node would license a single instance of a given feature. I have argued previously, however, that the Mamaindê nucleus requires two vowel positions, and thus two mora.

2.2.7 Syllabification

I will assume that syllabification in Mamaindê is continually at work, turning strings of input segments into well-formed syllables in the output. It achieves this by constructing the fewest possible syllables, from left to right, which effectively means that it builds the largest syllables it can according to the restrictions of the above template. The Maximal Onset Principle is also active in the language, continually resyllabifying consonants between vowels as onsets instead of codas. The motivation for this principle comes from the desire to construct as few licensers as possible (Goldsmith 1990).

Examples of Maximal Onset Principle:

(787)	/loh-ãni/	[ˈloː.hã.ni]	vulture
(788)	/weit-ãni/	[ˈwei.ɾã.ni]	child
(789)	/hos-ãni/	[ˈhoː.sã.ni]	monkey: macaco prego
(790)	/suh-aʔ-wa/	[ˈsuː.haʔ.wa]	I am afraid

In Mamaindê, however, this principle is counteracted by a tendency to preserve moras. Note that in three of the examples above, the syllables that lose a coda preserve the mora by compensatory lengthening of the vowel.[136] This shows the strong quantity sensitive nature of the language, where stressed syllables must have two moras. The Maximization of Onset, then, is operative in Mamaindê, but its does not actually succeed in diminishing the number of licensers.

In autosegmental theory, these two processes could be viewed as the re-association of a coda segment to an onset position, and the subsequent association of the nucleus to the mora position left orphaned by the coda. This can be demonstrated in the syllabification of the word /hos-ãni/ 'tufted capuchin/macaco prego'.

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[136] The lengthening rule mentioned here will be described fully in section 2.5.9.1.

Cross-Reference to Section 2.5:
[Compensatory Vowel Lengthening; Post-Lexical; Obligatory]

Initial affixation (of Final Nominal Suffix /-ā̃ni/)
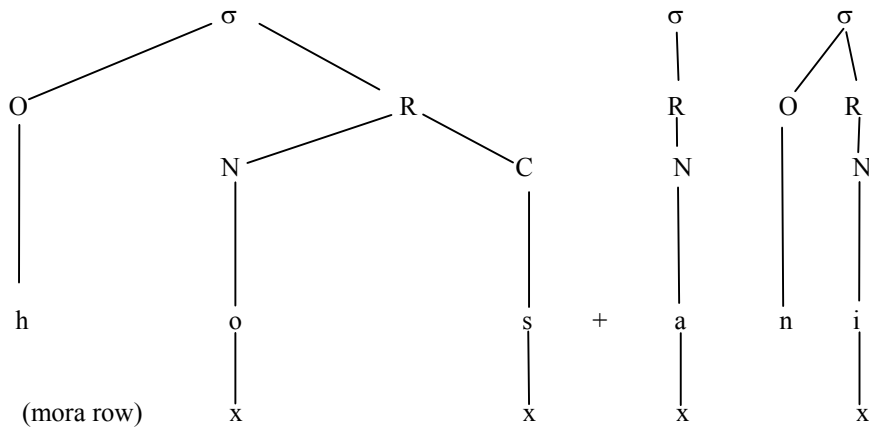
Example of Maximization of Onset and Compensatory Lengthening
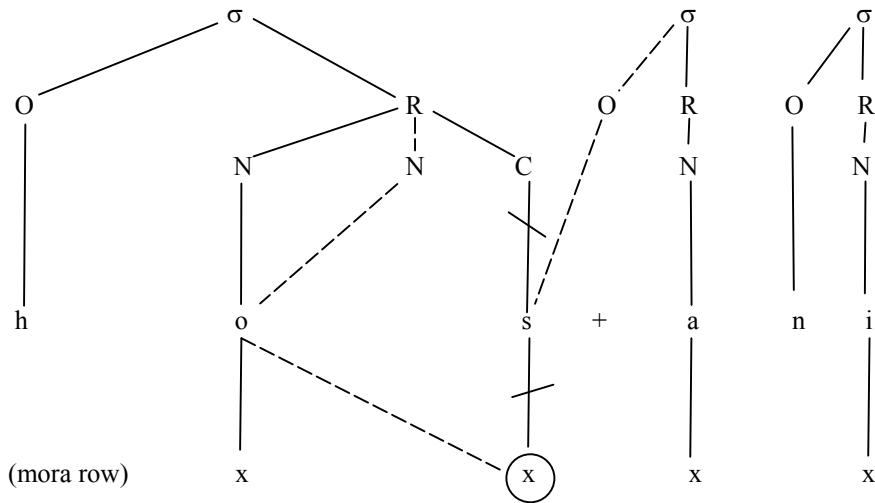
The Maximization of Onset process is also subject to the restrictions of the syllable template[137], particularly when more than one consonant is found between vowels. When two adjacent consonants occur intervocalically, the language will try to syllabify them both, if possible, as part of the onset (e.g. *[du.ˈkwaː.la.tʰwa]* 'he/she brings'). However, when the first of these is a glottal, the language will always syllabify the glottal as a coda and the subsequent consonant as an onset (e.g. *[naʔ.dudn.da.gu]* 'to be full of food'; *[haʔ.dĩŋ]* 'quickly'). This is done even if both consonants satisfy the requirements for onset membership (e.g. *[daʔ.ˈjuk.tu]* 'evil spirit:proper name'; *[naʔ.mĩn.du]* 'his/her skin'; *[duʔ.siʔ.siŋ.da.gu]* 'to drag')*. Such behavior shows that the language has a marked preference for glottals in the coda whenever possible.

The most interesting behavior in relation to syllabification is demonstrated by the forms which suffer both metathesis and onset maximization. These are forms which underlyingly contain a consonant cluster in the coda, namely an oral stop followed by a glottal. When such syllables immediately precede a syllable that begins with a vowel, the glottal and the oral stop will metathesize, and then the oral stop becomes syllabified as the onset of the following syllable, while the glottal remains in the coda of the original syllable. A formal presentation of the metathesis rule, as well as possible motivations for such a radical change in original underlying structure, will be discussed in section 2.5. At this point we simply want to note the effect that both of these processes have on syllabification. The following forms demonstrate the outcome – the coda consonants trade places, and the rightmost coda consonant then becomes an onset of the following syllable.

Cross-Reference to Section 2.5:
[Metathesis; Post-Lexical; Obligatory]

(791)	/juha**kʔ**-ãni/	[ju.ˈha**ʔ.g**ã.ni]	all
(792)	/hu**kʔ**-ãni/	[ˈhu**ʔ.g**ã.ni]	bow/gun
(793)	/kʰa**tʔ**-ãni/	[ˈkʰa**ʔ.d**ãni]	stick
(794)	/kʰo**nʔ**-ãni/	[ˈkʰo**ʔ.n**ã.ni]	tortoise

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[137] These restrictions are based partly on the sonority sequencing principle.

2.3 Mamaindê Stress

2.3.1 Definition of Stress

Much of this section will be based on prior research conducted on this topic, which was published as "Mamaindê Stress: the need for strata" (Eberhard 1995).[138] The following pages will first give an overview of stress in this language, and then those aspects of the stress system that were not covered or were not well understood at the writing of the 1995 work will be discussed in detail, particularly the apparent exceptions to the stress rules.

The Mamaindê stress system is crucial for any in depth understanding of the rest of the phonology. This is due to the fact that stress in Mamaindê is directly linked with several phonological processes, with other prosody, and with syllable structure. The syllable structure informs the stress system, and the stress system then helps to define the environment in which prosodic features and phonological processes may apply.

Stress is typically rather illusive to define in acoustic or phonetic terms. It is more a perception on the part of the native speaker/hearer, who sees certain syllables as being more prominent than others in the speech string. Theories such as metrical theory have proposed objective and helpful means of defining these perceptions. It appears that most languages prefer for speech to consist of a string of syllables interrupted at different intervals by more prominent syllables. The placement of these prominent syllables allows the hearer to identify different elements and boundaries within the speech string, such as phonological feet, roots, affixes, words, and sentences. In Mamaindê, where roots always receive primary stress and affixes do not, stress helps to distinguish roots from affixes.

Cross-linguistically, stress is normally assigned on the basis of one of the three following conditions: 1) morphology, 2) syllable position within the word, or 3) syllable structure (Goldsmith 1990:114). Some languages use only one of these strategies while others use a combination of methods. Mamaindê employs all three of the above strategies in assigning stress, and it does so in a stratal or morphological approach.[139]

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[138] Although my basic conclusions regarding Mamaindê stress have not changed, a few crucial differences exist between the current treatment and my 1995 thesis. These differences will be highlighted at the appropriate places in the text. A helpful review of my 1995 work was published by Kenstowicz (1996).

[139] This eclectic method of applying stress is covered rather extensively in my previous work "Mamaindê Stress: the need for Strata' (Eberhard 1995).

2.3.2 Phonetic Correlates of Stress

In Mamaindê, the phonetic correlates of stress are length, vowel quality, and amplitude. Stressed syllables are typically longer, their vowels are typically more stable (less vulnerable to modification by such processes as weakening), and they are typically spoken with more amplitude than unstressed syllables. Pitch, on the other hand, although another common correlate of stress in many languages, is not a phonetic manifestation of stress in Mamaindê. High tone, as well as low tone, can occur on stressed or unstressed syllables alike.[140] This is due to the fact that Mamaindê is a tonal language, where pitch is contrastive and therefore lexical. Mamaindê thus patterns after Southern Nambikwara where contrastive tone has been documented.[141]

Phonetic correlates of stress, and the resulting prominence, however, are not always perceptible due to the natural tendency of speakers to use a more rapid style of speech in everyday conversation. Rapid speech, aside from contracting words and deleting unnecessary syllables in the sake of economy, will often make the prominence between syllables less distinct, or do away with any distinction altogether. In careful speech, however, the stress system becomes apparent. Thus, the data in this section are based mostly upon careful speech.

2.3.3 An Overview of Metrical Theory

2.3.3.1 Arboreal Theory

Metrical Theory was first introduced by Liberman and Prince (Liberman and Prince 1977). This theory was developed for the purpose of providing a systematic, rule based approach to stress which could account for a large variety of stress systems using a limited number of parameters. The theory proposed an arboreal or hierarchical representation of stress which built stress "trees" directly on top of syllable structure. The foot level (F) was introduced as an intermediate level between the syllable (σ) and the word (W). Feet were thus able to account for the consistent grouping of syllables into domains (mostly, but not necessarily) smaller than the word but larger than the syllable, each domain having as its head a single stressed syllable, whether secondary or primary.

The trees initially indicated which syllable was strong and which was weak by means of the labels "s" for strong and "w" for weak. Later the manner of diagramming itself was used to indicate this, where straight lines led to strong syllables, and slanted lines led to weak syllables.

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[140] See section 2.4. for examples which show that pitch is not predictable from stress.
141 Lowe (1999:271) and Kroeker (2001:81) both refer to the contrastive nature of tone in Southern Nambikwara. In the other Northern Nambikwara languages, however, tone is not contrastive and instead is used as a phonetic correlate of stress. See Telles (2002:125-127) for Latundê and Lakondê, which she describes as having a pitch-accent system, and Antunes (2004:71-72) for Sabanê.

Below is an example of an arboreal representation of stress on the English word 'conversation'.

An arboreal representation of stress


```
                            W
              F                     F
              |                     |
         σ         σ          σ          σ
        con       ver        sa         tion
```
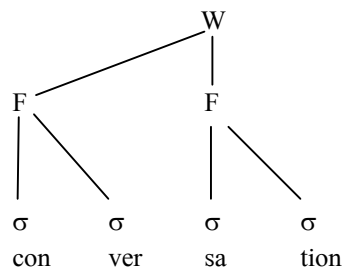
I will not be using the arboreal theory in my analysis of Mamaindê stress. This is due to the fact that it often makes the wrong predictions in languages of this type. These predictions have to do with the boundaries of metrical feet, which are crucial building blocks for the construction of metrical trees. But as we will soon see, foot boundaries are impossible to determine in many Mamaindê words. To understand more of this discussion, the reader is encouraged to consult a detailed comparison of the Tree and Grid approaches in Eberhard, 1995, Chapter 10, p123-133. Suffice it to say here that since grid theory does not concern itself with the boundaries of feet, it allows for a more straightforward analysis of Mamaindê stress, and will therefore be the approach employed in the remainder of this work.

2.3.3.2   Grid Theory

The grid theory differs significantly from arboreal theory. The main difference is that, while the arboreal theory builds stress into the hierarchical prosodic structure of the word, grid theory views stress as an independent prosody, built upon mora structure. Stress can thus be viewed as an autosegment in its own right.

The mora upon which the grid is built is essentially a unit of measurement - used to measure the weight and timing of segments within an utterance (Kenstowics,1994:45). In Metrical theory, this unit of measurement has come to be regarded as a separate level of phonological representation in its own right (Goldsmith,1990:190). This level has been called the mora level, or mora row, and is the initial level upon which the metrical grid is based. Nucleus and coda segments are each considered to be one mora in length, while onset segments do not carry any moraic weight at all. The concept of the mora is particularly useful in the analysis of certain stress systems (including Mamaindê) which 'count moras', or assign stress to syllables based upon the weight of the segments within them.

The representation of stress in grid theory is accomplished by means of several rows of grid marks, or x's. The first and lowest row is the mora row, the second is the foot row, and the third is the word row. An 'x' is placed on the first

row above every moraic segment, i. e., syllable nuclei and coda consonants. In the second row, an 'x' is placed over every syllable that is the head of a foot, and in the third row, over the foot that is considered to be the head of the word. The final result is a representation which visually captures the relative stress or prominence of each syllable in the string. Grid theory would represent stress on the English word 'conversation' in the following fashion.

A grid representation of stress

word			x		primary stress level
foot	x		x		secondary stress level
mora	xx	xx	x	xx	
	con	ver	sa	tion	

2.3.3.2.1   Parameters

One of the major strengths of metrical theory is that it can account for a wide variety of stress systems by appealing to a very small number of criteria. These criteria are known as 'parameters'. The parameters of grid theory are the following:

The parameters of Grid Theory

  a.   Perfect Grid (PG)
  b.   Quantity Sensitivity (QS)
  c.   End Rule (ER)
  d.   Extrametricality

        Perfect Grid simply states whether or not the language has an alternating stress pattern. Quantity Sensitivity is the tendency found in many languages to stress syllables which are considered heavy, or which have more than one mora. End rule is described by Goldsmith (1990:193) as a mechanism 'which places a grid mark on the extreme left or extreme right of whatever domain it is specified for'. Thus End Rule must always be specified for the level in which it is operative (foot or word), and for the edge of the string (initial or final) which is to be stressed. Extrametricality is simply a way of saying that a peripheral syllable (initial or final) at a specified level (foot or word) is invisible to the stress rules of the language.[142]

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[142] For fuller treatments of Metrical theory and grid theory, the reader is encouraged to consult works such as Hayes (1981), Halle and Vergnaud (1987), and Goldsmith (1990).

2.3.4 Mamaindê Stress: A Prose Description

Before discussing formal rules, I will offer a brief prose description of the
Mamaindê stress system, to enable the reader to have a basic notion of how stress
functions in this language.

      Mamaindê stress is first of all conditioned by morphology. When the
Mamaindê word is looked at as an unanalyzable sequence, stress is impossible to
predict. Notice the variety of stress patterns in the few words below. The first four
examples show that primary stress can come at the beginning, the middle, or the end
of words, and that there is no pattern of alternating stress. In each of these cases
syllable position seems less important than syllable weight. Then, just as we begin to
think that this may be a quantity sensitive language, where heavy syllables always
attract stress, we notice in the last two words that several heavy syllables are not
stressed. Finally, the last three examples demonstrate that primary stress can come
either before secondary stress, after secondary stress, or between two secondary
stressed syllables.

Stress patterns of whole words

(795)   ['haʔ.wə]   take it!

(796)   [kə.'lik.tu]   banana

(797)   [hə.'jaʔ]   enough

(798)   [də.'nu.ɾə.gu]   to give

(799)   ['ʔa̯i.ˌdei.naʔ.wa]   I intend to go

(800)   [ˌkaʔ.'jã̰i.saʔ.wa]   I write

(801)   [ˌsuʔ.'doᵈn.də.ˌleik.tʰã̰ŋ.wa]   I didn't know

      The reason Mamaindê stress is so hard to predict over the word as a whole
is that it actually operates at the morphological level, and not at the word level.
Primary stress occurs on the root morpheme alone, while secondary stress can occur
both in the root and in the affix classes closest to the root. The affixes that occur in
strata/morpheme classes furthest from the root never get stressed, even if their
syllable structure would make them candidates for stress.

      Once the domain of stress is identified, the stress system is rather
straightforward. Lets look once more at the above forms, this time restricting
ourselves to the root morphemes alone.

Stress patterns of roots

(802)   ['haʔ.wə]   take it!

(803)   [kə'lik]   banana

(804)   [hə'jaʔ]   enough

(805)   [dəˈnu]   give

(806)   [ˈʔ a̰i]   go

(807)   [ˌkaʔ.ˈj a̰is]   I write

(808)   [ˌsuʔˈdoᵈn]   I didn't know

This time the pattern is clear. Mamaindê presents a quantity sensitive stress system, in which stress is assigned to every heavy syllable in the root. Primary stress is on the rightmost of the heavy syllables. In cases where there are no heavy syllables within the root, and quantity cannot play its stress-attracting role, primary stress is still right-headed, being located on the right-most light syllable.

Outside the root, the stress system is not as developed. Syllables become less prominent the further one gets from the stem and consequently the level of stress tends to diminish. Primary stress is not active outside the stem and stem auxiliary suffixes. Outside of this domain only secondary stress is possible, and then only on heavy syllables located in morpheme classes closest to the root, such as the auxiliary affixes and noun classifiers. The final morpheme classes, those that mark person, tense, and mood, never receive any stress at all, even when they are heavy. Thus, even though the root is always right-headed (at the word-level), Mamaindê words often appear to be left-headed since the highest level of stress appears on the root, which, due to a large suffix system and a small prefix system, will almost invariably occur on the left edge of the word.

2.3.5 Mamaindê Stress: A Formal Description

Now we will consider the specific grid rules or parameters that can account for such a stress system. First I must mention a word about vowel length in the data to be discussed below. When data is given for the purpose of predicting stress, I will use a syllabified version of the underlying representation without indicating any vowel length. This is because stress in Mamaindê is conditioned by morphology and therefore is a lexical process, whereas vowel lengthening is fully predictable once stress has been assigned, and therefore is accounted for in the post-lexical component. While vowel length can only be predicted by referring to stress, stress can be predicted without having to consider the added length of certain vowels. Thus, the inclusion of vowel length in the data here would obscure the fact that vowel length is an irrelevant phenomenon for the lexical phonology of Mamaindê (more on this in section 2.5.9, 'Lengthening').

Cross-Reference to Section 2.5:
[Stress Rules; Lexical; Obligatory]

2.3.5.1   Quantity Sensitivity

The most fundamental characteristic of the Mamaindê stress system is its quantity sensitive (QS) nature, meaning that it assigns stress largely based on the structure of the syllable rhyme, specifically, whether the rhyme is heavy or light. Heavy rhymes are generally defined as branching rhymes, while light rhymes are non-branching (Goldsmith, 1990:177-178). In a quantity sensitive system, heavy syllables are given prominence over light syllables, when possible.

While my previous work on stress utilized this classic definition of heavy and light syllables, the need to view diphthongs as two separate vowels in the nucleus (see section 2.1.2.8.3) requires a slight modification of this definition. Since diphthongs are always heavy in Mamaindê,[143] we must view them as consisting of two moras, having the same weight as syllables with a coda segment. This means that VV syllables, or syllables with branching nuclei, are also considered heavy in this language.[144] Our definition of a heavy syllable must then include not only a branching rhyme node, but also a branching nucleus node.[145] The crucial factor for a quantity sensitive stress system, however, is not necessarily which node within the rhyme is branching, but the result of the branching, which is the addition of an extra mora to the syllable. It is this extra mora, whether in the coda or in the nucleus, which makes the syllable heavy and attracts the stress. While I will not be arguing for a new definition of quantity sensitivity, it appears that at least for this language, the standard view needs to be expanded to include not only a branching rhyme node, but also the possibility of a branching nucleus node as well. [146]

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[143] Except for a few rare cases where a diphthong occurs in the suffix string and not in the root. In these exceptions the diphthong does not receive stress. However, the lack of stress is not due to an insufficient number of moras, but instead to the fact that the suffix is in a morphological position where stress is not operative. An example of this can be seen in the word [ˈseik.ˌjuh.ˈˈjeʔ.sa.rau.le.hĩŋ.wa] 'it is said that he/she actually did speak in intermediate past'. Neither the suffix with the diphthong /-satau/ 'REP', nor the suffix with the nasal coda /-hĩn/ 'N.Vis' receive stress because they are both in strata 4 where none of the stress rules apply. For a discussion of strata, see section 2.3.5.4.

[144] This data can also be used to support the view that considers VV forms as VG forms, since VG can be subsumed under VC, and with this one VC template we could simplify the definition of a "heavy" syllable. However, a VG approach has difficulty in providing a unified response to another part of the phonology, the spreading of features from the vowel to the coda. The VG approach also cannot account for contrastive vowel length in forms such as /at/ 'to fish' and /aat/ 'big'. For these reasons, I will maintain the current analysis presented in this paper, that diphthongs consist of bi-moraic VV sequences. Once again, there is evidence on both sides of this issue, and either way, stress can be predicted correctly.

[145] While quantity sensitive stress systems generally treat diphthongs as bimoraic, they are typically seen as involving a branching rhyme. Metrical systems which view diphthongs as VV sequences within a branching nucleus are much less common, but still not unknown in the worlds languages. Anderson (1984) argues for a branching nucleus analysis for Yupik, Icelandic, Norwegian, and Swedish. Roca and Johnson (1999:252) analyze English diphthongs using a branching nucleus. Finally, Goldsmith (1990:158) admits the possibility of a branching nucleus.

[146] It is general practice to not only consider diphthongs and long vowels as heavy, but to also view them as filling both the nucleus and the coda positions, thus acquiring their weight by

The root morphemes below are intended to demonstrate the consistency with which the language stresses heavy syllables.

Examples of quantity sensitivity in root morphemes: [147]

VV forms - Heavy syllables with a branching nucleus

(809)	[kʰa.ˈkʰai-]	parrot: type
(810)	[ˈdeu.na-]	to be lost
(811)	[ja.ˈlau-]	bracelet
(812)	[tʰa.ˈnai̯-]	mahogony tree
(813)	[ˈkeu.ga-]	to wait for
(814)	[ˈai̯.kʰi-]	bird: mutum
(815)	[ˈhiu.ɾi-]	tree (generic)
(816)	[ka.ˈjau.gi-]	white man
(817)	[wa.ˈlai.kʰi-]	spirit: specific type
(818)	[sa.ˈgai.ga-]	to swing

VC and VCC forms - Heavy syllables with a branching rhyme

(819)	[ˈkʰatʔ-]	stick
(820)	[ˈlik-]	to leave
(821)	[ˈhot-]	spider monkey
(822)	[ˈat-]	to fish
(823)	[ˈãn-]	to shoot/hunt/play ball
(824)	[ˈduᵈn-]	flute
(825)	[ja.ˈsiᵍŋ-]	to be pitied
(826)	[ja.ˈlik-]	necklace of tucum seeds
(827)	[na.ˈgah]	again
(828)	[ka.ˈjat-]	corn
(829)	[wa.ˈlot-]	gourd

---

way of a branching rhyme. However, other phonological processes in Mamaindê (see Vowel Feature Spreading) require a view that restricts these complex VV sequences to the nucleus position.
[147] The hyphen indicates the roots that generally take suffixes. The ones without the hyphen are free morphemes that never take suffixes.

(830)   [ha.ˈjaʔ]   enough
(831)   [ja.ˈhoᵈn-]   old man
(832)   [sa.ˈwik-]   grandchild
(833)   [ju.ˈhak]   all
(834)   [kʰa.ˈnĩ̃ŋ-]   ball
(835)   [ja.la.kwa.ˈɗuᵈn-]   howler monkey
(836)   [a.na.ˈwat-]   nose flute
(837)   [na.ga.ˈdot-]   Negarotê
(838)   [wa.le.ˈkʰaᵈn-]   chief
(839)   [ˈoᵍŋ.ga-]   to do
(840)   [ˈhaʔ.wa]   here, take this!
(841)   [ˈsuh.n̥a-]   to be afraid
(842)   [ˈhah.kʰa-]   to be identical
(843)   [ˈwaʔ.na-]   to feel
(844)   [ˈkʰoʔ.na-]   to suppose wrongly
(845)   [ˈhoʔ.gi-]   match
(846)   [ka.ˈloh.n̥i-]   bat
(847)   [wa.ˈda̰ᵈnʔ.ni-]   kettle, clay pot

VVC, VVCC - Heavy syllables with branching rhyme and nucleus

(848)   [ˈwauᵇm-]   to be red
(849)   [da.ˈnãum-]   to throw/to send
(850)   [ju.ˈheiᵍŋ-]   tongue
(851)   [ka.ˈdeik-]   to separate
(852)   [ˈtʃĩumʔ.ni-]   sand flea: borrachudo
(853)   [ˈmãiŋ.gi-]   cashew fruit/tree
(854)   [ˈdeup.tʰi-]   parakeet: type
(855)   [wa.ˈsaiᵍŋʔ-]   stuff
(856)   [ˈhaiᵍŋ.ˌtʃeiᵍŋ-]   musical instrument
(857)   [a.ˈɗium-]   kindling
(858)   [ka.ˈdeuᵇm-]   it is alive
(859)   [wa.ˈdeiʔ.ni-]   anteater
(860)   [tʰa.ˈleuᵇm.ni-]   woodpecker: redheaded
(861)   [ha.ˈjãuŋʔ.gi-]   flower

Within Grid theory, quantity sensitivity is formalized by allowing a binary value for the 'quantity sensitive' parameter, which can be set to yes or no, depending on the language. In Mamaindê this parameter is set to 'yes':

QUANTITY SENSITIVE: YES

This rule is active on two levels. On the mora row it will assign a grid mark to every mora, including nucleus and coda segments. At the foot level, it places a second grid mark over the vowel of every heavy syllable (or every syllable which has two grid marks on the mora row), thus giving prominence to syllables with more than one mora.

Below I show the manner in which quantity sensitivity is applied in grid theory, using roots displaying a wide variety of heavy/light syllable combinations (heavy syllable on the right, heavy syllable on the left, two heavy syllables, disyllabic word with no heavy syllable, monosyllabic word with no heavy syllable). As we discuss each of the stress rules in turn in the remainder of this section, we will follow this same set of five roots *(/naniʔ/* 'what', */onka/* ' to do', */naʔtun/* 'to be full', */tanu/* 'give', */la/* 'macaw') through a complete derivation of these rules, each subsequent set of derivations building on the previous one.

(862)   UF: /naniʔ/   'what'

    Initial syllabification
    and mora assignment:

                mora row   _ _ -   x   xx
                                      na niʔ

    QS rule:

                foot row   _ _ -   x
                mora row   _ _ -   x   xx
                                      na niʔ

(863)   UF: /onka/   'to do'

    Initial syllabification
    and mora assignment:

                mora row   _ _ -   xx   x
                                        on ka

    QS rule:

                foot row   _ _ -   x
                mora row   _ _ -   xx   x
                                      on   ka

(864)   UF: /naʔtun/ 'to be full'
        Initial syllabification
        and mora assignment:

                        mora row   ——   xx xx
                                                naʔ tun
        QS rule:

                        foot row   ——   x   x
                        mora row   ——   xx xx
                                                naʔ tun

(865)   UF: /tanu/   'to give'
        Initial syllabification
        and mora assignment:

                        mora row   ——   x   x
                                                ta   nu

        QS rule: N/A

(866)   UF: /la/   'macaw'
        Initial syllabification
        and mora assignment:

                        mora row   ——   x
                                                la

        QS rule: N/A

        Although the application of QS to the examples above is rather straight
forward, some heavy syllables in other forms can contain complex nuclei or codas
and would appear to be super-heavy, containing more than two moras. Nevertheless,
in Mamaindê, heavy syllables with different amounts of material in the coda are not
stressed at different levels. This shows that heavy syllables may only be bimoraic,
regardless of how much coda material is added. The examples below, which
increase in terms of the complexity of the rhyme, illustrate this.

QS and different types of heavy syllables:

(867)	/jalau/	⟶	[jaˈlau]	CVV	bracelet
(868)	/juhakʔ/	⟶	[juˈhakʔ]	CVCC	all
(869)	/tanãun/	⟶	[taˈnãum]	CVVC	send/throw
(870)	/wasainʔ/	⟶	[waˈsaiᵍŋʔ]	CVVCC	stuff

Since all of these syllables are stressed at the same level, we must conclude that the language has a limit on the number of moras possible in a given syllable. This fact can be accounted for by restricting the licensing of moras at both the syllable and coda levels. The Mamaindê coda, then, must be limited to licensing a single mora, while the Mamaindê syllable may license up to two moras. The result of these restrictions is that that there will only be two levels of syllable weight possible in this language (aside from emphatic and phrase level stress).[148]

As we have seen, the quantity sensitive nature of Mamaindê is felt in the root and in morpheme classes in proximity to the root. Outside this general domain however, quantity sensitivity is no longer active. This means that syllables in the final morpheme classes of the string are never stressed, even if they are heavy.[149]

Examples of heavy syllables (underlined) which are not stressed:

(871)	/wi-ta<u>hĩn</u>-wa/	[ˈwiː.da.hĩŋ.wa]	enter!
(872)	/na-∅-leit-<u>nãn</u>-wa/	[ˈnaːˌ.leik.tʰãŋ.wa]	he drank
(873)	/sun-∅-<u>nãn</u>-wa/	[ˈtʃuᵈn.nãŋ.wa]	he hit
(874)	/ʔai-juh-jeʔ-sa<u>tau</u>-le-<u>hĩn</u>-wa/	[ˈʔai.ˌjuh.ˈˈjeʔ.sa.rau.le.hĩŋ.wa][150]	
		someone said he certainly went	

The lack of QS in the morpheme classes furthest from the root can only be accounted for by allowing phonology to appeal to morphology in some way. This is where Lexical phonology, or a similar approach, becomes useful. By assigning each morpheme class to a morphological stratum, we can determine which stress rules are active at each level. A discussion of the lexical strata within Mamaindê can be found

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[148] Mamaindê does happen to have two other types of stress, Lexical stress and Phrase level stress, which may at times emphasize certain syllables that are located far from the root. But neither one is tied to syllable weight in any way. More on this in sections 2.3.5.4 and 2.3.5.5 on Lexical and Phrase level stress.

[149] Phrase level stress causes exceptions to this statement, in that syllables which are eligible for phrase level stress are always at the end of the word and thus can find themselves far from the root. However, the phrase level stress rule is separate from the main stress system since it is a later, post-lexical phenomenon. See section 2.3.5.5, 'Phrase level stress'.

[150] The double stress mark in this form designates the lexical or inherent stress of emphatic morphemes, which is discussed in section 2.3.4.4.

in section 2.3.4.3, outlining the different morpheme classes occurring in each stratum, as well as including a list of which stress rules are operative in those strata. In general, however, the point being made here is that Mamaindê is most definitely a QS language, and that this sensitivity to syllable weight is felt most strongly within the root.

2.3.5.2   End Rule

While Quantity Sensitivity assigns stress within the root without any regard to syllable position, syllable position does in fact play an important role in Mamaindê stress. For instance, what happens when all the syllables in the root have the same syllable weight? They could either all be light syllables, such as in /hajo/ 'yes', or they could all be heavy, such as the syllables in /haʔfin/ 'quickly'. How does the stress system choose between candidates of equal weight? It is in these situations and these only, that syllable position becomes a critical factor in Mamaindê stress.

In order to see what occurs in such situations, it is once again imperative that we allow morphology to inform phonology by restricting our discussion to root morphemes alone.

Root morphemes stressed according to syllable position

(875)   [haˈlo]   land

(876)   [daˈnu]   give

(877)   [ˌnaʔˈduᵈn]   full

(878)   [ˌhaʔˈfin]   quickly

Once we limit ourselves to the root, the pattern that emerges is a simple one: when the syllables of the root have the same weight, the rightmost one will always have the highest stress. This is traditionally referred to as iambic stress and can be formalized in grid theory as:

END RULE [FINAL]

This basic principle is actually operative at both the foot and the word levels. So we must divide this general parameter into two separate rules applying grid marks at different levels of the stress grid.

END RULE [FINAL, FOOT]
END RULE [FINAL, WORD]

The main distinction between them is that the foot level rule assigns secondary stress while the word level rule assigns primary stress. We will look at each of these rules in turn.

2.3.5.2.1   End Rule [Final, Foot]

At the foot level, syllables can receive stress not only as a result of quantity sensitivity, but also as a result of syllable position. When the root contains no heavy syllables, the language stresses the rightmost light syllable. This parameter is formalized as:

> *END RULE [FINAL, FOOT]   (ERFF)*

　　　　End Rule [Final, Foot] is only operative in the root, or in the first strata of the phonology. It places a grid mark in the foot level row over the rightmost grid mark in the mora row. In effect, this means assigning secondary stress to the rightmost syllable of the root. This strategy is commonly invoked as a means by which Quantity Sensitive stress systems may deal with strings of input that have no heavy syllables.
　　　　We must remember, however, that QS takes precedence over End Rule, stressing all the heavy syllables in the root first regardless of their syllable position. Only when there are no heavy syllables found in the root does the End Rule [Final, Foot] take effect. This preferred order of application has been discussed by several scholars as an instance of the Elsewhere Condition (Kiparsky 1973, Goldsmith 1990:189-90), whereby the more specific of two rules is given priority. Since the QS rule is concerned only with the internal make-up of individual syllables, while the ERFF rule must look at a larger string, the domain of the QS rule is a subset of the domain of the ERFF rule. Thus the QS rule is more specific and must be given priority. If foot-level stress has already been assigned to a specific string by the QS rule, the ERFF rule does not apply to that string. This blocking effect of QS is demonstrated in the first two examples below.

ERFF and secondary stress applied to root morphemes:

(879)   UF: /naniʔ/   'what'
　　　　Initial syllabification
　　　　and mora assignment:

	mora row	_ _ -	x xx
			na niʔ

　　　　QS rule:

	foot row	_ _ -	x
	mora row	_ _ -	x xx
			na niʔ

　　　　ERFF   N/A

(880)   UF: /onka/   'to do'
       Initial syllabification
       and mora assignment:

                mora row   ——   xx   x
                                     on   ka

       QS rule:

                foot row   ——   x
                mora row   ——   xx   x
                                     on   ka

       ERFF   N/A

(881)   UF: /naʔtun/ 'to be full'
       Initial syllabification
       and mora assignment:

                mora row   ——   xx   xx
                                   naʔ tun

       QS rule:

                foot row   ——   x   x
                mora row   ——   xx   xx
                                   naʔ tun

       ERFF   N/A

(882)   UF: /tanu/   'to give'
         Initial syllabification
         and mora assignment:

                             mora row   ____   x   x
                                                          ta   nu

         QS: N/A

         ERFF: foot row   ____   x
                             mora row   ____   x   x
                                                          ta   nu

(883)   UF: /halo/   'land'
         Initial syllabification
         and mora assignment:

                             mora row   ____   x   x
                                                          ha   lo

         QS: N/A

         ERFF: foot row   ____   x
                             mora row   ____   x   x
                                                          ha   lo

(884)   UF: /jami/   'nose'
          Initial syllabification
          and mora assignment:

                              mora row   ____   x   x
                                                          ja mi

          QS: N/A

          ERFF: foot row   _____   x
                              mora row   ____   x   x
                                                          ja mi

(885)   UF: /wate/ 'to disappear'
          Initial syllabification
          and mora assignment:

                              mora row   ____   x   x
                                                          wa te

          QS: N/A

          ERFF: foot row   ____   x
                              mora row   ____   x   x
                                                          wa te

(886)   UF: [la]   'macaw'
        Initial syllabification
        and mora assignment:

                        mora row   ____   x
                                                      la

        QS: N/A

        ERFF: foot row   ——   x
                        mora row   ____   x
                                                      la

Notice that this rule not only applies stress to a string of light syllables, but it will also stress forms like the last one above, where there is only a single light syllable in the root. Since this syllable is in effect the right-most syllable, the ERFF applies and it receives foot-level stress.

2.3.5.2.2   End Rule [Final, Word]

After the foot level has been dealt with, word level stress must be assigned. This is accomplished by the following rule:

END RULE [FINAL, WORD]   (ERFW)

This rule places a grid mark at the word level above the rightmost foot level mark in the root. If only one grid mark is present at the foot level, then it will be considered by default as the rightmost and receive the word level stress. The result is a right-headed root at the word level.[151]

In traditional terms, this right-headed pattern would be labeled iambic stress, although we must be careful not to take this too literally as the iambic pattern will only result when all the syllables of the input have the same weight, or to be more specific, when all the syllables of the input have been stressed at the same grid level. Take, for instance, the root form *['onka]* 'to do'. It is clearly trochaic rather than iambic. This apparent contradiction is due to the manner of rule application in Grid theory. Grid theory posits that at each level of the grid, stress rules have a sort of selective blindness about them - they can only see the level which is immediately beneath them. Thus word level rules may only 'see' foot level grid marks, and foot level rules may only 'see' mora level grid marks. This selective 'seeing' is responsible for the manner in which ERFW applies to words such as *['onka].*

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[151] Specifying the level is important here, since the right-most syllable of a root can be quite different from the right-most grid mark at a specific level.

Although there are two syllables in the root, the last syllable is invisible to the word level rule since it does not have a foot-level grid mark. The first syllable, then, which has already been assigned foot-level stress by the QS rule, becomes the only candidate for word level stress and is considered by default to also be the right-most candidate.[152] Consequently, ERFW builds word level stress upon the first syllable.

    The following demonstrates how this rule applies to our set of five forms.

ERFW and primary stress applied to root morphemes:

(887)   UF: /naniʔ/   'what'

Initial syllabification
and mora assignment:

                                    mora row   x   xx

                                                            na niʔ

              QS rule:

                                  foot row   ____   x

                                  mora row   ____   x   xx

                                                 ____   na niʔ

              ERFF: N/A

              ERFW: word row   ____   x

                                  foot row   ____   x

                                  mora row   ____   x   xx

                                                         na niʔ

---

[152] In essence, it is the QS rule which is dictating both the foot and the word level stresses in this form.

(888) UF: /onka/   'to do'
      Initial syllabification
      and mora assignment:

                              mora row   ____   xx   x
                                                        on ka
      QS rule:

                              foot row   ____   x
                              mora row   ____   xx   x
                                                        on   ka

      ERFF: N/A

      ERFW: word row   ____   x
                      foot row   ____   x
                      mora row   ____   xx   x
                                                on   ka

(889) UF: /naʔtun/ 'to be full'
      Initial syllabification
      and mora assignment:

                              mora row   ——   xx   xx
                                                        naʔ tun
      QS rule:

                              foot row   ____   x   x
                              mora row   ____   xx   xx
                                                        naʔ tun

      ERFF: N/A

      ERFW: word row   ———   x
                      foot row   ———   x   x
                      mora row   ____   xx   xx
                                                naʔ tun

(890)   UF: /tanu/   'to give'
         Initial syllabification
         and mora assignment:

                          mora row   ____   x   x
                                                      ta   nu

         QS: N/A

         ERFF: foot row   ____   x
                          mora row   ____   x   x
                                                      ta   nu

         ERFW: word row   ____   x
                          foot row   ____   x
                          mora row   ____   x   x
                                                      ta   nu

(891)   UF: [la]   'macaw'
         Initial syllabification
         and mora assignment:

                          mora row   ____   x
                                                       la

         QS: N/A

         ERFF: foot row   ____   x
                          mora row   ____   x
                                                       la

         ERFW: word row   ____   x
                          foot row   ____   x
                          mora row   ____   x
                                                       la

The above forms demonstrate how this one set of rules can be used to stress the wide variety of roots existing in the language. There are, however, a small number of forms not represented in the above examples. These are the root forms with more than two syllables, i.e., the three and four syllable roots. These were not included in the original set because they are often suspect on morphological grounds, since the vast majority of Mamaindê roots are mono or bi-syllabic.[153] Those with more than two syllables typically involve the concatenation of more than one morpheme and should generally be seen as complex stems. In such cases, the first stratum complex roots are formed and the stress rules apply only once to the result of that morphological operation.

A good example of this is the noun form *[ˌeuˈtaiˌsein]* 'camera'. This is actually composed of three morphemes, */eu-tai/ + /-sein/* 'see-take+container', two verbs plus a noun classifier, which are conjoined into a complex nominal form. They are all heavy and so all get stressed at the foot level. The first two syllables, however, are verb roots belonging to the first stratum, where the ERFW rule applies right-headed word level stress to the second syllable, /tai/. Then the noun classifier */-sein/* 'container' is affixed to the composite stem in the second stratum, where the ERFW is not operative (see the next section for more discussion of lexical strata).

Due to a highly productive morphology, complex stems, such as the form cited above, are quite common in the language. The crucial thing to note at this point is that most of these complex stems with three or four syllables are composed of several first stratum roots that are stressed as a single unit. That said, there are a few cases of three and four syllable roots that seem to resist any attempts to parse them into smaller units.[154] Our stress rules account for these as well.

The data below includes forms with tri-syllabic roots, which can be realized with heavy/light patterns of LLL, LLH, HLL, LHL, HHL, LHH, and LHL, as well as tetra-syllabic roots which display the patterns of LLLH, and LLHL. (Notice that HLL doesn't exist, and HHH is suspect because morphologically, when three heavy syllables are adjacent, there are at least two morphemes involved).

	Tri-syllabic roots:	**gloss**	**heavy/light syllables**
(892)	[waleˈkʰaᵈn]	chief	LLH
(893)	[anaˈlot]	in surplus	LLH
(894)	[kaˈjaugi]	white man	LHL
(895)	[duˈkwiᵍŋʔni]	father-in-law	LHL
(896)	[nagaˈda]	to lead	LLL
(897)	[ˌdaʔˈlohni]	old woman	HHL

---

[153] This was originally noted by Kingston (1976a: 45).   ‘.

[154] Most likely, there was a time when these longer root forms did consist of several morphemes. However, the synchronic state of our knowledge of the lexicon of the language, and the current intuitions of native speakers are not enough to reconstruct internal morphemes in these forms. For these reasons, they must be submitted to the stress rules in the same manner as other single root morphemes

(898)   [hiˌdeiˈnũn]   to worry   LHH
(899)   [ˌdaʔsiˈduᵈn]   to be skinny   HLH
(900)   [jaˌhaiˈdũn]   ashamed   LHH

	Tetra-syllabic roots:	**gloss**	**heavy/light syllables**
(901)	[jalakwaˈduᵈn]	howler monkey	LLLH
(902)	[khaˌtehwaˈlaᵈn]	snake: bico de jaca	LHLH

We will now apply our set of rules to a few of these longer forms. I will use several of the above forms to demonstrate.

(903)   UF: 'father-in-law'   /tukwinʔni/
        Initial syllabification
        and mora assignment:

                                 mora row   ——   x   xx   x
                                                           tukwinʔni
        QS rule:

                                 foot row   ——   x
                                 mora row   ——   x   xx   x
                                                           tukwinʔni

        ERFF: N/A

        ERFW: word row   ———   x
                                 foot row   ———   x
                                 mora row   ——   x   xx   x
                                                           tukwinʔni

(904) UF: 'old woman'   /taʔlohni/
       Initial syllabification
       and mora assignment:

                                    mora row   ——   xx xx x
                                                               taʔlohni
       QS rule:

                                    foot row   ——   x   x
                                    mora row   ——   xx xx x
                                                               taʔlohni

       ERFF: N/A

       ERFW: word row   ———   x
                    foot row   ———   x   x
                    mora row   ——   xx xx x
                                              taʔlohni

(905) UF: 'to worry'   /hiteinũn/
       Initial syllabification
       and mora assignment:

                                    mora row   ——   x xx xx
                                                               hiteinũn
       QS rule:

                                    foot row   ——   x   x
                                    mora row   ——   x xx xx
                                                               hiteinũn

       ERFF: N/A

       ERFW: word row   ———   x
                    foot row   ———   x   x
                    mora row   ——   x xx x
                                              hiteinũn

(906)　UF:　　　　　　　　　　'to be skinny'　　　　　　/taʔsitun/
　　　Initial syllabification
　　　and mora assignment:

　　　　　　　　　　　　　　mora　row　　　——　　　xx x xx
　　　　　　　　　　　　　　　　　　　　　　　　　　taʔsitun

　　　QS rule:

　　　　　　　　　　　　　　foot row　　　——　　x　　　x
　　　　　　　　　　　　　　mora　row　　　——　　　xx x xx
　　　　　　　　　　　　　　　　　　　　　　　　　　taʔsitun

　　　ERFF:　　　　　　　　　　　　　　　　　　N/A

　　　ERFW:　　　　　　word row　　　———　　　　　x
　　　　　　　　　　　　foot row　　　———　　x　　　x
　　　　　　　　　　　　mora　row　　　——　　　xx x xx
　　　　　　　　　　　　　　　　　　　　　　　　　taʔsitun

(907)　UF:　　　　　　　　　　'snake: bico de jaca'　　/kʰatehwalan/
　　　Initial syllabification
　　　and mora assignment:

　　　　　　　　　　　　　　mora　row　　　——　　　x xx x xx
　　　　　　　　　　　　　　　　　　　　　　　　　　kʰatehwalan

　　　QS rule:

　　　　　　　　　　　　　　foot row　　　——　　　　x　　　x
　　　　　　　　　　　　　　mora　row　　　——　　　x xx x xx
　　　　　　　　　　　　　　　　　　　　　　　　　　kʰatehwalan

　　　ERFF:　　　　　　　　　　　　　　　　　　N/A

　　　ERFW:　　　　　　word row　　　———　　　　　　x
　　　　　　　　　　　　foot row　　　———　　　x　　　x
　　　　　　　　　　　　mora　row　　　——　　　x xx x xx
　　　　　　　　　　　　　　　　　　　　　　　　　kʰatehwalan

Note that our same set of stress rules can account for stress on these longer root forms as well.

Reduplicated root forms can also consist of 3 or 4 syllables, such as *[wala'lãn]* 'soft', and *[haloha'lo]* 'jungle fig'. These forms behave in the same manner as the composite root forms discussed earlier. Internally, they consist of more than one morpheme (a root and a reduplicated portion), and the first round of stress is applied after the reduplicated part has been affixed onto the root. The fact that stress is not copied during the reduplication process (see the last example below) is further evidence that the stress rules of the 1st stratum apply only after composite root formation.[155]

reduplicated forms	gloss
(908) [tahiˈhiktʃi]	dangerous spirit
(909) [amaˈmat]	to appear
(910) [saˌdeisaˈdeiᵍŋ]	to be yellow
(911) [tʰaluˈlu]	to shine
(912) [walaˈlãn]	to be soft
(913) [halohaˈlo]	jungle fig tree
(914) [galagaˈla]	chicken
(915) [maˈmãintʃi]	Mamaindê

Many times it can be difficult to determine impressionistically which syllable is being stressed by a Mamaindê speaker. That is why careful speech must be used whenever eliciting stress. However, even in careful speech the stress patterns can be elusive, particularly when it involves a root morpheme with two heavy syllables. Both heavy syllables may appear equally long. In these situations we must appeal to vowel quality in order to decide between competing analyses.

Vowel weakening of /a/ and /o/ to [ə] occurs optionally throughout the language. But such weakening never occurs in stressed syllables. This means that we can use the occurrence or non-occurrence of vowel weakening to help us determine whether a particular vowel is stressed. The examples below show that whenever a Mamaindê root consists of two or more heavy syllables, any of the vowels may be reduced except for the vowel of the last heavy syllable, which is never weakened. This syllable then must carry the primary stress.

---

[155] See section 3.2.1, 'Reduplication', for more on the behavior of reduplicated forms.

End Rule Word and vowel quality

(916)   [kamaʔmat] or [kəməʔmat] but never [kamaʔmət]*   butterfly

(917)   [kaʔjan] or [kəʔjan]   but never   [kaʔjən]*   minnow/lambari

(918)   [saʔlah] or [səʔlah]   but never   [saʔləh]*   to menstruate

(919)   [saʔda̱nʔ] or [səʔda̱nʔ]   but never   [saʔdə̱nʔ]*   to be dull

(920)   [tʰaʔlan] or [tʰəʔlan]   but never   [tʰaʔlən]*   bee: type

(921)   [naʔga̱s] or [nəʔga̱s]   but never   [naʔgə̱s]*   to listen

Once again the data shows that our word-level stress rule, End Rule [Word, Final], is correct, since the syllable which can never be weakened is the rightmost of the two heavy syllables.

2.3.5.3   *Stress and Morphological Strata*

So far we have restricted ourselves to the analysis of stress within the domain of the root. In this section we will look at stress throughout the rest of the word.

One of the unique aspects of Mamaindê is that it assigns stress based on prosodic and non-prosodic factors: syllable weight, syllable position, and morphology. While many languages use either one or two of these strategies, few seem to require an appeal to all three. Mamaindê is one of those few. We have already looked at syllable weight and syllable position, so we will now turn our attention to morphology.

As we mentioned in the last section, the three stress rules evident in the language function in the domain of the root and are able to predict stress within that domain. Outside of the root, however, the strength of these rules weakens and they have less predictive power. What becomes more crucial outside of the root is the notion of strata.

Lexical Phonology (Mohanan:1986) introduced the concept of strata into phonology. Strata are consecutive 'levels' or stages in the derivation of a word which can be defined by their own unique set of phonological rules and morpheme affixation processes. The idea was that there are two types of phonological processes: those that require access to morphological information and those that do not. The former are part of the Lexical component while the latter belong to the Post-lexical component. Within the Lexical component there is a constant interplay between phonology and morphology, such that when the morphology is finished building a word, the phonology is also complete.

Arguments for a lexical analysis of Mamaindê stress, as opposed to a more typical post-lexical application of stress include the following:

1. Stress patterns cannot be seen postlexically (we have already discussed this in section 2.3.4)

2. Morpheme classes have different limits on the maximum level of stress which can be applied to syllables within these classes. This suggests that each stress rule has its own unique domain of application, functioning in certain morpheme classes and not others.

3. Some morphology, like the first-person markers */-aʔ/* and */-naʔ/,* cannot be affixed until the phonology 'knows' if the previous syllable has been stressed. The stress of the previous syllable determines which form the first-person marker will take. Thus stress must be taking place during the lexical component before all of the affixation is complete.

4. Certain instances of vowel length would have to be indicated in the lexicon if the stress rules were considered post-lexical. There would be no other way to predict the consistent lengthening of the last short vowel of roots comprised entirely of light syllables (such as the root form */halo/* 'land' in the word *[dahaˈloːtalatʰawa]* 'it is my land'). Only by applying stress during the Lexical Component, where it can make reference to the morphological boundaries within the word, can vowel lengthening be predicted satisfactorily.

Assigning the Mamaindê stress rules to the lexical component, where they apply in conjunction with morphological affixation processes, resolves the above issues and indicates that a Lexical analysis of this stress system is the most insightful approach.

Although stress outside the root is harder to determine in Mamaindê, it follows a pattern which involves the interplay between morphology and stress. First of all, QS functions in all morphological domains except for the last class of affixes, which deal with the person, tense aspect system. End Rule [Final, Foot] is only operative within the root. End Rule [Final, Word] functions in the root and also in the morpheme classes closest to the root since heavy syllables in these positions always receive word level stress. In the mid-fixes, or those morphological classes which occur between the first set of affixes and those at the end of the word, syllables will never receive word level stress, but are allowed to receive secondary stress if they are heavy. This shows that ERFW is no longer functioning but that QS is still active. Morphemes in the final morpheme classes, those furthest removed from the root, are never stressed, even if they are heavy, thus indicating that in these affixes none of the three stress rules is active.

The above information can be translated into stratal divisions. While the complete morphological makeup of each of the strata is not conclusive yet, the

following types of morphemes or morpheme classes do exhibit a consistent ability either to receive certain types of stress, or to be invisible to the stress rules. Each stratum is thus defined by a unique set of these morpheme classes as well as its own unique set of stress rules.

/   The following list of strata includes all stress rules and affixation processes. Also included are the various syllabification and lengthening processes discussed in the previous chapter (such as Maximization of Onset and Compensatory Lengthening), since their presence is crucial for the proper functioning of the stress rules. Note that in particular, Compensatory Lengthening must precede QS in order for certain syllables to be seen as heavy. Forms which lose a coda due to Maximization of Onset, such as */saʔnĩn/ + /aʔ-wa/ → [saʔ.nĩ.naʔ.wa]* 'I am happy', could receive incorrect stress if it were not for the prior application of Compensatory Lengthening before the stress rules.

Stress rules listed by strata (adapted from p.89-91 of Eberhard 1995)

LEXICAL COMPONENT
Strata 1
        Morphological Processes/Cycles:
                1.   root
                2.   prefixes (including reduplicated prefixes)
                3.   compounds (and reduplicated suffixes)
        Phonological Processes:
                1.   Syllabification & Maximization of Onset
                2.   Compensatory Lengthening
                3.   Mora Projection
                4.   QS
                5.   End Rule [final, foot]
                6.   End Rule [final,word]

Strata 2
        Morphological Processes/Cycles:
                1.   oblique markers
                2.   object markers
                3.   embedded Verbs/auxiliary suffixes

        Phonological Processes:
                1.   Syllabification & Maximization of Onset
                2.   Compensatory Lengthening
                3.   Mora Projection
                4.   QS
                5.   End Rule [final, foot]

Strata 3

Morphological Processes/Cycles:
1.   manner suffixes
2.   noun classifiers
3.   temporal modifiers

Phonological Processes:
1.   Syllabification & Maximization of Onset
2.   Compensatory Lengthening
3.   Mora Projection
4.   QS

Strata 4

Morphological Processes/Cycles:
1.   subject markers
2.   tense/evidentiality markers[156]
3.   mood markers/emotives
4.   final nominal suffixes

Phonological Processes:
1.   Syllabification & Maximization of Onset
2.   Mora Projection

(No stress rules in this stratum)

At this point a complete derivation of a typical Mamaindê verb will be given to show how words move thru the lexical strata, acquiring morphological material and being stressed by the stress rules. Note that, within the derivation, brackets indicate the string under consideration. After each cycle, internal brackets are deleted. This is known as bracket erasure.[157]

---

[156] A glitch in the morphological basis for this ordering is encountered in the form */-satau/* 'Reported Speech'. Although a part of the evidential system, */-satau/* does not occur in strata four along with the other evidentials, but occurs sequentially between the manner suffixes and the temporal modifier of the third strata. This can be shown in forms such as *['doː-ˌnũn-sadau-le-hĩn-wa]* 'die-COM-RS-I.PST-N.VIS.DECL', 'it is said he also died'. Yet it never recieves stress, even though it contains a heavy syllable and QS is operative in strata three. Instead, it behaves as though it is linked to and intrinsically belongs with the other evidentials in strata 4, where no stress rules are operative. This would argue against a strict morphological basis for the strata, and suggests a somewhat looser connection between morphology and strata.

[157] A more complete discussion of how lexical strata interact with the stress rules of Mamaindê can be found in Eberhard, 1995. More example derivations are provided there for the interested reader.

Complete derivation of [ˌsuʔˈdoᵈndaˌleiktʰãnwa] 'it wasn't known to me'

Phonetic form: [ˌsuʔˈdoᵈndaˌleiktʰãnwa]

Lexical form: /suʔton   -ta   -leit -Ø -nãn -wa/
                 not.know O1   I.PST S3   PST   N.INT

Stratum I
Cycle 1
  Affixation
    Root   [suʔton]

  Rules
    Syllabification/Max. Onset

                                            [suʔ.ton]

    Mora Projection

                                             xx xx
                                            [suʔ.ton]

    QS

                                             x   x
                                             xx xx
                                            [suʔ.ton]

    ERFF

                                            N/A

    ERFW

                                                  x
                                             x   x
                                             xx xx
                                            [suʔ.ton]

Stratum II
Cycle 1
  Affixation
    Object marker

```
                                            x
                                      x    x
                                      xx  xx
                                  [[suʔ.ton][ta]]
```

  Rules
   Syllabification/Max. Onset

```
                                            x
                                      x    x
                                      xx  xx
                                  [[suʔ.ton][.ta]]
```

   Mora Projection

```
                                            x
                                      x    x
                                      xx  xx   x
                                  [[suʔ.ton][.ta]]
```

  QS

                            N/A

  ERFF

                            N/A

  BE (Bracket Erasure)

```
                                            x
                                      x    x
                                      xx  xx x
                                   [suʔ.ton.ta]
```

Stratum III

Cycle 1
  Affixation
    Temporal Modifier

```
                        x
          x   x
          xx  xx x
          [[suʔ.ton.ta][leit]]
```

  Rules
    Syllabification/Max. Onset

```
                         x
           x   x
           xx  xx x
           [[suʔ.ton.ta][.leit]]
```

    Mora Projection

```
                         x
          x   x
          xx  xx x    xx
          [[suʔ.ton.ta][.leit]]
```

    QS

```
                        x
          x   x      x
          xx  xx x    xx
          [[suʔ.ton.ta][.leit]]
```

    BE

```
                        x
          x   x      x
          xx  xx x  xx
          [suʔ.ton.ta.leit]
```

Stratum IV

Cycle 1
  Affixation
    Subject marker

```
                                   x
                          x    x      x
                          xx  xx x  xx
                          [[suʔ.ton.ta.leit][Ø]]
```

  Rules
    Syllabification/Max. Onset   N/A
    Mora Projection   N/A
  (no stress rules apply at this stratum)

    BE

```
                            x
                   x    x      x
                   xx  xx x  xx
                   [suʔ.ton.ta.leitØ]
```

Cycle 2
  Affixation
    Tense

```
                            x
                   x    x      x
                   xx  xx x  xx
                   [[suʔ.ton.ta.leitØ][nãn]]
```

  Rules
    Syllabification/Max. Onset

```
                            x
                   x    x      x
                   xx  xx x  xx
                   [[suʔ.ton.ta.leitØ][.nãn]]
```

Mora Projection

```
                            x
            x    x     x
            xx  xx x  xx       xx
          [[suʔ.ton.ta.leitØ][.nãn]]
```

(no stress rules apply at this stratum)

BE

```
                             x
            x    x     x
            xx  xx x  xx       xx
           [suʔ.ton.ta.leitØ.nãn]
```

Cycle 3
 Affixation
  Mood/Clause type

```
                            x
            x    x     x
            xx  xx x  xx       xx
          [[suʔ.ton.ta.leitØ.nãn][wa]]
```

 Rules
  Syllabification/Max. Onset

```
                           x
            x    x     x
            xx  xx x  xx      xx
          [[suʔ.ton.ta.leitØ.nãn][.wa]]
```

  Mora Projection

```
                          x
            x   x     x
            xx  xx x  xx      xx    x
          [[suʔ.ton.ta.leitØ.nãn][.wa]]
```

(no stress rules apply at this stratum)

BE

```
                                                      x
                                            x    x    x
                                           xx  xx x xx    xx   x
                                           [suʔ.ton.ta.leitØ.nãn.wa]
```

Output of Lexical Component

```
                                             x
                                      x    x    x
                                      xx  xx x xx    xx    x
                                      [suʔ.ton.ta.leitØ.nãn.wa]
```

      Although the above derivation doesn't include all the phonological and allophonic rules, it serves to demonstrate that the interplay between stress rules and affixation outlined in this section is necessary to produce the correct output in regards to stress.

2.3.5.4   Lexical/Inherent Stress

The stress rules we have described up to this point can correctly predict stress up to the word level. However, there are two other types of stress present in Mamaindê which cannot be handled by these rules. The first of these is inherent or lexical stress. Inherent stress is found only on the emphatic morpheme */-jeʔ/* 'surely/clearly/certainly'. The exaggerated level of stress on this morpheme is realized as greater amplitude, and this amplitude is typically at the highest level possible in Mamaindê, higher even than that of the primary stressed syllable of the root. Any stress above the word-level cannot be assigned by the rules of the lexical component, so this emphatic stress must be assigned either post-lexically, or in the lexicon itself. A post-lexical approach is not possible since this stress is assigned to a specific bound morpheme within a word, something which a post-lexical process would not be able to identify. The only solution is to posit that this stress is inherent to this morpheme. The morpheme */-jeʔ/,* when affixed to the root of any verb, makes the statement emphatic, and the extremely high level of stress is indicative of the speakers high level of certainty of the utterance. Thus I will consider this morpheme to be stored in the lexicon with a complete stress grid associated to its skeletal tier, a grid which includes an extra level of stress beyond the word level (I will label this emphatic stress at the phrase level), ensuring that this morpheme always receives the most prominence in the entire phrase.

(922)   Lexical entry for /jeʔ/

       emphatic   x

       word   x

       foot   x

       mora   xx

                      /jeʔ/

(923)   Example of /jeʔ/ in a word string

             x

          x x

          x x

         xx xx

        [eujeʔn̄ĩndawa]   he certainly saw

2.3.5.5   Post-Lexical/ Phrase Level Stress

The last type of stress in this language is actually a phrase level phenomenon. The final syllable of a connective morpheme, which comes at the end of a phrase and is used to connect two phrases together within a sentence, will receive higher amplitude and longer duration than the syllables around it. It appears that longer duration is the more critical of the two features, as not all of them will have great amplitude, but they all consistently display a lengthening of the last syllable. These connective morphemes are located in the last stratum of the lexical component where there are no lexical stress rules, and thus are never stressed by the rules of the lexical component. These morphemes, then, will get their length in the post-lexical component, where extra length is simply added to the last syllable of the phrase. However, this lengthening doesn't interact with any of the other stress rules of the lexical component. Pitch is also not a phonetic factor here, even though many of the connectives end in a high tone. There are some, specifically *-sihta̱ʔ/,* and *-ta̱ʔ/,* which end in low tones. The important thing to note is that the connective marker at the end of every phrase will receive extra length, marking the fact that the speaker has come to the end of a sentence internal phrase.[158] This also allows the hearer to break the signal into phrasal parts and thus decode the utterance with greater ease.

---

[158] Interestingly, this extra lengthening of final syllables does not occur at the end of sentences, which terminate with the person/tense/mood suffixes. This is strictly a sentence internal device, marking phrase boundaries within the sentence.

Some of the connective morphemes in Mamaindê:

(924)	/-hĩʔ/	then/Different Subject
(925)	/-khatoʔ/	then/Same Subject
(926)	/-sįhtaʔ/	in order to/Different Subject
(927)	/-teiʔntaʔ/	in order to/Same Subject
(928)	/-ĩ/	…and (used for listing of nouns or verbs)
(929)	/-satoʔni/	if
(930)	/-tąku/	and
(931)	/-tʰoh/	but
(932)	/-kʰihenkani/	instead of…
(933)	/-kʰijãn/	so as not to…
(934)	/-kʰiyãnʔ/	in the same way

Below we have an example of a connective being lengthened at the end of a two word phrase.

(935)   /wasainʔ/ 'stuff' and /tu + ĩ/ 'get + list' = 'he got stuff, and…'

Output of lexical component:

word		x	x		
foot		x	x		
mora	x	xx		x	x

[wa.saigŋʔ   du. i]

Output of post-lexical component with lengthening of connective: [159]

word		x	x		
foot		x	x		
mora	x	xx		xx	xx

[wa.saigŋʔ   duː. iː]

---

[159] The lengthening of the verb root [du] will be discussed in the next section, 'Post-Lexical Lengthening'.

2.3.5.6   Post-Lexical Lengthening

In section 2.2 'The Syllable', we discussed a compensatory lengthening process in the Lexical component which lengthens the vowel of any syllable which loses its coda segment due to Maximization of Onset. This process is directly related to the quantity sensitive nature of the stress system, which is continually engaged in 'mora counting' to ensure that heavy syllables remain heavy.

This concern with maintaining proper syllable weight becomes apparent once again in the post-lexical component. Here the words have already received their stress, having passed through all the stress rules and affixation processes of the language. But the phonology is still concerned about syllable weight, wanting to make sure that all primary stressed syllables are long. This concern is due to cases where there are no heavy syllables in the root, such as the root */tanu/* 'give', the ERFF and ERFW rules would still assign stress to the final syllable even though it is light. These forms are marked cases, as they actually go contrary to the quantity sensitive nature of the language. To repair such forms, the phonology enforces another obligatory rule in the post-lexical component which lengthens any primary stressed syllable which is light.

Post-Lexical Vowel Lengthening: (P-LVL)[160]

Classical:

$$\begin{array}{c} V \\ \text{[+primary stress]} \end{array} \rightarrow V\text{:} / \underline{\quad} \$ $$

---

[160] The ($) represents a syllable boundary. This ensures that the vowel under consideration is originally in a light syllable.

Autosegmental:

σ
|
R   (this R refers here to a rhyme that does not branch)
|
N
| \
V   ː
| |
x   x
x
x
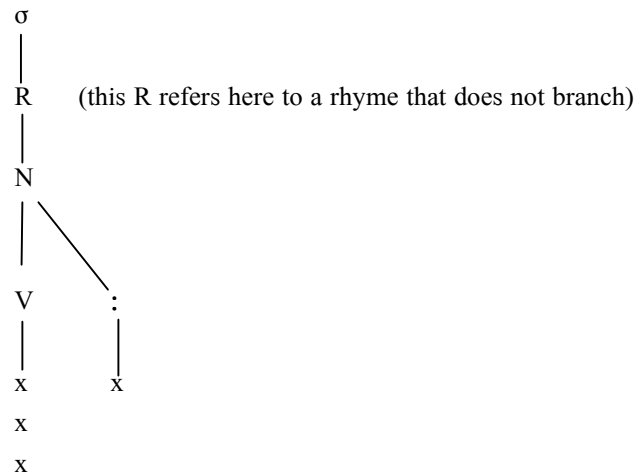
      The effects of this rule can be found throughout the language, accounting for the vowel lengthening of light syllables which carry primary stress. At the end of the post-lexical component, after the application of this rule, every primary stressed syllable will be heavy, thus ensuring that the quantity sensitive nature of the language is maintained. Here are examples of such lengthening in noun and verb roots of one, two, three, and four syllables.

(936)   /tu/ + /latʰa/ + /wa/   → [ˈɖuːlatʰwa]   he gets
        get   S3   N.Int

(937)   /tanu/ + /latʰa/ + /wa/   → [daˈnuːlatʰwa]   he gives
        give   S3   N.Int

(938)   nakata/ + /latʰa/ + /wa/   → [nagaˈdaːlatʰwa]   he leads
        lead   S3   N.Int

(939)   /halo/ + /tu/   → [haˈloːɾu]   land
        land   FNS

(940)   /kalakala/ + /tu/   → [galagaˈlaːru]   chicken
        chicken   FNS

There is additional evidence that points to the possibility of a post-lexical lengthening that is broader than just the lengthening of vowels in light syllables. In slow, careful speech, even the codas of primary stressed syllables may be held for a longer period of time than is customary. This extra length on coda consonants adds more prominence to the primary stressed syllable, but is only used when the speaker is trying to emphasize a particular word. Thus it should be regarded as an emphatic device, one that does not constitute an extra level of stress. For instance, when the speaker wishes to emphasize that something is especially difficult, he will lengthen the coda of the root /kʰãn/ 'difficult', in the following manner:

Post-Lexical Lengthening of consonants used as an emphatic device:

(941)   /kʰãn/ /-latʰa/ /-wa/ →   [ˈkʰãnlatʰwa]   it is difficult

(942)   /kʰãn/ /-latʰa/ /-wa/ →   [ˈkʰãnːːlatʰwa]   it is very, very, difficult

2.3.5.7   Apparent Exceptions to the Stress Rules

In previous studies, there were forms which were initially viewed as exceptions to the original stress rules. However, recent work has shown that, given the proper perspective, these can also be understood in light of the stress rules outlined in the previous pages.
        These apparent exceptions involve certain collocational preferences which have already been noted in the phonemic section of this phonology, where specific vowels tend to occur after the stressed syllable of poly-syllabic roots. [161] There are two vowels which occur in this position; the /i/ and the /a/. We will address each one separately.

2.3.5.7.1   The Predictable /i/ Vowel in Nouns

The /i/ is the preferred vowel in the syllable after the stressed vowel in poly-syllabic noun roots. Examples like these are abundant in the language.

(943)   /wa̲insi-tu/   [ˈwa̲iᵍŋtʃiɾu]   family: group

(944)   /haiʔki-tu/   [ˈhaiʔgiɾu]   word

(945)   /sĩunʔni-tu/   [ˈtʃĩumʔniɾu]   gnat: borrachudo

(946)   /hiuti-tu/   [ˈhiuɾiɾu]   tree: generic

---

[161] Kingston first noticed the predictable nature of these vowels in his manuscript on Mamaindê morpheme boundary phenomenon (1976:2). Price (1976:339-340) also makes a passing reference to the predictability of certain vowels in unstressed positions.

(947)	/mamãĩnsi-tu/	[maˈmãĩntʃiɾu]	Mamaindê
(948)	/tãnki-tu/	[ˈdãŋgiɾu]	star
(949)	/nahajautʰi-tu/	[nahaˈjauptʰiɾu]	water: for drinking
(950)	/watʰi-tu/	[ˈwaːtʰiɾu]	sister
(951)	/sũni-tu/	[ˈsũːniɾu]	sun/grandfather
(952)	/kanani-tu/	[gaˈnaːniɾu]	one
(953)	/hohotʰi-tu/	[hoˈhoːtʰiɾu]	owl
(954)	/kʰokʰi-tu/	[ˈkhhoːkʰiɾu]	harpy eagle
(955)	/mãinki-tu/	[ˈmãiŋgiɾu]	cashew
(956)	/nukʰi-tu/	[ˈnuːkʰiɾu]	arm
(957)	/mĩni-tu/	[ˈmĩːniɾu]	father

The difficulty here is that some of these forms are exceptions to the current stress rules. When the /i/ occurs after the stressed vowel in a root which initially has no heavy syllables, the stress rules, specifically the End Rule, would predict that the final vowel of the root should be stressed. For example, in the roots below, one would expect the following stress patterns.

Expected Stress on some /-i/ final noun morphemes:

expected stress	actual stress	gloss
waˈtʰiː	ˈwaːtʰi	sister
sũˈniː	ˈsũːni	sun
nuˈkʰiː	ˈnuːkʰi	arm
mĩˈniː	ˈmĩːni	father

In the above cases, however, the final vowel of the root is never stressed. Instead the syllable prior to the final vowel recieves the stress. The language is basically acting as though the last vowel, the /i/, were not there, and subsequently it stresses the penultimate syllable of the root. The most common explanation for this type of behavior is to posit the extrametricality of the last syllable, where vowels in peripheral positions are invisible to stress rules. The problem with this approach is that in Mamaindê nouns, some /i/ vowels at the end of noun roots do receive stress.

(958)	[jaˈmiː-ɾu]	nose
(959)	[gaˈliː-ɾu]	vagina

The other difficulty with such an approach is that when other vowels occur at the end of noun roots, they regularly get stressed as well. Take for example forms such as:

(960)   [galagaˈlaː-ɾu]   chicken
(961)   [haˈloː-ɾu]   land

So the critical factor here is not the position of the syllable in the word, but the nature of the vowel itself. Interestingly enough, Kingston (1976:2) had a similar idea in his treatment of these vowels. I will therefore borrow from his thinking and add to it the theoretical notion of underspecification.

Before developing an analysis for these problematic forms, we must first make sure we can define them accurately as a class. This can be done by noting that there is a distinction between these vowels and all the other vowels in the language.

Basically these final vowels are distinguishable from all others in that they share three important characteristics: their place features are predictable, their lack of stress is predictable (even when they should otherwise be stressed), and their location in the root is predictable (i.e. they are peripheral in the root and occur after the stressed vowel).

The correct analysis should account for each of these unique facts. It cannot be mere coincidence that the only vowels with predictable features (aside from the /-a/ final verbs which make use of the very same analysis) are also the only vowels which don't get stressed as they should. The predictability of their features is somehow linked to their lack of stress. These must be pertinent facts in any analysis of this data.

Attempts to predict when these post-stress vowels will occur have been unsuccessful. They arbitrarily appear at the end of roots with varying numbers of syllables.

(962)   /nahajautʰi-tu/   [nahaˈjauptʰiɾu]   water: for drinking
(963)   /kanani-tu/   [gaˈnaːniɾu]   one
(964)   /watʰi-tu/   [ˈwaːtʰiɾu]   sister

This /i/ final vowel also does not seem to be dictated by the segmental enironment. The following pairs of forms present almost identical contexts, yet the first example in each pair always carries the final /i/ vowel, while the second never does.

(965)   /watʰi-tu/   [ˈwaːtʰiɾu]   sister
(966)   /mĩni-tu/   [ˈmĩːniɾu]   father
(967)   /ʔmĩn-tu/   [ˈʔmĩndu]   skin
(968)   /watʰi-tu/   [ˈwaːtʰiɾu]   sister
(969)   /kʰat-tu/   [ˈkʰattu]   stick

It is clear from the above that we cannot predict the occurrence of these final vowels. But we can predict their features. So I will posit that these final post-stress /-i/ vowels are underspecified V segments in the lexicon that get their features filled in later by rule. Not only do they lack place features, but they are also unassociated to the syllable structure in their underlying form. In the lexicon the underspecified V consists only of a V root node and an orphaned skeletal position, with no features or syllable structure above it. When the root leaves the lexicon, it immediately gets stressed. But since the underspecified V has no syllable structure associated to it, and since it is syllable structure alone which can license the intial mora row, the underspecified V cannot be stressed and is left orphaned. Only much later, when it gets its features filled in at the end of the post-lexical component, will the V be syllabified, and at that point the stress rules have already applied to the root morpheme.

In essence, the end result of underspecifying these final vowels is analogous to extrametricality, where specific peripheral segments are considered invisible to the stress system, and thus unstressable. The difference here is that these unstressed vowels have predictable features, allowing us to view them as being minimally specified both in terms of their features and in terms of their syllable structure. And it is this lack of syllable sturcture that essentially makes them invisible to the stress rules.

The features of the underspecified V in nouns are ultimately filled in by the following redundancy rule in the post-lexical component.

NOUN V-FEATURE FILLING RULE [162]

$\setminus$

---
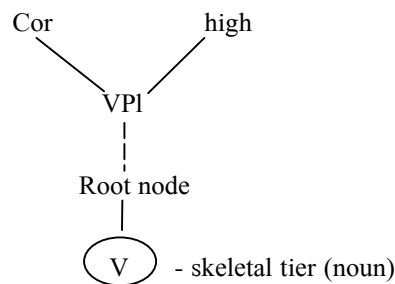
[162] The shorthand 'V' here is used to refer to the underspecified vowel. VPl refers to the Vowel Place feature node.

This effects of this analysis are demonstrated below with the form */sũni-tu/ [ˈsũːniɾu]* 'sun'.

Derivation of /sũni-tu/ 'sun'

Lexicon:

```
                                σ
                              / |
                             O  R
                             |   \
                             |   N  C
                             |   |  |
     root                   /s  ũ  n  <V>/
```
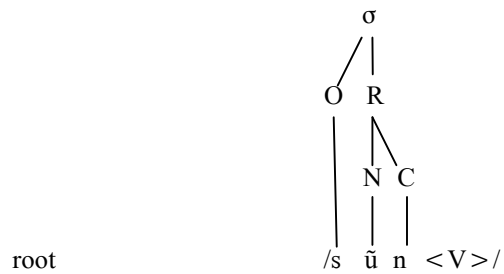
Stress Rules:

```
                                 xx
       Syllabification          [sũn.V]
```

```
       QS
                                  x
                                 xx
                                [sũn.V]
```

```
       ERFF                      N/A
```

```
       ERFW
                                 x
                                 x
                                 xx
                                [sũn.V]
```

By the end of the Lexical Component, the noun affix would be added and the output would look like this (ignoring other phonological rules at the moment):

Output of the Lexical Component:

```
          x
          x
          xx    x
        [sũn.Vtu]
```

Post-Lexical Component
  Noun V-Feature Filling:

```
          x
          x
          xx x x
        [sũn.itu]
```

  Resyllabification:

```
          x
          x
          x x x
        [sũ.ni.tu]
```

  Compensatory Lengthening:

```
          x
          x
          xx  x x
        [sũ:.ni.tu]
```

Output of Phonology:

```
          x
          x
          xx  x x
        [sũ:.ni.tu]
```

A similar derivation could be repeated for all the nouns ending in the predictable /i/. Not all of the /-i/ final nouns, however, should be treated in this manner. A number of these final syllables may actually be, or may have been at one time, suffixes in their own right. This seems to be the case for the *-ki/* suffix used for animate/growing things, or the *-si/* suffix used for people groups. The *-ni/* ending may refer to a kinship relationship, although it is used for many other types of nouns as well. At this point it is wise only to posit a morpheme status for forms which have earned it – those which seem to hold their general meaning in a variety of environments and in a significant number of words.

The true exceptions, then, are those nouns with /-i/ final syllables which have no semantic content. These final /i/ vowels function simply as markers of an '/i/ class' of noun roots that are defined morphologically as having an unaccentuable final syllable. These '/i/ class' nouns are the ones whose stress patterns can only be accounted for by positing an underspecified V in the underlying forms of their root morphemes. Once we allow for the possibility of the underspecified V in these words, the lack of stress on the last syllable simply falls out from the application of the stress rules and the manner in which underspecified segments get their features.

2.3.5.7.2   The Predictable /a/ Vowel in Verbs

While the favored post-stress vowel in noun roots is the /i/, a different vowel is favored in the post-stress position in poly-syllabic verb roots. This is the /a/ vowel. Another way to state this is to say that when there is a vowel in the verb root after the stressed vowel, this vowel is /a/. It is a relatively small set of verb roots which even have a second syllable after the stressed syllable, and in these unusual cases, the /a/ always fills the final vowel slot of the root.

Some verb roots with post-stress /a/

(970)	/ˈjoha-latʰa-wa/	he/she is buying/trading
(971)	/ˈweiha-latʰa-wa/	he/she is placing it
(972)	/ˈlaka-latʰa-wa/	he/she knows
(973)	/waˈnaka-latʰa-wa/	it is close
(974)	/ˈwãha-latʰa-wa/	he/she is waiting
(975)	/ˈsiha-latʰa-wa/	he/she is building
(976)	/ˈluka-latʰa-wa/	he/she chooses
(977)	/ˈjauhna-latʰa-wa/	he/she loves
(978)	/ˈsuhna-latʰa-wa/	he/she is afraid
(979)	/euˈlikʰa-latʰa-wa/	he/she is called

As was the case for the /i/ final noun roots, many of these /a/ final verb roots appear to be exceptions to the stress rules. Like their noun counterparts, we would expect verb roots with all light syllables, such as /joha/, to stress the final syllable. But we see in the forms above that the first syllable is stressed instead.

Once again, we have a vowel whose features are predictable but which never gets stressed, even though it is in a stressed position. The same analysis applies here to verbs that applied to the underspecified /i/ in nouns. I will once again make use of underspecification and posit an underspecified V segment in the underlying forms of these exceptional verb roots. Like its counterpart in noun roots, this post-stress /a/ vowel appears to be an 'empty' morpheme semantically, functioning simply as an indicator of an 'a-class' of verb roots which do not stress their final syllable. The difference between these verb forms and the noun forms we saw earlier is that the underspecified V gets its features filled in by a different redundancy rule. The noun forms fill in the features of the 'V' by way of the Noun Feature-filling Rule, while the verb roots fill in the features of the underspecified 'V' by way of the Verb Feature-Filling Rule spelled out below.

VERB V-FEATURE FILLING RULE
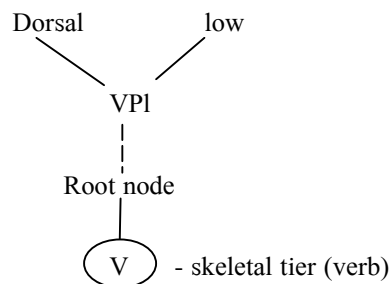
Thus the verb root */joha/* 'trade' would be stored in the lexicon as */johV/*, and originally syllabified as:

/joha/ - original syllabification
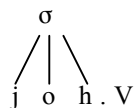
The lack of syllable structure above the V would cause the stress rules to ignore it, and stress would fall on the first syllable. Once again, the use of the underspecified V allows us to explain why certain poly-syllabic forms, in this case specific /a/ final verbs, do not behave as expected in terms of the stress rules.

A related issue to this discussion is the fact that most root morphemes in Mamaindê, and in most of the other Nambikwara languages, are mono-syllabic.[163] Therefore any syllables before or after the stressed vowel of the root are usually other morphemes which have been added to the root. Poly-syllabic roots do exist, but they are much fewer in number that mono-syllabic roots, and of the poly-syllabic roots, many are obviously derived from previous concatenations of two or more root morphemes into compound stems such as */wikah-tu/* 'ant:type', which is actually the conjoining of */wi/* 'tooth' and */kah/* 'bitter' (if you eat this ant it gives off a bitter taste). Other poly-syllabic roots are suspect of being older compounds as well, such as */walekhandu/,* though we have not been able to reconstruct what the internal makeup of these forms might have been. When we speak of predictable vowels in Mamaindê, we are restricting ourselves to the predictable vowels before or after stress within a single root morpheme, not within a compound stem. This means that these forms are fewer in number than it might seem at first.

---

[163] An exception is Sabanê, which seems to prefer two and three syllable nominals (Antunes 2004: 214). This tendency for poly-syllabic roots in Sabanê is one of the major differences between it and the other Nambikwara languages.

2.4 Tone

2.4.1 Tone in the Nambikwara Family

The matter of tone continues to be an area of interest and debate among Nambikwara scholars. Although tone studies of individual languages within the family have been conducted, the conclusions vary considerably depending on the language and lect being discussed. As of yet, no one has attempted to verify these differences or explain them in light of diachronic, areal, or other evidence. In this section my goal will be to describe the Mamaindê tone system, but I do so with the keen awareness that a broader comparative look at tone within the whole family is certainly in order.

I will use Hyman's statement below as my definition for tone.

> *"A language with tone is one in which an indication of pitch enters into the lexical realization of at least some morphemes" (Hyman 2001:1368)*

How tone or pitch has been dealt with by the different authors is interesting. Kroeker (2001:81) and Lowe (1999:269) both claim that tone is lexical in Southern Nambikwara. Kingston (n.d.,Tonal Curves and Perturbation:6) and the present author make the same claim for Mamaindê. Telles (2002:114,125-126) on the other hand, posits a pitch-accent system for Latundê, while Antunes (2004:71-84) claims that pitch in Sabanê is strictly a phonetic correlate of its stress system.

Although it is clear from the above that each of these languages employs pitch differently, they all must refer to pitch contrasts in some way. Thus, it seems best to represent the usage of pitch along a scale, similar to the continuum proposed by Yip (2002:4). This continuum extends from a lexical tone language at one end, where no pitch is predictable, to a pitch-as-stress system on the other, where every pitch is predictable. In the middle are numerous variations on the two extremes, including pitch-accent. According to this scenario, Southern Nambikwara would be at the lexical end of the continuum followed closely by Mamaindê. Latundê would be near the middle and Sabanê would fall on the pitch-as-stress end.

$\longleftrightarrow$

lexical tone	pitch-accent	pitch-as-stress
Southern Nambikwara	*Latundê*	*Sabanê*
Mamaindê		

These differences in dealing with tone also correspond directly to the vitality of the language in question. Southern Nambikwara and Mamaindê, for instance, exhibit a 'healthy' lexical tone system, and although they have had contact with the outside world for over a century, and although bilingualism has invaded virtually every age level, these groups have still been able to maintain the vigorous use of the vernacular as the first language for the vast majority of the society.[164]

less language shift		more language shift
←		→
lexical tone	pitch-accent	pitch-as-stress
Southern Nambikwara	*Latundê*	*Sabanê*
Mamaindê		

Latundê, on the other hand, which as a pitch-accent language could be considered a 'weak' tone system, is more endangered as a language and has less language vitality. The only speakers left are adults, since the children have only a passive knowledge of their mother tongue, and an active command of Portuguese.

Finally, Sabanê, where contrastive tone is non-existent, and where pitch is used simply as a predictable feature of stress, is almost completely moribund, with only a handful of elderly speakers left. This possible connection between the degree of language loss in general (directly related to the amount of contact with Portuguese) and the degree of tone loss in particular seems plausible, and should be investigated further in any future attempt to explain the differences between these tone systems.

2.4.2 Stress vs. Tone

Mamaindê is a tone language that also has stress. Yip (2002:256-257) points out that tone and stress are not mutually exclusive language properties, and that the definition of a tone language 'does not also commit to an absence of stress'. The use of phonetic properties other than pitch to signal stress is common among the world's languages (such as length, amplitude, vowel quality, etc), and such strategies can easily co-exist alongside lexical tone systems. Having said that, the frequent use of pitch by stress systems makes it imperative to determine whether or not the pitch

---

[164] There are signs that this state of affairs will be short lived. Southern Nambikwaras are moving their villages to the very edge of Brazilian towns, the Mamaindê prefer Portuguese literacy to literacy in the vernacular. Young men and women from both groups are abandoning work in the fields and are vying for government jobs which guarantee them a monthly salary, jobs which are typically awarded to those who demonstrate the highest ability in Portuguese. These are unavoidable signs of cultural and linguistic change. While the current generation has so far been able to handle bilingualism and other changes without losing their mother tongue, there is concern for the generation that follows.

patterns one is dealing with are the result of a tone system or a stress system. In this section I show acoustic evidence that tone and stress are distinct features of the Mamaindê language.

In Mamaindê, tone *cannot* be used to predict stress.[165] Below we will see that the stressed syllables do not all carry the same tone. In fact, stressed syllables can display any of the four tone patterns in Mamaindê (see also Eberhard, 1995:27).

(980)

stressed syllable with H tone:[166]

H L H

w̃ãn latͪawa   she is returning

w̃ãn   la   tͪwa

---

(981)

stressed syllable with L tone:

```
L  L    L  H
 \  ||   /   |
  \ ||  /   |
```
ka**lo:**latwa   it's growing
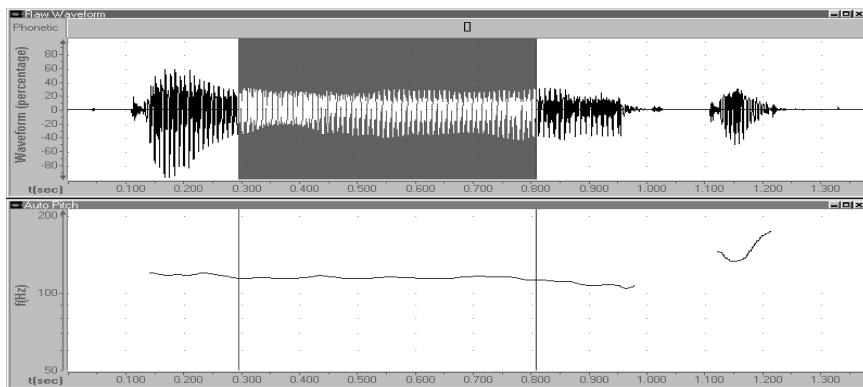
kə   **lo:**   la   tʰwa[167]

---

[167] Notice the change in vowel quality here. Although the syllable /ka/ is pronounced with more amplitude, the vowel has weakened to a central position, indicating that this is *not* the stressed syllable. In multi-syllabic roots, the vowel quality must be taken into account. In this word, the effects of stress can be seen in the lengthening of the second vowel. As we have already seen in the section on stress, this is a quantity sensitive language where syllable weight is important. When there are no heavy syllables in the root, the stress system will lengthen the rightmost syllable. This lengthening is indicated by a colon throughout this section.

(982)

stressed syllable with HL tone:

H   L   L H
 \   /   / /
ɗuːlatwa   he's getting (something)
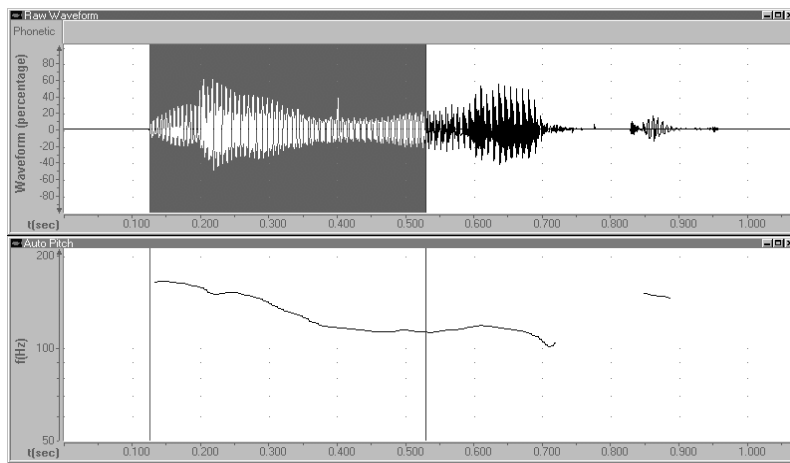
        ɗuː   la   tʰwa ¹⁶⁸

---

¹⁶⁸ Notice the strongly imploded [ɗ]. This is the recording of an older speaker for the word
/tulathawa/ 'he gets'. Although this allophone of /t/ is being abandoned by the younger
speakers, it still comes across clearly in the speech of the older generation.

(983)

stressed syllable with LH tone:

L H L H

wi:lat^{h}wa   she is eating (meat)
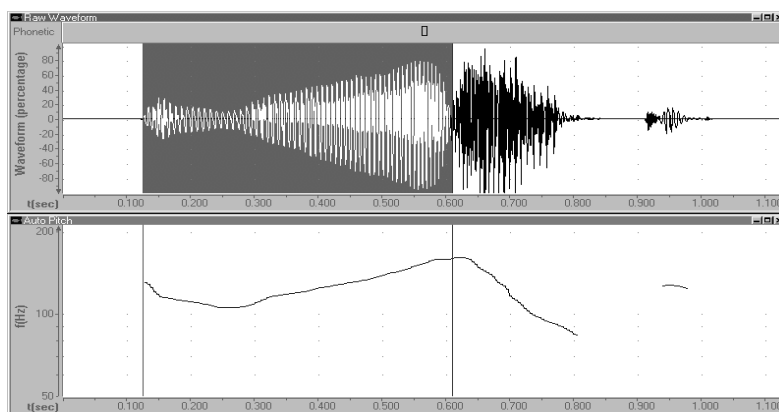
wi: la   t^{h}wa [169]

      As these examples show, in Mamaindê any of the four pitch patterns can occur on stressed syllables, while in unstressed position one will only see H and L.[170] This follows a predictable tendency in many languages to allow more contrasts on stressed syllables. The crucial point here, however, is that in stressed syllables at least, Mamaindê pitch is independent of stress.[171]

      A final word about this independence is necessary. When one notices that the complex tone patterns (either HL or LH) occur only on stressed syllables, it is tempting to posit a direct relationship between pitch and stress, a relationship in which specific pitch patterns are based on the stress system. This is, however, misleading. The only relationship between the tone system and the stress system is that they are both based on the notion of the mora. This simply means that syllable weight is what determines which tone patterns as well as which levels of stress are possible on any particular syllable. This will be discussed further in 2.4.4.2.

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[169] Underlined vowels are creaky voiced segments. Although fairly stable in this pitch graph, they often present erratic pitch contours.

[170] These same four pitch patterns are also evident on syllables with creaky voice vowels:

 L   H   LH   L HL

/lo/ 'itauba/hardwood tree';   /ni/ 'like this';   /li/ 'cold';   /kihlan?/ 'son';

[171] It has already been established in section 2.3 that the phonetic correlate of stress in Mamaindê is syllable length, not pitch.

2.4.3 Tone vs. Intonation

A second question we must address at the outset is whether or not the tones in Mamaindê are influenced in any way by intonation patterns. There can only be three possibilities here: it could be that the changes in pitch we are noticing might be wholly attributed to intonation, partly influenced by intonation, or not influenced by intonation patterns at all. The four waveforms above, where the stressed syllable of the verb root can carry one of four tonal patterns, demonstrate that intonation cannot be influencing the change in pitch on the root. Here they are again in phonetic form, with the root morphemes underlined.

(984)

     H L H
a) <u>wãn</u>latwa   he returns

     L L L H
b) <u>kalo:</u>latwa   it grows

     LH L H
c) <u>wi:</u>latwa   he eats

     HL L H
d) <u>du:</u>latwa   he gets

     All four of these verbs (as well as most of the examples throughout this section) are intentionally shown with the same verbal suffix string, *[-latwa]* 'S3/PRS/N.INT'. Not only do these four examples have the same suffixial ending, but these utterances are all part of the same communicatory frame – an unmarked declarative sentence. There is no change in mood or attitude on the part of the speaker. Therefore, if there were any evidence of intonation on these utterances, it would be seen in that part of the utterance whose tone remains the same (the affixes), not in that part whose tone varies (the root).[172] We must deduce from this that the different tonal patterns evidenced on the Mamaindê roots cannot be attributed to intonation. In the previous section I also argued that this variation in pitch was not due to stress. The logical conclusion is that the tone patterns on Mamaindê roots are lexical. These lexical tones, and the interesting sandhi which they sometimes exhibit, will be the major focus of this section.

     Certain affixes, on the other hand, do show evidence of intonation. Since Mamaindê is an SOV language, most of the verb examples in my data come

---

[172] There is some evidence that in certain genre, downstep may occur. If this proves to be true, it would obviously influence tones in the whole utterance. However, it could only affect the specific pitch of individual tones in relation to other syllables with the same tone. It still would not be able to account for the contrastive tone patterns found on Mamaindê roots.

sentence final. This would be a common locus for intonation to affect underlying tone. In Mamaindê, intonational patterns can be found on the tone of the final syllable of the verb affix string. A brief sketch of this final intonation would include the following tendencies: the final syllable of the last verb suffix is usually H when in unmarked declarative and imperative statements, it is H , HL or LH in different types of interrogatives, it is HL in a humorous statement, and L in the negative.

      Verb-phrase final syllables that are not sentence final often carry a H tone as well. This is the locus of the verb connectives, which are bound morphemes suffixed to the verb root, and are mandatory between two verb phrases in the same sentence. The final H tone on the majority of these verb final connective markers seems to suggest an intonational device.

(985)

    L H
a) /-kʰatoʔ/   then (same subject) [173]

    L   L H
b) /-h̰ḭnʔkalu/   then (different subject)

    L H
c) /-tạku/   and

    H L H
d) /-sihtạku/   so that

  H
e) /-ḭ̄/   listing device   (suffixed to verbs or nouns when being listed)

      Of particular relevance to this discussion is the connective */-h̰ḭnʔkalu/* 'DS.then'. When shortened to the more common mono-syllabic form */-h̰ḭ̄ʔ/*, it still ends in a H tone, even though the lexical form of the morpheme has a L tone on that syllable. This provides evidence for positing the H tone as an intonational device on the final syllable of connectives.

      However, there are a few connectives that do *not* end in a H tone when they are shortened. In their contracted forms, these connectives always end in an L tone.

---

[173] There are times however, when a speaker will change the H tone on the last syllable of the connective */-kʰatoʔ/* 'then' to a L tone. Since this morpheme always occurs between two phrases, the tones it carries are probably the result of intonation. The meaning of the L remains unknown, but it seems to signal an unmarked utterance or a rather uninterested speaker. On the other hand, when */-kʰatoʔ/* ends on a H tone, the speaker is expressing more interest in what he is saying and is conveying this excitement to the hearer.

(986)

   H L H   H L

a) /-sihtạku/   'so that'   ⟶   [-sic̥ʰạʔ]

    L H   L

b) /-tạku/   'and'   ⟶   [-ɾạʔ]

       Also, there are a number of other connectives which consistently end in a L tone in all situations. Examples are:

(987)

    H L

a) /-natʰoh/   but

    L H L

b) /-teʔnataʔ/   in order to

    H L

c) /-kʰijãn/   so as not to

    L HL

d) /-kʰijãnʔ/   in the same way

       These data show that the intonation analysis on connectives is far from conclusive.

2.4.4 Mamaindê Tone

Mamaindê has been described by various authors (Price, Kingston, Eberhard, Yip) as a tonal language. As we demonstrated earlier, tone is a feature of language that can be realized in a number of ways and to different degrees. On one end of the spectrum, we have languages where tone is never required as a lexical feature. On the other end, we have languages where the tone of each and every syllable is fixed in the lexicon and never changes. Lastly, we have languages in the middle of the spectrum, where only certain tone bearers are lexically attached to tones and others are not, or languages where all tones are lexical but may undergo tone changes under certain conditions.

It is in this last group that Mamaindê falls. It is a tonal language where tone must be marked in the lexicon, but it also allows for some changes to occur to the tones of certain syllables. I will describe both of these characteristics in the following pages, employing a standard autosegmental approach. In the footnotes, however, I refer to Optimality (OT) constraints when appropriate, as I feel that OT offers some helpful insights into the workings of Mamaindê tone.

2.4.4.1   Underlying Tones

Previous research on Mamaindê tone is published by the author, (Eberhard 2005). The only other existing treatment of Mamaindê tone is found in variants of a manuscript entitled 'Tonal Curves and Perturbation' by Kingston (n.d.). The fundamental difference between my proposal here and Kingston's is in the number of underlying tones proposed. Here I posit a tone system for Mamaindê comprised of only 2 underlying tones, H and L.[174] These two tones can then be combined into a total of 4 surface patterns when spread over any bi-moraic syllable: H, L, L-H and H-L.[175] This differs from Kingston's analysis where he posits 4 contrastive tones - two register tones, H and L, and two contour tones, Rising and Falling (Kingston n.d.(b):6). As I will endeavor to show in the following pages, however, this tone system can be described quite readily without having to refer to contour tones as lexical. Contour tones on syllables will be shown to follow from the fact that in Mamaindê tones (H or L) are lexically associated to moras, instead of syllables.

The tonal inventory of Mamaindê apparently differs somewhat from that of the other languages within the Nambikwara family. Both Kroeker (2001:81) and Lowe (1999:269) describe the Southern Nambikwara tone system as being comprised of 3 underlying tones; one register (L), and two contour (Falling and Rising). For the Lakondê and Latundê lects of Northern Nambikwara, Telles (2002:125-126) cites the presence of H, L, Rising and Falling pitches in surface

---

[174] It is quite possible that we could posit just one underlying tone, H, and then fill in L by default at the end of the phonology. Although requiring one additional constraint to fill in the Lo, this analysis would reduce the complexity in the lexicon. The only difficulty with this approach is the tone of the negative construction (described in sections 2.4.4.4 and 3.4.2.3.5.3). The negative seems to require the presence of an L tone in the lexicon for the correct tone sandhi to occur. Still, the possibility of reducing the number of underlying tones is an option that should be pursued in future studies of Mamaindê tone.

[175] Frequency range of each tone arranged according to three male informants (in Hz.):
Speaker 1 – Joaquim
       L tone range – 69 –119
       H tone range – 130 –190
Speaker 2 – Barbinho
       L tone range – 49 – 75
       H tone range – 90 – 150
Speaker 3 – Luiz
       L tone range – 52 – 80
       H tone range — 99 – 160

forms, but prefers to view only H as lexical, and refers to these as 'pitch accent' languages instead of tonal languages.[176] Although I have not conducted tonal research in the Negarotê lect, my own personal interaction with Negarotê speakers would lead me to infer that the Mamaindê and Negarotê tonal systems are virtually identical, including the contrastive H. Apparently, then, all of the Northern Nambikwara languages present 4 possible pitch patterns in their surface forms, while the Southern Nambikwara languages only present three.[177] The question remains whether the H tone of the Northern languages is a vestige of proto-Nambikwara or whether it was a more recent development.

2.4.4.2   Associating Tones and Mora

The data below show that contour pitch patterns (F=falling, R=rising) in Mamaindê are possible on heavy syllables (those with a coda consonant or a lengthened vowel) but not on light syllables.[178]

(988)
```
    F L  H
a) duː.la.twa                 he/she is getting


   L L L  H
b) kə.loː.la.twa              it is growing


   R  H L  H
c) on.gə.la.twa               he/she is doing …


   H L  L  H
d) də.nuː.la.twa              he/she is giving


   L  F L  H
e) waʔ.nĩn.la.twa             he/she is performing magic


   H R  L  H
f) wə.nũn.la.twa              it is good


   R L  H
g) daː.la.twa                 he/she is laying down
```

---

[176] We saw in section 2.4 that a pitch accent system will not account for Mamaindê since stress and tone are not linked.

[177] The Sabanê language, which is neither of the Northern nor Southern branches of Nambikwara, does not have lexical stress (Antunes 2004:71-84).

[178] The data presented in this section is in phonetic form. Verb roots are underlined, colons mark lengthened vowels, and periods mark syllable boundaries.

This pattern is consistent across the language, leading to the conclusion that the tone-bearing unit in Mamaindê is the mora, not the syllable. Syllables with codas, in the form of a consonant or a lengthened vowel, are two moras long and are therefore allowed two tones[179]. So, instead of rising and falling contour tones, what we find on bi-moraic syllables are combinations of H and L, each tone associating to a mora.

My analysis of Mamaindê stress in section 2.3 is also dependent on the notion of mora, and assigns importance to the number of mora in a syllable. The fact that both the stress system and the tone system are based on the same building blocks is a crucial insight that ties Mamaindê phonology together, giving more validity to the present analysis.

Defining the mora as the tone-bearing unit is directly related to the idea that in the surface representation, each tone must link to a mora.[180] Tones may not remain floating. It also means that tones only associate to segments that have been assigned a mora by the phonology. This effectively limits the tone bearing units to nucleus and coda segments only. Whether a syllable ends with a consonant or consists of a long vowel does not matter – in both cases the second mora can attract an extra tone to the syllable. Below are some examples of tone to mora associations in Mamaindê.[181]

(989)

```
   H         H
   |         |
   μ         μ
a) /ta/  →  [da]                    my (nominal prefix)


  H L      H L       H   L
   |        |         \  /|
   μ       μμ        μμ
b) /tu/ →  duː   →  [duː]        to get
```

---

[179] Of course, not all heavy syllables have two tones at the phonetic level. If the mora of the nucleus and the coda of a heavy syllable have the same tone, the two tones will naturally be reduced to one single tone in the output due to the Obligatory Contour Principle (OCP). The point here, though, is that **only** heavy syllables can have two tones.

[180] In Optimality Theory, this would be handled by the LINK constraint, which would ensure that 'each tone is associated with a mora'.

[181] The intermediate lengthening in example 11b is due to the application of the stress rule on roots. This shorthand format, however, does not do justice to the OT framework, where both the constraints of the stress system and the tone system would be considered simultaneously to arrive at the surface form without any intermediate steps. Likewise, in 11c and d, the coalescing of two identical adjacent tones into one is simply the work of the OCP, and not an intermediate step in the phonology.

```
  L L H              L   H
                      \  |
                       \ |
  μμ μ      —>      μμ μ
c) /anka/   —>    [aᵍŋga]            to be costly
```

```
  L H H              L   H
                     / /\
                    / /  \
  μμ μ      —>      μμ  μ
d) /onka/   —>    [oᵍŋga]            to do
```
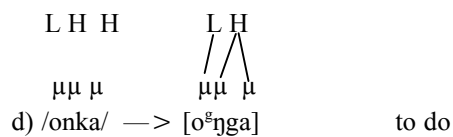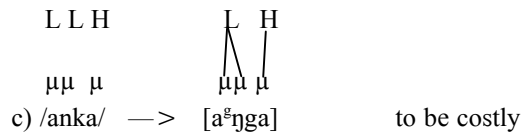
Conversely, all moras in Mamaindê are linked to one tone and one tone only.[182] Moras will not appear toneless on the surface, and double associations to a single mora do not occur. This effectively means that true contour tones are not allowed. However, when the nucleus of a heavy syllable is assigned one tone and the coda is assigned a different tone, the result appears on the surface to be a contour pitch pattern, such as in examples (b & d) above.

Not all codas, however, can carry tone on the surface. What actually happens in Mamaindê speech, and it would seem plausible for tone languages in general, is that only sonorants have this privilege on the phonetic level.[183] This means that phonetically, if the coda is a non-sonorant segment, the second tone of a heavy syllable naturally falls back on the nucleus position.[184]

(990)
(phonological form)   (phonetic form)
```
  L  H L                 L H  L
  |  | |                 |  \/
  |  | |                 |  /\
  μ  μμ                  μ  μμ
 /kanih/       —>       [kanih]          many
```
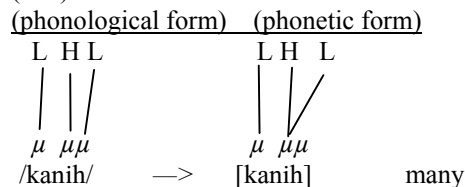
However, for the remainder of this section, such phonetic detail will not be necessary. My main concern regarding the linking of tone and mora will be to indicate which syllables can carry two tones and which may not. This is most clearly shown by linking the tones with the mora that licenses them. Although coda obstruents do not carry tone on the surface, their presence, in the form of an extra mora, is what allows a second tone to be linked to the syllable in which they are

---

[182] This same notion is captured in OT by way of two common constraints: Interpretability and NoContour (Pulleyblank 1997:91,97).

[183] The OT constraint needed here would be the *Link[Obstruent] constraint - 'Tones do not link with obstruents'.

[184] Phonologically, however, the second tone is still licensed by and associated to the second mora of the syllable.

found. Therefore, throughout the remainder of this section I will be associating each mora with a tone, regardless of whether or not that mora is an obstruent.[185]

2.4.4.3 Tone Plateauing in Verbs

As we have already mentioned, in Mamaindê, each mora of each syllable is lexically defined for tone. Typically, this means that no matter where a morpheme might occur it will generally exhibit the same tone pattern. This can be illustrated below.[186]

Verb root	followed by L		followed by H	
H wan	H L H wan – la.twa	he is returning	H H H waː – naʔ.wa	I am returning
L ta	L L H daː – la.twa	he is falling	L H H daː – aʔ.wa	I am falling
LH wi	L H L H wiː – la.twa	he is eating	L H H H wiː – aʔ.wa	I am eating

---

[185] Notice that tones are not prohibited from linking with nasal consonants, since nasals are sonorants. This linking with nasals can occur either in the coda position, or in the nucleus position with a syllabic /n̩/, since in both of these instances the nasal is linked to a mora. The syllabic /n̩/, shown below, is found in forms where contraction has occurred and as a result of a vowel elision, an original nasal onset has become the sole nucleus of a syllable. The syllabic nasal in the contracted form is allowed to retain the original tone of the syllable.

```
 L   H L            L  H L
 μμ  μ μμ           μμ μ  μμ
/teiʔ.na.ta̰ʔ/   >   [deiʔ.n̩.da̰ʔ]      in order to
```

[186] Here, as with most of the examples in this section, I have selected a small number of frames to use with each verb stem in order to minimize the influence from different intonation patterns. The constant repetition of the 3rd person present tense forms is intentional.

There are, however, environments where tone sandhi is evident. This can be seen in forms such as the one below. Note the deletion of the L in the root of the rightmost form.

Verb root	followed by L		followed by H	
L HL sanĩn	L HL L H sə.nĩn – la.twa	he is happy	L H H H sə.nĩː – naʔ.wa	I am happy

The locus of most Mamaindê tone sandhi is within the verb stem. This occurs when a verb root with a HL on its last syllable is followed by a high tone on the next syllable.[187] Let us take a closer look at the verb /sanĩn/ 'happy', which ends with a falling HL contour on the last syllable. First we will show the root followed by a low tone, found on the first syllable of the 3rd person, present tense declarative ending /-latʰa-Ø-wa/.[188] Notice that the pitch graph which follows the form below shows no change in pitch on the root. [189]

---

[187] Kingston mentions this tone sandhi on page 11 of his unpublished manuscript 'Tone Curves and Perturbation'.

[188] The data examples in the following waveforms and throughout the remainder of this tone section are transcribed in phonetic form unless otherwise indicated. Root morphemes are underlined when appropriate.

[189] Although it may appear as though the highlighted syllable /nĩn/ contains a LHL tone in this graph and a LH in the following graph, the actual tone bearing units in this language are only the segments of the rhyme, i.e., the nucleus and the coda. Therefore, one must be careful not to assign tone to every change in pitch, but only to those changes in pitch that are distinctive in the language. Since the initial rising portion of this syllable corresponds to a non-tone bearing unit, the onset, we will consider it as simply a phonetic transition between the L of the preceding vowel, and the H of the following vowel. My analysis of other tone graphs throughout this paper will also disregard the tone of the onset.

(991)

```
L    H L   L      H
|    | |   |      |
|    | |   |      |
|    | |   |      |
μ    μμ   μ      μ
```
<u>sa   nĩn</u> – la   twa   he is happy


```
       L    HL                     L          H
       sa   nĩn                    la          twa
```
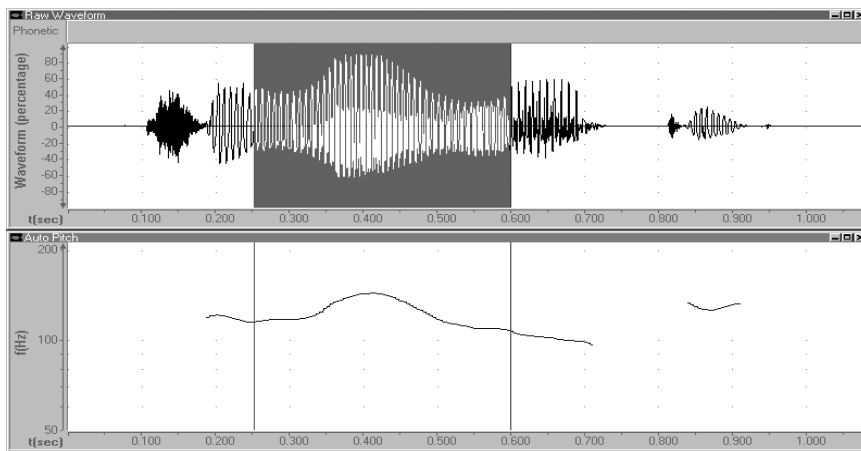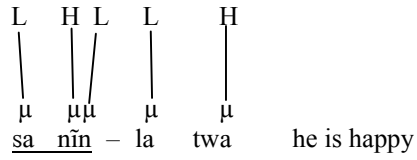

We find that a HL pattern on the last syllable of a verb root will always remain unaltered as long as it is followed by a L tone in the next morpheme. However, if it is followed by a H in the next syllable, the HL on the root loses the L and changes to a simple H tone, as demonstrated in the form below.

(992)

L	H L	H	H
μ	μ μ	μ μ	μ
sa	nĩ:	naʔ	wa

I am happy

L	H		H H
sa	nĩ:		naʔwa
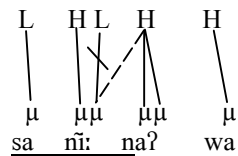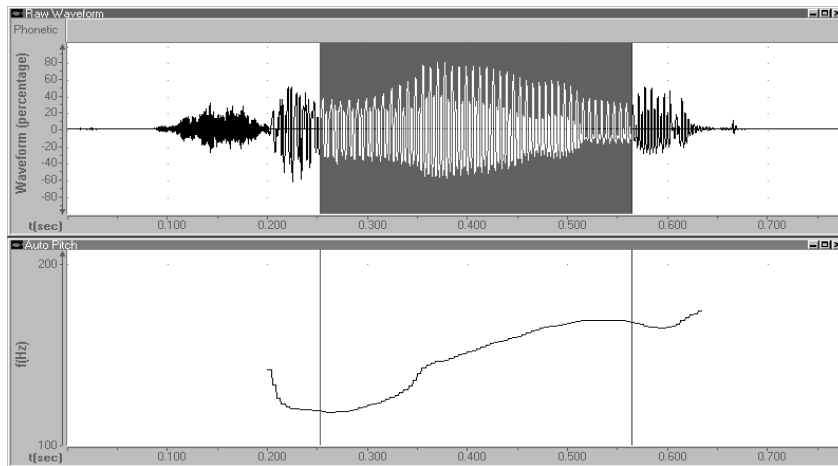
     The most straightforward way to analyze this tone change would be to posit that the underlying representation on the last syllable of the root in both these cases is not HL at all, but a simple H. Before another H it remains H. Then, when it occurs before L, the L spreads to the left creating a HL pattern. This approach would require few constraints.

     Unfortunately, this simple analysis will not work when we look at the rest of the data. Mamaindê has many verb roots that end with a simple H tone. When these are followed by a morpheme with a L tone, they never perturb to HL. For example:

(993)

L	H	L	H
μμ	μμ	μ	μ

a) daʔluk + latwa   he/she is coughing

```
H L   H    L  H
|  |\  /\  |  |
μ μμ μμ    μ  μ
```

b) <u>jahaidũn</u> + latwa   he/she is shy [190]

```
H    L  H
/\   |  |
μμ   μ  μ
```

c) <u>wan</u> + latwa   he/she is returning

```
        H                    L      H
        wan                  la     twa
```
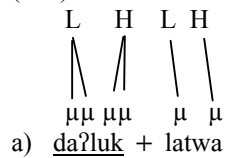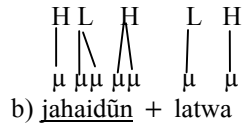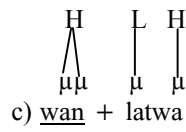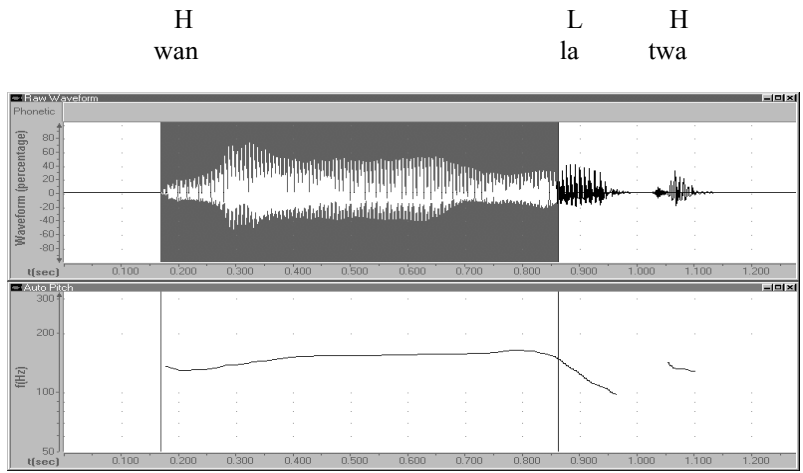

Examples such as the ones above show that an H before an L does not perturb to HL. In fact, we get all the four possible tone patterns exhibited before L.

(994)

```
HL   L  H
||   \  |
μμ   μ  μ
```
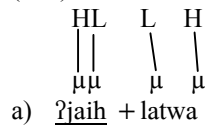
a)   <u>ʔjaih</u> + latwa   he is sad

---

[190] Examples b & c above are shown with only one instance of H spreading to two moras so as not to violate the OCP. However, since there are two tone bearing units in these forms, there is no reason within Mamaindê phonology why these could not be represented with two adjacent H tones.

```
   L  H   L   H
   |\  |   |   \
   | \ |   |    \
   μμ  μ   μ    μ
```
b) <u>suhnə</u> + latwa   he is afraid

```
   L  L    L   H
   |  |\   |   |
   |  | \  |   |
   μ  μμ   μ   μ
```
c) <u>kəlo:</u> + latwa   it grows
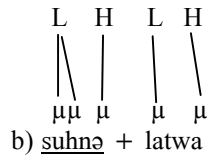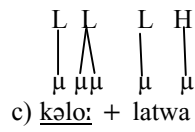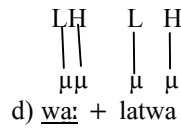
```
   L H    L   H
   |\|    |   |
   | |    |   |
   μμ     μ   μ
```
d) <u>wa:</u> + latwa   he comes

More evidence for HL as an underlying tone pattern on some syllables comes from examples where the HL is permitted in word final position, such as in the following form:

(995)
```
  L  H L
  |\ | |\
  | \| | \
  μμ  μμ
```
  haʔɗin   quickly

 haʔ   ɗin
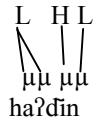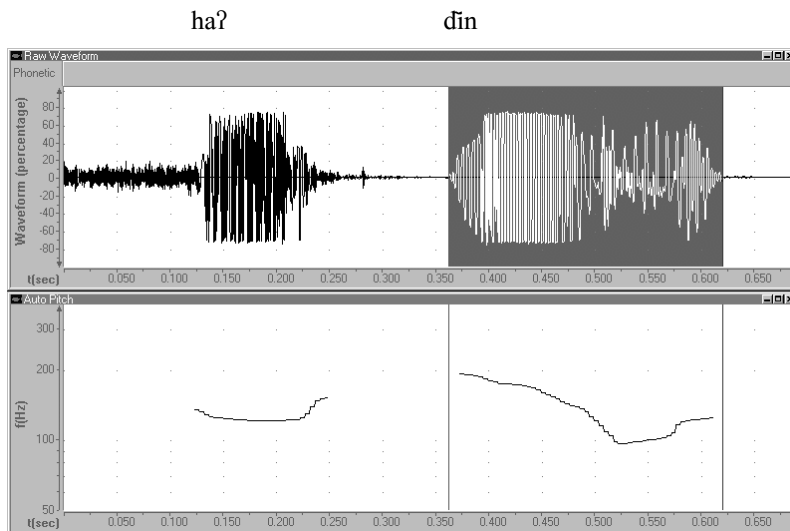
Words such as the one above, however, could also suggest another alternative. This involves positing a toneless mora at the right edge of roots that undergo sandhi, such as */sanĩn/* 'happy' or */haʔtin/* 'quickly'. This final mora would then get filled in with H when followed by H, or L when followed by L or end of word. Although plausible for the data cited thus far, this approach runs into problems with forms where the tone sandhi occurs at the left edge of the verb, as opposed to the right. Notice what happens to the tone on the root */wa̱/* 'come' when a causative prefix is added.

(996)

```
     L  H    L    L  H
     ||   /||   |    \
     μμ   μμ   μ    μ
```
a)   wa̱: - nũn - latwa
     come-RPT-S3.PRS.DECL[191]   =   it/he is coming again

```
   H        L H   L    L   H
   |    ---   ||   ||   |    |
   μ        μμ   μμ   μ    μ
```
b)   ta -   wa̱: - nũn - latwa
     CAU-come-RPT-S3.PRS.DECL   =   he is causing it to come again

If we continued to assume toneless moras instead of tone sandhi, we would now be forced to posit toneless morphemes at *both* edges of the root, sometimes on the right, sometimes on the left. At times, these toneless mora would be the original mora of the root syllable, while at other times they would fill the slot of the extra length of the vowel. Such an ad hoc use of the notion of toneless mora would be so overly powerful that it would explain very little.

Finally, the 'toneless mora' approach would simply be unable to account for forms where the HL sequence is not peripheral at all, such as when it is embedded within a compound verb stem. Below we have the complex verb stem composed of two roots, */tu-ʔnĩu/* 'get-return = bring', followed by the connective */-sihta̱ʔ/* 'in order to', which gets resyllabified as *[duʔ.nĩup.sih.ra̱ʔ]*.[192] Here we have the phonetic form with the underlying tones:

---

[191] The internal structure of the */-latwa/* string is */-latʰa-Ø-wa/* 'S3-PRS-DECL'.

[192] The /p/ is an epenthetic consonant which is the result of constraints we are not concerned with at this time. See section 2.5.8.2, 'Epenthetic C'.

(997)
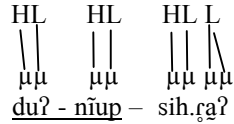
```
 HL     HL     HL  L
 \ \    | |    | |  \
 µ µ    µ µ    µ µ  µ µ
```
du? - nĩup –   sih.r̥a?   in order to get and return (bring)

```
        HL        H           HL        L
        du?       nĩup        sih       r̥a?
```
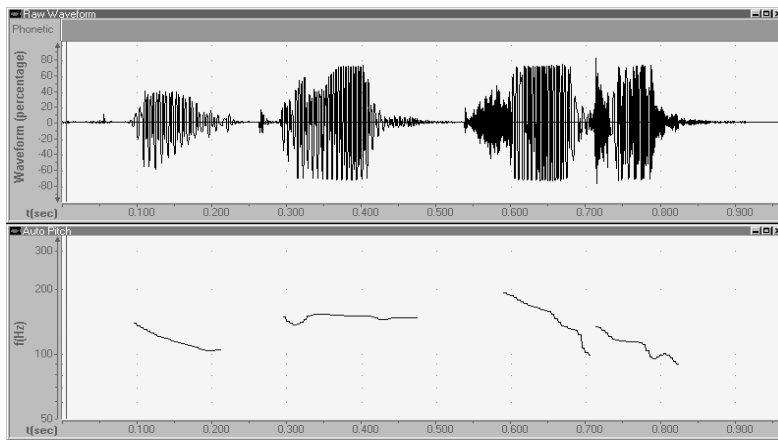

      Although the L tone in the second syllable gets deleted,[193] the L of /tu/, 'get', is clearly still present in the first syllable, located between two H's and not adjacent to the word edge. Here the L must be an underlying tone. Toneless moras cannot explain its presence.

      But in other contexts the same L *is* deleted. For example, the same root /tu/ 'get' in a different form *[duːɡəna?wa]* 'he/she did not get it (from him)' loses its association to L.

---

[193] This deletion of the L on *[nĩup]* follows the pattern we have already seen on the form /sanĩna?wa/ 'I am happy', where a HL on the root boundary goes to H before an H in the following suffix. This deletion does not apply to the first syllable, however, since it is not peripheral and is embedded within the stem.

(998)

HL H   L   H   H H L H

μ   μ   μμ   μ   μμ μ μμ μ

<u>tu</u> – ka – naʔ -wa   →   du: gənaʔwa   he/she did not get it (from him)
get-OBL-NEG-DECL[194]

    du: gənaʔ   wa
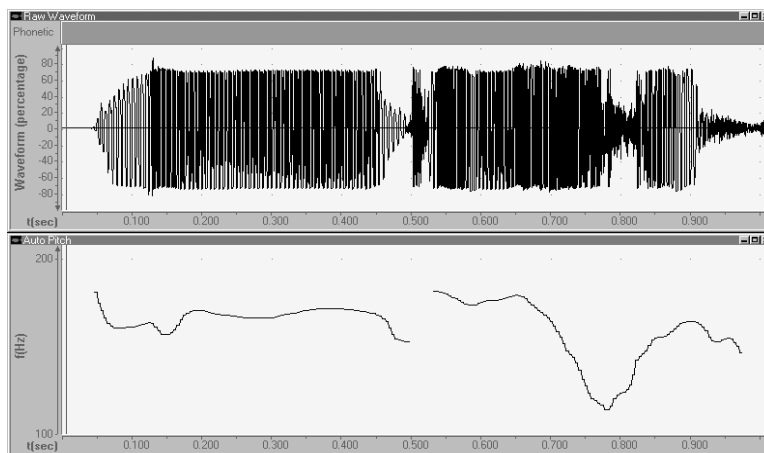
       This type of behavior cannot be accounted for except by positing that the L was there underlyingly, and that there is some type of rule, constraint, or group of constraints, operating in the language that would cause the L to delete in certain environments. The HL and LH sequences, therefore, must be regarded as part of the lexical form of certain vowel roots.

       Now that we have established the lexical nature of these HL and LH sequences, we can begin the task of accounting for this interesting tone perturbation. The heart of the tone sandhi issue in Mamaindê verbs revolves around sequences of HLH. There seems to be some sort of restriction against HLH sequences across the verb stem/affix boundary. Specifically, when a verb stem ends with a HL, or falling pitch, and is then followed by a H in the adjacent suffix, the intermediate L is always delinked, and three H tones occur instead.

       As Hyman (2000:6) and Odden (personal communication) point out, this phenomenon of HLH becoming HHH is prevalent in the Bantu languages of Africa and is often referred to as 'plateauing'.[195] It is also evident in Deg (Crouch, 1994),

---

[194] While the /-wa/ morpheme will be glossed as a declarative throughout the majority of this work, a more emic gloss would be 'Non-Interrogative'. See section 3.4.2.3.5.5 on clause types in verb morphology.

[195] Although a well known feature of several African tone languages, 'plateauing' in the Amerindian or Amazonian languages is generally not mentioned in the tonal literature.

and Mianmin (Cahill, 2000). [196] The motivation for 'plateauing' is believed to derive from a generic tendency to facilitate speech production, and a more specific desire to avoid rapid tone changes. These forces can be seen at work in Mamaindê as well, but here the effects of plateauing are only felt in a very specific domain, namely, at the verb stem+affix boundary.

   Using Autosegmental theory, we could account for these interesting cases of tone sandhi by way of the following rule, which involves tone spreading and a consequent de-linking. [197]

Cross-Reference to Section 2.5:
[Tone Rules; Lexical; Obligatory]

   NO TROUGH   % (MIRROR IMAGE RULE) [198]
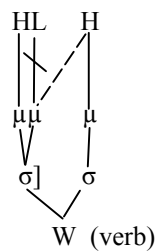
   This rule suggests the following:
- First, that this process applies only to HLH sequences where the L in the stem and the H in the affix are adjacent at the stem/affix boundary (never elsewhere)
- Secondly, that it is always the L tone which is deleted (never a high).
- Thirdly, that this deletion occurs only within polytonic syllables (multiple-tone syllables), never unitonic (single-tone syllables).

   And this is exactly what we find occurring in Mamaindê verbs. Below is an example of a verb undergoing 'plateauing'.

---

[196] Cahill adds that "there is the additional complexity of downstep in this process in some African languages" (personal communication).

[197] For an OT approach to this same phenomenon, the reader is referred to Eberhard 2005. In that account, the markedness constraint used is a NoTrough constraint, which disallows a HLH sequence across a verb stem boundary. Alongside this, I posit two pairs of faithfulness constraints, one pair governing the faithfulness of tones, and the other pair governing the faithfulness of syllables.

[198] The (]) symbol represents the edge of the stem.

(999)

Application of NoTrough

L   HL H   H
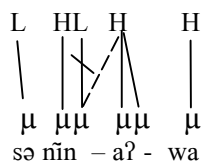
μ   μμ   μμ   μ
s̠ə nĩn – aʔ - wa   I am happy

(1000)

Output of NoTrough

L   H   H   H[199]
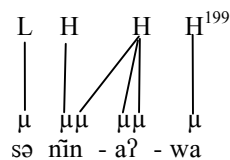
μ   μμ   μμ   μ
s̠ə nĩn - aʔ - wa   I am happy

2.4.4.4   Tone Sandhi and the Negative Construction

Besides the plateauing phenomenon found in verbs, other types of tone sandhi occur in Mamaindê as well. In the negative construction, we find two types of situations that provoke tone sandhi. The first occurs when the negative morpheme /-ʔ/ becomes linked to the coda of a preceding syllable. The second is when the only vestige of the negative morpheme is its floating tone.

2.4.4.4.1   The Negative as a Coda

The negative morpheme in Mamaindê is typically realized as the suffix /-aʔ/ or /-ʔ/ inserted in the middle of the verb string. The most salient feature of this negative construction is its distinctive low tone. Whenever the /-ʔ/ form of the negative is used, the glottal becomes syllabified as part of the coda of the preceding syllable. In the process, its L tone will either displace any H tone already present in the coda, or it will cause a falling tone on the previous syllable. This easily becomes the most prominent tone in the word, and even in the language. Below is an example of a Mamaindê negative as an input form.

---

[199] It is assumed that in such cases the OCP further reduces the three adjacent H tones to a single H.

(1001)

 HL H **L** H   H

<u>tu</u> - n - ʔ - nãn- wa
get-S1-Neg-Pst-Decl   = I did not get (any)

       Due to the Mamaindê syllabification constraints, the glottal will be syllabified here as a coda segment. Since that syllable already has one coda segment, the negative /-ʔ/ does not add an extra mora to the syllable and we might expect its L tone to be deleted due to the restrictions on tone–mora associations. However, the L of the negative remains and the output has the following tones:

(1002)

  H L H   H
   \ / |\ |
    \/ |\ |
   µµ   µµ   µ
  dunʔ. nãn. wa   I did not get (any)

       In the above word, where the /-ʔ/ is syllabified as part of the coda, the coda also includes another segment, the second person morpheme /-n/. Both these coda segments and their respective tones, as well as the L tone of the root, are vying for the single mora position available to the coda. For the L of the negative to win over the H, some type of restriction is required here which will not allow the negative tone to be deleted.[200]

       This dilemma brings up an interesting question related to suprasegmental features – could it be that certain morphemes are more strongly characterized by these features than others? In some cases, the suprasegmental itself is enough to identify a morpheme in certain situations. This may be a feature more common to tonal languages, where the tones of certain morphemes could be more crucial than the tones associated to other morphemes. The result is that these special morphemes seem to have inalienable tones. Their CV segments may get deleted, but the prosody associated to that morpheme is never deleted. Other tones may be affected by tone sandhi, but this particular tone is never altered. This is what appears to be happening with the Mamaindê negative. At times, the tone is realized on a CV sequence. At other times, the CV sequence does not surface, but the L tone is always present. This L tone is what identifies or marks the morpheme more than anything else. When we realize that positive constructions and negative constructions in Mamaindê sometimes differ only by a single tone change, it becomes crucial for tone contrasts in the negative to be preserved at all costs.

       For that reason, I propose that the L tone of the negative morpheme is pre-associated in the lexicon. The other tones of the word are present in the underlying

---

[200] The actual output of this form includes an alveolar prestop epenthesized before the first nasal, producing *[dũt^dnʔnãnwa]* 'I did not get (any)'.

form but are unassociated to the segmental string. In its lexical form, it would look like this:

(1003)

```
 HL H  L   H    H
        |
 tu -n -ʔ -nãn -wa
 get-S1-NEG-PST-DECL   =  I did not get any
```

       As the word begins to pass through the Lexical component, the segments are syllabified, giving certain syllable positions (the nucleus and the coda) the licensing they need to associate to tones and moras. Once the string has been syllabified, and moras have been assigned, the tones are linked to the segmental tier according to the restrictions on tone-mora associations that we established earlier. One of these restrictions is that a single mora may only carry a single tone. The end result of the syllabification and of the mora restriction is that the negative /-ʔ/ is syllabified as a coda and the L tone remains filling the single tone slot allotted to the coda, thereby blocking the association of the other coda tones. Thus, the permanence of the negative L tone in such forms can be explained by allowing for its pre-association to the segmental tier. The rest of the derivation falls out simply from the manner in which syllabification and tone assignment are ordered, and from the pre-existing restrictions on tone associations.[201]

       It is insightful to remember that if the L tone of the negative were not pre-associated in the above form, it would have been subject to the NoTrough rule and plateauing would have occurred. The very fact that the HLH is allowed in this form is further evidence of the presence of the negative construction and of its pre-associated L tone.

       The non-deletion of the negative L tone in Mamaindê is particularly interesting since its permanence creates a HLH sequence across a verb-affix boundary, thus violating the aforementioned NoTrough rule. The ability of the negative morpheme to violate the restriction on HLH shows that in Mamaindê, morpheme integrity is a higher priority than avoiding rapid tone changes.[202]

2.4.4.4.2   The Negative as a Floating Tone

As we have seen, the negative morpheme (/-aʔ/ or /-ʔ/) is always pre-associated to a pronounced L tone. However, in some negative constructions, the negative consists

---

[201] This could be handled in OT by a Max constraint. The one I proposed in Eberhard (2005) is MaxNeg[Tone], which ensures that the tone used to mark a negative construction in the input will be present in the output.

[202] See Eberhard (2005) for a more elaborated OT approach detailing the specific constraints and rankings which can account for the Mamaindê negative.

solely of a floating L tone with no segmental representation at all.[203] In these cases, a different type of tone sandhi occurs.

Take for instance the verb root */seit/* 'speak' which has a HL tone pattern. In example (a), it is followed by the L tone of the 3rd person present suffix string */-latwa/*, and in (b) these tones get associated in a straightforward manner. In (c), however, the root */seit/* is followed by the H tone of the imperative morpheme string */-tahĩnwa/.* [204]

(1004)

   HL   L   H

   μμ   μ   μ

a) <u>seit</u> - latwa   speak-S3.PRS.DECL   = he speaks

   HL   L   H

   μμ   μ   μ

b) <u>seit</u> - latwa   speak-S3.PRS.DECL   = he speaks

   HL   H H H

   μμ   μ μμ μ

c) <u>seit</u> - tahĩnwa   speak-IMP[205]   = speak!

As we would expect, this positive imperative form violates NoTrough and suffers the same deletion process common to all HLH sequences across the stem boundary. The surface form of (c) is predictably all H tones.

(1005)

  HL   H H H

  μμ   μ μμ μ

  seit   ta hĩn wa   speak-IMP[206]   = speak!

---

[203] Up to this point, the only floating tones found in this language have been in the negative construction.

[204] Due to various other constraints on consonant place features, these two forms are actually realized as *[ˈseiktʰatwa]* and *[ˈseiktʰahĩŋwa]*.)

[205] The imperative morpheme string has internal structure which is not pertinent here. The details of the imperative will be dealt with in section 3.4.2.3.5.5, 'Clause Types'.

[206] The imperative morpheme string has internal structure which is not pertinent here. The details of the imperative will be dealt with in section 3.4.2.3.5.5, 'Clause Types'.

But below we see the same verb in a negative imperative. Here there is nothing to indicate the presence of the negative except for the floating L tone.

(1006)

HL (L) H H H
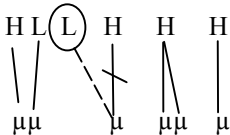
μμ   μ μμ μ
<u>seit</u> - Ø - tahĩnwa   speak-S3-Neg-Imp =   don't speak!

Forms such as the one above are perfect examples of prosody characterizing a morpheme. In such cases, the phonology cannot delete a grammatical function. If the L tone of the negative is deleted, there would be no difference between the positive command and the negative one, since this single tone segment is the only clue we have of the presence of the negative morpheme. We must therefore allow for some universal constraint that ensures that some material from every morpheme is allowed to surface in the phonetic form of every word, or in this case, that the floating L tone in the input makes it to the output.[207]

To determine the underlying position of the floating L, one must first determine the location of the negative morpheme in general. Throughout the data, negatives only occur suffixed to the verb. The location of the negative within the verb is fairly straightforward since the negative morpheme, */-aʔ/*, always appears between the subject markers and the tense/mood/illocutionary force bundle at the end of the verb. And this is exactly where the effects of the floating tone are seen.

The form below shows the output of */seit-∅-tahĩn-wa/* 'don't speak'. Notice that the HL on the root is not affected. Instead, the L tone spreads to the right, deleting the first H on the following imperative suffix.[208]

(1007)

H L (L) H   H   H

μμ   μ   μμ   μ
seit   ta hĩn wa   don't speak!

All the data available show that this is the general pattern in Mamaindê. Floating tones link to the mora on their right. Since Mamaindê does not allow for moras to maintain double associations, the original tone is then delinked. Although this rightward spreading of floating tones may just be a language specific trait, this tendency has also been proposed as a universal by Cahill (2002), who cites

---

[207] Once again, a constraint such as MaxNeg[Tone] would account for this in an OT framework.

[208] The H on the final syllable */-wa/* can also be lowered to L in some negative constructions, demonstrating a strong reaction by the speaker. This low tone */-a/* is one of the emotive vowels found at the end of the verb (see section 3.4.2.3.5.6, 'Emotives').

rightward linking of floating tones in Lango, Kalam Kohistani, Usarufa, Konni and Mixtec. This hypothesis is further supported by Cahill (1998) where he mentions another 17 languages where a tonal associative morpheme docks rightward. Whether this tendency is a part of universal grammar or not, we assume that all tone languages that allow floating tones must have some strategy for them to link to the output, spreading either to their left or to their right. Mamaindê chooses the former. Here is the autosegmental rule that governs the linking of floating tones in this language.

Cross-Reference to Section 2.5:
[Tone Rules; Lexical; Obligatory]

FLOATING TONE LINK RIGHT

T̲ ⃝   T

μ ∅   μ
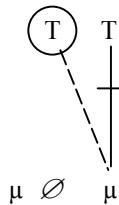
2.4.4.5   *Nouns and Toneless Syllables*

Nouns in Mamaindê appear to be much more consistent in their tone patterns than verbs. None of the different types of sandhi described above applies to nouns. Low tones are also more prevalent in nominals than in verbs, even though all tone patterns do exist in noun constructions. The only type of tone sandhi occurring in nouns is when the final nominal suffix */-ãni/,* which has a LH tone pattern, is affixed to any noun root with a final H tone. In these cases the LH of */-ãni/* becomes a HH.

(1008)
  L   L H   L L H
                                                                       | | |

a) <u>lo</u> – ãni   rat-FNS   ⟶   loãni

   H L H   H H H
                                                                       | | |

b) <u>lo</u> – ãni   buriti leaf-FNS   ⟶   loãni

Kingston mentions this as the only type of tone perturbation in nouns as well (Kingston n.d.:10). While this appears to be another case of plateauing, this one perturbation process among nouns does not follow the plateauing process we previously outlined for verbs. The main difference is that in verbs it is the tone on the affix affecting the tone on the root. Here we have a somewhat opposing type of sandhi among nouns where it is the tone of the root that spreads to the suffix.

This could be handled in one of two ways. We could assume that the tone on /-ãni/ is indeed LH. Then we only need a rule that forces the L in noun suffixes to undergo sandhi following nouns ending in H tone. The difficulty here is that /-ãni/ is the ONLY noun suffix that undergoes this type of sandhi. None of the tones of any other noun suffixes in Mamaindê is affected by the last tone in the root, even when HLH sequences are involved. Below we see other noun suffixes:[209]

(1009)
a)

L H	L H		L H L H
janãn	nã?ã	→	janãnnã?ã
jaguar	PL		jaguars

b)

H L	H		H L H
sawik	tu	→	sawiktu
grandchild	FNS		a grandchild

c)

L HL	H		L HL H
wasain?	tu	→	wasain?tu
stuff	FNS		some stuff

d)

L HL	L H		L HL L H
wa?nĩn	so?kã	→	wa?nĩnso?gã
magic	NCL.PERSON		the shaman

So /-ãni/ turns out to be an exception rather than the rule. NoTrough, the basic rule that governs tone sandhi in verbs, simply does not apply to the nouns in this language. Some other explanation for the sandhi of /-ãni/ must be found.

Another way to handle the /-ãni/ suffix is to conclude that there is no lexical tone at all on the first syllable of this morpheme.

---

[209] The subtle distinction between the two Final Nominal Suffixes, /-tu/ and /-ãni/, will be dealt with in section 3.4.1.3.9.

(1010)

```
      L   ( )H            L   ( ) H
      |     |             |\    |
a) lo -  ãni      →      lo   ãni         the rat


      H   ( )H            H  ( ) H
      |     |             |\    |
b) lo -  ãni      →      lo   ãni         the buriti leaf
```
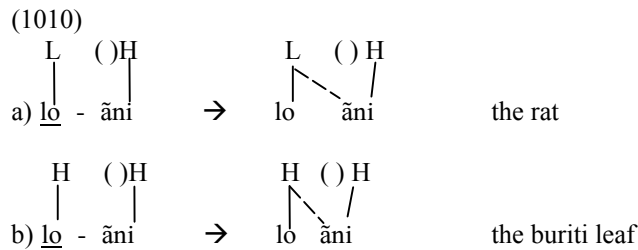
     We could then rely on the association principles already established to require that every vowel be associated to a tone. This will ensure that syllables with no lexical tone will be linked to a tone before they are output.

     The final question is to determine which tone spreads to the toneless syllable. There would seem to be a pattern in Mamaindê that tones may not spread within a morpheme – only across a morpheme boundary. This is true of all the tone sandhi we have seen so far It would also explain why the toneless syllable of /-ãni/ gets its tone from the noun stem and not morpheme internally. We could even make a case that this appears to be a general principle in tone languages since it actually comes from the definition of sandhi itself.

>   "sandhi ....the phonological modification of grammatical forms which have been juxtaposed" (Crystal 2008:422).

     According to this definition, without a grammatical boundary there can be no sandhi. In Mamaindê, tone sandhi can be further specified as internal sandhi, or that which occurs word internally across morpheme boundaries, in contrast to external sandhi, which occurs across the word boundary. I therefore propose the following as a general constraint on all tone spreading within the Mamaindê tonal system.

    CROSS-MORPHEME SPREADING CONSTRAINT   % (MIRROR IMAGE)[210]
    Tone spreading does not occur within morphemes.

```
       T  *
       |\
       | \
       | \
    +  µ  µ  +
```
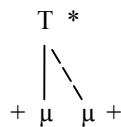
     This preference for spreading tones across morpheme boundaries ensures that when a tone associated with one mora spreads and changes the tone of an adjacent mora, the two mora will not be located in the same morpheme. Thus the only option for the toneless syllable in /-ãni/ is to get its tone from the root and not from within the suffix.

---

[210] T refers to either H or L tone. The asterisk indicates ungrammaticality. The dotted line here refers to feature changing or feature filling processes, not to the application of the OCP. This is not an OT constraint, but a constraint on autosegmental representations.

2.4.5 Final Thoughts on Tone

The previous sections have offered a description of the Mamaindê tone system.
They have shown that tone, intonation, and stress are distinct in Mamaindê, and that
the tone system is based on the foundation of the mora in much the same way that
the stress system is also based on the mora and the concept of syllable weight. We
have been able to adequately describe this tone system without having to resort to
contour tones. We have seen that tone sandhi in verbs revolves around a restriction
on HLH sequences, and that plateauing results. We have found that the negative
construction requires the use of floating tones. And finally, we have been required to
posit a toneless syllable to account for tone sandhi in nouns.

While tonal languages are not the norm in Amazonia, recent research is
uncovering a growing list of these, and it remains to be seen how many of the above
characteristics of the Mamaindê tone system (mora as tone-bearing units, plateauing,
floating tones, and toneless syllables) will be found in other tone languages of the
region.[211]

One important insight gleaned from this research is that the Mamaindê tone
system has been forced to make reference to the morphology on several occasions.
This intrusion of morphology into the workings of the tone system shows once again
how Mamaindê prosody cannot be divorced from morphology, whether that prosody
be the stress system or the tone system.

---

[211] Yip (2002:246) offers the following list of those Amazonian languages which appear to
have lexical tone, based on the most reliable reports:

Language	Family
Pirahã	Mura (Brazil)
Barasana	Tukanoan (Colombia)
Bora	Witotoan (Peru)
Mamaindê	Nambikwara (Brazil)
Iñapari	Maipuran-Arawakan (Peru)
Yagua	Peba-Yaguan (Peru)

The above list, however, is in no way definitive. There are other cases documented in the
literature: Southern Nambikwara (Kroeker 2001), Gavião do Jiparana, Hup, Yuhup, and
possibly Dâw. Gavião do Jiparana, a Tupi-Monde language, has been documented as tonal by
Moore (1984, 1999), and I have been able to corroborate this conclusion with tonal data
obtained from Horst Stute in 2005 (personal communication). Hup, Yuhup, and Dâw are
Maku languages of Brazil which have recently been documented by various researchers as
having a form of lexical tone (Epps 2008, S. Martins 2004, V. Martins 2005, Martins and
Martins 1999, Brandão 1999). Hup and Yuhup appear to exhibit contrastive lexical tone
which interacts with stress in what is referred to as word-accent (Epps 2008:86-98). Dâw has
also been considered tonal but is a somewhat less clear case (Epps 2008:96-98, Martins and
Martins 1999:256). Finally, Rodrigues (1999b:114) makes a passing comment regarding the
existence of tone in various Tupi languages, including Munduruku, whose tonal qualities were
also reported by Crofts (1985). These remarks regarding possible Amazonian tone languages
must still be understood as preliminary, given that research into tonal systems in Amazonia is
far from complete, and further discoveries will surely be made.

2.5   Phonological Processes

The final section of this chapter contains all the phonological rules of the language. They are organized according to phonological type, and the formal representations used will follow standard generative and autosegmental formalisms. After discussing each rule within each rule type, all the processes will then be set in their proper lexical or postlexical domain. This will be followed by a list of all crucial orderings which hold between the rules. Finally, I will give a panoramic view of phonological processes within the larger Nambikwara family.

   In this work we give much attention to phonological processes. This focus is due to the amazing richness of Mamaindê phonology. Twenty-five feature changing processes have been identified and described in the pages that follow (aside from the three stress rules). In the following pages I will for the most part employ either classical generative rules (based on Chomsky and Halle's SPE), or Autosegmental notation, or both. When appropriate, Metrical and Lexical theory will also be used. The specific feature geometry I will employ is based mostly on Clements and Hume (1995: 292), although at times a few deviations have been necessary due to the nature of the data. The processes outlined here should give the reader a fairly comprehensive view of how Mamaindê phonology functions.[212]

2.5.1 Non Feature Changing Processes

Here we will make the assumption that, when a lexical entry leaves the lexicon, it enters the lexical morphology and phonology. But before any lexical rules can apply, it undergoes a number of adjustments to prepare it for the processes that will follow. These are not mechanisms that change input forms into output forms, but restrictions/constraints made upon underlying form. Since several of these are described elsewhere in this work, they will only be mentioned here so as to place them in relation to the other rules and processes of the phonology.

2.5.1.1   Syllabification

The syllabification process, including Coda Licensing and Maximization of Onset, is considered as automatic and iterative, occurring whenever new material is added to the root. See the Syllable section, 2.2, for the template that governs the construction of syllables in Mamaindê.

---

[212] Descriptive depth has been lacking in most of the published research in regards to the phonological processes of the languages within the Nambikwara family. This section is an attempt to begin to remedy this situation.

2.5.1.1.1   Coda Licensing (Lexical)

Licensing (both Coda licensing and Syllable licensing) is a part of the automatic
process of syllabification. As the section on syllable structure points out, all codas in
Mamaindê must be [-cont].[213] This is an example of Coda Licensing (Goldsmith,
1990:123-127). Although more of a restriction or constraint enforced by the syllable
template than a true phonological process, coda licensing is a crucial part of
Mamaindê phonology, interacting with many of the other phonological rules.[214] Its
presence is felt before any of the other lexical rules, and sets the stage so that later
processes can change the feature values of coda segments in such a way that they
will satisfy coda licensing. The language has several strategies for accomplishing
this. One is the Affrication rule. The other is the Onset Devoicing Rule. These will
be discussed shortly.

Because of its importance to Mamaindê phonology, I am making a special
mention of coda licensing here before I begin to describe the other phonological
processes. We see this restriction at work in forms such as the ones below, where
underlyingly the coda is [+continuant], but on the surface it is realized as a [-
continuant]. (The place features of the coda in the surface forms will be accounted
for later when we deal with the Vowel Place Feature Spreading Rule).

(1011)   /khaus-tu/   [ˈkʰauptu]   gourd-FNS

(1012)   /sis-tu/   [ˈsiktu]   savannah.grass-FNS

(1013)   /weis-wa-kʰatoʔ/ [ˈweikwakʰaɾoʔ]   make-continually-then.SS

(1014)   /khakhos-sa̱-tu/   [kʰaˈkʰotsa̱ɾu]   dangerous-speech-FNS

The last two forms also make it clear that this is not a matter of simple
assimilation of [-cont] from adjacent segments. The only way the [-cont] variant can
be explained in these cases is by a restriction at another level, the prosodic level.

CODA LICENSING

σ

Coda [-cont]

---
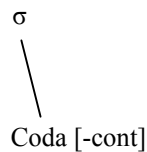
[213] Continuant segments are only allowed in the coda if they acquire their [+continuant]
feature from outside the coda.

[214] As licensing theory would predict, the set of coda consonants in Mamaindê is a subset of
the complete consonantal system. The particular subset allowed in the Mamaindê coda
happens to be the least sonorant subset.

2.5.1.1.2   Maximization of Onset (Lexical)

Another important task of syllabification is the Maximization of Onsets. This principle remains in force throughout the Lexical Component, syllabifying intervocalic consonants as onsets whenever possible. This is described in detail in the section on the Syllable, 2.2.

2.5.1.2   Mora Assignment (Lexical)

See the section on Stress, 2.3, for a description of how moras are assigned to syllable positions in this Quantity Sensitive language.

2.5.1.3   Tone-Mora Association (Lexical)

Section 2.4 on Tone describes the assigning of tones to moras.

2.5.2 Assimilation

A number of assimilation processes are evident in Mamaindê phonology. Some are obligatory and others are optional. The only assimilation process documented for Latundê (Telles, 2002:131) is a broad vowel harmony rule within the root morpheme, which is not present in Mamaindê, although there is a very limited vowel assimilation process by which an epenthetic underspecified vowel assimilates to the place features of the final vowel in the root if an /h/ intervenes. See section 2.5.8.1, 'Underspecified Vowel Epenthesis'.

2.5.2.1   Pre-Stress Obstruent Voicing (Post-Lexical)

Voiceless unaspirated plosives occurring in the onset of stressed syllables are obligatorily voiced.[215] This refers to all unaspirated stops besides the glottal stop. (The reader is reminded that the lack of contrast between voiced and voiceless plosives has already been established in section 2.1.1.2, 'Unaspirated Plosives').

---

[215] Although this rule does describe a very strong tendency among Mamaindê speakers, there a few exceptions. Some forms seem to show free variation between voiced and voiceless unaspirated stops even in the pre-stressed position. Examples of free variation in this context can be seen in words such as *['deiːɾu] ~ ['teiːɾu]* 'road', and *['biːkʰiru] ~ ['pikʰi-tu]* 'bird.type'.

(1015)   /pikʰi-tu/   [ˈbiːkʰiɾu]²¹⁶
         type of bird-FNS   a type of bird

(1016)   /wa-ta-tu/   [waˈdaːɾu]
         your-mother-FNS   your mother

(1017)   /teih-tu/   [ˈdeiːɾ̥u]
         road-FNS   a road

(1018)   /nakʔas-aʔ-wa/   [naʔˈgaːsaʔwa]
         understand-S1-N.INT   I understand/hear

(1019)   /ãntoʔ-taku/   [ãnˈdoʔdagu]
         faint-CN.AND   to faint and…

(1020)   /seit-toh-ta-lata-∅-wa/   [ˈseikˈdoːɾ̥alatwa]
         speak-E.V.WANT-O1-S3-PRS-N.INT   It is wanting to speak to me
                                             I want to speak *(free gloss)*

(1021)   /kais-tu-kʰatoʔ/   [ˈgaikˈdukkʰərəʔ]
         call-get-CN.THEN   to invite, then…

(1022)   /naʔtun-lei-a-nãn-wa/   [naʔˈdunleianãnwa]
         full-I.PST-S1-PST-N.INT   I was full (of food)

Such voicing could be represented formally in the following way:

PRE-STRESS OBSTRUENT VOICING

    [-cont, -spr glot, +cons]   →   [+voice] / ___   V
                                                         [+stress]

---

[216] Besides undergoing voicing, the /p/ and /t/ phonemes may also be realized as imploded voiced stops in this environment.

The motivation for this process can be clearly attributed to the stressed environment, indicating that this is not a case of voicing assimilation. For that reason the above rule has been cast in a traditional generative model rather than an autosegmental representation. Having said that, the voicing or weakening of a consonant in a stressed environment is not what one would expect. Here we are faced with one of the puzzling aspects of this phonological system – the language chooses to make use of weaker consonants (voiced stops) in the strongest positions (onsets of stressed syllables), and stronger consonants (voiceless stops) in weaker positions (codas). Looking at it from the opposite perspective and choosing the voiced set of plosives as underlying does not help in this regard, as we still have to account for the strengthening in the coda. In the end, it becomes clear that whichever set of plosives are posited as underlying (voiced or voiceless), we are left with a problematic, or simply uncharacteristic distribution of these allophones.[217]

Note the presence of the [-spread glottis] feature, which is necessary to rule out the aspirated stops. Since I am taking the position that glottal stops are [-consonantal], and since they do not participate in this voicing either, the [+cons] feature has also been added to prevent further over-application of the rule.

2.5.2.2   *Intervocalic Obstruent Voicing (Post-Lexical)* [218]

When the voiceless unaspirated obstruent occurs in the onset of an *un*stressed syllable, either between voiced segments or word-initially, voicing is no longer expected, but becomes optional. Word initially, voiceless and voiced stops appear to alternate freely in unstressed syllables.[219] In intervocalic settings, variation has been observed but the voiced segments are preferred.[220] After a voiced stop, such as a nasal, this rule will always apply and the voiceless unaspirated obstruent will be voiced.

(1023)	/nakata/	[nakaˈdaː] ~ [nagaˈdaː]	in front
(1024)	/takalah-ta-lata-wa/	[takaˈlaːɾalatwa] ~ [dagaˈlaːɾalatwa]	I don't like it
(1025)	/ta-kanani-tu/	[takaˈnaːniɾu] ~ [dagaˈnaːniɾu]	my brother
(1026)	/kalis-tu/	[kaˈliktu] ~ [gaˈliktu]	banana
(1027)	/kapais-ãni/	[kaˈbaisãni] ~ [gaˈbaisãni]	armadillo:15K
(1028)	/kutũn-soʔkã/	[kuˈdũnsoʔkã] ~ [guˈdũnsoʔgã]	a lame person

---

[217] It must also be kept in mind that the decision by this author to consider the voiceless unaspirated plosives as underlying is in some sense an arbitrary one. The opposite stance could also be taken. However, an argument for the voiceless position can be found in section 2.1.1.2, 'Unaspirated Plosives', based on symmetry, naturalness, and markedness,
[218] The name of this rule refers only to one of the environments of the rule. There are others.
[219] Free variation is viewed here only as a language internal quality, since outside the formal linguistic domain one can often find causes for such variation.
[220] The voicing of obstruents in intervocalic positions is generally considered a case of intervocalic weakening or laxing rather than assimilation.

(1029)　/ta-nitus-ta-lata-wa/　[taniˈduktalatwa] ~ [daniˈduktalatwa]　it hurts me

(1030)　/taʔlohni-tu/　　　　[taʔˈlohni̥ɾu] ~ [daʔˈlohni̥ɾu]　　　old woman

(1031)　/tanũhni-tu/　　　　[taˈñuhn̥i̥ɾu] ~ [daˈñuhn̥i̥ɾu]　　　hummingbird

(1032)　/tawañun-taku/　　　[tawaˈnũndagu] ~ [dawaˈnũndagu]　respond and…

(1033)　/kamãn-ta-hĩʔ/　　　[kaˈmãndahĩ̥ʔ] ~ [gaˈmãndahĩ̥ʔ]　he commanded me

　　　　However, voiceless unaspirated obstruents which follow other voiceless consonants or occur in word final position do not fit the input requirements of this rule, and thus will never receive voicing, regardless of whether they occur in a stressed or unstressed syllable. (Following voiceless consonants, an onset may optionally become stronger and not weaker - see Onset Strengthening).

(1034)　/kajat-ta-latha-wa/　[kaˈjattalatʰwa] ~ [gaˈjattalatʰwa]　it is a grasshopper

(1035)　/hik-tu/　　　　　　[ˈhiktu]　　　　　　　　　　hand

(1036)　/juhak/　　　　　　[juˈhak]　　　　　　　　　　all

　　　　This optional voicing process can be formalized by way of the following rule:

INTERVOCALIC OBSTRUENT VOICING (OPTIONAL):

$$[\text{-cont, -spr. glt, +cons}] \rightarrow [\text{+voice}] \ / \ \left\{ \begin{matrix} X \\ [\text{+voice}] \\ \# \end{matrix} \right\} (\text{ʔ}) \ \underline{\quad} \ \underset{[\text{-stress}]}{V}$$

　　　　Interestingly, this process completely ignores the presence of intervening glottal stops in the environment. When a glottal precedes the obstruent, the rule looks instead to the segment which comes before the glottal. If this preceding segment is voiced, then the obstruent will be voiced. For this reason, the rule must include the possibility of a glottal in its environment.

(1037)　/wḁsoʔka/　　→　[ˈwḁːsoʔga]　　　　the one who comes

(1038)　/mãnʔtu/　　　→　[ˈmãnʔdu]　　　　hill

　　　　The intervocalic voicing rule given above is clearly related to the pre-stress rule seen earlier, as both of them refer to the process of voicing obstruents. Thus, in a generative model, the two previous rules could be combined, albeit in a rather cumbersome manner. However, keeping these rules separate helps us to be mindful of how these processes differ in three crucial aspects. First, the stress level of the syllable in question differs. Secondly, while the Pre-Stress Obstruent Voicing rule

requires no additional environment, applying across the board to onsets of all stressed syllables, the Intervocalic Voicing rule applies only to onsets of unstressed syllables which follow voiced segments (either consonants or vowels) or are found in word initial position. Thus the second rule is more limited in scope. Thirdly, and most importantly with respect to the individual nature of these rules, the voicing of pre-stress obstruents is obligatory (outside of a few exceptions) while the voicing of obstruents in unstressed environments is optional. This last difference cannot be accounted for in a single rule representation, making the separation of these processes a necessity.

2.5.2.3   Affrication (Lexical)

The sibilant /s/ can optionally undergo affrication in morpheme initial position. This may occur before high vowels (both front and back), before the /ei/ diphthong, and after high or velar consonants (k, g, or ŋ). In all these cases affrication is an optional process.

      This process is conditional on two things: first, the position of the sibilant, and second, the features present in the environment. We will begin looking at these conditions by observing the position of the sibilant in the word.

(1039)	/sihtu/	[ˈsihdu] ~ [ˈtʃihdu]	house
(1040)	/sintu/	[ˈsigŋdu] ~ [ˈtʃigŋdu]	meat
(1041)	/sĩunʔnitu/	[ˈsĩumʔniɾu] ~ [ˈtʃĩumʔniɾu]	sand flea: borrachudo
(1042)	/siutu/	[ˈsiuɾu] ~ [ˈtʃiuɾu]	basket
(1043)	/sistu/	[ˈsiktu] ~ [ˈtʃiktu]	savanah grass
(1044)	/suntaku/	[ˈsuᵈndagu] ~ [ˈtʃuᵈndagu]	to hit, kill
(1045)	/suʔnãinlatwa/	[suʔˈnãinlatwa] ~ [tʃuʔˈnãinlatwa]	he is an expert
(1046)	/suʔlantaku/	[suʔˈlaᵈndagu] ~ [tʃuʔˈlaᵈndagu]	to not be possible
(1047)	/suʔtontaku/	[suʔˈdoᵈndagu] ~ [tʃuʔˈdoᵈndagu]	to not understand

      As shown above, affrication frequently occurs in the word initial position. In some forms, however, it is not acceptable to affricate the sibilant at the beginning of the word. For instance, when a word initial /s/ occurs before /a/ or /o/, affrication will not occur.

(1048)	/santaku/	[ˈsadndagu]	[ˈtʃadndagu]*	to harvest
(1049)	/saʔtetaku/	[ˈsaʔdedagu]	[ˈtʃaʔdedagu]*	heavy
(1050)	/sawawekʰatoʔ/	[sawaˈweːkʰaɾoʔ]	[tʃawaˈweːkʰaɾoʔ]*	growl/purr
(1051)	/saintu/	[ˈsaindu]	[ˈtʃaindu]*	elder brother

(1052) /samimikʰatoʔ/   [samiˈmiːkʰaɾoʔ]   [tʃamiˈmiːkʰaɾoʔ]*   whisper

(1053) /sakaikalatawa/   [saˈgaigalatwa]   [tʃaˈgaigalatwa]*   to swing

     Furthermore, there are a good number of instances in which affrication can occur word internally such as in the following:

(1054) /mamãin-si-tu/   [maˈmãinsiɾu] ~ [maˈmãintʃiɾu]

        Mamaindê-NCL.GROUP-FNS

        a Mamaindê

(1055) /wain-sa̱-tu/   [ˈwaigŋsa̱ɾu] ~ [ˈwaigŋtʃa̱ɾu]

        medicine-NCL.LIQUID-FNS

        medicine

(1056) /tu-sihtaʔ/   [ˈɗuːsihɾa̱ʔ] ~   [ˈɗuːtʃihɾa̱ʔ]

        get-CN.IN.ORDER.TO.DS

        in order to get (different subject implied)

     What is consistent in all these examples, however, is the position of the /s/ in relation to the morpheme. In each case, the affected sibilant occurs in the morpheme initial position.[221] Internal to the morpheme, however, the affricate is never acceptable, even when followed by a high front vowel.

(1057) /jasin-taku/   [jaˈsigŋdagu] [jaˈtʃigŋdagu]*   to be pitied

(1058) /wasi-wasin-taku/[wasiwaˈsigŋdagu] [watʃiwaˈtʃigŋdagu]*   to be pale

(1059) /nusi-tu/   [ˈnuːsiɾu] [ˈnuːtʃiɾu]*   1   lizard

     The features of surrounding segments are of course a crucial factor here as well, albeit a quite complex one. Whereas a typical case of affrication or palatalization in many languages often involves the simple spreading of Coronal or the [-anterior] feature, such an analysis will not account for the data in Mamaindê.

---

[221] The appeal to morphology in this rule helps us to disambiguate a few difficult cases. The forms /hainsi-tu/ 'music', and /jainsi-tu/ 'food', for instance, will often have the /s/ affricated, [ˈhaigŋtʃiɾu]; and [ˈjaigŋtʃiɾu], even though its status as a morpheme initial segment in these forms appears unclear from a morphological standpoint. While /hain/ and /jain/ are unmistakably root forms, the /-si/ sequences here do not carry the typical meaning of the morpheme /-si/, 'group/people'. Thus the parsing of these words is ambiguous in light of their morphology alone. The phonology, however, gives us strong evidence that the /-si/ is indeed treated as a separate morpheme in these cases, for the /s/ is allowed to undergo the affrication process.

The fact that affrication in Mamaindê can occur optionally before both front and back high vowels makes it clear that the relevant feature here is not one of horizontal space (encoded in features such as Coronal, Dorsal, [back], [anterior]), but of vertical space (Aperture, Stricture, [high], [open], etc.).[222]

(1060)	/sihtu/	[ˈsihdu] ~ [ˈtʃihdu]	house
(1061)	/sintu/	[ˈsiŋdu] ~ [ˈtʃiŋdu]	meat
(1062)	/sĩunʔnitu/	[ˈsĩumʔniɾu] ~ [ˈtʃĩumʔniɾu]	sand flea: borrachudo
(1063)	/siutu/	[ˈsiuɾu] ~ [ˈtʃiuɾu]	basket
(1064)	/sistu/	[ˈsiktu] ~ [ˈtʃiktu]	savanah grass
(1065)	/suntaku/	[ˈsuᵈndagu] ~ [ˈtʃuᵈndagu]	to hit, kill
(1066)	/suttaku/	[ˈsuttagu] ~ [ˈtʃuttagu]	to kiss
(1067)	/suʔnãinlatwa/	[suʔˈnãinlatwa] ~ [tʃuʔˈnãinlatwa]	he is an expert
(1068)	/suʔlantaku/	[suʔˈlaᵈndagu] ~ [tʃuʔˈlaᵈndagu]	to not be possible
(1069)	/suʔtontaku/	[suʔˈdoᵈndagu] ~ [tʃuʔˈdoᵈndagu]	to not understand

To describe Mamaindê affrication in a rule based approach, two ordered processes are required. The first is Lexical Palatalization,[223] which spreads the [+high] feature from the following vowel to a morpheme-initial sibilant, creating the palatal fricative [ʃ].[224]

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[222] There are a few rare forms employing su/ as a morpheme initial sequence that are exceptions to this rule. In these cases the /s/ is never realized as /tʃ/.

/suni/	[tʃuni]*	sun/grandfather
/suhnataku/	[tʃuhnadagu]*	to be afraid
/sunga/	[tʃunga]*	to pass a fever, to cool off

[223] As the name implies, this rule differs from the Post-lexical Palatalization process in terms of its domain of application. See section 2.5.6.1 on 'Post Lexical Palatalization'.
[224] I will assume that a [+high] feature assigned to the Stricture node of an /s/ will result in a palatal [ʃ].

LEXICAL PALATALIZATION - (OPTIONAL)[225]

```
+            C                          V
         
   [+strid]  CPl                       Voc
          
        Cor       Strict        Aper
                       - - - - -     |
                          [+high]
```
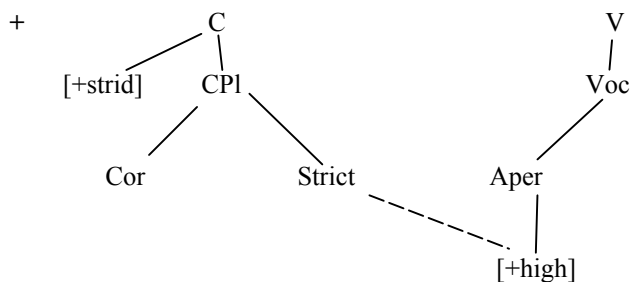
Secondly, an intrusion rule inserts a /t/ before morpheme-initial palatal fricatives. This is a case of morpheme-initial fortition, which furnishes the listener with clues as to the location of morpheme boundaries, thus facilitating perception.[226]

/T/ INTRUSION (CLASSICAL)

[+strid, +cor, +high]   →   [tʃ] / + _____

/T/ INTRUSION (AUTOSEGMENTAL)

```
    /t/
     ┊
     ▼
+           C
         
          CPl
        
  [+strident]  [Coronal]  [+high]
```
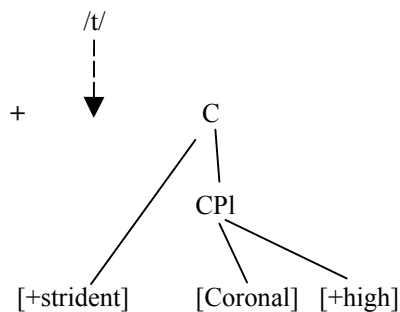
The output of these combined processes is the affricate [tʃ]. This combination of rules accounts for the vast majority of the data, which involves

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[225] (+) indicates a morpheme boundary, which by definition may also refer to a word boundary.

[226] Although not an assimilation process in and of itself, the /t/ Intrusion rule is included here in the Assimilation section due to its inseparable link to the Palatalization rule, which is assimilatory in nature. The /t/ Intrusion rule never applies if Palatalization has not first applied.

affrication before the /i/ or /u/ vowels.[227] However, the /ei/ diphthong, which begins
with a [-high] front vowel, can also trigger affrication.

(1070)	/seintu/	[ˈseigŋdu] ~ [ˈtʃeigŋdu]	container
(1071)	/seiksoʔka/	[ˈseiksoʔga] ~ [ˈtʃeiksoʔga]	one who speaks
(1072)	/seini/	[ˈseini] ~ [ˈtʃeini]	here
(1073)	/seinʔ/	[ˈseigŋʔ] ~ [ˈtʃeigŋʔ]	to make believe

This leaves us with an odd grouping of vowels following the /s/: /i,u,ei/ can
trigger affrication while /a,o/ cannot. Such asymmetrical processes are difficult for
standard phonological theory to account for because the assumption is that
environments should be definable as a natural class. If we allow for the participation
of the /e/ by relying on the [-low] feature, then the non-participation of the /o/
becomes a problem. On the other hand, if we account for the /e/ by opting for the
[-back] feature, then the participation of the /u/ becomes a problem. The only option
available, aside from positing affricates as phonemes, is to treat the /i/ of the /ei/
diphthong as the predominant vowel of the diphthong nucleus, at least in respect to
its relationship to the stricture of consonants.

A similar treatment of /ei/ will also be necessary when we discuss Vowel
Place Feature Spreading, where [ei] will be seen to group with the /i, u/ vowels,
functioning together with them as a class to trigger the spreading of place features to
underspecified codas.[228] The fact that the language groups the /ei/ diphthong with
the high vowels in more than one area of the phonology is insightful. We can
capture this fact by making use of the notion of underspecification, minimally
specifying the /e/ segment in such a way that it removes an inherent redundancy
within the /ei/ sequence. The redundancy here is that the only [-back] vowel that can
immediately precede the /i/ is the [e]. Two adjacent [ii] segments never occur. Thus,
the only feature needed by the /e/ in an [ei] sequence is the [-back] feature. The rest
is predictable.

/e/ UNDERSPECIFICATION

/V/   → [e]
 |
[-back]
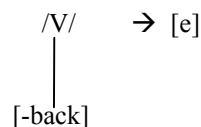
[227] An exception to these rules is the form /aat-siʔ/ 'big-not' = 'little'. It will never undergo
affrication even though the /s/ is followed by a high vowel. The best explanation for this is
that although this form was originally composed of two morphemes, over time it has become
fossilized to a single morpheme, and thus the /s/ is no longer treated as being located at a
morpheme boundary.
[228] See section 2.5.2.5 on Vowel Place Feature Spreading for more details.

This redundancy rule states that when a vowel is minimally specified underlyingly as having a single feature, [-back], the remainder of its features will be filled in at the end of the phonology and it will be realized as /e/. [229]

For the present discussion, this means that any [ei] sequence will be treated underlyingly as a /Vi/ sequence. By removing this redundancy we arrive at an explanation for the transparency of the /e/. It has no value for the feature [high]. When the palatalization rule applies to an /s/ followed by an [ei] diphthong, the underspecified /V/ will be skipped and the [+high] will be spread from the /i/.

Here is the noun classifier */sein/* 'container' in the form */wa̱-sein/* 'come-container = an arriving vehicle'. Note how the underspecified /e/ vowel is skipped in the spreading process.

Example of Lexical Palatalization with an underspecified /e/

```
              [-back]      [-back]
                 |            |
/wa̱/ + /s        V       i      n/
          |
         CPl
        /    \
     Cor     Stricture
                   `  ,
                     [+high]
```
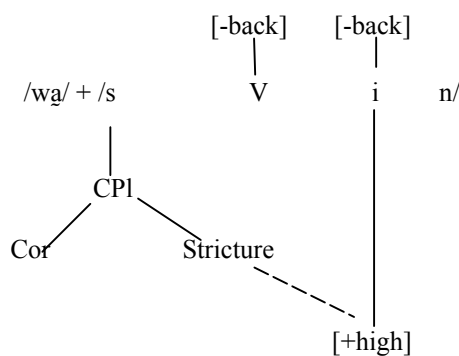
Velar consonants may also trigger the affrication process. This tells us that the language is treating the velar consonants (/k,g,ŋ/) as being similar in some way to the high vowels in respect to their ability to influence the articulation of sibilants. Both the velar consonants and the high vowels spread their [+high] feature to the sibilant, eventually producing the affricate [tʃ]. Note also that these dorsal consonants which affect the sibilant occur before the /s/ and not after the /s/, as was the case of the vowels.

(1074)   /hain-sa̱/   [haigŋsa̱] ~ [haigŋtʃa̱]
          sing-NCL.LIQUID
          music

---

[229] The [-back] specification is necessary to distinguish this partially underspecified V from the fully underspecified V discussed in section 2.5.12.1 on Underspecified Vowel Feature Filling.

(1075)   /heit-satoʔni/   [heiksaɾoʔni] ~ [heiktʃaɾoʔni]

         angry-CN.IF

         if (he is) angry…

(1076)   /seit-sa̱/   [seiksa̱] ~ [seiktʃa̱]

         speak-NCL.LIQUID

         speech

(1077)   /ʔa̱i-hensoʔ/   [ʔa̱iheigŋsoʔ] ~ [ʔa̱iheigŋtʃoʔ]

         go-always

         always go[230]

The only way to group the high vowels /i,u/ with velar consonants /k, ŋ/, while at the same time exclude the back vowels /a,o/, is by appealing once again to height or stricture. [231] By spreading the height feature instead of a place feature, we are able to immediately treat the high vowels and the velar consonants as a cohesive group and account for both sources of palatalization with a single rule. The previous Lexical Palatalization rule has been expanded below to include velar consonants in the environment by using a more generic X, and by making this a mirror-image rule which can spread the [+high] feature from the right or the left. (The /t/ Intrusion rule will then apply following the Palatalization rule).

LEXICAL PALATALIZATION REVISED - % MIRROR IMAGE RULE (OPTIONAL)

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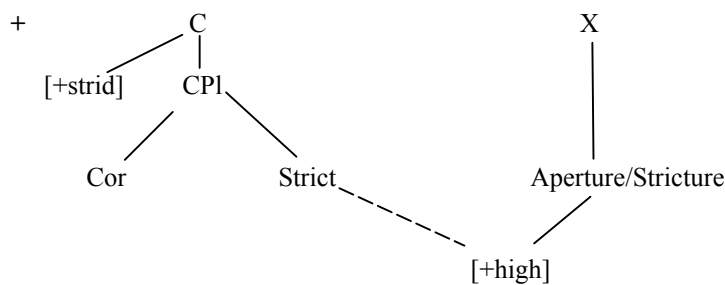
[230] The affrication of the /s/ in the suffix *-hensoʔ/*, 'always', is the only case of affrication which does not occur at a morpheme boundary. This suggests that there is a need for a further division of that form into *-hen/* 'time' + *-soʔ/* 'only', two suffixes already present in the language. This morphological structure would meet the morpheme boundary requirement of the rule.

[231] A typical approach in the literature is to view front vowels as [-ant] coronals, and thus account for the affrication/palatalization of the /s/ by spreading the [-anterior] feature from the vowel to the consonant. But this of course will not account for the participation of the /u/, nor of the velar consonants.

The last point which should be made in relation to affrication is that it interacts with other processes. Such interaction often produces ordered sets of rules. For instance, the process of Affrication (with its two internally ordered rules) must precede Vowel Elision[232] in the form below.

	Lex. Pal.	**/t/ Intrusion**	**V Elision**

(1078) /mamãin-si-ãni/   [maˈmãinʃiãni] → [maˈmãintʃiãni] → [maˈmãintʃãni] [233]

   Mamaindê-NCL.GROUP-FNS

   the Mamaindê

VPlace Feature Spreading[234], which spreads place features from the nucleus to the coda, is also ordered in respect to the Affrication process. This can be seen in the following examples where the dorsal features of the coda must be acquired before the spreading of [+high] from the coda to the /s/. Thus VPlace Feature Spreading must precede both Lexical Palatalization and /t/ Intrusion.

	VPlace Spread	**Lex.Palatalization**	**/t/ Intrusion**

(1079) /wain-sa̱-tu/   [ˈwaigŋsa̱ɾu] → [ˈwaigŋʃa̱ɾu] →   [ˈwaigŋtʃa̱ɾu]

   medicine-NCL.LIQUID-FNS

   medicine

(1080) /seit-sa̱-tu/   [ˈseiksa̱ɾu]   →   [ˈseikʃa̱ɾu]   →   [ˈseiktʃa̱ɾu] speak-

   NCL.LIQUID-FNS

   speech

2.5.2.4   *Glide Strengthening (Post-Lexical)*

We have just considered the most common affrication process in Mamaindê. Yet there is another affrication process which must be kept separate from the former. I will refer to this as Glide Strengthening, for instead of involving the sibilant, this process involves the /j/ glide.[235] Glide Strengthening occurs whenever the high front glide /j/ follows an oral obstruent.[236] So far all examples of this process occur across morpheme boundaries. This rule also differs from the previous Affrication process

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[232] See section 2.5.3.1 on Vowel Elision in this chapter for specifics on this process.

[233] The nasal coda in this form is an exception to the Vowel Place Feature Spreading rule. See section 2.5.2.5.

[234] See section 2.5.2.5 on Vowel Feature Spreading in this chapter

[235] Also known as 'Consonantalization'.

[236] Once again we notice a need for rule ordering - the coda must become a [-cont] obstruent first before the glide can undergo affrication. See Coda Strengthening.

in that this one is obligatory. Notice the behavior of the /j/ when following obstruents in the forms below.

(1081)   /ã-kaji-hãs-jaʔ-kʰatoʔ/ → [ãkajihãtjaʔkʰaɾoʔ] →   [ãkajihãttʃaʔkʰaɾoʔ]
         to tear completely by itself

(1082)   /tawawais-jeʔ-lata-wa/ → [tawawaikjeʔlatwa] →   [tawawaiktʃeʔlatwa]
         he sets it straight

(1083)   /seitjuhjeʔletnãnwa/   → [seikjuhjeʔleiktãŋwa]→   [seiktʃujeʔleiktãŋwa]
         he certainly spoke (in intermediate time)

(1084)   /ʔai̯-hãs-jeʔ-lata-wa/   → [ʔai̯hãtjeʔlatwa]   →   [ʔai̯hãttʃeʔlatwa]
         they went completely

As a distinct process in the phonology, it requires its own rule.

GLIDE STRENGTHENING (CLASSICAL)

/j/   → [tʃ] /   C   + ___
                     [-cont, -nas]

GLIDE STRENGTHENING (AUTOSEGMENTAL)

C   +   C

[-cont]   [+cont] [-cons] [+son] [-back]
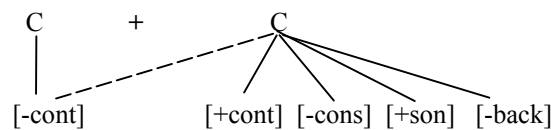
A strict reading of the above would produce a contour [+cont] / [-cont] segment, realized as the palatal stop/glide [cj]. However, the palatal plosive [c] is not part of the Mamaindê sound system, and complex segments made up of components with differing values for sonority are more difficult to articulate than those with shared sonority. For these reasons, whenever the front glide is linked to a [-cont] feature it will be interpreted phonetically as the affricate [tʃ].

Phonetic Interpretation of a [-cont]/ [+cont] palatal

$$/j/ \quad \rightarrow \quad [t\int]$$

[-cont]   [+cont]
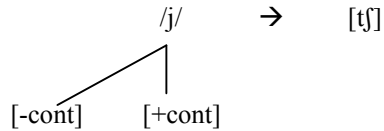
      The Glide Strengthening rule can also account for forms where suppletive morphology leaves a [t] and [j] adjacent. In the form below*, /-t/,* a suppletive allomorph for O1, is being used in place of the standard */-ta/* form. This in turn creates an environment where the strengthening of the glide can take place.

(1085)   /ikalaka-tʰã-ta-jun-tawa/→[igalaga-tʰã-t-jun-tawa]→[igalagatʰãttʃudndawa]

        work-NCL.THING-O1-COM-G.KN

        his working with me (that everyone knows about)

2.5.2.5   *Vowel Place Feature Spreading (Post-Lexical)*

One of the most salient phonological processes in Mamaindê is the manner in which coda segments get their features filled in by the phonology. There are several points of interest here. First we have vowels affecting the primary place features of coda consonants instead of simply adding a secondary place feature, a process Kenstowicz (1994:466) admits is not always clear in current theory. Secondly, the input of this process is quite different from most accounts of consonant to vowel assimilation. The primary place feature of the Mamaindê coda consonant is not simply altered slightly as in the palatalization of a velar /k/ to a fronted velar /k̠/ after front vowels, but it is changed radically, such that we may have a coronal consonant being realized as a pre-velar after the front vowel. This challenge will cause us to underspecify certain Place features for consonants in the coda position. Thirdly, depending on the previous vowel, there are two possible assimilation processes going on, one resulting in a pre-velar consonant, and the other in a labial consonant. The challenge here is to link these two assimilation processes into the spreading of a single vocalic node. Lastly, the spreading of vowel features to the coda in Mamaindê requires a modified feature geometry for vowels, one that incorporates elements of two of the more well-known feature models. This last point highlights the fact that this part of Mamaindê phonology poses a certain challenge to current theory.

      Here we see examples of this process. A hyphen separates the roots from the rest of the affix string. Because different vowels affect the coda in different ways, the following data is organized according to the vowel which precedes the coda in the root.

after /i/

(1086)	/lit-latawa/	[liktatwa]	he arrives
(1087)	/sis-tu/	[siktu]	savannah grass
(1088)	/kanis-tʰãtu/	[kaniktʰãɾu]	the brightness
(1089)	/sin-tu/	[sigŋdu]	meat
(1090)	/kʰin-latawa/	[kʰigŋlatwa]	he has a cold
(1091)	/waʔnĩn-soʔka/	[waʔnĩŋsoʔga]	shaman

after /ei/

(1092)	/waleis-soʔka/	[waleiksoʔga]	a Southern Nambikwara
(1093)	/sein-tu/	[seigŋdu]	container
(1094)	/weit-tu/	[weiktu]	child
(1095)	/juheinʔ-tu/	[juheigŋʔdu]	tongue
(1096)	/kateis-latwa/	[gadeiktatwa]	he divides
(1097)	/wa̰-soʔkein/	[wa̰soʔgẽiŋ]	he came, then suddenly…

after /ai/

(1098)	/wais-tu/	[waiktu]	açai palm
(1099)	/alain-kʰatoʔ/	[alaigŋkʰaɾoʔ]	he crosses, then…
(1100)	/wasainʔ-tu/	[wasaigŋʔdu]	stuff
(1101)	/tais-latawa/	[daiktatwa]	he takes it out
(1102)	/mãinki-tu/	[mãiŋgiɾu]	cashew/caju

after /au/

(1103)	/taun-tu/	[daubmdu]	tail
(1104)	/kʰaus-tu/	[kʰauptu]	gourd/cup
(1105)	/aus-latwa/	[auptatwa]	it is different
(1106)	/waun-soʔka/	[waubmsoʔga]	the red one
(1107)	/ãun-kʰatoʔ/	[ãumkʰaɾoʔ]	to leave, then…

after /eu/

(1108)	/kateun-ta-latwa/	[gadeubmdalatwa]	it is alive to me
(1109)	/taleunni-tu/	[daleubmnidu]	woodpecker

(1110)   /eun-kʰatoʔ/   [eubmkʰaɾoʔ]   you see, then…(S.S)
(1111)   /saleun-tu/   [saleubmdu]   Cinta Larga people
(1112)   /eun-tasoʔka/   [eubmdasoʔga]   one who hungers for meat
(1113)   /leunʔ-tu/   [leubmʔdu]   tapir (Negarotê lect)
(1114)   /saʔkẽunʔ-latwa/   [saʔgẽumʔlatwa]   he is urinating

after /iu/

(1115)   /sĩunʔni-tu/   [sĩumʔniɾu]   sand flea: borrachudo
(1116)   /ĩunʔ-latawa/   [ĩumʔlatwa]   he is sleeping
(1117)   /atĩun-tu/   [adĩumdu]   kindling
(1118)   /tanãuntanĩun-hĩ̈ʔ/   [danãumdanĩumhĩ̈ʔ]   throw in water, then (DS)

after /u/

(1119)   /nũs-tu/   [nũttu]   mortar
(1120)   /sun-kʰatoʔ/   [tʃudnkʰaɾoʔ/   to hit, then…
(1121)   /jalakwatun-tu/   [jalakwadudndu]   howler monkey
(1122)   /jamũnʔ-tu/   [jamũnʔdu]   large frog
(1123)   /ʔut-tu/   [ʔuttu]   weasel: jungle type
(1124)   /wanũn-latawa/   [wanũnlatwa]   it is good

after /a/

(1125)   /halas-tu/   [halattu]   back (body part)
(1126)   /janãn-tu/   [janãndu]   jaguar
(1127)   /han-latawa/   [hadnlatwa]   it flops
(1128)   /katehwalan-tu/   [kadehwaladndu]   rattlesnake
(1129)   /samãnʔ-tu/   [samãnʔdu]   leaf-cutter ant

after /o/

(1130)   /nahon-tu/   [nahodndu]   water
(1131)   /hos-tu/   [hottu]   monkey (macaco prego)
(1132)   /kʰonʔ-tu/   [kʰodnʔdu]   tortoise
(1133)   /suʔton-soʔka/   [suʔdodnsoʔga]   one who doesn't know
(1134)   /hiton-latawa/   [hidodnlatwa]   he dreams

(1135) /tʰotʰon-latawa/   [tʰotʰodnlatwa]   it is black
(1136) /kʰõn-tatu/   [kʰõndaɾu]   monkey: type of

   The first thing that must be established is that Mamaindê vowel place features spread only to coronal codas. Although not completely transparent in the data above, the codas in question are all in fact coronal codas underlyingly. This can be evidenced when these same segments appear in intervocalic contexts. In such contexts, the coronal consonant manifests itself. A few of the above forms are repeated once again in an intervocalic position to demonstrate the coronal nature of these underlying coda forms.[237]

(1137) /lit-aʔ-wa/   [liɾaʔwa]   I am leaving
(1138) /sis-ãni/   [sisãni]   grass-FNS
(1139) /sein-ã/   [seinã]   here
(1140) /weit-ãni/   [weiɾãni]   child-FNS
(1141) /wais-ãni/   [waisãni]   açai palm-FNS
(1142) /alain-a-khatoʔ/   [alainakʰaɾoʔ]   I cross over , then…
(1143) /taun-ãni/   [daunãni]   tail-FNS
(1144) /kʰaus-ãni/   [khausãni]   gourd/cup-FNS
(1145) /eun-a-kʰatoʔ/   [eunakʰaɾoʔ]   I eat meat, then…S.R.
(1146) /leunʔ-ãni/   [leuʔnãni]   tapir-FNS

   Non-coronal codas, however, (such as dorsals) are never affected by the features of the preceding vowel.

(1147) /hukʔ-tu/   [hukʔtu]   bow/gun
(1148) /juhak/   [juhak]   all/everything
(1149) /juk-tu/   [juktu]   foot

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[237] It should be pointed out, however, that some codas which are internal to the stem will never occur intervocalically. In these cases, determining the underlying place features of the coda is more difficult. For instance, while the roots in the words below are clearly followed by a separate morpheme /-ni/ 'animate object', these roots never occur alone without this extra animate marker. Thus we never have the luxury of hearing these codas pronounced in another environment, either intervocalically, or word finally. We can only surmise that since the surface [m] in all non-ambiguous codas (those which we can test intervocalically) derives from an underlying /n/, then it must be true in these ambiguous forms as well.

/sĩunʔ-ni-tu/   [sĩumʔniɾu]   sand flea: borrachudo

/taleun-ni-tu/   [daleubmniɾu]   woodpecker

(1150)   /hik-tu/   [hiktu]   hand

(1151)   /jalik-tu/   [jaliktu]   necklace/bead

(1152)   /aik-ti/   [aiktu]   field

(1153)   /naik-tu./   [naiktu]   root/headwaters

(1154)   /hauk/   [hauk]   be different

Due to the difference in the behavior between the coronal and non-coronal codas, we will begin by viewing Coronal as the default or underspecified Place feature for coda segments in this language.[238] A coda consonant with an underspecified Place node will have no Place features of its own, and will thus attempt to borrow place features from the environment.[239] If this is not possible, the Place feature will be realized as Coronal at the end of the phonology by way of the default filling rule below.

CORONAL FEATURE FILLING RULE [240]

Coda   Coda

| |

C   →   C

| |

(C-Place)   CPlace

|

Coronal
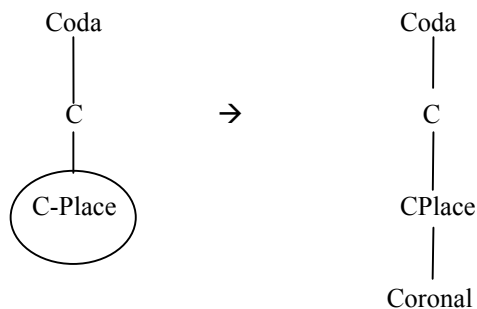
As the rule above implies, Vowel Place features only spread to a following consonant when it is in the coda position. In the onset, faithfulness of C Place is

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[238] See Kenstowicz (1994:516-517) for cross-linguistic evidence of what he terms the 'coronal syndrome', where coronals are the most susceptible to phonological variation.

[239] Although the Place features of coda coronals are underspecified, other features must still be retained in order for the phonology to distinguish between the [t], [s], or [n]. This is particularly crucial when one of these coda coronals is resyllabified as an onset in intervocalic environments where Vowel Place Feature Spreading does not apply (such as in the first set of data on the previous page). By specifying the [nasal] and [continuant] features of these underspecified C segments, we can distinguish easily between the three coronal segments mentioned above ([t] = [-nas], [-cont]; [s] = [-nas], [+cont]; [n] = [+nas], [-cont]). If we need to further contrast these from the [l], the [lateral] feature may also be used. Interestingly, all the features necessary to identify these segments in intervocalic environments were originally grouped together under the Manner node by Clements (1985:215).

[240] The circle in the rule below denotes an unfilled node or unspecified feature/

maintained. This demonstrates the universal tendency for the coda position to be the most vulnerable to alternations, a pattern which follows from the greater number of restrictions generally found in coda positions (Goldsmith 1990:125-126).

Furthermore, this underspecified coda C is filled in by features which come, not from a following consonant, but from the previous vowel. Thus the name "Vowel Place Feature Spreading". There is a sense in which the vowels in Mamaindê are stronger and more "faithful" than the consonants. The Mamaindê consonants undergo various processes triggered by their proximity to vowels, while the opposite does not occur. This indicates that some consonants lack certain Place features, while the vowels are fully specified, lending support to the idea of the underspecified coda C in the discussion above. This also follows from cross-linguistic tendencies. In a foundational article on feature theory, Clements (1985:225-252) claims that the tendency for consonants to assimilate to vowels more than vice-versa is a universal trait and is based on the premise that consonants are more likely to be underlyingly unspecified for certain Place features, while vowels are always fully specified.

The previous data is repeated below in a manner that highlights the unspecified nature of the coronal coda. I will employ a C to denote an oral coda consonant unspecified for Place, and an N to refer to a nasal coda consonant unspecified for Place.

(1155)	/liC-latawa/	[liktatwa]	he arrives
(1156)	/siC-tu/	[siktu]	savannah grass
(1157)	/kaniC-tʰãtu/	[kaniktʰãɾu]	the brightness
(1158)	/siN-tu/	[sigŋdu]	meat
(1159)	/kʰiN-latawa/	[kʰigŋlatwa]	he has a cold
(1160)	/waʔnĩN-soʔka/	[waʔnĩŋsoʔga]	shaman
(1161)	/waleiC-soʔka/	[waleiksoʔga]	a Southern Nambikwara
(1162)	/seiN-tu/	[seigŋdu]	container
(1163)	/weiC-tu/	[weiktu]	child
(1164)	/juheiNʔ-tu/	[juheigŋʔdu]	tongue
(1165)	/kateiC-latwa/	[gadeiktatwa]	he divides
(1166)	/wa̲-soʔkẽiN/	[wa̲soʔgẽiŋ]	he came, then suddenly…
(1167)	/waiC-tu/	[waiktu]	açai palm
(1168)	/alaiN-kʰatoʔ/	[alaigŋkʰaɾoʔ]	he crosses, then…
(1169)	/wasaiNʔ-tu/	[wasaigŋʔdu]	stuff
(1170)	/taiC-latawa/	[daiktatwa]	he takes it out
(1171)	/mãiNki-tu/	[mãiŋgiɾu]	cashew/caju

(1172)   /tauN-tu/   [daubmdu]   tail
(1173)   /kʰauC-tu/   [kʰauptu]   gourd/cup
(1174)   /auC-latwa/   [auptatwa]   it is different
(1175)   /wauN-soʔka/   [waubmsoʔga]   the red one
(1176)   /ãuN-kʰatoʔ/   [ãumkʰaɾoʔ]   to leave, then…

(1177)   /kateuNta-latwa/   [kadeubmdalatwa]   it is alive
(1178)   /taleuNni-tu/   [taleubmnidu]   woodpecker
(1179)   /saleuN-tu/   [saleubmdu]   Cinta Larga people
(1180)   /euN-tasoʔka/   [eubmdasoʔga]   one who hungers for meat
(1181)   /leuNʔ-tu/   [leubmʔdu]   tapir (Negarotê lect)
(1182)   /saʔkẽuNʔ-latwa/   [saʔgẽumʔlatwa]   he is urinating

(1183)   /sĩuNʔni-tu/   [sĩumʔniɾu]   sand flea: borrachudo
(1184)   /ĩuNʔ-latawa/   [ĩumʔlatwa]   he is sleeping
(1185)   /atĩuN-tu/   [adĩumdu]   kindling
(1186)   /tanãuNtanĩuN/   [danãumdanĩumhĩ̃ʔ]   to throw into water

(1187)   /nũC-tu/   [nũttu]   mortar
(1188)   /suN-kʰatoʔ/   [tʃudnkʰaɾoʔ/   to hit, then…
(1189)   /jalakwatuN-tu/   [jalakwadudndu]   howler monkey
(1190)   /jamũNʔ-tu/   [jamũnʔdu]   large frog
(1191)   /ʔuC-tu/   [ʔuttu]   weasel: jungle type
(1192)   /wanũN-latawa/   [wanũnlatwa]   it is good

(1193)   /halaC-tu/   [halattu]   back (body part)
(1194)   /janãN-tu/   [janãndu]   jaguar
(1195)   /haN-latawa/   [hadnlatwa]   it flops
(1196)   /katehwalaN-tu/   [gadehwaladndu]   rattlesnake
(1197)   /samãNʔ-tu/   [samãnʔdu]   leaf-cutter ant

(1198)   /nahoN-tu/   [nahodndu]   water
(1199)   /hoC-tu/   [hottu]   monkey: macaco prego
(1200)   /kʰoNʔ-tu/   [kʰodnʔdu]   tortoise
(1201)   /suʔtoN-soʔka/   [suʔdodnsoʔga]   one who doesn't know
(1202)   /hitoN-latawa/   [hidodnlatwa]   he dreams

(1203)   /tʰotʰoN-latawa/ [tʰotʰodnlatwa]   it is black
(1204)   /kʰõN-tatu/   [kʰõndaɾu]   monkey: type of

      These forms are once again organized according to which vowel precedes
the coda. The basic pattern evident in this data is that each vowel affects the coda in
different ways. A default coda preceded by an /i/ vowel (or any of the diphthongs
ending in a high front vowel) will be realized as a dorsal consonant. If it follows the
/u/ of a diphthong, the default coda will appear as a labial consonant. All other
vowels, the simple /u/, and the /o/ and /a/, do not affect the default coda at all, thus
allowing it to be realized as a coronal at the end of the phonology.

      That this is an assimilation process might need to be explained, since at
first glance it could be tempting to view this as dissimilation. The front vowels seem
to be producing back coda consonants, and the back vowels seem to result in front or
labial consonants. A closer look at the features involved, however, shows that if we
view the /i/ vowel as Coronal, there would be no way to determine whether the
dissimilar place feature would be a Dorsal or a Labial. Furthermore, although the /u/
vowel is back and produces a 'front' consonant, the actual features involved include
the [labial] feature which is present both in the /u/ vowel and in the coda form it
produces. At least in terms of the Labial feature, what we are really seeing is
assimilation instead of dissimilation. A dissimilation analysis, then, cannot give a
coherent account of this phenomenon. I will argue in the following pages for a
simple assimilation account of all the data above.

      This nucleus-coda assimilation pattern is found extensively throughout the
language and is one of the more characteristic traits of Mamaindê phonology. The
other languages in the Nambikwara family either do not appear to possess this trait,
or they exhibit this nucleus-coda assimilation on a much smaller scale. For instance,
Southern Nambikwara (Kroeker, 2001:79) only uses a similar assimilation process
when nasal coda segments follow the /au/ diphthong. In these cases the coda
assimilates to the labial feature of the diphthong, being realized as an /m/. Although
the coda also assimilates to the place feature of velar segments, it does not borrow
its velar features from the preceding vowel, but from a following velar consonant. In
Latundê (Telles, 2002:53-57), coda assimilation seems to be more similar to the
Southern Nambikwara model than to the Mamaindê model. However, the nasal coda
in Latundê, according to Telles, assimilates only to preceding glides and not to
preceding vowels (this is of course due simply to a difference in the analysis of
diphthongs). If the preceding glide is a coronal /j/, the nasal coda remains coronal. If
the preceding glide is a labial /w/, then the nasal coda assimilates and is realized as a
labial /m/. But this labial assimilation is still a rare occurrence in Latundê, while the
Mamaindê nucleus-coda assimilation process is very productive. The velar
counterpart of this assimilation is also lacking in Latundê, as the nasal codas do not
ever appear to be realized as an [ŋ] after a preceding velar segment. Finally, in
Sabanê, no assimilation of this sort was documented.

      Returning to Mamaindê, we must first decide on how many processes are at
work here. Whether the default consonant becomes dorsal or labial, in each case it is
getting its place features from the preceding vowel and not from the following
consonant. Thus it is clear that both cases of assimilation (dorsal or labial) are the

result of a single process and should be handled as such by the spreading of a single node. The obvious node to spread here is the VPlace node. The challenge is in defining exactly how the Mamaindê language organizes its vowel features under the VPlace node, or more precisely, defining how best to represent the organization of vowel features in light of the Mamaindê data.

The feature organization I argue for here is based on the Mamaindê data, which can be accounted for in the most straightforward manner by viewing all vowels as Dorsal.[241] Within the Dorsal node, we can use [+/-back] to differentiate the front and back vowels. By viewing the front vowels as [-back] Dorsals, it facilitates their connection to a pre-velar consonant (such as a fronted /k̪/), which would also be characterized as a [-back] Dorsal.[242] On the other hand, viewing the front vowels as [-ant] Coronals would require the use of a redundancy rule by which [-ant] Coronal consonants are realized as Dorsals. While both of these approaches are functional, the one involving Dorsal [-back] is the most straightforward in terms of the Mamaindê data.[243]

Another possibility would be to argue that it is not the place feature but the height feature that is spreading from the /i/ to the coda and causing the default C to be realized as a Dorsal consonant. But the only way to spread this height feature without the [back] feature accompanying it would be to make the Dorsal and Labial assimilation processes independent of each other (an option we have already discarded), or to do away with the notion of horizontal space in vowels, eliminating the [back] feature in vowels by means of radical underspecification. Although it is possible to come up with a feature matrix for a 5 vowel system that would eliminate the back feature and allow the front /i/ vowel to spread only [+high] and [-round] from its VPlace node, such a complex analysis begs the question that a simpler solution must be available. The simpler solution is to treat all vowels as Dorsals, and to view the vowel feature spreading to codas as a matter of assimilation along the horizontal axis and not the vertical axis.

As for the organization of the other vowel features, I will be using the Labial feature for both vowels and consonants since the Mamaindê data appears to

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[241] In a helpful discussion on vowel features, Clements (1995:275-6) compares the Articulator model (formulated by Sagey 1986, Halle 1989, and Halle, Vaux and Wolfe 2000) with his own Constriction based model. He notes that the Articulator model places all vowel place features under the Dorsal node, while the Constriction model posits a geometry for vowel place that parallels that of consonants (namely, a feature structure that includes the Labial, Coronal and Dorsal nodes). Although I will be using Clement's geometry as the basic model for the organization of Mamaindê features, Mamaindê vowels are most easily handled by adopting Halle and Sagey's approach when it comes to vowel place features. This is due to the simplicity of spreading a Dorsal [-back] feature from the front vowel as opposed to spreading a Coronal [-anterior] feature, which would then require a redundancy rule whereby a Coronal [-ant] consonant becomes a Dorsal. While both of these approaches are functional, the one involving Dorsal [-back] is the most straightforward.

[242] Although not specified in the data presented, every instance of /k/ following /i/ is realized as /k̪/.

[243] See Clements and Hume (1995: 294-296) for a good discussion of the other alternative – the spreading of [-ant] Coronal.

make no distinction between the round feature of vowels and the labial feature of consonants. I will therefore assume that when it is applied to vowels, the Labial feature indicates rounding. It seems to be an accepted practice to posit a link between the rounded vowels and the Labial consonants. As Kenstowicz (1994:462) points out, "the only explicitly acknowledged formal connection between consonantal and vocalic Place relates Labial and [round]."

In regards to vowel height, the Mamaindê data once again calls for a specific feature structure. The data above shows that only the high vowels can spread their place features (Dorsal and Labial) to the underspecified coda (leaving aside for a moment the fact that the simple /u/ does not participate in this spreading). However, the [high] feature is only part of the required environment, it does not participate in the spreading itself. By separating vowel height from vowel place via the Aperture node,[244] we can spread both the [back] Dorsal feature and the Labial feature from the vowel to the coda by way of a single spreading of the entire VPlace node without involving the height feature.

If, on the other hand, we place vowel height under the VPlace node, then we will be required to spread the Dorsal and Labial features as separate processes, or, if we attempt to spread them together under the VPlace node, we will be forced to spread height along with them. In doing so, we will encounter problems which will be pointed out shortly when we discuss the spreading of the features of the /u/ in a diphthong.

The feature model we have arrived at for Mamaindê is thus a combination of both the Halle and the Clements models. Below is a table of the vowel place features used in the present analysis. Note that Labial is a univalent feature while [back], [high] and [low] are binary.

Mamaindê Vowel Features

	Dorsal	Labial	Aperture	
	[back]		[high]	[low]
i	-		+	-
e	-		-	-
a	+		-	+
o	+	X	-	-
u	+	X	+	-

The [low] feature is actually redundant in this 5 vowel system, since the five vowels can be differentiated without it (redundancy indicated by shading). We can therefore eliminate [low] and distinguish between all the Mamaindê phonemic

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[244] The use of the Aperture node for vowel height is from Clements and Hume's Unified Feature Theory (1995:281).

vowels with the use of three features: Dorsal [+/-back], Aperture[+/-high], and Labial (univalent).

Mamaindê Vowel Features - (without redundancies) [245]

	Dorsal	Labial	Aperture
	[back]		[high]
i	-		+
e	-		( )
a	+		-
o	+	X	-
u	+	X	+

The place features of the Mamaindê diphthongs (/ai,ei,au,eu,iu/}can be reduced even further. We find that there are fewer contrasts in the second vowel position of diphthongs, where only the /i/ and the /u/ may occur, than in the first position, where any vowel may occur except /o/. To distinguish between these two vowels of the second vowel position we only need two features. According to the behavior of codas in vowel place feature spreading, the only necessary features are Dorsal[-back] for the /i/, and Labial for the /u/. We can now add the features for the second position of diphthongs (symbolized as /Vi/ and /Vu/ respectively) to our vowel feature table.

Mamaindê Vowel Features (with diphthongs)

	Dorsal	Labial	Aperture
	[back]		[high]
i	-		+
e	-		( )
a	+		-
o	+	X	-
u	+	X	+
Vu		X	+
Vi	-		+

The hierarchical organization of the above vowel features can best be represented in a feature geometry tree.

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[245] We have already established /e/ as underspecified for [high] – see Affrication.

Mamaindê Vowel Feature Geometry

```
                    V
                    |
                   Voc
                    
             VPlace        Aperture
                    
   Labial    Dorsal        [+/-high]²⁴⁶
                    
             [+/-back]
```
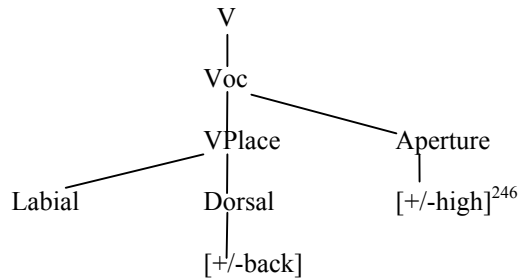
Once Mamaindê feature organization has been worked out, the actual assimilation process is simply a matter of spreading the VPlace node from a high vowel to an underspecified coda. Note that while the height of the vowels is a required part of the environment, the height feature is separate from Place and does not spread.

VPLACE FEATURE SPREADING RULE (AUTOSEGMENTAL)²⁴⁷

```
                    σ
                  /   \
                 V     C
                 
              Vocalic   CPlace
              
        Aperture
        
         [+high]    VPlace
```
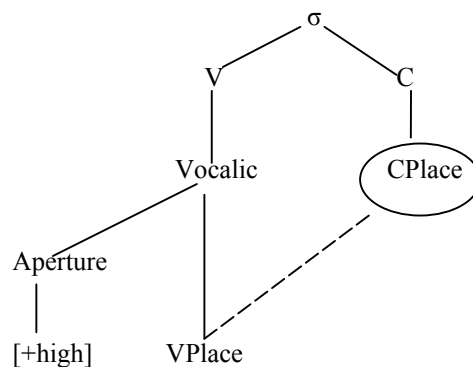
The VPlace features translate into CPlace features in the following manner: a [-back] Dorsal vowel feature, when spread from VPlace to CPlace, results in a [-back] fronted Dorsal consonant, or a fronted velar. The Labial feature, when spread to CPlace, results in a Labial consonant, or an unrounded bilabial.²⁴⁸

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²⁴⁶We could just as easily use Clements features for vowel height [open1], [open2] here. I am opting for the feature [high] since it is more commonly used.
²⁴⁷ I am not including a classical generative rule here since it would be quite complex and not helpful or insightful in any way.

The above rule is best understood when applied to forms with different vowels. First we will show examples of forms with simple vowels.

VPlace Feature Spreading with Simple Vowels:

a) /aC/→ [at]　　　　　b) /iC/ → [ik̟]　　　　　c) /uC/ → [ut]
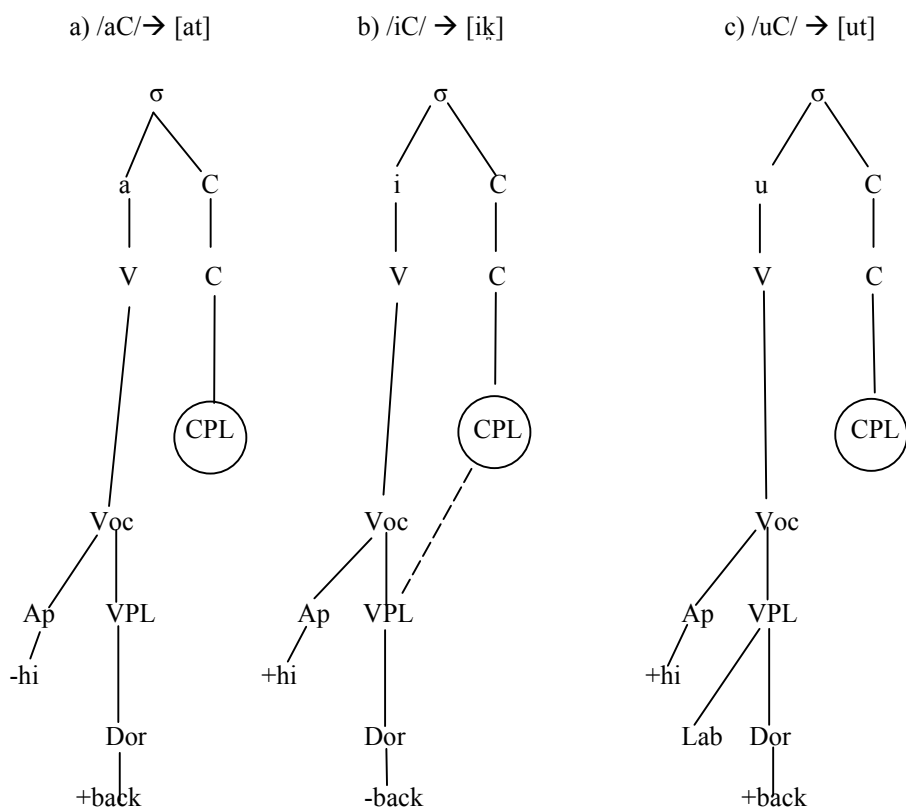
The VPlace Feature Spreading rule applied in only one of the above cases. In example (a) above, the vowel place features are not spread to the coda since the vowel in question, the /a/, is not a [+high] vowel. In (b), the vowel is high and spreading does occur, resulting in a fronted /k̟/, or a pre-velar coda consonant.[249] The last example, however, is a bit more involved. The /u/ vowel is [+high] and satisfies the input requirements of the rule. However, the difficulty here is not the input but the output. If VPlace were to spread in this context, the output would produce a

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[248] It must be unrounded as well as bilabial because this is a coda segment which is required by coda licensing to be [-cont]. All [-cont] labial consonants in the sound inventory are unrounded.

[249] The [k] is often fronted to the point that at times it resembles the palatal stop [c].

Labial, Dorsal[+back] consonant segment, and the only consonant in the Mamaindê sound inventory which matches this description is the /w/. But it has already been pointed out in the discussion on Mamaindê syllables how the coda licenses only [-cont] segments. Thus the inability of the /u/ to spread its features to the coda is a direct result of coda licensing.

Finally, some examples with diphthongs.

VPlace Feature Spreading with Diphthongs:

a)   /aiC/ → [aiḵ]   b) /auC/ → [aup]
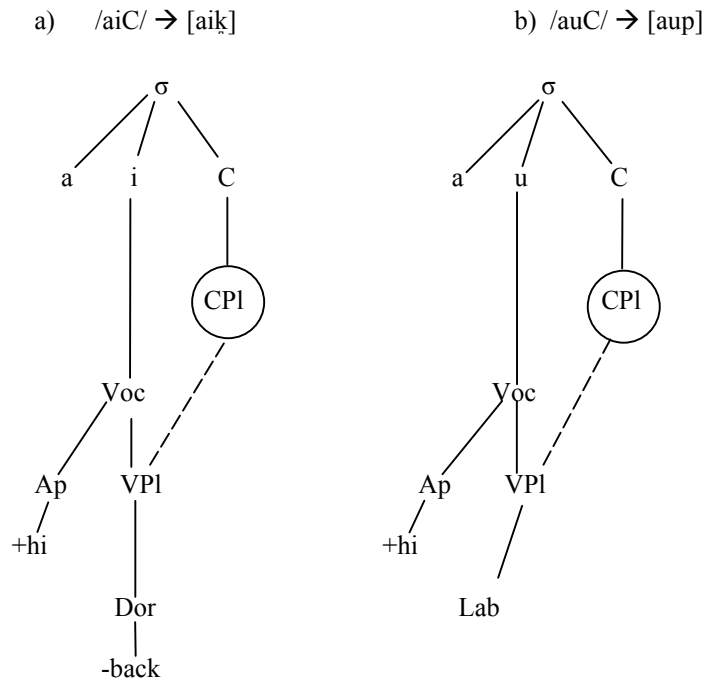
Note that the only difference between the [i] and the [u] in the second V place of diphthongs is that the first is Dorsal and the other is Labial. As was noted earlier when discussing the vowel features of diphthongs, these second vowel positions only need one feature each under VPlace to distinguish them apart. And this is the one feature that spreads.

The separation of the height feature under the Aperture node, and the subsequent addition of the Vocalic node, is necessary in Mamaindê to account for forms such as (b) where the /u/ of a /Vu/ diphthong spreads its vowel place feature to the underspecified coda without the spreading of [high], resulting in a bi-labial consonant. If [high] was included under the VPlace node, then it would be difficult to explain why the [+high] does not also spread. One possibility would be to argue

that because the [high] feature is redundant in this second vowel position then it is not present underlyingly. The problem with this approach is if the [high] is not present, then what triggers the rule? The [high] feature is needed in order to distinguish those vowels that participate in this rule from those that do not. And if [high] *is* considered to be present under the VPlace node, then it must fall logically under the Dorsal node.[250] Thus it would be required to spread along with all place features, including Labial, and then we would have to explain how the spreading of both Labial *and* [+high] could result in a /p/ or /b/. It is possible that a redundancy rule might be used as a repair strategy. However, this is not the analysis one would prefer if there were simpler solutions to be found. And the simpler solution is to borrow an already existing idea (found in the Unified Feature Theory of Clements) and separate height from place in our vowel features.

As the discussions above have attempted to point out, the Mamaindê vowel place spreading process requires a specific feature geometry that combines separate elements of two distinct feature theory models, the Articulator Theory (Halle) and the Unified Feature Theory (Clements). This in turn poses certain challenges to each of these models of feature organization. Although outside the scope of this descriptive work, more research is certainly called for in this area. As Kenstowicz (1994:468) notes 'It is clear that there are still some major gaps in our understanding of the ways in which the V-PL features do and do not influence C-PL."

2.5.2.6   *Consonant Cluster Place Assimilation (Lexical)*

In the shadow of a very productive assimilation rule such as the vowel place spreading process outlined above, it is easy to miss yet another assimilation process that affects the place features of the Mamaindê coda. This second type of assimilation can be formalized by a simple consonant cluster assimilation rule, where the first C of a consonant cluster borrows its place features from a following consonant.

CONSONANT CLUSTER ASSIMILATION [251]

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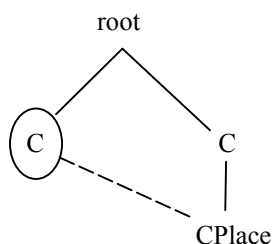
[250] This is where Halle (1989) places the [high] feature in his feature geometry model.
[251] The circled C is a consonant unspecified for place.

This rule, however, is very limited, for it only applies when *both* consonants of the cluster are located *within* the root. Thus, this rule applies to the nasal coda in the verb form */aNka/ → [agŋga]* 'costly', which is a single root morpheme, but not to the nasal coda in the form */saN-kʰatoʔ/ → [sadnkʰaɾoʔ]* 'harvest-then…', which is composed of two morphemes, with the /Nkʰ/ consonant cluster spread across both. In the former case, the consonant cluster /Nk/ is contained entirely within the root, so the Consonant Cluster rule applies and the nasal coda assimilates to the velar place of the following velar stop (disregarding the extra inserted stops in this data as we are only focusing on place features at the moment). In the latter case, the more limited rule cannot apply because the consonant cluster is not contained within the root, thus giving the broader vowel place spreading rule an opportunity to affect the coda. In this context, however, the previous vowel is not a high vowel, meaning that this second rule will also fail to apply and the nasal coda will get its coronal place features filled by default at the end of the phonology.

Since the Consonant Cluster Assimilation Rule is limited to clusters within the domain of the root, its effects are quite rare.[252] A few examples, however, are available in the data. Here the nasal coda assimilates to the following consonant and not to the previous vowel.

(1205)	/oNka-taku/	[ogŋgaɾagu]	to do
(1206)	/aNka-taku/	[agŋgaɾagu]	to be costly

Other forms show that the root and a derivational morpheme have come together and created a stem that has fused to such an extent that the phonology treats it as a single root morpheme. In these cases, the Consonant cluster rule will also apply.

	UF	**StemFusion**	**CCAssimilation**	**Gloss**
(1207)	/hajãuNʔ-ki-tu/	hajãunʔki-tu	[hajãuŋʔ-giɾu]	flower
	flower-NCL.PLANT-FNS			
(1208)	/mãN-kalo-tu/	mãnkalo-tu	[mãŋgaloɾu]	cloth
	heat-NCL.FLAT.THING-FNS			

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[252] Another way to handle the morphological requirements of this rule would be to place it in a strata belonging only to the root morphemes. The VPlace Feature Spreading Rule could then apply near the end of the phonology.

These two processes, the VPlace Spreading Rule and the Consonant Cluster Place Assimilation Rule, interact in some ways. In general terms, if a consonant unspecified for place is followed by another unspecified consonant, then only the VPlace Feature Spreading Rule can apply and the first consonant will get its place features filled in from the previous vowel (regardless of whether or not the consonant cluster occurs within the root).[253] Borrowing features from the vowel in these cases is actually quite logical since it would be difficult to borrow features from a following consonant if those features aren't there underlyingly. This scenario accounts for the vast majority of the place feature spreading to codas since coronal (default) consonants are by far the most common in Mamaindê.

If, however, an unspecified consonant is followed by a consonant with place features (i.e. non-coronal), and if both of these consonants are contained within the root, then we have a situation which fits the structural description of *both* rules. As one would expect in such cases according to the Elsewhere Condition, the more limited rule (the Consonant Cluster Assimilation Rule) applies first and the initial consonant assimilates to the following one.

Interestingly, a following /ʔ/ appears to be invisible to this rule, indicating that it is treated differently than other consonants. The glottal does not spread its place features, even when it is in a consonant cluster within the root. In these cases, where potentially Consonant Cluster Assimilation could apply, the phonology acts as if the glottal were not there and the VPlace Feature Spreading Rule applies instead.[254]

(1209)   /s a ʔ k ẽ u N ʔ -latʰawa/   [saʔgẽumʔlatwa]   he is urinating

                            Labial

Neither is the glottal capable of blocking the spreading of place features between consonants within the stem separated only by a glottal. This results in non-adjacent assimilation. In both the following form and the form above, the glottal behaves as a segment which has no place features.

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[253] There are a handful of exceptions which violate the VPlace Spreading Rule. These are: *[mãin-du]* 'pet', *[ʔmĩn-du]* 'skin', *[mamãinsi-ru]* 'Mamaindê, *[daʔmãinni-ru]* 'Sabanê, *[suʔnãin-latwa]* 'he is an expert'. In each of these we would expect the coda to borrow its features from the vowel and become a velar nasal, but a coronal appears instead. Interestingly, all of these exceptions involve the nasal /i/ vowel.

[254] One apparent exception to this transparency is found in the form:

/sĩunʔni-tu/   →   [sĩumʔniɾu]   'sand flea: borrachudo'

However, this form was more than likely a compound stem originally - a stem composed of a root + affix, */sĩunʔ-ni-tu/.* The VPlace spread rule applies first to the root alone, filling in the place features of the coda, then when the affix is added, the Coda already has features and the Cluster rule can not apply.

(1210)   /h a j ã u n ʔ-k i - t u/   [hajãuŋʔgiɾu]   flower-NCL.PLANT-FNS

Dorsal

The last two processes, VPlace Spreading and Consonant Cluster Place Assimilation, can be united when looked at from a broader perspective. In both of them we find support for a wider motivation which Optimality Theory describes as the Coda Condition (Kager, 1999:131).

CODA-COND
*Place] σ

This constraint states that a coda may not license place features. It must instead borrow its place features from an adjacent segment. Kager seems to imply that there is a tendency for the borrowed features to come from the following onset, but there is nothing in the constraint which would prohibit the coda from acquiring its place features from a previous vowel. Thus both of the processes discussed above, VPlace Spreading and Consonant Cluster Assimilation, satisfy this constraint and are given a broader footing, being united by the same motivation.

2.5.2.7   Oralization of Nasal Codas (Post-Lexical)

This last form of assimilation is probably the most characteristic trait of the whole Mamaindê sound system. This is the process which is responsible for the formation of the pre-oralized nasal segments [dn], [bm], and [gŋ]. These were introduced under the phoneme /n/ in section 2.1.1.6.2, where their distribution was spelled out.[255] We will now take another look at these nasal variants in light of phonological processes. Here is just a sampling of the numerous examples of these segments.

[ᵇm]

(1211)   /keun-latʰa-wa/   [ˈgeuᵇmlatʰwa]   he mixes
(1212)   /aun-latʰa-wa/   [ˈauᵇmlatʰwa]   he errs
(1213)   /taun/   [ˈdauᵇm]   tail

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[255] As described under the /n/ in the Phoneme section 2.1.1.6.2, the pre-oralized forms have a very restricted distribution. They never occur word initially as do the [n] and the [m]. They also never occur intervocalically. They are found only in the coda position following oral vowels. Such a restricted distribution points to an allophonic analysis.

(1214)	/leunʔ-tu/	[ˈleuᵇmʔdu]	tapir
(1215)	/kateunta-latʰa-wa/	[gaˈdeuᵇmdalatʰwa]	it is alive
(1216)	/eun-hã/	[ˈeuᵇmhã]	do you see?
(1217)	/waun-latʰa-wa/	[ˈwauᵇmlatʰwa]	it is red
(1218)	/talaun-latʰa-wa/	[taˈlauᵇmlatʰwa]	it is thick
(1219)	/haunsi-tu/	[ˈhauᵇmtʃiɾu]	cloud

[ᵍŋ]

(1220)	/haunsi-tu/	[ˈhauᵇmtʃiɾu]	cloud
(1221)	/waninikʰein-tu/	[waniniˈkʰeiᵍŋdu]	bicycle
(1222)	/sin-tu/	[ˈsiᵍŋdu] ≈ [ˈtʃiᵍŋdu]	meat
(1223)	/jalinʔja̲-tu/	[jaˈliᵍŋʔja̲ɾu]	puberty flute music
(1224)	/jaleinʔ-tu/	[jaˈleiᵍŋʔdu]	minnow
(1225)	/hein-tu/	[ˈheiᵍŋdu]	sound
(1226)	/hain-sa̲-tu/	[ˈhaiᵍŋsa̲ɾu]	music
(1227)	/walinʔ-tu/	[waˈliᵍŋʔdu]	anteater: type 'miɾĩm'
(1228)	/ki̲n-latʰa-wa/	[ˈki̲ᵍŋlatʰwa]	it itches
(1229)	/sein/	[ˈseiᵍŋ] ≈ [ˈtʃeiᵍŋ]	container
(1230)	/alain-latʰa-wa/	[aˈlaiᵍŋlatʰwa]	he crosses
(1231)	/wakinʔ-tu/	[waˈgiᵍŋʔdu]	owner
(1232)	/wainsi-tu/	[ˈwaiᵍŋtʃiɾu]	medicine

[ᵈn]

(1233)	/ju̲n/	[ˈju̲ᵈn]	knife
(1234)	/jalakwatun-tu/	[jalakwaˈduᵈndu]	howler monkey
(1235)	/nakajanʔ-tu/	[nagaˈjaᵈnʔdu]	person/indian
(1236)	/jatan-tu/	[jaˈdaᵈndu]	deer
(1237)	/walan-tu/	[waˈlaᵈndu]	termite
(1238)	/hansi-ja̲-tu/	[ˈhaᵈntʃija̲ɾu]	healing song
(1239)	/jahon/	[jaˈhoᵈn]	old man
(1240)	/nahon-sa̲-tu/	[naˈhoᵈnsa̲ɾu]	sweet beverage
(1241)	/walolonsi-tu/	[waloˈloᵈntʃiɾu]	fruit: type
(1242)	/un-latʰa-wa/	[ˈuᵈnlatʰwa]	it is far
(1243)	/san-latʰa-wa/	[ˈsaᵈnlatʰwa]	he is harvesting

(1244) /han-latʰa-wa/   [ˈhaᵈnlatʰwa]   it is flopping
(1245) /sun-latʰa-wa/   [ˈtʃuᵈnlatʰwa]   he hit it
(1246) /on-latʰa-wa/   [ˈoᵈnlatʰwa]   he is lazy
(1247) /takoʔtakon-latʰa-wa/ [tagoʔtagoᵈnlatʰwa] it is crooked

   While these sequences appear at first glance to be the result of epenthetic consonants, I intend to show that there is no epenthesis occurring here at all – it is simply a case of partial assimilation, of the spreading of the oral feature from the vowel to the nasal consonant, in such a way that a complex coda segment is created which is part oral and part nasal.[256] The only phonetic difference between a pure nasal consonant and a pre-oralized nasal consonant is one of timing; in the latter the opening of the velic is delayed until after the tongue has assumed its place of articulation for the nasal.
   First I will give evidence that these segments are in fact simple nasals underlyingly. The intervocalic nasal segments below show that the pre-oralized forms are variants of, and alternate with, the simple nasal stop.

(1248) /alain-a-sihtaʔ/   ⟶   [alainasihr̥aʔ]
        cross.over-S1-IN.ORDER.TO.DS   in order for me to cross over

(1249) /alain-sihtaʔ/   ⟶   [alaiᵉŋsihr̥aʔ]
        cross.over-IN.ORDER.TO.DS   in order to cross over

(1250) /naʔtun-a-hĩʔ/   ⟶   [naʔduːnahĩʔ]
        to.be.full-S1-THEN.DS   I was full, then…

(1251) /naʔtun-hĩʔ/   ⟶   [naʔduᵈnhĩʔ]
        to.be.full-THEN.DS   he/she was full, then…

(1252) /kateun-a-hĩʔ/   ⟶   [kadeunahĩʔ]
        be.alive-S1-THEN.DS   I was (still) alive, then…

(1253) /kateun-kʰatoʔ/   ⟶   [kadeubmkʰərəʔ]
        be.alive-THEN.SS   he/she was still alive, then…

(1254) /tu-tein-aʔ-wa/   ⟶   [ɗudeinaʔwa]
        get-DES-S1-N.INT   I want to get (it)

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[256] The pre-oral segment will be indicated by a raised obstruent throughout.

(1255) /tu-tein-latʰa-wa/ ⟶   [ɖudeiᵍŋlatʰwa]

      get-DES-S3-N.INT   he/she wants to get (it)

      The second crucial fact is that the pre-oralized forms always occur after oral vowels, and never after nasal vowels.

(1256) [siᵍŋdu]   meat
(1257) [nakʰanĩŋdu]   head
(1258) [wauᵇmlatwa]   it is red
(1259) [gagãumlatwa]   he is clumsy/green/amateur

      The consistency with which the pre-stopped nasals and the nasal vowels avoid each other makes it tempting to view the inserted stop as a sort of blocking device to keep oral vowels from becoming nasalized by the following nasal coda. Although I believe this may very well have been the historical source of such forms, such an analysis is not possible in a synchronic study since we now have many minimal pairs, represented below, which force us to posit an underlying difference in the vowels. As we showed in our discussion of Mamaindê vowel phonemes, nasal vowels must be seen as phonemic in current Mamaindê speech.

(1260) /han-latʰa-wa/   [haᵈnlatʰwa]   it wiggles
(1261) /hãn-latʰa-wa/   [hãnlatʰwa]   it is white
(1262) /han-aʔ-wa/   [haːnaʔwa]   it does not wiggle
(1263) /hãn-aʔ-wa/   [hãːnaʔwa]   it is not white

      The difference between the last two forms above can only be attributed to a phonemic difference in vowel quality. The formation of the pre-oralized nasals in (251) and (252) then, cannot be due to some blocking strategy or insertion rule, for the vowels are already oral and nasal respectively. No blocking of nasal spreading is needed.

      While a preceding oral vowel is necessary for oralization of nasals to occur, the above data shows that syllabification must also be taken into account. When the coda is resyllabified as an onset, the pre-oralized segment does not occur. Only when the nasal fills a coda position (at the post-lexical level) and the nucleus position is filled by an oral vowel will the pre-oralized nasal be formed. Whether or not the coda is followed by another consonant is not crucial, as these pre-oralized nasals can also be formed word finally.

(1264) [ʔaiᵍŋ]   fish
(1265) [jahoᵈn]   old man
(1266) [dauᵇm]   tail

The two conditions to this pre-oralization process, then, are the orality of the nucleus, and the coda position of the nasal consonant. Thus syllable structure, and more specifically the rhyme, is the relevant domain here.[257]

As was noted in the Phoneme section, pre-oralized nasals are also present in the majority of the other Nambikwara languages: Southern Nambikwara, Negarotê, Latundê, and Lakondê. For Southern Nambikwara, Kroeker cites the conditioning environment of the pre-oralized stops as being an oral vowel (2001:79). Presumably a similar oralization process is present in these languages as well.

There are at least two plausible ways to account for this oralization process. The first is phonological in nature, appealing to assimilation rules, while the second is phonetic, appealing to articulatory principles.[258] I will present both in the pages that follow, but in the end will opt for the second analysis.

2.5.2.7.1   Oralization: A Phonological Account

In autosegmental terms, this process could be viewed as a simple case of oral or [-nasal] spreading.[259] More specifically, such an analysis would propose a feature geometry which includes a Soft Palate Node linked directly to the root node, similar to the Soft Palate node outlined in Halle's Revised Articulator Theory (Halle 2000:389).[260] When a nasal occurs in a coda position preceded by an oral vowel, the orality (or [-nasal] feature) from the vowel spreads to the nasal.

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[257] It could be argued that the most critical factor in pre-oralization is for the Mamaindê nucleus and coda to always agree, at least in part, in their nasal/oral articulation. This tendency to share features within the rhyme could in turn be seen as a general motivation for other processes, such as Vowel Place feature spreading, where the nucleus and the coda are required to share place features.

[258] A third account could be envisioned that appeals to constraints instead of rules (as in OT phonology). This would presumably use some sort of Ident constraint which would require the rhyme (the nucleus and the coda) in the output to be identical in terms of orality/nasality. Under this view, no spreading process would be required and thus binary nasal features would not be necessary. While this approach will not be developed further in this paper, see Eberhard (2003) for a previous attempt at such an analysis.

[259] I use the term 'oral spreading' throughout this paper as another way of saying '[-nasal] spreading'.

[260] See Eberhard (2003) 'Mamaindê Pre-stopped nasals', a manuscript online at Rutgers Optimality Archives, for an earlier treatment of this issue employing Optimality Theory.

ORAL SPREADING RULE

```
        [-nasal]                [+nasal]
            |    ⸍               |
VPlace   Soft Palate  ⸍ ⸍  Soft Palate          CPlace
          ⟋                        ⟍               |
         V                          C
         |                          |
       Nucleus ⟍            ⟋ Coda
              ⟍          ⟋
                Rhyme
```
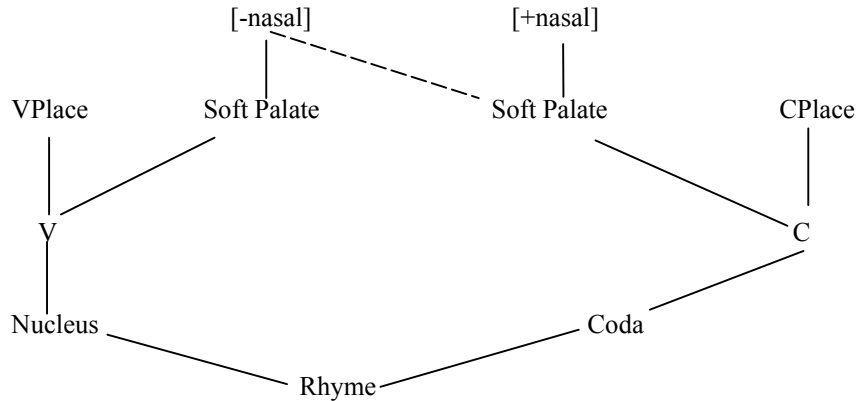
Notice that after the spreading of the [-nasal] feature, the nasal coda retains its association to [+nasal]. This results in the pre-oralized contour nasal segment, one which is doubly associated to a [-nasal] and a [+nasal] feature. The general effect of this spreading process is that, on the surface, the Mamaindê nucleus and coda will always agree, at least in part, in their nasal/oral articulation.

Oral Spreading demonstrated in the root form /sun/ - 'hit' [261]

```
        [-nasal]                [+nasal]
            |   ⸍ ⸍                 |
VPlace   Soft Palate ⸍ ⸍ Soft Palate        CPlace
           |                                    |
           V                                    C
           |                                    |
          su                                    n
```
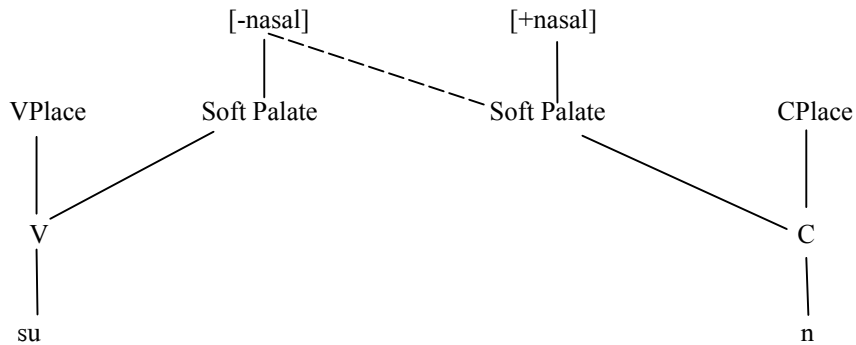
output: [su^d n]

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[261] The opposite of this spreading could also occur - for example, the sharing of [+nasal] throughout the rhyme (as in /kʰãn/ 'hard'). However, since both the vowel and the coda in /kʰãn/ are underlyingly nasal to begin with in Mamaindê, it would be impossible to determine whether the sharing of a [+nasal] feature in these cases is due to the OCP or to nasal spreading.

In this account however, the terminal features of the Soft Palate node would need to be binary, [+nasal] and [-nasal], since there must be some oral or [-nasal] feature to spread to the coda.

While not a standard approach, the spreading of the [-nasal] feature is not a new idea. A similar analysis has already been suggested by Anderson (1974:272-74) for certain Macro-Ge languages such as Maxakali, Kaingang, and Apinaye. The downside of this approach is that binary features for nasality are required, something which has been argued against by numerous linguists, as feature theory moves further in the direction of general monovalency (see Kenstowicz, 1994:492, 504; Steriade, 1995, and Piggot, 1992).[262] The binary nasal features are thus an unfortunate result of this first approach.

2.5.2.7.2   Oralization: A Phonetic Account

A more intuitive and insightful way of handling the formation of these oral/nasal contour segments is to view their formation as a phonetic behavior, not a phonological process.

In a similar case, Wetzels (2008) makes a compelling case for the phonetic approach, citing examples from Kaingang and Maxacali, languages which had previously been analyzed as requiring the spreading of the [-nasal]. Wetzels builds on work done by Keyser and Stevens (2006) who introduce the idea of phonetic enhancement, namely, that certain articulatory mechanics occur simply in order to enhance or make more prominent specific phonological contrasts already existing within a language. For languages which form oral/nasal contours for the purpose of enhancing the voicing of the coda consonant, Wetzels (2008:9-11) proposes the idea of Voiced Stop Enhancement (VSE), while for those that use these contour segments to make the orality of oral vowels more prominent preceding nasal codas, he proposes the notion of Oral Vowel Enhancement (OVE).

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[262] Piggot (1992), on the other hand, claims that [-nasal] spreading is not necessary. He analyzes nasal systems with both simple nasals and prenasalized segments as having no nasal consonants at all, but simply [-cont] segments unspecified for nasality. In the context of nasal vowels, they take on the nasal quality of the adjacent vowel. In prenasalized segments, their nasality is only a phenomenon of the articulatory apparatus. But in Mamaindê his analysis is not adequate, for it is quite clear that the nasal quality of the nasal consonants in this language cannot be derived from the nasality of any adjacent nasal vowel, since many of them occur in the context of oral vowels (/na-kananitu/ 'his-brother'). If the nasal quality of an intervocalic nasal must be treated as underlying (/sun-aʔsiʔ/ 'hit-NEG'), then the nasal quality of that very same segment in a different context must also be considered as underlying (/sun-latwa/ ' hit-S3.PRS.DECL'). These nasal codas are therefore underlying nasal consonants which become less nasal when they occur in specific environments. When they are intervocalic, they are realized as simple nasals, and when followed by a consonant they are realized as contour pre-oralized nasals. Steriade (1995:149) also argues strongly for a monovalent nasal feature (see also Kenstowicz 1994:492).

Wetzels (2008:11) goes on to outline seven parameters to predict whether such oral/nasal contour sequences are the byproduct of VSE or OVE. These parameters have been simplified for our purposes below:

a. Does the language have contrastive vowels? If not, the OVE approach is excluded.

b. Does the language contrast voiced, voiceless, and nasal consonants? If so, VSE is excluded.

c. Does the language display a hierarchy in the place of articulation in regards to the oral/nasal contour segments, where the dorsals > coronals > labials? If so, then the VSE is predicted.

d. Are the contour nasal stops more frequent in the coda or the onset ([abm] vs. [mba])? If so, OVE is predicted.

e. Does [mb] alternate as an allophone with [b]? If so, then VSE is predicted.

f. Does [mb] alternate as an allophone with [m]? If so, then OVE is predicted.[263]

g. Are nasal consonants restricted to syllables with nasal vowels? If so, then OVE is excluded.

In each of the seven parameters above, the Mamaindê settings predict an OVE approach. This approach treats the oral phase of the oral/nasal segments as a phonetic means of enhancing the contrast between oral and nasal vowels when these are followed by a nasal coda. The reasoning behind this is simple: it is much more difficult to maintain an oral articulation of a vowel preceding a nasal coda than one which has no such coda. Therefore, in languages which contrast oral and nasal vowels, the delayed opening of the velum would facilitate the production of oral vowels in these contexts, and the oralization of the coda nasal would simply be the result of such a delay. And as we have already seen (section 2.1.2.2), Mamaindê has contrastive nasality on vowels. Thus the oral portion of the nasal coda would not need to be accounted for by phonological rule, but would instead be explained by principles of phonetic implementation. In comparing the two approaches then, the assimilation approach outlined earlier versus the Oral Vowel Enhancement approach discussed here, the later view is a significant improvement in that it adds

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[263] I will assume that this parameter will also apply to [bm] sequences such as those found in Mamaindê. According to parameter (d), one would actually expect [bm] coda sequences to be more frequent than [mb] onset sequences in cases where OVE is operational.

physiological motivation to the process, requires less theoretical power, and avoids the use of binary nasal features.[264]

2.5.3 Elision

2.5.3.1 *Vowel Elision (Post-Lexical)*

Vowel elision in Mamaindê occurs whenever two unstressed vowels are in hiatus (thus in different syllables). Elision in these cases is obligatory. The vast majority of these cases occur when the final nominal suffix */-ãni/* is suffixed to noun roots ending in the unstressed vowel /i/.[265]

(1267)	/suni-ãni/	[ˈsuːnãni]	the sun
(1268)	/einʔni-ãni/	[ˈeiᵍŋʔnãni]	the man
(1269)	/jainsi-ãni/	[ˈjaiᵍŋtʃãni]	the food
(1270)	/wainsi-ãni/	[ˈwaiᵍŋtʃãni]	the medicine
(1271)	/mamãinsi-ãni/	[maˈmãːintʃãni]	the Mamaindê

It also occurs in a few other forms where unstressed vowels are juxtaposed across morpheme boundaries.

(1272)	/ta-amamaʔ-tʰã/	[tamaˈmaʔtʰã]	my appearing
(1273)	/talona-aʔ-wa/	[taˈloːnaʔwa]	I am finished

In each of these cases of vowel adjacency, the first vowel is always elided, and resyllabification occurs, restructuring the orphaned onset with a new nucleus.

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[264] Regardless of which approach we take on oralization, the phonological or the phonetic, in the end we have the coda sharing features with the nucleus. It is this sharing within the rhyme, found here as well as in the vowel feature spreading process described earlier, that brings together these two distinct processes within the phonology, giving them both a unified footing. This in turn is an argument for positing a VV analysis for diphthongs, since a VG approach would not be able to offer a single motivation for these two processes. At times the coda would be affected by the previous vowel, at times by the previous glide. It is only by positing a VV analysis for diphthongs that we can account for both oralization of nasal codas and vowel feature spreading to codas in a comprehensive way. In each case, it is the nucleus that affects the coda, thereby enforcing a sharing of features within the rhyme. See the excursus on diphthongs for more on the VV versus VG discussion.

[265] If one of the adjacent vowels is stressed in any way, neither vowel is deleted. Example: */ta-onka/* → *[daˈogŋga]* 'to cause to do' */nãn-lei-a-nãn-wa/* → *[ˈnãnˌleianãnwa]* I cried

VOWEL ELISION (AUTOSEGMENTAL)

$$
\begin{array}{ccc}
 & & \varnothing \\
 & \nearrow & \\
V & & V \\
| & & | \\
[\text{-stress}] & & [\text{-stress}]
\end{array}
$$
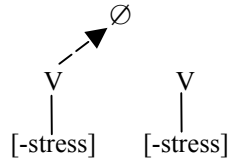
VOWEL ELISION (CLASSICAL)

$$
\begin{array}{ccc}
V & \rightarrow \varnothing\ /\ \underline{\quad\quad} & V \\
[\text{-stress}] & & [\text{-stress}]
\end{array}
$$
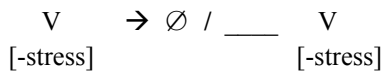
This process demonstrates the common tendency across languages to avoid adjacent vowels which are heterosyllabic. Adjacent vowels in Mamaindê are permitted, however, when they are tautosyllabic as part of a diphthong sequence in underlying forms, or when one of them is stressed.

In other contexts, unstressed syllables may suffer the loss of a vowel, a consonant, or the entire syllable may be lost. While the vowel elision rule was obligatory, and was motivated by the tendency to avoid a sequence of two unstressed vowels in hiatus, the reduction/elimination of unstressed syllables is optional, and appears to be merely a way of simplifying forms for the sake of economy and faster speech. Note in the data below that besides the nucleus, unstressed morphemes may also lose nucleus and onset, or entire syllables. This will be treated more fully in chapter 2.

Note that the sequences below are reduced forms of full morphemes. The first three examples, in fact, have three surface forms each, two of which are reductions of the full underlying form. Such deletion of atonic syllabic material is very common in Mamaindê, particularly in fast speech.

(1274) /wa̰-teiʔnataʔ/ → [ˈwa̰ːˌdeiʔnaˌdaʔ] → [ˈwa̰ːˌdeiʔn̩ˌdaʔ] →[ˈwa̰ːˌdeʔ]

come-IN.ORDER.TO.SS

in order to come (same subject)

(1275) /wa̰-sihtakʔu/ → [ˈwaːtʃsihɾ̩agu] → [ˈwaːtʃsihɾ̩aʔ] → [ˈwa̰ːsiʔ]

come-IN.ORDER.TO.DS

in order to come (different subject)

(1276) /ʔon-leit-a-nãn-wa →[ˈʔodn̩ˌleiːanãŋwa] → [ˈʔodn̩ˌleiːːnãŋwa] [266]

lazy-I.PST-S1-Pst-N.INT

I was lazy (in intermediate past time)

(1277) /wehna-latʰa-wa/   →   [ˈwehn̩latʰwa]   he becomes
(1278) /jauhna-latʰa-wa/   →   [ˈjauhn̩latʰwa]   he/she loves
(1279) /johna-latʰa-wa/   →   [ˈjohn̩latʰwa]   it is low
(1280) /suhna-latʰa-wa/   →   [ˈsuhn̩latʰwa]   she is afraid
(1281) /wa̱-latʰa-wa/   →   [ˈwa̱ːlatʰwa]   she comes
(1282) /ʔauhka-tein-aʔ-wa/   →   [ʔauhkaɾeʔwa]   I will bathe
(1283) /wa̱-taku/   →   [ˈwa̱ːɾaʔ]   he/she comes and…
(1284) /wa̱-hĩnʔkalu/   →   [ˈwa̱ːhĩʔ]   he/she comes,
                                                          then (DS)

    Such reduction can also be responsible for otherwise unknown syllable
nuclei, such as the syllabic /n̩/ found in several of the reduced forms above. When
the reduction process results in a syllable lacking a vowel, the /n/ must take on the
role of the nucleus.

2.5.3.2   Diphthong Simplification (Post-Lexical)

Mamaindê has a simplification process by which the /iu/ diphthong is realized as the
single vowel /i/. This occurs in all environments in normal speech and can be
accounted for by a simple elision rule.

(1285) /ʔiunʔ-latʰa-wa/   [ˈʔimʔlatʰwa]   he sleeps
(1286) /sĩunʔni-tu/   [ˈtʃimʔniɾu]   gnat: borrachudo
(1287) /ʔñiu-tʰã-tu/   [ʔñĩptʰãɾu]   the returning
(1288) /ʔñiu-latʰa-wa/   [ˈʔñĩːlatʰwa]   he returns
(1289) /hiuti-tu/   [ˈhiːɾiɾu]   tree
(1290) /kʰiu-tu/   [ˈkʰiːɾu]   coati
(1291) /siu-tu/   [ˈsiːɾu]   basket

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[266] This example is informative in that it lengthens the vowel when a coda is deleted, then
lengthens it again when the following vowel is deleted. The reason for the second lengthening
is that the deleted vowel was a complete morpheme, and the language must indicate its
original presence in some way. The extra length on the previous vowel fills the space where
the morpheme */-a/* 'S1' had been, giving a clue to the hearer that some segmental material is
missing.

DIPHTHONG SIMPLIFICATION (NORMAL SPEECH)

/iu/ → [i]

   The only conditioning factor here is the style of speech being used. The diphthong is always simplified in normal speech, and is thus heard as a complete diphthong only in careful speech. In Negarotê, however, (another Northern Nambikwara speech variety), the /iu/ diphthong is never reduced but is fully pronounced, even in normal fast speech. This simplification process, then, becomes a means of distinguishing between the very similar Mamaindê and Negarotê lects.

   The initial presence of the /u/ in the underlying form of this diphthong in Mamaindê can be attested to in various ways: first, indirectly, by its presence in all Negarotê speech, secondly, by its presence in Mamaindê careful speech, and thirdly, and perhaps more crucially, by the consistent spreading of the [labial] feature from the nucleus to the coda whenever the /iu/ diphthong is in the nucleus (note the [labial] spreading to the coda in the first three forms above).

   This [labial] spreading not only gives evidence of the initial presence of the /u/, but it also demonstrates the need for rule ordering between Vowel Feature Spreading and Diphthong Simplification. When the /iu/ diphthong is followed by a coda, the Vowel Feature Spreading rule must apply first to the /iu/ diphthongs before the elision rule, so that the /u/ will be present in order to spread its Labial feature to the coda.

   When the /iu/ diphthong occurs in an open stressed syllable, the simplified /i/ is lengthened. This shows that a second rule ordering is relevant as well. Diphthong Simplification must occur before the Vowel Lengthening 2 rule, deleting the /u/ before the /i/ can be lengthened.

2.5.4 Strengthening

2.5.4.1   Onset Strengthening (Post-Lexical)

The sonorant coronals /l/ and /n/ are both realized as the nonsonorant voiceless coronal stop [t] whenever they occur as onsets after another [-continuant] obstruent.[267] They are also devoiced by default as voiced nonsonorants only occur in

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[267]Although laterals could be viewed as either continuous or noncontinuous segments depending on one's theoretical framework, I will treat them here as [-continuant] segments due to the fact that Onset Strengthening combines the /l/ with the /n/, which is also [-continuant]. This view then allows us to simplify the process of strengthening, requiring only a single spreading of [-sonorant]. If we were to consider /l/ as [+continuant], on the other hand, it would necessitate the spreading of the [-continuant] feature as well. Having said this, there is one argument in favor of viewing the Mamaindê /l/ as a [+continuant]. This argument is based on coda licensing. If laterals were treated as continuants in this language, it would

this language as a result of the Obstruent Voicing Rules which apply in very specific environments (see the two Obstruent Voicing processes).[268] In the following examples, we see the results of this obligatory Onset Strengthening rule.

	UF	Coda Licensing	Surface Form
(1292)	/lit-latʰa-wa/ he/she is leaving	→ [ˈliklatʰwa]	→ [ˈliktatʰwa]
(1293)	/seit-latʰa-wa/ he/she is speaking	→ [ˈseiklatʰwa]	→ [ˈseiktatʰwa]
(1294)	/at-latʰa-wa/ he/she is fishing	→ [ˈatlatʰwa]	→ [ˈattatʰwa]
(1295)	/nã-leit-nãn-wa/ he/she drank (Intermediate Past)	→ [nãleiknãŋwa]	→ [nãleiktãŋwa]
(1296)	/amamas-latʰa-wa/ it appears	→ [amaˈmatlatʰwa]	→ [amaˈmattatʰwa]
(1297)	/weis-latʰa-wa/ he/she is making	→ [ˈweiklatʰwa]	→ [ˈweiktatʰwa]
(1298)	/kʰakʰos-latʰa-wa/ it is dangerous	→ [kʰaˈkʰotlatʰwa]	→ [kʰaˈkʰottatʰwa]
(1299)	/heis-nãn-wa/ he was angry (Recent Past)	→ [heiknãŋwa]	→ [heiktãŋwa]
(1300)	/titis-nũn-kʰatoʔ/ he/she sands, then…	→ [didiknũnkʰaɾoʔ]	→ [didiktũnkʰaɾoʔ]

---

explain why the /l/ never occurs in the coda position, which licenses only [-continuant] segments.
[268] This obstruent must also be [+consonantal] to rule out the glottal.

The last five forms show how Onset Strengthening assumes that coda licensing, or Coda Strengthening, has already had its effect. Licensing enforces a [-continuant] restriction on the coda, requiring any fricative in that position to be realized as an obstruent. This obstruent, in turn, fits the structural description of the Onset Strengthening rule, which is now free to apply to the adjacent onset.

ONSET STRENGTHENING RULE [269]

Autosegmental

\

```
              C    $       C
[+cons]      /|           /|
            / |          / |
        [-cont] [-son] [+son] [Coronal]
```

Classical

$$
\begin{bmatrix} \text{Coronal} \\ +\text{son} \end{bmatrix} \rightarrow [-\text{son}] \; / \; \underline{\quad} \begin{array}{c} C \\ \begin{bmatrix} -\text{cont} \\ -\text{son} \\ +\text{cons} \end{bmatrix} \end{array} \; \$ \; \underline{\quad\quad}
$$
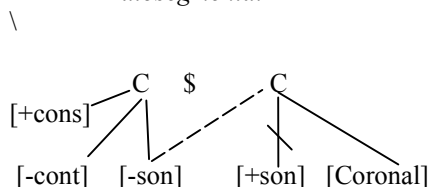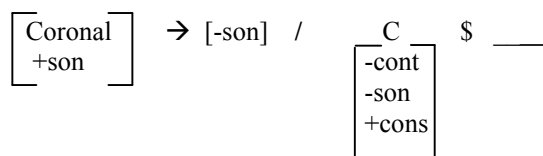
Once Onset Strengthening has applied, these onset consonants may then undergo further alteration by the optional Coronal Aspiration Rule below, which aspirates coronal obstruents in the onset.

Onset Strengthening must therefore precede Coronal Aspiration. But both of these processes are initially dependent upon the effects of Coda licensing. The end result of Coda Licensing plus Onset Strengthening is that consonant clusters tend to agree in terms of the [sonorant] feature. Although this agreement is not true of all consonant clusters in the language (particularly those involving a nasal coda), it is a marked tendency worth noting.

While the specific hierarchy of feature nodes within Feature Geometry generally assumes that major class features do not spread (except in the case of total assimilation), the case of Onset Strengthening in Mamaindê is a good counter-example. The strengthening of these particular onsets never occurs at a word boundary, but instead is internal to the word. It also is not conditioned by stress. Thus the expected environment for strengthening is not present. Since this strengthening only occurs to onsets following nonsonorants, it seems to be fairly

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[269] The ($) symbol indicates syllable boundary.

clear that this is a case of assimilation, where major class features do indeed spread from a nonsonorant coda to a sonorant onset.[270]

2.5.4.2   Coronal Aspiration (Post-Lexical)

Onset coronal obstruents may be optionally aspirated when preceded by a voiceless consonant and followed by an unstressed vowel. This does not, however, occur after glottals.

(1301)	/kaˈjat̪-tu/	[kaˈjat̪t̪ʰu]	corn
(1302)	/jais-tu/	[ˈjaikt̪ʰu]	son-in-law
(1303)	/weit-tu/	[ˈweikt̪ʰu]	child
(1304)	/seit-ta-latʰa-wa/	[ˈseikt̪ʰalatʰwa]	he/she speaks to me
(1305)	/hos-tu/	[ˈhott̪ʰu]	monkey: macaco prego
(1306)	/lit-latʰwa/	[ˈliktʰatʰwa]	he/she leaves
(1307)	/seit-latʰwa/	[ˈseiktʰatʰwa]	he/she speaks
(1308)	/amamas-latʰwa/	[amaˈmattʰatʰwa]	it appears
(1309)	/ˈat-latʰwa/	[ˈattʰatʰwa]	he/she fishes
(1310)	/ˈweis-latʰwa/	[ˈweiktʰatʰwa]	he/she makes
(1311)	/kʰaˈkʰos-latʰwa/	[kʰaˈkʰottʰatʰwa]	it is dangerous
(1312)	/nã-leit-nãn-wa/	[ˈnãleiktʰãŋwa]	he/she drank.IPst
(1313)	/heis-nãn-wa/	[ˈheiktʰãŋwa]	he/she was angry.Pst
(1314)	/titis-nũn-kʰatoʔ/	[diˈdiktʰũnkʰaɾoʔ]	he/she sands also, then

CORONAL ASPIRATION: (OPTIONAL)

$$
\begin{bmatrix} C \\ \text{coronal} \\ \text{-cont} \end{bmatrix} \rightarrow [\text{+spread glottis}] \ / \ \begin{bmatrix} C \\ \text{-voice} \\ \text{-const.glot.} \end{bmatrix} \ \$ \ \underline{\quad} \ \begin{bmatrix} V \\ \text{[-stress]} \end{bmatrix}
$$

This process will only occur to coronal onsets of unstressed syllables, as the onsets of stressed syllables will be voiced rather than aspirated, according to the Obstruent Voicing 1 Rule outlined previously. An allophone of /t/, the aspirated variant [tʰ] occurs only in consonant clusters after other voiceless obstruents. As was noted in the Phoneme section of this chapter, 2.1.1.3.2, the allophone [tʰ] should not

---

[270] If the /l/ was viewed as a [+continuant] to begin with (a possibility that was discussed in a previous footnote), the spreading of [-continuant] would also be necessary. However, the spreading of [-sonorant] here seems to be unavoidable.

be confused with the aspirated phoneme /tʰ/, as they are neutralized after voiceless obstruents but are contrastive in all other environments.

2.5.4.3   Stop Implosion (Post-Lexical)

Non-velar stops can optionally be realized as imploded voiced stops before back stressed vowels and after glottals or a word boundary. The velars do not participate in this process. Implosion can be seen as a type of strengthening since it brings more prominence to the obstruent in the onset of a stressed syllable. Sadly, this is not only an optional process, it is also a dying art, as the younger generation (those speakers under 40 years of age) have abandoned it completely.

STOP IMPLOSION (OPTIONAL – ELDERLY SPEAKERS ONLY):

$$
\begin{bmatrix} C \\ -cont \\ -back \end{bmatrix} \rightarrow \begin{bmatrix} +constr.\ glot. \\ +voice \\ +implosion \end{bmatrix} / \left\{ \begin{matrix} \# \\ [\textʔ] \end{matrix} \right\} \underline{\quad} \begin{bmatrix} V \\ +stress \\ +back \end{bmatrix}
$$

(1315)   /paah/   [ˈpaah] ≈ [ˈbaah] ≈ [ˈɓaah]   two

(1316)   /ponʔ-tu/   [ˈpoᵈnʔdu] ≈ [ˈboᵈnʔdu] ≈ [ˈɓoᵈnʔɗu]   frog: type

(1317)   /po-tu/   [ˈpoːɾu] ≈ [ˈboːɾu] ≈ [ˈɓoːɾu]   bird: uirapuro

(1318)   /panʔ-tu/   [ˈpaᵈnʔdu] ≈ [ˈbaᵈnʔdu] ≈ [ˈɓaᵈnʔɗu]   frog: type

(1319)   /tu-tein-aʔ-wa/   [ˈduːˌd̪eiːnaʔwa] ≈ [ˈɗuːˌd̪eiːnaʔwa]   I will get

(1320)   /toh-latʰa-wa/   [ˈdohɬatʰwa] ≈ [ˈɗohɬatʰwa]   he wants

(1321)   /suʔton-soʔki-tu/ [suʔˈdoᵈnˌsoʔgiɾu] ≈ [suʔˈɗoᵈnˌsoʔgiɾu] the doubting one

(1322)   /mãnʔ-tu/   [ˈmãnʔdu] ≈ [ˈmãnʔɗu]   hill

The only exception found to this rule is the morpheme */-tu/* 'final nominal suffix'. The initial obstruent in this nominal suffix can be imploded after a glottal even though the following back vowel is never stressed (see above).

2.5.5 Lenition / Weakening

2.5.5.1   Coronal Weakening (Post-Lexical)

The phoneme /t/ weakens in intervocalic position before unstressed vowels. In such cases, it is obligatorily realized as a flap [ɾ].

(1323)	/weit-ãni/	[ˈweiːɾãni]	the child
(1324)	/wa̱-kʰatoʔ/	[ˈwa̱ːkʰəˌɾəʔ]	come, then
(1325)	/lit-a-hĩ̱ʔ/	[ˈliːɾaˌhĩ̱ʔ]	I arrived, then…
(1326)	/nĩ-ta-tʰã-tu/	[ˈnĩː-ɾa-tʰã-ɾu]	the thing that hurts me
(1327)	/la-ta-latʰa-wa/	[ˈlaːɾalatʰwa]	it is a macaw
(1328)	/hiuti-tu/	[ˈhiuɾiɾu]	tree

The feature that spreads from this intervocalic environment to the /t/ is the [+cont] feature. This results in a [+cont] coronal obstruent, and in light of the available segments in the sound inventory, the [ɾ] is the logical output.[271] Voicing is thus acquired by default.

CORONAL WEAKENING (CLASSICAL)

/t/ → [+cont] / V   ___   V
                                                ⎡ +cont ⎤
                                                ⎣ -stress ⎦

_____

[271] The /s/ is also a [+cont] coronal, but this output would require the changing of the specification for [strident] as well as [continuant]. The flap does not require this extra feature change. Also, the [-lateral] feature is necessary in the structural description of the autosegmental rule to prevent an [l] in the output, and the [-nasal] is necessary to block the [n].

CORONAL WEAKENING (AUTOSEGMENTAL)
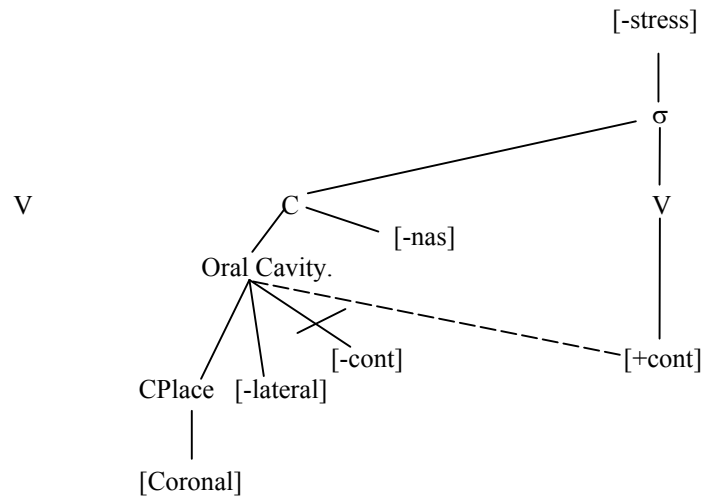
Coronal weakening also occurs when the alveolar stop follows the glottal fricative /h/. In such cases, the flap is then devoiced by a further rule (see the Onset Devoicing rule).

(1329)   /jaih-ta-latʰa-wa/   ['jaihɾ̥alatwa]²⁷²   it is sad to me/I am sad

(1330)   /toh-tu/   ['doːhɾ̥u]   bee

By employing the feature [-consonantal] and an X instead of V, we can broaden the environment of our rule enough to include both vowels and the /h/ as the preceding segments.

---

²⁷² The loss of voicing on this [ɾ] is discussed under Onset Devoicing .

CORONAL WEAKENING (REVISED)
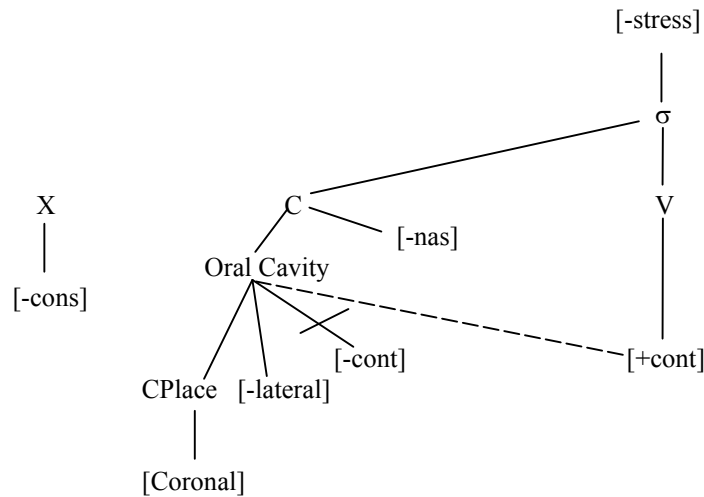
2.5.5.2   Vowel Weakening (Post-Lexical)

The back vowels, /a/,/o/, and /u/, are usually weakened in unstressed positions. The /a/ and /o/ weaken to a central lax [ə]. The back /u/ is weakened to a lax [ʊ] vowel. Front vowels never weaken. Although this is an optional rule, it typically depends on whether or not the speaker is using careful speech (which would not weaken any vowels) or normal speech (which has the tendency to weaken most unstressed vowels). The only morpheme in which an unstressed back vowel never becomes centralized in normal speech is the form */-latʰa/* 'S3', where the first /a/ vowel will never weaken even though it is not stressed.

(1331)	/kanah- latʰa-wa/	[gəˈnahlatʰwə]	it is dark
(1332)	/sanĩn-taʔ/	[səˈnĩŋˌdaʔ]	happy and ...
(1333)	/katehwalan-tu/	[kədeʌəˈlaᵈndu]	rattlesnake
(1334)	/tǫ-kʰatoʔ/	[ˈɗǫːkʰərəʔ]	die, then...
(1335)	/ʔnĩu-satoʔni/	[ˈʔnĩusərəʔni]	return, if
(1336)	/tu-tʰunna-wa/	[ˈɗuːtʰʊᵈnnawa]	he will get it
(1337)	/jṵn-tu/	[jṵᵈndu] ≈ [jṵᵈndʊ]	knife

VOWEL WEAKENING (OPTIONAL) [273]

$$
V \rightarrow \begin{bmatrix} \text{-tense} \\ \alpha \text{ high} \end{bmatrix}
$$
$$
\begin{bmatrix} \text{+back} \\ \text{-stress} \\ \alpha \text{ high} \end{bmatrix}
$$
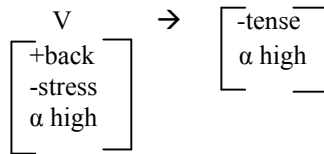
2.5.6 Coalescence

2.5.6.1   Post Lexical Palatalization (Post-Lexical)

Palatalization is much rarer in Mamaindê than affrication. Post-lexical palatalization occurs when a sibilant is adjacent to the glottal fricative /h/ in the environment of a high front /i/. This palatalization process is a type of coalescence that occurs across syllable boundaries, where an /s+h/ sequence is coalesced into a single [ʃ] segment. As a result of this process, a continuant segment is removed from the coda position and resyllabified as an onset, satisfying coda licensing. Notice that the palatalization of /s/ occurs whether the /i/ precedes or follows the /s+h/ sequence.

(1338)   /seis-hĩʔ/[274]   [ˈseiːʃĩʔ]
          speak-THEN.DS
          he speaks, then..

(1339)   /nakas̱-hĩʔ/   [naˈga̱ːʃĩʔ]
          listen-THEN.DS
          listen, then…

(1340)   /weis-hãn-kʰatoʔ/   [ˈweiːʃãnkʰətəʔ]
          make-CMP-THEN.SS
          make it completely, then…

---

[273] While this rule is not altogether precise, it is meant to show that both the /a,o/ →[ə] and /u/ → [ʊ] involve a change from a tense to a lax vowel, while still maintaining the height feature of the original. It will be assumed that this will result in the change of the other pertinent features necessary to arrive at both the [ə] and [ʊ]. While the feature [tense] is not required to differentiate between the phonemic vowels in Mamaindê, it becomes necessary to explain allophonic variations.

[274] /seis/ is an allomorph of /seit/ 'speak'.

This palatalization process also occurs when the /s/ and /h/ are inverted. Note the reversed order of the segments in the form below.

(1341)   /ih/ + /sihtaʔ/   ['i:ʃiɾaʔ]   run, in order to (DS)

This process can be formalized by the following mirror image rule□

POST LEXICAL PALATALIZATION [275]

/s/ → [ʃ] / ____ /h/ __V__   (% mirror image rule)[276]

$$\begin{bmatrix} \text{-back} \\ \text{+high} \end{bmatrix}$$

Both the presence of the /h/ and the /i/ are conditioning factors in the above environment. In forms with sequences of /s/ and /h/ which lack the /i/ vowel, the process does not occur. Likewise, sequences of /s/ and /i/ which lack an adjacent /h/ also do not trigger palatalization.

(1342)   /nakʔa̱s-hãs-aʔ-wa/   [naʔ'ga:sãsaʔwa][277]   I understand it all
(1343)   /hos-ĩ/   ['ho:sĩ]   capuchin (list form)
(1344)   /weis-aʔ-wa/   ['weisaʔwa]   I am making

Post-Lexical Palatalization differs in several ways from the Lexical Palatalization rule that is a part of the Affrication process (seen earlier in the section on Affrication, 2.5.2.3). While both palatalization processes require a [+high] feature in the environment, the lexical rule simply palatalizes the /s/, while the post-lexical rule coalesces the /s/ with an adjacent /h/, replacing the sequence of two segments with the single [ʃ] segment. Secondly, the lexical rule is only the first step in the affrication process, always followed by the /t/ Intrusion rule which inserts a coronal stop before the palatalized [ʃ], creating the affricate [tʃ]. Post-lexical palatalization never feeds the /t/ Intrusion rule, and thus never leads to affrication. This is due to the fact that the /t/ Intrusion rule is lexical and does not apply in the

---

[275] As the name implies, this rule differs from the Lexical Palatalization process in terms of its domain of application. See section 2.5.2.3, 'Affrication'.

[276] A strict reversal of the linear order of these elements does not account for every instance of mirror image application. Forms such *as ['weis-hãn-kʰatoʔ] → ['weiʃãnkʰərəʔ]* and *[nakạs-hị̃ʔ] → [na'ga:ʃị̃ʔ],* where the linear order of segments varies from /ish/ to /shi/, show some of the limitations of rule writing.

[277] Instead of palatalizing the /s/, in this form the /h/ is elided. Coda licensing is still satisfied. */hãs/* is an allomorph of */hãn/* 'all'.

post-lexical component. Thirdly, while the lexical rule applies only to the /s/ when it is morpheme-initial, post-lexical affrication applies to any /s/ which meets the structural description of the rule, whether it be in the coda or onset. Lastly, the motivation for the lexical rule is clearly tied to a tendency to strengthen certain consonants in morpheme initial positions, while the motivation for the post-lexical rule comes from the ever-present restrictions of coda licensing, which do not allow for continuants in the coda.

2.5.6.2   Onset Devoicing (Post-Lexical)

Sonorants in the onset position which follow the glottal fricative /h/ coalesce with the /h/ in normal speech, undergoing aspiration and devoicing. As was pointed out in section 2.2, 'The Syllable', the /h/ is not permitted in the coda position due to coda licensing. Onset devoicing, as a process of coalescence, effectively removes the /h/ from the coda and resyllabifies it as part of the onset, thus satisfying all licensers. [278] Coda licensing is thus the clear motivation behind this process.

  Some phonetic details should be pointed out. While the data below employs standard IPA symbols for the voiceless counterparts of each segment, when they coalesce with the /h/, all of these segments acquire a bit of aspiration as well so that they are realized on the surface as /r̥ʰ/, /n̥ʰ/, /j̥ʰ/, etc.

(1345)   /katehwalan-tu/   [ka̗deʌa'ladndu]   rattlesnake
    rattlesnake-FNS

(1346)   /jaih-jeʔ-latʰa-Ø-wa/   ['jai̗je̥ʔlatwa]   she is certainly sad
    sad-surely-S3-PRS-N.INT

(1347)   /oh-na-tu/   ['on̥aɾu]   sky
    above-NCL.AREA-FNS

(1348)   /suhna-latʰa-Ø-wa/   ['sun̥alatwa]   he is afraid
    afraid-S3-PRS-N.INT

(1349)   /sih-tu/   ['siɾ̥u]   house
    house-FNS

---

[278] In careful speech, this coalescence does not occur, but the sonorant following the /h/ is still aspirated and devoiced. Interestingly, the /h/ remains in the coda in slow speech. Presumably, careful speech, with its exaggerated pauses at syllable and word boundaries, can cause a word medial coda to be treated as a word final segment, In such a position, the /h/ is allowed to occur as a word final appendix (see Syllable section, 2.2).

(1350) /het-sihtaʔ/   [ˈheiktʃiɾ̥aʔ]   for him to
        be angry…
        angry-IN.ORDER.TO.DS

(1351) /loh-tu/   [ˈloɾ̥u]   vulture
        vulture -FNS

(1352) /ʔoh-latʰa-Ø-wa/   [ˈoːɬatwa]   it punctures
        puncture-S3-PRS-N.INT

The process of Onset Devoicing can be represented by the spreading of the Laryngeal node from the /h/ in the coda to the following sonorant in the onset with a subsequent delinking of the /h/. When this rule is applied to the data, it results in voiceless, aspirated segments since the Laryngeal node of the /h/ dominates [-voice] and [+spread glottis].

ONSET DEVOICING[279]
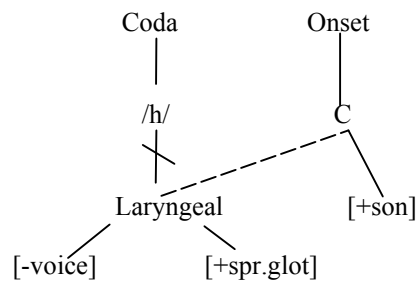
Rule ordering is evident as the /t/ must become a [+son] segment before this rule can apply. So Coronal Weakening applies before Onset Devoicing.[280]

---

[279] The coda and onset positions, while not necessary for this rule to function properly, are added here as a reminder that syllable structure is the motivation for this process.

[280] The Coronal Weakening rule affects the /t/, resulting in a [+cont] coronal, or rather, a flap [ɾ].

	UF		CorWeak	OnsDev	gloss
(1353)	/loh-tu/	→	[ˈlohɾu] →	[ˈloːɾ̥u]	vulture

In natural speech, the /h/ completely disassociates from its features, resulting in the coalescence of these two segments into one. In more careful speech, while the spreading rule still applies, delinking of /h/ does not always occur, and the result is often an /h/ followed by the devoiced or aspirated consonant.

			Careful speech	Natural speech	gloss
(1354)	/sih-tu/	→	[ˈsihɾ̥u] →	[ˈsiɾ̥u]	house

Interestingly, the /l/ is the only voiced consonant that can undergo Onset Devoicing in a mirror image fashion. Whether the /h/ occurs before or after the lateral, the rule still applies and the /l/ is devoiced.

(1355)	/ʔoh-latʰa-Ø-wa/		→	[ˈoːɬatwa]	it punctures
	puncture-S3-PRS-N.INT				

(1356)	/tu-lhi-latʰa-Ø-wa/		→	[ˈɗuːɬilatwa]	he would get
	get-IRR-S3-PRS-N.INT				

2.5.6.3   Onset UnRounding (Post-Lexical)

Although an /hw/ sequence typically follows the Onset Devoicing process outlined above, resulting in the [ʍ], a different behavior is observed when the /hw/ occurs before the /i/ vowel. In such cases the sequence /hw/ coalesces to a [ɸ]. The difference in the output is accounted for by a further process whereby the [ʍ] loses its link to [+round], being realized as [ɸ]. This further process I will refer to as the UnRounding Rule. Although not a coalescence rule in and of itself, the UnRounding Rule plays a part in the coalescence of /h/ and /w/. Together with Onset Devoicing, this rule is thus responsible for one of the rarer sounds in the Mamaindê phonetic inventory, the voiceless labial fricative [ɸ].

(1357)	/ih-wi-latʰa-Ø-wa/	[iˈɸilatwa]	he runs inside
	run-enter-S3-PRS-N.INT		

UnRounding Rule:

[ʍ] → [-round] **/ __ /i/**

The UnRounding Rule must be ordered after the Onset Devoicing rule, due to the feeding relationship between them. The crucial ordering of these two rules can be seen in the two derivations below, the last of which produces an ungrammatical form.

Correct Rule Ordering:

input:	/ih-wi-latʰa-wa/	he runs inside
Onset Devoicing Rule	iʍilatʰawa	
UnRounding Rule	iˈɸilatʰwa	
output:	[iˈɸilatʰwa]	

Incorrect Rule Ordering:

input:	/ih-wi-latʰa-wa/	he runs inside
UnRounding Rule	-------	
Onset Devoicing Rule	iʍilatʰawa	
output:	[iʍilatʰawa]*	

2.5.7 Metathesis

2.5.7.1   Consonant Glottal Metathesis (Post-Lexical)

Metathesis occurs in Mamaindê whenever the glottal is found in a position between a preceding consonant and a following vowel. In such situations, the order of these segments is altered so that the glottal occurs before the consonant. The examples below show the behavior of glottalized consonants when followed by the final nominal suffixes */-tu/* and */-ãni/.*[281]

	UF	w/FNS1	w/FNS2	gloss
(1358)	/hikʔ/	[ˈhikʔ.tu]	[ˈhiʔ.gãni]	hand
(1359)	/jukʔ/	[ˈjukʔ.tu]	[ˈjuʔ.gãni]	foot
(1360)	/hukʔ/	[ˈhukʔ.tu]	[ˈhuʔ.gãni]	bow
(1361)	/juhakʔ/	-----	[juˈhaʔ.gã]	all
(1362)	/sasikʔ/	-----	[saˈsiʔ.gã]	first

CONSONANT GLOTTAL METATHESIS

V Cʔ. V →   V ʔ.C V

       The motivation for this process is a preference in Mamaindê for the /ʔ/ to fill a coda position over an onset position. This appears to be due to a language specific view of glottals as the prototypical [-continuant] segment, thus maximally satisfying the demands of coda licensing. But if this were the only motivation under consideration here, it could be satisfied without any modification to the UF, keeping both the consonant and the glottal assigned to the coda in their original order, since the following configuration is allowed in the syllable template.

---

[281] The two final nominal suffixes (FNS) mark lexical items as nouns. Other than this basic function, they have lost most of their semantic/grammatical content. See section 3.4.1.3.9 on Final Nominal Suffixes for a discussion of these morphemes.

Original Syllabification of consonant / glottal sequences

```
      σ              σ
      |              |
      R              R
     /|             /|
    N  C           N
    |  |\          .|
    V  C ʔ          V
```
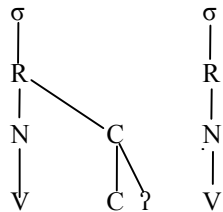
But there is also the maximization of onset being felt here. It is the interaction between these two tendencies which results in the pattern we see in these examples. The maximization of onsets requires some segmental material to fill the onset slot of the second syllable, while the preference for glottals in the coda switches the order of the segments such that the glottal can fill the coda while the other consonant is free to fill the onset.

Maximization of Onset with glottal as prototypical coda

```
      σ               σ
      |              /|
      R            O  R
     /|            |  |
    N  C           |  N
    |  |           |  .|
    V  ʔ           C  V
```
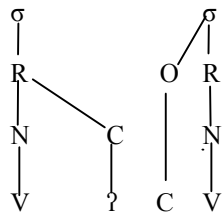
After metathesis, the obstruent is subject to voicing by the Intervocalic Obstruent Voicing rule.[282] This gives us the following rule order in a feeding relationship: Metathesis > Intervocalic Obstruent Voicing.

	UF	Metathesis	Interv. Obs.Voicing	gloss
(1363)	/sasikʔ-a/ →	[saˈsiʔka] →	[saˈsiʔga]	first

In obstruent-glottal sequences, the elder generation continues to metathesize the two consonants. Younger speakers, however, typically opt to elide the glottal completely. This tendency among the younger generation shows that the glottal could be in danger of being lost in many of these forms with

---

[282] The Intervocalic Obstruent Voicing rule will apply voicing even across an intervening glottal stop,

consonant/glottal clusters. The following is a sample of glottal elision among the youth.

(1364)   /nakʔas̲-aʔ-Ø-wa/   →   [naˈga̲ːsaʔwa]

         understand-S1-PRS-N.INT.

         I understand/hear

2.5.8 Epenthesis

2.5.8.1   *Underspecified Vowel Epenthesis (Lexical)*

An unspecified V is epenthesized in some forms to avoid the presence of the /h/ in the coda. When a root final /h/ is followed by an affix beginning with a consonant, an epenthetic underspecified V is optionally inserted after the /h/, allowing the /h/ to be resyllabified as an onset of a new syllable. This avoids violating the coda licensing restriction which limits the coda position to [-cont] segments (see Syllable section 2.2 for discussion of this process and of coda licensing). [283]

(1365)   /mih-tu/   →   [ˈmiːhVɾu]   rain
         rain-FNS

(1366)   /kanah-ta-tu/   →   [gaˈnaːhVdaɾu]   tomorrow
         night-NCL.LARGE-FNS

         Because this process only occurs when /h/ is found at the root boundary, it is by nature a part of the Lexical Component. The rule is formalized below.

---

[283] This is an optional process. But if does not apply, then the presence of the /h/ in the coda is resolved by another strategy, coalescence. See the Onset Devoicing rule in section 2.5.6.2, 'Onset Devoicing'.

UNDERSPECIFIED VOWEL EPENTHESIS (OPTIONAL) [284]
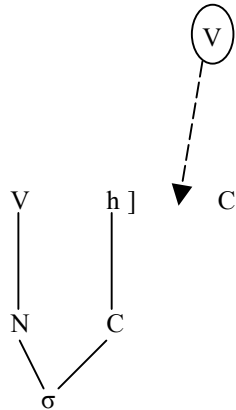
After the underspecified V is epenthesized in the previous rule, the specific features of the epenthetic vowel are then borrowed from the previous vowel. This can be represented by way of a vowel harmony rule. The circled V represents an underspecified vowel.

VOWEL HARMONY
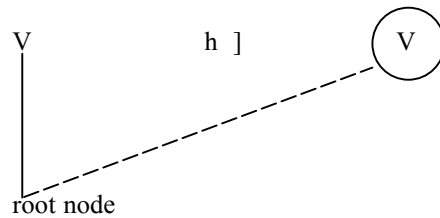
(1367)   /mih-tu/   →   [ˈmiːhVɾu]   →   [ˈmiːhiɾu]   rain
         rain-FNS

(1368)   /kanah-ta-tu/   →   [gaˈnaːhVdaɾu]   →   [gaˈnaːhadaɾu]   tomorrow
         night-NCL.LARGE-FNS

---

[284] The (]) bracket represents a root morpheme boundary.

2.5.8.2   Epenthetic C (Post-Lexical)

The Epenthetic C is an optional process by which an underspecified obstruent is inserted as a coda in stressed open syllables before an aspirated stop or an affricate.

(1369)   /eu-sihtaʔ/   [ˈeuptʃih̥raʔ]   in order to see (DS)

(1370)   /jau̠-sihtaʔ/   [ˈjau̠ptʃih̥raʔ]   in order to stay (DS)

(1371)   /jau̠-tʰã/   [ˈjau̠ptʰã]   the staying

(1372)   /to̠-tʰã/   [ˈdo̠ttʰã]   the death

(1373)   /wa̠-tʰã/   [ˈwa̠ttʰã]   the coming

EPENTHETIC C – OPTIONAL (CLASSICAL)

EPENTHETIC C – OPTIONAL (AUTOSEGMENTAL)

   In the above rule, the features [+spread glottis] and [+delayed release] are *separate alternatives* in the environment, causing this rule to apply before aspirated stops *or* before affricates.

   It becomes clear that the coda consonant has indeed been inserted in the above forms when elsewhere these same roots occur without the epenthetic stop.

(1374)   [ˈeuːlatwa]   he sees

(1375)   [ˈjau̠ːlatwa]   he lives

(1376)   [ˈɗoːlatwa]   he dies
(1377)   [ˈwa̠ːlatwa]   he comes

     The motivation for this process revolves around the issue of prominence. The epenthesis of a C occurs when aspirated onsets take prominence away from the stressed syllable. In such cases, a coda segment is added to strengthen the stressed syllable and give it extra length, and thus more emphasis. This extra length is added whether or not the stressed syllable was originally heavy. In cases where the root syllable already ends in a bi-moraic diphthong, the effect of Epenthetic C is to make this an extra long syllable. This length is not necessary for stress placement, but as a means of ensuring the prominence of the stressed syllables.

     As this rule inserts an underspecified C into the coda position, it must be ordered before the Coda Strengthening rule that will fill in the major class features of this C, causing it to be realized as a stop. This in turn must take place before the place features can be defined by way of the VPlace Feature Spreading rule. Epenthetic C is thus ordered before Coda Strengthening, which must be ordered before VPlace Feature Spreading.

     Epenthetic C also interacts with the Affrication process by which a morpheme initial /s/ undergoes affrication preceding a high front vowel. As has been shown, the affrication process itself is composed of two rules, the Lexical Palatalization rule and a /t/ Intrusion rule, which inserts a /t/ after the /s/ has been palatalized.[285] Since the Epenthetic C rule requires that a [-cont] consonant follow the /s/, in forms with affricates the inserted /t/ from the /t/ Intrusion rule must be present in the environment before the Epenthetic C rule can apply. This rule ordering is demonstrated in the form below.

	UF	*Lex. Pal.*	*/t/ Intrusion*	*Epenthetic C*
(1378)	/ja̠u-sihtaʔ/ →	[ˈja̠uʃihɽaʔ]	[ˈja̠utʃihɽaʔ]	[ˈja̠uptʃihɽaʔ]
	in order to stay (DS)			

     Finally, Epenthetic C must be preceded by the stress rules as stress is a conditioning factor in the environment.

     There are a few consonants that appear to be inserted in other contexts which are unrelated to the Epenthetic C rule. However, I believe these are not inserted, but simply the remnants of morphemes after severe reduction processes. The forms below are all complex stems composed of two verbs linked by a connective. In these forms the connective is often reduced to a single obstruent which becomes syllabified as on onset.

---

[285] See section 2.5.2.3 on Affrication.

(1379) /ãun-taʔ-ih/   →   [ãumˈbih]   to leave and run
        leave-and-run

(1380) /tu-taʔ-ʔa̰i/   →   [ɗuˈda̰i]   to get and go
        get-and-go

(1381) /tu-taʔ-w̰a̰/   →   [ɗuˈkw̰a̰]   to get and come
        get-and-come

These forms differ fundamentally from those covered by the previous
Epenthetic C rule in that these words all consist of forms which have had the suffix
/-taʔ/ 'and' deleted or reduced. Here the */-taʔ/* morpheme reduces and leaves behind
a single C skeletal position which then gets syllabified as on onset. It gets its place
features filled in later, sometimes by way of the VPlace Feature Spreading Rule, at
other times by other means which are as yet unclear.[286]

2.5.9 Lengthening

2.5.9.1   Compensatory Vowel Lengthening (Post-Lexical)

There are two vowel-lengthening rules in MD. The first involves compensatory
lengthening, which lengthens vowels originally followed by a coda. If this coda
segment then becomes maximized as an onset to the following syllable, the syllable
loses its privileged status as a heavy syllable, and the coda position becomes
orphaned. In these cases, a lengthening rule comes along and lengthens the vowel,
associating the extra length of the vowel to the orphaned coda in order to preserve
the original weight of the syllable.

(1382) /ja̰kʔ-ãni/   [ˈja̰ː.gã.ni]   peccary-FNS
(1383) /sis-tu/   [ˈsiː.sã.ni]   savannah.grass-FNS
(1384) /hos-ã-ta-tu/   [ˈhoː.sã.da.ɾu]   monkey.spider-GNT-NCL.LARGE-FNS
(1385) /nãn-aʔ-Ø-wa/   [ˈnãː.naʔ.wa]   cry-S1-PRS-DECL

---

[286] It is still not clear, for instance, how the underlying stem form */tu-taʔ-wa/* 'come and get'
comes to be realized as *[dukwa]*. Apart from the reduction of the */-taʔ/* morpheme, the dorsal
/k/ is still problematic. Although in other parts of the phonology onsets will assimilate to coda
consonants, here it appears that the glottal coda is assimilating the place features of the velar
glide, being realized as a dorsal stop. At this point in time we must consider this form as part
of residue until further research can shed additional light on this.

COMPENSATORY VOWEL LENGTHENING
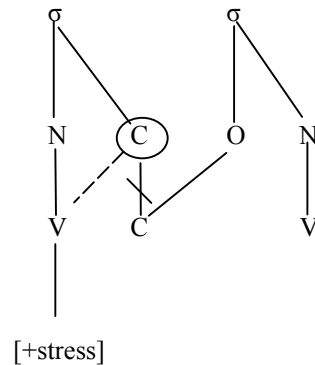
[+stress]

2.5.9.2 Post-Stress Vowel Lengthening (Post-Lexical)

A second vowel lengthening rule lengthens stressed vowels in light syllables. These are root forms containing only light syllables. In these situations, when there is no heavy syllable, the word level stress rule stresses the rightmost light syllable. These stressed light syllables are later lengthened by the Post-Stress Vowel Lengthening Rule. This rule is similar to a repair strategy, adding weight to all light stressed syllables and building the appropriate syllable structures when necessary so that they conform to the quantity sensitive nature of the language.

These two vowel lengthening rules are very similar. The main difference between them is that the first applies to syllables which were underlyingly heavy, while the second applies to syllables which were originally light. Because of this difference, the second rule must also build the appropriate syllable structure over the extra vowel length, while the first rule doesn't need to build any syllable structure, instead spreading the vowel length to an existing orphaned coda position.

(1386)	/lo-tu/	[ˈloː.ɾu]	rat
(1387)	/kalakala-tu/	[ga.la.ga.ˈlaː.ɾu]	chicken
(1388)	/jami-tu/	[ja.ˈmiː.ɾu]	nose
(1389)	/hŷ-tu/	[ˈhŷː.ɾu]	wolf: 'guara'

POST-STRESS VOWEL LENGTHENING
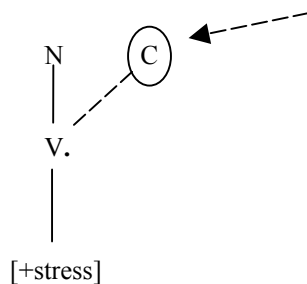
2.5.9.3   Emphatic Lengthening (Post-Lexical)

The coda of a primary stressed vowel may also be lengthened. This, however, is an optional process and indicates greater emphasis on the part of the speaker. The same process occurs in Southern Nambikwara (Kroeker, 2001:81)

(1390)	/lãn-latʰa-wa/	[ˈlãnː.la.tʰwa]	it is **hot** (*emphasis*)
(1391)	/seit-taʔ/	[ˈseikː.daʔ]	he **speaks**, and (*emphasis*)
(1392)	/wanũn-latʰa-wa/	[wa.ˈɲunː.la.tʰwa]	it is **good** (*emphasis*)
(1393)	/nakạs-latʰ-wa/	[na.ˈgạtː.ta.tʰwa]	he is **listening** (*emphasis*)

When the primary stressed syllable of the word to be emphasized does not have a coda segment, then the nucleus is lengthened instead. In either case, the extra length added to the rhyme of the stressed syllable (whether in the coda or the nucleus) indicates a strong emphasis on the part of the speaker.

(1394)	[ˈeuːlatwa]	he **sees**	(*emphasis*)
(1395)	[ˈjauːlatwa]	he **stays**	(*emphasis*)
(1396)	[ˈdǫːːlatwa]	he is **dying**	(*emphasis*)
(1397)	[ˈwạːːlatwa]	he is **coming**	(*emphasis*)

EMPHATIC LENGTHENING (OPTIONAL)
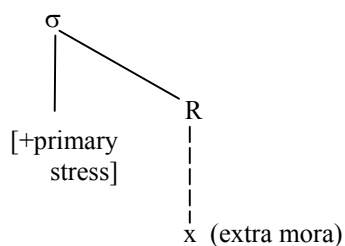
2.5.10   Stress Rules (Lexical)

The processes which account for stress in this language have already been specified in detail in section 2.3, with examples for each process. Here I will only list the three stress rules which comprise the Mamaindê stress system, so as to include them as part of the phonological processes of the language. The important thing to note here is that the stress rules are lexical rules, applying in different strata of the phonology as shown below, and not in the post-lexical component.[287]

> QUANTITY SENSITIVE: YES   (APPLIES IN STRATA 1, 2, AND 3)
> END RULE [FINAL, FOOT]   (APPLIES IN STRATA 1 AND 2)
> END RULE [FINAL, WORD]   (APPLIES IN STRATUM 1)

2.5.11   Tone Rules (Lexical)

There are two processes associated with tone, both of them making reference to morphology and thus belonging to the Lexical Component. The first of these is the NoTrough rule, which involves tone spreading and a consequent de-linking. Examples of this process have already been given in section 2.4.

> NO TROUGH [288]   % (MIRROR IMAGE RULE)
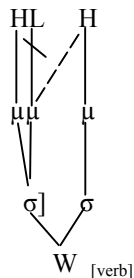
Section 2.4 also mentions that the above rule can be re- interpreted in OT terms as a constraint on tone, disallowing a HLH tone sequence in specific environments.[289]

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[287] No stress rules apply in stratum 4.

[288] The (]) symbol here represents the edge of the stem.

[289] Typically the use of rules militates against the use of OT constraints, and visa-versa. Since this grammar is written from an autosegmental perspective, I have not included the constraints which might apply in certain situations. Here however, I feel that this tone constraint is able to capture in a more insightful way the larger motivation for this behavior than its autosegmental counterpart.

*TROUGH
A HLH sequence will not occur across a verb stem affix boundary.

The only other process related to the tone system is the rule that dictates how a floating tone will be linked to the surface form. A full description of this process is found in section 2.4

FLOATING TONE: LINK RIGHT

μ   ∅   μ

(∅ is a zero morpheme)
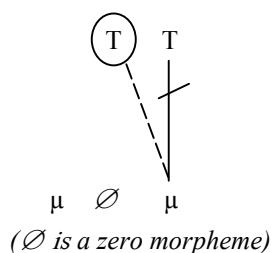
2.5.12   Feature Filling/Redundancy Processes

2.5.12.1 Underspecified Vowel Feature Filling (Lexical)

According to the Mamaindê stress system, root morphemes with all open syllables will stress the rightmost open syllable, which will then be lengthened. A small group of forms, however, appear to take exception to the stress rules. (Since the word level stress rule applies only to the root, affixation is not relevant in these forms. The data below are shown as root morphemes only.)

Exceptional forms in regard to word level stress:
Nouns

(1398)	/suni/	[ˈsuːni]	grandfather/sun
(1399)	/nusi/	[ˈnuːsi]	lizard: generic
(1400)	/mĩni/	[ˈmĩːni]	father
(1401)	/watʰi/	[ˈwaːtʰi]	sister
(1402)	/natʰi/	[ˈnaːtʰi]	mother
(1403)	/taʔmãini/	[daʔˈmãiːni]	the Sabanê
(1404)	/wasasathi/	[wasaˈsaːtʰi]	dragonfly
(1405)	/kanani/	[gaˈnaːni]	brother

Verbs

(1406)	/kanani/	[gaˈnaːni]	brother
(1407)	/tuna/	[ˈɗuːna]	to get back
(1408)	/laka/	[ˈlaːga]	to know
(1409)	/wãha/	[ˈwãːha]	to wait
(1410)	/luka/	[ˈluːga]	to choose
(1411)	/lita/	[ˈliːɾa]	to arrive
(1412)	/toha/	[ˈdoːha]	to search
(1413)	/siha/	[ˈsiːha]	to build
(1414)	/joha/	[ˈjoːha]	to trade
(1415)	/weha/	[ˈweːha]	to become
(1416)	/ikalaka/	[igaˈlaːga]	to work

Other forms (which follow the pattern of the verbs)

(1417)	/mũna/	[ˈmũːna]	well
(1418)	/nũsa/	[ˈnũːsa]	us

　　　　All of these forms which violate the stress rules have a striking similarity. The exceptional nouns predictably end with the /i/ vowel, while all of the exceptional verbs predictably end with the /a/ vowel. This could be made even broader. All vowels immediately following the stressed syllable within any noun root will be realized as /i/, while all vowels immediately following the stressed syllable in any verb root will be realized as /a/.[290]

　　　　Because they are predictable, these vowels should be accounted for by rule. Three possibilities present themselves. These predictable vowels are either derived from a common vowel phoneme, or they are not present in the lexical form and are later inserted by an epenthesis rule, or they are underspecified in the lexical form and the specific features are inserted later on in the phonology.

　　　　Deriving them both from a single vowel phoneme would not be difficult. We could presumably posit that the /a/ which follows the stressed syllable in all roots is realized as an [i] in noun forms. Of course this would not help us with the problem of stress placement in these forms. It also wouldn't explain why the /a/ is predictable in the verb forms.

　　　　If we used the second alternative, where the vowels were inserted, first of all we would have to posit two separate epenthesis rules, one which inserts the /i/ in nouns, and another which inserts /a/ in verbs. But of greater concern than having two rules is the fact that such an alternative would not allow us to predict why an

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[290] This interesting pattern was first discovered by Kingston (1976b:2).

epenthetic vowel is *not* inserted at the end of many other root forms, For example, the forms below fit the environmental description of the rule, but no vowel is added.

(1419)	/nũs/	[ˈnũt]	mortar
(1420)	/wanũn/	[waˈnũn]	good
(1421)	/hun/	[ˈhudn]	fish: type
(1422)	/sin/	[ˈsigŋ]	meat
(1423)	/litin/	[liˈdigŋ]	jump
(1424)	/lan/	[ˈladn]	to fill with liquid
(1425)	/jatan/	[jaˈdadn]	deer

This serious fault forces us to discard the idea of vowel epenthesis. That leaves us with the underspecified vowel option. This alternative assumes that all of these exceptional forms contain an underspecified V in the lexical form of the root. The fact that these underspecified vowels always appear at the end of the root, combined with the fact that their features are predictable, gives this analysis a firm footing. In addition, considering these vowels as underspecified will allow us later to account for their lack of stress.

This analysis requires two feature filling rules, one to fill in the vowel features of underspecified vowels in noun roots, and the other to fill in the vowel features of underspecified vowels in verb roots. The reference to nouns and verbs, and the fact that this rule only applies to underspecified segments *within* the root form, make this a lexical rule of the language.

UNDERSPECIFIED VOWEL FEATURE FILLING – CLASSICAL [291]

nouns:
V → [i] /   V   C (C) ____]
                [+stress]

verbs:
V → [a] /   V   C (C) ____]
                [+stress]

---

[291] The (]) refers to the edge of the root.

NOUN VOWEL FEATURE FILLING - AUTOSEGMENTAL

```
    V        C        (C)       ⎛ V ⎞      ]
                                ⎝   ⎠
    │                             ┊
                                VPlace
 [+stress]                      ╱    ╲
                           [+high]  [-back]
```

VERB VOWEL FEATURE FILLING - AUTOSEGMENTAL

```
    V        C        (C)       ⎛ V ⎞      ]
                                ⎝   ⎠
    │                             ┊
                                VPlace
 [+stress]                    ╱    │    ╲
                        [-high] [+back] [-round]
```
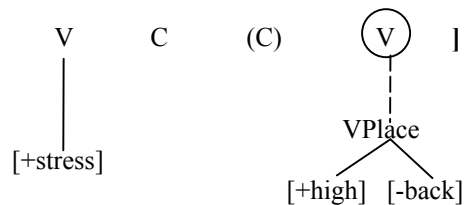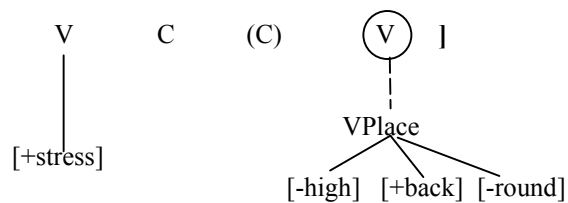
In terms of features, post-stress vowels within the root are always predictable. And it is this predictability which calls for underspecification. However, simply employing underspecification will not account for the lack of stress on these vowels. Even an underspecified vowel, by virtue of being considered a vowel, would still be required to associate to the mora row during stress assignment.

So we must appeal to a more powerful notion: the notion of extrametricality. Because of its power, it is generally agreed that any use of extrametricality should be constrained in at least two points so as not to be used in an ad hoc manner (Hayes 1999:416). First, the set of possible extrametrical segments or structures should be limited to a single, definable phonological constituent; and secondly, extrametrical material should always be peripheral within the domain under consideration (see also the Peripherality Condition in Harris, 1982).

I suggest that the underspecified vowels in Mamaindê fit this description and should be considered extrametrical. These underspecified vowels, represented in the lexicon as V, are a very limited and definable set of segments, occurring in a very limited number of forms. They also satisfy the Peripherality Condition, since they occur only at the right edge of the root. Although this might seem to stretch the definition of peripherality, the root constitutes the first domain of stress in Mamaindê, being the sole morphological material available to the first strata of the phonology. Thus, the underspecified vowels will always be peripheral at this initial stage. With affixation, these vowels later lose their extrametrical status precisely because they are no longer peripheral. This loss of extrametricality, however, does not affect the application of stress since word level stress is assigned only within the domain of the root, where the underspecified vowels are still extrametrical. Applying the idea of peripherality in this manner, to the stem or root instead of to

the whole word, is not uncommon. There are references to this notion in Goldsmith (1990:214) and Kenstowicz (1994:567), as well as a similar treatment of Spanish stress by Harris (1982).

By considering the underspecified vowels in Mamaindê as extrametrical, they become 'invisible' to the stress rules which assign word level stress to the root. This effectively accounts for the lack of stress on these vowels. Such a view does not, however, keep these vowels from being syllabified. By employing the metrical grid theory in this analysis, syllable structure and stress are kept independent from each other. In other words, stress is not built upon syllable positions. This means that the extrametricality of a segment does not affect its ability to be syllabified and incorporated into word structure.[292]

The derivation below shows how syllabification and stress assignment are applied to */sunV-tu/* 'grandfather', a form involving the underspecified vowel. Note that stress assignment in Mamaindê is lexical, applied to the form by way of several strata.

LEXICAL COMPONENT

First strata input: /sunV/ (root only)

INITIAL SYLLABIFICATION [293]

---
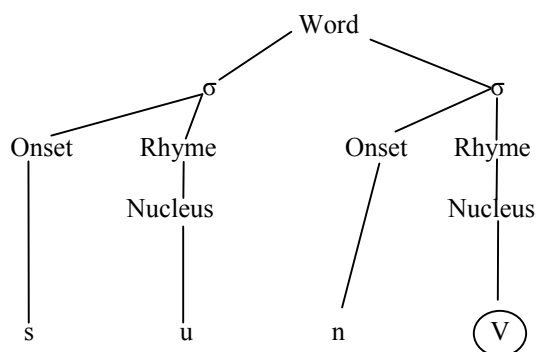
[292] If we used the arboreal theory, syllabifying extrametrical segments would still be possible, albeit a bit more problematic, involving the use of 'stray syllable adjunction' to link extrametrical material to the word structure.

[293] This derivation leaves out the skeletal tier for the sake of simplicity.

MORA ASSIGNMENT (WITH EXTRAMETRICALITY)

```
                    Word
              σ                σ
     Onset   Rhyme      Onset   Rhyme
             Nucleus            Nucleus

      s        u          n        (V)

               x                <x>      mora
```
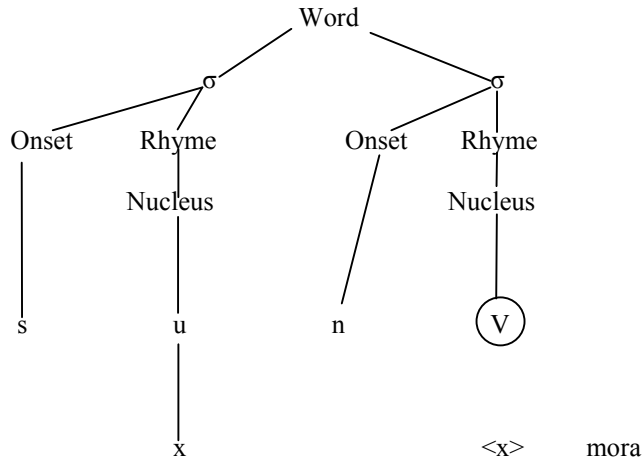
FOOT AND WORD LEVEL STRESS ASSIGNMENT (WITH EXTRAMETRICALITY)

```
                    Word
              σ                σ
     Onset   Rhyme      Onset   Rhyme
             Nucleus            Nucleus

      s        u          n        (V)

               x                <x>      mora
               x                         foot
               x                         word
```

POST-STRESS VOWEL LENGTHENING

```
                            Word
                 σ                        σ
         Onset      Rhyme          Onset      Rhyme

                Nucleus   Coda             Nucleus


           s        u      :        n         (V)


                         x    x           <x>      mora
                         x                         foot
                         x                         word
```
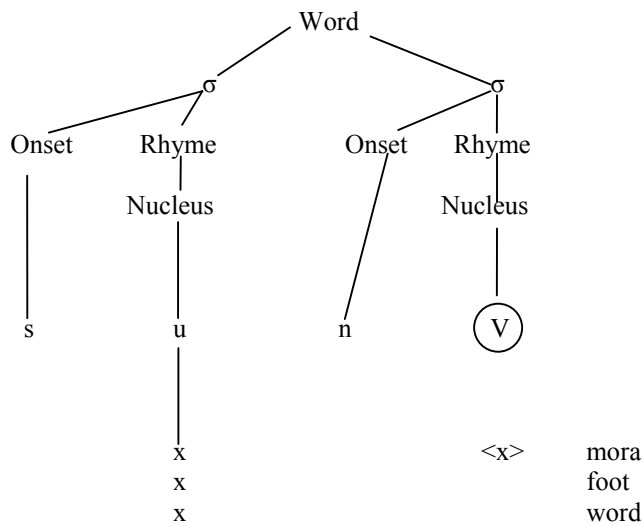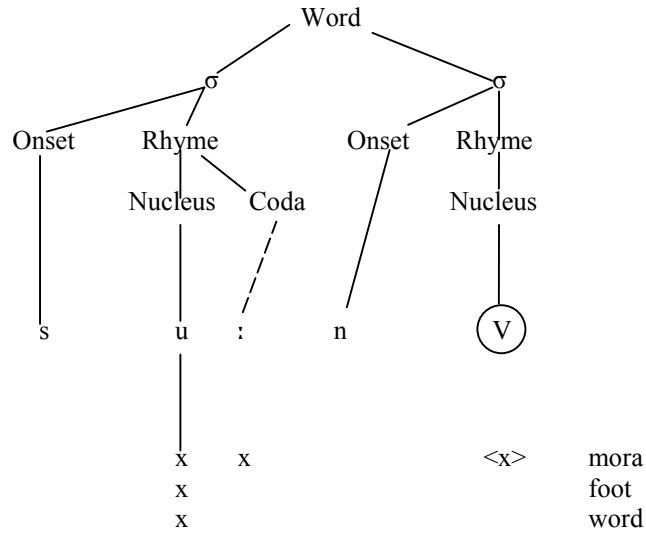
First strata output: [ˈsuːnV]

Second strata affixation: [[ˈsuːnV]tu]

```
                               Word
                 σ                      σ                σ
         Onset     Rhyme       Onset   Rhyme     Onset    Rhyme

                Nucleus  Coda          Nucleus            Nucleus


           s       u      :      n       (V)       t        u


      mora         x    x                                    x
      foot         x
      word         x
```
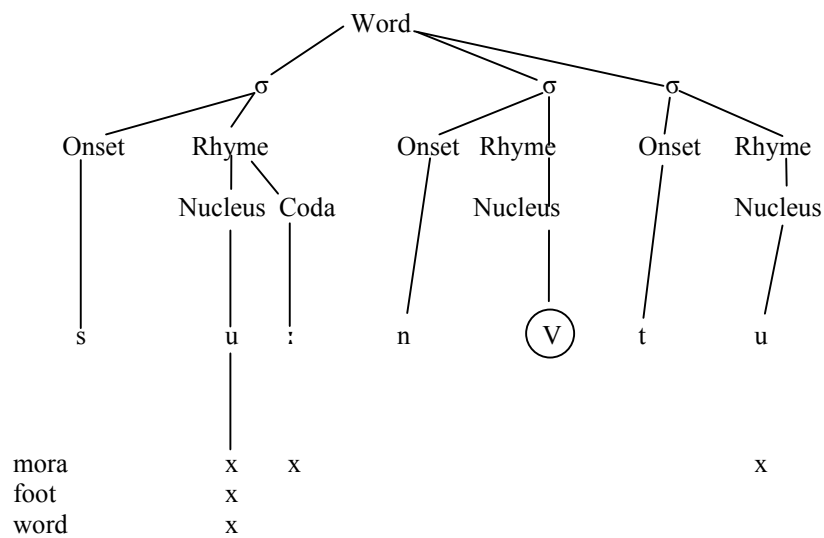
Output of stress -   [ˈsuːnVtu]

POST-LEXICAL COMPONENT

Noun Vowel Feature Filling -   ˈsuːnitu

Output of Phonology -   [ˈsuːnitu]²⁹⁴

      With this understanding of underspecified vowels as extrametrical segments, accounting for the lack of stress on these vowels now becomes straightforward. The underspecified vowels at the end of root forms are extrametrical, and thus are incapable of bearing stress.

      These Vowel Feature Filling rules are thus ordered in relation to the Stress rules. The stress rules must apply before the feature-filling rule, building mora only on those vowels which are visible to the stress rules, thus explaining the lack of stress on the underspecified vowels. Later the features of the underspecified vowels are filled in by the Vowel Feature Filling rules above.

      There are also other forms that appear to have underspecified vowels at the end of the root, following the same pattern demonstrated above, with /i/ after stress in nouns, and /a/ after stress in vowels. In these forms, however, accounting for stress is not problematic since it is correctly predicted by the Quantity Sensitive rule.

Non-exceptional stress with underspecified vowels

/wankV/	[ˈwagŋga]	return
/ankV/	[ˈagŋga]	precious
/onkV/	[ˈogŋga]	do
/suhnV/	[ˈsuːhn̥a]	to be afraid
/sihnV/	[ˈsiːhn̥a]	to build (a dwelling)
/wehnV/	[ˈweːhn̥a]	to be pregnant
/jauhnV/	[ˈjauːhn̥a]	to love
/mãinkV/	[ˈmãiŋgi]	cashew
/tehnV/	[ˈdeːhn̥i]	woman
/wennV/	[ˈwegŋni]	now
/watannV/	[waˈdadnni]	pot
/euʔnV/	[ˈeuʔni]	name
/enʔnV/	[ˈegŋʔni]	man
/mamãinsV/	[maˈmãintʃi]	the Mamaindê
/jainsV/	[ˈjaigŋtʃi]	food

---

²⁹⁴ The further process of coronal weakening creates an alveolar flap in the output of this form which is not shown here.

In some of the above forms, an alternative analysis is possible. Instead of positing underspecified vowels whenever a predictable vowel occurs after the stressed syllable at the end of the root, we could view a number of these forms as being composed originally of more than one morpheme. The lack of stress on the final syllable in these forms therefore has a morphological explanation instead of a phonological one (remember that word level stress is only operative within the root morpheme or stem). We must therefore separate these multimorphemic forms from the monomorphemic ones listed previously.

For instance, some roots/stems were clearly not monomorphemic in their original form, since they are obviously composed of several distinct morphemes that are still in use in the language today. Thus, synchronic evidence is able to give us clues as to the internal makeup of some of these forms.

(1426) /jain-si/

eat-NCL.PAT

that which is eaten

food

(1427) /i-kala-ka/

CAU-raise-OBL

to cause it to be raised in reference to…

to build

(1428) /on-ka/

do-OBL

to do in reference to…

to do

(1429) /mamãin-si/

Mamaindê-NCL.GROUP

the Mamaindê

(1430) /taʔwen-si/

Sabanê-NCL.GROUP

the Sabanê

In each of these forms, several morphemes have become fused through constant use in a specific order and the language now treats them as monomorphemic roots, which is evidenced by the fact that native speakers are not

able to identify their component parts. Other root endings seem to point to a similar origin. Here are a few endings that are often found fossilized as part of the root.

Some commonly found fossilized endings:

/-ka/	in reference to
/-si/	people group
/-khi/	patient marker
/-si/	patient marker (allomorph)
/-ki, -ni/	living thing; plant, animal, person

The semantics of these forms, however, are not always consistent, making the original morphological structure of many words much harder to determine. Kingston (1976b:15-22) points this difficulty out, while still maintaining that all morphemes in Mamaindê were originally monosyllabic. Thus he is suspicious of any root over one syllable. I believe that at least diachronically his position may be right. To Kingston, these added vowels at the end of roots are all remnants of older morphemes, which have since become fused with the root.

Even the /-i/ root endings, occurring after the stressed syllable in the nouns at the very beginning of this section, could be seen as a separate morpheme with the meaning of 'animate object/person'. However, even if this was at one time an independent morpheme, it is no longer a productive morpheme and cannot be affixed to any other animate nouns other than this limited set. This indicates that this morpheme has become fossilized with the root, and that stress must apply before fusion, thus stressing only the original root.

2.5.12.2 Other Feature Filling Rules

There are two other feature filling rules which have already been discussed in other sections. They fill in features at the end of the phonology.

CORONAL FEATURE FILLING RULE
(see section 2.5.2.5, 'Vowel Place Feature Spreading')

VOWEL HARMONY
(see section 2.5.8.1, 'Underspecified Vowel Epenthesis')

2.5.12.3 Redundancy Rule

This is a redundancy rule which has already been discussed previously. Instead of filling in features, it replaces features at the end of the phonology.

> *GLIDE FEATURE REDUNDANCY RULE*
> (see section 2.5.2.4, 'Glide Strengthening')

2.5.13   The Lexical/Post-Lexical Division

All the processes above will now be identified as either Lexical or Post-Lexical. Lexical processes (those which refer to or interact with morphology in some way) are listed first, followed by post-lexical ones (those which do not refer to or interact with morphology).

2.5.13.1 Lexical Component

Below are listed all the Lexical rules of the language, along with a short statement indicating why each rule belongs in this section of the phonology.[295] Specific evidence supporting the membership of these rules in the Lexical Component can be found in the appropriate section devoted to that rule.

Non Feature Changing Processes:

   A. *SYLLABIFICATION*
     (including the principles of Licensing and Maximization of Onsets)
   B. *MORA ASSIGNMENT*
   C. *TONE TO MORA ASSOCIATION*

Feature Changing Processes:

   1.   *THE STRESS RULES* – each of them refer to specific morphological strata
         QS - active in strata 1, 2 and 3
         ERFF – active in strata 1 and 2
         ERFW – active only in stratum 1
   2.   *NO TROUGH* – refers to verb stem edge
   3.   *FLOATING TONE: LINK RIGHT* - refers to a zero morpheme
   4.   *CONSONANT CLUSTER PLACE ASSIMILATION* – refers to the stem

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[295] I am not including here any of the automatic non-feature changing processes, such as those which deal with syllabification and mora assignment, even though they are certainly a part of the Lexical Component.

5. *VOWEL HARMONY* –refers to underspecified V outside the root
6. *UNDERSPECIFIED V EPENTHESIS* – must precede Vowel Harmony
7. *UNDERSPECIFIED VOWEL FEATURE FILLING* –refers to underspecified V within root
8. *AFFRICATION*
   a. *LEXICAL PALATALIZATION* - refers to morpheme boundaries
   b. */T/ INTRUSION RULE* - refers to morpheme boundaries

2.5.13.2 Post-Lexical Component

These are the Post-Lexical rules of the language. The one characteristic they all share is their lack of any reference to morphology. Being Post-lexical, they logically follow the Lexical rules, applying only at the end of the phonology.

Non Feature Changing Processes:

1. *METATHESIS*

Feature Changing Processes:

1. *COMPENSATORY VOWEL LENGTHENING*
2. *CORONAL WEAKENING*
3. *ONSET DEVOICING*
4. *VOWEL ELISION*
5. *EPENTHETIC C*
6. *CODA STRENGTHENING.*
7. *VPLACE FEATURE SPREADING*
8. *DIPHTHONG SIMPLIFICATION*
9. *POST-STRESS VOWEL LENGTHENING*
10. *GLIDE STRENGTHENING*
11. *LATERAL STRENGTHENING*
12. *CORONAL ASPIRATION*
13. *PRE-STRESS OBSTRUENT VOICING*
14. *INTERVOCALIC OBSTRUENT VOICING*
15. *UNROUNDING RULE*
16. *POST-LEXICAL PALATALIZATION*
17. *EMPHATIC LENGTHENING*
18. *(ORALIZATION)*[296]

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[296] This is where Oralization would be classified if we considered it a phonological process instead of the result of phonetic implementation. See discussion in 2.5 under Oralization of Nasal Codas.

Unspecified Feature Filling

> A. *UNDERSPECIFIED VOWEL FEATURE FILLING*
>> i. Nouns
>> ii. Verbs
> B. *VOWEL HARMONY*
> C. *CORONAL FEATURE FILLING*

Redundancy Rules:

> D. *STRIDENT FEATURE REDUNDANCY*
> E. *GLIDE FEATURE REDUNDANCY*

2.5.14   Crucial Rule Orderings

These are all the crucial rule orderings which have been attested to in Mamaindê phonology and argued for in the preceding pages:

Crucial Rule Orderings

The Stress Rules precede:	Compensatory Vowel Lengthening
	Post-Stress Vowel Lengthening
	Pre-Stress Obstruent Voicing
	Intervocalic Obstruent Voicing
	Vowel Elision
	Coronal Aspiration
	Stop Implosion
	Coronal Weakening
	Vowel Weakening
	Underspecified V Epenthesis
	Vowel Harmony
	Underspecified Vowel Feature Filling
	Epenthetic C
	Coda Lengthening
Epenthetic C precedes:	Post-Stress Vowel Lengthening
	Coda Strengthening
	VPlace Feature Spreading
Coda Strengthening precedes:	Lateral Strengthening
	VPlace Feature Spreading
Lateral Strengthening precedes:	Coronal Aspiration

C Cluster Assimilation precedes: VPlace Feature Spreading[297]

Lexical Palatalization precedes: /   t/ Intrusion

VPlace Feature Spreading precedes: Affrication (Lex. Pal. and /t/ Intr.)
                                          Glide Strengthening
                                          Diphthong Simplification

Affrication precedes: Vowel Elision
(Lex. Pal. and /t/ Intr.)   Epenthetic C

Diphthong Simplification precedes: Post-Stress Vowel Lengthening

Underspecified V Epenthesis precedes: Compensatory Vowel Lengthening

Underspecified V Epenthesis precedes: Vowel Harmony

Metathesis precedes: Intervocalic   Obstruent Voicing

Coronal Weakening precedes: Onset Devoicing

Onset Devoicing precedes: UnRounding

2.5.15   Phonological Processes within the Nambikwara Family

Before finishing this section on phonology, it would be helpful to compare the
twenty-five phonological processes[298] of Mamaindê described above with those of
the other Nambikwara languages.[299] This gives us a clue as to the proximity of these
languages phonologically, and where Mamaindê fits into the broader language
family. Telles (2002:129-138), for instance, cites a total of four phonological
processes for Latundê. These processes include: vowel harmony, syllabic reduction,
obstruent voicing, and vowel epenthesis. Of these four processes, all four occur in
Mamaindê in some fashion, although often in a different environment. Antunes
(2004:84-88), on the other hand, gives three phonological processes for Sabanê.

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[297] This order of application is a direct result of the Elsewhere Condition, and therefore does
not need to be specified. It is expected. It is included here simply to remind us of the crucial
ordering involved.

[298] These are the feature changing processes, not including the three stress rules.

[299] I have omitted certain details given by these different authors in regards to the specific
environments of these rules, since the details are not the focus of this particular discussion.
The reader is encouraged to refer to the original authors for more specifics concerning
phonological processes in these other Nambikwara languages.

These are: vowel elision, glottal epenthesis, and /i/ deletion. Of these three rules, only vowel elision has a corresponding rule in Mamaindê, but once again, it applies in a different domain. Finally, Kroeker (2001:83-85), offers twelve rules (besides syllabification rules) for Southern Nambikwara.[300] These twelve are: affrication of morpheme initial /s/ and /j/ (resulting in the affricates [tʃ] and [dʒ]), nasalization of a vowel following a morpheme initial /n/, complete denasalization of the nasal consonant, coalescence of /l+l/ to [t], deletion of morpheme final /l/ before a stop, assimilation of /t/ to the place features of a following /k/, devoicing of /l/ preceding an /s/, lengthening of morpheme final /h/ before a glottal, metathesis of consonant plus glottal sequences, vowel elision when two vowels are adjacent, glide/nasal epenthesis between two adjacent vowels, and /n/ epenthesis between a stressed vowel and a following /t/ in the next syllable. Of these twelve processes, four appear in Mamaindê in some form, albeit with different environments. These four are: affrication of /s/ and /j/, assimilation of /t/ to the following /k/, metathesis of consonant plus glottal sequences, and vowel elision when two vowels are adjacent. Interestingly, only vowel elision occurs in all four of these languages.[301]

Although the comparison above is very general, it still serves to show that the phonologies of these languages support the current claim that Mamaindê is much closer to Latundê than either Southern Nambikwara or Sabanê. Admittedly, the limited number of processes discovered to date in Latundê and Sabanê make any observations based on phonology somewhat premature.

Interestingly, there is even some similarity between Mamaindê phonology and the phonology of languages of other Amazonian families. For instance, the process which creates pre-stopped or denasalized nasals is shared by both Mamaindê and a number of Macro-Ge languages, including Kayapo and Suya (Eberhard and Thompson, 2006), Maxakali (Wetzels 1995), and Xokleng and Kaingang (Mullins, personal communication). In all of these languages, including Mamaindê, the nasal is the underlying form and the oral portion is predicted by rule (albeit a different rule). Suya and Kayapo (Eberhard and Thompson, 2006) also share a number of other processes with Mamaindê as well, including Vowel Epenthesis at end of word, Coronal Weakening, Affrication of /s/, and Stop insertion before aspirated Consonants (in the case of Suya, this process inserts a glottal, and in the case of Mamaindê, an oral obstruent is inserted).

Although these correspondences between Nambikwara and Macro-Ge phonologies are only curious observations at this point, and do not necessarily indicate any link between these language families, continued research along these lines is vital as we attempt to uncover the history of the Nambikwara language family.

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[300] I have omitted Kroeker's syllabification rules from this list. I have also collapsed some of the rules from Kroeker into one simple descriptive phrase to capture the similarity between some of the processes. For these reasons, the list of seventeen processes in Kroeker has been simplified to twelve here.

[301] The specifics of when this rule may occur is of course different from language to language. Ignoring such details, however, vowel elision occurs in all four languages when two vowels are adjacent.

3 Morphology

In this chapter, I will begin with the broader topics of morphological typology, morphological operations, and morphological processes, with a brief discussion of how each of these are reflected in Mamaindê. A significant section will then be dedicated to the reduplication process, and the remainder of the chapter will deal with the various grammatical categories or parts of speech of the Mamaindê language.

3.1 Typology and Morphological Operations

Synthesis and fusion are often considered the opposite ends of a scale along which morphological systems can be classified (Comrie 1989:47). Although not necessarily helpful in terms of predicting other phenomena, we will use it us a place to start to comparing Mamaindê morphology to that of other languages. Mamaindê is highly polysynthetic, with a large amount of semantic content encoded by way of multiple affixation to the word root. On the fusional scale, it is rather agglutinative in nature, in so far as morphemes tend to have a one-to-one correspondence with their meanings, and morpheme boundaries tend to be fairly defined. This feature of the language is not so tidy, however, as there are a few forms which express more than one morpho-syntactic function or meaning,[302] and a good number of morphemes which suffer various degrees of allomorphy, sometimes losing some or all of their segmental material, thus making morpheme boundaries more difficult to determine. (As I cite individual morphemes in this chapter, care will be taken to list all known allomorphs as well).

      Examples of the highly polysynthetic nature of this language are not hard to find. Verbs of dependent clauses typically show the least amount of morphology compared to verbs in other positions in the utterance, but even they must take at the minimum two suffixes in order to be realized in a string of speech. This minimal morphology required on dependent verbs includes a subject marker (often the 3rd person zero morpheme), plus a connective morpheme. Main verbs, those with all the information necessary to fill the final verb slot in a main clause, must take at least

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[302] The switch reference system is an example of this. These forms are portmanteaus which serve two purposes – to mark the switch reference system, and to encode connective meanings or relationships between verbs. They can not be parsed into smaller constituents. See section 4.3.3.1.1, 'Switch Reference Connectives'.

three suffixes and often take many more.[303] The following examples serve to
illustrate these facts:[304]

Dependent verbs

(1437)   tu-a-satoʔni
           get-S1-Cɴ.ɪꜰ
           if I get…

(1438)   hain-nũn-Ø-sihtaʔ
           sing-also-S3-Cɴ.ɪɴ.ᴏʀᴅᴇʀ.ᴛᴏ.ᴅꜱ
           so that he can sing also …

Main verbs

(1439)   seit-wa-tik-latʰa-Ø-wa
           speak-Hᴀʙ-Rᴘᴛ-S3-Pʀꜱ-Dᴇᴄʟ
           He habitually speaks in various places

(1440)   ta-onka-jejeis-soʔkeuh-jeʔ-ki-ta-le-n-nãn-wa
           Cᴀᴜ-do-wrong-Pʀʙ-Eᴍᴘ-Oʙʟ-O1-I.Pꜱᴛ-S2-Pꜱᴛ-Dᴇᴄʟ
           I believe you certainly caused me to do wrong (in the intermediate past)

     Although Mamaindê nouns generally exhibit a lesser degree of affixation
than verbs, there can still be a fair amount of morphemes present in a nominal.

Nouns

(1441)   naho-janãn-ta-tu
           water-jaguar-Fᴇᴍ-FNS
           the female river otter

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[303] One of those is often a zero morpheme, such as the present tense */-Ø/* morpheme, or the
third person */-Ø/* allomorph, making it appear that there are less suffixes than there really are.
[304] All data here and in the remainder of this work will be given in phonemic form, unless
otherwise indicated. Tone however, while lexical, will not be marked unless it is critical to the
discussion at hand (such as in the section dealing with the negative morpheme). This lack of
marking is possible because tone has a low functional load in Mamaindê and is rarely
responsible for minimal pairs (there is almost always some other prosody, such as creaky
voice or nasalization, that can distinguish similar root forms). However, the reader is
reminded that tone must be indicated in the lexicon as it is an unpredictable and individual
feature of each morpheme.

(1442)   wa-jainsa-kanĩn-nã?ã-le?i-ijah-tu
          Ps2-food-NCl.ROUND-PL-PST-DEM-FNS
          those your previous seeds/your previous fruit

      Due to the widespread polysynthetic morphology, derivational and inflectional operations can be found within both Mamaindê nouns and Mamaindê verbs. Mamaindê speakers thus have at their disposal a large number of tools for the addition of meaning to the basic concepts expressed in roots (derivational morphology) and for the grounding of meaning in the real world (inflectional morphology).[305] Specific examples will be given under each word class. In both of these word classes the derivational affixes (both prefixes and suffixes) tend to cluster closer to the root and the inflectional affixes (only suffixes) towards the right edge of the word. As would be expected, the verb by far carries the majority of the morpho-syntactic meanings found in the language.

      This polysynthetic characteristic also makes for a very productive morphology, where new noun and verb roots and affixes can be combined and created in new ways by the speaker. This is a beautiful part of the language, and is responsible for one of the great joys which comes with the privilege of learning to speak it. An example of this creative side of the language can be seen in the way nominals can change their shape and content from one moment to the next. For example, when asked for the term they use for an airplane approaching in the sky, a Mamaindê speaker once gave the term below.

(1443)   oha-wa̱-sen-tu
          high-come-NCL.CONTAINER-FNS
          high coming container/airplane

      When a second speaker was asked to confirm this word, yet another form was given.

(1444)   oha-?a̱i-sen-tu
          high-go-NCL.CONTAINER-FNS
          high going container/airplane

      The airplane had passed overhead and was now heading away from them, causing the nominal form to change in a matter of seconds. Such are the joys and challenges of learning and working in a highly polysynthetic language.

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[305] This distinction between derivational and inflectional morphology I owe to Payne (1997:25-26).

3.2 Morphological Processes

The morphological processes employed in Mamaindê include prefixation,
suffixation, reduplication, compounding, and suprasegmental modification.[306]
Mamaindê shows the overwhelming predominance of suffixation to prefixation in
both nouns and verbs demonstrating a tendency towards left-headed words, or words
in which the root is most often closer to the left edge of the word than to the right.

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[306] There are some forms which might appear to involve infixation or circumfixation, but
which can be analyzed in alternate ways.

Infixation - Evidence for infixation in the language is very slim, and certainly not enough to
warrant positing it as a major morphological process of Mamaindê.

> /tanãun/+/ju/   →   [dajunãun]
> knock over/throw+foot   to knock over with the foot

      In this form, the first syllable of the root could be viewed as the causative
morpheme */ta-/,* but the second syllable, */nãun/,* has never been documented with the meaning
'knock over/throw' in any other context separate from */ta-/.* If */nãun/* cannot be identified as a
separate morpheme with the above meaning, this form then raises the possibility of infixation
being employed in Mamaindê. More often than not, however, stems which at first appear to
involve infixation can be parsed by appealing to prefixation and suffixation alone. One such
example is *'watoh/+/nu/,* touch+arm, which is realized as *[wanudoh].* Although the root
'touch' is typically given as */watoh/,* *[wanudoh]* can be analyzed further as having two
prefixes before the root.

> /wa/+/nu/+/toh/   →   [wanudoh]
> hand+arm+touch   to touch the arm with the hand

      In this case, both */wa/* 'hand' and */toh/* 'touch' have been documented with these
same meanings in other forms, thus supporting the position that this particular form does not
involve infixation.

Circumfixation - There is also one morpheme which at times appears to function as a
circumfix. The form */suʔlan/* 'not possible', can occur as a root in its own right, or modify
other roots. When it is modifying other verbs, this morpheme can occur as a discontinuous
affix, with the first syllable before the verb root and the second syllable after the root.

> /wehna/   +   /suʔlan/   +   /katoʔ/   →   [suʔwehnalankhadoʔ]
> become pregnant +not.possible+then
> 'not possible to become pregnant'

      But like infixation above, this example of circumfixation can be explained by
parsing */suʔlan/* into two morphemes, */suʔ-/* 'not', and */-lan/* 'possible'. The first is then
prefixed to the root, while the second is a suffix. Since these two morphemes occur separately
elsewhere and continue to carry their original meanings, we can discard circumfixation as a
morphological process of Mamaindê.

Suprasegmental modification was already mentioned in the previous chapter under tone. An example of such modification comes from the negative construction, which uses tone in a grammatical function to express negation. The tone melody in question is a sharp falling tone on the negative morpheme, or in cases where the negative morpheme material does not appear on the surface, the falling tone shifts to the syllable preceding the slot where the negative morpheme would be expected. In the process, the original tone of the preceding syllable is modified (see Tone section, 2.4). The important thing to note here is that this is yet another process the language has at its disposal to encode morphological information.

Before continuing on to the morphological makeup of the various parts of speech, we will first take a closer look at one of these processes, reduplication, as it inherently entails an extra level of complexity not associated with standard prefixation and suffixation.

3.2.1 Reduplication

There are a variety of reduplicated forms used in the language. Reduplication can be found within both nominal and verbal forms, utilizing a number of templates. The primary semantic function of reduplication in Mamaindê, at least in regard to the verbs, appears to be a descriptive one, linking form and meaning in a way that is often iconic, such that 'more' form equals 'more' meaning. In most cases the repetition of segmental material serves to strengthen or emphasize an existing descriptive/adjectival verb root, thus intensifying its meaning *(/walo/* 'rotten', */walowalo/* 'very rotten', */tʰã/* 'soft', */tʰãtʰã/* 'very soft', */tʰon~ tʰoʔ/* 'black', */tʰotʰon/* 'very black')[307]. Mamaindê reduplication comes in two different types; one creates prefixes, the other suffixes. In both of these systems, the base of reduplication is the root. We will be looking at each system in turn, followed by examples.

In applying the nonlinear model of phonology to reduplication, various approaches have been proposed, beginning with Marantz (1980), and later modified by Clements (1985), McCarthy and Prince (1986), and others. The original proposal (Marantz, 1980) was to formulate a reduplicating template which defines the shape of the reduplicant employing a sequence of CV segments. Clements (1985) modified the original proposal with the idea of transfer, whereby the reduplicating template functions as an autosegment, associating to the base by way of association lines, thereby transferring all the information in the reduplicated portion of the base to the reduplicant. McCarthy and Prince (1986) further constrained the reduplication process by predicting that only prosodic elements could ever be reduplicated, thus eliminating the CV template and replacing it with a template of prosodic units such as words, feet, syllables and mora.

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[307] Regier (1998:888) recognizes intensity as an extension of plurality, which he identifies as one of the iconic meanings of reduplication.

3.2.1.1 Prefixed Reduplication

The majority of the reduplicated forms in Mamaindê occur as prefixes. A sample of these prefixed words, both nouns and verbs, is given below.[308] Within the prefixed forms, 2 major types of reduplication are evident; one which copies a single syllable of the root, and another which copies two syllables. Partial syllable copies occur when the base syllable contains a coda segment.

3.2.1.1.1   Monosyllabic Forms

These are the most common of all reduplicated forms in Mamaindê. Notice they can be found on nouns or verbs. When the prefixing reduplicated piece is a single syllable, it copies the onset and vowel of the stressed syllable in the root, but does not copy any material after the stressed vowel (such as a coda or the second vowel of a diphthong). [309]

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[308] Only the reduplicated roots are included in these lists. I will assume that the reduplication of roots occurs before any other morphology is added to the word, thus making other affixial material irrelevant. Additional affixes would, however, be required before any of these forms could be considered complete words.

[309] Any post-stress syllables within the root are suspect in Mamaindê. Post-stress syllables in the example list are actually separate morphemes in their own right, having their own semantic content, and function as part of the stem (ex. the */-tʰi/* morpheme in */hoˈho-tʰi/* 'owl' marks animate objects). These morphemes are different from other affixes in that they are obligatory to that stem (the root never occurs without them) and they are considered by native speakers to be inseparable from the root. A list of these post-stress root syllables which should be considered as separate morphemes is given below. It can even be argued that many root final consonants are remnants of a following morpheme that has contracted through vowel elision. This position has been argued extensively by Kingston, and much of the list below is based on his analysis (1980, p.7).

Verb Root final segments/syllables as separate morphemes:

/-n/   - descriptive or adjectival verb (This was most likely /-na/ originally, as in */jaˈjaʔna/*, 'curly', but eventually the vowel elided leaving /-n/.)

/-na/, /-nha/ - internal feeling, volition

/-h/   - a verb which causes a change of state

/-s/, /-t/ - a transitive verb

/-ʔ/   - stative verb

/-ʔna/ - action resulting in a state

Noun root final syllables:

/-tʰi/ - animate

/-si/   - people group

/-ki/   - plant life

CV + CVC

(1445) kaˈkə̃n gummy

(1446) tʰoˈtʰon black

(1447) jeˈjeis ugly

(1448) wiˈwin swing

(1449) joˈjon shake

(1450) juˈjuk earthworm

(1451) jã̀ˈjãʔ curly

(1452) tʰaˈtʰãn soft

(1453) kʰĩˈkʰĩk cicada

CV+CVVC

(1454) kaˈkãun clumsy

CV+CVCV

(1455) hoˈho-tʰi³¹⁰ owl

(1456) jaˈja-tʰi horsefly

CV+CVVCV

(1457) jaˈjai-ki nut: type

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³¹⁰ Stems with internal morpheme breaks, such as those ending with the */-ki, /-tʰi/,* or */-si/*
morphemes, will actually undergo reduplication before the affixation of the second part of the
stem. In effect, this makes these monosyllabic roots.

CV + CVVCCV

(1458)   ma'mãin-si   Mamaindê

CCV+CCV[311]

(1459)   ʔsi̱'ʔsi̱n   to drag

3.2.1.1.2   Disyllabic Forms

In these forms, the reduplicated sequence consists of two CV syllables. These disyllabic reduplicants are quite common within nouns as well as verbs.

CVCV+CVCV

(1460)   takuta'ku   wavy

(1461)   haloha'lo   jungle fig tree

(1462)   kaluka'lu   ant (very small type)

(1463)   waluwa'lu   boggy

(1464)   kalaka'la   chicken

(1465)   kaloka'lo   to be spotted

CVCV+CVCVC

(1466)   walowa'lon   rotten

(1467)   salisa'lin   wrinkled

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[311] The fact that the only instance of CC sequences in reduplicated forms involves a glottal is strong support for viewing these as single glottalized consonants. However, processes encountered in the phonology section (see Glottalized Consonants in section 2.1.1.4) which routinely break up these glottal+C sequences (including metathesis, syllabification and deletion) argue for an analysis which continues to view these sequences as two separate segments.

(1468)   satesaˈten   blue/green

(1469)   wasiwaˈsin   pale/nondistinct

(1470)   wanuwaˈnũn   round

(1471)   watiwaˈtis   bright, shiny

(1472)   jawajaˈwas   iguana

(1473)   salasaˈlãn   to be confused

CVCV+CVCVCV

(1474)   janujaˈnu-tʰi   porcupine (small type)

(1475)   wajawaˈja-tʰi   type of bee

CVCV+CVCVVC

(1476)   watawaˈtain   sharp, fine

3.2.1.1.3   Prefixing Reduplication Template

To account for the three prefixing reduplication patterns shown above, CV, CCV, and CVCV, only a single prosodic template is necessary.

   PREFIXING REDUPLICATION TEMPLATE
   σ_μ σ_μ

       By adopting the prosodic theory of McCarthy and Prince (1986), we are able to arrive at this unified template for Mamaindê prefixing reduplication. The prefixing template consists solely of prosodic units, namely, two mono-moraic syllables. The mono-moraic quality of these syllables ensures that the coda is never copied. For prefixes, this template will be associated to the base in a left to right direction, observing the condition that the reduplicant and the base share an edge element (known as the Anchoring constraint). Furthermore, it will be satisfied in a maximal manner, thus abiding by the Maximality constraint (McCarthy and Prince, 1986:336).

A few examples of this prefixing template at work are shown below,
applying from Left- Right in a maximal fashion. This is a phoneme-driven process.

(1477)

Reduplicant	Base	Output

σ_μ σ_μ

h a l o   +   /halo/   →   [halohalo]   jungle fig tree

(1478)

Reduplicant	Base	Output

σ_μ σ_μ

ʔs i̯ n   +   /'ʔsi̯n/   →   [si̯ʔsi̯n]   to drag

(1479)

Reduplicant	Base	Output

σ_μ σ_μ

w a l o n   +   /walon/ →   [walowaˈlon]   very rotten

This prosodic template bypasses a number of difficulties with the CV
approach.[312] First, it enables the template to copy mono-moraic syllables regardless
of the number of segments in the onset, so that forms such as *[ʔsiʔsin]* are able to be
copied without resorting to an alternate CCV template. It also helps us to overcome
a problem inherent in the notion of transfer as proposed by Clements (1985:14).
Under the transfer theory, positing a two syllable template would then require that
both syllables be copied in their entirety, including any coda segments. This,
however, does not occur in the Mamaindê data, for as we have seen, codas are never
copied.

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[312] For the Mamaindê data, the prosodic template is clearly the more insightful approach. I am
not making any claims, however, as to the appropriateness or inappropriateness of CV
templates in other languages. A non-prosodic template may still be necessary in languages
which only copy a single segment.

The following discussion provides further examples which show the ineffectiveness of the CV approach to the Mamaindê data. The non-prosodic approach would require two templates (CV and CVCV) to cover all of the prefixing patterns seen thus far. This can be demonstrated by attempting to account for the monosyllabic forms with a single CVCV template. The result of course copies the coda, giving us an ungrammatical form.

(1480)

CVCV
| | |

tʰon   +   /tʰon/   →   [tʰon + tʰon]*   black
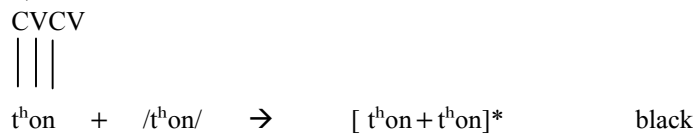
Notice that the coda in the base associates to what is intended to be an onset position in the template. The failure of the segmental approach to recognize the syllable associations implied by the CVCV template causes the output to fail as well. Thus two segmental templates would be required, CV and CVCV, the first to account for monosyllabic forms and the second for disyllabic ones. Clearly, this is a step in the wrong direction.

An alternative approach would be to add a syllable tier to the template, and then impose the transfer principle, requiring that all information and associations in the base be copied in the reduplicant. This would include the copying of information regarding syllable constituents. The end result, however, is identical to the former approach.

(1481)

tʰo n
| | |

CVC

σ   σ   (template)

σ

CVC
| | |

/tʰon/   →   [tʰon + tʰon]*   black
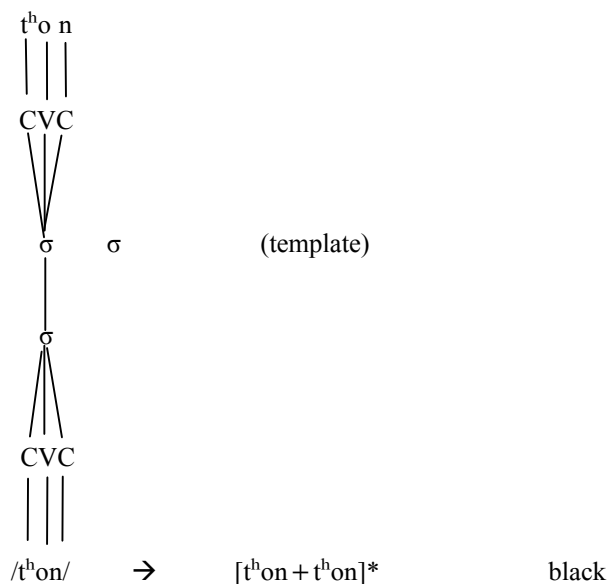
For these reasons, both the segmental template and the transfer principle must be rejected when dealing with Mamaindê reduplication. The only way to avoid the copying of the coda is to employ a prosodic template and then allow the reduplicating process to count and choose smaller prosodic elements within the syllable, namely, mora. The prosodic template already proposed, $[\sigma_\mu \quad \sigma_\mu]$, with its single mora specifications, is thus able to account for all the data and overcome the problems of coda copying.

Although the transfer principle cannot be enforced in Mamaindê, some reference to the syllable structure of the base is in fact required. This becomes apparent in forms with diphthongs. In such cases, the second vowel of the diphthong does not copy. The prosodic template posited earlier, consisting of two monomoraic syllables, will not produce the desired result unless a constraint is made on output-input associations. Without such a restriction, the second vowel of diphthongs will be required to fill the single mora of the second template syllable. This is due to the Maximality principle of McCarthy and Prince (1986:336), which states that the reduplicant must be as big as it can get without exceeding the template. The result is another ungrammatical output.

(1482)

      Reduplicant   Base   Output

      $\sigma_\mu \quad \sigma_\mu$

      k ã u n +   /kãun/ →   [kaukãum]*   clumsy/green

To avoid this problem presented by diphthongs, we must specify that any segment-to-syllable associations present in the output also be present in the input.[313] Such a constraint on the output would not allow the second vowel of the diphthong to associate to the second syllable in the template, as such a configuration would not correspond to the segment-to-syllable associations present in the input. Furthermore, due to the monomoraic nature of the template syllables, the second vowel of the diphthong would also be forbidden to associate to the first syllable. The reduplicant in the output would thus be limited to a single monomoraic form, which is the desired result in these cases.

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[313] In Optimality theory this would be equivalent to a DEP constraint.

(1483)

Reduplicant	Base		Output	

σ_μ   σ_μ

k ã u n   +   /kãun/   →   [kakãum]³¹⁴   clumsy/green

Now we will turn our attention to the second system of reduplication in Mamaindê, suffixation.

3.2.1.2   Suffixed Reduplication

Although prefixed reduplication is the norm in Mamaindê, suffixed reduplication also exists, and can be found among both nouns and verbs. The list below shows a sample of these suffixed forms, again only including roots.[315]

3.2.1.2.1   Monosyllabic Suffixes

CVC + CV

(1484)   ˈtuʔtu   to nail

CVCV+CV

(1485)   tuwiˈwi   bird: type

(1486)   wasaˈsa-tʰi [316]   dragonfly

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[314] This brings up once again the issue of glides. It is worth noting that the problem with diphthongs could also be resolved by positing a Vowel-Glide approach. The glide, being a consonant, would not be able to form an acceptable syllable on its own, and thus would not be permitted to link to the second syllable of the template. This approach would eliminate the need for the output-input constraint. For further discussion, the reader is referred to section 2.1.2.8.3 in the phonology which discusses the pros and cons of the VV and VG approaches.

[315] A few other reduplicated suffixed forms have been documented which do not fit the patterns in this list. However, they are rare and no additional consistent patterns have emerged.

[316] The syllable /-tʰi/ is an obligatory morpheme fused to some roots which marks animate objects.

(1487)   talu'lu   shine

(1488)   sami'mi   to whisper

(1489)   tʰani'ni   to twist

CVCCVC + CV

(1490)   wa'nĩʔni   clay

CVCVCV + CV

(1491)   wikʰati'ti   bird: type of

3.2.1.2.2   Disyllabic Suffixes

CVCVC+CVCV

(1492)   ta'nuhtanu   share

(1493)   ta'nuʔtanu   snake: two-headed, blind

(1494)   ka'luʔkalu   ant: type of

CVCVC+CVCV (+/-n) [317]

(1495)   ta'koʔtako-n   to be crooked

(1496)   tapaʔtapa-n   to be flat

(1497)   talestale-n   to be indistinct, unclear (referring to speech)

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[317] These last three stems carry a final morpheme /-n/ which is attached after reduplication.
This is an obligatory morpheme marking certain descriptive/adjectival verbs.

Although prefixing reduplication was easily captured by a single template, suffixing reduplication requires two. This difference is due to the fact that prefixed reduplicants in Mamaindê always mirror the syllable structure of the base (i.e., they always consist of the same number of syllables as the base). Suffixed reduplicants, on the other hand, when affixed to a disyllabic root, can either be monosyllabic or disyllabic. This forces us to posit both a monosyllabic and a disyllabic template for the suffixing forms.[318] Once again, monomoraic syllables are required in these templates, due to the fact that codas never copy.

SUFFIXING REDUPLICATION TEMPLATE - MONOSYLLABIC
σ_μ

SUFFIXING REDUPLICATION TEMPLATE - DISYLLABIC
σ_μ σ_μ

Forms taking suffixed reduplicants must then be marked in the lexicon, indicating which template will be used. When associating the suffixing templates, the phonemes are linked to the template in a right to left pattern, which is the expected direction in suffixing forms (McCarthy and Prince, 1986:336). A few examples show the use of these two templates.

Monosyllabic Suffixed Reduplication

(1498)

base	reduplicant	output

/sami/   +   s a m i   →   [samimi]   'whisper'

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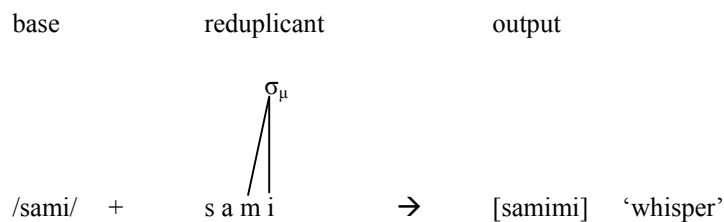
[318] Two templates could be avoided if proof can be found that the initial syllables in the forms that take monosyllabic reduplicants are instead separate morphemes in their own right. This would leave us with monosyllabic roots, which would result in the expected monosyllabic reduplicant. However, evidence for the morpheme status of these initial syllables has not been found. Another alternative, which derives monosyllabic reduplicants from disyllabic ones, will be given at the end of this section.

Disyllabic Suffixed Reduplication

(1499)

	base	reduplicant	output

/kaluʔ/ +   k a l u ʔ   →   [kaluʔkalu]   'ant: type'
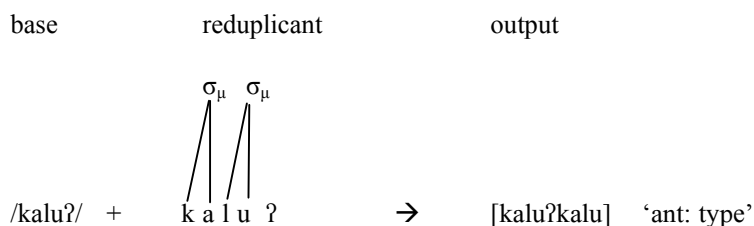
A final interesting case of suffixed reduplication is found in the word coined for 'bicycle', which can be reduplicated using either the monosyllabic or disyllabic template.

(1500)   waniwani-kʰen ~ wanini-kʰen[319]   bicycle

This single form gives us a clue, albeit very small, that all the monosyllabic reduplicants above could have derived from a disyllabic template, followed by a further process of elision which deletes the third syllable of the new stem (root+reduplicant). This possibility would simplify suffixing reduplication to a single template, improving our overall analysis of Mamaindê reduplication. However, evidence for this elision process has been found only in a single form, so judgment must be reserved in this case until further support is found.

3.2.1.3   Exceptional Cases of Reduplication

This section covers a few exceptional types of reduplication not accounted for in the above discussion. These types consist of few forms each and should not be considered as productive.

3.2.1.3.1   Apparent Infixed Reduplication

In Eberhard (1993), I argued for the existence of infixed reduplication in Mamaindê. Some of the forms cited in that work can be dismissed now after further research has shown that these forms simply possess a final coda morpheme which is added after reduplication.[320] This being the case, the existence of infixation is suspect. What we

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[319] The morpheme /-kʰen/ is an allomorph of the noun classifier /-sen/ 'container'.
[320] I repeat here the list given by Kingston (1980:7) of suspicious post-stress segments and syllables, which could be viewed as morphemes in their own right.

have in these cases is suffixing reduplication occurring before the affixation of the final material in the stem.

Forms with typical final C morpheme

(1501)   walili-s   to lick

(1502)   walalã-n   to be light (regarding weight)

Forms with atypical final segments/syllables

(1503)   wikoko-n   type of ant

(1504)   tʰalulu-s   to be shiny

(1505)   tawawa-s   to lie

(1506)   kawiwi-n   bird, type of

(1507)   katata̲-s   to tremble

(1508)   walala-nʔ   common bee: 'europa'

(1509)   kalalãu-nʔ   to snore

Verb Root final segments/syllables as separate morphemes:

/-n/ (/-na./)   - descriptive or adjectival verb
/-na/, /-nha/ - internal feeling, volition
/-h/   - a verb which causes a change of state
/-s/, /-t/ - a transitive verb
/-ʔ/   - stative verb
/-ʔna/ - action resulting in a state

Noun root final syllables:

/-tʰi/ - animate
/-si/ - people group
/-ki/   - plant life

(1510)   talilin-tun   midnight

(1511)   tahihik-si   alligator spirit

(1512)   wijajai-n   type of bird[321]

(1513)   walolo?-si   passion fruit

The latter list is atypical in the sense that the final segments/syllables are either unknown in terms of their morpheme status, or they do not carry the expected meaning (see the list of root-final morphemes in previous footnote). While it is possible that we are dealing here with morphemes which have lost their meaning over time, synchronically we must consider them as exceptions in the lexicon. Infixation should not be posited as a reduplication type in Mamaindê until the morphological status of these final elements is defined.

3.2.1.3.2   Multiple Reduplication

Some very rare forms exhibit multiple applications of reduplication templates.

(1514)   nakanakanaka   bald

(1515)   walalalain   sharp

The assumption here would be that in a few words, the reduplication template may be affixed twice.

3.2.1.3.3   Diphthong / Coda Copying Reduplication

A few reduplicated forms have been documented which actually copy a diphthong or a coda, although these are quite rare. A few of these roots are offered here. Because they copy additional material after the vowel, they do not fit any of the previous templates. A possible explanation would be that we could be dealing here with yet another reduplication type, that of complete morpheme reduplication.[322]

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[321] This word also appears in an alternate form pronounced as /wijãijãi-tu/.

[322] The last three forms have additional obligatory morphemes, /-n/, and /-n?/ added after reduplication..

CVCVV + CVV

(1516)   wijãijãi[323]   type of bird

CVC+CVC

(1517)   kamaʔmaʔ   butterfly

(1518)   saloʔloʔ-sa̠   waterfall

(1519)   toʔtoʔ   woodpecker, type

CVCCVVC + CVCCVV

(1520)   taʔmaiʔtaʔmai-n   weak, soft

CVCVVC + CVCVV

(1521)   talaiʔtalai-n   formless

CVV+CVVCC

(1522)   jaijai-nʔ   tremble

3.2.1.3.4   Prosody and Reduplication

A quick glance at the data given so far will show that the tendency in Mamaindê is for suprasegmental features not to copy. Stress is not copied, but is applied later to the whole stem, including the root and the reduplicated piece, thus stressing the last heavy syllable, regardless of whether or not it is in the base or in a suffix. Nasalization and laryngealization (creaky voice) are typically left out of the reduplicant, even when they are present in the base. As these have been shown to be contrastive vowel features in the language[324], the almost complete lack of nasalization and creaky voice in reduplicated sequences is unexpected, and could in

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[323] The first three forms in this listing will only fit the complete morpheme reduplication hypothesis if proof can be found that the first syllables in each of these forms, */wi-/, /ka-/,* and */sa-/,* are considered as separate morphemes. At present, such proof is not available.

[324] See section 2.1.2.5, 'The Phonemic Contrasts of Vowels'.

fact be seen as an argument for viewing these features as non-contrastive, and
therefore not present when reduplication occurs.

(1523)   tʰaˈtʰãn   soft

(1524)   wanuwaˈnũn   round

(1525)   kaˈkã̱n   gummy

(1526)   salasaˈlãn   to be confused

(1527)   maˈmã̱in-si   Mamaindê

(1528)   kaˈkãun   clumsy

     However, the many phonemic contrasts already established in section 2.1.2
among oral/nasal vowels and oral/creaky voice vowels, and the very productive
enhancement of oral vowels in the presence of nasal codas (section 2.5.2.7,
'Oralization of nasal codas'), strongly suggest that we must continue to consider
both nasal vowels and creaky voice vowels as underlying.[325] But in reduplication,
the underlying nature of these vowels can only be seen in a very small number of
forms which actually *do* copy suprasegmentals.

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[325] In the multitude of reduplicated forms where oral vowel enhancement occurs, the nasal
coda does *not* spread nasality to the previous vowel in the base.

/walowaˈlon/	rotten
/salisaˈlin/	wrinkled
/satesaˈten/	blue/green
/wasiwaˈsin/	pale/nondistinct
/tʰoˈtʰon/	black
/jeˈjeis/	ugly
/wiˈwin/	swing
/joˈjon/	shake

(1529)   jã'jãʔ   curly

(1530)   wijãijãi   bird, type of

(1531)   ʔsi̤'ʔsi̤n   to drag

(1532)   kʰĩ'kʰĩk   cicada

      One option available at this point is to posit that the language has some nasal vowels which are underlying, and others which are derived. Those that are underlying would copy and appear in the reduplicant. Those that are not would only appear in the base, presumably being derived from a nasal coda after reduplication has already occurred. Although clearly not a preferred analysis, it appears plausible. The biggest difficulty with such an approach would be differentiating between these two types of nasal vowels in the data. While the difference between them could be shown in reduplicated forms, most nasal vowels occur in roots that never undergo reduplication. Thus, reduplication leaves a large question mark in the phonology, a question mark that at this point cannot be answered readily. I will continue to view nasality and creaky voice as contrastive on vowels (for reasons already outlined), but the Mamaindê tendency to not copy suprasegmental features in the process of reduplication is a puzzle that must be addressed in future studies.

3.3 Head / Dependent Marking

Mamaindê is a head marking language, marking possession on the head of the noun phrase (the possessed) and not on the dependent (the possessor).

(1533)   Paulo-soʔka   na-sih-ã   wi-lei-a-nãn-wa.
           Paulo-NCL.HUM   Ps3-house-FNS   enter-I.PST-S1-PST-DECL
           I entered Paulo's house.

(1534)   wa-walekʰan-tu
           Ps2-chief-FNS
           your chief

(1535)   na-teiʔ-tu
            Ps3-wife-Fns
            his wife

Thus, the following utterance, which marks possession on the possessor, is ungrammatical.

(1536)   na-Paulo-soʔka   sih-ã   wi-lei-a-nãn-wa.*
            Ps3-Paulo -NCL.Hum house-Fns   enter-I.Pst-S1-Pst-Decl
            I entered Paulo's house.

The fact that the possessor comes before the head noun is related to the head-final characteristics of this language. Greenberg's (1963) word-order classification holds true here, and can be shown at the morphological level (where nouns are marked by a possessor prefix instead of a suffix) and at the phrasal level, where verbs come at the end of the phrase in a head final position. [326] This head final characteristic then translates into a basic SOV word order at the clause level, at least when overt nominals are used. Clause word order, and its variations, will be discussed in chapter 4, 'Syntax'.

3.4 Grammatical Categories (Parts of Speech)

The grammatical categories which function as the basic building blocks of the Mamaindê phrase are verbs, nouns, adverbs, conjunctions, and interjections. Adjectives are encoded as verbs.

3.4.1 Nouns

3.4.1.1 Prototypical Nouns

The prototypical noun in Mamaindê can exist formally as the head of a noun phrase, and functionally as the subject or object of a clause. It can typically receive noun morphology such as possessive markers (marking the noun as being possessed), noun classifiers, plural marking, noun modifiers (which include temporal markers),

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[326] This head-final characteristic is offset, however, by the tendency already mentioned for Mamaindê to employ more suffixes than prefixes, particularly in verbs, causing verbal roots to be much closer to an initial position in the word than a final position.

and a final nominal suffix.[327] As none of these are obligatory, it is possible for the noun root to appear with any number of the above or to occur alone. The point here, however, is that the test for nounhood in Mamaindê includes determining whether a given root can take these morphological markings which identify it as a noun. The more general criteria of course would be the function of the word in the phrase or sentence.

3.4.1.2   Noun Types

3.4.1.2.1   Proper Names

Proper names are typically accompanied by the appropriate noun classifier suffix. Person names are borrowed from Portuguese,[328] and often the 'human/animate' noun classifier /-soʔka/ is suffixed to the name to indicate that it refers to a human being. Geographical names usually are followed by the appropriate noun classifier as well, such as /-kʰu/ 'land', /-tʰĩn / 'dwelling/village', or /-weh/ 'river'. So one finds terms such as:

(1537)   ＜Paulo＞-soʔkã[329]
           Paulo-NCL.HUM

(1538)   ＜Brasil＞-kʰu-tu/
           Brazil-NCL.LAND-FNS

(1539)   taiʔka-kʰu-tu
          stone.column-NCL.LAND-FNS
           proper name for the region around a sacred mountain

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[327] At times referred to as either definite/indefinite articles or as referential suffixes in the literature, these final nominal suffixes have lost much of their original meaning. See section 3.4.1.3.9 on final nominal suffixes.

[328] Although traditionally vernacular names were used, the Mamaindê have used Portuguese personal names for decades. Many of the elders still have vernacular names, but these are seldom used. There is some secrecy associated to these vernacular names now, and it is with great difficulty that they can be elicited. Vernacular names were not given at birth, but are descriptive names related to memorable incidences in the life of the child, such as 'broken arm', and 'black shin'.

[329] The angled brackets indicate morphemes borrowed from Portuguese.

(1540)   tu-kwa̰-weh-tu
            get-bring-NCL-RIVER-FNS
            the river that brings/Cabixi River

(1541)   ju-kʰoʔ-tʰĩn-tu
            edge-hang-NCL.DWELLING-FNS
             the village that hangs on the edge (of the escarpment)/Capitão Pedro

3.4.1.2.2   Noun Classes

Mamaindê noun roots are generally divided into classes according to their physical
properties, notably shape and physical state, as well as a few more abstract
categories. Because usually the noun classifiers are not obligatory, these root classes
are not self-evident until the appropriate noun classifier has been affixed to the root.
These classifiers not only indicate the perspective the Mamaindê have of specific
nominals, but they also shed interesting light on issues of worldview. This will be
discussed in more detail in section 3.4.1.3.3, "Noun Classifiers".

3.4.1.3   *Noun Structure / Morphology*

The Mamaindê noun is generally composed of a root and at least one affix, although
the root may stand alone as a free morpheme. There are a number of noun affixes,
some functioning as prefixes, others as suffixes, although the tendency in Mamaindê
is towards more suffixation than prefixation.[330] While in the majority of cases nouns
occur with minimal morphology, they can also be quite complex, consisting
maximally of the following components:

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[330] This holds true both in noun and verb morphology.

Mamaindê Noun - Maximal Constituent Structure

Ps -1 -2 -3 -1.Pl	ROOT	Auth	NCl -various	Gnd -Ø -Fem	Pl	Tmp -Pst -Fut	Dem	Incl/Rst	Fns

Possessive marker- Ps
        First person – 1
        Second Person – 2
        Third Person – 3
        First Person Plural – 1.Pl
Authenticity marker - Auth
Noun Classifier – NCl
Gender – Gnd
        Female - Fem
Plural marker - Pl
Nominal Temporal Marker – Tmp
        Past – Pst
        Fut ure- Fut
Demonstrative – Dem
Inclusive/Restrictive - Incl/Rst
Final Nominal Suffix - Fns

Examples demonstrating the above order

(1542)   na-teʔ-soʔka-ta-nãʔã-leʔi-ijah-ãni
        Ps3-wife-NCl.hum-fem-Pl-fut-Dem-Fns
        Those very ones who were his wives in the past

(1543)   ta-kateik-kanĩn-tu
        Ps1-mangava-NCl.round-Fns
        my ball (made of mangava rubber)

(1544)   nũsa-jahon-nãʔã-nu-tu
        Ps1.Pl-old.man-Pl-fut-Fns
        our old men in the future

(1545)   wa-hukʔ-kʰat-ãni
          Ps2-bow-NCL.STICK-FNS
          your bow

(1546)   na-haiʔka-toʔ-sạ-tu
          Ps3-word-AUTH-NCL.LIQUID/SPEECH-FNS
          his true speech

(1547)   mãnʔ
          hill/mountain

        Several of these categories have default values. When there is no overt
marking for plural the noun is assumed to be singular, or the number is not in focus
at the time and is therefore unimportant. There are many of these cases where plural
nouns are not marked as plurals and appear in the singular form. Likewise, when
there is no overt marking for female, the noun is assumed to be masculine, or the
gender is not in focus. Finally, when there is no overt temporal marking on the noun,
it is assumed that the time frame of the noun can be derived from context. In all of
these cases, the default unmarked forms are the most common.

3.4.1.3.1   Possessive Markers

The above forms also show examples of possession. Note that possession is marked
on nouns by the addition of a person prefix. The prefix follows the schema outlined
below.

Possessive markers

Person	Possessive Marker	Prefixed to /halo/ 'land'	Gloss
1ST SINGULAR	ta-	ta-halo-tu	my land
2ND SINGULAR	wa-	wa-halo-tu	your land
3RD SINGUALR	na-	na-halo-tu	his land
1ST PLURAL	nũsa-	nũsa-halo-tu	our land

Note that there is no independent plural morpheme, as well as no plural equivalent for the second and third person possessives. These simply use the appropriate singular forms, plurality being shown by the use of the plural marker on the pronoun, if necessary.

(1548)   wa̱i-nã̃ʔã̃   wa̱-sen-sa̱   juʔwaʔ-hensoʔ
         PN2-PL   PS2-speak-NCL.SPEECH   lie-CN.ALWAYS

         na-latʰa-Ø-wa.
         COP-S3-PRS-DECL
         All of you, your speech, it is always lies.

(1549)   hã̃i-nã̃ʔã̃   na-set-sa̱   takoʔtakon-latʰa-Ø-wa.
         PN3-PL   PS3-speak-NCL.SPEECH   crooked-S3-PRS-DECL
         All of them, their speech, it is crooked.

As in many languages, possession is inalienable in reference to body parts. The possessive marker for body parts in isolated speech is always the first person plural form */nũsa-/*. This conveys the idea that this is a body part common to us all. Even when referring to their own body in connected speech, the Mamaindê will often revert to the */nũsa-/* form.

3.4.1.3.2   Authenticity

The Mamaindê language demonstrates a concern at various levels with the idea of truthfulness. Like similar languages, it employs a system of evidentiality in the verb system. But it also has at its disposal a manner of indicating veracity within the noun. By adding the nominal suffix */-toʔ/* 'authentic/true' to a noun root, the speaker emphasizes the authenticity of the noun being described. While the absence of this morpheme on a given noun does not in any way convey doubt or lack of authenticity, its presence indicates that the speaker is wanting to draw attention to the fact that this nominal is not a counterfeit, but the true original article. This morpheme is used whenever the speaker feels the hearer might be doubting the authenticity of the noun.

(1550)   na-haiʔka-toʔ-sa̱-tu
         PS3-word-AUTH-NCL.LIQUID/SPEECH-FNS
         his true speech

(1551)   taṉai-toʔ-tu
           mahogany-AUTH-FNS
           an authentic mahogany tree

(1552)   mamãĩnsa-toʔ-soʔki-tu
           Mamaindê-AUTH-NCL.HUM-FNS
           a true Mamaindê person

3.4.1.3.3   Noun Classifiers

Noun classifiers are a distinguishing trait of the Nambikwara languages. In every Nambikwara language studied thus far, noun classifiers have proven to be a crucial component of the morphology. While the largest set of noun classifiers appears to belong to Mamaindê (the set of 24 listed below), Southern Nambikwara (Kroeker, 2001: 44) has a set of 18, Lakondê a set of eight (Telles, 2002:187), and Sabanê (Antunes, 2004:113) a set of seven classifiers.

In Mamaindê, nouns are typically classified according to their physical attributes. These include such characteristics as the shape of solid things (round, flat, stick-like, etc.), and the physical state of non-solid entities (powder, liquid). Some nominals are classified by their function (house, container), and still others by more abstract criteria (time, place, gender, animacy, etc.).

While some nouns carry the classifier obligatorily (such as /linʔ-jạ-tu/ 'manioc-NCL.LIQUID-FNS', 'chicha/sweet manioc drink') many nouns in fact do not. Only when the classifier changes the meaning of the base is it obligatory. In all other instances the classifier is redundant, and thus optional. It is unnatural for instance to say /sih-nĩn-tu/, 'house-NCL.HOUSE-FNS', simply because of the redundancy involved. Instead, this noun is used without the classifier, /sih-tu/ 'house-FNS'.[331]

The classifiers function much like adjectives, being attached compound-like to noun roots to describe them in a more precise manner when the root itself does not adequately specify the item in question. For instance, to say /kateik-kanĩn-tu/ 'mangava-NCL.ROUND-FNS' enables the listener to not only determine the type of tree involved (mangava rubber tree), but the classifier further describes the noun as round, and thus identifies the object as a ball made from mangava rubber. The classifier is necessary in such a construction.

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[331] However, some redundant classifiers are still permitted. For instance, /nũsa-halo-kʰu/, PS1PL.land- NCL.LAND, is totally redundant but also very common.

The Mamaindê noun classifiers[332]

classifier	meaning	example
-tʰĩn -nĩn	dwelling/village	ta̱-tʰĩn-tu lay down-NCL.DWELLING-FNS dwelling where he/she is sleeping ten-nĩn-tu old- NCL.DWELLING-FNS old house ju-kʰoʔ-tʰĩn-tu edge-hang- NCL.VILLAGE-FNS village hanging on the edge (refers to Capitão Pedro village)
-kalo	flat	ih-kalo-tu run-NCL.FLAT-FNS running flat thing/vehicle
-tʰãnʔ	leaflike	kaʔjã̱inʔ-tʰãnʔ-tu write-NCL.LEAFLIKE-FNS writing leaf/paper
-kanĩn	round/spherical	lah-kanĩn-tu new-NCL.ROUND-FNS new round thing＝infant

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[332] A few of these classifiers have alternate forms which are also included in the table. It is not always clear after which noun root the alternate form is to be used. At times, it appears that the alternate forms are used to avoid clusters of homogenous consonants. Some classifiers have several senses as well. The first form listed is the more common form for that classifier.

-kʰatʔ	sticklike	hiuti-kʰatʔ-tu tree-NCL.STICKLIKE-FNS tree trunk/stick/piece of wood kanik-kʰat-tu disease-NCL.STICKLIKE-FNS disease
-tʰũ -nũ	powder/paste/ granulated	ja̱k-ã-oʔ-tʰũ-tu peccary-GNT-pound-NCL.POWDER-FNS pounded meal of peccary and manioc sakĩnʔ-nũ-tu sand-NCL.POWDER-FNS sand
-teh -leh	string/road	lan-teh-tu full of liquid-NCL.STRING-FNS string/road full of liquid (veins) ten-leh-tu old-NCL.ROAD-FNS old road wakinʔ na-wasainʔ-leh-tu shaman PS3-stuff-NCL.ROAD-FNS the shamans road stuff/spirit stuff
-soʔka -soʔki	human/animate	wa̱-soʔka[333] come-NCL.ANIM-FNS the coming one

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[333] Here the 'human/animate' classifier is being used in a broader way to refer to anything that is 'coming', whether animate or inanimate. The use of this classifier gives a human or lifelike quality to any noun.

| -sa̱
-ja̱
-na | liquid/speech/gas/
sound/air | lauʔnũn-sa̱-tu
dizzy-NCL.LIQUID-FNS
dizzy drink/alcoholic beverage

toh-a-ja̱-tu
bee-GNT-NCL.LIQUID-FNS
honey

nahon-sa̱-tu
water-NCL.LIQUID-FNS
chicha/sweet drink in general

set-a-sa̱-tu
speak-GNT-NCL.SPEECH.FNS
speech

kalolo-sa̱-tu
thunder-NCL.SOUND-FNS
thunder

ʔi̱k-sa̱-tu
blow-NCL.WIND-FNS
the wind |
| -tʰã̱ | group
place
unspecified/
abstract thing
nominalized verb | ta-wa̱in-tʰã̱
Ps1-be.many-NCL.GROUP
my group/my family

na-ja̱u-tʰã̱-tu
Ps3-stay-NCL.PLACE-FNS
place where he/she is staying

nũsa-ʔjaih-tʰã̱
Ps1.PL-sad-NCL.THING-FNS
our sadness |

-si	people group	walek-si-tu
		be.unintelligible-NCL.PEOPLE-FNS
		the people who are unintelligible
		(refers to all Southern Nambikwara)
-ki	plant/animal life[334]	mãin-ki-tu
		cashew-NCL.PLANT-FNS
		cashew
-kʰu	land	nũsa-halo-kʰu
		PS1.PL-land-NCL.LAND
		our land
-weh	river	tukwa̱-weh-tu
		bring-NCL.RIVER-FNS
		the river that brings/Cabixi river
-kunʔ	edge/bank	naho-kunʔ-tu
		water-NCL.BANK-FNS
		riverbank
-na	area/space	taʔwen-na-tu
		forest-NCL.AREA-FNS
		the area of the forest
-hen	time	waʔjona-hen-tu
		menstruate-NCL.TIME-FNS
		the time of menstruation
-sen -len -kʰen	container	ʔoha-wa̱-sen-tu
		high-come-NCL.CONTAINER-FNS
		high coming container/airplane
		siu-len-tu
		basket-NCL.CONTAINER.FNS
		basket
		wanini-kʰen-tu
		revolve-NCL.CONTAINER-FNS
		bicycle

[334] This is a very loose category with numerous exceptions.

-tunni	black	jañan-tunni-tu jaguar-NCL.BLACK.FNS black jaguar
-eiʔni	tawny	jañan-eiʔni-tu jaguar-NCL.TAWNY.FNS tawny jaguar
-kalokalon	spotted	jañan-kalokalon-tu jaguar-NCL.SPOTTED.FNS spotted jaguar
-ĩu	stutterer	jaho-ĩu-tu old.man-NCL.STUTTERER-FNS an old man who stutters
-hahau	dwarfish (having dwarfish qualities)	taʔlohna-hahau-ta-tu old.woman-NCL.DWARFISH-FEM-FNS the old dwarfish woman
-kʰutʰi	cripple	jahon-kʰutʰi-tu[335] old.man-NCL.CRIPPLE-FNS the old crippled man

Several of these classifiers can also function as noun roots in their own right, taking noun affixation just as any noun, without requiring any preceding nominal.

(1553)   teh-tu   road-FNS

(1554)   hen-tu   time-FNS

(1555)   na-sa̱-tu   his-speech-FNS

(1556)   na-tʰã-tu   his-place-FNS

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[335] These last three classifiers differ from the rest in that they define subsets of humans. These, combined with the three previous color classifiers, are all descriptive in nature, and would appear to be verbs. The color classifier /-kalokalo/ is in fact related to the verb root /kalokalo/ 'spotted'. In this case, however, it is functioning as a noun classifier. It could only function as a verb root here if it were followed by a nominalizer, which it is not. The rest of these descriptive type classifiers (the color forms and the human subset forms) never occur with any verb morphology, and thus cannot be categorized as verbs.

The independent nature of this smaller set of forms would suggest that they could alternately be viewed as noun roots which at times also function as classifiers, or rather, occur affixed to other nouns in a compounding fashion. This is not true, however, for the majority of the classifiers, which never occur without a nominal, or some prior nominal referent. Thus, most classifiers cannot be given noun status.

Noun classifiers also have an important discourse function. Once a nominal has been introduced, its appropriate noun classifier will often function as an anaphoric substitute for the head noun, taking over for the noun root in subsequent references to that nominal throughout the discourse.

(1557)   nakatos-tu   na-halo-kʰu   un-jeʔ-latʰa-Ø-wa.
          Negarotê-FNS   Ps3-land-NCL.LAND   far-EMP-S3-PRS-DECL
          The land of the Negarotê is very far away.

          nãinʔtoh,   na-kʰu   naih   ʔại-ten-aʔ-Ø-wa.
          CN.EVEN.SO   Ps3-NCL.LAND   still   go-DES-1P-PRS-DECL
          Even so, I'm still intending to go to their land.

(1558)   kajạt-kʰaʔt-tu   ta-ait-tu   hat-Ø-aʔ-Ø-wa.
          corn-NCL.STICK-FNS   Ps1-field-FNS   have-S3-NEG-PRS-DECL
          There is no corn in my field

          na-hĩʔ   hãi   kʰaʔ-ã   haʔfin-sitoh-ta-latʰa-Ø-wa
          COP-CN.THEN.DS   it   NCL.STICK-FNS   plant-WNT-O1-S3-PRS-DECL
          So those are the sticks (plants) that I want to plant.

(1559)   na-ʔại-sen-tu   halaus-jeʔ-let-Ø-nãn-wa.
          Ps3-go-NCL.CONTAINER-FNS   break-EMP-I.PST-S3-PST-DECL
          His car broke down.

          halaus-hĩʔ,   na-sen-tu
          break-CN.THEN.DS   Ps3-NCL.CONTAINER-FNS

          nãinʔ   ãun-let-Ø-nãn-wa.
          just   leave-I.PST-S3-PST-DECL
          So after it broke, he just left it.

The underlined forms in each example above refer to the same nominal. When this nominal is first introduced in the text, it occurs with the noun root and the noun classifier. In the second instance, it occurs without the root, the noun classifier taking the place of the noun.

Noun classifiers are important in another respect as well. They are the most common method of nominalizing verbs in Mamaindê. Any Mamaindê verb can be nominalized by suffixing an appropriate noun classifier, thus allowing for a very productive morphology. A few examples of this function are given below. More examples will follow in section 3.4.2.4.1 'Noun Classifiers as nominalizers'.

(1560)   mãn-kalo-tu
          be.hot-NCL.FLAT.THING-FNS
          flat hot thing/ cloth/cothes

(1561)   ta-sanĩn-sa̲
          Ps1-happy-NCL.LIQUID/SPEECH
          my happy speech

(1562)   kanis-kanĩn-tu
          shine-NCL.ROUND-FNS
          the round shining thing/light bulb

(1563)   ʔa̲i-sen-tu
          go-NCL.CONTAINER-FNS
          the going container/car

(1564)   tunʔ-soʔki-tu[336]
          growl-NCL.HUM-FNS
          the growling one/ piranha

To sum up the previous discussion, the three functional categories of Mamaindê noun classifiers have been described as: noun modifiers, anaphoric substitutes, and verbal nominalizers. These three very distinct functions demonstrate the pervasive and productive nature of this morphological class.

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[336] Here the human classifier, *-soʔki/,* is being used to highlight a human-like characteristic in the non-human world.

3.4.1.3.3.1   Noun Classifiers as Metaphor

The most useful insights regarding Mamaindê noun classifiers can be gleaned not
from a study of their internal grammatical properties, but from a deeper
understanding of their largely metaphorical nature. These classifiers, used in
increasingly new ways, continue to construct the edges of meaning of Mamaindê
nouns, edges which are obligatorily fuzzy and messy, due to the non-discrete and
infinite nature of language context (see Givón, 1989, for a helpful treatment of the
relationship between meaning and context). But in spite of this built-in non-
discreteness, the Mamaindê noun classifiers still allow us, perhaps more than any
other morphological category in the language, to catch a glimpse into the worldview
of this culture by observing the way the Mamaindê define both the physical and
abstract world around them. Such a glimpse is reciprocal; as elements of the
language help us to appreciate the cultural context, this context then allows us to
better comprehend the language. After probing into the inter-relationship between
culture and language as it relates to the Mamaindê people, I have become more
convinced that the Mamaindê cultural worldview is most naturally demonstrated in
the language by way of metaphorical expressions, of which noun classifiers play a
large part.[337]
      For instance, Mamaindê uses the same classifier for liquid and for speech.
This implies that they either regard speech as a liquid type phenomenon, or, which is
more likely, that they see the connectedness between these two concepts due to the
flowing nature of each, and thus readily view liquid as a metaphor of speech.[338]

(1565)   nato?-sa̱   kãn-hã
          what-NCL.LIQUID/SPEECH   descend-INT
          "What liquid is floating down? OR "What's the new word?"

(1566)   ta-set-a-sa̱
          PS1-speak-GNT-NCL.LIQUID/SPEECH
          my words

      The Mamaindê term for 'infant', */lah-kanĩn-du/* 'new-NCL.ROUND-FNS',
employs the round/spherical classifier */-kanĩn/,* affixed to the adjectival verb */lah/*
'new', thus creating an expression which could be rendered crudely in English as
'the new spherical thing'. This classifier refers to the large head of the infant, which,
metaphorically, is a way of viewing a part as representative of the whole.
Interestingly, babies are never referred to by the human classifier */-so?ka/.* This is

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[337] Another way in which culture is expressed metaphorically in the language is through the
use of body prefixes on verbs. See section 3.4.2.3.1.2, 'Noun Incorporation', for more on this
topic.
[338] This contrasts with some of the metaphors for speech found in other languages. For
instance, Reddy's research (1979) documents the "conduit" metaphor prevalent in English
when referring to speech and language (see also Lakoff, 1980:10).

due to the traditionally high infant mortality rate and the resulting reticence (of many indigenous cultures) to name infants and become more attached to them during the first fragile months of life.

    The side of the road can be described by two different noun classifiers, both of them metaphorical. The first is the classifier */-ju/* which refers to something in the shape of a mouth or lip, and is used for any raised edge. When the edge of the road is flat, then the correct usage is the noun classifier */-naʔk/,* which refers to the cheeks. So the Mamaindê speaker has at his disposal the two possible classifiers below to refer to the concept 'edge', depending on the height or protrusion of the edge in question, just as there is a relative difference in the height or protrusion of the lip in contrast to the cheek. The first example actually contains a pair of adjacent noun classifiers.

(1567)   teha-ju-ku
           road-NCL.MOUTH-NCL.LAND
           the high bank on the edge of the road

(1568)   teha-naʔk-a
           road-NCL.CHEEK-FNS
           the flat shoulder on the edge of the road

    Metaphysical metaphors are found in the language as well. The shamans ritual objects are marked by the "road" classifier */-teh/,* a point of view which only makes sense in an animistic worldview where the role of the shaman is to travel to the spirit world in search of wisdom, healing, and other help. This journey is aided by the use of shamanistic ritual 'objects', which then become identified with this spirit 'road'.

    Disease is modified by the noun classifier */-khat/,* "stick-like". When the shaman practices healing, he often refers to the patients disease as a stick or thorn which must be extracted from the body by sucking. After the ritual of sucking, he then spits this object from his mouth and the patient is pronounced cured. Every traditional indigenous disease is viewed by the Mamaindê as having spiritual origin, caused by the intrusion of an evil spirit into the body of the victim (diseases brought by the white man are not seen as being caused by spirits, and the shaman is therefore powerless to deal with them). The stick (or thorn, or tooth) the shaman refers to is said to belong to a plant or object that is the home of that particular spirit. When the shaman inserts these objects into his mouth and sucks on the patient, it is believed that the disease causing spirit is obligated to return to its home. The author has witnessed this shamanistic practice among the Mamaindê on many occasions. According to Harner (1980:16-17, 113-123), this use of a stick, thorn, plant, or other object as a 'home' for a malicious spirit is a general trait of shamanism, and similar sucking rituals have been documented in a variety of unrelated animistic cultures. What is fascinating to our discussion here is that the term for 'disease' in Mamaindê,

/nakanik-khat-tu/, 'disease-NCL.STICK-FNS', incorporates the noun classifier */-khat/,* 'sticklike', thus uniting two concepts, 'disease' and 'stick', which most worldviews would find quite difficult to connect in any way. However, an understanding of the Mamaindê cultural context shows that the classifier is simply verbalizing a spiritual metaphor already existent within the belief system, the belief that sickness can be symbolized, both physically and abstractly, as being contained in a 'spirit-stick' within the body of the patient.[339]

3.4.1.3.4   Gender

Gender is marked on the nominal by the use of a single affix, */-ta/.* This affix only marks the female gender, the male gender being unmarked. When being used to refer to humans, the female marker typically follows immediately after the 'animate/human' noun classifier.[340] The use of the animate/human classifier on a noun, without the gender marker, indicates male or unspecified gender.

(1569)   taʔlohni-soʔka-ta-tu
           old.woman-NCL.HUM-FEM-FNS
           an old woman

(1570)   hain-soʔka-ta-nãʔã
           sing-NCL.HUM-FEM-PL
           the singing women

(1571)   ＜Maria＞-soʔka-ta
           Mary-NCL.HUM.FEM
           Mary

When the female gender marker is not preceded by the animate noun classifier, it can take on various other related senses. It can be used to specify a nominal as being a mother, or as being large, or as being dangerous. The relation of large size with the female is clearly related to the notion of motherhood. That which begets, that which is the origin, is considered to be larger or in some way greater

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[339] There are other objects which can also be seen as symbolizing and containing sickness, such as thorns, snake teeth, tree wax, etc., but the stick seems to be the more generic symbol for sickness in this culture.

[340] Although gender is a type of noun classification, the fact that this gender marker can follow the noun classifier is a clue that in Mamaindê these are two separate morphological categories.

than the child or the begotten. We have a similar relation in English - 'the mother load', 'the mother of all inventions', 'the mother ship'. In Mamaindê the names of the larger animals often incorporate the female gender affix to denote their large size, even when the animal in question may be masculine.

(1572)   teh-ã-ta-tu
           snake-GNT-FEM-FNS
           the mother of all snakes/a large snake
           the anaconda

(1573)   hos-ã-ta-tu
           monkey-GNT-FEM-FNS
           the mother of all monkeys/a large monkey
           the spider monkey

(1574)   nũnʔ-ta-tu
           animal-FEM-FNS
           the mother of all animals/a large animal
           the tapir

The dangerous element is related to the fact that of many species of forest animals, the female is the most feared, particularly when she is taking care of her young. The female affix can thus be understood to mark nominals as dangerous in general. It often occurs affixed to the names of evil or malicious spirits, who are not considered to be female, but who are highly feared.

(1575)   na-ta-tu
           unspecified-FEM-FNS
           an unspecified dangerous thing
           (can be used of a dangerous animal or spirit)

(1576)   wan-ta-tu
           whirlwind-FEM-FNS
           whirlwind spirit

(1577)   walonʔ-ta-tu
           giant.armadillo-Fᴇᴍ-Fɴs
           giant armadillo spirit

(1578)   mãnʔ-ta-tu
           mountain-Fᴇᴍ-Fɴs
           mountain spirit

(1579)   jatan-ta-tu
           deer-Fᴇᴍ-Fɴs
           deer spirit
           (a mythical horned creature similar to a deer, but living in the rivers)

3.4.1.3.5   Number

Number can be indicated by the plural affix *-nãʔã.* It is used sparingly however, only being affixed to the noun when the speaker wishes to emphasize plurality. Its absence indicates that the noun is singular, or more typically, that number is simply not in focus at the moment. Number is seldom in focus in Mamaindê.

(1580)   jalik-nãʔã
           necklace-Pʟ
           necklaces

(1581)   jahon-nãʔã-leʔi-tu
           old.man-Pʟ-Tᴍᴘ.ᴘᴀsᴛ-Fɴs
           the old men in the past

(1582)   wet-nãʔã
           child-Pʟ
           children

3.4.1.3.6   Temporal Modifiers

There are several temporal suffixes on nouns which help the hearer place the nominal within the realm of time. These temporal markers are strictly nominal modifiers, and thus are not connected in any way to the tense on the verb.

Nominal Temporal Suffixes

-siha	mythological past
-sihati	ancient
-leʔ	past
-leʔi	
-nu	future

(1583)   nũsa-nak̲i̲nʔ-soʔka-sihati-tu
          Ps1.Pl-ancestors-NCl.Hum-Tmp.myth-Fns
          our ancestors in past mythological time

(1584)   hain-s̲a̲-nu-tu
          sing-NCl.sound-Tmp.Fut-Fns
          the future singing/future music

(1585)   ta-walekʰan-leʔi-tu
          Ps1-chief-Tmp.Pst-Fns
          my past chief

3.4.1.3.7   Demonstrative

There is a demonstrative, /-ijah/, 'that', which can be affixed near the end of the nominal string to specify it or single it out among others. When used with the third person pronoun /hãi/, it can refer to any nominal one is indicating and simply means 'that one that I am referring to". This demonstrative is used more as a specification device than a deictic one, since its basic function seems to be that of singling out a particular object from all the rest, rather than making any statement about the deictic situation. That having been said, /-ijah/ does tend to refer more often to objects or people who are somewhat removed in time or place from the location of the speaker.

So far, no corresponding demonstrative with any closer deictic implications has been found.

(1586)   hãi-ijah-ãni
          PN3-DEM-FNS
          that one over there - OR - that one that I have previously referred to.

(1587)   hukʔ-ijah-ãni
          bow-DEM-FNS
          that bow

(1588)   mãnʔ-ijah
          mountain-DEM
          that mountain

3.4.1.3.8   Inclusive / Restrictive

Another type of nominal suffix are those which carry with them either additive or subtractive semantic properties. The additive type, which I label inclusive suffixes, mark nouns as being included in a group of objects or persons previously mentioned in a discourse. This is done by suffixing one of the three inclusive markers in the table below at the end of the noun string, taking the place of the final nominal suffix.

Inclusive markers

-kauʔ	even
-kiʔ	also/as well
-ĩ	and

/-kauʔ/   'even'

(1589)   jahon-soʔkã-nãʔã-kauʔ
           old.man-NCL.HUM-PL-INCL.EVEN

           kajãinʔ-jeʔ-satau-le-hĩn-wa.
           write-EMP-RS-I.PST-EV.NVIS-DECL
           They said that even the old men were writing.

(1590)   tai-kauʔ   suhna-le-a-nãn-wa.
          I-INCL.EVEN   afraid-I.PST-S1-PST-DECL
          Even I was afraid.

/-kiʔ/   'also /as well'

(1591)   taʔlohna-kiʔ   tanu-tsĩn-wa.
          old.woman-INCL.ALSO   give-IMP-N.INT
          Give (some) to the old woman as well.

(1592)   tai-kiʔ   eu-satoh-ta-latʰa-Ø-wa.
          I-INCL.ALSO   see-WNT-O1-S3-PRS-DECL
          I also want to see.

The two inclusive markers above are used to mark a nominal which is part of a group of objects or persons that has either already been referred to in a previous sentence, or is implied. The last inclusive marker, /-ĩ/, has a coordinating function, and is used to mark nominals that fill the same syntactic role and that are listed in an adjacent fashion in the same sentence. Note that this suffix does not join the nominals per se, but simply marks them as being in a coordinating relationship. This explains the presence of the /-ĩ/ on the final item of each list below.

/-ĩ/   'and'   (used in listing)

(1593)   jalikʔ-ĩ,   jalauʔ-ĩ,   hukʔ-ĩ,   mamãins-ã
          necklace-INCL.AND, bracelet-INCL.AND, bow-INCL.AND, Mamaindê-FNS

          wet-hensoʔ   na-latʰa-Ø-wa.
          make-CN.ALWAYS   COP-S3-PRS-DECL
          The Mamaindê are always making necklaces, bracelets, and bows.

(1594)   Davi   na-waintʰã̄-ĩ,   Leonel   na-waintʰã̄-ĩ,   Ingles
            Davi   Ps3-group-Iɴᴄʟ.ᴀɴᴅ   Leonel   Ps3-group-Iɴᴄʟ.ᴀɴᴅ   Ingles

            na-waintʰã̄-ĩ,
            Ps3-group-Iɴᴄʟ.ᴀɴᴅ

            na-ʔa̱i-sen-tu   ʔa̱i-kʰit-jeʔ-let-Ø-nãn-wa.
            Ps3-go-NCL.ᴄᴏɴᴛᴀɪɴᴇʀ-FNS   go-S1.Pʟ-Eᴍᴘ-I.Pꜱᴛ-S3-Pꜱᴛ-Dᴇᴄʟ
            Davi and his group (family), Leonel and his group, Ingles and his group,
            we all went in his going-container (car).

        The fact that these inclusive morphemes never co-occur with the final
nominal suffixes is of interest, and may be a clue that they may have been
considered to be of the same category at one time.
        Besides the inclusive markers, which are additive type suffixes, there is
also one subtractive type morpheme possible on the noun. I refer to this as the
restrictive suffix because it restricts the focus to a single nominal. When added to a
noun, the *-soʔ* suffix singles the nominal out as the only one under consideration.
All others are excluded. The closest gloss would be 'only'. This restrictive marker
occurs in the same slot as the inclusive markers and behaves similarly by modifying
the quantity of objects/persons being referred to.

Restrictive marker - /-soʔ/ 'only'

(1595)   itʰã̄nʔ-soʔ   toh-latʰa-Ø-wa
            leaf-Rꜱᴛ.ᴏɴʟʏ   want-S3-Pʀꜱ-Dᴇᴄʟ
            he/she only wants money

(1596)   nakajanʔ-soʔka-ta-soʔ   laka-lhi-latʰa-Ø-wa
            indian-NCʟ.Hᴜᴍ-Fᴇᴍ-Rꜱᴛ.ᴏɴʟʏ   know-Iʀʀ-S3-Pʀꜱ-Dᴇᴄʟ
            Only an Indian woman would understand.

(1597)   wa̱i-ijah-soʔ   nawih-le-a-nãn-wa
            you-Dᴇᴍ-Rꜱᴛ.ᴏɴʟʏ   tell-I.Pꜱᴛ-S1-Pꜱᴛ-Dᴇᴄʟ
            I only told you.

3.4.1.3.9   Final Nominal Suffix

The final set of nominal suffixes consists of two members, /-ãni/ and /-tu/. The /-ãni/ suffix may also appear in its truncated form /-ã/. Every nominal will either take one of these two final suffixes or remain unmarked. In earlier work done by Kingston (1974:38), /-ãni/ and /-tu/ were originally treated as having, at least in part, some article-type functions, marking definite and indefinite nouns respectively. A similar definite/indefinite dichotomy was also established for Southern Nambikwara (Kroeker, 2001:46, and Lowe, 1999:281), where /-su/ marks indefinite and /-a/ definite. More recent research, however, from Telles (2002) on Latundê/Lakondê and Antunes (2004) on Sabanê, points out that the definite/indefinite category does not hold for these languages. They correctly cite examples of these final suffixes being used in violation of the definite/indefinite paradigm, particularly cases where the supposedly indefinite article is used with unique, non-ambiguous nominals. This argument against articles is convincing in Mamaindê as well, where it is common usage for the supposed indefinite article /-tu/ to be used in unique forms such as the ones below.

(1598)   ta-mĩni-tu
          Ps1-father-FNS
          my father

(1599)   na-ju-tu
          Ps3-mouth-FNS
          his mouth

          Such usage shows that a typical application of the definite/indefinite category does not completely fit the Mamaindê data. Due to these difficulties in applying the notion of article, Telles and Antunes, in their descriptions of Latundê and Sabanê respectively, opted to refer to these final nominal suffixes by way of the more generic term 'referential suffixes'.[341] Antunes (2004:92-92) mentions only one such suffix for Sabanê, /-mali/, with a truncated form /-ali/. No further definition or role for this suffix is given. He only mentions that when nouns are spoken in isolation, the full /-mali/ form is used (the possible relationship between /-ali/ in Sabanê and /-ãni/ in Mamaindê remains to be explored). Telles (2002:214) goes further, describing these referential suffixes in Latundê as discourse markers, /-te/ marking nominals which will not continue in the discourse, and /-tu/ marking those which will continue to be present.[342]

          But in Mamaindê, not only can one not use the standard definition of article for these suffixes, one also cannot assign them the same usage as in Latundê. There

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[341] This term was borrowed from Kingston (1974:38-49), who eventually switched to this more generic label after discovering difficulties with the 'article' approach.

[342] This is apparently different from the newness or givenness of discourse participants, since a new participant may or may not continue to be referred to in the remainder of the discourse.

is no connection between the continued presence of a nominal in a discourse and the choice of final nominal suffix. They also do not mark discourse participants in any other way, nor do they mark given/new information, or appear to signal any changes in the flow of the discourse such as change of topic or focus, etc.[343]

      While there is much we don't know about these suffixes, there are a few things that can be observed. First, when nouns appear in isolation in their citation form, they invariably take the */-tu/* suffix.[344] Secondly, in connected natural speech there tends to be a preference for the shortened form */-ã/*, the */-tu/* form, or no final morpheme at all, as opposed to the */-ãni/* form, which is by far the least used of them all.[345]

      Further observations show that in connected speech, the use of these two forms seems to be influenced somewhat by the nominal categories involved. Although the Mamaindê will agree that either ending is theoretically possible on any noun, in actual usage, the */-ãni/* form seems preferred by a very small set of nominals.[346] These nominal categories are the numerals (of which there are only two), the pronouns (only four), and any noun carrying the demonstrative affix */-ijah/*, 'that'.

(1600)   paah-ãni
        two-FNS
        two

(1601)   wai-ãni
        PN2- FNS
        you

(1602)   jainsi-ijah-ãni
        food-DEM-FNS
        that food

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[343] The */-ãni/* form is rarely present in most recent texts, and nominals are typically either unmarked or take the final */-tu/*. Discourse considerations are typically handled by other means in Mamaindê, such as by the use of switch reference markers.

[344] This differs from Latundê, (Telles, 2002:212) where nouns spoken in isolation can use either of the two referential suffixes.

[345] Interestingly, this contradicts Kingston's data from the 1960's and 70's, which showed a preponderance of /the */-ãni/* form (1974:44-45). He counted a 7 to 1 ratio of */-ãni/* over */-tu/* when referring to primary participants in narrative texts, while in the current state of the language the ratio is completely inverted, with */-tu/* occurring 8 to 1 over */-ãni/* in similar contexts. This is an indication that any differences in our conclusions are largely due to drastic changes in language use over time.

[346] Even then , these nominals will often carry no final suffix at all.

Beyond this small handful of nominal forms, the rest are generally marked by */-tu/* or */-ã/* or they carry no final suffix at all. Interestingly, these minimal uses of the */-ãni/* form are all highly marked for specificity, perhaps more so than any other nominals in the language, since numbers, pronouns, and demonstratives are all very definite ways of referring to 'things'.

Thus, in light of current usage as outlined above, it would appear that there did exist a definite/indefinite (or theme/rheme) distinction in the language at one time which was marked by */-ãni/* and */-tu/* respectively, as documented by Kingston (1974:38-40, 1976a: 66-67). But this distinction has apparently become 'fuzzy' over time with the diminishing use of the */-ãni/* form, leaving only a few of the highly specific items to carry */-ãni/,* while all the rest (even those which are definite), have been taken over by the */-tu/* suffix, a suffix which no longer suggests indefiniteness, but instead is used only in an unmarked manner. This gives us a current system which uses */-ãni/* when the high specificity of a nominal is in focus, (mainly reserved for a small set of extremely definite nouns), and the */-tu/* form to mark all other nouns where specificity or definiteness is not in focus.[347]

Besides their usage on nominals, the picture is complicated further by the fact that these final suffixes are also found optionally on numerous temporals, locatives, and verbal connectives. With some temporals and locatives, either form may be used, or none at all.

(1603)   nahanasihatija   in mythological time

(1604)   nahanasihatija-ãni   in mythological time-FNS

(1605)   nahanasihatija-tu   in mythological time-FNS

With other temporals and locatives, one suffix is consistently preferred over the other.

(1606)   wenni-ãni   now-FNS

(1607)   sen-ãni   here-FNS

(1608)   tʰuʔkija-ãni   there-FNS (seen)

(1609)   tʰatija-ãni   there-FNS (unseen)

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[347] The third option available to nominals is to take no final suffix at all, which is obviously unmarked in regard to specificity as well, and is becoming the more common practice among younger speakers.

(1610)   kanaha-ta-tu   night-NCL.LARGE-FNS = tomorrow

   While most verbal connectives do not take any final suffix, the few that do (including the conditional) take the */-ãni/* form exclusively.[348] Connectives have not been found with the */-tu/* suffix. Since connectives occur on verbs instead of nouns, it is clear that the function of these final suffixes goes well beyond the marking of nominal categories.

(1611)   tu-satoʔ-ãni
    get-CN.IF-FNS
    if he/she gets (it), …

(1612)   tu-tʰoh-ãni
    get-CN.BUT-FNS
    he/she got (it), but…

(1613)   tu-kʰihenka-ãni
    get-CN.INSTEAD.OF-FNS
    instead of getting (it), …

   Looking at the locatives, temporals, and connectives, we notice that the */-ãni/* suffix occurs more often than */-tu/* (contrary to the distribution among nominals). Among the connectives, */-ãni/* is the only final suffix possible. It would appear that we are dealing here with a separate function of these morphemes, but one that is not un-related to their original function on nominals. The common link between temporals, locatives and connectives in Mamaindê is their frequent occurrence in preposed adverbial clauses that are subordinate to the main clause, functioning as orientation material for what follows.

   Discourse grammar refers to this as the orientation function, placing it in opposition to assertion, which refers to material in the main clause (see Dooley, 2007:41-43). Chafe elaborates:

> *"Preposed adverbial clauses appear to serve this function, orienting the listener or reader temporally, conditionally, causally, or otherwise, to the information on the main clause which is to follow. Postposed adverbial clauses appear to serve a quite different function, being more in the nature of coordinated clauses which comment on a time, a condition, a cause, etc., relevant to the preceding main clause." (Chafe 1984:448)*

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[348] See section 4.3.3.1 for the list of all the connective suffixes.

Thompson (1987:447) claims that this "orienting" function, then, is perhaps the most prominent function of preposed adverbial clauses.

The use of *-ãni* to mark the orientation function of preposed subordinate clauses can best be seen in a specific type of orientation material, the 'tail-head linkage'. Dooley and Levinsohn categorize this construction as a type of orientation, defining the 'tail-head linkage' as:

> ...*the repetition in a subordinate clause, at the beginning (the "head") of a new sentence, of at least the main verb of the previous sentence (the "tail")… (Dooley and Levinsohn 2001:68,91)*

In Mamaindê this strategy is quite common, and is accomplished by repeating the verb from a previous sentence in a preposed subordinate clause, and then separating this 'tail-head linkage' from the main clause by way of a connective, to which the *-ãni* suffix may be added.

(1614)   kajauki-tu   nusa-halo-tu   na-wasainʔ-tu
          white.man-FNS   Ps1.Pl-land-FNS   Ps3-things-FNS

          tu-sitoh-latʰa-Ø-wa.
          get-WNT-S3-PRS-Decl

          hãi tu-kʰihenka-ãni,   mamãinsi-ãni   tu-Ø-tʰaʔ-wa.
          he   get-CN.INSTEAD.OF-FNS   Mamaindê-FNS   get-S3-FUT1-DECL
          The white-man wants to get stuff from our land. But instead of him
          getting (it), the Mamaindê will get (it).

The use of *-ãni* at the end of these 'tail-head linkages', and its predominance in locatives and temporals, suggests that it has (or at least has had) the discourse role of indicating orientation material.[349]

It is not clear whether *-tu* ever had the opposite 'assertion' role. The only indication of this in current usage is the consistent appearance of *-tu* on all nouns in isolation, a usage which is proto-typical of an assertion. However, its occurrence on

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[349] Dooley (2007:81) goes on to outline the formal signals of orientation material as: "initial position, their own intonation contour, a secondary sentence accent, and a bipartite structure linearly". Further support that the Mamaindê constructions marked by *-ãni* do in fact function as orientation material is found in the following facts which satisfy some of the above requirements:
  -adverbial clauses with *-ãni* are sentence-initial.
  -adverbial clauses with *-ãni* have a distinctive rising contour that separates them from the
   main clause.

some temporals and locatives suggests it has taken over some of the space of /-ãni/ at the discourse level much as it has on the nominal level.

The link that ties the usage of /-ãni/ at a discourse level with its usage at the nominal phrase level is its secondary discourse function of indicating marked topic. In his cross-linguistic study entitled "Conditionals are Topics", Haiman (1978) reveals that two very distinct elements of discourse, conditionals and marked topic, are often indicated morphologically in the same manner in a number of languages (he cites Hua, Turkish, and Tagolog).[350] Haiman goes on to show the surprisingly close relationship between these two discourse functions both semantically and pragmatically.[351] Because of these and other findings, Dooley (2007:77) takes this similarity a step further and demonstrates a link between orientation information in general and marked topic, recognizing that they are both signaled in similar fashion. The interesting point in Mamaindê is that both of these types of expressions, orientation material and marked topics, can be marked by the same /-ãni/ suffix, suggesting that Haiman and Dooley are correct in their findings. This view of /-ãni/ as an orientation/marked topic marker is the most promising hypothesis available for understanding these final nominal suffixes.

Examples of the dual usages of /-ãni/.

(1615)   na-tʰoh-ãni,   hãi-sa̲   wa̲i-ijah   ikʰa̲n-nu-hĩʔ,
          COP-CN.BUT-FNS   he-NCL.LIQUID   you-DEM   teach-S2-CN.THEN.DS

          ta̲i-ãni   wanũn-lhi-aʔ-Ø-wa
          I-FNS   good-IRR-S1-PRS-DECL
          But, if you teach that speech/language, as for me, I'll be okay with it.

The first /-ãni/ suffix above is being used to mark orientation on the connective, which is functioning as a tail-head linkage. The second is used to indicate a marked topic.

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[350] Crofts (1990:10) also discusses this same data.

[351] In Mamaindê, the conditional morpheme, /-satoʔ/, functions as a connective between a subordinate and a main clause, and is always followed by /-ãni/. The conditional thus shares a relationship with marked topics, which can also take the /-ãni/ suffix.

(1616)   mamãins-ã-wek-tʰã-tu,   hãi-ãni
          Mamaindê-GNT-CHILD-NCL.GROUP-FNS   they-FNS

          kaʔjãinʔ-tʰã-tu
          write-NCL.THING-FNS

          nak̲a̲s-satoʔ-ãni,   wanũn-sihta̲ʔ,
          understand-CN.IF-FNS   good-CN.IN.ORDER.TO.DS

          toh-ta-latʰa-Ø-wa.
          want-O1-S3-PRS-DECL
          The Mamaindê children, if they were to understand writing, for it to be
          good like that, I want it.

          Here the /-ãni/ is again used twice, once on the pronoun /hãi/ and once on
the conditional connective /-satoʔ/. In the former instance it is used to signal a
marked topic, and in the latter case to indicate the orientation function of the
subordinate clause.
          But even these distinctions based on orientation and assertion can become
blurred. Many of the subordinate clause connectives take no final affix at all, and
some temporals and locatives take the /-tu/ suffix, instead of the /-ãni/ form we
would expect. All of this points to a situation where at one time /-tu/ and /-ãni/ were
used on nominals for one purpose, that of contrasting theme and rheme (according to
Kingston, 1974:40-41), while they were used on adverbials (connectives, temporals,
locatives, and other adverbial clauses) to distinguish orientation from assertion.
Adverbial clauses (dependent or subordinate clauses) which typically provide
orientation (or point of departure), took the /-ãni/ form while other adverbials took
no suffix or the /-tu/ suffix to indicate assertions. Over time, these distinctions on
adverbials have eroded, so that the /-tu/ form and the null form have begun to take
over some of the orientation functions of /-ãni/. This can be seen on temporals such
as /kanahata-tu/ 'tomorrow', or simply /kanahata/ 'tomorrow', where the final
nominal suffix can be /-tu/ or nothing at all.
          Support for the gradual eroding of these forms in Mamaindê comes from
the fact that in other Nambikwara languages, these final nominal suffix forms are
still strictly required. In Latundê for example, nouns may never appear without one
of the referential suffixes unless it carries a noun classifier (Telles 2002:212). Such a
restriction does not hold in Mamaindê, where nominals in connected speech may
occur without any final suffix or any noun classifier. Here we see a loosening of the
morphological system in a way that suggests a loss of information encoded by part
of that system, and a subsequent reshuffling of semantic domains. Given such a
scenario, it is to be expected that defining the current meanings of the morphemes
involved would be a difficult task
          To summarize this discussion, I first described the set of final nominal
suffixes as remnants of a previous system that at one time appeared to have marked

the notions of definiteness/indefiniteness and theme/rheme on nominals (based on Kingston, 1974:38-41). This system has since eroded, and the /-tu/ form has taken over the space of its counterpart to the point where the system is no longer recognizable, except for a small set of definite nominals where /-ãni/ is still used to indicate specificity. Beyond this eroded system, there is a secondary usage of these morphemes which is somewhat clearer. This is the usage of /-ãni/ and /-tu/ to mark orientation and assertion respectively. It is in these discourse roles that we see a more consistent function for these suffixes: /-ãni/ being called upon to mark subordinate material (locatives, temporals, and particularly certain connectives) and to indicate the presence of marked topics, and /-tu/ functioning obligatorily as a means of marking assertion on nouns in isolation. While these are the most predictable roles of these suffixes, they are still fraught with numerous inconsistencies, and we are left with the realization that the loss of diachronic distinctions has limited us to only a partial understanding of the synchronic picture. A full reconstruction of the grammatical function of these morphemes may be irrecoverable.

3.4.1.4   Compound Nouns

Most nouns contain only a single noun root morpheme. However, the poly-synthetic nature of this language enables speakers to create complex noun stems by compounding several (two or more) noun roots in sequence. These are treated as single words, which can be deduced from the fact that only the last noun root is able to be modified by further noun morphology. The head of such nominal compounds is typically on the right.

Examples of compound nouns:

(1617)   naho-janãn-tu
               water-jaguar-FNS
               otter

(1618)   naho-aiʔkʰi-tu
               water-bird-FNS
               kingfisher

(1619)   jata-juhenʔ-tu
               deer-tongue-NP
               wasp, colloquially "língua de veado"

(1620)   taʔwen-wakinʔ-tu
            forest-owner-Fns
            mythological forest creature/'caipora'/'Big Foot'

3.4.1.4.1   Genitive Connector

The nominal suffix /-ã/ is a derivational morpheme used to connect two nouns
within a compound stem when they are in a genitive or possessor/possessed
relationship. The second nominal of the compound will always be the head or the
possessed element in the construction, and can take the form of either a noun, a noun
classifier, or a nominalized verb.

(1621)   toh-ã-ja̱-tu
            bee-Gnt-Ncl.liquid-Fns
            liquid of the bee/honey

(1622)   jaho-ã-sih-tu
            old.man-Gnt-house-Fns
            the house of the old man

(1623)   wet-ã-ta-kʰi-tu
            child-Gnt-lie.down-Pat-Fns
            that in which to lie down, belonging to the child/ a child carrying strap

(1624)   sṳ̃n-ã-sin-na-tu
            sun-Gnt-meat-Ncl.area-Fns
             the meat of the sun/ the place of the sun/ the sky

(1625)   nakʔ-ã-wainsi-tu
            blood-Gnt-medicine-Fns
            medicine of blood/ medicine for heavy bleeding during menstruation

3.4.1.5   Verbalized Nouns

Any nominal may be treated as a verb by adding the de-nominalizing suffix /-ta/
after the noun root, followed by an appropriate verbal inflection, typically the third

person present tense declarative. This creates a predicate nominal which functions as a verb, being used in the identifying, labeling or defining of objects. This is always the form employed when the speaker is providing the listener with the name of the nominal to which he is referring. Note that there is no third person pronoun necessary.

(1626)   tun-ta-latʰa-Ø-wa
          flute-Dɴᴍ-S3-Pʀs-Dᴇᴄʟ
          It is a flute

(1627)   siu-ta-latʰa-Ø-wa
          basket-Dɴᴍ-S3-Pʀs-Dᴇᴄʟ
          It is a basket

(1628)   waʔjona-tʰã-sih-ta-latʰa-Ø-wa
          menstruate-NCʟ.ᴛʜɪɴɢ-house-Dɴᴍ-S3-Pʀs-Dᴇᴄʟ
          It is a puberty hut

Occasionally, it is possible for noun roots to be de-nominalized without the presence of the *-ta* morpheme.

(1629)   na-nati-n-tʰaʔ-wa
          Ps3-mother-S2-Fᴜᴛ1-Dᴇᴄʟ
          You will be his mother

3.4.1.6   Pronouns

3.4.1.6.1   Person

There are three person pronouns. These are free morphemes which function in place of the nominal they reference, which can be either subject, object, or indirect object/oblique. Their presence is generally non-obligatory, as the personhood of the subject and objects is typically carried by the inflectional morphology of the verb. Thus their presence indicates that a certain emphasis is being placed on the person involved. These are by default either singular pronouns, or unmarked forms where number is not in focus. If the speaker wishes to highlight plurality, the additional plural marker will be added (see following section on number). They may occur with or without the final nominal suffix *-ãni.*

Person Pronouns:

tai	1st person pronoun (singular/unmarked number)
wai	2nd person pronoun (singular/unmarked number)
hãi	3rd person pronoun (singular/unmarked number)

This same set of pronouns is used to refer to nominals in all of the basic grammatical relations, subject, object and indirect object/oblique. This can be evidenced in the examples below.

As Subject:

(1630)   hãi-ãni   anka-lat^ha-Ø-wa
           PN3-FNS   costly-S3-PRS-DECL
           It is costly

(1631)   Donaldo to̲-sato?ni,   ta̲i   ?jaih-lhi-a?-Ø-wa.
           Donaldo die-CN.IF   PN1   sad-IRR-S1-PRS-DECL
           If Donaldo died, I would be sad.

(1632)   wa̲i mũn na?kan-sihta?   set-a?-Ø-wa
           PN2 well listen-CN.SO.THAT.DS   speak-S1-PRS-Decl
           For you to listen/understand well, I am speaking.

As Object:

(1633)   ta-jahon-tu   ta̲i   toh-Ø-a?-wa
           PS1-old.man-FNS   PN1   like-S3-NEG-DECL
           My old man doesn't like me.

(1634)   wa̲i sun-Ø-t^hunna-wa
           PN2   hit-S3-FUT1-DECL
           He will hit you.

(1635)   hãi eu-a-sato?ni   wi̲-lhi-a?-Ø-wa
          PN3 see-S1-CN.IF   eat.meat-IRR-S1-PRS-DECL
          If I would have seen him, I would have eaten him (speaking of an
          armadillo).

As Indirect Object/Oblique:

(1636)   ta-?a̲i-tãn?-hen-a   wa̲i set-ten-a?-wa
          PS1-go-SEQ-NCL.TIME-FNS   PN2 speak-DES-S1-PRS-DECL
          Before I go, I will speak to you.

(1637)   kanaha-ta   ta̲i toh-ã-ja   tanu-ta-Ø-tʰa?-wa
          night-GND.FEM   PN1 bee-GNT-NCL.LIQUID   give-O1-S3-FUT2-DECL
          Tomorrow she will give honey to me.

(1638)   ta-sawis-anã?ã   hiksamãn-ta-latʰa-Ø-wa.
          PS1-grandchild-PL   long.for-O1-S3-PRS-DECL.
          I miss my grandchildren.

          hãi   nalik-ka-henso?   na-na?-Ø-wa.
          PN3   remember-OBL-ALWAYS   COP-S1-PRS-DECL.
          I remember (about) them all the time.

        Note that in the last example the pronoun is singular or unmarked for
number, while the referent, grandchildren, is clearly plural as indicated in the
previous sentence. This is common usage unless the speaker wishes to highlight the
plurality of the pronoun.
        Pronouns typically stand alone, but they may also be modified by any of
the morphology available to nominals, including noun classifier, gender, number,
the demonstrative, and the final nominal suffix. If they carry a noun classifier, it
must be the human/animate noun classifier */-so?ka/*. If they carry the final nominal
suffix, it will be the */-ãni/* form.

3.4.1.6.2   Gender

Although there does not exist a separate pronoun set to connote differences of
gender, the female gender marker */-ta/* can be added to a pronoun when that
characteristic is being highlighted. If a pronoun lacks the female gender marker, this
implies that one is referring to the male gender, or that gender is simply not in focus.

(1639)   wạ-teʔ-tu   naih   tọ-Ø-hã.
         Ps2-wife-FNS   still   sick-S3-INT.
         Is your wife still sick?

         hãi-ta   enkuñ-sihtaʔ   set-aʔ-Ø-wa.
         PN3-FEM   recover-CN.SO.THAT.DS   speak-S1-PRS-DECL
         In order for her to recover, I speak (My wish is that she would recover)

(1640)   kajauka-ta   wanũ-Ø-aʔ-Ø-wa.
         white.man-FEM   good-S3-Neg-PRS-Decl.
         The white woman is no good.

         hãi-soʔka-ta   nitset-tạʔ
         PN3-NCL.HUM-FM   angry-CN.AND.SS

         het-ta-let-Ø-nãn-wa.
         yell-O1-I.PST-S3-PST-DECL
         She got angry and yelled at me.

        Note the added use of the noun classifier */-soʔka/* on the last example. This classifier is most common with the third person pronoun. When the female gender marker and the noun classifier are both used, the gender marker will always follow the classifier.

3.4.1.6.3   Number

As was already mentioned, the plural marker */-nãʔã/* is affixed to the pronoun only when plurality is in focus.

(1641)   wales-soʔka   wạ-latʰa-Ø-wa.
         unintelligible-NCL.HUM   come-S3-PRS-DECL

         hãĩ-nãʔã   hain-Ø-tʰunna-wa.
         PN3-PL   sing-S3-FUT1-DECL
         The Southern Nambikwara are coming. They will sing.

(1642)   t̯ai-nã̃ʔã   anukʰa-t̯aʔ
          Pɴ1-Pʟ   gather-Cɴ.ᴀɴᴅ.SS

          ju-set-joʔ-kʰit-ten-latʰa-Ø-wa
          mouth-speak-Rᴄᴘ-S1.Pʟ-Dᴇs-S3-Pʀs-Dᴇᴄʟ
          We will gather and discuss (it) together.

(1643)   wa̯i-soʔka-nã̃ʔã   nauʔkanaiʔ   hitenũn-hensoʔ
          Pɴ2-ɴCʟ.Hᴜᴍ-Pʟ   just   worry-Cɴ.ᴀʟᴡᴀʏs

          na-nuʔ-Ø-wa.
          Cᴏᴘ-S2-Pʀs-Dᴇᴄʟ
          You people are just always worried (for no reason).

        Note that the number marker also follows the noun classifier /-soʔka/ on
the last example. If a plural number of women are in focus, then the morpheme
order on pronouns is:

        pronoun>noun.classifier>female.gender>plural.

(1644)   nakatosa-nã̃ʔã   hại-soʔka-ta-nã̃ʔã   kanih-jeʔ-latʰa-Ø-wa.
          Negarotê-Pʟ   Pɴ3-ɴCʟ.Hᴜᴍ-Fᴇᴍ-Pʟ   many-Eᴍᴘ-S3-Pʀs-Dᴇᴄʟ
          The Negarotê women are many.

3.4.1.6.4   Demonstrative

Emphasizing a specific person or persons to the exclusion of others can also be
marked on the pronoun by the addition of the demonstrative /-*ijah*/ 'that/those'.

(1645)   hã̃i-soʔka-ijah-ãni   kʰakʰot-satau-Ø-nha-wa
          Pɴ3-ɴCʟ.Hᴜᴍ-Dᴇᴍ-Fɴs   dangerous-Rs-S3-Pʀs/NVɪs-Dᴇᴄʟ
          He, that very one, is said to be dangerous.

(1646)   hã̃i-ta-nã̃ʔã-ijah   wasainʔ   joha-let-Ø-nãn-wa
          Pɴ3-Fᴇᴍ-Pʟ-Dᴇᴍ   stuff   trade-I.Psᴛ-S3-Psᴛ-Dᴇᴄʟ
          They, those very women, are the ones who traded stuff.

(1647)   wa̱i-ijah   wanʔ-tu-soʔka   na-nuʔ-Ø-wa
          PN2-DEM   steal-get-NCL.HUM   COP-S2-PRS-DECL
          You there, you are the thief person.

3.4.1.6.5   Inclusive

Finally, pronouns can take the inclusive markers available to other nominals. These markers serve to focus on the inclusion of the indicated person in a previous list of people. We have already seen these morphemes, so a few examples will suffice.

/-kauʔ/   'even'

(1648)   ta̱i-kauʔ   suʔton-ta-latʰa-Ø-wa
          PN1-INCL.EVEN   not.know-O1-S3-PRS-DECL
          Even I don't know.

-kiʔ   'also'

(1649)   wa̱i-kiʔ   tu-tsĩn-wa
          PN2-INCL.ALSO   get-IMP-N.INT
          You as well should get some.

-ĩ   'and' (used in listing)

(1650)   nahen-leʔi-tu   hãi-ĩ,   wa̱i-ĩ,   ta̱i-ĩ,   juhak
          time-PST-FNS   PN3-INCL.AND, PN2-INCL.AND, PN1-INCL.AND all

          sanĩn-kʰit-let-nãn-wa.
          happy-S1.PL-I.PST-S3-PST-DECL
          Back then, he, and you, and I, we were all happy.

          As is the case within other nominals, inclusive markers and the final
nominal suffixes never co-occur within the same pronoun.

3.4.2 Verbs

At the heart of Mamaindê morphology is the Mamaindê verb. The verb can be modified by both inflectional and derivational morphology, and tends to carry more suffixes than prefixes, making verbs left-headed words (in the sense that the root is typically on the far left side of the word). This section will describe the structure of independent verbs only. Dependent verbs will be covered in the syntax chapter, under the heading 'Beyond the Clause'.

3.4.2.1   Verb Types

The complexity of the Mamaindê verb is not necessarily in its many types, but in its morphological structure. Nevertheless, there are a number of verb classes which should be mentioned.

Verbs can be active or stative. This distinction is not marked by form, but by semantics. Active verbs can be ditransitive, transitive or intransitive, while statives are obligatorily intransitive (see Verb Valence for examples). The stative verbs can also be subdivided into quantitative verbs, weather verbs, adjectival verbs, the copula, and the impersonal construction.

The first two of these stative verb types behave exactly the same in Mamaindê and there does not seem to be any language internal reason to treat them differently. Thus they will be discussed as a single class from the point of view of their morphological structure. The adjectival verbs will only be treated separately here because they are often realized as adjectives in other languages and some explanation and proof is needed of their verb-hood. Their morphological form, however, is identical to the previous types. The impersonal, on the other hand, is a stative which is treated in a unique way by the morphology and for that reason will be handled separately. Finally, the semantics and function of the copula are unique enough to warrant a separate discussion at the end of this section.

3.4.2.1.1   Quantitative and Weather Verbs

Quantitative and weather verbs are both stative and inherently intransitive. Although they differ semantically, they function similarly in that they both occur only in third person. This also holds true in Latundê (Telles 2002:223).

Quantitative verbs are predicates which make reference to number or quantity. Some examples follow.

(1651)   kajauka   kʰanih-jeʔ-latʰa-Ø-wa
            whiteman   many-EMP-S3-PRS-DECL
            There are many whitemen

(1652)   wawaikʰa-let-Ø-nãn-wa
            very.many-I.PST-S3-PST-DECL
            There were very many (in intermediate time)

(1653)   jalik-tu   paah-latʰa-Ø-wa
            bead/necklace-FNS   two -S3-PRS-DECL
            There are two necklaces

(1654)   nũsa-haiʔka   kanaka-jeʔ-Ø-nĩnta-wa
            PS1.PL-speech   one-EMP-S3-G.KN-DECL
            Our speech was one (we spoke only one language)

        Weather verbs are verb roots which refer to meteorological conditions
(Payne, 1997:55). They also occur obligatorily in the third person.

(1655)   miha-jeʔ-latʰa-Ø-wa
            rain-EMP-S3-PRS-DECL
            It is really raining

(1656)   lãn-latʰa-Ø-wa
            hot-S3-PRS-DECL
            It is hot

(1657)   lị-Ø-tʰunna-wa
            cold-S3-FUT-DECL
            It will get cold

(1658)   kamik-latʰa-Ø-wa
            be.dry.season-S3-PRS-DECL
            It is dry season

3.4.2.1.2   Adjectival Verbs

In the place of the conventional class of adjectives, the function of modifying and describing nominals in Mamaindê is performed by way of the verbal system. Typical noun-like qualities such as physical properties, dimensions, colors, value judgments, location, and other characteristics are encoded by way of descriptive verbal roots, or 'adjectival verbs'. These verbs function much like predicate adjectives (Payne, 1997:120), except that in Mamaindê there is no adjective class. That these are verbs in Mamaindê is quite clear. They are intransitive and take the intransitive verbal endings, behaving in all ways like any other intransitive verbs in the language. They occur in the typical sentence final verb position, and in all three persons. They can also be nominalized by the suffixation of a noun classifier, another characteristic of verbs (and in their nominalized form serve a descriptive purpose as well). Finally, they are never found on their own modifying a noun.[352] This language internal evidence makes it clear that we do not have an adjective class in Mamaindê. What we do encounter are different types of verb roots, some of which can function in an adjectival role. Antunes (2004:158) mentions the existence of what he calls 'verbal adjectives' in Sabanê as well and comes to the same conclusion that these descriptive forms with intransitive verb endings are simply a subset of intransitive verbs. Some examples in Mamaindê follow.

(1659)   walonʔ-tu   nahohntoʔ   aat-latʰa-Ø-wa
          giant.armadillo-FNS   very   big-S3-PRS-DECL
          The giant armadillo is very big

(1660)   na-jalik-nãʔã   waun-sade-latʰa-Ø-wa
          Ps3-bead-PL   red-yellow-S3-PRS-DECL
          The beads are orange

(1661)   kʰokʰi-tu   kʰakʰos-soʔki-tu   tʰotʰon-latʰa-Ø-wa
          harpy.eagle-FNS   dangerous-NCL.ANIM   black-S3-PRS-DECL
          The harpy eagle, the dangerous one, is black

(1662)   na-wain-tʰã   wanũn-jeʔ-let-Ø-nãn-wa
          Ps3-many-NCL.GROUP   good-EMP-I.PST-S3-PST-DECL
          His people were real good/beautiful people.

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[352] A few of these also function as adverbs, such as /wanũn/ 'good'. When in an adverbial role modifying another verb, they will occur in a free form without any verbal affixation. See section 4.1.2.1 on adverbs.

(1663)   jạkʔ-tu   jejes-latʰa-Ø-wa
          peccary-FNS   ugly-S3-PRS-DECL
          The peccary are ugly

(1664)   nakʰanis-latʰa-Ø-wa
          be.sick-S3-PRS-Decl
          He/she is sick

(1665)   ʔon-latʰa-Ø-wa
          lazy-S3-PRS-Decl
          He/she is lazy

(1666)   teh-tu   wasu-latʰa-Ø-wa
          path-FNS   slippery-S3-PRS-DECL
          The path is slippery

(1667)   wa-wasainʔ   saʔte-Ø-tʰunna-wa
          Ps2-stuff   heavy-S3-FUT2-DECL
          Your stuff will be heavy

(1668)   kʰen-hen-ã   nũsa-halo
          be.dry.season-NCL.TIME-FNS   Ps1.PL-land

          jalo-jeʔ-let-Ø-nãn-wa
          dry-EMP-I.PST-S3-PST-DECL
          In the dry season, our land was very dry.

(1669)   nũsa-haiʔka   na-kaʔjãinʔ-tʰã   kʰãn-latʰa-Ø-wa
          Ps1.PL-language   Ps3-write-NCL.THING   hard-S3-PRS-DECL
          The writing of our language is difficult

     A subset of adjectival verbs are the locative verbs (or predicate locatives),
which are semantically distinct from the rest, being used to specify location and
distance (Payne, 1997:121).

(1670)   na-sih-tu   un-latʰa-Ø-wa
          Ps3-house-FNS   far-S3-PRS-DECL
          His village/house is far away.

(1671)   wanaka-jeʔ-Ø-nĩnta-wa
          close-EMP-S3-G.KN-DECL
          It was close (everyone knows that)

(1672)   nahon   tʰãuna-soʔkeuh-latʰa-Ø-wa
          water   other.side-PRB-S3-PRS-DECL
          It is probably on the other side of the water/river

3.4.2.1.3   Impersonal Verbs

Certain stative verb roots are capable of taking the impersonal construction. I am borrowing the term 'impersonal construction' from Relational Grammar (Perlmutter 1978) where it refers to an utterance in which the speaker uses a dummy subject (typically the third person subject marker or pronoun) in place of the expected first person marker. [353] In the process, the original first person subject is demoted to the status of an oblique (or chomeur) and marked as an Object/Oblique.[354] A more detailed discussion of this construction, particularly how it relates to the clause, can be found in section 4.2.3, 'The Impersonal Construction'. Here I will restrict my comments to the verb type which is involved.

When the intent is to refer to a first or second person as subject, this strategy results in a statement that is clothed in third person, giving it an 'impersonal' feel.[355] However, when the impersonal is intended to refer to a third person subject, there is no difference in form between the impersonal construction and any typical verb. Thus the uniqueness of these verbs can be seen only in the first and second persons. In Mamaindê only a small subset of verb roots are allowed to take the impersonal construction, and most of these are stative intransitives. Some common ones are included below.

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[353] See Perlmutter and Postal (1984) for more information on impersonals in Relational Grammar, a theory of syntax which focuses mainly on the relations between the nominals and the predicate.

[354] This Object marker refers to direct objects, indirect objects, obliques, and chomeurs.

[355] When the impersonal is intended to refer to a third person subject, there is no difference in form between the impersonal construction and a typical verb.

(1673)   tǫ-ta-latʰa-Ø-wa
          sick-O1-S3-PRS-DECL
          It is sick to me (I am sick)

(1674)   nĩ̱-ʔna-latʰa-Ø-wa
          hurt-O2-S3-PRS-DECL
          It hurts to you (You hurt)

(1675)   suhni-ta-latʰa-Ø-wa
          afraid-O1-S3-PRS-DECL
          It is frightening to me (I am afraid)

(1676)   ʔja̱ih-Ø-latʰa-Ø-wa
          sad-O3-S3-PRS-DECL
          It is sad to him (He is sad)

(1677)   heh-ta-latʰa-Ø-wa
          hungry-O1-S3-PRS-DECL
          It is hungry to me (I am hungry)

(1678)   hitʰa̱-ʔna-latʰa-Ø-wa[356]
          tired-O2-S3-PRS-DECL
          It is tiring to you (You are tired)

(1679)   suʔton-ta-latʰa-Ø-wa
          to.not.know-O1-S3-PRS-DECL
          It is unknown to me (I don't know)

(1680)   hitenũn-ʔna-latʰa-Ø-wa
          worry-O2-S3-PRS-DECL
          It is worrisome to you (You are worried)

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[356] This root is derived from two morphemes - /hik/ 'hand', and /tʰa/- 'tired'.

(1681)   ʔǫn-Ø-latʰa-Ø-wa
           be.lazy-O3-S3-PRS-DECL
           It is lazy to him (He is lazy)

        While most of the impersonal roots are obligatorily intransitive, some
(semantically) transitive verbs may also take the impersonal form.

(1682)   takalah-ta-latʰa-Ø-wa
           to.dislike-O1-S3-PRS-DECL
           It is not liked by me (I don't like it)

(1683)   nakajaunũn-ta-latʰa-Ø-wa
           forget-O1-S3-PRS-DECL
           It is forgetting to me (I forget it)

(1684)   toh-ta-latʰa-Ø-wa
           want-O1-S3-PRS-DECL
           It is wanting to me (I want it)

        The impersonal is in some ways quite similar to the absolutive case in
ergative systems. In Mamaindê, the impersonal uses an object marker to mark the
subject of certain (deep level) intransitives, thus establishing a formal link between
the subject of the intransitive with the object of the transitive, a major characteristic
of the absolutive case. As this only occurs with a small subset of verbs, however, it
appears to be a split-ergative system. This may be a family trait. Telles (2002:227)
reports the presence of split-ergativity in Latundê, and Kroeker (2001:4) mentions a
similar phenomenon in Southern Nambikwara, which he attributes to all the stative
verbs.
        Several unique aspects of the Mamaindê system need to be mentioned.
Mamaindê impersonals are identified by markings on the verb, and not by way of
case marking on nouns as in many ergative languages. The impersonal makes this
link between the subject of intransitive and object of transitive by way of deep
structure, where the same underlying subject is treated as a surface object at a
different level. The ergative/absolutive dichotomy does not typically require such
levels, and can be handled by simple surface marking. The Mamaindê impersonal is
always a transitive clause on the surface, while the typical absolutive can occur in
either a transitive or intransitive construction. Besides these differences, the
impersonal construction also requires the insertion of a third person subject that is
semantically empty, a dummy subject, something not necessary in an absolutive.
Therefore, while Mamaindê does appear to possess a limited split ergative system

(as demonstrated in the impersonals), it is a somewhat atypical system. Givón perhaps gives the best description of such impersonal constructions, referring to them as 'metaphorical intransitives' (1989:63), for although they are transitive at face value, they are representative of intransitive meaning at some deeper level.

Evidence of the underlying subject in these impersonals can be obtained by investigating the switch reference system. In the examples below, the impersonal clause is preceded by a dependent clause, linked by way of a connective. The connectives in Mamaindê not only serve to connect clauses, but they also function as a switch reference system, indicating if the subject of the second clause will change or remain the same as the subject of the previous clause. It is the choice of the connective that carries this crucial information.

(1685)   tai̯-ãni   wa̱-ta̱ʔ   sañĩn-ta-latha-Ø-wa.
         PnI-FNS   come-CN.AND.SS   happy-O1-S3−PRS-DECL
         I came and it is happy to me. (I have come and am happy about it)

(1686)   hãi-ãni   wa̱-hĩʔ,   sañĩn-ta-latha-Ø-wa.
         PN3-FNS   come-CN.AND.DS   happy-O1-S3−PRS-DECL
         He came, and it is happy to me. (He has come and I am happy about it)

In the first example above we have two clauses linked by the SS (Same Subject) connective /-ta̱ʔ/, indicating that the subject of the second clause will remain the same as the first, in this case, first person. In the second example, we have the DS (Different Subject) connective /-hĩʔ/, which signals that a switch in subject is occurring (from third person to something else). In both these cases the use of the switch reference system supports our analysis that the first person Object marker /-ta/ is actually being used to refer to a person who is the subject at some non-surface level, and that, at that same underlying level, the third person Subject marker /-latʰa/ refers to a person who is not the subject at all. The importance of the switch reference system is that it predicts who the underlying subject of the second clause will be, and in both cases, this prediction agrees with the object marker, not the subject marker. Thus, the switch reference system of the language lends significant support to our analysis of the impersonal construction.

Interestingly, all of these impersonals have an emotive connotation, involving verbs which express intense personal feelings or desires, the majority of them negative in nature; sad, sick, tired, want, doubt, fear, worry, hunger, hurt, forget, etc. This adds support to Payne's claim (1997:145) that the split in split-intransitive systems is often drawn along semantic lines.[357] Its intriguing to wonder why the most emotive verbs in the language are relegated to the third person. Could these impersonal predicates somehow be relics of the harsh history of the Mamaindê people? Or is this simply a shared human trait, where unpleasant memories are

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[357] A similar semantic distinction is found in Nambikwara stative verbs (Kroeker, 2001:4).

communicated in the most distant manner possible? While the second option seems most likely, it certainly is the case that their long history of tribal wars, epidemics, deprivation, and other tragedies has left the Mamaindê with painful memories,[358] and that the impersonal construction provides them with a linguistic defense mechanism to distance themselves from the associated feelings of grief or pain. In much the same way that the Mamaindê prefer not to mention the name of a deceased relative, they prefer to speak of their own pain in impersonal terms.[359]

3.4.2.2   Verb Valence

The inherent relationship of a given verb to the nominals in the clause, and the number of constraints on these relationships indicate the valence of that verb. Such relationships are typically described as intransitive, transitive, and ditransitive. The intransitives can be active or stative, while the transitives and ditransitives are obligatorily active.

3.4.2.2.1   Intransitives

(1687)   tai̯   hiton-le-a-nãn-wa
           I   dream-I.PST-S1-PST-DECL
           I dreamed recently (in intermediate past)

(1688)   na-hĩni-tu   sei   jau̯-latʰa-Ø-wa
           Ps3-grandmother-FNS   here   to.be-S3-PRS-DECL
           His grandmother is here.

(1689)   ikalaka-ten-aʔ-wa
           work-DES-S1-DECL
           I intend to work

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[358] At the peak of the smallpox epidemic in the late 1950's, a disease brought on by the advancement of the white man, the Mamaindê had become so destitute and hopeless that at least one family gave a child away to whoever would take it and raise it (personal communication - Bob Crump, SAM Mission Society).
[359] The verb /sanĩn/ 'be happy' can also be used in an impersonal manner, but it is often used with the standard first person subject marker as well.

(1690)   na-wet-tu   taʔnũs-wa-latʰa-Ø-wa
          Ps3-child-FNA   cough-Cɴт-S3-Pʀs-Dᴇᴄʟ
          His child comes coughing (continues to cough from the past to the
          present)

3.4.2.2.2   Transitives

(1691)   sĩu-tu   wes-kʰit-latʰa-Ø-wa
          basket-FNS   make-S1.Pʟ-S3-Pʀs-Dᴇᴄʟ
          We are making baskets

(1692)   nũsa-jahon-sihatija-tu   kajat-kanĩn
          Ps1.Pʟ-old.man-Tᴍᴘ.Mʏᴛʜ-FNS   corn-NCL.ʀᴏᴜɴᴅ

          haʔfin-jeʔ-Ø-nĩnta-wa
          plant-Eᴍᴘ-S3-G.Kɴ-Dᴇᴄʟ
          Our ancestoral men planted corn seeds (as everyone knows)

(1693)   nahajauptʰi-tu   nã-aʔ-Ø-wa
          water-FNS   drink-S1-Pʀs-Dᴇᴄʟ
          I am drinking water

(1694)   wikʰai-tu   sun-jeʔ-let-Ø-nãn-wa
          bushmaster-FNS   kill-Eᴍᴘ-I.Psт-S3-Psт-Dᴇᴄʟ
          He killed the bushmaster snake.

(1695)   nahana   hukʔ-tu   tu-a-tʰaʔ-wa
          later   bow/gun-FNS   get-S1-Fᴜт-Dᴇᴄʟ
          I will get a bow/gun later

3.4.2.2.3   Ditransitives

(1696)   jainsi-tu   tanu-leʔ-soʔkeuh-Ø-tʰunna-wa
          food-FNS   give-O1.Pʟ.Iɴ-Pʀʙ-S3-Fᴜт-Dᴇᴄʟ
          He will probably give food to us

(1697)   ta-haiʔka   ta-sanĩn-sa̰-tu   hãi
           Ps1-word   Ps1-happy-NCL.LIQUID-FNS   he

           set-ka-Ø-le-a-nãn-wa
           speak-OBL-O3-I.PST-S1-PST-DECL
           I spoke my words, my happy words, to him (in intermediate past time)

(1698)   wa-wasainʔ-tu   tanãun-ʔna-ten-aʔ-Ø-wa
           Ps2-stuff-FNS   send-O2-DES-S1-PRS-DECL
           I intend to send your stuff to you.

3.4.2.2.4   Semantically Passive Verbs

Although the typical passive construction does not occur in Nambikwara languages, there is one verb which appears to be semantically passive in Mamaindê. This is the verb */ton/,* 'to be hit'. It is used whenever a target is hit by a projectile, either bullet, arrow, rock, etc. Since there is no formal difference between the structure of this verb phrase and any other in the language, we must conclude that this is also an active verb. Its uniqueness is in the semantics.

(1699)   nũnʔta   ton-latʰa-Ø-wa
           tapir   to.be.hit-S3-PRS-DECL
           The tapir is hit!

        Because the subject of the verb functions semantically as a patient, this verb cannot be used with an agent in the subject slot. Any attempts to do so are ungrammatical, as shown below. No other verbs of this type have been found.

(1700)   tãi nũnʔta   ton-aʔ-Ø-wa*
           I   tapir   hit-S1-PRS-Decl
           I hit the tapir.

3.4.2.2.5   Inherent Object Verbs

The semantic domain of a small set of active verbs includes not only the action of
the verb, but also the specific nominal which is the object or goal of the action. In
most languages, these types of predicates could relate to any of a number of
nominals, such as 'give X', 'approach X', 'eat X'. But in Mamaindê, when these
verbal ideas are related to certain direct or indirect objects, a specific root must be
chosen.[360] The overt form of the object is then not required in these cases, as it is
implied by the presence of the verb root itself.

          The verbal idea 'arrive' has two root forms – a specific form */hĩun/* which
is used only when one has arrived at the edge of water, and a general form */lit/*
which is used with all other types of objects. Notice that the nominal */nahon/* 'water'
is not required in the first utterance as the idea is carried by the verb root.

(1701)   hĩun-let-Ø-nãn-wa
            arrive.at.water-I.Pst-S3-Pst-Decl
            He/she arrived (at the waters edge.)

(1702)   sih-tu   lit-let-Ø-nãn-wa
            house-FNS   approach-I.Pst-S3-Pst-Decl
            He/she arrived at the house

          The verbal idea 'give' has two forms. The specific form */teh/* is used only
when giving someone liquid to drink. All other instances of 'give' use the form
/tanu/. Again, there is no need to mention that liquid is being given in the first
example as the root already implies this.

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[360] Interestingly, several of the verbs with inherent objects are 'water' verbs, verbs dealing
with water as the goal or object. It may be possible that these special 'water verbs' arose from
the scarcity of water in the original Mamaindê homeland, an area of savannah scrubland and
escarpments with very small streams which often dry up in the dry season. These special verb
roots thus highlight the value placed on activities which are done with or near water. A few
other 'water' verbs include */tanãuntanĩun/* 'throw into water, */eukatai/* 'go get water', and
/taitu/ 'fill with water'. Similarly, specific verbs for the act of eating meat and the state of
being hungry for meat may also stem from a scarcity in their traditional lifestyle. The inherent
difficulties in procuring sufficient meat in the original Mamaindê territory, a land of few game
animals and small streams with very small fish, makes meat a prized food and the act of
eating meat becomes valued above other acts of eating. Thus it is given its own root form.

(1703)   wet-tu   teh-latʰa-Ø-wa
          child-FNS   give.to.drink-S3-PRS-DECL
          He/she is giving the child (some liquid) to drink.

(1704)   wet-tu   jun-tu   tanu-latʰa-Ø-wa
          Child-FNS   knife-FNS   give-S3-PRS-DECL
          He/she is giving the child a knife

        The verbal idea 'eat' has two forms. The specific form */wi̱/* is limited to the act of eating meat. All other instances of 'eating' use the form */jain/.* Again, there is no need to mention that meat is being eaten in the first example as the root already implies this.

(1705)   wi̱-sitoh-ta-latʰa-Ø-wa
          eat.meat-WNT-O1-S3-PRS-Decl
          I want to eat (meat)

(1706)   kajat-tu   jain-sitoh-ta-latʰa-Ø-wa
          corn-FNS   eat-WNT-O1-S3-PRS-Decl
          I want to eat corn

        The verbal idea 'hunger for' has two forms depending on whether one is hungering for meat, */eun/,* or for food in general, */hehsadoh/.* When considering the forms above as well as those below, it becomes clear that eating meat among the Mamaindê is a highly prized activity.

(1707)   hehsatoh-ta-latʰa-Ø-wa
          hungry-O1-S3-PRS-Decl
          I am hungry

(1708)   eun-ta-latʰa-Ø-wa
          hungry.for.meat-O1-S3-PRS-Decl
          I am hungry (for meat)

3.4.2.3   Verb Morphology

The linear order of elements within the main verb may be represented tentatively by the table on the following page.

Mamaindê Independent Verb Structure

This table illustrates the internal structure of the independent verb. Required morpheme categories are shaded. (Dependent verbs have less morphology and will be discussed separately.)

CAU	BDY	ROOT	STA	OBL	O	END	MAN	E.V.	PL	PRB	RS	DES	3REF	EMP	IRR	POT	TNS. M	NEG	S	TNS/ EVD	CL.TYPE	EMO
Derivational prefixes		*Stem*		*Inflectional Suffixes Set A*			*Derivational Suffixes*										*Inflectional Suffixes Set B*					

Abbreviations for the major morphological categories found in independent verbs:

3REF	THIRD PARTY REFERENT		NEG	NEGATIVE
BDY	'BODY' NOUN INCORPORATION		O	OBJECT PERSON MARKER (DIR. & INDIR.)
CAU	CAUSATIVE		OBL	OBLIQUE MARKER
CL.TYPE	CLAUSE TYPE		PL	PLURAL MARKER
DES	DESIDERATIVE		POT	POTENTIAL
EMO	EMOTIVES		PRB	PROBABILITY
EMP	EMPHATIC		RS	REPORTED SPEECH
END	ENDEARMENT TERM		S	SUBJECT MARKER
E.V.	EMBEDDED VERB		STA	STATIVE
IRR	IRREALIS/CONDITONAL		TNS.M	TENSE MODIFIER
MAN	MANNER		TNS/EVD	TENSE/EVIDENTIALITY

Although we have already seen in a previous section that nouns may take a large number of affixes, the above table clearly indicates that the verb is by far the most polysynthetic component in the language. Verbal affixation is mostly suffixial, counting with only two verbal prefix categories in contrast to a total of twenty different verbal suffix categories. This demonstrates the left-headed tendency of the Mamaindê verb, where the root typically occurs near the far left edge of the inflected verbal string.

Not all of these morphological categories are obligatory. The only slots besides the root which are obligatory on the main verb are the last four; Subject, Tense/Evidentiality, Clause Type, and Emotives.[361] However, in spite of the fact that words have not been found which carry all of the above morphology, it is not uncommon for a large portion of these morphological categories to modify a single verb root. Two examples will suffice to show the extremes of morphology on the main verb; minimal affixation, and maximal affixation.[362]

(1709)   **ãn**-Ø-nãn-wa
           hunt-S3-PST-DECL
           He went hunting today (in recent past time)

(1710)   ta-i-**onka**-ki-ta-soʔkeuh-juh-jeʔ-le-n-nãn-wa
           CAU-BDY.EYE-**do**-OBL-O1-PRB-3REF-EMP-I.PST-S2-PST-DECL
           You probably caused my eye to function in intermediate past time
           (You probably caused me to wake up in intermediate past time)

Specific support for the order of constituents in the above table will be provided when possible, as we discuss each morpheme category in turn. The table shown here fits the general structure of the Mamaindê verb: with causatives and body incorporation occurring as derivational prefixes, followed by the root within the larger stem, then followed by inflectional suffixes which indicate the presence of non-subject nominals, which are in turn followed by numerous derivational midfixes such as manner, etc, which add to the verb various semantic nuances, and lastly the final inflectional suffixes which ground the verb in broader concepts of time and participants and truth. Within the derivational prefixes, and within both inflectional

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[361] One must keep in mind that the set of person and tense markers each includes a zero morpheme which can occur as one of these obligatory morphemes. The zero person morpheme is the third person, while the zero tense morpheme is the present tense. Although these two zero morphemes are very common, they never co-occur. When both of these semantic categories are called for, i.e., a third person verb in the present tense, the third person subject marker takes on the overt form /-latʰa/, and the tense remains unmarked.

           ʔai-latʰa-Ø-wa
           go-S3-PRS-DECL
           he is going

[362] The root morphemes are bolded to aid the reader in separating the prefixes from the suffixes.

groupings of suffixes, the constituent order shown above is tightly maintained. However, between many of the derivational midfixes, it must be understood from the start that any specific order holding between them is quite flexible, subject to being altered in various ways. Such variance shows that defining an exact ordering between every constituent may not be the most insightful way to approach the Mamaindê verb, if it is even possible. This conclusion follows from what linguists have discovered in many polysynthetic languages, that "relatively free pragmatic constituent order" and "possibilities of variable morpheme ordering" are "concomitant properties of polysynthetic languages" (Aikhenvald, 2007:6). The broader view, then, of derivational prefixes, stem, inflectional suffixes A, derivational midfixes, and inflectional suffixes B is probably a more appropriate way to conceive of the structure of Mamaindê verbal morphology.

The structure of the dependent verb is identical to that of the main verb above, but it obligatorily takes a connective marker in place of the final three inflectional affixes; the Tense/Evidentiality, Clause Type, and Emotive. Besides these last three inflectional morphemes, all morphological categories are possible on the dependent verb, including other inflectional markers such as subject. However, the dependent verb will typically avoid employing affixes which are true of the whole sentence and thus more appropriately modify the main verb. This means that the notion of subject will only be realized overtly on the dependent verb if there is a change of subject between the dependent and the independent clauses. The lack of the last three inflectional markers, as well as the tendency to avoid repetitive morphology, makes the dependent verb in Mamaindê much shorter and concise than the independent verb. The only obligatory morphology on a dependent verb is the connective suffix. The morphology of dependent verbs will be discussed further in section 4.3.3.1, 'Connectives'.

The remainder of this section on verb morphology will describe each of the possible affix categories found on the main verb.

3.4.2.3.1   Derivational Prefixes

3.4.2.3.1.1   Causatives

There are two possible morphemes which can occur in the initial verb prefix slot - the causative morpheme */ta-/* or */tal-/* and the involuntary morpheme */ã-/* or */ãl-/.* The causative */ta-/* is employed to indicate that the subject of the verb is a third party which voluntarily caused the action to occur. The involuntary morpheme */ã-/* (and its allomorph */ãl-/*) prefixes verbs when the action was involuntary, or reflexive, or caused by some unspecified/unknown source. The allomorphs */ãl-/* and */tal-/* are used when the root begins with a vowel.

Third party cause

(1711)   ta**wate**latʰawa

      ta-**wate**-Ø-latʰa-Ø-wa

      CAU-disappear-O3-S3-PRS-DECL

      He caused (it) to disappear/be gone

(1712)   ta-**sanĩnʔ**-ta-nuʔ-Ø-wa

      CAU- happy-O1-S2-PRS-DECL

      You cause me to be happy

(1713)   tãl**enkũn**ʔnatʰunnawa

      tãl-**enkũn**-ʔna-Ø-tʰunna-wa

      CAU-heal-O2-S3-FUT2-DECL

      He will cause you to be healed

Reflexive or unspecified cause

(1714)   ã**sanĩnʔ**kanaʔwa

      ã-**sanĩnʔ**-ka-naʔ-Ø-wa

      CAU-happy-OBL-S1-PRS-DECL

      I am happy (unknown cause)

(1715)   ãl**enkũn**teʔwa

      ãl-enkũn-ten-aʔ-Ø-wa

      CAU-heal-DES-S1-PRS-DECL

      I intend to heal by myself

(1716)   ã**i**lonteʔãun

      ã-i-lon-teʔ-Ø-ãun

      CAU-BDY.EYE-burst-DES.S1-PRS-DECL.HUMOR

      I will (involuntarily) cause my forehead to burst

(1717)   ã**i**onkatah

      ã-i-onka-tah

      CAU-BDY.EYE-do-IMP

      Wake yourself up!

3.4.2.3.1.2   Noun Incorporation

One of the more productive characteristics of Mamaindê morphology is the use of noun incorporation. Noun incorporation in this language involves verbal prefixes to refer to body parts. Since these prefixes refer to a restricted semantic domain (only body parts), and since they have a function which combines nominal elements with the verb, I will refer to the morphological process as Body-Part Incorporation, and to the class of prefixes as Body Prefixes. Body-Part Incorporation is clearly a type of noun-incorporation, a typical process found in polysynthetic morphologies (Aikhenvald 2007:6, 20). Not only are body-parts the only nominals to be incorporated in Mamaindê, they are also obligatorily possessed, adding support to Aikhenvald's claim that most Amazonian languages limit incorporation to obligatorily possessed nouns (2007:20). The noun incorporation process found in Mamaindê is mostly of the more standard object/oblique type, although a few found in this section are of the subject type.

   Proof that these are bound verbal prefixes, not just free noun forms occurring before the verb, comes from forms where the free nominal and the body prefix are found together.

(1718) nanuk^{h}itu   nukaupnãnwa

     na-nuk^{h}i-tu nu-kaup-Ø-nãn-wa
     Ps3-arm-Fns Bdy.arm-break-S3-Pst-Decl
     He broke his arm (in recent past)

(1719) nukaupnãnwa

     nu-kaup-Ø-nãn-wa
     Bdy.arm-break-S3-Pst-Decl
     He broke his arm (in recent past)

(1720) nanuk^{h}itu kaupnãnwa *

     na-nuk^{h}i-tu kaup-Ø-nãn-wa
     Ps3-arm-Fns break-S3-Pst-Decl
     He broke his arm (in recent past)

   The above examples show that body-part incorporation may occur with or without an overt nominal.[363] The body prefix thus enjoys a closer connection to the verb than the nominal does, as it is required in this sentence while the overt nominal is not. Note that when an appropriate body prefix exists, the use of the overt nominal without the body prefix is not acceptable.

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[363] The body prefix may or may not be realized as a shortened form of the noun.

Even stronger proof that these body prefixes are part of the verbal element comes from those verbs where noun incorporation is preceded by other verbal prefixes, such as the causative marker. The fact that they occur between the causative prefix and the root of the verb shows that they must be treated as verbal prefixes as well.[364]

(1721)   ta-ju̱-nitus-kʰatoʔ

            CAU-BDY.FOOT-hurt-CN.THEN.SS

            It caused his foot to hurt, then…

Although not every body part has its corresponding prefix, a number of body parts can be referred to in this way. Some of these prefixes are identical to their free nominal form, others are shortened versions of the free form, while a few are altogether different.

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[364] See also the last two examples in section 3.4.2.3.1.1 on 'Causatives'.

Noun Incorporation Prefixes (Body Prefixes)

Body Prefix	Gloss	Example	Example gloss	Free gloss
i-	eye/ forehead	i-nãn i-onka i-toh	eye-cry eye-do forehead-touch	to be drowsy to awake to touch with the forehead
nu/nuk	arm	nu-kʰãn	arm-hard	to be strong
na-	head	na-lit na-hawas na-kalo	head-arrive head-put in head-grow	to remember, think to understand, learn to grow on the top
na̠/na̠ʔ-	ear	na̠-kʰakut	ear-teach	to teach verbally
ju-	mouth	ju-kʰoʔ ju-ten ju-tʰãn ju-set	mouth-hang mouth-shut mouth-open mouth-speak	to hang on an edge to shut to open to speak, converse
ju̠/ju̠kʔ-	foot	ju̠-nĩ	foot-hurt	to hurt in the foot
tʰa̠-	stomach	tʰa̠-ʔaukʰa	stomach-pierce	to pop something swollen
ta-	buttocks	da-kʰakʰan	buttocks-messy	to have scarred buttocks
wa-/hik-	hand	hik-kʰãn wa-kʰai wa-toh	hand-learn hand-rip hand-want	to learn with the hand to rip with hand to touch with the hand
tu-	shin	tu-tʰotʰon	shin-black	to have black shins
halas-	back	halas-set halas-aup halas-kʰãn halas-eu	back-speak back-break back-hard back-see	to speak gossip to break in the middle to be courageous to spy

Although most of the above verb roots can also occur without the body prefix, a few verbs require the presence of a body prefix at all times. The root form /kʰãn/, learn, for instance, is never found without an accompanying body prefix.

It is interesting to note the change in meaning when the same verb takes on a variety of different body prefixes. The verb root /kʰakut/, 'teach' for example, can be modified in a number of helpful ways by employing the appropriate body part prefix in a given situation.

(1722)   ju-kʰakut

          BDY.MOUTH-teach = teach the mouth = teach to speak

(1723)   i-kʰakut

          BDY.EYE-teach = teach the eye = teach to learn by visual example

(1724)   na̱-kʰakut

          BDY.EAR-teach = teach the ear = teach to learn by listening

(1725)   hik-kʰakut

          BDY.HAND-teach = teach the hand = teach to do with the hand

     A similar variety of forms can be found on the verb /kakãun/,
'clumsy/inexperienced/green'.

(1726)   i-kakãun
          BDY.EYE-clumsy
          To have poor vision

(1727)   na̱-kakãun
          BDY.EAR-clumsy
          To not be able to learn/listen well

(1728)   hik-kakãun
          BDY.HAND-clumsy
          To be inept with ones hands

(1729)   ju-kakãun
          BDY.MOUTH-clumsy
          To be a poor speaker

     Although typically only one body prefix will occur on a given verb root, it
is occasionally possible to find two such prefixes on the same verb. This is
demonstrated in the form below.

(1730)   wa-na̱-ten-latʰa-Ø-wa
           Bᴅʏ.ʜᴀɴᴅ-Bᴅʏ.ᴇᴀʀ-cover-S3-Pʀs-Dᴇᴄʟ
           to cover the ear with the hand

      The closer the relationship with the verb, the closer the Body prefix will be to the root. Thus in the form above the prefix which indicates the object of the verb, */na-/* 'ear'. is closer to the root than */wa-/* 'hand', which functions as an oblique.

3.4.2.3.1.3   Incorporation and Metaphor

Many of the Mamaindê body prefixes used in noun incorporation are metaphorical in nature. They are often used to refer to things or concepts which are not body parts at all, but which display some resemblance or similarity to a specific body part, either in form, in spatial area, in condition/quality, or in function.[365] Similar metaphorical usage of body part terms has been documented in other languages as well, such as in Mixtec (Lakoff, 1987:314-317). Consider the two Mamaindê prefixes below, */ju-/* 'mouth' and */halas-/* 'back'.

Noun Incorporation used as Metaphor

ju-	mouth	ju-kʰoʔ	mouth-hang	to hang on an edge
		ju-ten	mouth-shut	to shut
		ju-tʰãn	mouth-open	to open
halas-	back	halas-set	back-speak	to speak behind/gossip
		halas-aup	back-break	to break in the middle
		halas-kʰãn	back-hard	to be courageous
		halas-eu	back-see	to look behind/spy

      In each one of the above examples we have the metaphorical use of body prefixes. The concept 'mouth', when alluding to its form, can refer to an 'edge', as found in the word */ju-kʰoʔ/* 'mouth-hang=hang on an edge', or, when its function is in focus, it can refer to a 'door', as in */ju-ten/* 'mouth-shut=shut the door', and */ju-tʰãn/* 'mouth-open=open the door'. The 'back' as part of the body can simply refer to a similar spatial area shared by other objects, such as the 'middle' of something, in */halas-aup/* 'back-break=break in the middle', or 'behind' something, in */halas-*

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[365] This relation of morphology to geometrical shape can also be observed in the use of noun classifiers in Mamaindê.

set/ 'back-speak=gossip' or */halas-eu/* 'back-see=spy'. It can even refer to a quality such as rigidity/strength, alluded to in the form */halas-kʰãn/,* 'back-hard=to be courageous'.

Another example of a body prefix often used to refer to a spatial area is the prefix */na-/* 'head'. In the phrase below it is used metaphorically to refer to the top of the tree, where the leaves begin to grow at the beginning of the rainy season.

(1731)   wasanĩnʔ-teʔntaʔ   watais-hĩʔ   itʰãnʔ
          be.rainy.season-CN.IN.ORDER.TO.SS   close-CN.THEN.DS   leaf

          haʔwen   na-kalo-ka-lhi-latʰa-Ø-wa
          begin   BDY.HEAD-grow-OBL-IRR-S3-PRS-DECL
          Closer to rainy season, leaves would begin to grow on the heads
          (of the trees)

Instead of appealing to spatial area, the following body prefix makes a comparison based on the condition of the body part mentioned.

(1732)   tʰa̱-ʔaukʰa
          stomach-pierce (to puncture)

This is of course metaphorical in nature as well, linking the swollen nature of a belly to anything that is swollen and can be pierced, such as a balloon.

A rather complex use of body part as metaphor is highlighted by the form below. Here we find two body prefixes, and two metaphors, within a single form.

(1733)   na̱-i-to-nũn-soʔka
          BDY.EAR-BDY.EYE-die-ALSO-NCL.HUM
          deaf person

The verb 'die' itself, when prefixed by the body part */i-/* 'eye', is of course metaphorical, highlighting the likeness of the general condition of death of the body to the specific condition of death of the eye, or blindness. Then the addition of the body prefix */na-/* 'ear' compares the condition of one body part, blindness, to the condition of another, deafness. The rough semantics seem to develop in the

following progression: with /to/ being 'die', *i-to* becomes 'to die in the eye', or 'to be blind'. Then with *i-to-nũn* established as 'to be blind', *na-i-to-nũn* becomes 'to be blind in the ear', implying that in the same way the eye is blind, the ear can also be 'blind'. The extension of meaning found above, where one metaphor is built upon another, is a beautiful example of the rich productivity and symbolism possible within Mamaindê morphology.

3.4.2.3.2   The Stem

The verb stem is at the heart of the verb. The most common stem is the single verb root. But due to the polysynthetic nature of the language, compound roots are also possible in Mamaindê.

3.4.2.3.2.1   Compound Verb Roots

Several verbs are allowed to occur adjacent within the stem to form a compound verb root. When the two verbs are active verbs, such compounds typically refer to actions that occur in rapid succession. There is a progressive element involved, as the order of roots reflects the order of events as they are played out in real life. The list below includes some of the more common verb compounds, ignoring for the moment any irrelevant affixation.

(1734)   tu-we
          get-place   get and place = put

(1735)   tu-ʔñĩu
          get-return   get and return = bring

(1736)   ih-wi
          run-enter   run and enter = run in

(1737)   sun-tanãun
          hit-throw   hit and throw = kill

(1738)   nakʔat-tu
          hear-grab   hear and grab = believe

(1739)   mãn-to
         burn-die   to die with heat

(1740)   wi̱-tanãun
         eat.meat-throw   eat (meat) and throw = to eat meat very fast

(1741)   ãun-wate
         leave-disappear   leave and disappear = be gone

(1742)   hale-tanãun
         step-throw   step and throw = kick

(1743)   eu-tai
         see-take out   see and take out = take a picture

(1744)   eu-tanãun
         see-throw   see and throw = gaze, stare

(1745)   luka-tu
         separate-get   separate and get = choose

        A few compound verb sequences require additional material to be inserted
between the two verbs in the stem. This additional material will take one of three
forms, either /-ta-/, /-t-/, or /-k-/. All of these forms appear to be derived from the
serial verb connector, /-taʔ/ 'and', which is used as a connective on dependent verbs
when they occur in the 'and' relationship in a serial verb string (see Connectives).
        When one of these shortened forms of the connective /-taʔ/ is inserted
between two verb roots, the two become fused together and are treated as a single
compound verb form. A few of these are listed here.

(1746)   tuta̱i
            tu-t-ʔa̱i
            get-and-go   get and go = take

(1747)   tukwa̱
             tu-k-wa̱
            get-and-come   get and come = bring

(1748)   eutatu
            eu-ta-tu
            see-and-get   see and get = choose

(1749)   ʔjaihtaja̱u
            ʔjaih-ta-ja̱u
            sad-and-stay   sad and stay = remain sad

(1750)   anukʰatatau
            anukʰa-ta-tau
            gather-and-chop   gather and chop

       Compound verb connectives (like /–ta-/ , /-t-/, /-k-/) are differentiated from
the serial verb connector /-taʔ/ in that the former appears within the stem, between
two verb roots, and before any inflectional suffixes. The latter only occurs at the end
of a dependent verb in a serial construction (for further information see section
4.3.3.1, 'Connectives').
       Although rare, it is possible to have up to three verb roots in a compound
stem.

(1751)   tukwa̱we
             tu-k-wa̱-we
            get-and-come-put   get, come and put = bring and put

(1752)   eutalukatai
            eu-ta-luka-tai
            see-and-separate-take.out   see, separate, take out = see and choose

Compound verb stems can also be composed of an adjectival type verb root plus an active verb root, where the adjectival verb modifies the active verb. The order seems to be arbitrary as these can be found in either order; as adjectival/verb or as verb/adjectival.[366]

(1753)   onka-jejes
          do-bad
          to mess up

(1754)   wanũn-set
          good-speak
          to speak well
          (or 'to be trustworthy')

We know these are functioning here as compound roots and not separate verbs because any prefixes will occur before the stem as a whole and never between them, and they share a single set of derivational and inflectional suffixes.

(1755)   ta-onka-jejes-ki-ta-let-Ø-nãn-wa
          CAU-do-bad-OBL-O1-I.PST-S3-PST-DECL
          he caused me to mess up yesterday

3.4.2.3.2.2   The Copula Verb

At times, the Mamaindê speaker may wish to fill in certain details during the speech act which are not found in any verbal root, elements of meaning which are only encoded by way of the affixial system. This often gives one the feeling of an afterthought. In such situations, they will either repeat the previous verb using new affixes, or employ a more generic root, the copula /na/, as a place filler, and add the desired affixes.[367] This root has very little independent meaning (see Payne 1997:115), although it can best be translated as 'to be' or 'it is' in most cases.

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[366] In such cases, the adjectival type verb roots function as adverbials and modify the other verb within the stem. (See Kingston, 1976a:46, for a similar treatment of these forms).

[367] Kingston referred to this verb as the Mamaindê 'universal verb'. This copula, which has a low tone, is not to be confused with other similar verb roots such as /na/ 'speak' (high tone), and /nã/ 'drink' (rising tone).

(1756)   na-jeʔ-latʰa-Ø-wa
           COP-Emp-S3-Prs-Decl
           And that's just the way it is.

(1757)   ʔjaih-latʰa-Ø-wa.   na-hensoʔ-latʰa-Ø-wa.
           sad-S3-Prs-Decl   COP-always-S3-Prs-Decl
           He/she is sad. Always is.

      This verb can also be used to construct predicate nominal clauses, such as the one below (see Payne 1997;115).

(1758)   hãi   ta-wainta-tʰã-tu   na-latʰa-Ø-wa.
           PN-3   Ps1-group-NCL.GROUP-FNS   COP-S3-Prs-Decl
           Those right there, they are my group.

      The copula is also required after certain connectives, such as at the end of any string of serial verbs using the connector /-ĩ/ 'list'. In these verb strings, the last verb is the copula, which communicates the least semantic content, but is necessary to carry the inflectional affixes.

(1759)   wa-taʔ,   set-ĩ,   hain-ĩ,   sanĩn-ĩ
           come-CN.AND   speak-CN.LIST sing-CN.LIST happy-CN.LIST

           na-kʰit-ten-soʔkeuh-latʰa-Ø-wa
           COP-S1.PL.In-Des-Prb-S3-Prs-Decl
           We will probably come and speak, and sing, and be content.

3.4.2.3.2.3   Statives
This form of the verb is used to express a generic state, as opposed to simply a single or repeated action. The morpheme which marks the stative is part of the stem, and thus must occur immediately after the root, prior to any other morphology.

/-ʔna/   stative

(1760)   sanĩn-ʔna-latha-Ø-wa

           happy-Sta-S3-Prs-Decl

           He is happy (in the state of being happy)

(1761)   ta-ʔna-naʔ-Ø-wa

          lie.down-STA-S1-PRS-DECL

          I am laying down (in the state of laying down)

(1762)   nalit-ʔna-wa-let-Ø-nãn-wa

          think-STA-HAB-I.PST-S3-PST-DECL

          He thought habitually (in the state of thinking)

        Although earlier data records many instances of this suffix, in more recent
years, the stative is heard less and less, presumably due to the similarity of this
morpheme with the second person object marker /-ʔna/, and the desire to
disambiguate such constructions. In the place of the stative, the verb root /ja̱u/ 'to
be/to stay' is often used to convey the same semantic information.

(1763)   sanĩn-ja̱u-latha-Ø-wa

          happy-stay/be-S3-PRS-DECL

          He is happy (in the state of being happy)

3.4.2.3.3   Inflectional Suffixes Set A

3.4.2.3.3.1   Oblique Marker

In the position immediately following the verb stem is the optional oblique marker
/ka/. We could also view this as a type of adposition marker – indicating the
presence of an adposition type construction within the verb itself (adpositions often
mark obliques in many languages). The /-ka/ has a very broad function, and is used
to indicate a number of oblique relationships as benefactive, source, goal and
referent. At other times it is even more generic, referencing any other nominal
besides the nuclear terms of the phrase. In such cases the most appropriate gloss is
often 'in reference to'. Kingston (1974) uses the term 'referential/ benefactive
suffix', while Telles (2000:241) expands this to the 'benefactive/goal/source
morpheme' in her treatment of Latundê.
        The /-ka/ takes on these various meanings with different verbs and in
different contexts.

referent

(1764)   set-ka-na-latʰa-wa
          speak-Oʙʟ-O2-S3-Pʀs-Dᴇᴄʟ
          He/she is speaking about you

(1765)   saninʔ-ka-Ø-Ø-nãn-wa
          happy-Oʙʟ-O3-S3-Psᴛ-Dᴇᴄʟ
          He/she is happy about it.

goal

(1766)   nũnʔki-soʔ   nãn-ka-Ø-nuʔ-Ø-wa
          breast-only   cry-Oʙʟ-O3-S2-Pʀs-Dᴇᴄʟ
          You cry only for the breast.

benefactive

(1767)   nãn-ka-na-hensoʔ   na-latʰa-Ø-wa
          cry-Oʙʟ-O2-Cɴ.ᴀʟᴡᴀʏs   Cop-S3-Pʀs-Decl
          He/she always cries for you

source

(1768)   tu-ka-na-taku
          get-Oʙʟ-O2-Cɴ.ᴀɴᴅ.SS
          He/she got (it) from you, and…

(1769)   wate-ka-na-taku
          disappear-Oʙʟ-O2-Cɴ.ᴀɴᴅ.SS
          It has disappeared from you

(1770)   ＜cocacola＞-sa̰-tu   tanu-ta-jeʔ-let-Ø-nãn-wa.
          CocaCola-NCʟ.ʟɪQᴜɪᴅ-FNS   give-O1-Eᴍᴘ-I.Psᴛ-S3-Psᴛ-Decl.
          He gave me some Coca-Cola.

(1771)   na-ka-Ø-jeʔ-le-a-nãn-wa.
           drink-OBL-O3-EMP-I.PST-S1-PST.DECL
           So I drank from him (at his expense)

(1772)   wãnʔ-ka-na-taku
           beg-OBL-O2-CN.AND.SS
           He/she begs it from you, and…

As /-ka/ marks a relationship between a nominal and the verb, it is obligatorily followed by an object marker that indicates the personhood of that nominal.[368] These person markers will be discussed in the next section. Interestingly, the verb /tanu/ 'give' never carries the oblique marker /-ka/, employing only the appropriate object person marker. Thus when the object marker occurs in the absence of the oblique marker, the dative role is assumed.

(1773)   tanu-ka-ʔna-latʰa-Ø-wa*
           give-OBL-O2-S3-PRS-DECL
           He/she gives (it) to you

(1774)   tanu-ʔna-latʰa-Ø-wa
           Give-O2-S3-PRS-DECL
           He/she gives (it) to you

An alternate form /-ki/ is used in place of /-ka/ when the oblique marker occurs with the first person object marker /-ta/.[369]

(1775)   tu-ki-ta-latʰa-Ø-wa
           get-OBL-O1-S3-PRS-DECL
           He is getting (it) from me.

(1776)   set-ki-ta-ten-hã
           speak-OBL-O1-DES-INT
           Will he speak to me?

---

[368] This Object person marker is not always overt, as in the third person when it takes the form of a zero morpheme.
[369] An idiosyncratic feature of the form /-ki/ is that is lengthened, and thus takes stress, while the form /-ka/ does not.

3.4.2.3.3.2   Object (or Non-Subject) Markers

The personhood of the accusative, the dative, and the oblique is all handled by a
single set of verbal affixes. These morphemes agree with the person of the object,
regardless of its type. This means that the basic Mamaindê noun-verb relations are
marked on the verb as either subjects or non-subjects. No other noun-verb relation is
recognized by the Mamaindê grammar.

Object (or Non-Subject) Person markers - singular

/-ta/	1ˢᵗ person
/-ʔna/, /-ʔn/, /-na/, /-nũn/	2ⁿᵈ person
/-Ø/	3ʳᵈ person

          For singular objects (non-subjects), the above markers will appear alone.
They do not specifically mark the singular, however, for each of them can also be
found in conjunction with a separate plural morpheme. The singular is therefore
only indicated by the absence of one of the plural morphemes found below. In
reality, the default forms are the non-plural forms above, even when referring to
plural objects. It is only when the plurality of the object is in question or at issue that
the Mamaindê speaker will employ the more marked plural object forms.

Object (Non-subject) Person markers - plural

/-leʔ/ ∼ /-loʔ/	Object - 1ˢᵗ person plural – inclusive
/-tahlik/ ∼ /-tahloʔ/	Object - 1ˢᵗ person plural – exclusive
/-ʔai/	Object - 2ⁿᵈ and 3ʳᵈ person plurals

          The first person object plurals actually mark both person and number. A
separate person marker is not needed, although the */-tahlik/* form is often
accompanied by the first person marker */-ta/* to construct the composite */-tahlik-ta/*
form which emphasizes the first personhood of the plural. The second and third
person plural objects, on the other hand, are marked with the same plural morpheme,
/-ʔai/. Therefore they need the addition of the appropriate object person markers in
order to distinguish them apart. Here we see the combination of these two
morphemes to mark plural objects in the second and third persons. [370]

---

[370] Notice the plural form for second and third person objects is the same as the 3ʳᵈ person
plural for subjects. In cases where there might be a problem in differentiating a third person
plural subject from a third person plural object, they will add the morpheme */-jeʔ/* to the
subject form, as in */-ʔaijeʔ/,* and not in the object form, which will remain */-ʔai/.*

Combined Object and Person markers

/-ʔai-ʔn/   object plural - 2nd person
/-ʔai-Ø/   object plural - 3rd person

We must keep in mind that all these 'object' forms are used for any non-subject relation. Thus these forms can function as either direct or indirect object forms, or objects of oblique constructions. In contexts where more than one of these relations could apply, the direct object is taken as the default meaning. However, for utterances which could include an indirect object, two clauses are usually employed. Notice below that the possibility of both direct and indirect objects in the same clause ambiguates grammatical roles. To clarify such cases, two clauses may be used, as per the examples below.

(1777)   tanãun-ʔna-ten-aʔ-Ø-wa
            Ps2-stuff-FNS   send-O2-Des-S1-Prs-Decl
            I will send you – OR - I will send (something) to you.

(1778)   wa-wasainʔ   tanãun-ʔna-ten-aʔ-Ø-wa
            Ps2-stuff   send-O2-Des-S1-Prs-Decl
            I will send you and your stuff - OR - I will send your stuff to you

clarified as…

(1779)   wa-wasainʔ   tu-n-sihtaʔ,   tanãun-Ø-ten-aʔ-Ø-wa
            Ps2-stuff   get-S2-Cn.purpose.DS   send-O2-Des-S1-Prs-Decl
            For you to get your stuff, I will send (it).

The object person markers occur immediately after the root when they refer to either the direct or indirect objects. The oblique morpheme *-ka* is not used in these cases. This is illustrated below.

Object markers used to mark Direct Objects

(1780)   sun-ta-latʰa-Ø-wa
            hit-O1-S3-Prs-Decl
            He/she hit me.

(1781)   kanaha-leʔi-tu   eu-ʔna-le-a-nãn-wa
          night-Pst-FNS   see-O2-I.Pst-S1-Pst-Decl
          I saw you yesterday

(1782)   hãi   toh-Ø-aʔ-Ø-wa
          PN3   want/like-O3-S1-Prs-Decl
          I want that.

Object markers used for Indirect Objects

(1783)   tanu-ta-nũn-nãn-wa
          give-O1-S2-Pst-Decl
          You gave (it) to me (recent past)

(1784)   tanu-ʔna-latʰa-Ø-wa
          give-O2-S3-Prs-Decl
          He/she is giving (it) to you.

(1785)   tanu-Ø-a-tʰaʔ-wa
          give-O3-S1-Fut1-Decl
          I will give (it) to him/her.

(1786)   jalik-tu   wanũn-kʰanĩn-tu   tanu-leʔ-Ø-tʰaʔ-wa
          beads-FNS   pretty-NCl.ROUND-FNS   give-O1.PL.IN-S3-Fut1-Decl
          He/she will give us (inclusive) beads, pretty beads.

(1787)   tanu-tahlikta-Ø-tʰaʔ-wa
          give-O1.PL.EX-S3-Fut1-Decl
          He/she will give (it) to us (exclusive)

(1788)   ʔe̱h-tu   tanu-ʔaiʔn-let-Ø-nãn-wa
          axe-FNS   give-O2.PL-I.Pst-S3-Pst-Decl
          He/she gave the axe to you all.

(1789)   ʔḛh-tu   tanu-ʔai-let-Ø-nãn-wa
          axe-FNS   give-O3.PL-I.PST-S3-PST-DECL
          He/she gave the axe to them.

When referring to the oblique, the object marker occurs immediately after the oblique marker /–ka/ (or /-ki/).

(1790)   anukʰa-ki-ta-let-Ø-nãn-wa
          gather-OBL-O1-I.PST-S3-PST-DECL
          They gathered together with me (in intermediate past)

(1791)   tu-ka-na-taku
          get-OBL-O2-CN.AND
          He/she got (it) from you, and…

Note that the Mamaindê grammar will use the oblique marker to mark certain noun-verb relations as obliques which would otherwise be categorized as direct or indirect objects in some languages. This occurs most noticeably with the verbs 'speak' and 'hear/listen'. For instance, the verb /naʔkas/, 'to hear/listen/understand', is never followed by the object marker unless there is an intervening oblique marker to accompany it, thus showing the oblique status of the nominal. Although only a slight shift in semantics is involved here, a form such as 'I hear you' in English becomes something more akin to 'I am listening to you' in Mamaindê.[371] The verb /set/, 'to speak' also requires the oblique marker to be present whenever a typical object relation is in focus. These are small instances where the grammar is expressing its uniqueness and making its own categories in ways that differ from those in many other languages.

(1792)   naʔkas-ka-na-aʔ-Ø-wa
          hear-OBL-O2-S1-PRS-DECL
          I am listening to you

---

[371] This comparison is not altogether insightful, since English is able to make a distinction between these two phrases semantically while Mamaindê cannot.

(1793)   naʔkas-ki-ta-nu-hã
          hear-OBL-O1-S2-INT
          Are you listening to me?

(1794)   hãi   naʔkạs-ka-tahlikta-kʰatoʔ   het-let-Ø-nãn-wa.
          he   hear-OBL-O1.PL.EX-CN.THEN.SS   angry-I.PST-S3-PST-DECL
          He heard us (exclusive) then he got angry.

(1795)   hãi   naʔkạs-ka-leʔ-kʰatoʔ,   het-let-Ø-nãn-wa.
          he   hear-OBL-O1.PL.IN-CN.THEN.SS   angry-I.PST-S3-PST-DECL
          He heard us (inclusive) then he got angry.

(1796)   set-ka-na-Ø-we-hã
          speak-OBL-O2-S3-PST-INT
          Was he talking about you?
          Was he talking to you? (alternate meaning) [372]

        While the use of a single set of affixes to mark the person of the direct
object, indirect object and oblique is not at all uncommon, in Mamaindê there are
often no other language internal clues to differentiate between such syntactic
categories. For instance, there are no adpositions, or change in word order, or any
other overt means by which the indirect object may be shown to be unique from the
direct object. Here we see two forms with the very same word order and the same
affix set. In the first the object marker is referring to the direct object relation, and in
the second to the indirect object relation.

(1797)   sun-ʔna-latʰa-Ø-wa
          hit-O2-S3-PRS-DECL
          He/she is hitting you.

---

[372] To differentiate between the two alternate meanings possible in the first clause
above. the speaker will commonly add a reference identifying the hearers of the
speech act.

(1798)   tanu-ʔna-latʰa-Ø-wa
            give-O2-S3-PRS-DECL
            He/she gives (it) to you

        Obviously, the simple cases above are easily interpretable according to the
verb being used, the valence of the verb, and the social context of the utterance.
While this economical use of grammatical categories simplifies production in many
cases, in other cases misunderstandings may arise. Take for instance when the
speaker wishes to communicate an idea which involves both an accusative and a
dative, such as 'he sent me to you'. The lack of surface differentiation between these
two categories in Mamaindê prohibits the speaker from constructing a single verb
with both accusative and dative markings. In such a case the speaker would be
obliged to employ two different clauses, one where the object marker references the
accusative, and the second where the idea of the 'benefactive' is inserted by way of
another verb altogether. By using two verbs, the speaker is able to clarify the
participants. (Kroeker mentions similar difficulties in Southern Nambikwara
(2001:55).)

(1799)   ta̱i   tasih-ta-let-Ø-nãn-wa.
            PN1   send-O1-I.PST-S3-PST-DECL
            He sent me

(1800)   wa̱i   eu-ta-nu-sihtaʔ,   tasih-ta-let-Ø-nãn-wa.
            PN1   see-O1-S2-CN.PURPOSE   send-O1-I.PST-S3-PST-DECL
            So you could see me, he sent me.

        As the forms above show, object markers are typically used only once in a
given verb, marking only one type of object at a time. However, it is possible for
both functions to be present if the impersonal construction is used (see section
3.4.2.1.3, 'Impersonal Verbs', for further information on this topic).

(1801)   tu-ki-ta-sitoh-latʰa-Ø-wa
            get-OBL-O1-DES-S3-PRS-DECL
            He wants to get it from me

(1802)   tu-ka-na-sitoh-ta-latʰa-Ø-wa
            get-OBL-O2-WNT-O1-S3-PRS-DECL
            I want to get it from you (lit: It wants me to get it from you)

(1803)   tanu-ʔna-sitoh-ta-latʰa-Ø-wa
           Give-O2-Wɴᴛ-O1-S3-Pʀs-Dᴇᴄʟ
           I want to give it to you *(lit: it wants me to give it to you)*

          Emphasizing what was stated in the beginning of this section, one of the major implications of the manner in which object markers are used in the data is that the Mamaindê grammar makes no distinction between the different types of objects. In terms of verb relationships, nominals are essentially either subjects or non-subjects (apart from such things as locatives, etc, which have no direct relation to the verb.). This economical division of the noun/verb relationship in Mamaindê has already been documented by Eberhard (1993:1), where I used the Relational Grammar terms '1' and 'Non-1' to refer to these two relations.[373] It has also been found to be true for the Latundê language (Telles 2002:225) and apparently for Southern Nambikwara as well (Kroeker 2001:54-55). As such, this manner of fusing certain grammatical categories constitutes a distinctive part of Nambikwara morphology.
          The lumping together of all objects into a single class may suggest something more – it may give us clues as to the way in which the Mamaindê culture views reality. There is a certain economy of categorization, such that the relationship between object and verb in constructions such as 'giving to X' and 'doing something to X' are seen as the same. This is in line with the simplification of the obliques, where such concepts as benefactive, source, goal, etc. are treated identically in the grammar, and instead of employing a number of adpositions, the single morpheme /-ka/ is all that is needed to mark all of these obliques. The idea of dividing nominal/verb relations along the binary subject/non-subject line, instead of using a ternary or greater subject/object/direct object/oblique criteria, means that the focus on the subject in Mamaindê is such that any attention to the divisions between other nominal/verb relations is unimportant.[374] We can only surmise as to the origins of such fusion. It could be that cultures going thru survival mode could have developed a practical way of thinking that focused primarily on the topic at hand, and minimized all other distinctions.

3.4.2.3.3.3   Directional Morpheme

Mamaindê also makes use of a directional morpheme on the verb when the action of the verb is moving in the direction of the speaker. The best gloss in English would be the locative 'here'.

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[373] This terminology was based on the Relation Grammar idea of nuclear terms as '1' (nominative) and '2' (accusative), with '3' being the dative.

[374] The impersonal constructions present interesting cases where the focus on the dummy subject allows the speaker to mask his personal emotions.

(1804)   miha   wa̱-ha-tʰunna-Ø-wa
            rain   come-Dɪʀ.ʜᴇʀᴇ-Fᴜᴛ2-S3-Dᴇᴄʟ
            The rain will be coming this way

(1805)   ja̱ka-nã̃ʔã̃   ih-ha-let-Ø-nãn-wa
            peccary-Pʟ   run-Dɪʀ.ʜᴇʀᴇ-I.Psᴛ-S3-Psᴛ-Dᴇᴄʟ
            Wild peccary *(queixada)* ran thru here

        The directional morpheme is also frequently used in place of the first
person object marker when one wishes to indicate that the speaker is the benefactive
of the verb in question. This is an indirect way of speaking common in the language.

(1806)   tanu-ta-tahĩnwa
            give-O1-Iᴍᴘ
            Give (it) to me!

(1807)   tanu-ha-tahĩnwa
            give-Dɪʀ.ʜᴇʀᴇ-Iᴍᴘ
            Give (it) here!

        The directional, */-ha/,* also has an alternate form */-hi/* when used with the
imperative form */-sĩnwa/.*

(1808)   wi-hi-sĩnwa
            enter-Dɪʀ.ʜᴇʀᴇ-Iᴍᴘ
            Come in here (to me).
            [said when inviting someone in when the speaker is inside and the
            listener is outside]

3.4.2.3.3.4   Endearment Terms

One of the more beautiful traits of the grammar is the ability to express relational
affection by way of verb morphology. Besides the basic set of object person markers
outlined above, there is also a more specialized and intimate set of object markers
available to the Mamaindê speaker. These I refer to as endearment terms, suffixes
used to show a bond of affection between the speaker and the object (direct or
indirect) of the verb. This does not appear to be a case of honorifics, for social status

or respect are not the issue. These morphemes may only be used when the object of affection is human, for they have never been found in any other context. The most common usage of these terms is found at the birth or death of a loved one. They are not used lightly, and outside of such significant occasions, are typically considered to be inappropriate. For this reason they are quite rare, and are now falling out of use (many young people are not aware of their existence). At this point, it is not clear how many of the other Nambikwara languages employ endearment terms.[375]

The two endearment morphemes in Mamaindê:

/-ja̱ʔ/   'endearment term for child (when object of verb is a beloved child)

/-jo̱ʔ/   'endearment term for adult (when object of verb is a beloved adult)

The first morpheme, */-ja̱ʔ/,* is an endearment term referring specifically to children. The use of */-ja̱ʔ/* indicates that the object of the verb is a child that is considered dear to the speaker, another indication that we are not dealing with honorifics here. This endearment term typically functions either as direct object, indirect object, or object of an oblique, depending on the relation of the endeared person to the verb.

(1809)   tanuja̱ʔteʔwa

           tanu-ja̱ʔ-ten-aʔ-Ø-wa

           give-END.CHILD-DES-S1-PRS-DECL

           I will give it to the child (who is dear to me)

(1810)   tãlenkunja̱ʔtʰunnawa

           tãl-enkun-ja̱ʔ-Ø-tʰunna-wa

           CAU-heal-END.CHILD-S3-FUT2-DECL

           He/she will cause the dear child to be healed.

Interestingly, the data shows that this morpheme in rare occasions can also function as subject, pointing to the possibility that this may not be an object marker at all, but an endearment term without any specific reference to noun-verb relations.

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[375] Fiorini (2007:233) does mention, however, a related phenomenon in Southern Nambikwara, where vowel changes in the aspectual suffixes of verbs can indicate the degree of intimacy between the speaker and addressee.

(1811)   jainsi   jainja?tʰa?wa
           jainsi   jain-ja?-Ø-tʰa?-wa
           food   eat-END.CHILD-S3-FUT1-DECL
           They (my precious children) will eat the food.

        The adult endearment term, /-jo?/, is even less common than the
endearment term for children.[376] It has only been found in one text in the data
corpus, and only in a special situation where a hero of the culture, an old man, is
killed and buried in a field. This is the most celebrated of all the Mamaindê myths,
the myth of the sacred flute, and retells a point in their history when the community
was starving for food, and the flute spirit speaks to an old man, telling him he must
die for his people. The old man assumes his sacrificial role and finally convinces his
people to kill him and bury him in the empty field, whereupon his various body parts
turn into numerous crops and become food and sustenance for the people.[377] The
myth contains various references to the death and burial of this cultural hero. In each
of these instances, the verb 'to kill', 'to bury', or 'to leave' is suffixed by the adult
endearment term /-jo?/.

(1812)   ?jãuhna-jo?-tʰoh-ãni   tu-tai-taku
           love-END.ADULT-CN.BUT-FNS   get-go-CN.THEN.SS

           sun-jo?-je?-Ø-ĩnda-wa.
           kill-END.ADULT- EMPH-S3-G.KN-DECL
           Although they loved him, they took him (the dear one) and killed him.

(1813)   ?aita-nu   kakain-tu
           field-NCL.PLACE   middle-FNS

           tanika-na-jo?-je?-Ø-ĩnda-wa.
           bury-COP-END.ADULT-EMP-S3-G.KN-DECL
           They buried him, the dear one, in the middle of the field.

---

[376] This morpheme could easily be mistaken for the reciprocal morpheme /-jo?/, except that
context will normally distinguish the two.
[377] This is a classic 'demas' myth, where a mythical hero or villain dies and from the dead
body new life is born (Eliade, 1959:101).

(1814)   najuhak   nãn-katoʔ   ãun-bih-joʔ-jeʔ-Ø-sihna-wa.
          everyone   cry-Cɴ.ᴛʜᴇɴ.DS   leave-run-Eɴᴅ.ᴀᴅᴜʟᴛ-Eᴍᴘ-S3-Dᴇᴅ-Dᴇᴄʟ
          Everyone cried and ran away, leaving the dear one. (deduced info)

      Once again we see Mamaindê culture and social life implicated in its language, where the relationships that are most important to the speaker are able to be expressed by way of 'relational' morphology encoded on the verb.

3.4.2.3.4   Derivational Suffixes

The derivational affixes which follow have also been labeled 'midfixes' by Kingston, a term which seems apropos as they obligatorily occur sandwiched between the two sets of inflectional morphemes.

3.4.2.3.4.1   Manner

The most productive of the derivational suffixes are those which deal with Manner. The Manner position on the verb can be filled by any of a large number of derivational morphemes. These are listed below. They influence in some way the manner in which the verb is executed, or variations on the actual "doing" of the verb.

Manner Suffixes

Manner	Abbrev	Morphemes	Additional meaning
Continuative	CNT	-ja	
		-ʔai	
		-jaʔna	
Repetitive	RPT	-nũn	repeat
		-kanah	repeat
		-aʔsoʔ	to/for each
		-kinaʔsoʔ	to/for each one
Reciprocal	RCP	-joʔ	
Reflexive	RFL	-ninaʔ	
Directional	DIR	-waun	round
		-wain	straight
		-ha	here
Iterative	IT	-tik	
Habitual	HAB	-jaʔ	
		-wa	
		-ʔai	
		-jau	
Comitative	COM	-nũn	
		-kuh	
		-hũnʔ	
Sequencial	SEQ	-tãn	first, before
		-tanʔ	
Incompletive	INC	-taun	almost (incompleted)
		-waʔna	try
Completive	CMP	-hãn	completed
		-talona	completed

Repetitive (*RPT*)

-nũn 'again'

(1815)   jain-nũn-sitoh-nu-hã
          eat-MAN.AGAIN-WNT-S2-INT
          Do you want to eat again?

-kʰinaʔsoʔ / -aʔsoʔ   'each'

(1816)   tanu-kʰinaʔsoʔ-nisĩnwa
          give-MAN.EACH-IMP
          Give to each one.

          The 'each' morpheme is a special type of repetitive marker, indicating that the verbal action was repeated in relation to the different objects or recipients available.

Reciprical (*RCP*)

-joʔ 'reciprocal'

(1817)   sun-joʔ-let-Ø-nãn-wa
          hit–MAN.RCP-I.PST-S3-PST-DECL
          They hit each other

Reflexive (*RFL*)

-ninaʔ 'reflexive'

(1818)   tais-ninaʔ-nisĩnwa
          tie-MAN.RFL-IMP
          Tie yourself (referring to buckling ones seat-belt)

Directional (*DIR*)

-wain 'straight'

(1819)   ʔai̯-wain-latʰa-Ø-wa
            go-MAN.STRAIGHT-S3-PRS-DCL
            He is going straight

-waun 'around'

(1820)   hain-waun-khit-lhi-latʰa-Ø-wa
            sing-MAN.AROUND-S1.PL-IRR-S3-DECL
            We would sing around (dancing in a circle)

Iterative (*IT*)

-tik 'successive, iterative/to repeat the same action in different places'

(1821)   halo   jau̯-waun-tik-jeʔ-le-a-nãn-wa
            land   live-MAN.AROUND-MAN.IT-EMP-I.PST-S1-PST-DECL
            I lived in successive places all around this land.

        Note that the above form includes both the directional manner suffix */-waun/* 'around' as well as the iterative suffix */-tik/*. In this case, the directional must precede the iterative. An opposite ordering is unacceptable as demonstrated below.

(1822)   halo   jau̯-tik-waun-jeʔ-le-a-nãn-wa*
            land   live-MAN.IT-MAN.AROUND-EMP-I.PST-S1-PST-DECL
            I lived in successive places all around this land.

Habitual (*HAB*)

-wa   'habitually/ constantly/literally: 'come doing'

(1823)   na-wet-tu   taʔnũs-wa-latʰa-Ø-wa
            PS3-child-FNS   cough-MAN.HAB-S3-PRS-DECL
            His child habitually coughs (continues to cough from past to present)

(1824)   sei   wa̱-wa-jeʔ-let-Ø-nãn-wa
          here   come-MAN.HAB-EMP-I.PST-S3-PST-DECL
          He was constantly coming here.

Continuative (CNT)

-jãʔ 'continue'

(1825)   set-jãʔ-let-Ø-nãn-wa
          speak-MAN.CNT-I.PST-S3-PST-DECL
          He/she continued to speak (refers to a specific instance)

(1826)   nũnʔta   ihnaih-jãʔ-tʰahtawa
          tapir   follow-MAN.CNT-IMP.PL.IN
          Let's continue to follow the tapir

Comitative (COM)

-hũnʔ 'with'

(1827)   ja̱u-hũnʔ-ʔna-Ø-tʰunna-wa[378]
          live-MAN.COM-O2-S3-FUT2-DECL
          He will live/be with you

-nũn 'also'

(1828)   ikalaka-nũn-sitoh-nu-hã
          work-MAN.COM-WNT-S2-INT
          Do you also want to work?

---

[378] This is a case where the order of constituents is reversed, with the Manner suffix preceding the Object marker. Such fluidity in morphological ordering is a feature common to the set of Manner suffixes.

Sequencial (*Seq*)

-tãn 'first/before'

(1829) nataika-naʔ-tãn-ten-a-nha-wa
        ask-O2-Man.Seq-Des-S1-Prs/Nvis-Decl
        I intend to ask you first

(1830) nalik-ka-na-tãn-ten-a-hna-wa
        remember-Obl-O2-Man.Seq-Des-S1-Aud-Decl
        I will remember you first

Incompletive (*Inc*)

This set of suffixes is employed when the action of the verb was not fully accomplished.

-taun   'almost'

(1831) ãn-taun-let-Ø-nãn-wa
        shoot-Man.Almost-I.Pst-S3-Pst-Decl
         he almost shot (it)

(1832) wateʔi-tu   leu-taʔ   hikkʰãn-taʔ
        anteater-FNS   approach-Cn.and.SS   stand-Cn.and.SS

        jalakwatun   ʔit-taun-jeʔ-let-Ø-nãn-wa
        howler.monkey   grab-Man.almost-Emp-I.Pst-S3-Pst-Decl
        The anteater approached, stood up, and almost grabbed the howler
        monkey.

-waʔna   'try/experiment'

(1833) kaʔjainʔ-waʔna-ten-aʔ-Ø-wa
        write-Man.try-Des-S1-Prs-Decl
        I want to try writing

Completive (*CMP*)

-hã?/-hãn 'all'

(1834)   jain-hã?-ten-a?-Ø-wa
          eat-MAN.ALL-DES-S1-PRS-DECL
          I will eat it all

(1835)   tu-hãn-so?geuh-latʰa-Ø-wa
          get-MAN.ALL-PRB-S3-PRS-DECL
          He probably got it all

-talona 'finish/complete'

(1836)   jalik   ha?tin   wek-talona-Ø-tʰunna-wa
          necklace   quickly   make-MAN.FINISH-S3-FUT2-DECL
          She will finish the necklace quickly

These last two suffixes can both be used in a single form. In such a case, */-talona/* usually precedes */-hã?/*.

(1837)   jalik-nã?ã   ha?tin   wek-talona-hã?-Ø-tʰunna-wa
          necklace-PL   quickly   make-MAN.FINISH-all-S3-FUT2-DECL
          She will finish all the necklaces quickly

Typically, only one of these manner suffixes will be used on a given verb. At times however, more than one is needed. When this is the case, they will occur adjacent to each other, as we saw above, and in the form below (the stem here is a compound stem).

(1838)   set-tanãun-hũn?-tik-ten-a-nha-wa
          speak-throw-MAN.WITH-MAN.IT-DES-S1-PRS/NVIS-DECL
          I, in various places, intend to throw my speech (invoke the spirit world)
          along with others.

Up to three manner suffixes are possible in a given verb string. More than that is unattested in the data.

(1839)   ʔai-jãʔ-tik-nũn-soʔkeuh-latʰ-Ø-wa
          go-Man.cnt-Man.it-Man.also-Prb-S3-Prs-Decl
          He also probably continued to go (in an iterative fashion.)

(1840)   set-ka-jãʔ-tik-ta-nũn-soʔkeuh-jeʔ-satau-le-n-nãn-wa
          speak-OBL-Man.cnt-Man.it-O1-Man.Com-Prb-Emp-RS-I.Pst-S2-Pst-Decl
          It is reported that you also continually and iteratively spoke (in intermediate past) about me/ to me.

Some variation is apparently allowed in the ordering of the object marker and the manner affixes. While typically the second person object marker precedes all manner affixes, the first person object marker tends to follow after some manner affixes and precede others. This variation can be demonstrated in the last form above where the Object marker occurs between the iterative affix and the comitative affix, and either after or before the completive morpheme /-hãʔ/ (or /-hãn/) in the two examples below, depending on the person of the object.

(1841)   tanu-hãʔ-ta-latʰa-Ø-wa
          give-Man.all-O1-S3-Prs-Decl
          He/she gave me it all

(1842)   tanu-ʔna-hãʔ-sitoh-ta-latʰa-Ø-wa
          give-O2-Man.All-Wnt-O1-S3-Prs-Decl
          I want to give it all to you.

(1843)   tanu-ta-hãʔ-latʰa-Ø-wa*
          give- O1-Man.All-S3-Prs-Decl
          He/she gave me it all

We will see later that variant morpheme orderings (although limited) are also possible between other suffixes in the verbal string. This reminds us of the fact that we are dealing with a polysynthetic language here, where some variation is to be expected (Aikhenvald 2007:6).

3.4.2.3.4.2   Potential

The set of 'potential' morphemes indicate the ability or inability to be able to perform a specific action. These can be used when the speaker is emphasizing that permission has or has not been granted for that particular action, or when the verb is actually considered possible or impossible. This set of morphemes includes the following suffixes:

-la/lan   'can/allowed/possible'

-ʔlan   'cannot/impossible' (a fusion of /-aʔ/ 'negative' and /-lan/ 'can'.)

-sihluʔ/sihluʔna 'cannot/impossible'

-lata/-la   'possibility questioned'

These potentials are not as productive as one might expect, and are used sparingly.

(1844)   ʔai̯-lan-kʰit-latʰ-Ø-wa
            go-POT-S1.PL-S3-PRS-DECL
            We are allowed to go[379]

(1845)   ʔai̯-ʔlan-kʰit-latʰ-Ø-wa
            go-POT.NEG-S1.PL-S3-PRS-DECL
            We are not allowed to go

(1846)   wi-ʔlan-juh-hĩʔ
            enter-POT.NEG-3REF-CN.BECAUSE.DS
            Since he was not allowed to go...

---

[379] The use of the third person subject marker in conjunction with the first person plural will be discussed shortly.

(1847)   ʔa̱i-sihluʔna-le-aʔ-Ø-nãn-wa
           come-Pot-I.Pst-Neg-S3-Pst-Decl
           He didn't allow him to go

(1848)   wa̱-nũn-lhi-ʔlan-Ø-la
           come-Man.Com-Irr-Pot.Neg-S3-Pot.Int
           Would he not be allowed to come with (unspecified person)? / Could he
           not come with?

     In the last example above the irrealis morpheme /-lhi/ is also used. When it
appears, it must precede the potential.
     The potentials are very useful when verbs become nominalized, allowing
the speaker to construct nominals out of verbal ideas which already include a
reference as to whether the action is possible or not.

(1849)   nusa   jain-la-kʰi-tu
           our   eat-Pot-Ncl.Pat-Fns
           that which we can eat

(1850)   nusa   jain-ʔlan-kʰi-tu
           our   eat-Pot.Neg-Ncl.Pat-Fns
           that which we cannot eat

     In the following quote, we find a Mamaindê father, speaking of his
daughter who has come of age, commenting on the lack of potential marriage
candidates. In a matrilocal society, this is a culturally revealing statement, for it
shows the disappointment of not being able to acquire the many benefits of a son-in-
law thru the marriage of his daughter.

(1851)   na-hĩʔ,   ta-wet-tu,   Iracema   na-ta-leʔi-tu,
           Cop-Cn,   Ps1-child-Fns,   Iracema   Cop-Ncl.fem-Pst-Fns

           na-enʔni   tu-la-kʰi
           Ps3-man   get/marry-Pot-Ncl.Pat

           hat-ju-aʔ-hĩʔ,   ja̱u-latʰa-Ø-wa.
           have.none-3Ref-neg-Cn.then.DS   stay-S3-Prs-Decl
           So then, our daughter Iracema, since there is no man that she can marry,
           she just stays here.

3.4.2.3.4.3   3rd Party Referent

The suffix /-*juh*/ is one of the more difficult morphemes in the language to pin down semantically, as its range of meaning is quite extensive. The best understanding at this point is that /-*juh*/ refers to the fact that there is a third party involved who is not an active participant (not any of the nuclear terms) in the verb but whose involvement is important in the mind of the speaker. This could range from an observer of the action, one who commanded the action to be done, one who influenced the action, a beneficiary of the action, one who is aware of the action, etc. This third party may or may not even be present at the time of the verb. It is typically accompanied by the emphatic morpheme /-*jeʔ*/, which will follow it if present. Interestingly, /-*juh*/ is one of the more mobile of all the affixes, moving freely between the manner suffixes and the emphatic.

/-juh/ '3ʳᵈ party referent'

(1852)   set-juh-jeʔ-latʰa-Ø-wa
            speak-3Rᴇꜰ-Eᴍᴘ-S3-Pʀs-Dᴇᴄʟ
            He is speaking (in reference to a third party)

(1853)   wi-ʔ-lan-juh-hĩʔ
            enter-Nᴇɢ-Pᴏᴛ-3Rᴇꜰ-Cɴ.ᴛʜᴇɴ.DS
            since he was not allowed to go (by a third party)

3.4.2.3.4.4   Reported Speech

The reported morpheme /–*satau*/ indicates that the speaker obtained his information from a third party and was not an eye-witness to the action. This is the most common way of reporting information that was passed on by someone else, without divulging the name of the source.

/-satau/ 'reported'

        This morpheme, although non-adjacent to the main evidential system of the language, is nevertheless an integral part of that system.[380] Since it refers to information acquired by the sense of audition, the reported morpheme must co-occur

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[380] The complete evidentiality paradigm is listed under section 3.4.2.3.5.4, 'Tense/Evidentiality'. Note that evidentials and tense are intertwined in Mamaindê.

obligatorily with the set of evidential markers that indicate non-visual information. As such, it provides a double encoding of the information source, making it extra clear that the utterance was not based on a witnessed event, but instead on information acquired through hearing, and specifically through the testimony of another speaker.

The non-visual evidential markers:

/-nha/	non-visual information in the present
/-hĩn/	non-visual information in the past
/-le-hĩn /	non-visual information in intermediate and distant past

The reported markers precede the non-visual evidentials in every case, with the possibility of the intermediate past tense marker occurring between them.

(1854)   nikset-satau-le-Ø-hĩn-wa
          angry-RS-I.PST-S3-PST/NVIS-DECL
          It was said that he was angry.

(1855)   nikset-satau-Ø-nha-wa
          angry-RS-S3-PRS/NVIS-DECL
          It's said that he is angry now.

Direct quotations, where the source of the information is cited, typically do not use the reported morpheme. In such cases, the Mamaindê will repeat the entire quote and then close it by adding the verb 'to say'. When, however, the speaker wishes to emphasize the fact that these are not his own words, he may use the reported morpheme with the appropriate evidential.

(1856)   ………….." na-jeʔ-satau-le-Ø-hĩn-wa
                     say-EMP-RS-I.PST-S3-PST/NVIS-DECL
          ..………….. " he/she said.

Such a pre-occupation with truth is already built into languages with a highly developed evidentiality system, and in Mamaindê it is reinforced with the addition of the reported morpheme. Further examples of the reported morpheme are given in section 3.4.2.3.5.4, dealing with Evidentiality.

3.4.2.3.4.5   Plural Subject

Typically, the notion of number is not in focus in Mamaindê utterances. Singular and plural subjects are equally referenced with the same default subject marking (this was also the case with plural object marking - see section 3.4.2.3.3.2, 'Object markers'). However, whenever the notion of number becomes an issue, the plurality of subjects is marked on the verb by way of the following set of plural suffixes: [381]

Plural subject markers

/-kʰit/	Subject - 1st person plural inclusive
/-tahlek/-tʰahta/ [382]	Subject - 1st person plural exclusive
/-ʔai/ ~ /ʔau/	Subject - 2nd/3rd person plural

These plural suffixes are used sparingly in Mamaindê speech, and function in conjunction with the standard set of person subject markers. For instance, when */-ʔai/* is followed by */-n/* (second person subject marker) it forms the composite */-ʔai-n/* second person plural subject suffix. If it precedes */-ʔna/* (second person object), it forms */-ʔai-ʔna/,* which marks second person plural object (as we have seen previously). In the absence of any overt subject marker, it can either reference a subject or a third person plural object (distinguished by context). Probably a more emic way of thinking of the */-ʔai/* marker is as a non-first person plural.

(1857)   tu-ʔai-n-tʰunna-wa
          get-S2/3.PL-S2-FUT2-DECL
          You (plural) will get.

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[381] The Mamaindê plural system is simpler than others in the language family, as it does not formalize the notion of duality, as seen in Southern Nambikwara (Kroeker, 2001:55-59) and Lakondê (Telles, 2005:274-285).

[382] These two forms are both used for 1st person plural exclusive subjects. A third form, */-tahlik/,* is typically used for 1st person plural objects. Although many speakers make a distinction between the /-tahlek/ and the */-tahlik/* forms, using the former for the 1st person exclusive plural subjects and the latter for the 1st person exclusive plural objects, others do not, using a single form for both functions, or using both forms for a single function. Such variation is presumably the result of the dialectical variations of the different bands which have come together and formed the Mamaindê community, although most speakers will not identify their lect as anything other than "pure" Mamaindê,

(1858)   tu-ʔai-le-n-nãn-wa
           get-S2/3.PL-I.PST-S2-PST-DECL
           You (plural) got.

(1859)   eu-ʔai-ʔna-Ø-tʰaʔ-wa
           see-S2/3.PL-O2-S3-FUT1-DECL
           He/she will (certainly) see you (plural).

(1860)   eu-ʔai-Ø-tʰaʔ-wa
           see-S2/3.PL-S3-FUT1-DECL
           They will (certainly) see (it).

(1861)   eu-ʔai-Ø-tʰaʔ-wa
           see-O2/3.PL-S3-FUT1-DECL
           He/she will certainly see them.[383]

        When the verb root itself is /ʔai/ 'go', the 2nd/3rd person subject plural marker changes to a variant form /-ʔau/ in order to differentiate it from the root and to facilitate comprehension.

(1862)   hajaʔ   set-ta̱ʔ   ʔa̱i-ʔau-tsĩnwa
           enough   speak-CN.AND.SS   go-S2/3.PL-IMP
           Enough speaking – get out of here!

        While the /-ʔai/ plural co-occurs with the expected second or third person subject marker, the other plural markers listed above behave differently. Interestingly, when they mark the first person plural subject, they often co-occur with third person subject referents. The /-kʰit/ first person plural inclusive marker is obligatorily followed by the third person subject marker /-latʰa/ in the present tense, without exception, and unmarked as to subject in all other tenses (which is typically the case of the third person as well). The /-tahlek/-tʰahta/ exclusive forms are less predictable, and are optionally followed either by the third person marker, the first person marker, or by no subject marking at all. Such lack of concordance is disturbing. It is worth noting that the third person subject marker /-latʰa/ has on occasion been used to refer to first person singular subjects as well. There is clearly more to these subject markers than has been proposed up to this point. We will deal

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[383] The difference between these last two is only indicated by context.

more with this issue when we address subject markers, proposing a hypothesis for their seemingly unpredictable behavior in conjunction with the plurals.

Examples of the first person plural subjects and their usage.

(1863)   hain-waun-tik-kʰit-lhi-latʰa-Ø-wa

        sing-MAN.AROUND-MAN.IT-S1.PL.IN-IRR-S3-PRS-DECL

        We (inclusive) would go around from place to place singing

(1864)   nahohntoʔ   jain-kʰit-jeʔ-latʰa-Ø-wa

        much   eat-S1.PL.IN-EMP-S3-PRS-DECL

        We (inclusive) are certainly eating alot

(1865)   teuna-kʰit-jeʔ-let-Ø-nãn-wa

        lost-S1.PL.IN-EMP-I.PST-S3-PST-DECL

        We (inclusive) were certainly lost (in intermediate time)!

(1866)   nahana-hen-nu   hehsatoh-kʰit-Ø-tʰaʔ-wa

        later-NCL.TIME-FUT   hungry-S1.PL.IN-S3-FUT1-DECL

        We (inclusive) will get hungry later.

(1867)   tu-ka-na-hãʔ-tahlek-soʔkeuh-juh-jeʔ-le-a-nãn-wa

        get-OBL-O2-MAN.ALL-S1.PL.EX-PRB-3REF-EMP-I.PST-S1-PST-DECL

        We (exclusive) probably got (it) all from you.

(1868)   teh-a-ta   na-sakẽunʔ-teh-tu   suhna-tahlek-Ø-nãn-wa

        snake-GNT-mother Ps3-urine-road-FNS afraid-S.PL1.EX-S3-PST-DECL

        We (exclusive) were afraid of the anaconda's urine road (the

        rainbow).[384]

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[384] In Mamaindê mythology, the rainbow is caused by the dangerous anaconda spirit, and thus is feared.

(1869)   to̱-soʔki-tu   tu-ta̱ʔ
          die/sick-NCL.HUM-FNS   get-CN.AND.SS

          ʔñĩu-ha-tʰahta-let-Ø-nãn-wa
          return-DIR.HERE-S1.PL.EX-I.PST-S3-PST-DECL
          We (exclusive) got the sick person and returned here.

        Interestingly, such a mismatch of person markers is not without precedent
within the wider language family. The use of the first person plural form in
conjunction with 3ʳᵈ person singular forms can also be seen in Lakondê (Telles,
2005:274-285). In this Northern Nambikwara language, the tone and duration of the
final vowel in the verbal tense marker indicates the person of the singular, while the
plural and dual markers are separate morphemes. The Lakondê system of singular
subjects can be summarized as follows: the first person singular is encoded on the
tense marker by a lengthened vowel and a final high tone, the second person has a
shortened vowel and a final high tone, while the third person is encoded by way of a
shortened vowel and a final low tone. Although not addressed by Telles, it is this
last form of the tense marker, with its shortened vowel and low tone, that
consistently shows up following the separate first person plural marker. This could
be partially explained by considering these third singular forms as the default,
unmarked forms of the tense markers. But that does not explain why such unmarked
forms, typically used with third person singular, should be the forms used with the
first person plural, instead of the expected first person forms.[385] Once again, we are
faced with a seemingly inconsistent plural marking system.
        One thing that should be considered when looking at the Mamaindê plurals
is that the most non-conforming of the plurals are the inclusives, which combine
both first and second person elements. It may be that this intrinsic duality within the
inclusives causes the Mamaindê language, and perhaps the Lakondê language as
well, to view them as neither strictly first nor second person, and therefore prefers
the default third person marker when referencing them.

3.4.2.3.4.6   Probability

The notion of probability is encoded by way of the verbal suffix /-soʔkeuh/, which
implies that the speaker believes that the action of the verb is probable. A functional
English gloss would be, 'I think that …'. It is thus neither certain nor especially
doubtful. If it is followed, however, by the emphatic /-jeʔ/, more certainty is added
to the claim, as in the gloss, 'I think it is certain that….' In conversation, these two
suffixes occur quite regularly together.

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[385] It could also be that because the first plural morpheme already encodes person-hood, a
further person marker is not necessary and so the default, unmarked tense form is used.

(1870)   na-soʔkeuh-latʰa-Ø-wa
           COP-PRB-S3-PRS-DECL
           Probably / Its probably so.

(1871)   ã-nitus-soʔkeuh-let-Ø-nãn-wa
           CAUSE-hurt-PRB-I.PST-S3-PST-DECL
           I think he probably hurt himself

(1872)   wenni-ijah   waʔjona-tʰã   sih-tu
           now-DEM   puberty-NCL.THING   house-FNS

           talona-soʔkeuh-jeʔ-Ø-tʰunna-wa
           finish-PRB-EMP-S3-FUT2-DECL
           The puberty hut will certainly be finished soon – at least that's what I
           think.

(1873)   na-wet-tu   nakah   nakanik-soʔkeuh-jeʔ-latʰa-Ø-wa
           PS3-child-FNS   again   sick-PRB-EMP-S3-PRS-DECL
           I think their child is sick again for sure.

3.4.2.3.4.7   Desiderative

The desiderative is marked on the verb by the suffix /-ten/.

(1874)   ʔiun-ten-aʔ-Ø-wa
           sleep-DES-S1-PRS-DECL
           I intend to sleep

(1875)   ʔai̯-ten-latʰa-Ø-wa
           go-DES-S3-PRS-DECL
           He intends to go.

(1876)   ʔenʔ-kʰanĩn   kanaka-kʰañĩn   wate-hĩʔ,
         moon-NCL.ROUND   one-NCL.ROUND   disappear-CN.THEN.DS

         eu-ʔna-ten-aʔ-Ø-wa
         see-O2-DES-S1-PRS-DECL

         When the moon, one moon, disappears, I intend to see you.[386]

         (I intend to see you a month from now)

      Although this morpheme can behave as a typical desiderative, its usage is broader than simply expressing desires and wants in present time. It has the added implication of future tense, the sense that present intentions will actually take place in the near future. This future perspective of *-ten* typically gives the entire verb a forward-looking orientation, even though the verb per se may be past or present. In current usage, this future aspect has become grammaticalized, and thus it can be used as an alternative future tense marker, without any reference to intention whatsoever. According to Payne (1997:237), such grammaticalization of desiderative type morphemes[387] is quite common in many languages. The form below shows this grammaticalized usage of *-ten*.

(1877)   wa-mãin-tu   to̲-ten-latʰa-Ø-wa
         Ps2-pet-FNS   die-DES-S3-PRS-DECL
         Your pet will die.

      In the example above, *-ten* is clearly not being used in any way to refer to intention or desire. It is simply a grammaticalized usage of the suffix to indicate something which will occur in the imminent future (somewhat like the English construction 'It's wanting to rain'). Interestingly, even in such cases, it is still found only in past or present tense verbs, never co-occurring with either of the two future tense markers of the language.

      Although most commonly found in present tense verb constructions, *-ten* can also occur in a past tense construction with an embedded verb, meaning that the initial verb will occur in a future time in reference to the time of the embedded verb.

(1878)   to̲-ten-kʰoʔna-let-Ø-nãn-wa
         die-DES-E.V.ASSUME-I.PST-S3-PST-DECL
         He thought he was going to die.

---

[386] Like many traditional cultures, the Mamaindê have intricate ways of telling time by the phases of the moon.
[387] Payne was referring to free desiderative verb forms as opposed to affixes, but the same desiderative semantics are at work here in the case of the *-ten* morpheme.

When /-ten/ is followed by the first person subject marker /-aʔ/, in natural speech these two morphemes tend to fuse into a single syllable, /-teʔ/. The fusion of these two morphemes is demonstrated in the examples below, which are identical utterances, except that the first is typical of more careful speech while the second is found in more natural speech.

(1879)   na-kʰijãnʔ   onka-ten-aʔ-Ø-wa
          COP-CN.SAME   do-DES-S1-PRS-DECL
          I intend to do the same (as she).

'

(1880)   na-kʰijãnʔ   onka-teʔ-Ø-wa
          COP-CN.SAME   do-DES/S1-PRS-DECL
          I intend to do the same (as she).

3.4.2.3.4.8   Embedded Verbs

A small set of verb roots are allowed to appear outside the stem and within the derivational system of other verbs. These are verbs which can function as stand-alone verb roots in their own right, but which can also be embedded within another verbal string, adding a second verbal idea to the initial verb, much like auxiliary verbs.[388] They differ from compound or serial verb strings in that they do not behave as part of the stem. Embedded verbs are less 'attached' to the root and can be separated from it by other derivational morphology, something that never occurs with compound verbs. Although both the root verb and its embedded verb may each take derivational affixes, the resulting verbal string will have only one set of inflectional morphology (i.e., subject, tense/evidentiality, mode, and mood markers), which obligatorily occurs at the end. Semantically, the initial verb root appears to be subordinate to the embedded verb, and in this sense, these constructions share some of the properties of complement clauses in other non-poly-synthetic languages.

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[388] These were originally termed 'auxiliary verbs' by Kingston (1976b:52), although not all of the suffixes he considered auxiliaries actually function as independent verbal roots. For this reason many of Kingston's auxiliaries do not fit the description of embedded verbs found in the present analysis.

Embedded verbs

/-kʰoʔna/   'to assume wrongly that…'

/-sitoh/   'to desire/want to…'[389]

/-waʔna/   'to attempt to…'

It is interesting to note that two of the three morphemes used as embedded verbs in Mamaindê correspond roughly to two of the often cited domains of matrix verbs which can take complement clauses in many languages, the cognitive and volitional domains, which are represented by verbs such as 'want' and 'know'.

The embedded verb *-kʰoʔna/* is used when the speaker wants to express the idea that the initial verb in question is actually part of a mistaken assumption. Although I am glossing these as simply 'E.V.ASSUME', the central idea here is that the assumption is incorrect.

(1881)   ta-weit-ã   to̲-ki-ta-kʰoʔna-le-tʰoh,
          Ps1-child-FNS   die-OBL-O1-E.V.ASSUME-I.PST-CN.BUT

          wenni-ijah   enkũn-jeʔ-latʰa-Ø-wa
          now-DEM   heal-EMP-S3-PRS-DECL
          I thought my child had died (to me), but right now she is getting better.

(1882)   mamãinsi-tu   ta-ten-khoʔna-ta̲ʔ
          Mamaindê-FNS   fall-DES-E.V.ASSUME-CN.AND.SS

          kʰawais-jeʔ-let-Ø-nãn-wa
          shout-EMP-I.PST-S3-PST-DECL
          The Mamaindê thought they were going to fall (off) and shouted out.
          (said after the tire blew on the flat-bed truck they were riding on.)

The examples above show that the embedded verb *-kʰoʔna/* is not part of the stem, but instead occurs after derivational morphology, in these cases after the oblique marker, object marker and the desiderative morpheme *-ten/.* However, below we see that it differs from other verb suffixes in that it can also be used as a root in its own right.

---

[389] In its stand alone verbal root form, *-sitoh/* is realized as *toh/,* as in *toh-ta-latha-wa/* 'it is wanting to me'.

(1883)   nato?-sa̱   kʰo?na-nu-we-hã
         what-NCL.LIQUID   assume-S2-PST-INT
         What (speech) were you assuming?

The embedded verb */-sitoh/* is extremely common, particularly in the speech of the younger generation. It can be used to modify any verbal action for which the subject has a strong desire or want, often taking the place of the desiderative.

(1884)   kanahata   kajauka-tʰĩn
         tomorrow   white man-NCL.DWELLING

         eu-sitoh-ta-latʰa-Ø-wa
         see-E.V.WANT-O1-S3-PRS-DECL
         I want to see the town tomorrow.

(1885)   janãn-ã-wi̱-tu   nũsa-wi̱   ta-hawas-juh-hĩ?
         jaguar-GNT-tooth-FNS   Ps1.PL-tooth   CAU-put.in-3REF-CN.THEN.DS

         mamãinsã   nũn?-nã-sin-tu
         Mamaindê   animal-GNT-meat-FNS

         wi̱-sitoh-wa-latʰa-Ø-wa
         eat.meat-E.V.WANT-HAB-S3-PRS-DECL
         Since the jaguar has put his tooth in our teeth, the Mamaindê habitually want to eat animal meat.[390]

(1886)   nato?-sa̱   set-sitoh-nu-hã
         what-NCL.LIQUID   speak-E.V.WANT-S2-INT
         What do you want to say?

(1887)   ta-?e̱h-tu   tu-ka-na-sitoh-ta-latʰa-Ø-wa
         Ps1-axe-FNS   get-OBL-O2-E.V.WANT-O1-S3-PRS-DECL
         I want to get my axe (back) from you
         (It is wanting to me to get my axe (back) from you)

---

[390] The tooth of the jaguar spirit is one of several sacred 'objects' which all Mamaindê are said to possess within their bodies. It is this sacred jaguar tooth which they believe is responsible for the hunger for meat.

This last example not only demonstrates that the embedded verb may occur after other derivational suffixes, but it also shows that it can take its own object marker which is separate from the object of the main verb. The only examples of this in the data, however, are when the embedded verb takes an impersonal subject, as in the case above, where the first person object is being used to express, in an impersonal way, the semantic subject of the verb. The third person marker here simply reflects a dummy subject.

Finally, some examples of the embedded verb /-waʔna/, 'to attempt/try'.[391]

(1888)   hain-waʔna-ten-aʔ-wa
           sing-E.V.ATTEMPT-DES-S1-DECL
           I will attempt to sing

(1889)   aikʰawekʰi-tu   ãn-waʔna-tʰoh
           bird-FNS   shoot-E.V.ATTEMPT-CN.BUT

           aun-let-Ø-nãnwa
           escape-I.PST-S3-PST-DECL
           He attempted to shoot the bird, but it escaped.

3.4.2.3.4.9   Emphatic

A very common verbal suffix is the 'emphatic' marker, used by the speaker to emphasize the utterance in question. Such emphasis is also accompanied by greater intensity and a higher tone on the emphatic marker. This marker is also used to highlight the truth of the statement.

Emphatic markers

/-jeʔ/   emphatic marker

/-loʔ/   emphatic marker[392]

(1890)   kanahaleʔi-tu   li-jeʔ-let-Ø-nãn-wa
           yesterday-FNS   cold-EMP-I.PST-S3-PST-DECL
           Yesterday it was really cold.

---

[391] When functioning as an independent verb root, /waʔna/ may also mean 'to feel' or 'to internally process'.

[392] These two forms appear to be dialectical variants of the same morpheme, each used by descendents of different bands within the Mamaindê village.

(1891)   samãnʔ-tu   kajauhna-loʔ-latʰa-Ø-wa
         leaf.cutter.ant-FNS   delicious-EMP-S3-PRS-DECL
         The leaf-cutter ants are really delicious.[393]

(1892)   kamis-hen-leʔi-tu   nahohntoʔ
         dry.season-NCL.TIME-PST-FNS   much

         nakʰanis-jeʔ-le-a-nãn-wa
         sick-EMP-I.PST-S1-PST-DECL
         I was extremely sick last dry season.

(1893)   wanũn-jeʔ-latʰa-Ø-wa
         good-EMP-S3-PRS-DECL
         That's very good.

        The emphatic is also used to indicate agreement in conversation. When
speaker A makes a statement that speaker B wants to agree with, he will invariably
use the emphatic marker to show this agreement.

Speaker A

(1894)   wennia   lãn-latʰa-Ø-wa
         now   hot-S3-PRS-DECL
         It's hot right now.

Speaker B

(1895)   hajo.   lãn-jeʔ-latʰa-Ø-wa
         INJ.yes   hot-EMP-S3-PRS-DECL
         Right. Really hot.

---

[393] The queen ants of leaf-cutter colonies are considered delicacies among all Nambikwara
groups, and among many other Amazonian groups as well.

3.4.2.3.4.10 Irrealis

The attitude of Mamaindê speakers towards the reality of a situation may also be encoded in the verb. Although verbs are unmarked for realis, irrealis is encoded by way of the irrealis marker */-lhi/*. This marker is the last of the many derivational affixes, and occurs between the Emphatic marker and the Tense Modifier. It could also be termed a conditional marker.

/-lhi/ Irrealis marker

(1896)   ikate-lhi-nnaʔ-Ø-wa
           like-IRR-S2-PRS-DECL
           You would like it.

(1897)   hahka-lhi-latʰa-Ø-wa
           be.same-IRR-S3-PRS-DECL
           It would be the same.

(1898)   na-ʔñĩu-tʰa   wanũn-lhi-latʰa-Ø-wa
           Ps3-return-NCL.THING   good-IRR-S3-PRS-DECL
           His return would be a good thing.

(1899)   nusa-walekan-tu   nakas-khit-jeʔ-lhi-latʰa-Ø-wa
           Ps1.PL-chief-FNS   listen-S.PL1-EMP-IRR-S3-PRS-DECL
           We would certainly listen to our chief.

        Since irrealis speaks of the unfulfilled aspect of a verb, it is often found in conjunction with the conditional connective 'if'. When the conditional connective is employed at the end of a subordinate clause, the presence of the */-lhi/* is expected on the verb of the following main clause, highlighting the fact that the truth conditions of the main verb are dependent on the fulfillment of the condition set out in the subordinate clause.

(1900)   hain-nu-satoʔni   hain-nũn-lhi-aʔ-Ø-wa
           sing-S2-CN.CND   sing-COM-IRR-S1-PRS-DECL
           If you sing, I would sing with (you).

(1901)   huk   wes-Ø-satoʔni   joha-lhi-aʔ-Ø-wa
          gun   fix-S3-CN.CND   pay-IRR-S1-PRS-DECL
          If he fixes the gun, I would pay.

Although this morpheme occurs commonly on present tense verbs, implied is the idea that the irrealis situation has not yet happened, but if the conditions are met, it will occur in the future. Interestingly, it is seldom found on future tense verbs. Used in past tense, the irrealis marker serves to describe an event which would have happened had things transpired differently.

(1902)   eu-ʔna-na-satoʔni   tanu-ʔna-lhi-le-a-nãn-wa
          see-O2-S1-CN.CND   give-O2-IRR-I.PST-S1-PST-DECL
          If I had seen you, I would have given (it) to you.

(1903)   nawih-Ø-nu-satoʔni   laka-jeʔ-lhi-let-Ø-nãn-wa
          tell-O3-S2-CN.CND   know-EMP-IRR-I.PST-S3-PST-DECL
          If you had told him, he would have known

3.4.2.3.5   Inflectional Suffixes Set B

These last morphological categories are those which ground the utterance in time and participants, giving it a broader context. These inflectionals are also the obligatory categories found on every main verb (except for the negative, which is somewhat of a misfit in this group).

3.4.2.3.5.1   Tense Modifier

Mamaindê employs two different suffix slots on the verb to indicate time. The first of these slots (from left to right) is reserved for what I will label here the tense modifier. The second slot indicating time is the general tense marker of the language, which will be described shortly. Although they are not found strictly adjacent to each other within the verb, being separated by the person marker, both of these temporal suffixes are part of the tense system of the language, the first being a modifier of the second. The tense modifier, /-let/, obligatorily co-occurs with the general tense marker /-nãn/, 'non-distant past', narrowing down the scope of the non-distant past to an intermediate past time frame. For this reason, it is glossed as 'I.Pst'. In Mamaindê non-distant past time extends from past events of today, to the

beginnings of distant time.[394] The requirement that the intermediate morpheme must co-occur with the non-distant past marker suggests that it has an additive or modifying function with the semantic content of 'further removed', thus limiting the boundaries of 'non-distant' past time to the realm of 'intermediate past'. This morpheme, then, effectively subdivides non-distant past time into intermediate and recent past. When the non-distant marker /-nãn/ occurs with the tense modifier /-let/, it signifies intermediate past. When the non-distant marker appears alone, without the tense modifier, recent past is assumed.

Tense Modifier (only in declaratives)

/-let/ ~ /-le/ [395] 'further removed' = intermediate past

Interaction between Mamaindê past tenses and the Tense Modifier /-let/

(showing only the visual evidential past forms)

Tense Modifier	+ Tense Marker	= Time frame being signified
/-Ø/	/-nãn/ 'non-distant/VIS'	/-Ø-nãn/ recent past, same day
/-let/ 'further removed'		/-let-nàn/ intermediate past, yesterday to several decades ago
N/A	/-hĩnʔ/ 'distant/VIS'	/-hĩnʔ/ distant past, very distant past (in mind of speaker)

This table shows the two major divisions in past time found in the language, that of distant and non-distant past. The non-distant past may be further sub-divided into intermediate past and a recent past, according to the use or non-use of the tense modifier /-let/.

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[394] Typically many decades ago or more, but the boundary between distant and non-distant is relative to the temporal frame of other verbs in the speech context, as well as the speakers personal opinion as to the remoteness of the event.
[395] The /-let/ form is used with third person subjects, while /-le/ is used with 1st and 2nd person subjects.

The time period being referred to in intermediate past is quite relative in Mamaindê, extending anytime from yesterday to decades ago. The boundary between recent past and intermediate past, however, is quite rigid. The past events of today are the only ones that can be considered recent past, while yesterday is the beginning of intermediate past time. The boundary between intermediate past and distant past, however, is much more subjective, and the speaker may choose to use one over the other depending on the emphasis he wishes to place on how distant the particular event was in relation to other events The intermediate past is never used, however, for past events within the same day, a function reserved for the recent past, nor for events in mythological time, which take a different type of marking altogether (see Tense and Evidentiality).

(1904)   nahana-leʔi-tu   ta-let-Ø-nãn-wa
           long.time-PST-FNS   be.born-I.PST-S3-PST-DECL
           He/she was born long time ago (in intermediate past time)

(1905)   kanaha-leʔi-tu   talona-le-a-nãn-wa
           night-PST-FNS   finish-I.PST-S1-PST-DECL
           I finished yesterday.

(1906)   jalakwatun-tu   ãn-let-Ø-nãn-wa
           howler.monkey-FNS   shoot-I.PST-S3-PST-DECL
           He shot a howler monkey (in intermediate past time).

Although not indicated in the above table for the sake of clarity, evidentiality is also being marked by the tense system. All the tense forms in the table are from the visual evidential paradigm. Other paradigms also exist, and the tense modifier /-let/ may be employed with any of the evidentials which also mark non-distant past, always bringing with it the more specific idea of intermediate past. See section 3.4.2.3.5.4 on Tense/Evidentials for a complete chart of all tense/evidential marking.

The crucial thing to note about the *-let* morpheme is that it cannot perform its function alone. It works obligatorily in conjunction with the non-distant past tense marker *-nãn,* but occurs non-adjacent to it (being separated by the subject marker). In this sense these two past tense morphemes could be termed 'extended exponents' – both referring to a single grammatical property that receives more than one marking. In this case, one is simply more general and the other more specific.

The intermediate past tense modifier for interrogatives is a variation of the above, and appears alone before the subject marker, without the additional general tense marking.

Tense Modifier (in interrogatives)

/-wale/   'intermediate past'

(1907)   naniʔ-hena   wanka-wale-nna-hã
          what-time   return-I.Pꜱᴛ-S2-Iɴᴛ
          What time did you return (in intermediate time)?

3.4.2.3.5.2   Subject Markers

The morphology used to mark subjects in Mamaindê is the following:

Subject markers

/-a/ ~ /-aʔ/ ~/-naʔ/   1ˢᵗ person
/-n/ ~/-nuʔ/ ~/-nnaʔ/ ~/-nanuʔ/   2ⁿᵈ person
/-Ø/ ~ /-latʰa/³⁹⁶   3ʳᵈ person

As already discussed in section 3.4.2.3.4.5, 'Plurals', all subject markers can be used for either singular or plural, only requiring the use of the additional set of plural markers when plurality is in focus.
        There is considerable allomorphy in the subject markers. The choice of the correct marker first of all depends on the tense of the verb. If the verb is any tense other than present, the reduced forms listed above will be used, */-a/* for first person, */-n/* for second person, and */-Ø/* for third person.

(1908)   ja̰u-a-nãn-wa
          be/stay-S1-Pꜱᴛ-Dᴇᴄʟ
          I was here (in recent past time)

---

³⁹⁶ The phonetic form of the 3ʳᵈ person present tense subject always reduces to /-lat/, unless it occurs in deliberate speech, in which case the full */-latʰa/* form may be found.

(1909) ja̰u-n-nãn-wa
        be/stay-S2-PST-DECL
        You were here (in recent past time)

(1910) ja̰u-Ø-nãn-wa
        be/stay-S3-PST-DECL
        He was here (in recent past time)

   In present tense, the choice of the first and second person forms depends mostly on the weight of the previous syllable, or more specifically, whether the previous syllable is stressed. When the previous syllable has a coda and receives stress, the first person will employ the /-aʔ/ form, while the second person will be realized with the variant /-nnaʔ/.[397] If the previous syllable lacks stress, the first person takes the /-naʔ/ form and the second person the /-nuʔ/ form.[398] This last /-nuʔ/ form is a truncated version of the fuller /-nanuʔ/ second person form which may also appear after light unstressed syllables. The fuller /-nanuʔ/ form, however, is seldom heard, the speakers preferring the more economical second person allomorph /-nuʔ/.

	1st person	2nd person

Subject markers after stressed syllable

(1911) /ˈseit/ 'speak'   ˈseit-aʔ-wa   ˈseit-nnaʔ-wa[399]

Subject markers after unstressed syllable

(1912) /ˈsuhna/ 'afraid'   ˈsuhna-naʔ-wa   ˈsuhna-nuʔ-wa

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[397] Whenever two nasal consonants are adjacent, the first will always be realized as a denasalized stop, either [ᵇm], [ᵈn], or [ᵍŋ] depending on the features of the previous vowel. See 'Oralization of Nasal Codas', section 2.5.2.7.

[398] Although generally useful, these generalizations do not always apply. For instance, take the present tense forms with the conditional suffix /-lhi/. Although /-lhi/ is a light syllable and never stressed, the 1st person subject marker following it is invariably the /-aʔ/ form, never the /-naʔ/ variant.

[399] This root loses its final consonant, [t], before the affixation of the 2nd person, becoming 'sei-nnaʔ-wa'. Then due to the denasalized stop rule, the final output is [sei-ᵍnnaʔ-wa].

As already laid out in section 2.3 on stress, if a root has no heavy syllables, the last vowel of the root will be stressed and will then undergo compensatory lengthening, being syllabified as a coda. Thus, when forms with lengthened vowels are followed by the first or second person subject markers, they will employ the forms which follow stressed syllables. Here is an example with the verb /wa̱/ 'come'.

Some subject markers after lengthened syllable:

	1st person	2nd person
(1913) root /wa/ → /ˈwaː/ →	ˈwa̱ː-aʔ-wa	ˈwa̱ː-nnaʔ-wa

The third person subject marker has less variant forms than first and second person. The /-latʰa/ form is obligatory in all present tense positive constructions, while the unmarked form appears in all other tenses.

Some examples follow of each of the subject markers in present tense, using the verbs /ja̱u/ 'to be/stay (in a vertical position)' [400], and /onka/ 'to do'.

(1914)   ˈja̱uː-aʔ-Ø-wa
           be/stay-S1-PRS-DECL
           I am here

(1915)   ˈonka-naʔ-Ø-wa
           do-S1-PRS-DECL
           I am doing (something)

(1916)   ˈja̱uː-nnaʔ-Ø-wa
           be/stay-S2-PRS-DECL
           You are here

(1917)   ˈonka-nuʔ-Ø-wa
           do-S2-PRS-DECL
           You are doing (something)

---

[400] This verb implies that the subject is in a vertical position, either standing or sitting. Its counterpart, /ta̱/ 'to lie down' is used when referring to something that is in a horizontal position. These are the two verbs most commonly used in greetings and their responses. When the Mamaindê approach someone's house during the day, they will yell out /ja̱u-n-hã/ 'are you there (vertically)?'. But if they approach at night, the greeting will be /ta̱-n-hã/ 'are you there (horizontally)?'.

(1918)   ˈja̠uː-latʰa-Ø-wa   →   [ˈja̠uːlatʰwa]
          be/stay-S3-PRS-DECL
          He is here

(1919)   ˈonka-latʰa-Ø-wa   →   [ˈoᵍŋgalatʰwa]⁴⁰¹
          do-S3-PRS-DECL
          He is doing (something)

3.4.2.3.5.2.1   The /-latʰa/ Morpheme

The third person subject construction deserves closer consideration, as it stands apart from the other subject markers in numerous and even disturbing ways. While there is a clear phonetic connection between all the variants of the first person subject, and a similar connection between the variants of the second person forms, the third person shows no such connection between its allomorphs, alternating between /-latʰa/ and the unmarked form (parsed as /-Ø/).⁴⁰² This indicates that while there is a consistent way of marking of first and second person across the language, (by use of their variant but related forms) there is no such consistency in third person. Two completely distinct forms are used.

      The third person also differs from the other person markers in that it appears to be more general. Although consistently marking all third person subjects in present positive constructions throughout the language, under certain conditions it can be used for first person subjects as well. We have already seen in our discussion of plurals how the third person /-latʰa/ co-occurs with the first person plural marker in present tense, creating a first person plural subject.

(1920)   ikalaka-latʰa-Ø-wa
          be/stay-S3-PRS-DECL
          He is working

(1921)   ikalaka-kʰit-latʰa-Ø-wa
          be/stay-S1.PL-S3-PRS-DECL
          We are working

---

⁴⁰¹ Note the reduction of /latʰa/ to /-lat/ whenever it is found in natural non-deliberate speech.
⁴⁰² In all tenses other than present, it seems more insightful, and certainly less abstract, to talk about the 3ʳᵈ person as an unmarked form, or simply being indicated by the absence of a marker, than it does to talk about null morphemes. But due to the limitations of glossing, we will continue to gloss the 3ʳᵈ person as /-Ø/ wherever the overt marker is absent.

The third person /-latʰa / form may even be used as an alternative way of making a statement in the first person that is visibly obvious, such as 'Here I am'.[403]

(1922)   tại   jạu-latʰa-Ø-wa
            I   be/stay-S3-PRS-DECL
            Here I am.

It becomes clear that in the last two examples, both in first person, /-latʰa/ cannot be functioning as a third person subject. The odd distribution of this morpheme, and its uniqueness when compared to the other person markers, calls into question whether at times the notion of person is even in focus at all.

Two alternatives present themselves. The first is the possibility that /-latʰa/ simply marks the idea of 'generic' or default personhood, which is typically understood as third person in most utterances, but can be used to express other persons when that usage is obvious either by way of additional morphology, such as that used in the first person plural constructions, or by way of the speech context, as in the "Here I am" example.

A second alternative is more convincing. While describing the usage of the subject markers, Kingston (1991b:8,79) mentions that this full set of 'verb forms' (which he does not define but appears to refer to the complete set of subject markers laid out above) has a dual function. Not only do they mark the subjects of verbs, but they are also used to convey visual verification within what he called the 'verification' system of the language, or, to use a more accepted term, the evidential system. His statement is a bit misleading, since not all of the person markers have this function. But I do believe that evidentiality, which we will discuss shortly, is the clue to understanding the strange behavior of the /-latʰa/ morpheme.

Although Kingston considered the full set of subject markers as being part of the evidential system, it is clear that the majority of those markers do nothing more than mark personhood. When we discuss evidentiality, we will see that most subject markers (or some variant of them) co-occur with the whole of the evidential system, consistently marking subject throughout, and nothing more. They are thus present, but not part of the evidential system. However, the form /-latʰa/ is unique. It does not co-occur with any of the other evidentials. It does not consistently mark person. Instead, it occurs in the place of other evidentials. These facts lead me to hypothesize that this morpheme was originally not a person marker at all, but the basic marker of visual information within the evidential system. Since then, it has become grammaticalized as a portmanteau, now marking the third person subject along with the idea of visual information.

The current fusion of third person with the visual evidential is not hard to understand, as we would expect visual evidentials to be much more useful and

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[403] Although possible, such forms are quite rare. They are also quite different from the impersonal construction, which employs the 1st person object marker to mark 1st person subject. See section 3.4.2.1.3 on impersonal verbs.

productive in third person. While it would be natural for a speaker to convey that he actually saw 'a third party do thus and so', it would be less natural or certainly less common for him to say that he saw himself or his listener do thus and so. This natural association of third person with the visual evidential could have easily led to the fusion of these two categories and the grammaticalization of */-latʰa/*.

Such grammaticalization of evidentials into markers of personhood is not uncommon, particularly in cases where languages are in the process of language shift. In Wintu, an endangered language of North America (Aikhenvald, 2004:301), diachronic data shows a similar change where a visual evidential evolved into a person marker, presumably due to the influence of English.

Synchronically, I believe */-latʰa/* is best treated as a portmanteau, a morpheme which is now clearly part of the system which marks person on the verb, but which may also still be used to express visual evidence for an utterance. This continuing function as an evidential helps us to understand the presence of */-latʰa/* in the 'obvious' first person forms. I repeat the previous example here for convenience sake.

(1923)   ṯa̱i   ja̱u-latʰa-Ø-wa
           I   be/stay-S3-PRS-DECL
           Here I am.

By understanding the history of this morpheme, we can see that */-latʰa/* is functioning in this case not as a person marker but as an evidential,[404] indicating that the speaker is an eyewitness to the truth of the statement, further emphasizing the obviousness of the remark - "Here I am, I can see myself, I'm obviously here".

This leaves unexplained the most problematic data, the first person plural forms, both inclusive and exclusive, which consistently co-occur with the */-latʰa/* morpheme in present tense, as well as with third person forms in all other tenses. Evidentiality does not help in these cases, but the link between */-latʰa/* and present tense is insightful.

If it was originally part of the evidential system, */-latʰa/* was presumably used to mark tense as well, since all of the current evidentials have the dual function of marking tense and information source (see section 3.4.2.3.5.4 on Evidentiality for supporting data). If this dual nature was originally true of */-latʰa/* as well, it would most likely have marked visual information and present tense, for that is the only tense in which it occurs today. Third person would then have presumably been unmarked in all tenses, which is currently the case in all but the present tense. The possibility that third person was originally unmarked in all tenses would have then allowed */-latʰa/* to easily take over the domain of third person without the loss of any

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[404] Although */-latʰa/* is functioning as an evidential here, it is glossed as a person marker for the sake of consistency.

overt morphology.[405] This little bit of diachronic surmising sheds some possible light on why */-latʰa/* currently marks third person only in present tense – the morpheme may have historically already had a link to the present.

      The idea that */-latʰa/* may have lost an original association to present tense does not preclude the possibility that in certain contexts, the notion of present tense may still be part of the semantics of this morpheme, at least in some fossilized form. I believe this is what has occurred with the first person plurals, which use the */-latʰa/* not as a third person marker nor as an evidential, but simply as a vestige of a previous present tense that has become fossilized in these forms.

(1924)   ʔjaih-kʰit-latʰa-Ø-wa
            sad-S1.PL.IN-S3-PRS-DECL
            We (inclusive) are sad.

(1925)   hehsatoh-tʰahta-latʰa-Ø-wa
            hungry-S1.PL.EX-S3-PRS-DECL
            We (exclusive) are hungry.

      After */-latʰa/* became grammaticalized as a third person marker, this association of the first person plural with third person */-latʰa/* became generalized into an association with all the other third person forms of the verb.

      To sum up this section on person subject markers, what we now have in the language is a complete set of person markers, including the unmarked case for third person, plus one grammaticalized evidential, */-latʰa/,* that has become 'fossilized' as a third person subject marker in present tense.

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[405] This re-constructed scenario of some previous state of the Mamaindê language, which includes the marking of present tense and lack of marking of all 3rd person subjects, generally finds support in the wider language family. In Southern Nambikwara, according to Kroeker (2001:57, 61-65), present tense is always marked overtly (as part of the evidentiality system), and the 3rd person subject is never marked. Sabanê (Antunes, 2004:144) does not mark any subjects on the verb while present tense is always accompanied by overt morphology. The Latundê/Lakondê group (Telles, 2002:274,293) is the minimalist in this regard, employing no marking whatsoever for either 3rd person subject or for present tense. Language internal support for the position that Mamaindê originally lacked any marking of 3rd person subject can also be found in the present tense negative construction, which although present tense, never uses an overt 3rd person marker (see section 3.4.2.3.5.3, 'Negation'). The lack of */-latha/* in these present tense negatives is insightful.

3.4.2.3.5.3   Negation

Being a tone language, all morphemes in the language consist of both a segmental and a prosodic element. The negative, however, sets itself apart from all other verbal morphology in that the prosodic element is the major constituent. Evidence of this will be seen shortly. The negative construction is created by affixing a composite negative morpheme immediately after the subject marker of the verb.[406] The two elements that form this composite negative morpheme are listed below:

segmental level:

/-naʔ/ ~ /-aʔ/ ~ /-ʔ/   'negative'

tonal level:

/L/   'negative'

The abrupt low tone,[407] however, is the more characteristic of the two elements of the negative, as it may at times appear alone, while the segmental affix will never appear without the addition of the low tone. Nevertheless, it is possible and even common for both of these negative elements to be present, as a sort of composite morpheme, in a given negative construction. When they are both present, the mora(s) of the segmental morpheme is pre-associated to the low tone of the tonal morpheme, resulting in a negative marker with an abrupt low tone.[408]

Positive

          LH-L L   -H

(1926)   jau̯-latʰa-Ø-wa
          to.stay-S3-PRS-DECL
          He/she is here

---

[406] Negatives may also require other morphology within the verb to change, such as tense/evidential markers. When the third person general knowledge evidential occurs in the negative, it obligatorily changes from the */-nĩnta/* form to */-nãnta/.* See section 3.4.2.3.5.4, 'Tense/Evidentiality'.

[407] The low tone of the negative is noticeably of lower frequency than other low tones around it. I don't believe this is a reason to posit a 3rd level of tone in the language for this could be treated as a simple phonetic feature to enhance the contrast of this grammatical tone.

[408] Although vowel length is not contrastive but added by rule, I am including it here to better show the details of tone associations.

Negative

> HL   **-L**   -H

(1927)   jạu-Ø-**aʔ-**Ø-wa
          to.stay-S3-NEG-PRS-DECL
          He/she is not here

Positive

> L H   -H   -H

(1928)   nakas-nnaʔ-Ø-wa[409]
          hear-S2-PRS-DECL
          You understand/hear (it)

Negative

> L H   -H **-L**   -H

(1929)   nakas-nna-**naʔ-**Ø-wa
          hear-S2-NEG-PRS-DECL
          You don't understand/hear

Positive

> L H -H   -H

(1930)   nakas-aʔ-Ø-wa
          hear-S1-PRS-DECL
          I understand/hear

---

[409] In these forms with the verb */nakas/* 'hear' followed by a suffix with an initial /n/, the final /s/ of the root is deleted in speech.

Negative

          L HL   **-L**   -H

(1931)   nakas-n-**naʔ-**Ø-wa
               hear-S1-Neg-Prs-Decl
               I don't understand/hear

Positive

          HL-L L   -H

(1932)   set-latʰa-Ø-wa
               speak-S3-Prs-Decl
               He/she is speaking

Negative

          HL   **-L**   -H

(1933)   set-Ø-**aʔ-**Ø-wa
               speak-S3-Neg-Prs-Decl
               He/she is not speaking

Positive

          HL-H- L L   -H

(1934)   tuː-ten-latʰa-Ø-wa
               get-Des-S3-Prs-Decl
               He/she will get (some)

Negative

       HL-HL   **-L**   -H

(1935)   tuː-ten-Ø-**aʔ**-Ø-wa[410]
        get-DES-S3-NEG-PRS-DECL
        He/she will not get any.

      Three things should be noticeable from the data above. The first is that in the negative construction some of the subject markers require the use of reduced forms. The third person subject marker changes in the negative construction from the */-latʰa/* morpheme to an unmarked subject, and the first person is marked only by */-n/*.[411] A second feature of the negative is that there is a similarity between the first person subject */-aʔ/*, and the negative morpheme */-aʔ/*, the only difference being that the former carries a high tone, while the latter is pre-associated to a L tone.

      The third and most striking feature of the negative construction is not just its low tone, but the fact that this low tone often causes tone sandhi in the tonal environment in which it is inserted, demonstrating a tendency to spread its low tone to a neighboring mora. When the negative morpheme includes any segmental material at all, the moras (nucleus and coda) of the segmental negative are pre-associated to the L tone. This L tone will then attempt to spread regressively, docking on the nearest mora to the left, resulting in a falling tone on the preceding syllable. Such spreading is limited, however, to contexts where the preceding syllable is bimoraic and carries a H tone that is adjacent to the L of the negative.

    NEGATIVE L SPREAD RULE

      H   L

            /\

    .μμ.   μ
           |
      negative
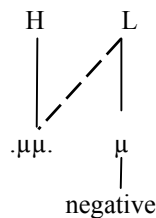
      While a similar discussion of this phenomenon is found in the tone section of this paper, section 2.4, I will expand on it here and give a number of examples to demonstrate how the negative morpheme affects some of the more typical environments it may find itself in.

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[410] These last two forms of the verb /tu/, 'get', will then suffer tone plateauing due to the NoTrough Rule, changing the HL on the root to a level H. See section 2.4 on 'Tone'.
[411] This gives support to the hypothesis that the */-latʰa/* affix was originally not a person marker at all. More of that in section 3.4.2.3.5.2 on subject markers.
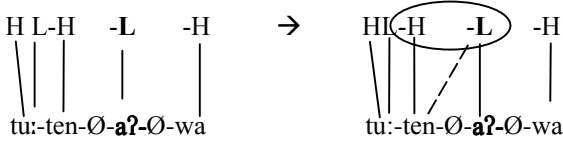
Here the L of the negative spreads to the H tone on its left just as the rule would predict, creating the characteristic falling tone that often precedes the negative. (This falling tone is encircled in the examples below).

Positive

HL-H- L L- H

(1936)   tu:-ten-latʰa-Ø-wa[412]
get-DES-S3-PRS-DECL
He/she will get (some)

Negative

H L-H   **-L**   -H   →   HL-H   **-L**   -H

(1937)   tu:-ten-Ø-**aʔ**-Ø-wa   tu:-ten-Ø-**aʔ**-Ø-wa
get-DES-S3-NEG-PRS-DECL
He/she will not get any

In other situations, such as in the form */set-Ø-aʔ-Ø-wa/* 'he didn't speak', the tone preceding the negative is already L, and the Negative L Spreading Rule does not apply. The OCP will then simplify the LL tonal sequence to a single L, and the L will be shared by both syllables.

Negative

HL   **-L**   -H →   H   L   H

(1938)   set-Ø-**aʔ**-Ø-wa   set-Ø-**aʔ**-Ø-wa
speak-S3-NEG-PRS-DECL
He/she is not speaking

---

[412] This form of the /tu/ verb (and the subsequent example as well) would then undergo plateauing according to constraints spelled out in section 2.4 on tone.

A similar situation is found in the form below. Here the negative morpheme consists simply of the glottal with a L tone, which is then resyllabified as part of the complex coda of the first syllable. Once again, the rule does not apply, and the OCP again joins the two L tones into one.

HLL L H   H
│││ │ │ \   │

(1939)   tuː-n-ʔ-nãn-wa
          get-S2-NEG-PST-DECL
          You did not get (any)
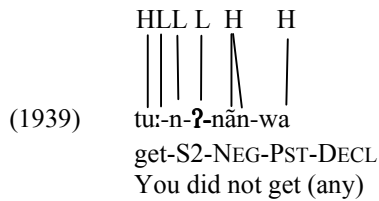
In other cases, the leftward spreading of the negative L tone is not possible simply due to the lack of sufficient moras or tone bearing units in the preceding syllable to support two tones. This is the case of the form below, where the second person morpheme has only a single mora, and thus cannot support a dual association to tone.

Negative

L H   -H -**L**   -H
│ │   │ │   │

(1940)   nakas-nna-**naʔ**-Ø-wa
          speak-S2-NEG-PRS-DECL
          You don't understand/hear
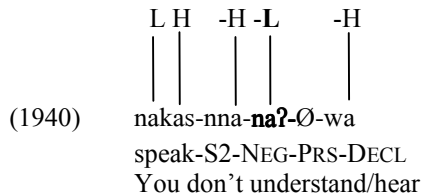
If the preceding syllable has a rising tone (two moras with a L and H already associated to them) then the spreading of the L leftward from the negative will occur, as predicted by our Negative L Spread 1 Rule.

Negative

LH -**L**   -H
│\ ╱   │
│ ╲╱   │

(1941)   jau-Ø-**aʔ**-Ø-wa
          to.stay-S3-NEG-PRS-DECL
          He/she is not here
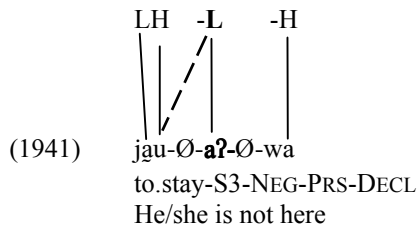
But this introduces another difficulty. For we now have 3 tones attempting to associate to 2 mora, and according to the Association Convention (one tone per mora), one of the tones must be deleted. Given that (as we have already seen in section 2.4 on Tone) Low tones are less faithful in Mamaindê than High tones, and given that the L of the negative will always take precedence over any other tones and will thus not suffer elision (another constraint in the tone section), the only option left to the language is to delete the initial L tone of the root. This then requires the H to shift leftward and accommodate the first mora which has become orphaned.

Loss of initial L due to the Association Convention

LH   -L   -H

(1942)   jau-Ø-aʔ-Ø-wa
            to.stay-S3-Neg-Prs-Decl
            He/she is not here
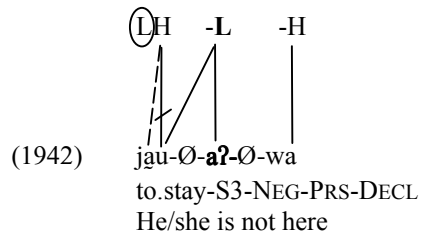
The end result is that a root with a rising tone is realized with a falling tone when followed by the negative morpheme. Such fascinating tonal behavior is consistent throughout the language whenever the negative is present.

The negative will also spread its L tone leftward to stressed vowels which are originally mono-moraic but which later become lengthened. This demonstrates that the Negative L Spread Rule must apply after the Vowel Lengthening Rule (see section 2.3 on Stress) has lengthened the vowels of stressed light syllables, giving them the added mora that is required for the L tone to spread. For instance, here the vowel of the root /wa/ must be lengthened before the Negative L Spread Rule spreads the L.

LH-L   H   LH-L   -H   LH-L   -H

(1943)   wa-aʔ-Ø-wa   →   ˈwaː-aʔ-Ø-wa   →   ˈwaː-aʔ-Ø-wa
            come-Neg-Prs-Decl
            He is not coming
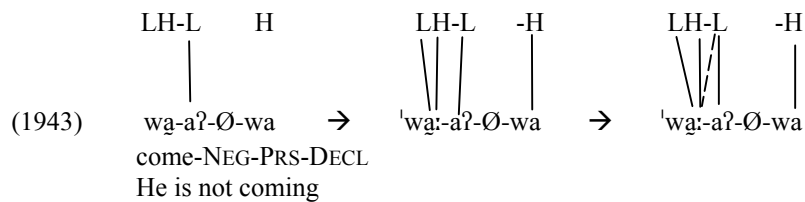
But once again we have two tones attempting to associate to a single mora. The Association Convention and the constraints of the tonal system then combine to adjust the tone-to-mora ratio of the output form by deleting the initial L tone on the root and shifting the H.

(1944)

ˈwaː-aʔ-Ø-wa
come-NEG-PRS-DECL
He is not coming
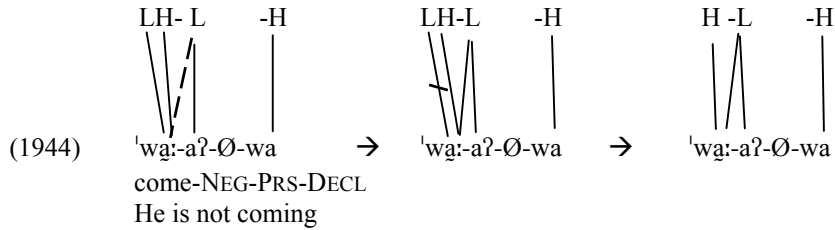
In certain contexts, the negative has no segmental material and underlyingly consists only of a floating L tone. This is the case of all negative imperatives. In these situations, the floating L tone will consistently spread to the right as opposed to the left (this is also discussed in the tone section of this paper, section 2.4, where I outline the Floating Tone Rule). If in such cases the following syllable is mono-moraic, and thus not capable of handling a dual association to tone, the negative will cause the disassociation of the original tone to its right and effectively replace it. The reason for this is that the floating tone must 'spread or die', and when the semantics calls for the negative to be realized on the surface, it will cause the deletion of other tones before it loses the tone of the negative.

(1945)   set-Ø-tahĩnwa
          speak-NEG-IMP
          Don't speak

(1946)   set   ta   hĩn   wa[413]

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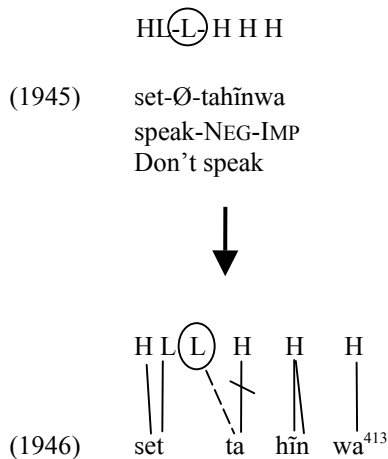
[413] This last H tone may at times be realized as a L when the speaker wishes to show strong disapproval. See section 3.4.2.3.5.6 on Emotives. The positive form of this command involves a plateauing of HLH to HHH (see section 2.4 on Tone for details of this process):

HL-H H H   HH-H H   H
set-tahinwa   → set-tahinwa

As we have seen in the above data, at times the negative spreads its L tone and at other times it does not. At times it spreads to the left, at other times to the right. Sometimes it is responsible for the deletion of other tones, at other times it will allow for dual association of tones. Such behavior warrants a study of its own, as I am convinced there is still much to be learned about the Mamaindê negative, particularly the effects of the negative morpheme in every possible environment. What is appropriate here to note is that a spreading L tone is the major characteristic of the Mamaindê negative, potentially provoking a number of changes in the prosodic shape of neighboring morphemes. That this is unique in the language underscores the fact that while the rest of the language employs tone in a lexical manner, the tone of the negative acquires a grammatical function.

3.4.2.3.5.4   Tense/Evidentiality System

Mamaindê tense is inexorably intertwined with evidentiality. In fact, they combine to form a single complex tense/evidentiality system. A single morphological paradigm of portmanteau suffixes marks them both (with some exceptions). Although clearly a unified system, I will first attempt to tease tense and evidentiality apart, in order to comment on them individually, later weaving them back together to give the reader the bigger picture at the end of this section.

3.4.2.3.5.4.1   *Tense*

To allow us to focus on the temporal qualities of this system apart from evidentiality, I will describe each of the tenses found in the language by making use of the tense/evidential morphemes reserved for indicating visual information. These visual evidentials have become a sort of default form in the language, and will serve well for the purpose of introducing the tense categories. The reader is reminded, however, that there are numerous forms for each of these tenses, depending on the evidential one wishes to employ. The only tenses that do not carry evidential overtones are the two future tenses. The full set of evidential markers will be described in the next section.

The notion of time in Mamaindê is encoded on the verb by way of 5 tenses: a present, two futures, and 3 past tenses. Present tense is always the unmarked tense, employing no overt morphology. The two future tenses are marked by */-tʰaʔ/* and */-tʰunna/,* the former indicating complete certainty on the part of the speaker, and the latter communicating slightly less conviction, while still giving a strong impression that the speaker believes the event will probably occur. The weakest form of talking about the future, the desiderative */-ten/,* has already been described in section 3.4.2.3.4.7, and will not be mentioned further here as it is not specifically a true tense or evidentiality marker.

We saw in a previous table (under Tense Modifier) the two major divisions in past time found in the language, that of distant and non-distant past. These are marked with */-hĩnʔ/* and */-nãn/* respectively.[414] The non-distant past may be further sub-divided into an intermediate past and a recent past, according to the presence or absence of the tense modifier */-let/*.[415] This modifier carries with it the semantic notion of 'further removed', and when it co-occurs with the non-distant past morpheme */-nãn/*, it refers to that part of non-distant past which is furthest removed from the present, the intermediate past. When */-nãn/* appears alone, without the tense modifier, the recent past is implied.

As was also mentioned under the Tense Modifier heading, the past events of today (including the events of the previous night) are the only ones which can be considered recent past. The time period being referred to in intermediate past extends anytime from yesterday to decades ago. Distant past time belongs to the frame of reference reserved for events in ones early childhood and before. This intermediate/distant past boundary, however, is quite subjective, and depends on the emphasis the speaker is placing on the remoteness of a particular event, using either intermediate or distant past time to make his point about how distant he feels it was.

Below is a display of the markers used in the different tenses of the visual evidential paradigm, followed by examples of each.

Tense Markers and the Visual Evidential

	Visual Evidentials				
Present	Non-distant Past		Distant Past	Future1 (most certain)	Future2 (certain)
/-Ø/	/-nãn/		/-hĩnʔ/	/-tʰaʔ/	/-tʰunna/
	Recent Past	Intermediate Past			
	/-Ø/ + /-nãn/	/let/ + /-nãn/			

Present Tense

(1947)   wa̱-aʔ-Ø-wa
          come-S1-PRS-DECL
          I am coming

(1948) tunʔ-tu   wanũn   hain-nanuʔ-Ø-wa
        flute-FNS   good   sing-S2-PRS-DECL
        You are playing the puberty flute well.

(1949) wenna-toʔ-jah   lit-latʰa-Ø-wa[416]
        now-AUTH-DEM   leave/arrive-S3-PRS-DECL
        He is leaving right now (this very minute.)

Non-Distant Recent Past

(1950) lani-teʔnatạʔ   watais-tạʔ   <3 horas da madrugada>
        be.day-CN.IN.ORDER.TO.SS   close-CN.AND   3 oclock in the morning

        ta-sisata-tu
        PS1-niece-FNS

        lah-soʔki-tu   na-wet-tu   ta-jeʔ-Ø-nãn-wa
        new-NCL.HUM-FNS   PS3-child-FNS   born-EMP-S3-PST-DECL
        Close to dawn, at 3am this morning, my niece's baby was born.

(1951) kajauka   nakat-sihtaʔ   set-Ø-nãn-wa
        white.man   listen-CN.IN.ORDER.TO.DS   speak-S3-PRS-DECL
        For the white man to listen, he spoke (earlier today)

(1952) wa-taʔlohni   nahohntoʔ   het-Ø-nãn-wa
        PS2-old.woman   much   angry-S3-PRS-DECL
        Your mother was extremely angry (earlier today).
.

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[416] Interestingly, the verb */lit/* carries with it the fundamental concept of 'crossing the boundary of here', which could be crossed in either direction, and thus includes the semantic domains of both 'arrive' and 'leave'. This can cause confusion at times, and it is often followed by another verb to disambiguate the utterance, such as */lit-taʔ jạu/* 'arrive-and stay' or */lit-taʔ ʔại/* 'leave-and go'. Another method of clarifying matters is to use the variation */lita/* which signifies only 'arrive'.

Non-Distant Intermediate Past

(1953)   kanahaleʔi-tu   ＜escola＞-tʰĩn   kaʔjainʔ-jeʔ-le-a-nãn-wa
          yesteday-FNS   school-NCL.HOUSE   write-EMP-I.PST-S1-PST-DECL
          I wrote/studied in school yesterday.

(1954)   taʔwen-na-tu   ʔiun-khit-jeʔ-let-Ø-nãn-wa
          jungle-NCL.AREA-FNS   sleep-S1.PL-EMP-I.PST-S3-PST-DECL
          We slept in the jungle (speaking of a hunting trip a month previously).

(1955)   nahana-leʔ-jah   jau-tu   nahensoʔ   amamat-let-Ø-nãn-wa
          time-PST-DEM   dolphins-FNS   suddenly   appear-I.PST-S3-PST-DECL
          Awhile back, dolphins suddenly appeared (a year ago).

Distant Past

(1956)   nahana-sihati-ijah-tu   nũsa-jahon-nãʔã   suʔton-Ø-hĩnʔ-wa
          time-ANC-DEM-FNS   Ps1.PL-old.man-PL   not.know-S3-D.PST-DECL
           In ancient time, our ancestors didn't know (that).

(1957)   ta-hĩni-tu   na-ta-hen-leʔ-ijah
          Ps1-grandmother-FNS   Ps3-born-NCL.TIME-PST-DEM

          ＜Rondon＞-soʔka
          Rondon-NCL.HUM

          tukwa-weh-tu   littes-Ø-hĩnʔ-wa
           bring-NCL.RIVER-FNS   go.up-S3-D.PST-DECL
          At the time of my grandmother's birth, Rondon came up the Cabixi
          river.[417]

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[417] /*dukwawehtu/* (the river that brings) is the proper name of the Cabixi River.

(1958)   ʔun-kʰu   wales-soʔka   na-kʰu
          far-NCL.LAND   Nambikwara-NCL.HUM   Ps3-NCL.LAND

          ja̱u-a-hĩnʔ-wa
          live-S1-D.PST-DECL
          I lived in a far away land, in the land of the Southern Nambikwaras

Future 1 – Most Certain

(1959)   wa-wasainʔ-tu   tu-a-tʰaʔ-wa
          Ps2-stuff-FNS   get-S1-FUT1-DECL
          I will get your stuff (you can count on it).

(1960)   na-ʔnĩu-hen-ã   sanĩn-khit-Ø-tʰaʔ-wa
          Ps3-return-NCL.TIME-FNS   happy-S1.PL-S3-FUT1-DECL
          At the time of his return, we will be happy (it's certain).

(1961)   hãi-kʰanĩn   ʔenʔ-kʰanĩn   wate-Ø-tʰaʔ-wa
          PR3-NCL.ROUND   moon-NCL.ROUND   disappear-S3-FUT1-DECL
          That round thing, the moon, it will disappear (it's certain).

Future 2 – Certain

(1962)   tu-leʔ-hĩʔ   na-siha   ʔa̱i-ta̱ʔ
          get-O1.PL-CN.THEN.DS   Ps3-house   go-CN.AND

          ja̱u-khit-Ø-tʰunna-wa
          go-S1.PL-S3-FUT2-DECL
          After he picks us up, we will all go and stay at his house.

(1963)   mamãinsa-nãʔã   ta-kʰanih-ta̱ʔ   nuk-kʰãn-Ø-tʰunna-wa
          Mamaindê-PL   CAU-be.many-CN.AND   arm-strong-S3-FUT2-DECL
          The Mamaindê will become many and be strong

(1964)   ʔa̰i-kʰatoʔ   jain   haʔfĩn   talona-kʰatoʔ
          go-CN.THEN.SS   food   plant   finish-CN.THEN.SS

          ʔñĩu-khit-Ø-tʰunna-wa
          return-S1.PL-S3-FUT2-DECL
          We will go, plant food, and when we are finished, we will return.

    As we noted earlier, the Mamaindê tense system cannot operate alone, for it comes packaged along with the evidentiality system. This is the topic of our next section.

3.4.2.3.5.4.2   *Evidentiality*

Evidentiality is a means of grammaticalizing the source of a speakers information. This provides the listener with clues as to the informational basis for each utterance. If inflection is the grounding of an utterance in the real world, then inflectional tense/evidential systems are those which ground an utterance in the chronological experience of time as well as in the practical realm of supporting evidence.

    Evidentials are a characteristic of a number of Amazonian languages[418], including the Nambikwara language family, where they have been attested to in five languages: Southern Nambikwara (Kroeker, 2001:62-65; Lowe, 1999: 274-276), Lakondê (Telles and Wetzels, 2006), Latundê (Telles, 2002:288-290), Sabanê (Antunes, 2004:138-140) and now Mamaindê.

    Southern Nambikwara exhibits the most complex system of the five, although knowing exactly how to evaluate it is challenging since the available research does not wholly agree. According to Kroeker, Southern Nambikwara employs two separate paradigms of four evidentials each (visual, inferred, reported, general knowledge), the choice of paradigms being dependent on whether the information is available just to the speaker or to the speaker and to the addressee. Lowe's (1999: 274-276) analysis of Southern Nambikwara, somewhat different from Kroeker's, involves 4 evidentials (visual, inferred, reported, and internal support), [419] as well as two subcategories of inferred (inferred from actions or from circumstances), and an interaction between evidentiality and a sub-system which

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[418] See Aikhenvald (2004) for a thorough treatment of evidentiality in a broad range of languages, including a number of Amazonian examples such as Tariana, Desano, Tuyuca, Jarawara, Yanomami, Kamayura, Hupda, and others.

[419] Kroeker uses the terms observation, deduction, customary, and narration, while Lowe employs the categories observational, inferential, quotative, and internal support. I have represented them above in terms which are more consistent with the current literature, facilitating cross-comparisons with the other languages of the family.

marks given and new information. Further verification of these interesting properties is needed before we can truly understand the Nambikwara evidential system as a whole.

In a recent study by Telles and Wetzels (2006), Lakondê has been described as having a dual system of seven evidential morpheme categories. The basic system consists of visual, non-visual, sensory (inferred), reliability, and supposition, while a secondary co-occurring system consists of the reported and quotative evidentials. The non-visual has an extension that may be used to express 'possibility'. There is some question as to whether the reliability and supposition morphemes should be classified as true evidentials, since they refer more to traditional modal roles reflecting certainty/uncertainty rather than a source of information per se. They do, however, occur in the same position morphologically as the remainder of the evidentials, and therefore are treated by Telles and Wetzels as a single paradigm.

Sabanê (Antunes, 2004:138-140) has three evidential categories, sensory (information coming from all the senses, comparable to a firsthand evidential in many languages), inferred, and reported, the last of these involving a separate morphological choice that does not compete with the first two evidentials and can co-occur with either. The Sabanê system also contrasts evidential from non-evidential events, each of these choices having its own truth value.

Latundê (Telles, 2002:288-290) is the simplest of the five, with only an auditory (non-visual) and a reported evidential.

Mamaindê fits somewhere in the middle of this group, employing a rather elaborate set of six evidentials in a dual paradigm system.[420] The basic evidential paradigm consists of the following: visual, non-visual, inferred, and general knowledge, while a supplementary co-occurring system is used for two reported evidentials, being divided into reported second-hand and reported third-hand. Of the other systems within the family, Mamaindê is noticeably closest to Lakondê. It also has parallels with systems of five evidentials, such as those found in Tariana, an Arawak language, (Aikhenvald, 2004:60) and Tuyuca, East Tucanoan (Payne,

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[420] The reader should be made aware of some corrections to Aikhenvald's (2004) comments regarding Mamaindê evidentials. Her volume provides an important and comprehensive panorama of the typology of evidentiality, and has been of inestimable help to this author. However, it unfortunately makes a few misinformed references to the Mamaindê evidential system (Aikhenvald, 2004:56-57, 61, 123, 234). All examples labeled in her work as Mamaindê are actually from Kroeker's (2001) Southern Nambikwara data. Her book cites Kroeker as the source of the Mamaindê data and Lowe as the source for Southern Nambikwara, while in fact, both of these writers were describing the same language, Southern Nambikwara. It goes on to use Mamaindê as an example of a 4 evidential system, visual, inferred, general, reported, when in fact, Mamaindê has 6 evidentials, and what is being described is Kroeker's analysis of Southern Nambikwara. Aikhenvald (2004:234) also mentions that the Nambikwara family is unique in possessing 2 evidential systems, one for things the speaker himself vouches for, and another system for things which the speaker and the addressee both can vouch for. She mentions Mamaindê as possessing this quality as well. But in fact, Mamaindê only has a single collective or general knowledge evidential, information which everyone knows, not a separate system as is present in Southern Nambikwara (see section on General Knowledge evidentials).

1997:256-257). The main difference between these systems of five evidentials and the six found in Mamaindê is the further subdivision required in Mamaindê of the 'reported' evidential into 'reported second-hand' and 'reported third-hand'.

As we have already mentioned, this morphological system has a dual function in Mamaindê, that of marking tense as well as indicating information source. This fusion of tense and evidentiality is a characteristic also shared by Southern Nambikwara (Kroeker: 61-61) Sabanê (Antunes, 2004:138), and Lakondê (Telles and Wetzels, 2006), but apparently not Latundê (Telles, 2002:288-290), where tense is not mentioned in relation to evidentials. While the evidential function is not part of future tense in Mamaindê, Southern Nambikwara, or Lakondê, the evidentials occur in all tenses in Sabanê, including future.

Provided below is a table of comparisons between the evidentiality systems of the five Nambikwara languages studied to date.[421]

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[421]Many lects within the family are of course missing. These are the five which have been researched to date. A [✓] indicates that researchers have identified the item as a property of a given system. The lack of a [✓] does not necessarily mean that it doesn't occur in that system, but simply that this property was not included in that languages description. If a language has only a single reported evidential, this is indicated in the reported 2nd hand row, with the implication that it combines both 2nd and 3rd hand. A (✓) in parentheses shows items in dispute among researchers.

Comparing Evidential Systems within the Nambikwara Language Family

	S. Nambikwara	Mamaindê	Sabanê	Lakondê	Latundê
Evidentials					
visual	✓	✓		✓	
non-visual		✓		✓	✓
inferred	✓	✓	✓	✓	
general knowledge	(✓)	✓			
reported 2nd hand	✓	✓	✓	✓	✓
3rd hand		✓			
quotative				✓	
sensory (firsthand)			✓		
internal support	(✓)				
Modals as Evidentials					
reliability				✓	
supposition				✓	
Evidential Extensions					
visual used as 'certainty'		✓			
non-visual used as 'internal state'		✓			
non-visual used as 'possibilitive'				✓	
inferred used as 'mirative'		✓			
Other Properties					
fusion of tense & evidentiality	✓	✓	✓	✓	
evidentials used w/future tense			✓		
evidential sub-systems: individual vs. collective verification	(✓)				
evidential sub-systems: given vs. new info	(✓)				
contrasting systems: evidential system vs. non-evidential system			✓		
co-occurring systems: reported co-occurring with other evidentials		✓	✓	✓	

While the majority of the Tense/Evidential morphemes in Mamaindê carry these dual functions, there is not a perfect one-to-one fit between the tense and evidential systems. Some morphemes within the system only mark tense (the two future tenses), without any reference to evidentiality, while others mark the source of information (reported and general knowledge) and lack a specific tense. Although never used with future tenses, evidentials in Mamaindê can be used with the desiderative.

Theoretically, all of the Mamaindê evidentials can be used with all persons (except for the present tense visual, which is limited to third person). However, in practice, the evidentials are used more frequently with third person than with any other. This coincides partially with Aikhenvalds findings (2004:231-2) that there are more restrictions in first person, since it is in first person that evidential systems show gaps in their paradigms. The Mamaindê preference for evidentials in third person (other than the non-visual use as 'internal state') appears to follow from a logical need to provide the source of ones information when it is most suspect. One is expected to know the source of information about ones own actions, but it is our statements about others that we most need to back up with evidence.

Besides those evidentials listed above, other possible evidentials are still being researched for Mamaindê. Two further categories mentioned by Kingston (1991b:101), are: 'reported visual' (things which others have reported as having seen), and 'obvious'. However, as he offers very little supporting data, and as I have not been able to verify these forms in my own corpus, these categories have been left out of the current study.[422] Even so, with the six tense/evidentials substantiated thus far, Mamaindê already fits into the category of a 'larger system' (Aikhenvald 2004:60), thus providing its speakers with a number of elaborate ways to express not only the temporal background for what they want to say, but exactly how they have come to know what they are saying.

The following chart attempts to bring together all the Mamaindê evidentials and tenses into one comprehensive overview. Examples of each evidential category will follow.

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[422] It is not clear how 'reported visual' would differ from 'reported secondhand'.

Mamaindê Tense/Evidential System[423]

EVIDENTIAL	Present	Recent Past	Interm. Past	Distant Past
1. Visual	(-latha – only 3rd pers)[424]	-nãn	let-nãn	-hĩnʔ
2. Non-Visual (also Internal state)	-nha / nhaʔ	-hĩn	-le-hĩn	-le-hĩn
3. Inferred (also Mirative)	-sihna	-ntĩn	-le-ntĩn	-sihĩnʔ
4. Reported 2nd hand	-satau-nha	-satau-hĩn	-satau-le-hĩn	-satau-le-hĩn
5. Reported 3rd hand	-sĩn-nha			
6. General Knowledge	-nĩnta / -ĩnta /-nta			

The examples of these forms below will use a single set of verb roots for all the evidentials. These identical utterances, however, occur in differing hypothetical contexts, showing how the choice of evidentials is not linked to the morphological environment, but to the broader background of informational sources.

Visual

present	/-latʰa/
recent past	/-nãn/
intermediate past	/-let/ + /-nãn/
distant past	/-hĩnʔ/

The visual evidential indicates that the speaker witnessed the event firsthand.[425]

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[423] The 2 future tenses are not included here as they do not participate in evidentiality. The last 2 evidentials, reported 3rd hand and general knowledge, do not distinguish between the available tenses.

[424] This evidential has become grammaticalized as a part of the person system, and has taken on the additional meaning of 3rd person subject. It is thus limited to marking visual/firsthand information on present tense 3rd person subjects only, except for the exceptional case where */-latʰa/* is used as the visual evidential on 1st person to emphasis an obvious statement about oneself.

(1965) ta-tukwinʔni-tu   na-ʔaik-tu   tau-latʰa-Ø-wa
        Ps1-father.in.law-FNS   Ps3-field-FNS   chop-S3/VIS-PRS-DECL
        My father-in-law is clearing his field
        (and I know this because I just came from his field and I saw him
         working)

(1966) wetwainʔ-tu   na-waʔjona-tʰã   siha
        girl-FNS   Ps3-menstruate-NCL.THING   house

        tai-hĩʔ   hain-Ø-nãn-wa
        take.out-CN.THEN.DS   sing-S3-PST/VIS-DECL
        After taking the girl out of her puberty hut, they sang (earlier today)
        (and I know this because I was there early this morning and witnessed it)

(1967) waʔnĩn-soʔka   janãn-tu   sun-let-Ø-nãn-wa
        shaman-NCL.HUM   jaguar-FNS   kill-I.PST-S3-PST/VIS-DECL
        The shaman killed a jaguar (yesterday)
        (and I know this because I saw him do it)

(1968) jahon   ʔaik-tu   tanik-taʔ   nãn-Ø-hĩnʔ-wa
        old.man   field-FNS bury-CN.AND.SS   cry-S3-D.PST/VIS-DECL
        They buried the old man in the field and cried (many years ago)
        (and I know this because I was there as a youngster and witnessed it.)

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[425] In this section *-latʰa* is glossed as 'S3/VIS' to show its secondary usage as an evidential.
As we have already observed, this present tense visual evidential has undergone
grammaticalization, such that its primary function now is to mark 3rd person (presumably due
to extensive use in that person). Throughout this work it has been glossed simply as 'S3'. But
here we see it being used in its secondary function as a visual evidential and therefore it is
being glossed accordingly.

Non-Visual

present	/-nha/
recent past	/-hĩn/
intermediate/distant past	/-le/ + /-hĩn/

The non-visual indicates that the speaker got his information through the non-visual senses, such as hearing. The non-visual does not have a distinct form for distant past. In such cases, it employs the same form as intermediate past, */-le-Ø-hĩn/.*

(1969) ta-tukwinʔni-tu   ʔaik-tu   tau-Ø-nha-wa
        Ps1-father.in.law-FNS   field-FNS   chop-S3-PRES/NVIS-DECL
        My father-in-law is clearing his field
        (and I know this because I just passed near his field and heard him
         chopping)

(1970) wetwainʔ-tu   na-waʔjona-tʰã   siha
        girl-FNS   Ps3-menstruate-NCL.THING   house

        tai-hĩʔ   hain-Ø-hĩn-wa
        take.out-CN.THEN.DS   sing-S3-PST/NVIS-DECL
        After taking the girl out of her puberty hut, they sang (earlier today)
        (and I know this because I heard the puberty music begin)

(1971) waʔñĩn-soʔka   janãn-tu   sun-le-Ø-hĩn-wa
        shaman-NCL.HUM   jaguar-FNS   kill-I.PST-S3-PST/NVIS-DECL
        The shaman killed a jaguar (yesterday)
        (and I know this because I heard the commotion and the gunshot)

(1972) jahon-tu   ʔaik-tu   tanik-taʔ
        old.man-FNS   field-FNS   bury-CN.AND.SS

        nãn-le-Ø-hĩn-wa
        cry-I.PST-S3-PST/NVIS-DECL
        They buried the old man in the field and cried (many years ago)
        (and I know this because I was there as a youngster and heard it.)

A few extra forms will be given here which are perhaps the clearest examples of this evidential. The first comes from a narrative where the speaker was riding on the back of a flatbed truck when the tire blew. He uses the non-visual to indicate that he heard it happen, but did not actually witness it.

(1973)   <pneu>-kʰanĩn   ãn-ju-kʰaukʰa-kʰatoʔ
            tire-NCL.ROUND   CAU-foot-explode-CN.THEN.SS

            na-hen-sa̰-tu   wikhãn
            Ps3-noise-NCL.SOUND-FNS   loud

            hen-le-Ø-hĩn-wa
            make.noise-I.PST-S3-PST/NVIS-DECL
            The tire blew (its foot) and made a loud noise.
            (and I know this because I heard it)

This last example of the non-visual is found in the famous myth of the flute spirit, where an elderly man speaks of hearing the flute spirits playing music, but no one believes him because they can not hear anything.

(1974)   jamaʔk-ã   naʔtun-juh-hĩʔ
            flute.spirit-FNS satisfied-3REF-CN.THEN.DS

            hain-Ø-nha-wa
            sing/play-S3-PRS/NVIS-DECL
            The flute spirits are full/satisfied and are playing music.
             (and I know because I can hear them, even though I can't see them)

Inferred

            present   /-sihna/
            recent past   /-ntĩn/
            intermediate past   /-le/ + /-ntĩn/
            distant past   /-sihĩnʔ/

The inferred evidential indicates that the speaker deduced the information through circumstantial evidence.

(1975)   ta-tukwinʔni-tu   ʔaik-tu   tau-Ø-sihna-wa
            Ps1-father.in.law-FNS   field-FNS   chop-S3-Prs/Inf-Decl
            My father-in-law is clearing his field
            (and I know this because both he and his axe are gone)

(1976)   wetwainʔ-tu   na-waʔjona-tʰã   siha
            girl-FNS   Ps3-menstruate-NCL.THING   house

            tai-hĩʔ   hain-Ø-ntĩn-wa
            take.out-CN.THEN.DS   sing-S3-Pst/Inf-Decl
            After taking the girl out of her puberty hut, they sang (earlier today)
            (and I know this because the door to her hut was open and flutes lay
             about)

(1977)   waʔnĩn-soʔka   janãn-tu   sun-le-Ø-ntĩn-wa
            shaman-NCL.HUM   jaguar-FNS   kill-I.Pst-S3-Pst/Inf-Decl
            The shaman killed a jaguar (yesterday)
            (and I know this because he was dressing a jaguar skin today)

(1978)   jahon   ʔaik-tu   tanik-taʔ   nãn-Ø-sihĩnʔ-wa
            old.man   field-FN   bury-CN.AND.SS   cry-S3-D.Pst/Inf-Decl
            They buried the old man in the field and cried (many years ago)
            (and I knew this because of a mound of freshly dug earth in the field)

Reported

The reported markers constitute a supplementary paradigm within the evidential
system, occurring in a separate slot on the verb, prior to the tense modifier
(intermediate past) and thus non-adjacent to the remainder of the evidentials. These
reported evidentials obligatorily co-occur with the non-visual evidential. This link
between reported and non-visual is of course only natural since both of these are
auditory sources of information. Unlike the rest of the evidential system, however,
the reported evidentials are not portmanteau forms and, as such, do not indicate
tense in and of themselves. In reported constructions, the tense of the verb is carried
by the non-visual. There are two reported evidentials, second-hand and third-hand,
each marked by separate morphemes.

2nd hand

present	/-satau/ + /-nha/
recent past	/-satau/ + /-hĩn/
intermediate/distant past	/-satau/ + /-le/ + /-hĩn/

The reported second hand evidential */-satau/* is used to report what one has learned from others, typically without citing the original source. It is always followed by a form of the non-visual evidential.

(1979)   ta-tukwinʔni-tu   ʔaik-tu   tau-satau-Ø-nha-wa
         Ps1-father.in.law-FNS   field-FNS   chop-RS-S3-PRS/NVIS-DECL
         My father-in-law is clearing his field
         (and I know this because someone told me)

(1980)   wetwainʔ-tu   na-waʔjona-tʰã   siha
         girl-FNS   Ps3-menstruate-NCL.THING   house

         tai-hĩʔ   hain-satau-Ø-hĩn-wa
         take.out-CN.THEN.DS   sing-RS-S3-PST/NVIS-DECL
         After taking the girl out of her puberty hut, they sang (earlier today)
         (and I know this because someone told me)

(1981)   waʔñĩn-soʔka   janãn-tu   sun-satau-le-Ø-hĩn-wa
         shaman-NCL.HUM   jaguar-FNS   kill-RS-I.PST-S3-PST/NVIS-DECL
         The shaman killed a jaguar (yesterday)
         (and I know this because someone told me)

(1982)   jahon   ʔaik-tu   tanik-taʔ
         old.man   field-FN   bury-CN.AND.SS

         nãn-satau-le-Ø-hĩn-wa
         cry-RS-I.PST-S3-PST/NVIS-DECL
         They buried the old man in the field and cried (many years ago)
         (and I know this because someone told me)

To report what someone said in the past about an event still in the future, the Mamaindê employ the desiderative marker to indicate the future orientation of the verb, while using the reported evidential followed by the past tense non-visual to indicate that the source of information is in the past.

(1983)   kanahata-tu   ih-kalo-tu
          tomorrow-FNS   run-NCL.FLAT.THING-FNS

          wa̱-ten-satau-Ø-hĩn-wa
          come-Des-RS-S3-PST/NVIS-DECL
          They say the truck is coming tomorrow
          (and I know because I heard them say that)

Direct quotes which cite a specific second hand source typically do not use the reported evidential. In these cases the speaker will generally add the 'to say' verb construction at the end of the quote without the reported morpheme.

(1984)   taʔwen   wainsi-tu   kamat-ten-a-nha-wa.
          jungle   medicine-FNS   bathe-DES-S1-PRS/NVIS-DECL[426]

          na-jeʔ-le-a-nãn-wa.
          say-EMP-I.PST-S1-PST-DECL
          'I want to bathe her with jungle medicine', I said.

(1985)   jainsi haʔfin-ten-aʔ-Ø-wa   na-jeʔ-let-Ø-nãn-wa.
          food   plant-DES-S1-PRS-DECL   say-EMP-I.PST-S3-PST-DECL
          'I want to plant food', she said.

However, the lack of evidentials on quotes is not a strict rule. There are occasions when direct quotes can occur with the reported morpheme, and in these situations the reported evidential appears to be adding emphasis to the fact that the quote did not come from the speaker.

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[426] The non-visual is used here as an extension meaning 'internal state', and refers to an internal desire.

(1986)   < doutor > -soʔki-tu,   tu-kai-tanãun-kʰatoʔ   < borracha >
          doctor-NCL.HUM   shin-cut-throw-CN.THEN.DS   rubber

          tahawas-ten-a-nha-wa,   na-jeʔ-satau-le-hĩn-wa
          put.in-DES-S1-PRS/NVIS-DECL   say-EMP-RS-I.PST-PST/NVIS-DECL
          The doctor said, "I want to cut and throw away her shin and put in a
          rubber one".

3ʳᵈ hand

/-sĩn/ + /-nha/[427]

The reported third hand evidential *-sìn* is used when the speaker reports what
others say they have heard from a third source. It is only used in conjunction with
the present tense non-visual evidential *-nha*.

(1987)   ta-tukwinʔni-tu   ʔaik-tu   tau-sĩn-Ø-nha-wa
          Ps1-father.in.law-FNS   field-FNS   chop-RS3-S3-PRS/NVIS-DECL
          My father-in-law is clearing his field
          (and I know this because someone said they were told that it was so)

(1988)   wetwainʔ-tu   na-waʔjona-tʰã   siha
          girl-FNS   Ps3-menstruate-NCL.THING   house

          tai-hĩʔ   hain-sĩn-Ø-nha-wa
          take.out-CN.THEN.DS   sing-RS3-S3-PRS/NVIS-DECL
          After taking the girl out of her puberty hut, they sang (earlier today)
          (and I know this because someone said they were told that it was so)

(1989)   waʔñĩn-soʔka   janãn-tu   sun-sĩn-Ø-nha-wa
          shaman-NCL.HUM   jaguar-FNS   kill-RS3-S3-PRS/NVIS-DECL
          The shaman killed a jaguar (yesterday)
          (and I know this because someone said they were told that it was so)

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[427] This form is very similar to the inferred evidential and is often very difficult for the non-native speaker to differentiate between the two.

(1990)   jahon   ʔaik-tu   tanik-taʔ
          old.man   field-FN   bury-CN.AND.SS

          nãn-sĩn-Ø-nha-wa
          cry-RS3-S3-PRS/NVIS-DECL
          They buried the old man in the field and cried (many years ago)
          (and I know this because someone said they were told that it was so)

General Knowledge

          /-nĩnta/ ~ /-ĩnta/ ~ /-nta/

The general knowledge evidential /-nĩnta/ is used for information that any adult
native member of the community would know. This includes such things as habitual
events they are all aware of, or statements that they all believe. For this reason, it is
especially characteristic of myths. When used in myths, it is typically preceded by
the emphatic /-jeʔ/. It does not indicate tense, but because of its predominate use in
myths and history, it is most frequently found referring to events in distant past or
mythological time.

(1991)   ta-tukwinʔni-tu   ʔaik-tu   tau-Ø-nta-wa
          PS1-father.in.law-FNS   field-FNS   chop-S3-G.KN-DECL
          My father-in-law is clearing a field
          (everyone knows this because he's been doing this every day now for a
           month)

(1992)   wetwainʔ-tu   na-waʔjona-tʰã   siha
          girl-FNS   PS3-menstruate-NCL.THING   house

          tai-hĩʔ   hain-Ø-nta-wa
          take.out-CN.THEN.DS   sing-S3-G.KN-DECL
          After taking the girl out of her puberty hut, they sang
          (everyone knows this because that is what we always do)

(1993)   waʔnĩn-soʔka   janãn-tu   sun-jeʔ-Ø-ĩnta-wa
          shaman-NCL.HUM   jaguar-FNS   kill-EMP-S3-G.KN-DECL
          The shaman killed the jaguar
          (everyone knows this because it's a famous story)

(1994)   jahon   ʔaik-tu   tanik-taʔ
          old.man   field-FN   bury-CN.AND.SS

          nãn-jeʔ-Ø-nĩnta-wa
          cry-EMP-S3-G.KN-DECL
          They buried the old man in the field and cried (many years ago)
          (everyone knows this because its part of our mythology)

          This evidential has a variant form, *-nãnta/*, which occurs obligatorily in all
general knowledge negative constructions. To negate the previous statement about
the shaman, we use this negative variant of the general knowledge evidential, and
associate the abrupt low negative tone to its first syllable *-nãn/*.

(1995)   waʔnĩn-soʔka   janãn-tu   sun-jeʔ-nãnta-wa
          shaman-NCL.HUM   jaguar-FNS   kill-EMP-S3-NEG/G.KN-DECL
          The shaman did not kill the jaguar
          (and everyone knows it)

Extensions of Evidentials

Evidentials may also have secondary semantic properties, termed extensions
(Aikhenvald, 2004:153). These secondary meanings are discussed below.

Visual – Extension as 'Certainty'

We have mentioned that the visual evidential is also used as a default for factual
statements. This function of 'certainty' constitutes an extension to the visual and can
be employed to emphasize something that is obviously true. In the form below, the
third person marker (which we have defined as most likely a grammaticalized visual
evidential) is clearly not being used as third person, but as an extension of the visual
instead, emphasizing the obviousness of the statement.

(1996)   tai   jau-latha-wa
          I   be-S3/VIS-DECL
          I'm obviously here (I can see myself – I'm here).[428]

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[428] This relates to Aikhenvalds 'first person effect' (2004: 220) , where evidentials take on
secondary meanings when used with 1st person.

(1997) wa̱-sen-na-sa̱   naka̱s-le-a-nãn-wa
        Ps2-speak-S2-NCL.LIQUID   listen-I.Pst-S1-Pst/Vis-Decl
        I heard your speech (in intermediate past time)

      The last phrase above was uttered after listening to someone's voice on a recording the day before. Such a situation would typically call for a non-visual evidential since he never witnessed the speech; however, the speaker is insisting on the truth of his statement and therefore uses the visual evidential.
      This extension fits cross-linguistic usage. Aikhenvald gives examples of this visual extension in a number of languages, where 'the visual may have an additional epistemic extension of certainty' (Aikhenvald,2004:162,170). This means that in Mamaindê and other languages, many utterances which otherwise might take a non-visual or inferred evidential, can be simplified and take the visual as a statement of fact.

Non-Visual – Extension as 'Internal State'

As we have seen, the non-visual is typically used for situations where the speaker heard but did not see the event occur. However, this evidential can also be used in a secondary fashion as an extension which refers to ones emotions, thoughts, or general internal state. This secondary usage is mentioned by Aikhenvald as well (2004:163, 168, 219).
      After hearing a funny joke, a young Mamaindê man said the following:

(1998) tai-ãni   nahohntoʔ   kãun-ta-le-Ø-hĩn-wa
        Pn1-FNS   much   laugh-O1-I.Pst-S3-Pst/NVis-Decl
        To me, it was really laughable.

      When the Mamaindê teacher was happy about receiving things that someone had been sending to him, he mentioned his emotions using the internal extension of the non-visual.

(1999) tu-hensoʔ   na-hĩʔ   aat   sanĩn-taku,
        get-Cn.ALWAYS   Cop-Cn.THEN.DS   much   happy-Cn.THEN.SS

        ja̱u-a-nha-wa.
        be-S1-Prs/NVis-Decl
        I always get them, and so I am happy inside.

A husband, who had just taken a second wife, expresses his doubts as to the rightness of his decision, and uses the non-visual extension twice to highlight his internal struggle.

(2000) na-tʰoh, wenni-ijah-ãni, tehni-tu, baah-ãni,
COP-CN.BUT now-DEM-FNS woman-FNS two-FNS

tu-a-nha-wa. tu-a-tʰoh, wanน̃n
get-S1-PRS/NVIS-DECL get-S1-CN.BUT good

jau̱-la-a-ka. wanน̃n jau̱-soʔkeuh-na-nha-wa
be-POT-S1-INT good be-MAN.PROB-S1-PRS/NVIS-DECL
But right now, I have gotten two wives. I got them, but, am I doing well? I guess I am okay.

The extension of the non-visual gives the Mamaindê speaker several choices when speaking of his own feelings. He can use the standard impersonal (see section 3.4.2.1.3 on impersonal verbs) which distances himself from his feelings, or he can own his feelings and employ the non-visual extension of internal state, which highlights the fact that he is going through some internal experience. The second is the least common of the two.

Inferred – Extension as 'Mirative'

The inferred evidential has a mirative extension, or the additional function of expressing surprise. It appears that this is not uncommon in languages that employ this evidential (Aikhenvald, 2004:200-201). Inferred itself implies the process of discovery, where one infers things from circumstances. This element of discovery is closely related to the notion of 'the unexpected', which in turn is the basis for any surprise, thus giving the extension a semantic connection.

In the following example, the shaman's wife was bitten by a snake, and the shaman, who witnessed the event, relates the story using the inferred evidential instead of the visual. This usage, while clearly not the typical understanding of inferred, highlights the element of surprise in the storyline, as the snake was expected to run away, but instead held its ground.

(2001)   na-kʰatoʔ,   te̯ʔ-tu   ih-aʔsiʔ,   na-sei-ijah-ãni
          COP-CN.THEN.SS   snake-FNS   run-NEG   PS1-NCL.PLACE-DEM-FNS

     jau̯-jeʔ-le-Ø-ntĩn-wa
     be-EMP-I.PST-S3-PST/INF-DECL
     Then, the snake, without running, stayed in its place.

The elderly men often sing humorous songs about nature which sometimes take surprising twists, such as this little song about baby toucans, which, unlike the young of most other bird species, have exceptionally soft beaks. The humor here is found precisely in this unexpected feature.

(2002)   jalãn-a-wet-a   sa-tʰã   sa-tʰãtʰã
          toucan-GNT-child-FNS   beak-soft   beak-very.soft

     jau̯-le-Ø-ntĩn-kãun
     be-I.PST-S3-PST/INF-HUMOR
     The toucan baby has a soft beak, a very soft beak (surprise!)

Similar surprise is expressed when an outsider returns, after many years of absence, to visit the village and arrives still speaking their language. This was not expected and the inferred evidential is used in its mirative function.

(2003)   wa-sen-na-sa̯-leʔi-tu   mamãinsa-a-haiʔki
          PS2-speak-S2-NCL.SOUND-PST-FNS   Mamaindê-GNT-language

     set-tʰahta-nu-sa̯-leʔi-tu
     speak-O1.PL-S2-NCL.SOUND-PST-FNS

     nakajaunũn-ʔna-jeʔ-le-Ø-nʔ-sihĩn-wa
     forget-O2-EMP-I.PST-S3-NEG-PST/INF-DECL
     Your old speech, the Mamaindê language with which you used to speak
     to us, you clearly have not forgotten it.

Evidentiality and Culture

Some linguists have mused whether evidentiality systems imply a greater regard for truth within the speech community. Dixon (1997:120) brings up the following questions: 'Why do non-industrialized peoples have evidentiality systems, while industrialized peoples don't? Are they more concerned about the truth? Do they lie less?'

After living in the Mamaindê culture off and on for over 18 years, I do not see any basis for the supposition that they have a stronger than normal concern for truth. The evidential system, in fact, can be taken advantage of and exploited quite ingeniously for the express purpose of lying, not only about content, but also about one's degree of involvement in a given situation. My best hypothesis is that the Mamaindê evidentiality system has more to do with a desire to save face, or to safe guard ones own reputation. I offer below a few preliminary observations to support this hypothesis.

The typical way for a Mamaindê to refer to a 'good, trustworthy person' is to call her 'one who speaks well' – showing a strong connection between ones speech and ones reputation.

(2004)   hãi-ta   wanũn
           PN3-NCL.FEM   well

           set-soʔki-ta-latʰa-Ø-wa
           speak-NCL.HUM-DNM-S3-PRS-DECL
           She is one who speaks well (she is a trustworthy person = good person)

The opposite is also the case, where one who is untrustworthy or of a questionable moral reputation will be labeled as one who does not speak well. This creates a need to be perceived as one who speaks well, or keeps his word.

(2005)   wanũ-aʔ   set-soʔki-tu
           well-NEG   speak-NCL.HUM -FNS
           a person who does not speak well (an untrustworthy person = a bad person)

Mamaindê speakers tend to protect their reputations by the way they answer certain questions. A typical response to a question soliciting information is initially often met by a disclaimer.

(2006)   suʔton-ta-latʰa-Ø-wa
           not.know-O1-S3-PRS-DECL
           It is not known to me (I don't know)

    If the speaker does actually know the answer, this initial disclaimer is then promptly followed by the information the questioner solicited, using the appropriate evidential. The disclaimer has the effect of further softening the statement that follows, giving the hearer the impression that the speaker is not an authority on the information given. This general avoidance of claiming responsibility for unproven information is a trait that appears to be shared by other South American indigenous groups as well, such as the Quechua, who, according to Weber, are careful to 'avoid unnecessary risk, as by assuming responsibility for information of which one is not absolutely certain' (Weber 1986:138).

    While Mamaindê evidentials are mostly limited to the third person (in terms of their relation to the verb), this does not contradict the 'face' hypothesis. In fact, it strengthens it. It is in reference to information about a third party that the speaker may have reason to try to 'save face' - to distance himself from the event in such a way that if he is wrong it is understandable and he doesn't lost respect. Such distancing from first or second person is not nearly as successful for obvious reasons.

    The above discussion may provide us with some initial clues as to the function of the evidentiality system within the broader culture. The avoidance of being wrong is intrinsically related to the avoidance of losing face. The entire Mamaindê evidentiality system, then, may have the larger social function of providing the speaker with a way to avoid losing face within a society where one's words are connected to one's character.[429]

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[429] This possible link between losing face and evidentiality has not been proven in Mamaindê, but it is still a helpful working hypothesis. Although the relationship between language and culture has been discussed since the writings of Whorf, the tendency in descriptive linguistics has been to avoid this connection. Yet if such a connection exists, and I believe it does, it is specifically in descriptive linguistics that it should become significant, and it should be the responsibility of the field worker to bring such possible connections to light. Alongside the notion of linguistic relativity, which views culture as being influenced by one's language, I believe it is also insightful to think of language as being influenced in many ways by culture. A recent discussion of this position, including additional examples from another Amazonian culture, can be found in the writings of Everett (2005).

3.4.2.3.5.5   Clause Types

Finally, each main verb must be marked as to the type of clause in which in functions. In Mamaindê the main distinction here is between interrogative and non-interrogative.[430] The class of non-interrogatives can be established by the fact that the clause types of declarative (assertions) and imperative are marked with the same final morpheme */-wa/,* whereas the interrogatives lack the */-wa/* and are marked with a separate set of final morphemes. Declarative and imperative are then treated as subsets of the non-interrogatives, differing only by the addition of an imperative marker to further distinguish imperatives from the declaratives.

This type of clause categorization, interrogative versus non-interrogative, is not the norm cross-linguistically. It is certainly unattested within the greater Nambikwara language family. Sabanê (Antunes, 2004:146) separately marks assertives (declaratives) and interrogatives, while the imperatives are unmarked. Southern Nambikwara (Kroeker,2001:14) differentiates imperatives from non-imperatives, which include the sub-types of declarative and interrogative. According to Telles (2002:303), Latundê exhibits a formal opposition between declaratives and the other two clause types, interrogatives and imperatives.[431] Looking at this from a broader context, Payne (1997:294) makes the observation that typologically the norm is to leave the declarative unmarked. Thus, the opposition found in Mamaindê between interrogative and non-interrogatives may be quite rare, and calls for further investigation, not only of the extent of this categorization, but also of any clues as to the reasons for this unique dichotomy.

We will look now at these two major Mamaindê clause types, interrogative and non-interrogative, in that order, further dividing the non-interrogatives into declaratives and imperatives.

3.4.2.3.5.5.1   *Interrogatives*

The interrogative is marked by a set of interrogative suffixes appearing at the very end of the main verb. Each of them carries a high tone.[432] The choice of interrogative suffix is somewhat dependent on realis/irrealis conditions.

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[430] I am using the term non-interrogative simply as a general way of referring to clauses that are not interrogative, i.e., the declaratives and imperatives. This does not imply that the Mamaindê non-interrogatives are being used to ask questions, which is often the way linguists use this term.

[431] While all three major clause types have distinct verbal morphology, it appears that the declarative in Sabanê is differentiated by being the only one that can be unmarked.

[432] Except for rare exceptions, all of the clause type markers end in a high tone. This includes the */-wa/* of the non-interrogatives, as well as each of the different interrogative suffixes. The intonational pattern of interrogatives, however, tends to end on an even higher tone than the non-interrogatives. These high tones are not lexical, but are due to intonational patterns that apply to the whole clause. This can be shown by the fact that whenever interrogatives omit the

The Interrogative Suffixes:

/-hã/	realis questions - default
/-ka/	irrealis questions – rhetorical/internal/polite
/-sãʔã/	realis questions – abrupt

/-hã/

The default interrogative marker is *-hã*.[433] This is the most realis type of interrogative in the sense that it is a real question asked of a real listener by a speaker who is expecting a real response, and who is neutral as to the response that will be given. *-hã* can be used for both yes/no questions and for content questions. Mamaindê distinguishes content questions from yes/no questions by the presence or absence of a question word at or near the beginning of the sentence. When the question word is absent, a yes/no response is expected. When it is present, and the information being asked for is omitted, a more elaborate reply will be expected.

Note that recent past and intermediate past are obligatorily marked by the variants *-we* and *-wale* respectively in all interrogatives. These interrogative past tense forms occur, not in the tense/evidential slot, but in the tense modifier slot occupied by *-let* in the declarative. Person markers thus follow them, instead of preceding them.

yes/no questions

(2007)   <motorista>   nakan-na-Ø-hã
          driver   listen-S2-PRS-INT
          Driver – are you listening?

(2008)   iu-jeʔ-na-Ø-hã
          bite-EMP-S2-PRS-INT
          Did you get bit?

---

final interrogative marker, the high tone then shifts to the last syllable of the verb. The following forms demonstrate this tone change when the final morpheme is omitted:

  LH-LL-H   LH-H
 /ʔai-lata-ka/ 'go-Pot-INT' → /ʔai-la/ 'go-POT-INT'

[433] This interrogative is reduced to *-ã* when following the distant past morpheme *-hĩnʔ*.

content questions

(2009)   natoʔ jainsi-tu   tu-tạʔ   wạ-we-n-hã
          what   food-FNS   get-Cɴ.ᴀɴᴅ.SS   come-Psᴛ-S2-Iɴᴛ
          What food did you bring (earlier today)?

(2010)   kajauki-tu   naniʔ set-wale-Ø-hã
          white.man   what   speak-I.Psᴛ-S3-Iɴᴛ
          What did the white man say (in intermediate past)?

(2011)   naniʔ-hena   wạ-ten-nu-hã̃
          what-time   come-Dᴇs-S2-Iɴᴛ
          When are you coming?

(2012)   na-wet-tu   wenni ta-tʰoh   naniʔ-teʔntaʔ   naih
          Ps3-child-FNS now   born-Cɴ.ʙᴜᴛ what-Cɴ.ᴘᴜʀᴘᴏsᴇ still

          ikalaka-Ø-ha
          work-S3-Iɴᴛ
          His child was just born, so why is he still working?[434]

/-ka/

This question marker implies that an answer is not expected, as in a rhetorical question, or that the speaker fears the answer is probably other than what he is hoping for. It is obligatorily accompanied by one of the variants of the 'potential' morpheme */-la/* (which was discussed under the derivational suffixes). The presence of the 'potential' morpheme adds a further sense of irrealis to the clause,[435] either in speaker/listener expectations, or in the actual content of the question.

        In regards to the speaker/listener context, this combination of */-la + ka/* is used when there is no real addressee, as in internal questions where the speaker is

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[434] This statement shows the traditional taboo against a father working too hard in the first year after his child's birth. That taboo is more relaxed among the younger generation, but the elders remain concerned.
[435] Interrogatives are intrinsically irrealis in mode, and thus will often carry irrealis type morphology. (Payne, 1997:294).

asking something of himself, or in rhetorical questions, where there is a listener but the speaker does not expect the listener to respond.

On the other hand, the /-ka/ question type can also be used when there is an actual addressee from whom the speaker desires a response, but the speaker wishes to express doubt in some way. This dubitative function can be employed when one fears the worst, and wishes to express doubt as to a positive outcome of the circumstances, or it can be exploited in polite speak, when a speaker wishes to soften a petition or favor by politely doubting the desired outcome, a ploy often used in English with constructions such as, "could it be possible that you might…".

The forms of the 'potential' morpheme /-la/ used in conjunction with the interrogative imply a sense of doubt. The actual form used depends upon the person of the verb.

Potential morpheme with Interrogative

/-la-a-ka/	POTENTIAL-1ST PERSON-INT
/-la-nna-ka/ ~ /-la-nuna-ka/	POTENTIAL-2ND PERSON-INT
/-lata-Ø-ka/	POTENTIAL-3RD PERSON-INT

The first example is from a narrative where the speaker muses to herself when she is surprised by a Brazilian nurse who asked to eat peccary meat.

(2013)   naniʔ-teʔntaʔ   kajauka-ta-tʰoh   jak̲-a
         what-CN.PURPOSE   white.man-NCL.FEM-CN.BUT   peccary-FNS

         wi̲-teʔntaʔ   set-lata-Ø-ka
         eat.meat-CN.PURPOSE   speak-POT-S3-INT
         But she is a white woman! Why is she talking to eat (wanting to eat)[436] peccary?

(2014)   <medico>   na-soʔka   na-ju-tu   wet-ten-lata-Ø-ka
           doctor   COP-NCL.HUM   PS3-mouth-FNS   fix-DES-POT-S3-INT
           Will the doctor be able to fix her mouth?

---

[436] The verb /set/ 'speak/talk' also has the secondary sense of expressing desires or wants.

(2015)   ʔn̄ĩu-na-hen-nu-tu   tu-taʔ
          return-S2-NCL.TIME-FUT-FNS   get-CN.AND.SS

          ʔniu-juh-ten-la-nna-ka
          return-3REF-DES-POT-S2-INT
          When you return, could you possibly get and bring him (with you)?

      The following is an interrogative we have already seen, but it is a good example of a rhetorical question, where an answer from another speaker is not expected.

(2016)   na-tʰoh,   wenni-ijah-ãni,   tehni-tu,   baah-ãni,
          COP-CN.BUT   now-DEM-FNS   woman-FNS   two-FNS

          tu-a-nha-wa.   tu-a-tʰoh,   wanŭn   j̯au-la-a-ka
          get-S1-PRS/NVIS-DECL   get-S1-CN.BUT   good   be-POT-S1-INT
          But right now I have taken a second wife. I took her, but am I okay?

      Interrogatives may also be used in conjunction with evidentials. Here the speaker employs the *-ka* question form because he is fearing the worst, but he also chooses to use the inferred evidential in a mirative mode to express his surprise at the situation.

(2017)   Antonio na-soʔki-tu   naniʔ-teʔnataku   ʔniu-aʔsiʔ
          Antonoi COP-NCL.HUM-FNS   what-CN.PURPOSE   return-NEG

          ʔ̯ai-taʔ   wate-la-Ø-sihna-ka
          go-CN.AND.SS   disappear-POT-S3-PRS/INF-INT
          Why did Antonio, without returning, surprisingly go and disappear?

      It is also possible to leave off the interrogative marker *-ka* entirely and conclude the question with either the potential marker, person marker, or the evidential. These reduced question forms are typically of the internal variety, where the speaker is addressing himself. If the person marker is omitted, the person is deduced from the context.
      Each of the questions below end with the potential morpheme, thereby lacking any subject or interrogative markers. Personhood and mood are assumed. This assumption is aided in part by the interrogative intonational pattern, which

signals the clause type by the extra high tone on the final syllable.[437] Note that the person changes in each, again, deduced from the context.

(2018)   ta-jahon-tu   kajauka   na-sihnã-tu   wenni-ijah
          Ps1-old.man-FNS   white.man Ps3-house-NCL.AREA-FNS now-DEM

          ʔnĩu-ten-la.   suʔton-ta-latʰa-Ø-wa
          return-DES-POT   not.know-O1-S3-PRS-DECL
          Is my old man (father) returning at this moment from town? I don't know.

(2019)   naheh-aʔsiʔ   to̧-ta-ten-la
          satisfy.hunger-NEG die-O1-DES-POT
          Without satisfying my hunger (for sugar), will I die (to me)?[438]

(2020)   naniʔ-teʔnata?   naʔka   nĩ-ta-la
          what-CN.PURPOSE   head   hurt-O1-POT
          Why is it that my head is hurting (to me)?

(2021)   ＜poti＞-tu   to̧-hiʔ,   wa̧i-ijah-tu   sih-tu
          cow-FNS   die-CN.THEN.DS you-DEM-FNS house-FNS

          to̧-ten-la
          die-DES-POT
          Since the cows died, I wonder if you will also die in your house?

---

[437] The intonational patterns on questions are related to polite and impolite speech. Polite questions all conclude with the extra high tone. Impolite, or very informal questions, on the other hand, will often end with a low tone. This is also used when expressing irritation.
[438] This example comes from a text where the speaker was expecting to receive a large amount of sugar but it never came. Comments such as these give us a glimpse at the current status of the culture, with its high level of dependency upon the outside world.

(2022)   naniʔ-hena   nawih-talon-ten-la
          what-time   teach-finish-DES-POT
          I wonder at what time I will be finished teaching?

       If the speaker, instead of addressing himself, is speaking to another person in a polite fashion, he may include the potential morpheme and then end the question with the person marker, still omitting the assumed interrogative marker.

(2023)   wai̲ at-nũn-lhi-la-nuna
          you   fish-COM-IRR-POT-S2
          Would you also go fishing (with us)?

/-sã̃ʔã̃/

This last interrogative form is used with less frequency, and appears to be a more abrupt way to solicit information. It is less polite that the *-ka* form.

(2024)   wai̲-nã   naniʔ-nataʔ   ʔai̲-ten-sã̃ʔã̃
          you-PL   what-purpose   go-DES-INT
          Why are you guys going?

(2025)   naniʔ   na-lãn-taʔ   ʔoha-ʔai̲-sen-tu
          what   COP-bright-CN.AND.SS   high-go-NCL.CONTAINER-FNS

          walalãn-sen-tu   wa̲-ten-sã̃ʔã̃ʔ
          light-NCL.CONTAINER-FNS   come-DES-INT
          What day is the high going container, the light-weight container (the plane) coming?

3.4.2.3.5.5.2   *Non-Interrogatives*

The non-interrogatives are a Mamaindê clause type that is marked by a verb final
/-wa/, and includes both the declaratives and the imperatives. [439]

Declaratives

Utterances which end with the non-interrogative morpheme */-wa/* and do not in
addition carry the imperative marker, are considered declarative by default. For this
reason, up to this point I have glossed the non-interrogative morpheme */-wa/* as
'DECL' in all declarative clauses.

> /-wa/   non-interrogative (default as declarative)[440]

As we have seen hundreds of declaratives in this text already, a few here will
suffice.

(2026)   isun-ta-latʰa-Ø-wa
           cold-O1-S3-PRS-DECL
           It is cold to me (I am cold)

(2027)   hãi   wanaka-let-Ø-nãn-wa
           he   close-I.PST-S3-PST-DECL
           He was close by.

(2028)   kalakala   wi̱-kʰit-Ø-tʰunna-wa
           chicken   eat.meat-S1.PL-S3-FUT2-DECL
           We will eat chicken

---

[439] The term 'declarative' must be used instead of 'indicative' since the latter combines both
declarative and interrogative into the same category. We have already seen that in the
Mamaindê language it is the declarative and imperative that are grouped together, and the
interrogative that stands alone.

[440] A similar verb final */-wa/* in Southern Nambikwara is glossed by Kroeker (2001:65) as
imperfective aspect, being used only on future and other non-perfected events. This analysis is
not appropriate in Mamaindê, were the */-wa/* is used on all declarative and imperative verbs,
whether past, present, or future, perfect or imperfect.

Imperatives

The imperative also carries the non-interrogative /-wa/, but differs from the declarative by the addition of one of the imperative morphemes immediately preceding the non-interrogative marker.[441] As in most languages, the second person is the implied person of the default imperative forms, although these forms can be used for either singular or plural second person. The difference between the various imperative forms has to do with the relative politeness or lack of politeness they express, as well as the social context in which they are used.[442]

Forms of the Imperative:

/-tsĩn/	imperative – polite form
/-tahĩn/	imperative – standard (less polite) form[443]
/-tah/	imperative – informal form
/-tʰahta/	imperative – inclusive, 1st and 2nd person
/-soʔkuta/ ~ /-soʔu/	implied imperative – warning

First some examples of the two basic imperative forms, /-tsĩn/ and /-tahĩn/.

(2029)   wi-hi-tsĩn-wa
          enter-here-Imp-N.Int
          You may come in!
          (the polite way to invite someone in - spoken from inside a house)

(2030)   ʔai̯-tsĩn-wa
          go-Imp-N.Int
          You may go!
          (the polite form of leave-taking by the party that is staying)

(2031)   wa-waintʰã-tu   jau̯-ta̱ʔ   ikalaki-tsĩn-wa
          Ps2-group-FNS   stay-Cn.and.SS   work-Imp-N.Int
          Your group - stay and work with us!

---

[441] Kingston mentions a few other imperative forms which I have not been able to verify.
[442] See section 3.4.2.3.5.3 on Negation for a discussion of the negative forms of the imperative.
[443] The 3rd party morpheme, /-juh/, can at times be found inserted within this imperative marker, forming the composite form /-tajuhhĩnwa/. It is used when the command includes the involvement of a 3rd party in some way.

(2032)   wainsi-ijah   teh-tahĩn-wa
          medicine-DEM   give.to.drink-IMP-N.INT
          Give me the medicine!

(2033)   ʔain-ã   sun-tahĩn-wa
          fish-FNS   kill-IMP-N.INT
          Kill the fish!

(2034)   ãun-ta-nu-khatoʔ   nũsa-sih-na
          leave-O1-S2-CN.THEN.SS   Ps1.PL-house-NCL.AREA

          ʔai̯-tahĩn-wa
          go-IMP-N.INT
          Leave me and go to our village!

The more colloquial form, */-tah/,* which is associated with the 'low' register of the language, is the most demanding imperative of all. This form always omits the non-interrogative marker.

(2035)   haʔfĩn   anaʔ-tah
          quickly   stop-IMP
          Stop quickly!

The inclusive first and second person imperative form, */-tʰahta/,* also has an optional allomorph, */-hatahta/,* and is best glossed as 'let us'.

(2036)   nũsa-wet-tu   ʔai̯-taʔ   eu-tʰahta-wa,
          Ps1.PL-child-FNS   go-CN.AND.SS   see-IMP-N.INT

          ta-teʔ-tu   na-jeʔ-let-Ø-nãn-wa
          Ps1-wife-FNS   say-EMP-I.PST-S3-PST-DECL
          'Let's go see our child', my wife said.

(2037)   tʰehati-ijah-tu   ʔai̯-hatahta-wa
          there-DEM-FNS   go-IMP-N.INT
          Let's go over there!

(2038)   julãn-kʰatoʔ   nakah   sun-tʰahta-wi
          persuade-CN.THEN.SS   again   kill-IMP-N.INT/EMO.SUDDEN
          He persuaded him, 'Let's kill again'!⁴⁴⁴

     A borderline case, more like an implied imperative, is the warning
construction, used to warn someone of some hidden peril or the consequences of
their actions. This form has the unspoken meaning of 'be careful or else …'. It has
two variants, *-soʔkuta* and *-soʔu,* neither of which occur with the non-
interrogative morpheme.

(2039)   ta-soʔkuta
          fall-IMP.WARN
          Be careful or you might fall!

(2040)   samãnʔ   ʔiu-ʔna-soʔu
          leaf.cutter.ant   bite-O2-IMP.WARN
          Be careful or the leaf-cutters might bite you!

     This last example is an interjection used as an imperative, but without any
imperative morphology. Instead, the interjection itself is a command. This is a
special word used only with children, and is frequently employed by mothers when
calling their small children to come to them.

(2041)   jah
          come.INJ
          Come, child!

---

⁴⁴⁴ Taken from another well-known Mamaindê myth, where two children are blamed for
letting loose all the animals, thereby causing a need to hunt for ones food, and ultimately
bringing night to the world. This quote is from the climax of the story, when one child
persuades the other to open the cave that holds all the animals so they can kill and eat once
more. It is at this juncture that the animals escape.

3.4.2.3.5.6   Emotives

Emotives are the very last suffixes on the main verb. These morphemes are used to express something of the emotion of the speaker at the time of the utterance, thereby coloring the content of what is being communicated. By grammaticalizing emotions, this aspect of the language gives the speakers greater capacity for creativity within the verb itself, without having to resort to periphrastic strategies in order to express the full extent of their feelings. In Mamaindê, these emotives may also connote deictic information, a sense of space between the speaker and addressee.

Emotives occur in at least one other language in the Nambikwara language family. Fiorini offers an in-depth description of this aspect of Southern Nambikwara in his study of emotive vowel color (Fiorini. 2007). Neither Telles (2002) nor Antunes (2004) mention emotives in their descriptions of Latundê/Lakondê or Sabanê respectively.

In Mamaindê, emotives constitute a morpheme class which is super-imposed upon the clause type morphemes, occurring in the same slot in the verb. Emotives can take one of two forms: a single vowel, or a complete syllable. When a single vowel emotive is employed, it replaces the final vowel of the clause type marker, which is obligatorily the final vowel of the verb. When the full syllable emotive is used, it replaces the final clause type marker altogether. Emotives are only used in non-interrogative clauses.

The following is the set of Mamaindê emotives. Note that the two which are used for the purpose of yelling across long distances are realized as lengthened vowels.

Single vowel Emotives (with tones):

H
-a   unmarked emotion, unmarked distance

H
-eː   yelling, somewhat distant (or to express anger)

H
-uː   yelling, very long distance

H
-oː   regret, sadness

HL
-iː   sudden exclamations, surprise

L
-a   strong negation (used with negative imperatives)

Whole syllable Emotives:

   L   L
-kãun / -ãun   humor

   L   L
-tẽin / - ẽin   humor/surprise

Note that all of the single vowel emotives are realized with a high tone, except for the last two. The whole syllable emotives are both uttered with low tones, or at times falling tones. Here are examples of each.

/-eː/ 'yelling, somewhat distant (also may express anger)'

(2042)   <motorista> naka-n-hã.   haʔfĩn   anaʔ-tahĩn-w-eː
          driver   listen-S2-INT   quickly stop-IMP-N.INT-EMO.YELL
          Driver, are you listening? Stop quickly!
          (used to yell at the driver from the back of the truck)

(2043)   auweka-naʔ-ten-Ø-nha-w-eː
          collide-O2-DES-S3-PRS/NVIS-N.INT-EMO.YELL
          He is going to collide with you!
          (used to yell a warning to the rider of a bicycle)

/-uː/   'yelling, long distance'

(2044)   wet-tu   haʔta-latʰa-Ø-w-uː
          child-FNS   encounter-S3-PRS-N.INT-EMO.YELL
          They found the child!
          (used to yell to others further in the jungle who are still searching)

/-oː/   **'regret'**

(2045)   ni-ta̱ʔ   onka-toh-tʰoh,
          be.like.this-Cɴ.ᴀɴᴅ.SS   do-ᴡɴᴛ-Cɴ.ʙᴜᴛ

          onka-le-a-nʔ-nĩn-w-oː
          do-I.Pꜱᴛ-S1-Nᴇɢ-Pꜱᴛ-N.Iɴᴛ-Eᴍᴏ.ʀᴇɢʀᴇᴛ
          I wanted to do it like this, but I didn't.
          (when a Mamaindê had expessed regret at the way he had done a task)

/-iː/   **'sudden exclamations'**

(2046)   na-tʰoh-ãni,   nukãn-tahloʔ-naʔ-satoʔni
          Cᴏᴘ-Cɴ.ʙᴜᴛ-FNS   strong-O1.Pʟ-Nᴇɢ-Cɴ.ɪꜰ

          kanaha-loʔ-Ø-tʰunna-w-iː
          night-Eᴍᴘ-S3-Fᴜᴛ2-N.Iɴᴛ-Eᴍᴏ.ꜱᴜᴅᴅᴇɴ
          But, if he doesn't help us, it will become night!
          (used in a myth to express sudden concern)

(2047)   julãn   sek-kʰatoʔ   nakah   sun-tʰahta-w-iː
          persuade speak-Cɴ.ᴛʜᴇɴ.SS   again   kill-Iᴍᴘ-N.Iɴᴛ-Eᴍᴏ.ꜱᴜᴅᴅᴇɴ
          He persuaded him, "Lets kill again!"
          (used to express sudden anticipation)

(2048)   mãin-tu   tanãun   ta-i-loʔ-latʰa-Ø-w-iː
          pet-FNS   throw   Cᴀᴜ-Bᴅʏ.Eʏᴇ-burst-S3-Pʀꜱ-N.Iɴᴛ-Eᴍᴏ.ꜱᴜᴅᴅᴇɴ
          He threw it and caused the pet's eye (or forehead) to burst!
          (used when someone threw a soft drink can and hit an elderly Mamaindê
          man in the forehead. Everyone laughed at the sudden event, and the
          speaker immediately made up this joke, calling the old man a humorous
          term, 'pet'.)

/-a/   **'strong negation' (marked with L tone)**[445]

```
        L H L   H     L
        | | |   \ |   |
        | | |    \|   |
(2049)  onka-Ø-tahin-w-a
```
        do-NEG-IMP-N.INT-EMO.NEG
        Don't mess with it!

/-kãun/   ~ /ãun/ 'humor'

(2050)   jalãn-a-wet-a   sa-thã   sa-thã-thã
          toucan-GNT-child-FNS   beak-soft beak-soft-soft

          ja̜u-le-ntĩn-kãun
          be-I.PST-INF-EMO.HUMOR
          The toucans beak is soft, very soft.
          (sung in a humorous way)

     Much of the humor of the young adults, who are the most bi-lingual, is now based on Portuguese idioms which are then translated literally into Mamaindê, followed by the humor emotive.

(2051)   han-teʔ-Ø-ãun
          empty-DES/S1-PRS-EMO.HUMOR
          I want to be spent/emptied (humor)
          (taken from the Portuguese idiom 'vou vazar', meaning 'I will be leaving now', which could be approximated by the more idiomatic phrase 'I'm out of here'.)

---

[445] For more specifics on how tone and the negative interact, see section 2.5.2.4 'Tone sandhi and the negative construction'.

(2052)   ta-tʰeʔkatoʔki-tu   nahon   tai-teʔ-Ø-ãun
          Ps1-knee-FNS   water   take.out-DES/S1-PRS-EMO.HUMOR
          I want to take water out of my knee
          (taken from the Portuguese idiom 'vou tirar agua do joelho', meaning
          literally 'I will take water out of my knee' or 'I need to urinate', which
          could be approximated by the idiomatic phrase 'I need to take a leak'.)

/-tẽin/   **'humor/surprise'**

(2053)   jatan-a   ʔeit-tu   kʰun-ta̱ʔ   kʰasuh   tanãun-jeʔ
          deer-FNS   tobacco-FNS smoke-CN.AND.SS   spit   throw-EMP

          ih-sen-tẽin
          run-ʔ-EMO.HUMOR
          The deer smoked tobacco, spit it out, and ran away (humor).
          (a colorful description of the snorting of a deer)

        The previous example of humor is taken from the lyrics to a song
composed by the shaman. These humorous songs differ from other genres of
Mamaindê music in that they are spontaneous creations whose only social function
is to provide entertainment.[446] As the example above suggests, many of these humor
songs involve lyrics which poke fun at the animal kingdom.

3.4.2.4   Nominalizers

Nominalization is quite common in Mamaindê, where special affixes on the verb
root create nouns from verbs. The affixes most employed for this purpose are the
noun classifiers already discussed under noun morphology. While the basic function
of noun classifiers is to further modify the noun root, perhaps their most important
function in terms of the overall grammar is their ability to nominalize verb roots.

---

[446] Mamaindê music comes in a number of musical genre. Most of these have very specific
social functions, such as the war songs, the healings songs, the puberty songs, the 'Flute
Spirit' songs, etc. For a detailed account of traditional Mamaindê music styles, see Avery
(1977).

3.4.2.4.1   Noun Classifiers as Nominalizers

When noun classifiers are suffixed to a verb root, a noun is created with the
semantic content of the verb. The verb can then take on further noun morphology.
Many of the examples in the table of noun classifiers under noun morphology are
nominalized verbs. Below are a few more.

(2054)   mãn-kalo-tu

            be.hot-NCL.FLAT.THING-FNS

            flat hot thing/ cloth/cothes

(2055)   ta-sanĩn-sạ
            Ps1-happy-NCL.LIQUID/SPEECH
            my happy speech

(2056)   kanis-kanĩn-tu
            shine-NCL.ROUND-FNS
            the round shining thing/ light bulb

(2057)   ʔại-sen-tu
            go-NCL.CONTAINER-FNS
             the going container/car

(2058)   tunʔ-soʔki-tu
            growl-NCL.ANIM-FNS
            the growling one/ piranha

(2059)   na-tu-t-wạ-sạ-sihaleʔi-tu
            Ps3-get-CN-come-NCL.SOUND-ANC-FNS
            The speech that he brought a long time ago

       The generic form /-tʰã̃/ 'thing' is another noun classifier extremely useful
as a nominalizer. This is due to its ability to nominalize any verb. The process here
is one of action nominalization, whereby a noun is derived that refers to the action of
the original verb, similar to the /-ing/ morphological strategy in English. A verb like

/kateunta/ 'to be alive', for instance, becomes the nominal 'life' when this classifier is added.

(2060)   kateunta-tʰã-tu
           be.alive-NCL.THING-FNS
           life

(2061)   wa-onka-tʰã
           PS3-do-NCL.THING-FNS
           your doings

(2062)   na-eu-tʰã
           PS3-see- NCL.THING-FNS
            his seeing/ his point of view

3.4.2.4.2   The Patient Marker as Nominalizer

The second way of nominalizing a verb in Mamaindê is to attach the patient marker affix, */-kʰi/,* to the verb root. This process appears to be similar to the noun classifier approach, but is quite different grammatically. When the noun classifier nominalizes a verb, it will typically create a nominal without specifying its role in the clause, or, if the classifier */-soʔka/* 'animate' is used, it will assume that the noun created is the subject of the verb. The patient marker, on the other hand, nominalizes a verb by creating a noun which is a patient or undergoer of the verb to which it is affixed. So instead of subject nouns such as */tanu-soʔki-tu/,* 'the one who gives', the patient marker produces forms such as the following.

(2063)   tanu-kʰi-tu
           give-NCL.PAT-FNS
           that which was given

(2064)   wet-a-ta-kʰi-tu
           child-GNT-lie.down-NCL.PAT-FNS
            that in which the child lies/ a child carrier

(2065)   jain-kʰi-tu
            eat-NCL.PAT-FNS
             that which was eaten

(2066)   tu-la-kʰi-tu
            get-Pot-NCL.PAT-FNS
             that which could be gotten

It is even possible to have an overt subject marker on the verb along with the patient marker.

(2067)   eu-n-kʰi-tu
            see-S2-NCL.PAT-FNS
             that which you saw

3.4.2.5   Low Register

A low or informal register is very active, particularly among the younger speakers. The Mamaindê refer to it as */lahjatu/,* 'new speech', although this appears to refer more to those who use it than to the history of this speech variety. The only difference between the formal register of Mamaindê and the informal register is in the verb endings, specifically the inflectional morphology marking person, tense/evidentiality, and clause type. The formal or high register is used for all serious topics, for situations where one adult is speaking to a group of adults (including all speeches by the chief or the shaman), between the elderly, for the telling of stories and legends, and in ceremonies. Because of its prestige, the high register is almost always the default for any Mamaindê adult speaker when he is aware that his speech is being evaluated or recorded. The formal register is considered by the Mamaindê adults to be the only true form of the language, and thus the only form valid for study, causing them to look down on the informal speech as a less than perfect variety. Similarly, the young people, who often do not begin to acquire the high register until their teens, are reticent to have their speech recorded since they do not yet dominate the formal variety. For this reason, although this speech variety is quite common, very few recordings of the informal register exist.

The informal or low register is used extensively, but only in informal conversation, particularly between younger speakers. It is also used by adults when speaking to the youth, although when asked about it, the adults will usually deny that they speak in such an 'improper' manner.[447]

The existence of two registers within the same language is often treated as a type of diglossia. How many other Amazonian languages exhibit forms of diglossia is yet unknown. Interestingly, Ferguson (1972:245) mentions that the only documented cases of diglossia involve literate societies. A study of this aspect of Amerindian languages, which are mostly illiterate, may be revealing.

A curious aspect of the low register in Mamaindê is that it is characterized by a system of verb inflections that has some strong similarities to the inflectional paradigm found in the Latundê language (Telles, 2002:276). Both of these systems are centered around the verbal suffix *-tãn/, -tãnã/* (or a variant thereof).[448] In the low register of Mamaindê a form of this suffix is found in all tenses and persons, while in Latundê it is also widespread, marking all imperfectives and being used in most past and future constructions. The two systems are particularly similar in their past tense forms, where both the recent and intermediate past constructions are almost identical. This similarity is even further highlighted by the fact that both systems employ vowel and consonant length as a contrastive feature. As Telles does not mention diglossia in Latundê, we must assume that the Latundê system contains a single register, and that this single register in Latundê is extremely close to the informal register of Mamaindê. When we realize these two groups have had very limited contact in recent history (since recorded contact), we must conclude that this speech variety is not new but in fact probably quite old. At this point, we can only conjecture as to the origin of this speech variety.

At least three scenarios are theoretically possible when considering the history of these two registers: 1) the Northern Nambikwara proto form originally contained two registers, and after splitting off from the larger language, the Latundê have only preserved the informal one; 2) after splitting from the original proto-Nambikwara, these two speech communities then had contact at some point still in the distant past, when the Mamaindê were able to learn the speech variety of the Latundê, and keep it alive through the years as an informal register; 3) the informal register is a result of contact the Latundê and Mamaindê had with a different language, possibly the Cinta Larga to the north, or one of the many languages of the region which have since died out.

Option two, although not entirely impossible, doesn't seem plausible since it would require the more prestigious Mamaindê to learn and retain the speech variety of the less prestigious Latundê. The third option may be possible, but we have no data in that regard.

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[447] Ferguson (1972:237) mentions this denial aspect of diglossia.

[448] A similar form, *-dana/,* is found in Sabanê as well, where it functions as a present tense sensory evidential (Antunes, 2004:138). Any connection with the *-tãnã/* of Mamaindê is unknown. It is not improbable, however, that this form, which is used as a person and tense marker in the Mamaindê low register, could have been grammaticalized in Sabanê as a present tense evidential.

Of these three options, the first is the most convincing. This is because speech communities which are highly endangered generally end up losing much of their culture and language along the way. We see other evidences of this among the Latundê, who only have a handful of active speakers left, speakers who cannot remember their ethnic music or ethnic ceremonies, and who have lost much of their traditional material culture.[449] It is not improbable that in this process they could have lost significant portions of their language as well. The loss of a high or formal register implies that there may have been a huge loss of adult members of the community at some point in the past, with only the younger generation left to carry on the language and culture, a generation which had not yet learned the formal register sufficiently enough to pass it on to their children.[450] Such mass decimation of the adult population is in fact what has been documented in the sad history of the Latundê (as well as all of the Nambikwara bands), largely through inter-tribal warfare and disease, in particular the measles epidemics which came after the official contact with the outside world (Telles, 2002:4-20).

The low register replaces the person, tense/evidentiality and clause type markings found in the high register with the paradigm of verb final suffixes found below. The suffix /-tãn/, while not having any substantial semantic content, can be seen as the prototype morpheme marking the low register. Evidentials have not been found in this system.[451]

Low Register verbal person/tense suffixes:

	1st person	2nd person	3rd person
present	-jeʔtãːnu/-jeʔtaːnã	-tãnu	-jeʔtãh/-jeʔtã
recent past	-tãːnã	-tãnːã	-tãnã
interm. past	-taleːna	-talenna[452]	-talettʰa
distant past	-tãːẖı̱ʔ	-tãnːẖı̱ʔ	-tãẖı̱ʔ
future	-jeʔtãhtu/-jeʔtãhtã/ -jeʔtãːtʰu	-tãnːtʰu	-jeʔtãntʰu

---

[449] During a socio-linguistic survey of the Latundê in 2004, the author was surprised to find that the Latundê could not remember when they had performed the last puberty ceremony, a ceremony which is distinctive and crucial to the cohesiveness of Nambikwara cultures. They also mentioned they had lost the knowledge to make their traditional instruments, such as the sacred bamboo flutes and the gourd nose flutes.

[450] I owe this idea to a conversation with Stan Anonby, a socio-linguist with extensive survey experience in Amazonian speech communities.

[451] This supports Ferguson (1972:241-2) who states that low register forms are typically less complex than their high register counterparts.

[452] The sequences /nn/ and /nː/ differ in that the first undergoes the oralized nasal rule, being realized here as /ᵍŋ/, while the second is simply lengthened.

Note that in this system both vowel and consonant length is contrastive. In both recent and intermediate past, the first and second person forms can only be differentiated by the use of lengthened segments, the first person form lengthening the vowel, the second person form lengthening the nasal consonant.[453]

While it is possible to parse out some of the tense markers in these forms, such as the future form */-tʰu/* and the distant past form */hḭ̃ʔ/,* the person markers are not consistent across the tenses. For this reason, I will be treating all of these forms as fused person/tense morphemes, using the gloss L.R. to signify Low Register.

I will now use the verb */seit/* 'speak' to demonstrate the above forms.

Low Register – Present Tense

(2068)   seit-jeʔtã:nu

            speak-L.R/S1/PRS

            I am speaking.

(2069)   seit-tãnu

            speak-L.R/S2/PRS

            You are speaking.

(2070)   seit-jeʔtãh

            speak-L.R/S3/PRS

            He is speaking.

Low Register – Recent Past

(2071)   seit-tã:nã

            speak-L.R/S1/PST

            I spoke (earlier today)

---

[453] Latundê (Telles, 2002:279) also uses vowel length in its */-tã:n/* morpheme to differentiate first person from other persons.

(2072)   seit-tãːã
            speak-L.R/S2/Pst
            You spoke (earlier today).

(2073)   seit-tãnã
            speak-L.R/S3/Pst
            He spoke (earlier today).

Low Register – Intermediate Past

(2074)   seit-taleːna
            speak-L.R/S1/I.Pst
            I spoke (yesterday).

(2075)   seit-talenna
            speak-L.R/S2/I.Pst
            You spoke (yesterday).

(2076)   seit-talettʰa
            speak-L.R/S3/I.Pst
            He spoke (yesterday).

Low Register - Distant Past

(2077)   seit-tãːhḭ̃ʔ
            speak-L.R/S1/D.Pst
            I spoke (in the distant past).

(2078)   seit-tãːh̥ĩʔ
          speak-L.R/S2/D.PST
          You spoke (in the distant past).

(2079)   seit-tãh̥ĩʔ
          speak-L.R/S3/D.PST
          He spoke (in the distant past).

Unlike the high/formal speech, there is only one form of future in the low register.

Low Register – Future

(2080)   seit-jeʔtãːtʰu
          speak-L.R/S1/FUT
          I will speak.

(2081)   seit-tãːtʰu
          speak-L.R/S2/FUT
          You will speak.

(2082)   seit-jeʔtãñtʰu
          speak-L.R/S3/FUT
          He will speak.

The plural forms for first person behave similarly to their counterparts in the high register, where the *-kʰit* plural morpheme is added to third person singular forms.

(2083)   seit-kʰit-jeʔtãh
          speak-S1.PL-L.R/S3/PRS
          We are speaking.

The form */-jeʔ/,* which we have described previously as an emphatic in the high register, continues to be used in the low register, albeit in another capacity. In the lower register, it becomes grammaticalized, taking on a new inflectional function instead of a derivational function. This new function is to mark non-second person subjects, since it occurs obligatorily in all first and third person verbs which are non-past. It also changes its position and moves further away from the root. While the low register */-jeʔ/* suffix is obligatory on non-second person, non-past forms, it may or may not occur adjacent to the */-tãn/* suffix, as is evidenced by the example below.

(2084)   at-jeʔ-lhi-tãnu
          to.fish-L.R.-Irr-L.R/S1/Prs
          I would go fishing.

Other forms of the low register include an impersonal construction and an imperative.

Other Low Register morphemes:

Low Register	
Impersonal	/-tatahna/ ~ /-tatah/
Imperative	/-tah/

Low Register - Impersonal

(2085)   suʔton-tatah
          to.not.know-L.R/Impersonal/Prs
          I don't know.

(2086)   hitenũn-tatahna
          worry-L.R/Impersonal/Prs
          I am worried.

Low Register – Imperative

(2087)   ta-haiʔk-ã   aʔmuka-tah
          Ps1-word   trust-L.R/Imp
          Trust me!

(2088)   kalah-tah
          climb-L.R/Imp
          Climb up!

3.4.3 Interjections

The following interjections have been found in the language. These are employed as free morphemes, spoken either alone, or accompanied by a separate utterance.

Interjection:	Expresses:
paah	perturbation
kʰuuh	excitement
hoʔtʰi	surprise, humor
hã̃ʔã	agreement
hajo	affirmation, agreement
tuup	discomfort
haʔwa	command - take this!
jah	command - come here! (only used with children)

4   Syntax

The syntactic model adopted here will follow what has been referred to as BLT, or Basic Linguistic Theory, in keeping with the non-theoretical goals of this work.[454] Mamaindê syntax is fairly straightforward and any description of it should also be appropriately straightforward.

4.1   Phrase Level

4.1.1 Noun Phrase

The Mamaindê noun phrase is head–final. It is composed of an optional possessor followed by either a noun or a quantifier, or both. The noun may be a pronoun, lexical noun, proper noun, or a nominalized verb. If a quantifier is used, it becomes the head of the phrase.

Noun Phrase constituent order

NP →   (Poss) $\left\{ \begin{array}{l} \text{N} \\ \text{Q} \\ \text{N Q} \end{array} \right\}$

---

[454] I will however, be adopting a few basic notions from the Core-Periphery model of Role and Reference Grammar (Valin, 1997:26-27) where applicable, particularly the notions of 'core' and 'periphery'.

4.1.1.1 The Possessor within the Noun Phrase

Possession is marked on the head noun, which is optionally preceded by the possessor.

(2089) Joaquim-soʔka   na-wet-tʰã   juhak
        'Joaquim'-NCL.HUM   Ps3-child-NCL.GROUP   all

        nakʰanik-let-Ø-nãn-wa
        sick-I.PST-S3-PST-DECL
        All of Joaquim's children were sick.

(2090) na-sih-ã   nakah   siha-Ø-tʰunna-wa
        Ps3-house-FNS   again   build-S3-FUT2-DECL
        He will build his house again.

(2091) ta-tukwinʔni-tu   na-jau-tʰⁱn-tu
        Ps1-father.in.law-FNS   Ps3-live-NCL.HOUSE-FNS

        jau-wa-aʔ-Ø-wa
        live-HAB-S1-PRS-DECL
        I habitually live at my father-in-law's house.

(2092) 'Antonio'-soʔkã   na-ʔaik-tu   nahohntoʔ aat-latʰa-Ø-wa.
        Antonio-NCL.HUM   Ps3-field-FNS   very   big-S3-PRS-DECL
        Antonio's field is very big.

(2093) mamãinsa-ãni   na-haiʔka   anka-latʰa-Ø-wa
        Mamaindê   Ps3-word   costly-S3-PRS-DECL
        The language of the Mamaindê is valuable/dear.

(2094)   tai̯-nã̃ʔã   watanʔni-tu   na-wek-tʰã̃
          I-PL   clay.pot-FNS   PS3-make-NCL.THING

          nakajaunũn-kʰit-latʰa-Ø-wa.
          forget-S1.PL-S3-PRS-DECL
          We have forgotten the making of clay pots.

4.1.1.2   The Quantifier within the Noun Phrase

When a quantifier is used, it will follow the noun, becoming the head of the noun
phrase. There are three non-numeric quantifiers used in noun phrases.

Non-numeric quantifiers

          /juhak/   all
          /kanih/   many, large amount
          /aat-siʔ/   few, some, small amount (literally: 'big-NEG') [455]

(2095)   nakajanʔ-tu   juhak   li̯nʔ-nu-tu
          people/Indian-FNS   all   manioc-NCL.POWDER-FNS

          jain-soʔkeuh-latʰa-Ø-wa
          eat-MAN.PROB-S3-PRS-DECL
             All Indians/people eat beijo (tortilla shaped bread from manioc flour).

(2096)   kajauka   kanih   ja̯u-latʰa-Ø-wa
          white.man many   to.be-S3-PRS-DECL
          There are many white men (non-Indians).

---

[455] The quantifier /aat-siʔ/ 'small, little' can also be used to modify verbs. Interestingly, /aat/
'big, much' is never part of a noun phrase, but can be employed as a descriptive verb 'to be
big' or as a verb modifier 'very much'.

(2097)   wais-tu   aat-siʔ   tanãun-ten-aʔ-Ø-wa
           acai.palm-FNS   big-NEG   sell-Des-S1-Prs-Decl
           I will sell a few palm hearts.

(2098)   kajauka   na-nunʔ-tu   kanih   sun-khit-let-Ø-nãn-wa
           white.man   Ps3-animal-FNS   many   kill-I.Pst-S3-Pst-Decl
           We killed many of the white man's animals.

       Quantifiers may also occur alone, without the presence of the nominal. This
is an indication of their head status within the phrase.

(2099)   juhak   l̪inʔ-nu-tu   jain-soʔkeuh-latʰa-Ø-wa
           all   manioc-NCL.POWDER-FNS   eat-Man.Prob-S3-Prs-Decl
           All (Indians) eat beijo.
           (the nominal referent of 'all' is clear thru context)

(2100)   kanih   jau-latʰa-Ø-wa
           many   to.be-S3-Prs-Decl
           There are many *(the referent indicated by context)*.

(2101)   aat-siʔ   tanãun-ten-aʔ-Ø-wa
           big-NEG   sell-Des-S1-Prs-Decl
           I will sell a small amount.

4.1.1.2.1   Numerals

The quantifiers in the noun phrase may also include the small set of Mamaindê
numerals. There are only three numerals in the language, two of them being primary
forms and the third being a composite form.

Mamaindê numerals[456]

      /kanaka/   'one'

      /paah/~ /paa/ [457]   'two'

      /paa-kanaka/   'two-one' (three)

     Any reference to numerals above the numeral 'three' becomes difficult, requiring either a juxtaposition of two numerals, */paah-ãni, paah-ãni/* 'four', or a metaphorical phrase such as */hikʔ-hãn/* 'hand-full/five'. Typically, the Mamaindê avoid such mathematical precision in their language and use generic quantifiers such as */kanih/* 'many', or switch to Portuguese when counting matters.

(2102)   Ɂain-tu   paah   at-satau-le-Ø-hĩn-wa

             fish-FNS   two   catch.fish-RS-I.PST-S3-PST/NVIS-DECL

             He/she caught two fish, someone said.

(2103)   hoɁkʰi-tu   kanaka-ãni   hajaɁ-latʰa-Ø-wa

             kindling/match one   be.enough-S3-PRS-DECL

             One match is enough.

(2104)   jun-tu   paah-kanaka-ãni   tu-sitoh-ta-latʰa-Ø-wa

             knife-FNS   two-one-FNS   get-WNT-O1-S3-PRS-Decl

             I want to get three knives.

     Numerals may also function alone within the noun phrase, optionally taking nominal suffixes such as the noun classifier and the Final Nominal Suffix. If a final nominal suffix is used, it must be the */-ãni/* form.

---

[456] The numerals may optionally take the */-ãni/* final nominal suffix, which signals marked topic in this case, but never */-tu/.* That the topic is marked is evidenced by the fact that the speaker has chosen to count the nominal, which is not required.

[457] The two vowels in */paah/* indicate a lexically lengthened vowel. The initial stop is traditionally realized as an imploded voiced stop *[ɓaah].* The final /h/ is sometimes not articulated at all, hence the allomorph */paa/,* which is most obvious in the form */paa-kanaka/* 'three'.

(2105)   paah   at-satau-le-Ø-hĩn-wa
          two   catch.fish-RS-I.Pst-S3-Pst/NVis-Decl
          He/she caught two, someone said.

(2106)   kanaka-ãni   hajaʔ-latʰa-Ø-wa
          one   be.enough-S3-Prs-Decl
           One is enough.

(2107)   kanaka-kʰat   hajaʔ-latʰa-Ø-wa
          one-NCl.stick   be.enough-S3-Prs-Decl
           One stick is enough.

(2108)   paah-kanaka-ãni   tu-sitoh-ta-latʰa-Ø-wa
          two-one-FNS   get-Wnt-O1-S3-Prs-Decl
           I want to get three.

         Not all numerals, however, are part of the noun phrase. A common practice
is to employ the numerals as verbs, suffixed with inflectional verb morphology.

(2109)   ta-sawis-tu   paah-latʰa-Ø-wa
          Ps1-grandchild-FNS   two-S3-Prs-Decl
          My grandchildren are two (I have two grandchildren).

4.1.1.3 Nominalization and the Noun Phrase

Besides possessors and quantifiers, the third strategy for modifying nouns is to use
noun classifiers. As we saw in the previous chapter on morphology, such noun
classifiers may be used to either classify a noun or nominalize a verb by suffixing
the appropriate noun classifier to a verbal root. This second function, the
nominalization of verbs, plays a crucial role in the noun phrase, for it is these

nominalized verbs that have the most descriptive power in the language, giving the Mamaindê speaker a very productive tool for modifying nominals, and creating new ones at will. The root verb involved may be virtually any verb, descriptive or active.

(2110)   lah-kanĩn-tu   ta-satau-le-Ø-hĩn-wa

           new-NCL.ROUND-FNS   born-RS-I.PST-S3-PST/NVIS-DECL

           The new spherical one (the baby) was born (so they say).

         The example above shows a single nominalized verb in a single noun phrase. For more extensive descriptions using nominalizations, appositional noun phrases are employed. See below.

4.1.1.4   Appositional Phrases

Noun phrases are often juxtaposed to other noun phrases, forming a noun phrase string. This concatenation of nominal forms results in a series of descriptive appositional noun phrases. This is another productive process, permitting the speaker to easily join noun phrases together for the purpose of further describing a particular object, person, or thing.

Appositional phrases in Mamaindê fulfill the same syntactic function (subject, object, or oblique) as the nominal they are modifying. As each appositional phrase typically brings a new descriptive idea into play, the longer the series of such noun phrases, the more descriptive power being employed. There does not seem to be any limit on the number of appositional noun phrases used in a single sentence.

         Note the frequent and important role of noun classifiers in the construction of appositional phrases. When a noun classifier is affixed to a verbal root, the verb is nominalized and functions as another noun within the appositional phrase.

(2111)   hukʔ-tu   watiwatis-kʰatʔ-tu,   ãn-kʰatʔ-tu
           bow/gun-FNS   shiny-NCL.STICK-FNS   hunt-NCL.STICK-FNS

           anka-kʰatʔ-tu   toh-ta-latʰa-Ø-wa
           costly-NCL.STICK-FNS   want-O1-S3-PRS-DECL
           The gun, the shiny stick, the hunting stick, the costly stick, I want it.

(2112)   waun-teh-tu   paah-kanaka-teh-tu
          red-NCL.STRING-FNS   two-one-NCL.STRING-FNS

          joha-le-n-nãn-wa
          trade-I.PST-S2-PST-DECL
          Red strings, three strings, you traded (You traded three red necklaces.)[458]

          Due to the nominalized verbs embedded in these forms, the use of
appositional noun phrases in this language can perform the same function as relative
clauses do in other languages, that is, as a means of modifying nominals with a
whole clausal idea.

(2113)   Paulo-soʔka   wanih-soʔka   kajauka   haiʔka
          Paulo-NCL.HUM   tell-NCL.HUM   white.man   language

          wanũn   set-soʔka   kaʔjãinʔ-Ø-tʰunna-wa
          good   speak-NCL.HUM   write-S3-FUT2-DECL
          Paulo, the teacher, the one who speaks the white man's language well,
          he will write.

(2114)   nakajanʔ-tu   na-ʔau-tu
          person/indian-FNS   Ps3-other/partner-FNS

          kʰakʰot-soʔkeuh-latʰa-Ø-wa
          dangerous-PRB-S3-PRS-Decl
          That person, their other/their partner, is probably dangerous.

---

[458] See the work of Miller (2007) for the importance of the necklace in the Mamaindê
worldview.

4.1.2 Verb Phrase

The verb phrase is head-final.[459] Besides the obligatory verb, other constituents within the verb phrase are optional, and may include adverbs, quantifiers, locatives and nominals. I will be describing all nominal arguments, including the direct and indirect objects, as inside the core but separate from the verb phrase.[460]

Verb Phrase Constituent Order

VP → (AdvP) V

4.1.2.1   Adverb Phrases

The adverb phrase always precedes the verb and may optionally be composed of adverbs, locatives, quantifiers, or nouns.

Adverb Phrase Constituent Order:

$$\text{AdvP} \quad \rightarrow \quad \left(\left\{ \begin{array}{l} \text{Locative} \\ \text{N} \end{array} \right\} \right) \quad \left(\left\{ \begin{array}{l} \text{Adverb} \\ \text{Quantifier} \end{array} \right\} \right)$$

---

[459] The relationship between verb and adposition (pre- and postpositions), another criteria often used to define headedness, is not applicable here because typical adpositions do not exist in the language (the closest to an adposition function is the oblique marker embedded in the verb morphology). Even so, Mamaindê clearly follows the general behavior of head final languages.

[460] The term 'core' comes from the Core-Periphery model of the clause found in Role and Reference Grammar (Valin, 1997:26-27), where the Core consists of the nucleus and its arguments (subject and objects), and the Periphery consists of all other constituents which are not arguments of V. I am, however, retaining the use of the more traditional notion 'verb phrase', common to Basic Linguistic Theory, which is not a part of Van Valin's model (Valin, 1997:31).

4.1.2.1.1   Adverbs

The set of true adverbs is rather limited. This is due to the fact that verbal
morphology supplies much of the modifiers for the verb. Below is the set of the
basic adverbs discovered to date.

Mamaindê Adverbs:

haʔfĩn	quickly
wiʔ	slowly/softly
nakah	again/more
naih	still
nauʔkanaiʔ/naiʔ/	just/only/even so
haiʔ	just
ʔnuh	alone
mũn	well
haʔwen	begin to
naha/nah	already
wein	now

These particular forms belong only to the adverb class, never being
employed as verb roots. They occur immediately before the main verb of the clause,
and after any subject or object nominals.

(2115)   un-tʰoh   naih   ʔa̠i-ten-aʔ-Ø-wa
            far-CN.BUT   still   go-DES-S1-PRS-DECL
            It's far, but I'm still going.

(2116)   ta-waintʰã̠   wiʔ   nakaʔ-Ø-tʰunna-wa
            Ps1-group   slowly   understand-S3-FUT2-DECL
            My group/family will slowly understand.

(2117)   wại   nakah   jain-sitoh-nu-hã
           you   again   eat-E.V.WANT-S2-INT
           Do you want to eat again?

(2118)   aik-tu   ʔnuh   ikalaka-latʰa-Ø-wa
           field-FNS   alone   work-S3-PRS-DECL
           He/She is working in the field alone.

(2119)   kajauka   mũn   eu-ʔna-sihtaʔ   set-aʔ-Ø-wa
           white.man   well   see-O2-CN.IN.ORDER.TO.DS   speak-S1-PRS-DECL
           I speak so that the white man will look well on you.
           (I hope the white man thinks well of you.)

(2120)   laka-naʔsiʔ   nauʔkanaiʔ   set-latʰa-Ø-wa
           know-NEG   just   speak-S3-PRS-DECL
           Without knowing, he is just talking.

(2121)   haʔtĩn   wanki-tsĩnwa
           quickly   return-IMP
           Return quickly!

(2122)   wein   eu-khit-ten-latʰa-Ø-wa
           now   see-S1.PL-Des-S3-PRS-Decl
           Now we will see!

        More than one adverb may also be used in succession immediately before
the verb.

(2123)   na-hĩ̱ʔ   tại-ãni   haiʔ wị̱ʔ   set-ten-a-nha-wa.
           COP-CN.REASON   I-FNS   just slow   speak-DES-S1-PRS/NVIS-DECL
           So, I'll just speak slowly.

A number of verbs may also be employed in an adverbial function,
occurring in the same pre-verbal position as the adverbs above. In these cases, the
adverbial verb root is used without any additional morphology.

(2124)   hihektĩn   nakʰai-jeʔ-let-Ø-nãn-wa
            easy   cut-EMP-I.PST-S3-PST-DECL
            It cut easily.

(2125)   kʰãn   ikalaka-tsĩnwa[461]
            hard   work-IMP
            Work hard!

(2126)   hãi   wanũn   set-latʰa-Ø-wa
            he   good   speak-S3-PRS-DECL
            He speaks well.

(2127)   hajaʔ   set-tah
            enough   speak-IMP
            Enough said!

---

[461] Unstressed vowels (such as the last vowel of the verb */ikalaka/*) are realized as /i/ before
the */-tsĩnwa/* form of the imperative, in this case resulting in *[igaˈlagitsĩŋwa]*.

4.1.2.1.2   Quantifiers within the Adverb Phrase

Quantifiers may also occur within the adverb phrase.

Mamaindê Quantifiers in the Adverb Phrase:

wawaikʰa	much (also used as a noun quantifier 'more')
halakʰãn	much (also used as a noun quantifier 'more')
nahohntoʔ	much
aat	much (also used as a verb 'big')
aatsiʔ	a little bit (also used as a noun modifier for 'few')
analot	too much

(2128)   nahohntoʔ   toh-ta-latʰa-Ø-wa
           much   want-O1-S3-PRS-DECL
           I want it very much (It is wanting to me very much)

(2129)   aat-siʔ   ʔjaih-soʔkeuh-let-Ø-nãn-wa
           a little   sad-PRB-I.PST-S3-PST-DECL
           He was probably a little sad.

(2130)   aat   sanĩn-latʰa-Ø-wa
           much   happy-S3-PRS-DECL
           He/She is very happy.

(2131)   wai   analot   set-hensoʔ   na-nuʔ-Ø-wa
           you   too.much   speak-CN.ALWAYS   COP-S2-PRS-DECL
           You always speak too much!

4.1.2.1.3 Locatives

Locatives will typically occur in the adverb position, between the subject and the verb, and consist of the specialized forms below. They may co-occur with other adverbs or quantifiers.

Mamaindê Locatives:

sein/sei	here
tʰukatijah/tʰukajah/tʰuka	there (close - visible)
tʰatijah/tʰati/tʰa	there (far - not visible)
nahektʰã	in front
naʔhek	beside
nalenna	on the other side, opposite side
najãnã	beyond
nanuʔkanũn/nanuʔkakain/nanuʔka	in the center (in the chest area)
kaliwen	in the center
taʔjonna/ jonna	behind
tektalehkana	behind
hekta/hek/hei	on top
nakalahna	outside (the outside surface of)
nawenna	inside
taʔta̠hna/taʔta̠h	inside, underneath
jahenna	underneath
ʔoha	above, up high *(also used as a verb root)*
joha	below, down low *(also used as a verb root)*
wanaka	close *(also used as a verb root)*
jãn	far
un	far *(also used as a verb root)*

(2132)   sein   j̯au-aʔ-Ø-wa.
          here   to.be-S1-PRS-DECL
          I am here.

(2133)   siha   tektalehkana   j̯au-latʰa-Ø-wa.
          house   behind   to.be-S3-PRS-DECL
          It is behind the house.

(2134)   tʰuka   j̯au-latʰa-Ø-wa.
          there   to.be-S3-PRS-DECL
          It is right there.

(2135)   hãi-ãni   kanat-sen-tu   kaliwen-tu   j̯au-jeʔ-Ø-nĩnta-wa
          he-FNS   night-NCL.PLACE-FNS   middle-FNS   be-EMP-S3-G.KN-DECL
          He sat there in the middle of the darkness.

(2136)   juhak   ju-kʰoʔ-tʰĩn-tu   j̯au-latʰa-Ø-wa.
          all   mouth-hang-NCL.HOUSE-FNS   to.be-S3-PRS-DECL
           Everyone is at the village that hangs on the cliff
          (Everyone is at Capitão Pedro village)

(2137)   ta-hĩni-tu   tʰatijah   to-let-Ø-nãn-wa
          Ps1-grandmother-FNS   there.far   die-I.PST-S3-PST-DECL
          My grandmother died way over there.

(2138)   kanaha-leʔi-tu   Jaci-soʔki-tu   na-ʔaik-tu
          night-PST-FNS   Jaci-NCL.HUM-FNS   Ps3-field-FNS

          ikalaka-soʔkeuh-jeʔ-le-Ø-ntĩn-wa
          work-PRB-EMP-I.PST-S3-INF-DECL
          Yesterday, Jaci was probably working in his field (based on deductions)

(2139)   najanã   ʔnuh   ikalaka-latʰa-Ø-wa
          over.there   alone   work-S3-Prs-Decl
          He/She is working over there alone.

          Locatives may also be fronted to a clause initial position when location is in
focus (see Discourse section 4.4.2 for more on fronting).

(2140)   sei-ijah   juhak   nah   jau̱-latʰa-Ø-wa.
          here-Dem   all   already   to.be-S3-Prs-Decl
          Everyone is already *here.*

(2141)   tʰatijah   ta-hĩni-tu   to̱-let-Ø-nãn-wa
          there.far   Ps1-grandmother-FNS   die-I.Pst-S3-Pst-Decl
          Way over *there* is where my grandmother died.

          Certain verb roots (such as the adjectival verb 'far', and the related verbs
'close', 'above', 'below') may also function as free locatives/adverbs within the
clause, modifying the main verb.

(2142)   un   ja̱u-latʰa-Ø-wa.
          far   be-S3-Prs-Decl
           It is far away.

(2143)   ʔoha-ʔa̱i-sen-tu   ʔoha   ʔa̱i-le-a-nãn-wa.
          high-go-NCL.container-FNS   high   go-I.Pst-S1-Pst-Decl
          I went up high in a high-going-container (airplane).

4.1.2.1.4   Nominals as Adverbials

Nouns may also be used to modify the verb in a way that is similar to the use of
adpositional (prepositional or postpositional) phrases in many languages. In
Mamaindê however, there are no adpositions, and therefore, no adpositional phrases.
The function typically attributed to adpositional phrases cross-linguistically is

realized in Mamaindê as a simple noun or noun phrase occurring in the adverbial slot, which comes directly before the verb. The appropriate semantic relationship holding between the verb and its adverbial nominal, such as "for", "to", "from", "through", "by", "in", and so on, must be inferred by context. This includes the ditransitive construction, where the nominal functioning as the indirect object also occurs in the adverb slot, without any adposition or marking of any kind.[462] Here we see a number of examples of nominals functioning as adverbials.

(2144)   walonʔ-tu   na-wenna   sawawe-let-Ø-nãn-wa.
           armadillo.giant-FNS   Ps3-hole   growl-I.Pst-S3-Pst-Decl
           The giant armadillo was growling in his hole.

(2145)   hãi nahon-kʰãn-kalo-tu   ʔai-let-Ø-nãn-wa
           he   water-descend-NCL.FLAT-FNS   go-I.Pst-S3-Pst-Dec
           He went downriver by boat.

(2146)   nakatoʔ-tu   na-halo-tu   ʔai-satau-le-Ø-hĩn-wa.
           Negarotê-FNS   Ps3-land-FNS   go-RS-I.Pst-S3-Pst/Nvis-Decl
           They say the Negarotê fellow went back to his land.

\

(2147)   wasainʔ-tu   na-jais-tu   tanu-Ø-tʰunna-wa.
           stuff-FNS   Ps3-son.in.law-FNS   give-S3-Fut2-Decl
           He will give the stuff to his son-in-law.

(2148)   <Vilhena>-tʰʼĩn   ʔnĩu-a-nãn-wa
           Vilhena-NCL.HOUSE   return-S1-Pst-Decl
           I returned from Vilhena.

       The nominal adverbials can also co-occur with other adverbs. In such cases, the nominal typically precedes the adverb.

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[462] Except for the notions 'about', 'with', and 'for the benefit of', which are marked on the verb by the morpheme /-ka/. This morpheme, however, is not an adposition. See verbal morphology for more on /-ka/.

(2149)   <Vilhena>-tʰĩn   nah   ʔnĩu-a-nãn-wa
          Vilhena-NCL.HOUSE   already   return-S1-PST-DECL
          I have already returned from Vilhena.

(2150)   hãi   nahon-kʰãn-kalo-tu   wiʔ   ʔa̰i-let-Ø-nãn-wa
          he   water-descend-NCL.FLAT-FNS   slowly   go-I.PST-S3-PST-DECL
          He went slowly by boat.

4.2 Beyond the Phrase

4.2.1 Basic Clausal Constituent Order

As we have seen, Mamaindê morphology encodes the personhood of subjects and objects within the verbal string, consequently making overt nominals optional, and allowing complete sentences to be composed of a single verb. Thus, the order of basic constituents within the clause is only pertinent when overt nominals are present. In cases where overt nominals are used, the basic constituent order of the clause is SV in intransitive clauses and SOV in transitive clauses. In the latter, the OV order is a constant, while the order of Subject and Object may vary depending on discourse functions. These variations will be discussed shortly. Temporals come before the subject in a pre-clause position. The verb obligatorily occurs in the clause final position, a common trait of prototypical head-final languages. Mamaindê also satisfies the majority of the phrase level universals proposed for head-final languages (Payne 1997:72. See also Greenberg 1963).

Intransitive Basic Constituent Order
                    S V

(2151)   waʔñin-soʔka   hain-le-Ø-hĩn-wa
          shaman-NCL.HUM   sing-I.PST-S3-PST/NVIS-DECL
          The shaman sang (and I heard him).

(2152)   ʔenʔ-kanĩn-tu   wate-latʰa-Ø-wa.
            moon-NCL.ROUND-FNS   disappear-S3-PRS-DECL
            The moon has disappeared.

(2153)   tại   jạu-aʔ-Ø-wa.
            I   to.be-S1-PRS-DECL
            I am (here).

(2154)   mih-tu   alai-Ø-tʰaʔ-wa.
            rain   pass.by-S3-FUT1-DECL
            The rain will pass.

(2155)   ta-ta-tʰã-tu   un-latʰa-Ø-wa
            PS1-born-NCL.PLACE-FNS   far-S3-PRS-DECL
            The place I was born is far away.

(2156)   jalakwatun-tu   aun-let-Ø-nãn-wa
            howler.monkey   escape-I.PST-S3-PST-DECL
            The howler monkey escaped.

Transitive basic constituent order - SOV

(2157)   tehn-ãʔã   jalik-tu   toh-jeʔ-latʰa-Ø-wa
            woman-PL   necklace-FNS   want/like-EMP-S3-PRS-DECL
            Women really like necklaces.

(2158)   ʔenʔni-tu   tun-tu   wet-Ø-tʰunna-wa
            man-FNS   flute-FNS   make-S3-FUT2-DECL
            The men will make the flutes.

(2159)   hãi   na-sawis-tu   hiksamãn-soʔkeuh-latʰa-Ø-wa
          he   Ps3-grandchild-FNS   miss-PRB-S3-PRS-DECL
          He is probably missing his grandchild.

(2160)   tại   ta-ʔau-tu   ʔaʔmuka-ten-aʔ-Ø-wa
          I   Ps1-other-FNS   trust-DES-S1-PRS-DECL
          I will trust my partner/my other/my friend.

         Below is an example with an overt subject, locative, and object, preceded
by a temporal.[463] The locative is part of the verb phrase as we have already
observed.

(2161)   nahanasihati-ijah   ta-jahon-naʔa   sei-ijah-ãni
          in.ancient.time-DEM   Ps1-old.man-PL   here-DEM-FNS

          na-siha   siha-jeʔ-Ø-nĩnta-wa
          Ps3-house   build-EMP-S3-G.KN/PST-DECL
           In ancient time, my forefathers built their homes right here.

4.2.2 Limitations on Overt Arguments in a Clause

In ditransitive clauses, both the direct and the indirect object will theoretically occur
immediately before the verb, in the O slot. There is no implicit order holding
between them. However, Mamaindê speakers prefer to avoid employing three overt
arguments in the same clause. This means that while ditransitive clauses are
possible, one or more of the arguments will typically be encoded by verbal
morphology. If an overt mention of all three arguments is necessary, however, then
two clauses will usually be created, using either a main clause /subordinate clause

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[463] Such sentences, with a direct object and locative in the same clause, are quite rare.
However, examples like this, where the locative precedes the direct object, point to the
possibility that the direct object should be considered part of the verb phrase. However, this
same sentence is still considered grammatical if the locative occurs after the direct object.
This shows that the locatives have a relatively free distribution.

structure, or two completely separate sentences. The first example below is marked as ungrammatical or unnatural due to the excessive weight of arguments.

(2162)   ta-tukwinʔni-tu   na-jun-tu   wanũn-kʰat-tu
           Ps1-father.in.law-FNS   Ps3-knife-FNS   good-NCL.STICK-FNS

           na-sawis-tu   tanu-let-Ø-nãn-wa. *
           Ps3-grandchild-FNS   give-I.PST-S3-PST-DECL
           My father-in-law gave his knife, the good one, to his grandchild.

The above would be reworded in one of the two following fashions.

(2163)   ta-tukwinʔni-tu   na-jun-tu   wanũn-kʰat-tu
           Ps1-father.in.law-FNS   Ps3-knife-FNS   good-NCL.STICK-FNS

           tanu-let-Ø-nãn-wa.   na-sawis-tu
           give-I.PST-S3-PST-DECL   Ps3-grandchild-FNS

           tanu-let-Ø-nãn-wa
           give-I.PST-S3-PST-DECL
           My father-in-law gave his knife, the good one. He gave it to his
           grandchild.

(2164)   ta-tukwinʔni-tu   na-sawis-tu   tu-sihta̱ʔ
           Ps1-father.in.law-FNS   Ps3-grandchild-FNS   get-CN.IN.ORDER.TO.DS

           na-jun-tu   wanũn-kʰat-tu
           Ps3-knife-FNS   good-NCL.STICK-FNS

           tanu-let-Ø-nãn-wa
           give-I.PST-S3-PST-DECL
           My father-in-law gave his knife, the good one, so his grandchild could
           get it.

Kingston (n.d.:14) also mentions this limitation in respect to the number of nominals in the Mamaindê clause, and Kroeker (2001:4) does the same for Southern Nambikwara. Latundê (Telles, 2002:350), on the other hand, appears to have no such restriction.

Exceptions to this tendency do exist however. Below is a single clause with three nominals before the verb; a subject, an oblique, and a direct object. Note that while such clauses are rare, they show that the unmarked position of the oblique in relation to the other nominals is between the subject and the direct object.

This sentence comes from a text about an elderly woman who peeled her skin off, and the children subsequently shot it full of holes with their play arrows.

(2165)   na-tʰoh   wek-tu   kaliʔkʰinʔ-tu   na-ʔm̃in-tu
          COP-CN.BUT   child- FNS   child's.arrow-FNS   PS3-skin-FNS

          ãn-Ø-nta-wa.
          shoot-S3-G.KN/PST-DECL
          But then, the children shot her skin with their children's arrows.

4.2.3 The Impersonal Construction

The impersonal construction, which introduces a dummy third person subject into the clause, and relegates the first person subject to an oblique status, has already been dealt with under a discussion of verb types in section 3.4.2.1.3. The reader is referred back to that section for the discussion of the type of verb that appears in these forms. It is important to note, however, that this construction causes significant changes in verb-argument relations, thus affecting the clause as a whole. Givón perhaps gives the best description of such impersonal constructions, referring to them as 'metaphorical intransitives' (1989:63), for although they are transitive at face value, they are representative of intransitive meaning at some deeper semantic level.[464]

The examples from the morphology section 3.4.2.1.3 will be repeated here for the benefit of the reader.

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[464] I have for the most part adopted a single level syntax for this grammar description. There is, however, a need for a further level of grammar when analyzing the impersonal construction. It could be argued that such underlying structure is simply equivalent to the semantic domain

(2166)   to̱-ta-latʰa-Ø-wa
           sick-O1-S3-PRS-DECL
           It is sick to me (I am sick)

(2167)   nĩ̱-ʔna-latʰa-Ø-wa
           hurt-O2-S3-PRS-DECL
           It hurts to you (You hurt)

(2168)   suhni-ta-latʰa-Ø-wa
           afraid-O1-S3-PRS-DECL
           It is frightening to me (I am afraid)

(2169)   ʔja̱ih-Ø-latʰa-Ø-wa
           sad-O3-S3-PRS-DECL
           It is sad to him (He is sad)

(2170)   heh-ta-latʰa-Ø-wa
           hungry-O1-S3-PRS-DECL
           It is hungry to me (I am hungry)

(2171)   hitʰa̱-ʔna-latʰa-Ø-wa[465]
           tired-O2-S3-PRS-DECL
           It is tiring to you (You are tired)

(2172)   suʔton-ta-latʰa-Ø-wa
           to.not.know-sick-O1-S3-PRS-DECL
           It is unknown to me (I don't know)

(2173)   hitenũn-ʔna-latʰa-Ø-wa
           worry-O2-S3-PRS-DECL
           It is worrisome to you (You are worried)

---

[465] This root is derived from two morphemes - */hik/* 'hand', and */tʰa/* - 'tired'.

(2174)   ʔo̱n-Ø-latʰa-Ø-wa
           be.lazy-O3-S3-PRS-DECL
           It is lazy to him (He is lazy)

        While most impersonal clauses are underlyingly intransitive, there are a
handful, like the following, which are transitive on a semantic level.

(2175)   takalah-ta-latʰa-Ø-wa
           to.dislike-O1-S3-PRS-DECL
           It is not liked by me (I don't like it)

(2176)   nakajaunũn-ta-latʰa-Ø-wa
           forget-O1-S3-PRS-DECL
           It is forgetting to me (I forget it)

(2177)   toh-ta-latʰa-Ø-wa
           want-O1-S3-PRS-DECL
           It is wanting to me (I want it)

        The impersonal construction may even be used with an overt object, as
exemplified in the two forms below.

(2178)   ta-set-a-sa̱   nakajaunũn-ʔna-latʰa-Ø-wa
           Ps1-speech-GNT-NCL.LIQUID   forget-O2-S3-PRS-DECL
           My speech is forgetting to you (You forgot my speech).

(2179)   li̱n-nu-tu   juhak   toh-ta-latʰa-Ø-wa
           manioc-NCL.PASTE-FNS   all   want-O1-S3-PRS-DECL
           All the manioc dough is wanting to me (I want all the manioc 'beijo').

        Notice that the impersonal is in some ways quite similar to the absolutive
case in ergative systems. The impersonal in Mamaindê basically uses an object
marker to mark the subject of certain (deep level) intransitives, thus establishing a
formal link between the subject of the intransitive with the object or patient of the
transitive, a major characteristic of the absolutive case. As this only occurs with a
small subset of intransitives, the emotive verbs, it would be viewed as a split-

intransitive system. In such systems, the subjects of single argument clauses can be grouped with either the agents or the patients of multi-argument clauses depending on the semantics of the verb involved. When the subject of the single argument clause is grouped with the patient, as is the case of the Mamaindê impersonal, these constructions are also referred to as unaccusatives (for more information on split-intransitivity, see Payne, 1997:144-145).

Split-intransitivity, or something similar to it, may actually be a family trait. Telles (2002:227) reports the presence of split-intransitivity in Latundê, and Kroeker, although not using the label split-intransitive, mentions a similar phenomenon in Southern Nambikwara, which he attributes to all the stative verbs (2001:4).

In spite of these similarities with split-ergativity, several unique aspects of the Mamaindê system need to be mentioned. Mamaindê impersonals are identified by markings on the verb, and not by way of case marking on nouns as in many ergative languages. The impersonal makes this link between the subject of intransitive and object of transitive by way of morphology, where the underlying subject is marked as an object on the surface. The ergative/absolutive dichotomy does not typically require such levels, and can be handled by simple surface marking. The Mamaindê impersonal is a clause which always encodes the indirect object (at least the surface object) on the verb, while the typical absolutive does not have such a requirement. Besides these differences, the impersonal construction also requires the insertion of a third person subject that is semantically empty, a dummy subject, something not necessary in an absolutive. Finally, the last distinction between absolutives and impersonals is that absolutives can be used with any person of the verb as agent, while impersonals are only distinguishable from any other verb when employing non-third person agents.[466] Thus, while Mamaindê may appear to possess a limited split-intransitive system, these constructions are best treated as impersonals.

Evidence of the underlying subject in these impersonals can be obtained by investigating the switch reference system. In the examples below, the impersonal clause is preceded by a dependent clause, linked by way of a connective. The connectives in Mamaindê not only serve to connect clauses, but they also function as a switch reference system, indicating if the subject of the second clause will change or remain the same as the subject of the previous clause. It is the choice of the connective that signals this crucial information.

(2180)   tai-ãni   wa-taʔ   sanĩn-ta-latha-Ø-wa.
          PNI-FNS   come–CN.AND.SS   happy-O1-S3-PRS-DECL
          I came and it is happy to me (I have come and am happy about it)

---

[466] This would necessarily be the case of any language where 3rd person objects are unmarked.

(2181)   hãi-ãni   wa̲-hĩʔ,   sanĩn-ta-latha-Ø-wa.
          PN3-FNS   come-CN.AND.DS   happy-O1-S3-PRS-DECL
          He came, and it is happy to me (He has come and I am happy about it)

        In the first example above, we have two clauses linked by the SS (Same
Subject) connective /-taʔ/, indicating that the subject of the second clause will
remain the same as the first, in this case, 1st person. In the second example, we have
the DS (Different Subject) connective /-hĩʔ/, which signals that a switch in subject is
occurring (from 3rd person to something else). In both these cases the use of the
switch reference system supports our analysis that the 1st person Object marker /-ta/
is actually being used to refer to a person who is the subject at some non-surface
level, and that, at that same underlying level, the 3rd person Subject marker /-latʰa/
refers to a person who is not the subject at all. The importance of the switch
reference system is that it predicts who the underlying subject of the second clause
will be, and in both cases, this prediction agrees with the object marker, not the
subject marker. Thus, the switch reference system of the language lends significant
support to our analysis of the impersonal construction.

4.3 Beyond the Clause

4.3.1 Temporals as Sentence Initial Elements

While temporals can occur along with the other adverbs in the adverb position
immediately preceding the verb, their unmarked position is the pre-clausal sentence
initial slot. All of the temporals can occur in this position, while only a few ever
occur in the adverb slot before the verb. In the sentence initial slot, they are typically
followed by a short pause, indicating some sort of separation between these
temporals and whatever follows. Thus, in this position, they must be considered as
occurring outside of any verb or noun phrase, indeed outside of the clause itself,
serving instead to modify the sentence as a whole. Van Valin (1997:36) refers to this
position as the left-detached position, which is outside of the clause but part of the
sentence.

Temporal in left-detached position

```
                          ┌──────────────── Sentence
                          │                    │
                          │                  Clause
                          │                    │
                          │                   Core
                          │                  ╱  │  ╲
                          │                 ╱   │   ╲
                          │                ╱    │    ╲
         Temp          NP[sub]      NP[obj]      VP
```
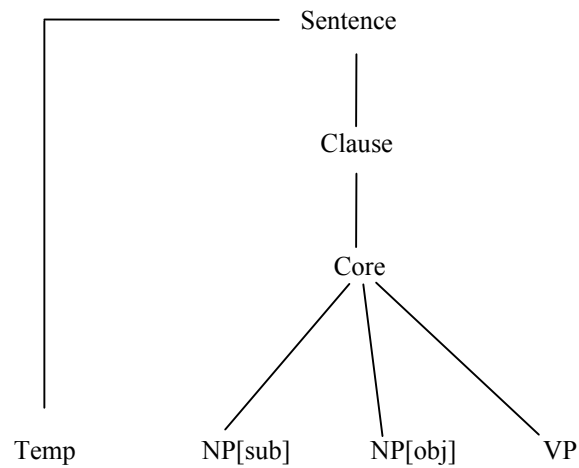
Mamaindê Temporals:

wein	now
nahana	later/earlier/after some time
kanahata	tomorrow
kanahaleʔitu	yesterday
nahanaleʔitu	a while ago
nahanasihatijatu	in ancient times

(2182)   wein-ijah   ʔai̠-sitoh-ta-latʰa-Ø-wa.
         now-DEM   go-WNT-O1-S3-PRS-DECL
         I want to go right now.

(2183)   nahana   ta-kamãn-kʰĩ-tu   lit-Ø-tʰunna-wa
         later   Ps1-order-NCL.PAT-FNS   arrive-S3-FUT2-DECL
         The stuff I requested will arrive later.

(2184)　　kanahata　taʔwen　ʔai̯-taʔ　　　jau̯-taʔ
　　　　　tomorrow　jungle　go-CN.AND.SS　stay-CN.AND.SS

　　　　　ikalaka-ten-aʔ-Ø-wa
　　　　　work-DES-S1-PRS-DECL
　　　　　Tomorrow I will go to the jungle and stay and work.

(2185)　　nahanasihati-ijah　　　nusa-jahon-nãʔã　　kajauka
　　　　　in.ancient.time-DEM　Ps1.PL-old.man-PL　white.man

　　　　　nakʰanik-kʰatʔ-tu　　　　suʔton-jeʔ-Ø-nĩnta-wa.
　　　　　sickness-NCL.STICK-FNS　not.know-EMP-S3-G.KN-DECL
　　　　　In ancient times, our ancestors did not know about white man's diseases.

　　　Other temporals are also possible, due to the productive nature of the morphology. By affixing *-hen* 'N.Cls.time' to most any verb, a new temporal clause can be created.

(2186)　　anuʔka-hen-ã　　　　　eu-khit-ten-latʰa-Ø-wa
　　　　　gather-NCL.TIME-FNS　see-S1.PL-DES-S3-PRS-DECL
　　　　　When we gather together, we will see (about that)

　　　A large number of verbs relating to time are found in the language, such as 'to be day/light', 'to be night/dark'. These will not be treated as temporals for they behave as verb roots in their own right. Below is a list of a few of these time related verbs.

Some time related verbs:

nakʰakʰaʔ	to be noon
nakʰakʰasadis	to be noon stretched (a little after noon)
lãn	to be day/light
kanaha	to be night/dark
johũn	to be afternoon
sũna lit	to be sunrise (sun arriving)
sũna wade/ sũna tahawat	to be sunset (sun disappearing/entering)

4.3.2 Question Words

All interrogative sentences are formed by the affixation of the interrogative suffix at the end of the verb. This process has already been dealt with under verbal morphology. However, questions differ in whether there is an additional question word added to the sentence or not. The interrogatives that do not employ a question word are the yes/no questions[467], and those that do are the content questions. Here we will deal with the content questions and the placement of the question word. Notice that all the interrogative examples in this section use a question word as well as the additional interrogative morpheme on the final verb.

Mamaindê Question Words:

natokʔ	what
nanĩʔ	what
natokʔ-wet	what-child = who
nahãitoʔ	which
nahãitʰã	where
nanita?	how
nanĩʔ-heina	what-time = when
naniʔ-teiʔnataʔ	what-purpose = why
naniʔ-kʰijãn	what-purpose = why

In the case of nouns, the position of the question word within the sentence is determined by the element that it intends to replace. [468]

(2187)   natokʔ-wet   juʔwaʔ-sạ   set-wa-le-Ø-ha
           QW.what-child   lie-NCL.LIQUID   speak-PST-I.PST-S3-INT
           Who told the lie?

---

[467] Examples of yes/no questions have been provided under the discussion of the interrogative morpheme in section 3.4.2.3.5.5, 'Clause Types'.
[468] The examples that follow show that the ordering of morphemes within the verb is switched in the interrogative, such that the intermediate past marker follows the unmarked past. See section 3.4.2.3.5.5.1 for more details.

(2188)   hãi   natokʔ-sạ   set-wa-le-Ø-hã
          he   QW.what-NCL.LIQUID   speak-PST-I.PST-S3-INT
          What words did he speak?

       Notice in the last form above that a noun classifier may be suffixed to the question word /natokʔ/ to specify what class of nominal is being called into question.
       When questioning adverbials, the question word is the first element in the sentence.

(2189)   naniʔteiʔnataʔ   juʔwaʔ-sạ   set-wa-le-Ø-hã
          QW.why   lie-NCL.LIQUID   speak-PST-I.PST-S3-INT
          Why did he tell the lie?

(2190)   naniʔ-heina   juʔwaʔ-sạ   set-wa-le-Ø-hã
          QW.what-time   lie-NCL.LIQUID   speak-PST-I.PST-S3-INT
          When did he tell the lie?

(2191)   nanitaʔ   juʔwaʔ-sạ   set-wa-le-Ø-hã
          QW.how   lie-NCL.LIQUID   speak-PST-I.PST-S3-INT
          How did he lie?

(2192)   nahaitʰã   juʔwaʔ-sạ   set-wa-le-Ø-hã
          QW.where   lie-NCL.LIQUID   speak-PST-I.PST-S3-INT
          Where did he lie?

       In questioning the verbal event itself, the speaker will make use of the question word / natokʔ/ 'what', placing it after any overt subject, and then adding the verb /onka/ 'do' inflected with the interrogative marker.

(2193)   hãi   natokʔ   onka-wa-le-Ø-hã
          he   QW.what   do-PST-I.PST-S3-INT
          What was he doing?

4.3.3 Clause Chaining

As Payne (1997:307) points out, there are multiple ways for languages to join verbs, each of them somewhere on the continuum from a single clause to two distinct separate clauses. We have already described the use of serial verbs in Mamaindê (under verb morphology), and how they encode various elements of a single event by juxtaposing multiple verb roots within a single clause, even a single word. No linking material (connectives/conjunctions) is needed between the verb roots in such serial constructions. A single example will suffice here, with the two verb roots italicized.

(2194)   *tu-ʔnĩu*-ten-latʰa-Ø-wa

          get-return-DES-S3-PRS-DECL

          He will bring it.

        Beyond the use of serial verbs, Mamaindê employs another strategy to link verbs which is often referred to as clause chaining. In Mamaindê these clause chains can have numerous functions. Some are used in a coordinating relationship, while others are found in a subordinate or dependent relationship. The dependent clauses can further be broken down into various adverbial types, such as time, purpose, negative-purpose, conditional, negative-conditional, manner, consequential, substitutive, additive, etc.
        The most prominent proto-typical element of clause chains, according to a summary by Payne (1997:321), is a clear distinction between final and non-final verbs, where the verb in the final clause is inflected for person, tense, aspect, etc, while non-final or medial verbs are not. Medial verbs, on the other hand, besides carrying less inflection, typically make reference to the subject only in terms of the subject of the final verb, and will often indicate the temporal element that holds between the clauses (Longacre, 1985:263). All of these proto-typical elements are present to some degree in Mamaindê clause chains. These elements will be referred to in more detail as we look at the connective system.

4.3.3.1   Connectives

The glue that holds chains of clauses together in Mamaindê is the set of connectives. Connectives occur between clauses within the same sentence, suffixed to the very end of each medial verb, and taking the place of most of the inflected morphology. Tense, evidentiality, mood and emotives are only indicated on the final verb. Although the medial verb is capable of carrying any of the derivational morphology found on the main verb, it customarily will exhibit minimal suffixing beyond the

connective. The subject may or may not be marked on the medial verb, depending on the connective being used and the type clause chain employed. The use of a connective is typically followed by a short pause during speech. The connective system, however, is not created equal – it is divided into two paradigms depending on how much information is conveyed. .

4.3.3.1.1   Switch Reference Connectives

The first set of connectives actually forms a small switch reference system. This system tells us three things: 1) whether the clauses on either side of the connective are in a coordinating or dependent relationship, 2) what temporal/logical relationship holds between the clauses, and 3) whether the subject of the following clause is the same or different than the preceding clause.

Switch Reference System

	Coordinating Relationship		Dependent/Independent Relationship	
Logical function	*Same Subj.*	*Different Subj.*	*Same Subj.*	*Different Subj.*
Simultaneous/ Incorporating	-taku -ta̱ʔ,			
Sequential	-kʰatoʔ	-hḭ̃ʔ, -sḭ̃ʔ,		
Purposive			-teʔnata̱ʔ -teʔnta̱ʔ -teʔ	-sihta̱ʔ

When 'same subject' connectives are used, no inflection for subject is necessary on the medial verbs of the chain, since the marking of subject is obligatory on the final verb. With 'Different subject' connectives, however, subject must be indicated on both medial and final clauses.

A word should be said about the first connective shown in the table above. I am using the term "incorporating function" to refer to the connecting of different verbs that are seen as simply smaller events within a larger one, or if you will, parts of a whole. When an incorporating suffix such as *-ta̱ʔ/* is used, 'same subject' is always implied, due to the intrinsic nature of such events – which are one person events capable of being broken down into intermediary but closely related steps. For that reason, this connective type does not have a counterpart in the 'different subject' column.

When the dependent/independent relationship exists between two clauses, the dependent clause always precedes the independent one, with the connective occurring between the two.

4.3.3.1.2   Non-Switch Reference Connectives

The second set of connectives, which is the larger of the two sets, marks the presence of an adverbial clause, and thus is intrinsically found linking clauses that are in a dependent/independent relationship. The purpose of these forms is to signal the type of temporal/logical relationship holding between the clauses. These connectives, however, have nothing at all to say about the subject of either verb.

Because of this lack of information regarding subject, these connectives will often be preceded by a standard subject person marker, thus identifying the subject of the first verb.[469] The second verb, or main verb, will always carry its own subject marking. The table below lists the connectives used in this second system.

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[469] Inflection in these instances is limited to subject marking. No tense or evidentiality is found on medial verbs of a clause chain. Such notions are carried only by the final verb of the chain.

Non-Switch Reference Connectives

Logical Function	Dependent/Independent Relationship
Negative purpose	-kʰijãn
Reason	-hḭ̃ʔ
Conditional	-satoʔni
Substitutive	-kʰihenkãni
Comparative	-kʰijãnʔ
Negative	-aʔsiʔ
Perpetual	-hensoʔ
Mirative	-soʔkẽin
Disjunctive	-taʔnã
Additive	-ĩ
Counter-factual	-thoh

      Examples of each of the connective types described thus far, including the clause chains they join, will be given in the following two sections, starting with examples of coordinating clauses, and followed by instances of dependent/independent clause chains.

      Connectives, like all Mamaindê morphemes, carry their own lexical tone. Their obligatory position at the end of the verb makes their tones particularly prominent, as well as subject at times to some final verb intonational patterns. I will use tone abbreviations H, L, HL, and LH to indicate the lexical tones of each form according to the number of syllables per form.

4.3.3.2   Clauses in a Coordinating Relationship

Extensive repetition of clauses in a coordinating relationship is a popular strategy in Mamaindê discourse. Such recursion accounts for the longest clause chains in the language, particularly when the coordinating clauses share the same subject. Below are some examples of this strategy.

Simultaneous/Incorporating with Same Subject - 'and…'

/-ta̰ʔ/ ~ /-ta̰ku/   **tones: /L/ ~ /L.H/**

The connective */-ta̰ʔ/* is used to connect verbs with the same subject which are related by either being simultaneous, or by being considered as a series of events which make up a greater whole. Thus, the events in these verbs may be sequential or may overlap in time. The single syllable variant is accompanied by a low tone. The two syllable */-ta̰ku/* has a low tone associated to the first vowel and a high tone to the second.

(2195)   kajauka-siha   ãun-ta̰ʔ   ʔñĩu-khit-let-Ø-nãn-wa
            white.man-house   leave-CN.AND.SS return-S1.PL-I.PST-S3-PST-DECL
            We left the white man's house (city) and returned.

       Below is a good example of the use of */-ta̰ʔ/* within the switch reference system.

(2196)   wateʔi-tu   leu-ta̰ʔ   hikkʰãn-ta̰ʔ
           anteater-FNS   approach-CN.AND.SS   stand-CN.AND.SS

           jalakwatun   ʔit-taun-jeʔ-let-Ø-nãn-wa
           howler.monkey   grab-INC.ALMOST-EMP-I.PST-S3-PST-DECL
           The anteater approached, stood up, and almost grabbed the howler monkey.

       If the speaker had changed the connective on */hikkʰãn-ta̰ʔ/* to */hikkʰãn-hḭ̃ʔ/,* then a different subject would have been signaled and it would have meant that it was the monkey who almost grabbed the anteater. When there is more than one possible agent in a clause, the connectives provide the information necessary.

(2197)   wa̱-ta̱ʔ,   eu-ta̱ʔ   set-ta̱ʔ,
          come-CN.AND.SS   see- CN.AND.SS   speak-CN.AND.SS

          hain-ta̱ʔ,   jain-ta̱ʔ   ta-ta̱ʔ,
          sing-CN.AND.SS   eat-CN.AND.SS   lie.down-CN.AND.SS

          sanĩn-jeʔ-Ø-ninta-wa
          happy-EMP-S3-G.KN-DECL
          She came, and saw, and spoke, and sang, and ate, and laid down, and
          was very happy.

Sequential w/Same Subject - 'then…'

/-kʰatoʔ/   tones: /L.H/

The connective /-kʰatoʔ/ is used to connect verbs with the same subject which are
related by the logical operator 'then'. Thus it tends to be used for sequential events,
or utterances where the sequence of events is in focus.

(2198)   <motorista>   anaʔ-kʰatoʔ   eu-kʰatoʔ
          driver   stop-CN.THEN.SS   see-CN.THEN.SS

          set-jeʔ-let-Ø-nãn-wa
          speak-EMP-I.PST-S3-PST-DECL
          The driver stopped, looked and then spoke.

(2199)   ʔe̱h-tu   tu-kʰatoʔ   wais-kʰatoʔ   tau-kʰatoʔ
          axe-FNS get-CN.THEN.SS clear-CN.THEN.SS chop-CN.THEN.SS

          talona-jeʔ-Ø-nĩnta-wa.
          finish-EMP-S3-PST/G.KN-DECL
          He got his axe, cleared (brush), chopped (trees), and then finished.

(2200)   tãn-kʰat-tu   wes-kʰatoʔ   hosata-tu
          thing-NCL.STICK-FNS   make-CN.THEN.SS   spider.monkey-FNS

          ãn-kʰatoʔ   maʔ-kʰatoʔ
          shoot-CN.THEN.SS   cook-CN.THEN.SS

          wi̱-jeʔ-Ø-nĩnta-wa.
          eat.meat-EMP-S3-G.KN-DECL
          He made a stick thing [arrow], then shot a spider monkey, then cooked
          it, then ate it.

Sequential w/Different Subject - 'then…'

/-hḭ̃ʔ/ ~ /-hḭ̃nʔkalu/ ~ /-sḭ̃ʔ/   /H/ ~ /L.L.H/

The connective /-hḭ̃ʔ/ has two functions. The one being described here is to connect
verbs with different subjects that are related by the logical operator 'then'. The
second function will be dealt with under the connective category entitled 'Reason'.
        These first examples illustrate the use of /-hḭ̃ʔ/ as a switch referent
connective, where it marks a change in subject as well as signaling a sequential
order to the events. It is being glossed as CN.THEN.DS.

(2201)   hãi   lit-Ø-hḭ̃ʔ   ʔa̱i-a-tʰunna-wa
          he   arrive-S3-CN.THEN.DS   go-S1-FUT2-DECL
          When he arrives, then I will go.

(2202)   nũnʔta-tu nahon eu-a-hḭ̃ʔ,   nauʔkanaiʔ ja̱u-Ø-nãn-wa
          tapir-FNS water see-S1-CN.THEN.DS   just   stay-S3-PST-DECL
          I saw the tapir in the water, and then it just stayed there.

        The next two examples show that a 'different subject' connective does not
necessarily imply a change in personhood, but rather requires a change in the actor.
It is when the subjects of both clauses are 3ʳᵈ person (and thus unmarked) that the
switch reference connectives become essential.

(2203)   sũna   ju-ten-ka-Ø-hɨ̃nʔkalu
          sun   mouth-shut-OBL-S3-CN.THEN.DS

          kanaha-loʔ-latʰa-Ø-w-i
          be.dark-EMP-S3-PRS-DECL-EMO.SUDDEN
          They shut up the sun and then it became dark!

(2204)   lani-ten-watais-Ø-hɨ̃ʔ   kalakala
          be.bright-DES-E.V.CLOSE-S3-CN.THEN.DS   chicken

          ʔai-Ø-hɨ̃ʔ   weit-tu   ta-jeʔ-let-Ø-nãn-wa
          go-S3-CN.THEN.DS   child-FNS   born-EMP-I.PST-S3-PST-DECL
          It was close to daylight, then the rooster crowed, and then the baby was
          born.

4.3.3.3   *Clauses in a Dependent / Independent Relationship*

Purpose w/Same Subject – 'in order to'

/-teʔ/ ~ /-teʔntaʔ/ ~ /-teʔnataʔ/[470]   **tones: /L/ ~ /L.H.L/ ~ /L.H.L/**

This morpheme connects two clauses with the same subject that are linked by the
concept of purpose. The second clause event occurs for the purpose of bringing
about the first. It can be roughly glossed in English either as 'in order to' or simply
'to'.

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[470] The truncated form */-teʔntaʔ/* has suffered vowel elision and is realized with a syllabic
nasal as
[-deʔṇdaʔ].

(2205) jalik-tu   waun-kʰañin-tu   tu-teʔntaʔ
        necklace-FNS   red-NCL.ROUND-FNS   get-CN.PURPOSE.SS

        joha-ten-aʔ-wa
        trade-DES-S1-PRS-DECL
        I want to trade in order to get red necklace beads.

(2206) hohothi-tu   set-hḭ̃ʔ,   kopait-tu
        owl-FNS   speak-CN.THEN.DS   armadillo-FNS

        ãn-teʔntaʔ   ʔai̯-ten-a-nha-wa[471]
        hunt/shoot-CN.PURP.SS   go-DES-S1-PRS/NVIS-DECL
        The owl hooted, so now I want to go to hunt armadillo.

(2207) nũnʔ-tu   ãn-teʔntaʔ   ʔai̯-Ø-tʰoh,
        animal-FNS   hunt-CN.PURP.SS   go-S3-CN.BUT

        eu-Ø-aʔ-wa
        encounter- S3-NEG-DECL
        He went to hunt some game, but didn't see any.

(2208) wanũn eu-ʔna-teʔntḁʔ   hikʰãn-let-Ø-nãn-wa
        good   see-O2-CN.PURP.SS   stand-I.PST-S3-PST-DECL
        He stood up to see you better.

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[471] The combination of the desiderative marker */-ten/*, the first person subject marker */-a/*, and the non-visual present tense evidential */-nha/* are realized phonetically as a fused form *[-dena]*.

Purpose w/Different Subject – 'in order to'

/-siʔ/ ~ /-sihtạʔ/ ~ /-sihtạku/   **/HL/ ~ /HL.L/ ~ /HL.L.H/**

This morpheme connects two clauses with different subjects that are linked by the concept of purpose. The second clause event occurs for the purpose of bringing about the first. It can be glossed in English as either 'in order to', 'so that', or simply 'to'.

(2209)   wại-ijahni   eu-n-sihtạʔ   kaʔjais-aʔ-Ø-wa.
          you-DEM   see-S2-CN.PURP.DS   write-S1-PRS-DECL
          In order for you to see , I am writing.

(2210)   tại   sanĩn-ka-sihtaʔ,   tanu-ta-let-Ø-nãn-wa
          I   happy-OBL-CN.PURP.DS   give-O1-I.PST-S3-PST-DECL
          For me to be happy about it, he gave it to me (in intermediate past).

(2211)   hãi   nusa-haiʔka   nakat-siʔ
          he   PS1.PL-word   hear/understand-CN.PURP.DS

          nawih-tạʔ   set-aʔ-Ø-wa
          teach-CN.AND.SS   speak-S1-PRS-DECL
          For him to understand our language, I am teaching and speaking.

        The following example comes from an explanatory text about the reason for the seclusion period during the female rite of passage. According to Mamaindê legend, a whirlwind once kidnapped a menstruating girl who was outdoors alone, and then made a mountain out of her. This is the background for the statement below.

(2212) mamãin-ta-tu   mãnʔ-tu
        Mamaindê-NCL.FEMALE-FNS   mountain-FNS

        we-aʔ-sihtạ̧ʔ
        become-NEG-CN.PURP.DS

        sihki-hensoʔ   na-jeʔ-latʰa-Ø-wa
        stay.indoors-CN.ALWAYS   COP-EMP-S3-PRS-DECL
        So that Mamaindê girls don't get turned into mountains, now they
        always stay indoors.

    This next example combines a number of different switch reference
connectives in a single sentence.

(2213) kʰanahata-leʔ-ja-tu   'Jaci'   na-soʔki-tu
        yesterday-PST-NCL.TIME-FNS   Jaci   COP-NCL.HUM-FNS

        jạk-tu   ãn-kʰatoʔ   tu-ʔñĩu-tạʔ
        peccary-FNS   shoot-CN.THEN.SS   get-return-CN.AND.SS

        an-ãun-juh-hiʔ,   kʰajauka-ta-tu
        CAU-leave-3REF-CN.THEN.DS   white.man-NCL.FEM-FNS

        set-jeʔ-let-Ø-nãn-wa
        speak-EMP-I.PST-S3-PAST.DECL
        Yesterday, Jaci shot a peccary, brought it and left it, and then the white
        woman spoke.

Reason   - 'because'

/-hĩʔ/ ~ /-hĩnʔkalu/   /H/ ~ /L.L.H/

We have already considered the first usage of /-hĩʔ/. Now we will turn to its
secondary function. In this role, it does not function as a switch referent, but signals
the 'because' relationship holding between clauses where the event of the first
clause causes or sets the stage for the event of the second clause. This may be
roughly translated as 'because/since/so'. In this function, no reference to the subject
of either clause is implied, which may or may not be the same.

These forms illustrate this second use of *-hĩʔ/,* where it is glossed as
'CN.BECAUSE'.

(2214)   hãi   wanũn   set-hĩ̲ʔ,   sun-aʔsiʔ
          he   good   speak-CN.BECAUSE   kill-CN.NOT

          ãun-satau-le-Ø-hĩn-wa
          leave.alone-RS-I.PST-S3-PST/NVIS-DECL
          He spoke well, so they left him alone without killing him (that's what I
          heard).

(2215)   jainsa hat-juh-hĩ̲ʔ   kʰajanʔtu   ʔjaih-ta̲ʔ
          food   not.have-3REF-CN.BECAUSE   alligator   sad-CN.AND.SS

          ju-khah-ta-jeʔ-let-Ø-nan-wa
          mouth-open-lie.down-EMP-I.PST-S3-PST-DECL
          Since it had no food, the alligator was sad and lay there with its mouth
          open

(2216)   naʔtun-hĩ̲ʔ,   nahohntoʔ
          be-full-CN.BECAUSE   much

          sanĩn-ta̲ʔ   ʔiun-Ø-tunna-wa
          happy-CN.AND.SS   sleep-S3-FUT2-DECL
          Because they are full (of food), they will be very happy and go to sleep.

Conditional   - 'if'

/-satoʔni/   /L.L.H/

The conditional relationship between two clauses is signaled by the connective
/-satoʔni/. If the dependent clause, which comes first, holds true, then the main
clause that follows will also hold true. Typical usage of this connective includes the

potential suffix /-lhi/ marking the main verb of the clause, highlighting the sense of conditionality in the utterance.

(2217)   ta-waintʰã   ʔon-satoʔni   ikalaka-lhi-Ø-aʔ-wa
          Ps1-group-NCL.GROUP   lazy-CN.IF   work-POT-S3-NEG-DECL
          If my people are lazy, they won't work.

(2218)   kopait-ã   na-wet-tu   eu-a-satoʔni,
          armadillo-FNS Ps3-child-FNS   see-S1-CN.IF

          tu-taʔ   wet-lhi-aʔ-Ø-wa
          get-CN.AND.SS   care.for-IRR-S1-PRS-DECL.
          If I see a baby armadillo, I will get it and take care of it.

(2219)   ʔnuh   ta-walekan-tu   ikalaka-nu-tʰã   toh-satoʔni,
          alone   Ps1-chief-FNS   work-S2-NCL.THING   want-CN.IF

          ikalaka-lhi-nnaʔ-Ø-wa   na-naʔ-Ø-wa.
          work-IRR-S2-PRS-DECL   say-S1-PRS-DECL
          'If just my chief wants you working, you will work,' I say.

(2220)   na-tʰoh   suʔton-soʔka   to-satoʔni
          COP-CN.BUT   not.know-NCL.HUM   die-CN.IF

          teh   ʔai-hĩʔ
          road   go-CN.THEN.DS

          hãi   kajaʔ-ã   wi-leʔ-lhi-latʰa-Ø-wa
          he   alligator-FNS   eat.meat-O1.PL-IRR-S3-PRS-DECL
          But if one (of us) who doesn't know dies, we would go down that road,
          and then we would be eaten by the alligator spirit.

Negative - 'without…'

/-aʔsiʔ/   /L.H/

The negative connective is used when the speaker wishes to negate the doing of the dependent verb in favor of the main verb. Its usage implies that a positive verb will follow. The best translation is 'without doing thus-and-so'…, or 'while not doing thus-and-so…'. This differs from the basic negative morpheme in that it does not carry any further verbal morphology, and like all connectives, fills the final verbal suffix slot.

(2221)   ikalaka-na-aʔsiʔ   nauʔkanaiʔ   jạu-aʔ-Ø-wa

          work-S1-CN.WITHOUT   just   stay-S1-PRS-DECL

          Without working, I am just staying here.

(2222)   suhna-aʔsiʔ   ʔoha-ʔại-sen-tu

          afraid-CN.WITHOUT   high-go-NCL.CONTAINER-FNS

          wi-a-nãn-wa

          enter-S1-PST-DECL

          Without being afraid, I entered the high-going-container (airplane).

(2223)   hãi wanũn set-hĩʔ,   sun-aʔsiʔ

          he   good   speak-CN.BECAUSE   kill-CN.WITHOUT

          ãun-satau-le-Ø-hĩn-wa

          leave.alone-RS-I.PST-S3-PST/NVIS-DECL

          He spoke well, so they left him alone without killing him (that's what I heard).

Counterfactual - 'but, however'

/-tʰoh/   /L/

This connective is used when the dependent clause and the independent clause are linked by the logical operator 'but'. Unlike many languages where the counterfactual connective is considered a part of the independent clause, in Mamaindê it is found as the final element in the dependent clause.

(2224)   nitset-a-thoh,   ta-wenna-soʔ   set-aʔ-Ø-wa
            angry-S1-CN.BUT   Ps1-inside-RST.ONLY   speak-S1-PRS-DECL
            I am angry, but I'm only speaking inside (to myself)

(2225)   nũnʔ-tu   ãn-teʔntaʔ   ʔai̯-Ø-tʰoh,
            animal-FNS   hunt-CN.IN.ORDER.TO.SS   go-S3-CN.BUT

            haʔta-Ø-naʔ-wa
            encounter- S3-NEG-DECL
            He went to hunt some game, but didn't encounter any.

(2226)   ta-waintʰã   hiksamãn-a-thoh,   wanũn   jau̯-aʔ-Ø-wa
            Ps1-group   homesick-S1-CN.BUT   good   be-S1-PRS-DECL
            I am homesick for my people, but I'm doing okay.

Substitutive - 'instead of', 'in place of'

/-kʰihenkãni/   /L.L.L.H/

When the speaker wishes to exclude one of two possible events, he will put the excluded option in the first dependent clause followed by the /-kʰihenka/ connective, and then offer the verb of the main clause in its place. This connective can be best translated by the word 'instead of'. The two clauses are not required to have any causal relationship holding between them.

(2227)   hitenũn-kʰihenka-ãni,   nauʔkanaiʔ sañĩn-ka-Ø-tahĩn-wa
          worry-Cɴ.ɪɴsᴛᴇᴀᴅ-FNS   just   happy-Oʙʟ-O3-Iᴍᴘ-N.Iɴᴛ.
          Instead of being worried, just be happy about it!

(2228)   kajau-kopais-tu   tu-kʰihenka-ãni
          white.man-armadillo('tatu 15 kilos')-FNS   get-Cɴ.ɪɴsᴛᴇᴀᴅ-FNS

          nãun-tʰu-tu   joha-ten-a-nha-wa
          sweet-NCʟ.ᴘᴏᴡᴅᴇʀ-FNS   buy/trade-Dᴇs-S1-Pʀs/NVɪs-Dᴇᴄʟ
          Instead of getting white man's armadillo (an idomatic expression for
          french bread), I think I want to buy/trade for some sugar.

(2229)   wetwainʔ-tu   tu-kʰihenka-ãni   na-watʰi-tu
          girl-FNS   get-Cɴ.ɪɴsᴛᴇᴀᴅ-FNS   Ps3-sister-FNS

          tu-satau-le-Ø-hĩn-wa.
          get-RS-I.Psᴛ-S3-Psᴛ/NVɪs-Dᴇᴄʟ
          Instead of marrying the girl, it is said that he married her sister.

Negative Purpose - 'so as not to…'

/-kʰijãn/ ~ /-kʰijãnsi/ ~/-kʰijãnsiʔ/   /H.L/ ~ /H.L.H/ ~ /H.L.H/

When the speaker wishes to show that the event of the main verb was done with the
express purpose of negating the first verb, this connective is used. The best English
translation would be 'so as not to'. Here, a direct causal connection is implied, such
that the doing of the main verb results in not doing the first.

(2230)   na-juk-tʰã-tu
          Ps3-foot-NCL.THING-FNS

          ã-jejeis-hãn-kʰijãnsiʔ
          CAU-ugly/bad-MAN.CMP-CN.NEG.PURPOSE

          haʔfin   tasihna-Ø-ten-a-nha-wa
          quickly   send-O3-DES-S1-PRS/NVIS-DECL
          So that her foot doesn't get completely bad, I'll send her quickly (to the
          city).

.

(2231)   ʔon-lhi-latʰa-Ø-wa.   na-kʰijãnsi-tu
          lazy-IRR-S3-PRS-DECL   COP-CN.NEG.PURPOSE-FNS

          ta̱i   walekan-ta-na-hĩʔ
          I   chief-DNM-S1-CN.THEN.DS

          ʔaik-tu   tau-kʰatoʔ   anuʔka-ta̱ʔ   tau-kʰatoʔ
          field-FNS   chop-CN.THEN.SS   gather-CN.AND.SS   chop-CN.THEN.SS

          kamãn-hensoʔ   na-naʔ-Ø-wa
          command-CN.ALWAYS   COP-S1-PRS-DECL
          They would be lazy. But, so that doesn't happen, I being chief and all, I
          always command them to get together and chop the trees together,
          that's what I do.

(2232)   to̱-kʰijãn   tehn-ĩ   wet-ĩ
          die-CN.NEG.PURPOSE   woman-INCL.AND   child-INCL.AND

          sihki-lhi-let-Ø-nãn-wa.
          stay.indoors-IRR-I.PST-S3-PST-DECL
          So they wouldn't die, the women and children would stay indoors.

Comparative - 'in the same way'

/-kʰijãnʔ/   **/L.HL/**[472]

This connective is used for the purpose of comparing two clauses and could be translated 'in the same way', or 'like'. The basis of the comparison is cited first in the dependent clause, followed by that which is being compared to it in the main clause.

(2233)   hãi ikalaka-kʰijãnʔ   ikalaka-ten-aʔ-Ø-wa
          he   work-Cɴ.ʟɪᴋᴇ   work-Dᴇs-S1-Pʀs-Dᴇᴄʟ
          I will work just like he worked.

(2234)   hos-a-ta   onka-jejeis-kʰijãnʔ   hãi
          monkey-Gɴᴛ-Lᴀʀɢᴇ   do-badly-Cɴ.ʟɪᴋᴇ   he

          onka-jejeis-jeʔ-latʰa-Ø-wa
          do-badly-Eᴍᴘ-S3-Pʀs-Dᴇᴄʟ
          He messes around just like a spider monkey messes around.

(2235)   na-jahon-tu   set-kʰijãnʔ   set-latʰa-Ø-wa
          Ps3-old.man-FNS   speak-Cɴ.ʟɪᴋᴇ   speak-S3-Pʀs-Dᴇᴄʟ
          He speaks just like his father.

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[472] Although this connective is quite similar in structure to the previous connective, the presence of the glottal and the distinctive tonal pattern are enough to differentiate them.

Mirative - 'then suddenly'

/-soʔkẽin/   /H.L/

When a first event is followed suddenly or unexpectedly by a second event, this connective is used to link the two clauses. It can be glossed as 'suddenly'.

(2236)   nakatos-a-ta-tʰĩn-tu   ʔai̠-soʔkẽin   <poti>-tu
           Negarotê-GNT-lie.down-NCL.HOUSE   go-CN.MIR   cow-FNS

           to̠-let-Ø-nãn-wa
           die-I.PST-S3-PST-DECL
           He had no sooner left for the Negarotê village, when suddenly the cow
           died.

           Here we have the moment in the 'How night came' legend where the
children inadvertently allow all the animals penned up in the cave to escape into the
jungle.

(2237)   ju-tʰãn-kʰatoʔ   sun-ten-soʔkẽin   haʔfĩn
           mouth-open-CN.THEN.SS   kill-DES-CN.MIR   quickly

           ta-ju-ten-naʔ-katoʔ
           CAU-mouth-shut-NEG-CN.THEN.SS

           nũnʔ-lau-sihatiya-tu   ãun-ta̠ʔ
           animal-other-ANC-FNS   escape-CN.AND.SS

           lik-tik-jeʔ-Ø-nĩnta-wa
           leave-MAN.IT-EMP-S3-G.KN-DECL
           They opened the door and wanted to kill (an animal), but then suddenly,
           when they didn't shut the door quickly, the other animals escaped and
           left (in all directions).

(2238)   hos-tu   tu-soʔkẽin   li̱-h̃ĩʔ,
           capuchin.monkey-FNS   get-CN.MIR   cold-CN.THEN.DS

           ã-nãun-ta-jeʔ-let-Ø-nãn-wa
           CAU-drop-fall-EMP-I.PST-S3-PST-DECL
           When the capuchin monkey grabbed it, suddenly, since it was cold, he
           dropped it. (speaking of a cold popsicle someone had given him)

        This last example comes from the Sacred Flute legend. After the people had
gone away to mourn the death of the old man, they returned to find that his body had
been transformed into all sorts of crops for their use, just like he said.

(2239)   ʔaiʔk-ã   lit-soʔkẽin   na-haiʔka-toʕ̃-ãni   jainsi-tu   nahohntoʔ
           field-FNS   arrive-CN.MIR   PS3-word-AUTH-FNS   food-FNS   much

           kalo-toʔ-juh-jeʔ-Ø-nĩnta-wa
           grow-AUTH-3REF-EMP-S3-G.KN-DECL
           When they arrived at the field, according to his true words, suddenly

           there was lots of food growing there.

Perpetual - 'always'

/-hensoʔ//L.H/

To communicate the idea that the verb of the dependent clause always occurs, the
Mamaindê use the /-hensoʔ/ connective which can be glossed 'always'. This
connective is invariably followed by the copula in the main clause. In this first
example, we get a glimpse of how much the female puberty ceremony is valued in
this culture.

(2240)   nauʔkanaiʔ   waʔjona-tʰã   hain-ka-hensoʔ
           just   puberty-NCL.THING   sing-OBL-CN.ALWAYS

           na-kʰit-latʰa-Ø-wa
           COP-S1.PL-S3-PRS-DECL
           We are just always singing the songs about puberty (the puberty rite

           songs).

(2241) nũnki-soʔ   nãn-hensoʔ   na-nuʔ-Ø-wa
       breast-RST.ONLY   cry-CN.ALWAYS   COP-S2-PRS-DECL
       You are just always crying for the breast.
       (said by a mother who was tired of breast-feeding her child)

(2242) na-hen-ã   waha-hensoʔ   na-naʔ-Ø-wa.
       Ps3-time-FNS   wait-CN.ALWAYS   COP-S1-PRS-DECL
       For that time [to come] I am always waiting.

Disjunctive - 'either/or'

/-taʔnã/   /L.H/

This connective signals a disjunctive relationship between two or more clauses,
where only one will hold true. Note that /-taʔna/ does not simply occur once between
two options, but at the end of each possible option, marking the end of each
dependent verb and thus connecting it to the rest of the sentence.

(2243) to̲-ʔna-taʔnã   to̲-ʔna-aʔsiʔ-taʔnã   nauʔkanaiʔ
       die-O2-CN.OR   die-O2-NEG-CN.OR   just

       nũsa-sih-a-nã   tu-ta̲i-ʔna-ten-a-nha-wa
       Ps1.PL-house-GNT-NCL.AREA   get-go-O2-DES-S1-PRS/NVIS-DECL
       Whether you die or don't die, I am determined to just carry you back to
       the village.

       If no main verb follows the clauses that are in a disjunctive relationship,
then a copula verb will be inserted to complete the sentence.

(2244) nitset-taʔnã   wate-taʔnã   na-lata-Ø-ka.
       angry-CN.OR   disappear-CN.OR   COP-POT-S3-INT
       Might he get angry, or might he just disappear?

(2245)   kajauka   nakʰanik-kʰat-tu   nakʰanik-taʔnã   nakajanʔ
          white.man   sick-NCL.STICK-FNS   sick-CN.OR   Indian

          na-kʰanik-kʰat-tu   nakʰanik-taʔnã   na-soʔkeuh-let-Ø-nãn-wa.
          sick-NCL.STICK-FNS   sick-CN.OR   COP-PRB-I.PST-S3-PST-DECL
          She was either sick with a white man's disease or sick with an Indian
          disease.

Additive   - 'and' (when listing a string of events)

/-ĩ/   /H/

This connective can effectively be glossed as 'and', and is used when the speaker
wishes to recite a listing of several events. The new information in each clause may
be the verb itself, or one of the arguments. A similar strategy is used for listing
nouns as well. Typically, a series of these clauses will be followed by the copula in
the final main clause.

(2246)   kajauka-ta-tu   kalakala-soʔ   wi̱-ĩ,
          white.man-FEM-FNS   chicken-RST-ONLY   eat.meat-CN.LIST

          <pota>-soʔ   wi̱-ĩ,   sakʰinka-soʔ   wi̱-ĩ,
          cow-RST.ONLY   eat.meat-CN.LIST   rice-RST-ONLY   eat.meat-CN.LIST

          na-lhi-latʰa-Ø-wa.
          COP-POT-S3-PRS-DECL
          White women only eat chicken, only eat beef, and only eat rice, that's the
          way it should be.

One of the most vivid examples of this listing device can be found in the flute spirit myth. Here the old man is telling his people that after he dies, all the parts of his body will become food for their survival.

(2247) na-kʰatoʔ   ta-saʔniki-tu   ʔe̱ʔ-tu   weh-ĩ
        Cop-Cn.then.ss   Ps1-lice-FNS   tobacco-FNS   become-Cn.list

        ta-wi̱-tu   kajas-kʰi-tu   weh-ĩ
        Ps1-teeth-FNS   corn-NCL.PLANT-FNS   become-Cn.list

        ta-tatʰenʔ-tu   liʔkon-tu   weh-ĩ   ta-sin-tu
        Ps1-thigh-FNS   manioc.type-FNS   become-Cn.list   Ps1-muscle-FNS

        ta-tʰenʔ-tu   li̱nʔ   na-naikʔ-tu   weh-ĩ
        Ps1-leg-FNS   manioc   Ps3-root-FNS   become-Cn.list

        ta-tʰeʔ-katos-kʰi-tu   japãnʔ-tu   weh-ĩ
        Ps1-leg-fold-NCL.PLANT-FNS   taioba.tuber-FNS   become-Cn.list

        ta-hik-kʰan-tu   waikʰi-tu   weh-ĩ
        Ps1-hand-claw-FNS   peanut-FNS   become-Cn.list

        ta-juhenʔ-tu   kamaʔ-tu   weh-ĩ   ta-wajainʔ-tu
        Ps1-tongue-FNS   bean.flat-FNS   become-Cn.list   Ps1-rib-FNS

        katatʰi-tu   weh-ĩ   ta-naki-tu   watuh-tu
        bean.string-FNS   become-Cn.list   Ps1-blood-FNS   urucum-FNS

        weh-ĩ   ta-nakañin-tu   walot-tu   weh-ĩ
        become-Cn.list   Ps1-head-FNS   gourd-FNS   become-Cn.list

        juhak   weha-Ø-tʰunna-wa
        all   become-S3-Fut2-Decl
Then, my lice will become tobacco, my teeth will become corn, my thigh will become 'water' manioc, my leg muscle will become manioc roots, my knees will become the taioba tuber, my finger/toenails will become peanuts, my ribs will become string beans, my tongue will become flat beans, my blood will become urucum, my head will become a gourd, all (of my body) will become (something).

(2248) jalik-tu   wes-kʰatoʔ   wes-taʔ
        necklace-FNS   make-CN.THEN.SS   make-CN.AND.SS

        wasainʔ-kʰatoʔ   tehni   tu-ĩ
        put.on-CN.THEN.SS   women   get-CN.LIST

        waʔjona-tʰã-tu   hain-sa
        puberty-NCL.THING-FNS   sing-NCL.LIQUID/SPEECH

        hain-ĩ   nũnʔna   ãn-ĩ
        sing/dance-CN.LIST   animal   shoot-CN.LIST

        mũna   hiton-sa̲   hiton-ĩ
        well   dream-NCL.LIQUID/SPEECH   dream-CN.LIST

        na-jeʔ-Ø-nĩnta-wa.
        COP-EMP-S3-G.KN-DECL.
        They made necklaces, and then, making them, they put them on, and
         then got women, and danced puberty songs, and shot game, and
         dreamed good dreams.[473]

        These last three connectives, the Perpetual, the Disjunctive, and the
Additive, are often followed not by a standard verb in the main clause, but by the
simple copula /na/. A number of examples of this behavior have already been given
above. One will suffice here.

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[473] This phrase is in reference to a traditional dance known as */jalãn-sa-tu/-* 'toucan music' -
where participants would dance in a circle much like the puberty dance, but with partners. A
man with lots of necklaces around his neck would obtain a dance partner easily because the
women would have the right to take his necklaces after the dance. The women also had the
right to ask for other possessions he owned. This dance has not been practiced for at least a
generation, but the tucum palm nut necklaces are still seen as talismans, which bring one good
luck with women, as well as good luck in hunting and in dreaming good dreams.

(2249)   kajauka-ta-tu   kalakala-soʔ   wi̱-ĩ,
          white.man-FEM-FNS   chicken-RST.ONLY   eat.meat-CN.LIST

          <pota>-soʔ   wi̱-ĩ,   sakʰinka-soʔ   wi̱-ĩ,
          cow-RST.ONLY   eat.meat-CN.LIST   rice-RST.ONLY   eat.meat-CN.LIST

          na-lhi-latʰa-Ø-wa.
          COP-POT-S3-PRS-DECL
          White women only eat chicken, only eat beef, and only eat rice, that's
          the way it should be.

         The frequent use of the copula as the final verb when one of these three
connectives are present brings up the possibility that the dependent clauses in
question may be considered by the grammar to have a quasi-independent status,
carrying within them all the semantics necessary to complete an entire thought,
relying on the main verb only for inflectional purposes.

4.3.3.4   Embedded Clauses

It is also possible to encounter embedded clauses, where one dependent clause is
embedded within another. Here I have repeated a few of the past examples that show
embedding quite clearly.

(2250)   nũnʔ-tu   ãn-teʔntaʔ   ʔa̱i-Ø-tʰoh,
          animal-FNS   hunt-CN.IN.ORDER.TO.SS   go-S3-CN.BUT

          haʔta-Ø-naʔ-wa
          encounter-S3-NEG-DECL
          He went to hunt some game, but didn't encounter any.

(2251)   na-tʰoh   suʔton-soʔka   tǫ-satoʔni   teh
          COP-CN.BUT   not.know-NCL.HUM   die-CN.IF   road

          ʔa̰i-hĩʔ   hãi   kaja̰ʔ-ã
          go-CN.THEN.DS   he   alligator-FNS

          wi̱-leʔ-lhi-latʰa-Ø-wa
          eat.meat-O1.PL-POT-S3-PRS-DECL

          But if one who doesn't know dies, he will go down that road, and then

          the alligator spirit would eat us.

4.3.3.5   *Connectives as Denominalizers*

Typically, denominalizations in Mamaindê involve the denominalizing suffix */-ta/*
which has been described under noun morphology. However, denominalized forms
may also be constructed by the use of connectives, turning any noun or nominalized
verb into a verb. All that is required is the appropriate person marker before the
connective.

(2252)   wa̰i   nuk-kʰã̰n   set-soʔki-n-siʔ
          you   arm-hard   speak-NCL.HUM-S2-CN.PURPOSE.DS

          set-ka-na̰ʔ-Ø-wa.
          speak-OBL-S1-PRS-DECL
          I want you to be a strong speaking person.

(2253)   enʔki-Ø-satoʔni   ta̰i   sanĩnʔ-ka-ten-a-nha-wa
          boy-S3-CN.IF   I   happy-OBL-DES-S1-PRS/NVIS-DECL
          If it's a boy, I'll be happy.
          (said at a child's birth)[474]

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[474] This interesting comment, in a matrilocal society, seems counter-intuitive as male
offspring will typically marry and move away from their parents. However, this utterance was

4.4 Beyond the Sentence

Although not a major focus of this study, I offer here a brief sketch of the more salient features of Mamaindê discourse.

Discourse naturally entails both sides of textual organization – both the strategies which unite smaller portions of a text into a larger whole (cohesion), and those tools which allow a speaker to divide a larger text into smaller segments (segmentation). In this section we will look at several methods which provide cohesion (appealing to the notion of similarity), and several which allow for segmentation by way of topicalization (appealing to the notion of uniqueness). We will begin by addressing the cohesive elements of Mamaindê discourse.

4.4.1 Cohesion

4.4.1.1   Repetition

By far the most common method of tying texts together in Mamaindê involves the use of repetition. This has been described at length by Kingston in his manuscript 'Repetition in Mamaindê Discourse' (n.d). I will not attempt a detailed analysis here of Kingston's research on this topic, but will simply provide the reader with a short summary of his work and how his conclusions apply to the data upon which my own work is based.

Kingston cites a number of strategies that employ repetition in the language. He then demonstrates how these strategies are characterized by three functions: repetition as a feature of narrative types (p1-10), repetition as its related to the information load system (p.20-28), and repetitive parallelism as a stylistic device (p.28-33). All of these functions of repetition have been found in the current data as well.

Within the first area, that of narrative, Kingston identified three different narrative styles, each defined by its own type of repetition: step, cyclic, and linear. Step repetition, according to Kingston, defines a narrative style that consistently repeats information found in the previous paragraph at the beginning of each new paragraph. Cyclic repetition, on the other hand, defines a style consisting of cycles, each cycle repeating the same basic facts of the main storyline and ending with the same verb, but adding new bits of information in a cyclic fashion until the whole story is complete. Finally, he cites linear repetition as the most common type, found

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not made by the parent, but by a relative whose young granddaughter would be a cross cousin to the boy being born and therefore marriageable. The Mamaindê practice bilateral cross-cousin marriage.

in narratives that utilize heavy repetition at the beginning and end of each episode, and relatively little repetition in between.

My own data appears to agree in general with these findings, although I have not focused on the area of discourse, and thus am not yet able to provide adequate support and or critique for these statements on narrative styles. This is an area where further research is required.

However, the three general functions of repetition outlined earlier by Kingston can be found quite readily in current Mamaindê discourse. Below, examples of repetition highlighting each of these functions will be shown, taken from textual material.

4.4.1.1.1   Repetition as a Feature of Narrative

Repetition is used quite liberally in traditional Mamaindê narrative. The elements repeated the most are nominals, temporals, locatives and verbs, employing either the same word or multiple variations of it. Many times, however, whole phrases and sentences are repeated in virtually identical fashion, with only the change or insertion of a tense or emphatic.

The use of large amounts of repetition can take place anytime during a discourse, but it is especially noticeable at the beginning and end of a narrative. Although the very first opening sentence of a narrative typically will have a heavier load of new information per clause than anywhere else in the discourse,[475] the rest of the intro will typically be a very tight unit with a very high rate of repetition.

Such repetition appears to be multi-functional. First, it ties together episodes such as introductions and conclusions into more cohesive units. This is particularly true when the elements repeated in the conclusion are the same as those found in the introduction. Secondly, heavy recurrence in the introduction is used to introduce the main topic of a entire discourse, which may then be reiterated at various points throughout. Lastly, with each repetition of a verb or noun root, new modifiers or affixes may be added to the morpheme in question, enriching the narrative with subordinate material.

This repetitive style is particularly characteristic of Mamaindê myth, where the speaker will introduce much more repetition than in any other genre. Nevertheless, this traditional narrative type is being replaced in the speech of the younger generation by a freer style with less repetition, presumably due to influence from Portuguese which does not use repetition to this degree.

The following example of an introduction comes from the very opening lines of a taped narrative recorded in one village for the purpose of sending it to a friend in another place. (The brackets indicate borrowings from Portuguese).

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[475] Kingston (n.d.:14) cites research that indicates a maximum of 1 to 2 items of new information per clause as being the average in discourse medial sentences. This does not include the opening line of a narrative, however, which will often violate this norm and introduce a high number of participants in a single clause.

(2254)   Pedro   na-soʔkã   naka̱-n-sihta̱ʔ
           Pedro   COP-NCL.HUM   listen-S2-CN.PURPOSE.DS

           set-ten-a-nha-wa.
           speak-DES-S1-PRS/NVIS-DECL
           Pedro, I will speak so that you can listen.

(2255)   ta̱i-ãni Donaldo Mamaindê ＜daqui da aldeia Capitão Pedro＞
           I-FNS   Donaldo Mamaindê, ＜here from village Capitão Pedro＞

           set-a-nha-wa.
           speak-S1-PRS/NVIS-DECL
           I, Donaldo Mamaindê, am talking from the Capitão Pedro village.

           Pedro   na-soʔkã   naka̱-n-sihta̱ku
            Pedro   COP-NCL.HUM   listen-S2-CN.PURPOSE.DS

           set-a-nha-wa.
           speak-S1-PRS/NVIS-DECL
           Pedro, I speak for you to listen.

           wenni-ija̱h-ãni   ＜dia 19 de julho＞ na-soʔkeuhna-jeʔ-latʰa-Ø-wa.
           now-DEM-FNS ＜day 19 of july＞   COP-PRB-EMP-S3-PRS-DECL
           Now I guess it's the 19th of July.

           na-hen-tu   set-a-nha-wa.
           COP-NCL.TIME-FNS   speak-S1-PRS/NVIS-DECL
            That's when I'm speaking.

na-hen-ã   ta-set-a-sa̱
Cop-NCL.TIME-FNS   Ps1-speak-Gnt-NCL.SPEECH

naka̱-n-sihta̱ʔ   set-a-nha-wa.
listen-S2-Cn.PURPOSE.DS   speak-S1-Prs/NVis-Decl

At this time I will speak for you to listen to my speech.

na-hĩ̱ʔ   ta̱i-ãni haiʔ wi̱ʔ   set-ten-a-nha-wa.
Cop-Cn.REASON   I-FNS   just   slowly speak-Des-S1-Prs/NVis-Decl

So, I'll just speak slowly.

mũna   naka̱-n-sihta̱ʔ   wi̱ʔ   .
well   listen-S2-Cn.PURPOSE.DS   slowly

set-ten-a-nha-wa
speak-Des-S1-Prs/NVis-Decl

I'll speak slow so you can understand/listen well.

    The heavy repetition of the verbs 'speak' and 'listen' in just six sentences binds this introduction into a very tight, cohesive unit. Although repetition is found throughout the text, it is more prominent here at the introduction and at the conclusion. Such mass repetition has a slowing down effect on the progression of a text, and naturally serves as both an "occasion setting device" in the introduction, and a "winding down device" in the conclusion. The conclusion of this same text ends with the phrase */talonanaʔwa/* 'I am finished' repeated seven different times, each instance followed by a little more information for his hearer.

    Here is another example at the very beginning of a text entitled 'The job of the chief', narrated by the chief himself.

(2256)   ta̱i ta-walekan   ta-onka-na-tʰã-tu
            I   Ps1-chief   Ps1-do-Gnt-NCL.THING-FNS

            ta-walekan   ta-onka-na-tʰã-tu
            Ps1-chief   Ps1-do-Gnt-NCL.THING-FNS

            ʔnuhna   onka-na-tʰã-tu   ʔnuh   ta-laka
            alone   do-Gnt-NCL.THING-FNS   alone   Ps1-know

ta-onka-na-tʰã̱-tu   ta-w̱ainta-tʰã̱-tu

Ps1-do-Gnt-NCl.thing-FNS   Ps1-group-NCl.thing-FNS

ta-w̱ainta-tʰã̱   hãi   kajauki   ijãnʔ-Ø-naʔ-wa.

Ps1-group-NCl.thing-FNS   he   white.man   be.same-S3-Neg-Decl

`   I, my chiefly doings, my chiefly doings, the things I alone do, the doings I
       alone know how to do, the things of my people, the things of my people,
       are not the same as those of the white man.

4.4.1.1.2   Repetition Related to Information Load

Although the very first clause in a narrative may introduce a large amount of
information, in the discourse medial position, typically there is a maximum of only
one or two new bits of information added per clause (see Kingston, n.d.:14). In such
medial positions, repetition can be used to control the rate of information flow. Not
only does this repetition enable the speaker to limit the information load per clause,
it also provides a cohesiveness to each episode.

   Here is an example from the text about Terezinha's snakebite. Note how
the verb remains the same, and yet in each sentence new information is added by
way of nominals.

(2257) ʔñĩu-kʰatoʔ   loh-jeʔ-let-Ø-nãn-wa.
    return-Cn.then.SS   vomit-Emp-I.Pst-S3-Pst-Decl

    ta-teʔ-tu   loh-jeʔ-let-Ø-nãn-wa.
    Ps1-wife-FNS   vomit-Emp-I.Pst-S3-Pst-Decl

    loh-kʰatoʔ,   paah-ãni   loh-jeʔ-let-Ø-nãn-wa.
    vomit-Cn.then.SS   two-FNS   vomit-Emp-I.Pst-S3-Pst-Decl
    After returning, she vomited. My wife vomited. Vomiting, two times she
    vomited.

4.4.1.1.3 Repetition as Parallelism

Parallelism is a stylistic device that can provide strong cohesion to a text. Kingston noted this characteristic of Mamaindê discourse as well (n.d.:28-33). Here we see an example of parallel sentences in a text about life before the coming of the white man.

(2258) na-tʰoh-ãni,   nahna   nakʰanik-kʰat-tu,   < malaria > -taʔna
        COP-CN.BUT-FNS   earlier   disease-NCL.STICK-FNS   malaria-CN.OR

        hãi-ã   nakʰanik-kʰat   ʔau-kʰat-taʔna
        it-FNS   disease-NCL.STICK   other-NCL.STICK-CN.OR

        na-tʰã   hat-jeʔ-Ø-nãnta-wa.
        PS3-NCL.THING   have-EMP-S3-NEG.PST-DECL

        na-tʰoh-ãni   hãi   kajauki   wạ-hį̃ʔ
        COP-CN.BUT-FNS   he   white.man   come-CN.REASON

        < malaria > -taʔna   nakʰanik-kʰat
        malaria-CN.OR   disease-NCL.STICK

        ʔau-kʰat-taʔna   na-tʰã
        other-NCL.STICK-CN.OR   PS3-NCL.THING

        tu-k-wạ-soʔkeuh-jeʔ-latʰa-Ø-wa.
        get-and-give-PRB-EMP-S3-PRS-DECL

        However, earlier (before the white man), the malaria disease, or other diseases, such things, they (our ancestors) didn't have. But, because the white man came, the malaria disease, or other diseases, such things, he probably brought them.

The discourse devices mentioned thus far (all based on the notion of repetition) are more a feature of formal speech, and as such are being used less and less by the younger generation. This reduction in the use of repetition is most likely due to Portuguese influence as the Mamaindê young people become more bilingual. Kroeker (personal communication) reports that the same changes are occurring among the younger Southern Nambikwara speakers.

4.4.1.2   Tail-head Linkages

As we have seen earlier, connectives in Mamaindê often connect clauses within the same sentence. These sentences are comprised either of several independent clauses, or of a dependent clause followed by an independent one. However, connectives may also be used to connect sentences as well, or to link two paragraphs or episodes together.

When the Mamaindê speaker wants to join sentences/paragraphs/episodes with a connecting thought, he will either back-reference the main verb of the previous sentence followed by a connective, or he will start the new sentence/paragraph/episode off with a copula followed by the connective. This strategy is referred to in the literature as a 'tail-head linkage' (Longacre, 1996:13) or as a 'point of departure' (Halliday: 1967:212), and is recognized as a typical feature of narrative discourse.

The text below, an excerpt from 'Terezinha's Snakebite Story', demonstrates the cohesive quality of the tail-head linkage construction, and shows just how prevalent it is throughout Mamaindê discourse. In a short span of 11 sentences, we see 9 tail-head linkages (the tail-head linkages are underlined).

(2259)   <u>ʔai-kʰatoʔ</u>   taʔwen-na-tu   ʔai̯n-tu
         go-CN.THEN.DS   jungle-NCL.AREA-FNS   fish-FNS

         at-jeʔ-le-a-nãn-wa.   <u>at-a-kʰatoʔ,</u>
         to.fish-EMP-I.PST-S1-PST-DECL   to.fish-S1-CN.THEN.SS

         tai-kʰatoʔ,   nahon-ijah
         take.out-CN.THEN.SS   water-DEM

         ʔau-tu   hĩun-jeʔ-le-a-nãn-wa.
         other-FNS   approach.water-EMP-I.PST-S1-PST.DECL

         <u>hĩun-kʰatoʔ</u>   ta-teʔ-tu
         approach.water-CN.THEN.SS   Ps1-wife-FNS

         hek-ta-let-Ø-nãn-wa.
         angry-O1-I.PST-S3-PST-DECL

un   wạ-kʰit-Ø-nãn-wa.   na-hĩʔ-ãni
far   come-S1.PL-S3-PST-DECL   COP-CN.REASON

ʔạiʔn-kʰit-ten-Ø-hna-wa.
go-S1.PL-DES-S3-NVIS-DECL

ʔạin-a   ãunpat-tahĩn-wa.   na-jeʔ-let-Ø-nãn-wa.
fish-FNS   leave-IMP-DECL   COP-EMP-I.PST-S3-PST-DECL

hajo.   un-jeʔ-latʰa-Ø-wa.   ãunpat-taʔ   ʔạiʔn-tʰahta-wa.
yes.   far-EMP-S3-PRS-DECL   leave-CN.SS.AND   go-IMP-N.INT

na-jeʔ-le-a-nãn-wa.
say-EMP-I.PST-S1-PST-DECL

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na-kʰatoʔ   ʔñĩu-jeʔ-le-a-nãn-wa.   ʔñĩu-kʰatoʔ
COP-CN.THEN.SS   return-EMP-I.PST-S1-PST-DECL   return-CN.THEN.SS

ta-teʔ-tu   set-jeʔ-let-Ø-nãn-wa.
PS1-wife-FNS   speak-EMP-I.PST-S3-PST-DECL

tʰeha-tijah-tu   ʔạiʔn-tʰahta-wa.   na-jeʔ-let-Ø-nãn-wa.
path-DEM-FNS   go-IMP.INCL-N.INT   say-EMP-I.PST.PAST-DECL

----

na-tʰoh-ãni,   tại-tu   julãn-le-a-nãn-wa.
COP-CN.BUT-FNS   I-FNS   joke-I.PST-S1-PAST.DECL

julãn-kʰatoʔ   tʰeh-ã
joke-CN.THEN.SS   path-FNS

tawatais-latʰa-wa.   na-jeʔ-le-a-nãn-wa.

close-S3-Prs-Decl   say-Emp-I.Pst-S1-Pst-Decl

I (we) went, then we fished for fish in the jungle. After fishing, and taking them out, we approached another stream. We approached, and then my wife got angry. "We have come a long way. Let's go. Let's leave the fish", she said. "Right. It is far. Let's leave and go", I said. Then we returned. Returning, my wife spoke. "Lets go on that path there", she said. But I joked with her. Then joking, "That road is close by", I said.

A search for tail-head linkages in the text above and in a variety of other Mamaindê texts reveals that the back-referencing variation tends to link sentences within paragraphs, while the copula variation tends to link paragraphs, particularly following a quote (the paragraphs are shown separated by the dotted lines).

The difference between the two variations on the tail-head linkage theme can perhaps be more easily demonstrated by way of two hypothetical examples, the first using back-referencing of the main verb of the first sentence, the second employing the copula.

(2260)   wate-latʰa-Ø-wa.   wate-tʰoh-ãni
           disappear-S3-Prs-Decl   disappear-Cn.but-FNS

           ʔnĩu-Ø-tʰunna-wa
           return-S3-Fut2-Decl
           He disappeared. He disappeared, but he will return.

(2261)   wate-latʰa-Ø-wa.   na-tʰoh-ãni   ʔnĩu-Ø-tʰunna-wa
           disappear-S3-Prs-Decl   Cop-Cn.but-FNS   return-S3-Fut2-Decl
           He disappeared. But he will return.

An interesting feature of the tail-head linkage construction is the location and duration of the pause that accompanies it. Typically, between sentences there is a short pause. However, when a tail-head linkage is employed, the pause between sentences is reduced and a greater pause is inserted after the connective, between the dependent and independent clauses. When the tail-head linkage is of the copula variety, often the sentential break is eliminated entirely, and the pause between the clauses is prolonged. This effectively adds to the cohesion already established between the two sentences by the use of the tail-head linkage device, giving the impression that the two sentences are now one.

Finally, it is worth noting that a number of connectives used in tail-head linkages will commonly take the final nominal suffix */-ãni/* as a discourse device to mark orientation material. The FNS suffix at the beginning of the last paragraph of 'Terezinha's Snakebite Story' above is used in this manner (see the noun morphology section 3.4.1.3.9 for a fuller discussion of this interesting suffix and its usage in discourse).

Although not utilizing the term 'tail-head linkage', Kingston (n.d.:25) classifies these constructions as part of the information load system. While it is certainly related to the information system,[476] I do not believe the main function of these constructions is so much to limit the amount of information in the next clause, as it is to provide an overt link between the previous sentence/paragraph and the one that follows.

While the other types of cohesive devices mentioned in this section are normally found only in more formal discourse, the tail-head linkage is pervasive throughout the language as a whole, found both in conversation as well as in styles that are more formal. It appears to function as the obligatory form of cohesion in all Mamaindê speech.

4.4.2 Topicalization

4.4.2.1   *Fronting of Elements*

Not only does the language employ strategies to unify a text, it also uses structural devices to indicate those points where a text is segmented into smaller units. Fronting is one device that fulfills this function. The fronting of nominals in Mamaindê typically occurs for the purpose of topicalization, or marking a new topic of a new segment.

This phenomenon was described by Kroeker (2001:19) for Southern Nambikwara. He maintains that while the Southern Nambikwara constituent order is T/LSOV[477], any nominal clause constituent may be fronted (moved to the front of the clause) for the purpose of topicalization.

This analysis appears to be fairly consistent with what is known so far about Mamaindê, where either the object, indirect object, or the subject may be fronted to a position prior to the temporal morpheme, or to the slot prior to the subject if no temporal morpheme is present. When this occurs, it typically signals that the fronted nominal is now the new topic.

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[476] Some information, such as an overt subject, is often not needed in the following clause if a sentence initial connector is used with a switch reference marker. Also, the use of a repeated verb stem in the sentence initial position does affect the type of information found in the new sentence by ensuring that there is always some old information provided in each subsequent sentence/paragraph.

[477] Temporal/Locative/Subject/Object/Verb

Due to this fronting technique, the basic constituent order becomes more fluid in nature, and subsequently, word order becomes less telling in predicting verb/argument relations. At times, this may result in some confusion as to the roles of the nominals involved. If a new participant is fronted, then ambiguity can arise, since the new participant could obviously enter as a subject or an object. The Mamaindê rely on switch reference markers and on context to disambiguate these cases.

Here we have a text where an elderly man is talking in general about the future of his grandchildren, and about the things they will never forget. Here he is making the point that his descendents will not forget to sing the puberty songs (music for the female rite of passage). Thus, the puberty songs become the new topic, and as a direct object it is fronted before the subject 'grandchildren'. The fronted material is underlined for the sake of clarity.

(2262)   na-tʰoh   hainsi-ja̱-tu   hain-sa̱
          COP-CN.BUT   sing-NCL.SONG-FNS   sing-NCL.SONG

          na-hain-taʔ   waʔjona-tʰã̱
          PS3-sing-CN.AND.SS   puberty-NCL.THING

          hain-ka-teʔ   na-sa̱-tu
          sing-OBL-CN.PURPOSE.SS   PS3-music-FNS

          ta-sawis-tʰã̱   nauʔkanãiʔ
          PS1-grandchild-NCL.GROUP   just

          nakajaunũn   ʔau-aʔsiʔ   nauʔkanãiʔ
          forget   leave-NEG   just

          wes-jaʔ-Ø-tʰunna-wa
          make-CNT-S3-Fut2-Decl
          But then, the music for the singing of puberty songs, my grandchildren
          will just continue to make (that music) without forgetting and leaving it.

From the same text, the speaker now fronts the indirect object, the eating of cacao fruit, as another item he has taught his grandchildren never to forget. The eating of cacao fruit then becomes the new topic.

(2263)   na-hĩʔ   hãi taʔwena walokʰi-tu jainsi jain-teʔ
          COP-CN.THEN.DS it   jungle   cacao-FNS   food   eat-
          CN.PURPOSE.SS

          na-tʰã-tu   ta-sawis-tʰã
          PS3-NCL.THING-FNS   PS1-grandchild-NCL.GROUP

          ikʰat-jeʔ-le-a-nãn-wa.
          show-EMP-I.PST-S1-PST-DECL
          Then, the eating of the jungle cacao, I showed my grandchildren.

        In another excerpt from 'Terezinha's Snakebite Story' we see fronting
again. Prior to this excerpt the speaker is talking about going to the jungle with his
wife (Terezinha) and planting some crops in their garden. The two of them then
decide to go fishing, and finally after giving up on fishing, they decide to cross the
stream and head home. The topic of this introductory episode is the couple and their
activities together. Then comes the sentence below, occurring at the very climax of
the story, where the topic clearly shifts to the man's wife. The rest of the text is then
about her pain, her worsening condition, and what it takes to save her life. In this
context, at the peak of this narrative, at the moment when the snake bites his wife,
he fronts the direct object, 'my wife'.[478] This is the only fronted object in the entire
text, and is used in a masterful way to mark the new topic not only of that episode
but also of the remainder of the discourse.

(2264)   alain-teʔ   watai-khatoʔ   ta-teʔ-tu   te̱h-tu
          cross-CN.PURPOSE.SS close-CN.THEN.SS   PS1-wife-FNS   snake-FNS

          iu-ki-jeʔ-let-Ø-nãn-wa.
          bite-OBL-EMP-I.PST-S3-PST-DECL
          (When she was) close to crossing (the stream), a snake bit my wife.

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[478] The most natural way to show this fronting in English is to form a passive. However, there
is no actual passive construction found in Mamaindê – just fronted objects.

4.4.2.2   *Left Dislocation of Elements*[479]

The major distinction between fronting and left-dislocation is that the language treats the former as occurring within the original clause, while the latter takes the dislocated element out of its original clause and places it to the left of the clause, at the beginning of the sentence. This effectively separates the dislocated element from the verb. Left-dislocation is usually followed by a pause, marking the clause boundary. While the typical Mamaindê constituent order is TEMP/SUB/LOC/OBJ/V, any emphasized nominal or noun phrase may be left-dislocated to a sentence initial position, followed by a significant pause. If there is a tail-head linkage used, the left-dislocated nominal will follow the connective.[480] The function of this change in word order is to indicate a change in topic, or give extra emphasis to the existing topic.

Kroeker (2001:20, 21) mentions the use of left-dislocation as another strategy for marking topic in Southern Nambikwara. Givón (1984:193,195) also documents left dislocation in a number of languages, including Sherpa and Jacaltec, where he defines it as a topic switching device.

In Mamaindê, this strategy can be used even when it means taking the nominal out of its original clause and putting it before a previous clause. In this example, there are three clauses, and when the subject of the medial clause is dislocated to the left, it finds itself separated from its verb by the first clause. Again, this strategy functions to highlight the existing topic, and here we see this device being used in a text about "My work as chief". Notice that the highlighted noun phrase, although left-dislocated, cannot precede the tail-head linkage at the start of the sentence, for tail-head linkages are inherently initial.

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[479] Another possible variation to word order is that of right dislocation. This, however, is not a topicalization strategy, but more an afterthought – a way of bringing up information for the purpose of clarifying the previous clause, or inserting something that the speaker suddenly realizes is missing. In a study by Hyman (1975), he also defined right-dislocation as an afterthought. This device puts the backgrounded nominal in a final position, preceded by a pause. Compared to left-dislocation, it is used rather infrequently in Mamaindê. Kroeker (2001:11) mentions this phenomenon in Southern Nambikwara as 'discontinuous phrases', and mentions that it is for the purpose of either limiting the amount of new information within the clause, or for the purpose of adding a clarification. The Mamaindê phrase below uses a right dislocated nominal apparently to clarify which subject is being talked about.

hiksamãn-nũn-latʰa-Ø-wa,	mamãinsa-nã?ã.
homesick-COM-S3-PRS-DECL,	Mamaindê-PL
They are also homesick, the Mamaindê.	

[480] Tail-head linkages, by their very function, are inherently found in the left-dislocated position.

(2265)   na-tʰoh-ãni   tại walekʰan-tu ikalaka na-sihtạʔ
         COP-CN.BUT-FNS   I   chief-FNS   work   COP-CN.PURPOSE.DS

         sen-na-aʔ-satoʔni   hãi nãuʔkanãiʔ
         speak-S1-NEG-CN.IF   he   just

         ikalaka-lhi-Ø-ãnta-wa.
         work-IRR-S3-NEG-DECL
          I, as chief, for them to work, if I didn't speak (command them), they
          would just not work at all.

        Although the left dislocated element functions as topic, it does not
necessarily have to possess a direct grammatical relationship with any clause in the
sentence. In cases where no such relation exists, the dislocated element is linked
instead to the sentence level without pertaining to any intermediate clause structure.
        In the "Sacred Flute Myth" excerpt below, the speaker is emphasizing that
something said in the past had actually come true. Here the focus is on the fulfilling
of a prophecy that an old man's body would become food for his people.[481] The left-
dislocated nominal "his true words" is not grammatically related to the rest of the
sentence, although semantically it is clearly functioning as topic.

(2266)   na-haiʔka-toʔ-ãni   jainsi-tu   nahohntoʔ
          PS3-word-AUTH-FNS   food-FNS   much

          kalo-toʔ-juh-jeʔ-Ø-nĩnta-wa
          grow-AUTH-3REF-EMP-S3-G.KN-DECL
          According to his true words, much food was actually, truly, growing!

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[481] The Mamaindê consider this to be their most important legend, and as such, it is an
excellent example of a 'demas' myth, where a legendary being is killed or dismembered and
its death becomes a source of life for the people.

5 Conclusion

Although the previous pages do not presume to cover every aspect of the language, nor to provide equal depth in all areas, the intent has been to offer the first full-length grammar of Mamaindê. As such, I trust it will be helpful in the ongoing study of this uniquely rich and varied language.

One of the underlying goals of this research has been to explore links between the Mamaindê language and the culture in which it is embedded. While arbitrariness and conventionality are common throughout much of language, I think it important to reiterate how culture is implicated over and over again in the forms and structures that we have seen in the previous pages. From endearment terms, to the use of noun classifiers, from noun incorporation to evidentials, culture keeps showing up. Although certainly not the only explanation for language structures, culture-rich features of Mamaindê life (such as social-specific behaviors, values, and worldviews) must be considered as having a potential influence in the genesis of the corresponding linguistic forms by which they are expressed.

Besides providing an overview of this one language and culture, the previous pages also provide more data for the broader study of the Nambikwara language family as a whole. It is in the study of the larger picture that we gain an appreciation for the place a language holds within its linguistic context. This understanding will also be useful in any attempts at historical reconstruction. Here I will summarize the place of Mamaindê in the greater Nambikwara linguistic context (pertinent references and examples for all of the information below can be found in the appropriate sections of this text.)

Phonologically, we have seen that Mamaindê is a Nambikwara language that falls midway within the language family in terms of many of its traits. For instance, Mamaindê can be classified between Southern Nambikwara and Sabanê in regards to its phonemic inventory, with 14 consonant phonemes and 16 vowel phonemes. It is also midway between Southern Nambikwara and Latundê in terms of the number of imploded stops still in use. Mamaindê groups with the Southern languages as a language with phonemic aspirated stops, while Latundê has none. Similarly, Mamaindê and Southern Nambikwara have a full set of three oral/nasal contour segments, while Latundê and Lakondê only have two, and Sabanê none. Tone has been analyzed as lexical in both Mamaindê and Southern Nambikwara, although differences arise in the number of tonal patterns available (three for Southern Nambikwara and four for Mamaindê) and in the functional load of the tonal system (higher in Southern Nambikwara than in Mamaindê). Latundê, on the other hand, is depicted as a pitch-accent language, and Sabanê as a language which simply uses pitch as a correlate of stress.

Morphologically, Mamaindê seems to be more innovative compared to the larger family. It has 24 noun classifiers, the largest set of noun classifiers yet seen in the Nambikwara languages. Split-ergativity is found in Latundê and Southern Nambikwara, while Mamaindê employs impersonal constructions instead. As for

evidentiality, while Mamaindê once again finds itself midway between the other languages of the family with 6 evidentials, (Southern Nambikwara and Lakondê have more, and Latundê and Sabanê have less) its evidential system includes a number of extensions, something not described in the other languages. In terms of marking clause types on the verb, Sabanê and Southern Nambikwara both treat the imperative as a separate type and lump together the declarative and interrogative, Latundê separates the declarative and groups the other two clause types together, while Mamaindê gives special status to the interrogative and marks declarative and imperative alike. Emotives have been found in both Mamaindê and Southern Nambikwara but have not been mentioned in any of the other related languages. Likewise, endearment terms have only been documented in Mamaindê and Southern Nambikwara, used on the verb to signal an intimate relationship between the speaker and the person being talked about. Finally, Mamaindê morphology contains two language registers, formal and informal, something totally unattested in any other Nambikwara language.

In terms of syntax, Mamaindê seems to group closer to Southern Nambikwara. Both Mamaindê and Southern Nambikwara limit the number of nominals allowed per clause, while this trait has not been mentioned in the other languages. Likewise, Mamaindê and Southern Nambikwara will front nominals for the purpose of topicalization.

Some of the data presented here offers special challenges or exceptions to current theory. The vowel place spreading process, by which coda consonants assimilate to certain place features of preceding vowels, poses certain difficulties to feature theory because it requires the adopting of elements from two of the competing feature geometry models. The stress system, instead of making use of just one or two of the available strategies for assigning stress, chooses the prominent syllable by employing all three of the possible strategies at the same time, in a stratal approach. Such phonological complexities call for a broader view of both feature theory and metrical theory.

Many questions have surfaced in the grammar writing process which I have not had the time or sufficient data to explore here. Some of these areas of future interest include, but are not limited to: the interaction between phrasal intonation melodies and word-level tone patterns, the negative tonal morpheme and its many and complex expressions, the origin and usage of the informal register, the usage of higher level discourse features not covered here, and the importance of less formal aspects of the language (such as metaphor) to the understanding of the language as a whole.

I conclude this descriptive tour of the Mamaindê language by borrowing a common Mamaindê leave-taking:

hajaʔ   set-aʔ-Ø-wa
enough   speak-S1-PRS-DECL
I have said enough.

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Samenvatting (Summary in Dutch)

Het Mamaindê is een Indianenvolk dat bestaat uit 250 personen, die, over 4 dorpen verspreid, leven in het grensgebied van de staten Mato Grosso en Rondônia, in Brazilië. Deze grammatica geeft een beschrijving van de taal van de Mamaindê, die met uitsterven wordt bedreigd. Het Mamaindê behoort tot de Nambikwara taalfamilie, en wel de noordelijke tak daarvan. Hoewel de traditionele taal nog steeds de voertaal is, zijn de eerste tekenen van desintegratie zichtbaar, vooral vanwege de snelle toename van het aantal jongeren dat ook het Portugees beheerst.

Het eerste hoofdstuk beschrijft de culturele, historische en sociolinguïstische context van het Mamaindê. Het schetst voor de lezer het kader voor een beter begrip van de culturele nuances die in de taal zijn verweven. Om de verwevenheid van taal en cultuur zichtbaar te maken, worden, waar mogelijk, voorbeelden aangereikt die deze interactie illustreren.

Het tweede hoofdstuk gaat uitvoerig in op de klankstructuur van het Mamaindê. Het foneemsysteem bevat 16 klinkers en 14 medeklinkers. Het relatief grote aantal klinkers vindt zijn verklaring in het contrastieve karakter van nasaliteit en 'creaky voice'. De maximale expansie van de lettergreep is CCVVCC. Het woordaccent is overwegend kwantiteitsgevoelig en kan worden voorspeld door middel van verschillende accentregels, die ieder afzonderlijk gelden voor een specifiek stratum van de morfologie. Mamaindê is een toontaal met twee lexicale tonen die voorkomen in vier verschillende lettergreeppatronen en toonregels die door de morfologie worden geconditioneerd. De meer dan 20 productieve fonologische processen, waaronder assimilatie, elisie, epenthese, fortitie, lenitie, metathese, coalescentie en klinkerverlenging, geven een idee van de complexiteit van de fonologische component van de taal. Een aantal processen is bovendien interessant vanuit theoretisch perspectief, zoals de spreiding van de plaatskenmerken van klinkers naar de codaconsonanten en de preoralisering van nasale medeklinkers. Zowel de segmentele als suprasegmentele (accent, toon) fonologie worden veelal geconditioneerd door de morfologie.

De morfologie wordt besproken in hoofdstuk 3. Hier krijgen wij zicht op de zeer uitgebreide woordvormingsprocessen van deze polysynthetische taal. De nominale classificatie wordt, behalve voor de classificatie van de zelfstandige naamwoorden, ook gebruikt voor de metaforische woordvorming. De werkwoordsmorfologie is zeer complex en geeft plaats aan 15 verschillende affixen. Zelfstandige naamwoorden kunnen als prefixen worden geïncorporeerd in het werkwoord, vooral de woorden voor lichaamsdelen die bij de actie uitgedrukt in het werkwoord zijn betrokken. Een uitgebreid systeem van evidentialiteit, dat is versmolten met het tempussysteem, geeft de spreker de mogelijkheid om voor elke zin de bron van de overgebrachte informatie aan te geven. Het bestaan van een hoog en een laag register, elk met zijn eigen verzameling affixen, maakt het systeem sociaal flexibel. Door middel van een groep koostermen kan de spreker een hoge graad van intimiteit uitdrukken ten aanzien van de focus van zijn uiting. Tevens

beschikt hij over een aantal emotieve morfemen, waarmee hij kan aangeven hoe hij zich gevoelsmatig ten opzichte van zijn uiting positioneert.

Het vierde en laatste hoofdstuk beschrijft de syntaxis (zinsbouw) en de discourse. Dit is het kortste hoofdstuk, omdat de zinsbouw de minst complexe component is van de Mamaindê grammatica. Een aantal constructies is nochtans interessant, zoals de onpersoonlijke constructie, die het de spreker toestaat enigermate afstand te nemen van zijn uiting wanneer hij spreekt over zijn eigen emoties. Ook is er een groot aantal connectieven die functioneren in een systeem van 'switch reference', zodat de hoorder weet wanneer de volgende zin van onderwerp verandert. Terwijl de discourse niet erg in de diepte wordt bestudeerd, wordt kort aandacht geschonken aan onderwerpen als herhaling, 'tail-head' verbindingen en vooropplaatsing.

Summary

This descriptive grammar focuses on the endangered language of the Mamaindê people, a community of some 250 individuals who live in four villages on the border between the states of Mato Grosso and Rondônia, Brazil. Their language, Mamaindê, is part of the larger Nambikwara family, and has been classified as belonging to the Northern Branch of that family. The language, while still used vigorously within the community of speakers, is suffering some signs of disintegration as bilingualism in Portuguese is growing rapidly.

Chapter 1 focuses on the cultural, historical, and sociolinguistic contexts of the Mamaindê language. In this chapter, I lay the groundwork for a broader understanding of this people and their social context that would enable the reader to appreciate the cultural nuances that permeate their language. Culturally specific examples are given throughout the text in order to supplement this broader perspective.

The second chapter focuses on phonology. The phonology description introduces a language with 16 vowels and 14 consonant phonemes. The large number of vowel phonemes is due to the fact that creaky voice and nasality are found to be contrastive vowel features. The syllable template is defined as CCVVCC. Stress is found to be largely quantity sensitive, but a number of stress rules are employed, each limited to a specific morphological strata. Mamaindê is a tone language, with two lexical tones occurring in four syllabic patterns, and tone sandhi evident in specific morpheme boundary contexts. Over 20 phonological processes are identified, including assimilation, elision, epenthesis, strengthening, weakening, metathesis, coalescence, and lengthening, showing that the phonological component of this language is considerable. Some of these processes pose significant challenges to phonological theory, including the spreading of vowel place features to coda consonants, and the formation of pre-oralized nasals. Throughout the segmental phonology, as well as throughout the stress and tonal systems, it is discovered that the phonology must repeatedly make reference to morphology.

Morphology is covered in chapter 3. Here we glimpse the real productive power of this language, which is highly poly-synthetic. Noun morphology is dominated by the noun classifiers, which are not only able to describe and categorize all nominals, but are also used extensively as metaphor. Verb morphology is even richer, with some 15 slots for affixation. Noun incorporation can be prefixed on the verb, referring specifically to body parts involved in the action of the verb. A robust evidential system, fused with tense, is able to provide ways for speakers to encode their source of information for each utterance. The existence of a high and low register, each with its separate set of inflectional morphemes, makes the verb system much richer and socially adaptable. A set of endearment terms are available that show a high degree of intimacy between the speaker and the focus of his utterance.

And lastly, emotive morphemes can be used which provide clues to the listener as to the overall attitude of the speaker.

The fourth and final chapter describes the levels of syntax and discourse. This is appropriately the smallest section of the entire work, as syntax is certainly the least complex component of the grammar. However, a few highlights include the impersonal construction, which allows the speaker to distance himself somewhat when speaking of his own emotions, and a large set of connectives functioning in a switch reference system, which indicates to the hearer when there will be a change of subject in the following clause. Although discourse is not studied in depth, topics such as repetition, tail-head linkages, and fronting/left dislocation are discussed as some of the more important discourse features of this language.