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ASPECTS OF MAYOGO GRAMMAR

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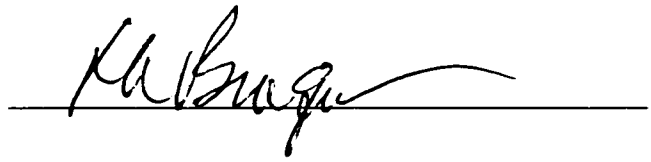

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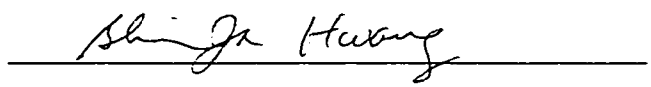

For the Mayogo people,
to the Glory of God

ASPECTS OF MAYOGO GRAMMAR

by

KENNETH STANLEY SAWKA

Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF ARTS IN LINGUISTICS

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our time with the Mayogo people and afterwards. Sue has given sacrificially to take care of our family and give of herself for the work of Bible translation. Her love for God is evident in everything she does and by this she has greatly encouraged me.

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ABSTRACT

ASPECTS OF MAYOGO GRAMMAR

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Mayogo is an Adamawa-Ubangi language spoken in northeastern Democratic Republic of Congo. This thesis presents an overview of some grammatical structures of Mayogo from a functional-typological perspective. Some basic concepts, such as word order, structure of noun and verb phrases, and several types of multi-clause propositions, are presented. Case marking on nouns and pronouns, as well as tense, aspect, modality and valency in the verbal system, are included as topics.

While previous phonological work has been done on the vowel system, this thesis provides an analysis of the grammar with special attention to certain grammatical phenomena such as reduplication. Reduplication has been found in at least ten grammatical categories and has various different functions within the language.

A collection of texts and data gathered while working among the Mayogo people provides the corpus of this research. This thesis takes a largely descriptive rather than a theoretical approach.

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LIST OF ABBREVIATIONS AND SYMBOLS

1s	first person singular
1p	first person plural
2s	second person singular
2p	second person plural
3s	third person singular
3p	third person plural
ADJ	adjective
ADV	adverb
AG	agent
ANA	anaphoric
ASSOC	associative
ATR	advanced tongue root
AUX	auxiliary
CAUS	causative
CER	certitude
COM	completive
COND	conditional
DEM	demonstrative

DET	determiner
DO	direct object
EMPH	emphatic marker
EXC	exclusive
EXCL	exclamation
Fig.	figuratively
FUT	future
GEN	genitive
HAB	habitual
IMP	impersonal
IMPF	imperfective aspect
INC	inclusive
INF	infinitive
INTER	interogative
IO	indirect object
lit.	literally
LOC	locative
MOD	modifier
N	noun
NEG	negative
NP	noun phrase

NUM	numeral
O	object
P	phrase
PASS	passive
PAST	past
PAT	patient
PFT	perfect aspect
PFV	perfective aspect
PL	plural
POSS	possessive
Pr	preposition
PRE	prefix
PRES	present tense
PP	prepositional phrase
PRO	pronoun
PROG	progressive aspect
Q	question word
QUANT	quantifier
REDUP	reduplication
REF	reference marker
REFL	reflexive

REL	relativizer
S	subject
spec.	specific type
STA	stative
SVO	subject-verb-object
TNS	tense
V	verb
VTR	transitive verb
*	ungrammatical form, or not found
??	possibly occurs
-	morpheme break
_	linked morphemes in the source language
( )	indicates understood source language notions
=	indicates an alternate for free translation

CHAPTER 1

INTRODUCTION

1.1 The Mayogo people

The Mayogo people are located in the northeastern part of the Democratic Republic of Congo. They are centered mainly in an area to the east of the city of Isiro. This area is one degree latitude and ten degrees east longitude. Two other pockets designated as Mayogo areas are to the east and north of the principal region. Approximately 75,000 of the estimated 100,000 speakers live within thirty kilometers of Isiro (McCord 1988). Names of a few other important Mayogo towns are Vube, Bala and Adjolia. The Mangbetu and Budu language groups surround the main area. Figure 1 illustrates the Mayogo regions.

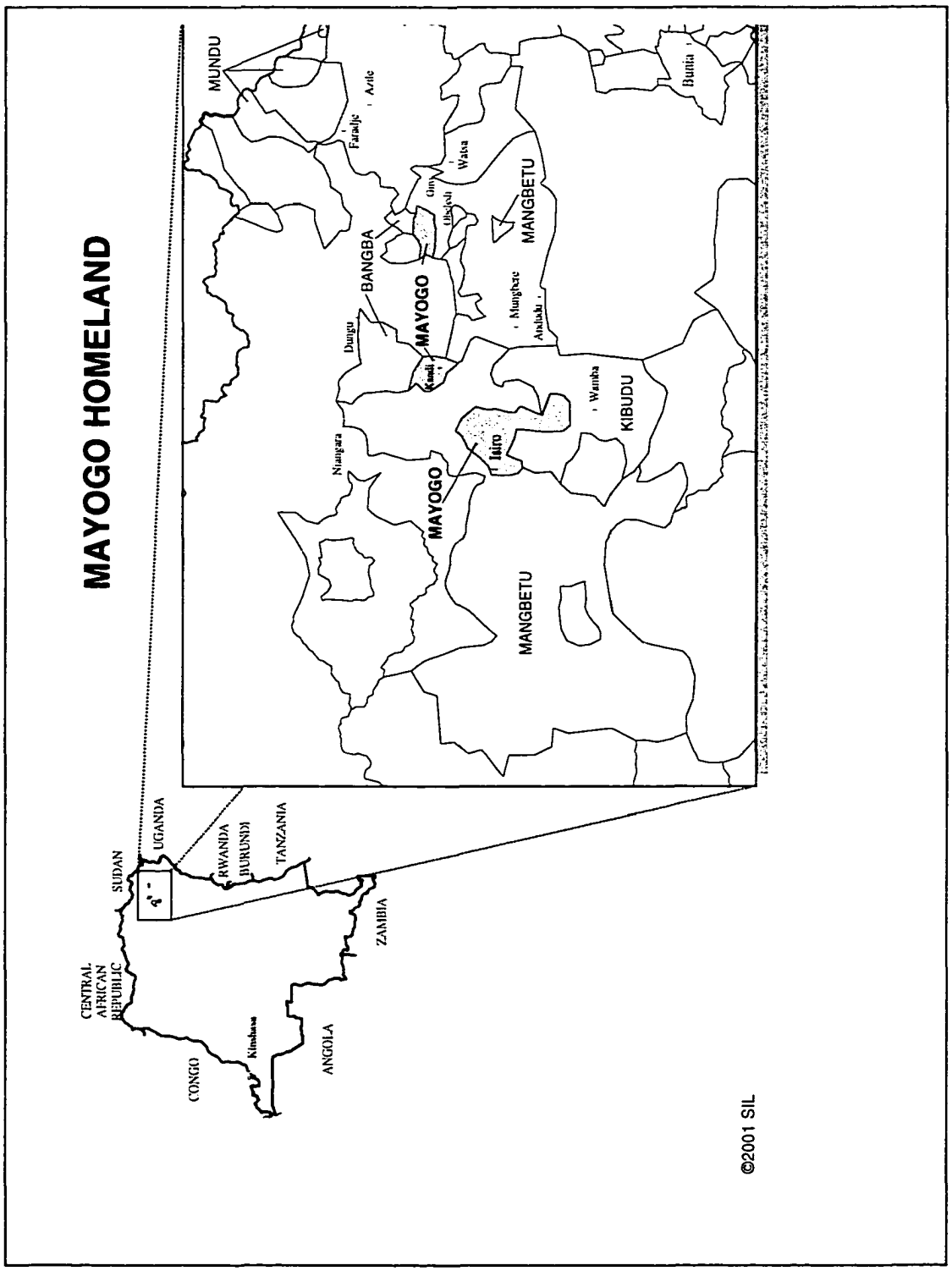

Figure 1. Mayogo regions.

The name of the language, as well as that of the people, is 'Mayogo'. Speakers use Mayogo when in the village or city; however, a large percentage of the population can function in a trade language as well. There are two trade languages used in that part of the Democratic Republic of Congo. Bangala, which is a form of Lingala, is used over the majority of the Mayogo area. Swahili is used in the Mangele-Mayogo area. French is the official language of the country, though people are less conversant in French.

The Mayogo people are principally subsistence farmers growing a wide range of crops including rice, manioc, maize, plantains, beans, potatoes, yams, peanuts, bananas, pineapples and other fruits and vegetables. Daily life centers around the need to grow and gather food. There is also a dependence upon food gathered from the forest.

Limited amounts of animal husbandry are also practiced by almost every household. The most common animals raised are chickens, ducks, pigs and goats.

The women make clay pots without the use of a potter's wheel. These pots, and locally made soap, palm oil, or garden produce can be sold for cash. Some men make charcoal, fabricate chairs, practice carpentry, or make bricks with a simple machine to earn cash. Previously, the most common cash crop was coffee, but due to the deterioration of the local infrastructure and the difficulties faced when transporting the sacks of coffee beans, coffee no longer holds a prominent role as a commodity. The local production of palm oil may have surpassed coffee in importance. Some hunting is also done but the amount of wildlife near a large population center like Isiro is limited.

Houses are mostly constructed of wattle and stick and have thatch roofs and dirt floors. Tin roofing is also used but it is far less common due to its cost. Some houses have adobe block walls or baked bricks. The latter is highly preferred because they will not quickly deteriorate when rained upon.

The Mayogos live in symbiosis[1] with pygmy groups who trade with them.

1.2 Language classification and dialects

In a language family index Mayogo is classified as Niger-Congo, Atlantic-Congo, Volta-Congo, North, Adamawa-Ubangi, Ubangi, Sere-Ngbaka-Mba, Ngbaka-Mba, Ngbaka, Eastern, Mayogo-Bangba (Grimes 2000b). It is closely related to Bangba and Mündü (Boone 1994a). Discussions with Mündü and Mayogo speakers indicate that Mayogo may have diverged from Mündü hundreds of years ago in the Faradje area, and Bangba diverged from Mayogo shortly after that. Figure 2 illustrates where Mayogo is placed in relation to some other Niger-Congo languages. The figure also includes all the fifteen languages of the Ngbaka[2] subgroup (Grimes 2000b). Language names in this figure are in all capital letters.

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[1]The Mayogo villagers are intermediates between the outside world and the forest world of the pygmies. One reference regarding symbiotic relationships with pygmy groups in central Africa is Thomas & Bahuchet (1988:311).

[2]Note that the language NGBAKA, spoken in western Democratic Republic of the Congo is classified under the Eastern division of the Gbaya-Manza-Ngbaka subgroup of the Ubangi languages and NGBAKA is not a member of the Ngbaka subgroup of the Sere-Ngbaka-Mba grouping. The Sere-Ngbaka-Mba grouping does however contain a language NGBAKA MA'BO (Grimes 2000b).

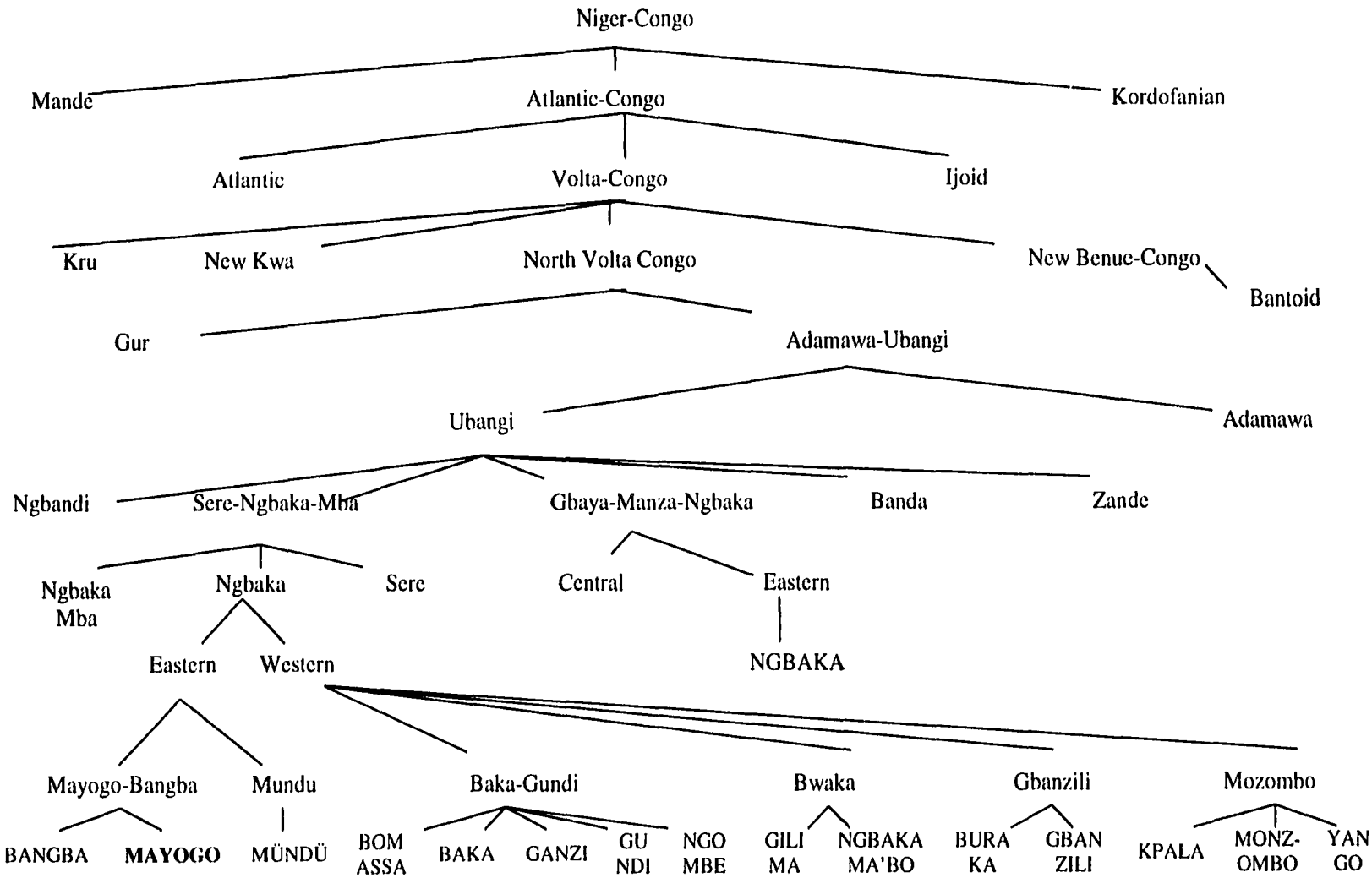

Figure 2. Classification of Mayogo and the Ngbaka subgroup.

There are six groupings of Mayogo speakers. Most are located in the government's Rungu and Wamba administrative zones. The largest dialect is Mabozo and it has approximately 80 percent of the speakers. Another dialect is Mangbele, grouped into the Mangbele A, which is located in the Azanga community, and the Mangbele B, which is located in the Mangbele community. Other groupings include Madjedje, Magbai and Budese. It is uncertain what linguistic differences may be found in these various groups as no inclusive survey has ever been completed. The Mabozo dialect is widely accepted among the others dialects to be the dominant dialect.

Mayogo speakers also claim that Dimadoko is a dialect of Mayogo; however, comprehension tests done with recorded texts indicate that Dimadoko has diverged to the point of being mutually unintelligible with the Mabozo dialect of Mayogo (Boone and Sawka 1994).

Some other spellings or words used to refer to the Mayogo language and people group include Maigo, Maiko, Mayko, Mayko, Kiyogo, Majugu and Mayugu (Grimes 2000a). The term 'Kiyogo' relates to the Bantu prefix *ki-* meaning 'language'. Although Mayogo is not a Bantu language this influence comes from surrounding Bantu languages like ki-Budu, ki-Komo, ki-Bwa and others. The latter two alternate spellings, Majugu and Mayugu, reflect best in English script the indigenous pronunciation of the language, which phonetically is written as [ma-ɗyɨ-gɨ].[3]

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[3]See the consonant and vowel phoneme tables later in this chapter. Much of the information in these tables is based upon McCord (1989) who presents an acoustical and autosegmental analysis of the Mayogo vowel system including a description of the consonants. *Dy* in this word *Madyogo* is a voiced palatal obstruent which is uncommon compared to other stops used in the language. The phonetic symbol *ɨ* is a high central [–ATR] vowel which is also uncommon. In the orthography *ɨ* is written phonemically as *o* and the phonemic symbols are used throughout the thesis unless otherwise indicated.

Since the Mayogo language did not have a successful orthography until the late 1980s and the first published book[4] did not appear until the year 2000, the culture has depended much on its oral history. The Mayogo people learn their history and culture as families or larger groups are gathered around communal fires that are usually under thatch huts. Legends, fables and true stories are all used to teach both young and old.

1.3 Field work and data

Data for this thesis was collected during fieldwork in the Democratic Republic of Congo from January 1991 until May 1996. Much of this time, my family lived in Ngeli which is a small church compound located about five kilometers from the city center of Isiro. My family was hosted by the Communauté Evangélique Chrétienne au Couer de l'Afrique.[5] Work on this thesis also built upon data that had been collected previously by Mike and Julia Anne McCord who gathered data over a period of two years from May 1986 to May 1988. We were thankful for the previous work that they had done on the language and in developing relationships with the people.

During our time in the Congo, the Mayogo people helped collect and analyze data. Some individuals who worked in the Mayogo project include Mukwali Timothée, Mongu Timuda, José Pakudha, Pastor Badhahenebua Daniel, Pastor Atulu Ndandangu, Luwa Francois, Mongu Timuda, Maboso, Sunolide Abusa, Mapuma Sebu, Nemisa Georgine, Neyongo Buluply, Adabyuane Ndegu, Tongu Theo and others.

The data for this work consist of elicited sentences and texts. Over fifty different texts of varying lengths were collected. About 30 of these are Mayogo folktales but there are also texts describing the history of the Mayogo people or recent events such as funerals. In

---

[4]This was the Gospel of Luke (Bádha Ngali gba Yesu Kilisito maka li Luka aye lie ko 2000).

[5]Evangelical Church of Christ in the Heart of Africa.

addition, there are procedural texts and other various genres of texts. Added to this, the project workers, including myself, collected about 200 local proverbs. Texts were recorded and then transcribed by hand but relatively few texts have been interlinearized and thoroughly studied. These texts, proverbs, and many other isolated phrases have been collected in the Shoebox (1995) computer program and were used to build a lexicon of over 1,600 words. Two of the folktales, one recent narrative, and a conversation are included in appendix B. One of the folktales is *The Story of Pindjo*, which is an amusing story about a young man and the shame that comes upon him when he disregards his father's advice. This story and *The Market*, which is a conversation, were transcribed originally by Mike and Julia Anne McCord. *The Quail and the Viper* is a Mayogo folktale that has wild animals as its main actors. *The Snake Story* is a short, but well-formed account, of what happened when a snake crossed our friend's yard one evening.

Research on nearly thirty specific topics of grammar such as pronouns, noun and verb forms, various particles, sentence structure, interrogatives, and discourse structure was conducted by the mother tongue speakers of the Mayogo project as well as by my wife and myself, mostly between 1994 to April of 1996. These and other smaller collections of grammar notes have been organized into over a hundred different entries within an electronic grammar database. This grammar database became the basis from which were prepared ten papers for a Language Universals and Linguistic Typology course offered by Dr. Susan Herring at The University of Texas at Arlington in the spring of 2000. These ten papers in turn became the basis from which this thesis began.

One difficulty in this research is that some of the analysis has been done when no further data could be collected. My family was last able to visit with the Mayogo people in

April of 1998 but no grammatical analysis was done during that visit. With this in mind, this thesis has tried to point out areas of research that need further research and possible revision.

1.4 Phonemes

McCord's 1989 work included a description of the syllable patterns, word structure and phonetic consonants and vowels in the language. These will not be repeated here. Included, however, is a short description of the phonemic segments. Table 1 depicts the Mayogo consonants. The phonemic consonants symbols in table 1 and the phonemic vowel symbols in table 2 are included in parentheses in these two tables, while the phonetic symbols are not in parentheses in these two tables. The phonemic symbols, as opposed to the phonetic symbols, are used throughout the examples and discussions within the thesis.

Table 1. Mayogo consonants

		labial	alveolar	palatal	velar	labiovelar	pharyngeal glottal
Stops, Affricates	voiceless	p (p)	t (t)	tʃ (ts)	k (k)	kp (kp)	ʔ (')
	voiced	b (b)	d (d)	dʒ (dj)	g (g)	gb (gb)	
	prenasal	mb (mb)	nd (nd)	ndʒ (ndj)	ŋg (ng)	ŋgb (ngb)	
	implosive	ɓ (bh)	ɗ (dh)	ɗʲ (dy)			
Fricatives	voiceless	f (f)	s (s)		x (ky)		
	voiced	v (v)	z (z)				ɦ (h)
	prenasal	ᵐv (nv)					
Resonants	nasal	m (m)	n (n)	ɲ (ny)			
	oral	w (w)	l (l), r (r)	y (y)			

Two rare consonants that were not included in earlier analysis are *r* and *ky*. Also a consonant cluster of *kpr* has been found that has not been documented before. When these rare consonants or the consonant cluster occur, it is often in an ideophone or a borrowed word. Examples of each of these in an ideophone phrase are in (1). The short word *má* used in these examples is categorized as an adverb that marks ideophones.

(1)	má ru	má kya	má kpru̇e
	like force	like quick	like absolute
	with force	as quickly	like absolutely

The symbol ['] before a vowel represents a glottal stop. Its occurrence before the vowels *e, i, i̇, o, u* and *u̇* have been found in the data. Some examples are seen in (2) and (3).

(2)	na-'e	na-'olo	na-'ulu
	to-remove	to-grill	to-fly
	to remove	to grill	to fly
(3)	'i kpȯsa	na-'i̇li̇	na-'u̇lu̇
	bunch spinach	to-forget	to-dry
	bunch of spinach	to forget	to dry

The same symbol ['] has a double function in the orthography since it is also used to indicate the elision of the initial vowel, either *e-* or *i-*, that functions like a singular prefix on nouns, or the elision of *o-* that functions like a plural prefix on nouns. The prefixes occur on most single syllable nouns that begin with a consonant.[6] When in isolation, these nouns

[6]There are few words composed of only one vowel in Mayogo. Some examples of words composed of only one vowel are the Mayogo noun for 'thing' [e], the verb for 'see' [u], and the verb for 'ask' [i]. In order to make these first two exceptions uniform with the CV syllable pattern found throughout the language as well as indicate the absence of a glottal stop an *h* has been proposed in the orthography. This results in the phonemic forms of *'he* 'thing' and *-hu* 'see'. Further research may yield other exceptions, and the orthography, while still undergoing evolution will likely revise some spellings.

require a prefix, but with a modifier, for example, an elision of the prefix takes place as shown in the examples listed in (4) to (6).

(4)	ekpɨ́	'kpí bini
	day	day one
	day	one day name
(5)	ɨlɨ	'lɨ ma
	name	name 1s
	name	my name
(6)	o-ngʉ	'ngʉ bhisi
	PL-chicken	chicken two
	chickens	two chickens

More on this phenomenon will be included in chapter 2.

The feature of Advanced Tongue Root is important to the Mayogo vowel system. McCord (1989) found that [+ATR] can spread leftward. He found that this spreading, however, is also blocked by other phonological constituents. More will be said about these findings in chapter 2, but for now it is sufficient to examine the 8 phonemic and ten phonetic vowels seen in table 2. The phonemic vowels are included in parentheses. There are allophones, *e* and *ɛ*, of the mid front vowel *e,* and allophones, *o* and *ɔ*, of the mid back vowel *o*. Due to phonological rules of the vowel system, only *e* and *o* need to be written in the orthography system. Since these phonemic vowels include both [+ATR] and [-ATR] features they have been positioned centrally within the cells of table 2. The low central vowel, *a*, and the high central vowel *ɵ* are always [-ATR] and do not have corresponding allophones. Thus

they are positioned to have the [-ATR] feature according to the table but with no corresponding or contrastive allophone to occupy the [+ATR] slot.[7]

Table 2. Mayogo vowels

		Front	Central	Back
High	+ATR	i (i)		u (u)
	-ATR	ɪ (i̵)	i̵ (ɵ)	ʊ (ʉ̵)
Mid	+ATR	e		o
		(e)		(o)
	-ATR	ɛ		ɔ
Low	+ATR -ATR		a (a)	

1.5 Tone

There are three basic levels of tone in Mayogo: high, mid, and low. Various combinations of glides such as high-low, low-high, low-mid and mid-high are also possible. For the purpose of this thesis, however, the reader only needs to know that tone is marked in a few places on nouns to distinguish lexical items as shown in (7) and tone is marked on the first syllable of the verb root to distinguish the future tense from the past tense. More on grammatical tone in verbs is included in chapter 4.

(7) kpála kpalá
person squirrel

[7]McCord (1989) used the symbols ɪ, ʉ̵, and ω for the phonetic vowel symbols ɪ, i̵, ʊ respectively that are used here.

1.6 Orthography and examples

For the ease of the Mayogo people, who it is hoped will benefit most from this work, this work has sought to follow the rules of Mayogo orthography as closely as possible. Examples are given in phonemic script, with the exception of adding hyphens to indicate the morpheme breaks. The phonemic script, does normally use hyphens in few instances to write long words, and before the reference markers, which will be explained in chapter 3. The morpheme breaks between the singular noun prefix *e-* and *i-* and the nouns they are attached to have not been indicated in this work except for the texts within the appendix. Again, this was done for the ease of the intended audience and also it would be pedantic to indicate every instance of this as it adds excessive clutter to the grammatical analysis of each examples. A hyphen has been included, however, to separate the plural prefix *o-* with the morpheme that it is attached to.

The discussion may also include references to the phonetic realization in brackets of some segments, especially when the tone distinguishes lexical differences. Items in the free translation that do not have a corresponding morpheme are usually indicated with parentheses.

1.7 Reduplication

One of the common threads throughout every chapter of this work is the mention of reduplication. Reduplication is especially productive in Mayogo and its prevalence cannot be ignored. The data have yielded over many uses of reduplication in the language in at least ten grammatical categories. These uses of reduplication are summarized in chapter 7. The different uses and forms have been analyzed and several scales of reduplication productivity have been proposed from this study. One of the aims of this research is to find out which constituents of the grammar, such as nouns, pronouns, verbs, adjectives, prepositions, conjunctions, and adverbs, use reduplication to the greatest extent in the language.

Unfortunately, the time limits and purpose of this research could not include a more thorough analysis (but see Sawka, forthcoming).

Reduplication is defined as repeating some part of the base of a morpheme immediately to the left, or to the right, or occasionally the repeated segment is located in the middle of the base itself (Spencer 1991:13). The reduplicated part may be as little as a single vowel or consonant. Reduplication differs from repetition in that the reduplicated forms must not have any morphemes between them and the base from which they sprang. Forms that are separated by other morphemes are simply repetitions.

Reduplication is common in many other languages, including African languages such as Igbo, Yoruba, Hausa, Kinyarwanda, Ewe and Kikerewe. An Austronesian language of the Philippines in which reduplication is especially productive is Tagalog. Reduplication occurs in Greek in which only the initial consonant of the root is reduplicated in the perfective forms. An example is seen in *ly:o:* (λυω) 'I release' becomes *lelyka* (λελυκα) 'I have released' (Goodwin 1984).

Wilbur (1973) wrote a classic dissertation, *The Phonology of Reduplication*, in which she begins by quoting the American anthropological linguist Edward Sapir who says that, "Nothing is more natural than the prevalence of reduplication..." (Sapir 1921:76). Wilbur defines reduplication as a structural change that is determined by grammatical information. She writes:

> Reduplication resembles a phonological rule. It applies to the underlying representation of words. It [sic] a strictly formal sense, reduplication looks exactly like a phonological rule. It has a structural description and a structural change. But its application is determined entirely by grammatical information. (Wilbur 1973:5)

Rojanski (1991) lists more than ten functions of reduplication from a study of West African languages. Some of these functions are multiplication, intensity, iteration, diminutively, formation of the future tense, an extenuation of an action, indication of time

and causation. Other functions found listed by other authors include accumulation, augmentative, distribution, attribution of result, instrument, result, and cognate object. Kouwenberg and LaCharité (1999) stated regarding the iconicity of reduplication that more of the same form equaled more of the same meaning.

Reduplication has become of special interest to morphophonology because it has in itself both morphological and phonological aspects. Furthermore, it has important implications for the autosegmental theories of phonology and morphology (Spencer 1991:151). There are now scores of articles written on the phenomenon. Work on this thesis does not even begin to review all the literature on reduplication, or compare how reduplication functions in other languages with how it is exhibited in Mayogo. Rather, it only seeks to point out the phenomenon in the examples provided and conclude with a short summation in the final chapter.

In Mayogo, reduplication is most often of the first syllable of the root word, and when this occurs the reduplicated segment is joined to the beginning of the root. In the examples here the reduplicated segment is glossed as REDUP and this gloss is joined to the gloss of the root with a hyphen to indicate the morpheme break. When the reduplication is of an entire root, as in some nouns, the reduplicated portion is written separately from the root according to the orthography rules for the language. Likewise, when interlinearized, the reduplicated portion of an entire word is written as REDUP without being joined with a hyphen to any other morpheme.

1.8 Overview of thesis

Chapter 2 presents the morphological typology and word order typology of Mayogo. The chapter gives a general sense of the type of the language in regards to its isolating, agglutinative, or fusional characteristics. It begins with some simple examples and other

evidence for placing Mayogo low on the index of synthesis as well as low on the index of fusion. The study of word order and headedness in phrases shows Mayogo's place among Joseph Greenberg's list of twenty-four basic groups for all languages of the world. In order to study the headedness of verb phrases, relative phrases and various types of noun phrases, some basic concepts of these in Mayogo are included. The chapter also includes a presentation of word order variation and determines how rigidly the word order is maintained.

Chapter 3 describes the Mayogo noun phrase. After giving some examples, a general rule concludes that section. Next, pronouns are considered and various forms of the pronoun, including the nominative, accusative, possessive, genitive, emphatic, and reflexive pronouns are discussed. Vowel harmony and variant forms of pronouns are included. Sections on demonstrative pronouns as well as relativizers are included as well.

The third chapter continues with a presentation of the nominal morphology. It includes sections on reduplication in nouns, adjectives, and more complex noun phrases before beginning a discussion of how case is marked in Mayogo.

Chapter 4 mainly treats two sides of the Mayogo verb phrase: One is tense, aspect and mode, and the other is voice and valency. There are three tenses (past, present and future) and three major aspects (perfective, imperfective and perfect) that provide a central core around which some other aspects and moods are attached. For example, the progressive aspect is analyzed as a subcategory under the imperfective and perfect forms. Also included is mention of how tone, negation, and reduplication function in verbs. Sections on statives, time words, and adverbs are also included.

Chapter 5 deals with issues of clause combining. Both paratactic and adverbial clause combinations are presented. There are seven types of paratactic clause combining included:

contrast, temporal succession, temporal overlap, alternation, addition, causation, and conditional. The combination that is discussed in greatest detail is conditionality. Adverbial clauses that are presented are: temporal sequence clauses, 'before' clauses, purpose and reason clauses, simultaneity clauses, and concessive clauses.

Chapter 6 continues with the discussion of the verb phrase but looks in detail at complementation and relative clauses. Only two types of complement constructions, the indicative and infinitive complement constructions, were found in the data. A comparison of the direct and indirect quote forms, as well as additional detail on quotation formulas, such as verb omission within the quotation formula are included.

Strategies of forming relative clauses that have been found include a relativizer plus a gap strategy. An analysis was done to find inflection in the relativizers that reflect the grammatical relations in the restricting clauses but none has been found. Information on what constitutes a headless relative clause is also included.

Besides the texts already mentioned in appendix B, appendix A includes text analysis for the index of synthesis and the index of fusion of *The Snake Story*.

There are several purposes for writing this thesis. Besides an interest in reduplication, an incentive to writing this is to organize the many grammatical observations that accumulated during fieldwork. The primary purpose, however, is to do research that will result in an overview of some of the basic grammatical structures in the language, which can then be useful for continuing the study and development of the Mayogo language.

The theoretical framework upon which this work is based has had its origins in the functional-typological approach of the Language Universals and Typology course previously referred to in this chapter. In that course 'functional' was defined as an approach which is based on the assumption that grammar is shaped by language in use. The approach defined

language itself as external cognitive and communicative requirements that are mediated through discourse. The approach was 'typological' in that it involves a comparison across genetically and geographically diverse languages. During the university course there was an opportunity to fulfill both aspects of the functional-typological approach. Most of the information regarding the comparison of the other languages studied in the course, however, has not been included in this thesis, although a few examples from other languages have been included when applicable.

In short, it is hoped that anyone who reads this thesis can capture some of the basics of Mayogo grammar.

CHAPTER 2

LANGUAGE TYPOLOGY

This chapter examines the morphological typology and word order typology of Mayogo. Previous research on the language provides information regarding word structure, so the purpose of this analysis is not the morphology of words. Nevertheless the next chapter, chapter 3, cannot avoid exploring some aspects of nominal morphology. Section 2.1 of this chapter begins with the morphological characteristics of the language as a whole, while section 2.2 presents a study in word order typology. Section 2.3 discusses word order variation. The final section, 2.4, is a summary of the major points of this chapter.

2.1 Morphological typology

2.1.1 Introduction

A functional typological approach to the study of morphological typology includes four types of language: isolating, agglutinative, fusional, or polysynthetic (Comrie 1989). An isolating language is one that can be said to have no morphology, in that there is a one-to-one correspondence between words and morphemes. In agglutinating languages, a word may consist of more than one morpheme, but the boundaries between morphemes are always clear-cut and morphemes have a reasonably invariant shape. In fusional languages, there is no clear-cut boundary between morphemes, but rather the different morphemes are fused together to give a single, unsegmentable morph. A polysynthetic language is one in which it is possible to combine together a number of lexical morphemes into a single word. Of course,

such labels all describe ideal languages, while real languages often do not purely follow any one of these systems.

This chapter presents evidence that Mayogo is best classified as having an isolating morphological typology. Evidence for the classification is presented from a nominal or verbal declension paradigm, and from example sentences.

2.1.2 Morphological typology of Mayogo

Morphologically, Mayogo has been found to be more isolating or analytic than prototypical agglutinative languages. Mayogo texts illustrate a predominance of short words. The linking of morphemes that does occur is accounted for by verb tense, noun class markings (such as the noun prefix *e-* or *i-* which must be added to single syllable noun roots), plural markers, reduplication and prefixes on pronouns such as the reflexive markers. In such cases, there are examples of the agglutinative process at work. Mayogo fits the two criteria given by Comrie (1981:39–40) for agglutinating languages. One criterion is that a word can consist of more than one morpheme; however, the boundaries between morphemes in a word are always clear-cut. This is shown in example (8) with the emphatic pronoun prefix *nga-* on the first person singular pronoun *ma*. This simple example shows that the morphemes are easily separated from each other.

(8) Ma a-mene nga-ma.
1s PAST-do EMPH-1s
I did it myself.

Secondly, Comrie stated that in agglutinating languages a given morpheme would have a reasonably invariant shape. Table 3 includes a portion of the personal pronouns and their corresponding emphatic pronominal collocations. It is not a complete list of the personal pronouns. A complete list will be given later in chapter 3. Rather than showing a few isolated

examples in sentences, this table is presented so that a comparison can be made between the different occurrences with the personal pronouns. The paradigm shows that the verb *mene* 'to do' and the emphatic pronoun marker *nga-* do not vary in their shape regardless of what pronoun they occur with.

Table 3. Some emphatic personal pronouns

Pronouns			Example Sentences	
	Full Forms	Anaphoric or Reduced Forms		
Singular				
first	ma		Ma a-**mene nga**-ma.	I did it myself.
second	mu		Mo o-**mene nga**-mu.	You did it yourself.
third	ani	e	Ani a-**mene nga**-e.	He did it himself.
			A a-**mene** da? **Nga**-ani.	Who did it? He did (himself).
Plural				
first exclusive	ya		Ya a-**mene nga**-ya.	We did it ourselves. (exclusive)
first inclusive	ni		Ni a-**mene nga**-ni.	We did it ourselves. (inclusive)
second	yi		Yi a-**mene nga**-yi.	You did it yourselves.
third	uo	u/o	U a-**mene nga**-o.	They did it themselves.
			A a-**mene** da? **Nga**-uo.	Who did it? They did (themselves).

There are variations in the pronouns themselves, which is due to three reasons. One, there are anaphoric forms, *e* and *o* for the third person singular and third person plural pronouns. These termed 'anaphoric' in that they refer to the same third person subject as opposed to some other third person subject. Secondly colloquial speech allows some

alternative or reduced forms for the third person singular and third person plural. Examples of these are listed in table 9. Third, there are variations for phonological reasons as seen in the second person singular pronoun (*mʉ/mo*). Another example is the verbal prefix past tense marker *a-*. This prefix, *a-*, changes to *o-* due to influences of the high central, [-ATR], vowel [ʉ], which is in turn influenced and is also realized as *o*. Details on these changes and different forms of pronouns will be included in chapter 3. These phonologically conditioned variations are generally not included when classifying the morphological typology of a language like Mayogo so they are not considered as morphological variations in this research.

Like table 3, the purpose of table 4 is not to include an analysis of the syntax but to illustrate that morphemes are basically invariable. The segments of verb root *-go* 'come' in this table are actually unchanged. The inflection shown on the verb root for past and future tenses are tonal differences that are considered to be separate from the verb root itself. Other morphemes in this table also show that they are basically invariable. Examples like the conditional sentence illustrate the strong isolating qualities of Mayogo.[8]

[8] *I dʉ me* or simply *I dʉ* occurs frequently in Mayogo to mark conditional statements. Literally *I dʉ me* can be glossed as 'It be that' and it is glossed in this way throughout the thesis. The pronoun *i* 'it' is explained in detail later in section 3.4.6. In the grammatical analysis of clauses *I dʉ me* or simply *I dʉ* are considered a unit and *i* is not analyzed as occupying the subject slot of a clause, and neither is the verb root *dʉ* 'be' considered the verb of the clauses presented as examples.

Table 4. Invariable shape of the verb root

Ani a-**go**. 3s PAST-come	past	He came.
Ani **go** de. 3s PAST-come NEG	past, negative	He didn't come.
Ani a-**gó**. 3s FUT-come	future	He will come.
Ani **gó** de. 3s FUT-come NEG	future, negative	He will not come.
Ani nga-**go**. 3s PROG-come	progressive	He is coming.
Ani **go-go**. 3s REDUP-come	habitual	He (regularly) comes.
Ani a-**gó** má-go. 3s FUT-come CER-come	evidentiality	He will surely come.
I du me ani nda **go**, ani ti da. it be that 3s then come 3s fall place.	conditional	If he wants then to go, he should.
Ani de nga-**go** ne mu. 3s PFT PROG-come with 2s	perfect	He was going to go with you.

Some examples of longer words in Mayogo follow in (9) to (12). Instances of longer words, however, even polysynthetic words such as example (10) occur most often in proper names as shown here. Normal Mayogo speech would not refer to an event or situation with a polysynthetic 'word' like Siberian Yupik can in the single word *angya-ghlla-ng-yug-tuq* 'he wants to acquire a big boat' (Comrie 1981:42). Therefore, it is concluded that polysynthetic examples in Mayogo are less likely instances of true incorporation but are instead unique instances of joining morphemes to form descriptive names.

(9) i-ngbo-ngula-gimba
it-swell-eyebrow-monkey
caterpillar (spec.)

(10) Bádha-he-ne-bua
good-thing-STA-heart
(A)-good-thing-is-(the)-heart.

Mayogo often uses reduplication as examples (11) and (12) show to form longer

words. Example (11) is the name of a specific insect that shows an instance of reduplication within the word as opposed to reduplication preceding the base word. This type of reduplication within a word and of more than one morpheme is unique in Mayogo and has not been seen to occur elsewhere except to form the name of something. Normally the first syllable reduplicates and attaches itself to the front of the root from which it is reduplicated. Moreover, this example shows reduplication of a clause that contains a verb (*dʉ* 'pierce') and a noun (*ngʉlʉ* 'neck').

(11) i-dʉ-ngʉlʉ-dʉ-ngʉlʉ-kpa
it-REDUP-REDUP-pierce-neck-hand
praying mantis

Example (12) is an instance of double reduplication of the verb root. Regarding the topic of polysynthesis however, reduplication like this is not considered here as a combination of different lexical morphemes in the strictest sense.

(12) nga-'o-'o-'o
PROG-REDUP-REDUP-put
to be habitually putting it

Note that Mayogo is an SVO language. A simple sentence like (13) illustrates the basic Mayogo word order. More on word order will be included later in this chapter.

(13)

S	V	O
Ani	a-sʉ	kpʉlʉ-o.
3p	PAST-hit	snake-REF

He hit that snake.

2.1.3 Index of synthesis and index of fusion

Mayogo could potentially be problematic for the traditional, discrete classification model since it is both agglutinative and isolating. Some insights, however, can be gained by measuring the index of synthesis and the index of fusion for Mayogo to add to this analysis.

The index of synthesis is the ratio of morphemes to words, and the index of fusion is measured from the number of portmanteau morphemes and the non-segmentability of morphemes in the language (Comrie 1989:46–51). The four types of languages that have been used as a means of classification are of course extremes on a continuum. As already mentioned, few languages can be classified as being purely a single type and this is the case for Mayogo also.

To find these indexes the number of morphemes and the number of words were counted in a text. Also considered was any evidence of segmentability and variance. The complete text and its translation are included in appendix B while appendix A includes a morpheme analysis of a portion of the text. It was found that 70 percent of Mayogo words are a single morpheme. This is evidence that Mayogo is low on the index of synthesis and fusion. Since two-thirds of the words are a single morpheme there is then little synthesis or fusion occurring.

Of those words that are not a single morpheme another 28 percent of the words are composed of two morphemes. These words are most often composed of verb tense marker, usually *a-*, as a prefix on the verb root. This was true in 67 percent of the 28 percent of the words that were not a single morpheme.[9] In 26 percent of the cases in which there were two morphemes joined into one word, there was a noun class marker as a singular prefix *e-* as in *e-ngɨ́* 'story', or the plural prefix marker *o-* as in *o-kpála* 'person'.[10] There were 7 percent of the occurrences of more than one morpheme per word that had a reference marker as a suffix. An example is the suffix *-o* attached to *kpʉlʉ* 'snake' as in *kpʉlʉ-o* 'that snake'. Finally, 2 percent of the words consist of three or more morphemes as in the case of the

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[9]For example the verb root *-dʉ* 'be' and the past tense prefix *a-* join to make *adʉ* 'was'.

[10]The text contained for occurrences of words which were in a reduced form with an elided vowel as in *'kpi* 'place' as opposed to the full form of *ekpi*. Such words were counted as words containing two morphemes.

reduplicated verb root *–lɯ* meaning 'stand' as in *a-lɯ-lɯ* 'remained standing'. Table 5 summarizes these results.

Table 5. Percentage of morphemes per word and types of morphemes

Number of morphemes per word	percentage of total	Types of morphemes	percentage of subset
1	70	pronouns, nouns, verbs, adverbs, conjunctions, prepositions, adjectives, numerals, locative nouns	100
2	28	verbs	67
		noun prefix	26
		reference marker	7
		total	100
3 or more	2	reduplication of verb root, nouns	100

Seeing that the root morpheme does not change when an affix is added or omitted, it is concluded that there is generally invariance of the morphemes.[11] The morphemes are easily segmented and Mayogo is placed towards the isolating extreme. Examples of non-segmentability in Mayogo would be the third person singular anaphoric pronoun *–e* which encodes both the notion of third person and the anaphoric reference to the same third person subject.

The text analysis found that Mayogo averaged a 1.3 morphemes per word ratio. Figure 3 illustrates with an X where one might place Mayogo on an index of synthesis continuum. On this continuum the extreme left would be a 1 to 1 ratio. Vietnamese would be

[11]Some features which are influenced across morpheme boundaries are tone, phonological features such as rounding and ATR. The morphemes, however, are for the most part invariant in that they are easily recognizable as being the same morpheme.

a purely isolating language. At the other extreme there would be polysynthetic languages like Eskimo (Siberian Yupik) (Comrie 1981:42).

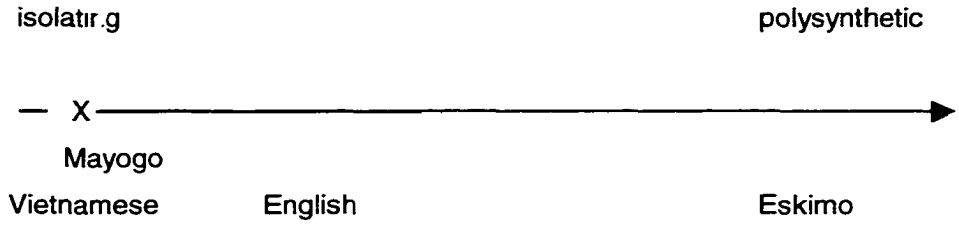

Figure 3. Index of synthesis continuum.

Figure 4 illustrates with an X where one might place Mayogo on an index of fusion continuum. A language noted for its high agglutinative characteristics is Turkish and a language noted at the other extreme for its fusional characteristics is Russian. Mayogo is low on the index of fusion (Comrie 1981:43–5).

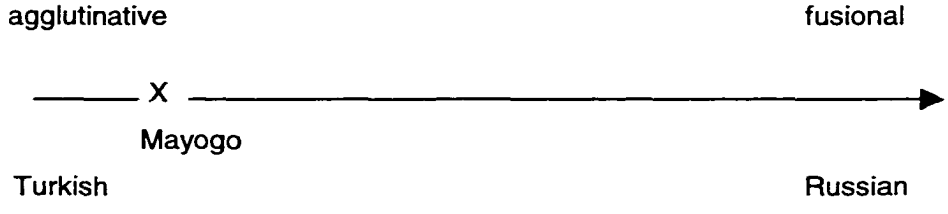

Figure 4. Index of fusion continuum.

2.2 Word order typology

2.2.1 Introduction

Ideas about how word order and typology are linked came to the forefront in the 1960s when Greenberg wrote his famous work entitled *Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements.* Appendix 2 of his work posited twenty-four basic groups for all languages of the world. The parameters for these groups are

based upon word order, headedness, and whether a language has prepositions or postpositions. According to the examples of languages that are listed with each group, one could expect that Mayogo would be most closely associated with Group 9 because Group 9 includes most Benue-Congo languages including all Bantu languages. The group also includes Romance languages, Albanian, Modern Greek, West Atlantic languages, Yoruba, Edo Group, Shilluk, Acholi, Bari and most languages of the Chadic group of Afro-Asiatic, but not Hausa; Neo-Syriac, Khasi, Nicobares, Khmer, Vietnamese, all Thai languages except Khamti; many Autronesian languages including Malay; and lastly the group also includes Subtiaba of Nicaragua (Greenberg 1966). Although Mayogo could be expected to be classified with this group, Mayogo was found to diverge from this group in the parameter of headedness for adjectival noun phrases. This will be discussed in section 2.2.2.6.

Instead, according to the criteria given, Mayogo conforms to the patterns of Group 10 languages. Languages in Group 10 are characterized as having a SVO word order. This word order is indicated in Greenberg's abbreviation system with a roman numeral II, as opposed to VSO order and SOV order, which are indicated by roman numerals I and III respectively. Group 10 languages have prepositions as opposed to postpositions (indicated by the abbreviations Pr-Po respectively), have the governing or head noun followed by the genitive noun constructions (NG) as opposed to preceding it (GN). And lastly, languages of this group have the adjective preceding the noun (AN) as opposed to the noun preceding the adjective (NA). In a synopsis, Group 10 languages can be summarized with Greenberg's abbreviations of II-Pr-NG-AN.

Other members listed as examples of Group 10 are German, Dutch, Icelandic, Slavonic, Kresh, Maya, and Papiamento. None of these are from Africa except for Kresh, which is a Nilo-Saharan language found in southern Sudan, the area from which Mayogo may have originated. Boone and Sawka (1994) reported that Mayogo may have originated

from the same area of the Moru-Madi languages that are likewise in southern Sudan. The connection to Kresh may be less important than the influence of Mangbetu upon Mayogo. Mangbetu, like Kresh is a Nilo-Saharan language, but the Mangbetu language group has had a long and recent history of influencing the bordering Mayogo areas. The number of speakers of Mangbetu in comparison to Mayogo is much larger.

2.2.2 Headedness

Head initial languages, or headed languages, means that the language places the central or obligatory member of the phrase before its modifiers or complements. A language is classified as head initial or head final according to the majority of its ordering relations. Greenberg (1966) said that non-harmonious ordering in languages would be evidence of historical change over time. He states that if a language doesn't change its word order in 2,000 to 3,000 years then the language is completely harmonious. Of Greenberg's twenty-four groupings of languages, only three groups are purely harmonious: Group 1, including languages such as Celtic languages, Hebrew, Arabic, Berber, Masai, Turkana, Didinga and Polynesian languages among others. Group 9 languages are also purely harmonious. Lastly, the third purely harmonious group is Group 20, which includes Hindi, Bengali, Arayan languages of India, Korean, Japanese, Nama Hottentot, Dravidian, Navaho and Quechua to name just a few. Group 10 languages are head initial except that the adjective precedes the noun. Mayogo, therefore, is not a completely harmonious language but it is nearly so. If, according to Greenberg's hypothesis that only completely harmonious languages are not likely to undergo word order changes then Mayogo would be still, of course be an a state of evolution. The language in no way seems to be lacking in evidences of recent historical change.[12]

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[12]Although not the focus of this paper one hint of the changes Mayogo may be undergoing are included in McCord's (1998) analysis of the central back rounded [–ATR] eighth vowel that occurs least frequently

In order to properly classify Mayogo we will now consider its headedness in six types of syntactic constructions.

2.2.2.1 Headedness of transitive verb constructions

In Mayogo the transitive verb comes before the object. Thus Mayogo is head initial for transitive verb constructions as indicated by examples (14) and (15).

(14)

S	V	O
Ya	a-lʉ	kpadhi.
1p.EXC	PAST-cook	manioc_leaf

We cooked manioc leaves

(15)

S	V	O
Kpála	a-sʉ	kpʉlʉ-o.
person	PAST-hit	snake-REF

(A) person hit that snake.

2.2.2.2 Headedness in verb phrases with auxiliaries

Auxiliaries are located before the verb root in Mayogo verb phrases. Thus Mayogo is head initial for verb phrases that contain auxiliaries.

Mayogo uses the auxiliaries *dʉ* and *de*[13] to mark the imperfective and perfective tense forms respectively. Both of these auxiliaries occur before the main verb of the sentence. Examples with these two short auxiliaries can be seen in (191) and (198) of chapter 4 where verb tense is discussed. Other forms have been analyzed as auxiliaries because of their

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compared to other vowels in the language. Secondly, Mayogo appears to have had a relatively recent separation from other Adamawa-Ubangi languages like Mündü and Bangba (Boone 1994a, 1994b, Boone & Sawka 1994).

[13]The reader of this thesis will encounter three uses of the particle *de*: for the perfect tense, for negation, and for the preposition 'near'. The data indicates that there is no tonal distinction between these forms but they are distinguished solely by their grammatical context. The perfect tense marker occurs before the verb, the negative marker is usually at the end of a clause and the preposition occurs before a noun. There is also the verb root *-de* which means 'to cut'.

obvious grammaticalization and frequency before verbs in the auxiliary position. Such an example is *-tsia* which can be seen in example (234).

2.2.2.3 Headedness in prepositional phrases

The noun phrase will be fully explained in the following sections but first this section will consider headedness in prepositional phrases. The preposition comes before the noun phrase in head initial languages. This is the order found in Mayogo. A few brief examples as follows suffice.

(16)

S	V	O	Pr	NP
Malimʉ	a-sʉ	kpʉlʉ	**ne**	**ndula.**
teacher	PAST-hit	snake	with	stick

Teacher hit (the) snake with (a) stick.

(17)

V	O	Pr	NP
na-zi	kpála	**bhʉ**	**lata**
to-bury	person	in	grave

to bury (a) person in (a) grave

2.2.2.4 Headedness in relative clauses

Chapter 6 discusses the relative clause construction in detail. For the purpose of establishing the headedness of Mayogo relative clauses, however, a simple example is included here. In Mayogo, the noun precedes the relative clause that modifies it. This is also referred to as postnominal relative clause construction. Example (18) has the portion of the sentence that functions as a relative clause in bold.

(18)

		RELATIVE CLAUSE			
V	N	REL	V		DET
Tsia	ndili	**inde**	**nga-ku**	**'gba**	bhomʉ.
look	child	this	PROG-cry	tears	that_near

Look (at the) child **that is crying** here.

Note how in the following example the noun phrase *ekpa na konge gba ani-e* 'day which (was) his vacation' has its components separated by a relative clause that begins with the relativizer *li*. Much more will be said about the use of the preposition *na* that is glossed as an associative marker later in this chapter.

(19) N RELATIVE CLAUSE Pr N
Ekpa **li olia a-si-e a kuti**, na konge gba
day that namesake PAST-lay-REF at village ASSOC vacation GEN

ani-e, ma a-du a-si lie sii-e.
3s-REF 1s PAST-IMPF PAST-lay COM here-REF

(The) day, **that that namesake was lying in his village**, which (was) his vacation, I was lying about near here.

2.2.2.5 Headedness in possessive noun phrases

Welmers (1973:275) suggests that in a discussion of possessive noun phrases the use of the term 'associative' is preferred over the term 'possessive'. This is since the term 'possessive' can result in confusion of "identical constructions with meanings that have nothing to do with possession." He also reserves the term 'genitive' for inflected noun forms in languages that have case systems. In this analysis of Mayogo, however, it has been found to be helpful to employ all three of these terms due to the variety of constructions found in the language. Although all of the constructions can fit under a general classification of 'associative', the term 'possessive' is useful in an analysis of Mayogo when talking about notions such as alienable and inalienable possession, and there is also a possessive marker *ka* that functions outside of the noun phrase that will be discussed in chapter 3. The term 'genitive' is used to refer to yet another construction in Mayogo that is formed without any inflection. This genitive construction uses the particle *gba* and is described in this section.

Lastly, there is a particle *na* that is glossed as an associative marker that is discussed in section 2.2.2.6.

Mayogo, like many other African languages, has two types of association or possession. Mayogo uses an inalienable possession form for things that are not easily separated from the associated noun. Examples are things that are inalienably possessed include body parts, names and family relations. This inalienable possession does not have any particle between the associated nouns as seen in the examples of (20) and (21). It appears that word order alone marks the possession as there is no tonal morpheme involved. The first noun is the possessed element and the second following it is the possessor or modifying noun.

(20) N PRO
'kpa ma
hand 1s
my hand

(21) N N
'di 'nu
horn animal
animal's horn

For things that can be separated from the associated noun, such as clothing, tools and houses, another form exists that uses the particle *gba*. Its use signals an alienable possession. Mayogo exhibits head initial order for both types of possession. Examples (22) and (23) are examples of alienable association that uses a genitive marker *gba*.

(22) N Pr N
eti gba Ebhe
house GEN God
house of God

(23) N Pr N
bongo gba bhóko
clothes GEN man
clothing of (a) man

For emphasis, inalienable nouns can be placed in the alienable construction as shown in comparison of examples (24) and (25). (24) is the normal inalienable construction but (25) is the alienable construction used to put an emphasis upon whose blood it was.

(24) ngute ani
blood 3s
his blood

(25) ngute **gba ani**
blood GEN 3s
blood **of his**

In summary, all of the above constructions referred to as the possessive or the genitive are both head initial.

2.2.2.6 Headedness in adjectival noun phrases

The typology for the adjectival noun phrase has lead to some special considerations of what is defined as an 'adjective' in Mayogo. Welmers (1973:249) notes that Ward's analysis of Efik from Cameroon and Nigeria (1933:42–3) claims that the term 'adjective' may be applied to any form that is reflected by an English adjective in translation, without reference to its derivation or grammatical function in the language being described. Since that early paper, which apparently made the analysis mostly on semantic grounds, the analysis of adjectives in African languages has of course progressed much further. Regrettably, the scope of this paper doesn't allow an in-depth look at the morphotonemic

differences between nouns and modifiers in Mayogo but some of the syntactic differences can be seen in the examples presented here.[14]

We could suspect, as in other African languages, the adjective-like words in Mayogo may be related more closely to nouns or verbs, or are in fact actually nouns or verbs themselves. Welmers says that true adjectives are rare in Niger-Congo languages (1973:250). For Mayogo, however, there is some clear evidence that a category of words that functions differently from nouns and verbs may indeed be a true adjective.

In Mayogo, adjectives come before the noun the modify with no marker between the noun and the adjective as seen in (26) and (27).

(26) ADJ N
bu 'ngʉ
white chicken
white chicken

(27) ADJ N
bádha 'zʉ
good food
good food

Adjectives can take on qualities of a noun, or function as a noun when they follow the noun that they modify. In such instances they are preceded by the associative marker *na* and the first syllable of the adjective is reduplicated. Some examples, that correspond to the previous examples, of this type of construction can be seen in (28) and (29).

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[14]A few instances of how adjectives contrast with nouns are seen when looking at examples of single syllable adjective such as *dhu* 'dull', *ba* 'large', *bi* 'plain', *bu* 'white'. These adjectives contrast with single syllable nouns such as *edhu* 'bird', *eba* 'termite' *ebi* 'leaf' (spec.) and *ebu* 'stomach' that often occur without the noun prefix (*'dhu, 'ba, 'bi, 'bu*) when joined with an modifier for example. Adjectives that are more than one syllable also have contrasting forms. Such an example is the adjective *bádha* [bădhā] 'good' and the numeral *badha* [bădhā] 'four'.

(28) N Pr N
engu na **bu-bu**
chicken ASSOC REDUP-white
chicken which (has) whiteness (=white chicken)

(29) N Pr N
ezu na **bá-bádha**
food ASSOC REDUP-good
food which (has) goodness (=good food)

The morpheme *na* has been glossed as an associative marker and in the free translation it is most often translated as 'which'. In this thesis it has been classified as a preposition that associates what precedes it with what comes after it. This morpheme has wide usage in Mayogo, and other Niger-Congo languages often have a morpheme like it in both form and function. A similar morpheme with the same form *na* was found by Raymond (1993) to have eleven different functions in Bhele, a Bantu language also located in the Democratic Republic of Congo. We have previously mentioned Welmer's view on the use of terms like 'possessive' or 'genitive' from his earlier work in 1973. His 1962 article entitled *Associative* a *and* ka *in Niger-Congo* identified what he classified as an 'associative morpheme.' It begins as follows:

> A grammar of almost any Bantu language will attest a morpheme *a* in a variety of constructions involving association, usually of a preceding noun with a following noun or pronoun. In many Bantu languages a second morpheme, with the shape *ka* or something similar, is used in some similar constructions. These morphemes have frequently been labeled "possessive", with reference to one of their more obvious uses, or "genitive", with the implication that more than literal possession may be involved; the variety of constructions in which they are found makes the more neutral term "associative" preferable. (Welmers 1963:432)

He goes on to say that:

> The associative morpheme *a* indicates a variety of semantic aspects of association between what precedes and what follows. A precise definition of each is not necessary, but it is important to recognize that there is such a variety. (Welmers 1963:433)

Indeed this applies to Mayogo also in which *na* is used in a variety of constructions one of which is when an adjective functions as a noun. The construction in which the adjective precedes the noun (the head final construction) is only slightly more common than the construction with the associative marker (the head initial construction). If the semantic focus was not upon the function of the modifier then the shorter, head final construction would seem to be the preferred and more economic form over the head initial construction.[15] When pressed further for an explanation as to any differences in translation between the two forms, either head final or head initial, Mayogo speakers explain that the head initial form is used more for generalities and insistence.

In other African languages it is common for verbs to function as modifiers. One bit of evidence that would indicate that Mayogo adjectives are related to verbs is that the same *na* morpheme that has been explained to function as an associative marker above, is identical to the infinitive prefix *na* on verbs.[16]

A piece of evidence, however, that adjectives are not derived from verbs is that to say "It is white" in Mayogo a stative word like *ko* is used in a verb-less clause[17] as in example (30). If the adjective could function as a verb then some verbal inflection upon an adjective might appear or the stative may not be needed.

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[15]Haiman (1983) discusses "economic motivation" in which the quantity of phonological content correlates with the quantity of information being conveyed.

[16]Since the same morpheme *na* can occur before nouns, adjectives and verbs this is evidence that these three constituents share some common features of modification. After evaluation with mother tongue speakers it was determined to attach *na* only to the verb root since verbs readily take tense prefixes whereas nouns and adjectives are more limited in what prefixes join to them. For nouns, only the single syllable nouns take either the *e-* or *i-* prefix, and the plural prefix *o-* can attach to most nouns and adjectives. Reduplicated particles attach to all of these constituents.

[17]See the section on stative constructions in chapter 4 for an explanation of what is meant by verb-less clauses.

(30) A ko bu-bu.
it is REDUP-white
It is white.

Secondly, there are verbs that have the same form as some adjectives but have no correlation in meaning and thus fill a different grammatical role within the language. For example, the verb *na-bu* 'to swarm' is unrelated to the meaning of the adjective that has the same form *bu* meaning 'white'. The verb takes different syntactic positions and fills grammatical functions that the adjective does not.

Note in these next two examples that when a quantifier or numeral follows the noun that the adjective precedes the noun.[18]

(31) Ma a-zu **ngbolo** bhugu limbomu.
1s PAST-eat long banana complete
I ate (a) **long** whole banana.

(32) Ma a-zu **ngbolo** bhugu bini.
1s PAST-eat long banana one
I ate one **long** banana.

For the adjective to precede the noun in this context is definitely the preferred form as opposed to the associative construction in which the 'adjective' follows after the noun it modifies (Badhahenebua 1995). Unfortunately, no mother tongue speakers were available at the writing of this paper to see if the associative construction and the other modifiers could both be in post-nominal position.

Therefore, the preferred position is for the Mayogo adjective to come before the noun it modifies. An adjective like 'white' can also be made into a noun, such as 'whiteness', when it follows the noun it modifies. When this happens the first syllable is reduplicated and

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[18] *Bhugu na ngbolongbolo* 'banana which is long' is possible.

the associative marker *na* precedes the word. Neither nouns nor verbs follow this pattern of reduplication when preceded by *na*. Thus this difference is evidence for a category of modifiers different from either nouns or verbs, that is, a category of adjectives.

Now a closer look at the role of nouns and adjectives both being used as modifiers is presented to show how the reduplication of adjectives, but the absence of reduplication in modifying nouns can be used to differentiate between the two.

(33) is an example of a noun 'chicken' used to modify another noun 'egg'. There is no reduplication and no use of the associative particle.

(33) pala 'ngʉ
egg chicken
chicken egg

The genitive construction, as explained previously, for this example would result in the following:

(34) pala gba engʉ
egg GEN chicken
egg of (a) chicken

If the associative marker *na* is inserted then there is still no reduplication of the noun *engʉ* 'chicken' as occurred with adjectives.

(35) pala na engʉ
egg ASSOC chicken
egg which (is from a) chicken (=chicken egg)

Example (36) does not occur.[19] One exception to this, is that a noun functioning as an adjective may reduplicate if the noun it modifies is plural. Consider (37) as well as others

[19]There is no reduplication of prefixes in Mayogo so the possibility of **e-engʉ* was not included but only reduplication of the root syllable *'ngʉ* was considered.

given in the section on forming the plural in chapter 3. In (37) *ogbi* ' in-laws' only exists in the plural form and therefore the plural marker *o-* is not indicated with a morpheme break.

(36) *pala na 'ngʉ 'ngʉ
egg ASSOC REDUP-chicken
chicken egg

(37) ogbi na bho-bhoko
in-laws ASSOC REDUP-man
male in-laws

Another way to differentiate adjectives from nouns is that adjectives can occur either after the modified noun when, preceded by the morpheme *na*, or before the modified noun. Placing the modifying noun 'chicken' before the noun 'egg', however, results in a disconnected noun followed by noun construction as seen in (38). Thus the modifying noun can only occur after the possessed element as has been seen previously in (20) and (21) but the modifying noun cannot be placed before the possessed noun as an adjective can.

(38) *engʉ pala
chicken egg
chicken... egg

Applying this principal, that adjectives can precede the word they modify and also reduplicate in the associative construction, while other words do not, we can see that, *mbia* 'new' or 'now' cannot be classified as an adjective in Mayogo. *Mbia* is not reduplicated in the associative construction nor can it be placed before the noun as seen in the examples (39) to (41).

(39) eti na mbia
house ASSOC new
house which (has the quality of) newness (=a new house)

(40) *eti na mbi-mbia
house ASSOC REDUP-new
house which (has the quality of) newness

(41) *mbia eti
new house
new house

Thus using this tool, m*bia* is then better classified as being some other constituent such as an adverb as opposed to it being an adjective in the language.

2.2.3 Headedness summary

The analysis of Mayogo according to Greenberg's system of twenty-four types places Mayogo into Group 10 (II-Pr-NG-AN). This is somewhat unexpected, however, since Group 9 (II-Pr-NG-NA) lists the Benue-Congo languages within this type. The only difference between the two groups is that Group 9 has noun preceding the adjective and Group 10 has the noun following the adjective. Table 6 gives a summary of head initial and head final phrases.

Table 6. Summary of head initial and head final phrases

Type of Phrase		Ordering	Head Initial	Head Final
Verb	with an object	VP (object)	X	
	with an auxiliary	VP (auxiliary)	X	
Preposition		Pr-	X	
Relative clause		NP (relative clause)	X	
Associative		NP (associative)	X	
Adjective Noun phrase		(adjective) NP		X

Further research in this area could include a study of the position of modifiers in

related languages, additional questions concerning preference of the head final and head initial position of 'adjectives', frequency counts, and research into which are the contemporary forms versus the older forms.

2.3 Word order variation

2.3.1 Introduction

One basic reason for syntactic word order in languages, especially those in which case is not marked, is to distinguish between subjects and objects in clauses. Not all languages, however, adhere to a strict basic word order and this section looks to see if Mayogo displays variations in the ordering of its constituent phrase parts.

Word order can vary for grammatical and pragmatic reasons. An example of grammatical reasons of course would be to form interrogatives, negations and in some languages the passive voice. Therefore, it is best to use simple, declarative, affirmative, main clauses when seeking to discover the basic word order of a language For the analysis of Mayogo word, order noun phrases without inflection upon the verbs or zero reference were used. The actual frequency of word orders in texts as opposed to what is logically possible was presented.

2.3.2 Frequency count of different word orders in texts

The frequency of different word orders in simple clauses that were both affirmative and declarative, in three texts was studied to see what variations in Mayogo word order could be found. These texts were: *The Snake Story, The Story of Pindjo,* and *The Market*, which are included in appendix B. The first two are narratives and only two examples of variation of the SVO word order were found. A third text of a different genre, that is a conversation, was also studied. Of these three texts, about 85 clauses that could fit the criteria were included in the calculations.

Table 7 gives a summary of the word order types that were found in the three texts

Table 7. Word order types in three Mayogo texts

Text	Type of Text	Number of clauses	Word order types	Percentage that follows the basic pattern
A Snake Story	narrative	11	SVO	45%
		12	SV	50%
		1	XVS	5%
Pindjo	narrative	30	SVO	61%
		18	SV	37%
		1	XVS	2%
The Market	conversation	2	SVO	20%
		8	SV	80%
		0	XVS	0%
Average			SVO	42%
			SV	56%
			XVS	2%

2.3.3 Flexibility in word order

From this analysis it appears that the word order of Mayogo is basically rigid. Ninety-eight percent of the clauses analyzed followed an SV pattern. The only examples of flexibility in word order were in the presentative constructions of the 'once-upon-a-time' phrases that are used to introduce narratives.

This examination, however, is not entirely conclusive in that only a small number of texts were analyzed. Work with a mother tongue speaker to explore possibilities beyond SV word order may yield other results. Although the clauses in the texts studied included many pronouns rather than full noun phrases this should not be a problem since the SVO word order is consistent regardless of whether pronouns or full nouns phrases are used. When

pronouns versus full noun phrases show a different word order pattern, as often occurs in other languages,[20] the cases would need to be considered separately.

2.3.4 Preferred word order

According to the Prague School of Linguistics (Gundel 1988), the given information in a discourse, which is also referred to as the theme or topic, comes before the new information. This new information is referred to as the rheme or comment. Rheme is the additional information that includes the focus of the text. This principle of communicative dynamism simply says that the level of new information will increase towards the end of the sentence. Indeed, data from many languages show that the new information is often at the end of sentences and this is concurrent with the 'Once upon a time. . .' examples such as (47) seen in Mayogo. The principle of course has an effect on word order, which may change so that new information can be put into focus at the end of sentences. 'Sentence final focus' is a phrase used to refer to arguments being placed at the end of the sentence even if it is contrary to the normal word order.

Mithun (1992:58) says that the assumption that all languages have some basic, syntactically defined word order is not universally valid. She adds that the order of constituents does not always reflect the syntactic functions of those constituents in a number of languages, but rather reflect their pragmatic functions, that is, their relative newsworthiness within the discourses at hand.

Thus the preferred position of given information in Mayogo clauses is clause initial. This first example shows how a continuous (given) topic is placed at the beginning of the clause. The new information regarding the topic 'manioc' is clause final in the first phrase.

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[20]An example of a change in word order when a pronoun rather than a full noun is used would be in the French example sentence in which the object *mon enfant* of *J'aime mon enfant* is replaced by the pronoun *le* and takes a position before the verb as in *Je l'aime.*

(42)

RHEME			GIVEN	
S	V	O	S	V
Ya	a-lʉ	kpadhi.	Kpadhi	a-bhʉ.
1p.EXC	PAST-cook	manioc	manioc	PAST-simmer
We cooked manioc.		(The) manioc was done.		

The referent of the discourse in (43) is *father*. Since the initial clause of the text tells us that 'there was a man who had a child', 'his father' in this example is now *given* information. Had there been no mention of the father previously, this still could be considered given information since it is an example of world knowledge type of given information; that is, a boy would certainly have a father whether introduced or not.

(43)

S			V				
'Dyɨ	anɨ	a-tsia	a-pa	pɨ	anɨ	moko	me, ...
father	3s	PAST-look[21]	PAST-say	to	3s	so	that
His father then said to him so that, ...							

The preferred position of new information in Mayogo is clause final. (44) to (46) show the 'pot', 'leaves' and *siliba* as all placed at the end of the clause. The last example, although not a simple sentence, is a good illustration of how 'snake' which has been identified generically in the text is then specified and made distinct (new information) through its particular name or type in a clause final position.

(44)

S		V	O			
... mʉ	de	ha	lʉsa,	mʉ	dʉ	a-nʉ ...
2s	PFT	transfer	pot	2s	-be	FUT-go
... you then take (a) pot, you will go ...						

(45)

S	V			O
...anɨ	a-kuo	lɨe	ne	kpangɨ,...
3s	PAST-collect	COM	with	leaf
... he collected together some leaves,...				

[21]See section in chapter 4 for an explanation of why *-tsia* glossed as 'look' is translated as 'then'.

(46) S

Gala kpʉlʉ de: siliba.
other snake NEG snake (spec.)
No other snake: (but a) siliba!

Mayogo has a "once-upon-a-time" phrase similar to English that illustrates sentence final focus. Along with the past tense of the verb *na-dʉ* 'to be', the impersonal demonstrative pronoun *a* functions as an empty subject holder to form an inversion in the presentative construction.

(47) A a-dʉ nani bhoko bini, ani a-zu ndili...
it PAST-be distant_past man one 3s PAST-birth child
It was long ago one man, he fathered (a) child... (= There once as a man...)

Herring (1990) built upon the Prague work cited earlier to find that for SV languages the old information occurs before the new, but she also discovered that languages with VS order prefer new information before old. These findings are consistent with Mayogo, a basically rigid SV language, which prefers the old information before the new.

2.4 Summary

Mayogo can be classified as more isolating as opposed to being an agglutinative language. Mayogo texts contain an abundance of short words and around 70 percent of the words are a single morpheme. Those that are not a single morpheme are often the result of a verb prefix, or a noun prefix. The boundaries between morphemes in a Mayogo word are always clear-cut.

Greenberg's classification of twenty-four language types places Mayogo as a Group 10 language. This chapter already introduced the difference between adjectives and other words such as nouns in the language however more will be said on this also in the next chapter.

Regarding the flexibility of word order, Mayogo follows a mostly rigid SV0 pattern. Ninety-eight percent of the clauses analyzed following an SV0 pattern.

CHAPTER 3

NOUN PHRASE

This chapter describes some basic aspects of the noun phrase in Mayogo. The chapter begins in section 3.1 by looking at nominal morphology including an explanation of how plurals are formed, how nouns can act as modifiers, or how nouns can join together to form compound nouns. Next the noun phrase is considered in detail in section 3.2. Section 3.3 deals with reduplication in nouns. Section 3.4 covers the pronominal system while section 3.5 describes what are adjectives in Mayogo. Other topics included in this chapter are location words and reference marking. Section 3.8 concludes by describing some aspects of Mayogo case marking.

3.1 Nominal morphology

This section describes the nominal morphology of single syllable nouns in Mayogo. It builds upon McCord's (1989) work that gave a helpful analysis describing the nominal morphology. His work included mention of the tonal characteristics of associative constructions. This will not be repeated here, but instead this thesis has built upon that previous research in order to focus on several other aspects of the noun phrase. McCord reported vestiges of a noun class system of prefixes with five noun prefixes phonetically realized as [ɛ̀-/è-, à-, lī-, í-, mà-]. Additional research, however, has found that the evidence presented for these noun classes is lacking and that perhaps only the noun class with the *e-*

prefix is substantially preserved at the present.[22] Inclusion of noun classes did not seem to be intuitive or helpful to the mother tongue speakers that helped with further research.

It is useful when discussing nouns in Mayogo to define two categories of nouns: Class I, and Class II. This presentation will now consider each of these noun classes and include some examples.

3.1.1 Class I nouns: single syllable nouns with a prefix

Class I nouns have a single syllable of the pattern CV that in isolation must have either the singular prefix *e-* or *i-*, or the plural prefix *o-*. The *e-* prefix, for example, is phonetically realized as [è] or [è] depending upon the ATR feature of the noun root.[23] The prefixes, as already noted by McCord (1989:22), have important functions with regards to word structure. This is undoubtedly true. Rosendall (1998:66) found the phonetically exact same prefix functioning in Gbari, a Niger-Congo language of Nigeria, in the same manner and cites Blench (1989:316), just as McCord (1989) does in citing Welmers (1973:165), noting that this prefix is a remnant of a noun class system.

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[22]It was proposed that *ma-*, phonetically realized as [mà-], was a prefix for mass nouns like *mapunga* 'rice', *madidi* 'banana', *makala* 'salary'.

Li-, phonetically realized as [lī-],was proposed to occur for items in pairs like *lidhʉ* 'toe' *likpa* 'finger', *libhombi* 'jakfruit' however other items that occur in pairs like *madhaka* 'shoulder_blade', and *libho 'ka* 'nipple' do not take this prefix.

An alternate analysis is that *li* [lī-] for some of these words is actually *lí* [lí-] which is one of the single syllable nouns of Class II meaning 'fruit, grain' or 'nut' and that these are compound nouns but not noun class prefixes. For example *libhombi* is simply the 'jakfruit' of the jakfruit tree. Likewise, then *lidhʉ* 'toe' is a compound noun literally meaning the 'digits (that extend like fruit) of the foot'. 'Foot' in Mayogo is *edhʉ*. *Likpa* 'finger' is literally 'fruit of the hand'. *Ekpa* means 'hand'.

The use of *a* [à] and *í* [í] as two other noun classes were stated as being unclear in the previous work.

While there are many words in the language that begin with any of these five proposed remnants of Bantu noun classes, [è-/ȅ-, à-, lī-, í-, mà-], some of the frequencies of these 'prefixes' are due to the formation of compound nouns and other instances have not consistently displayed the same tone.

As stated above within the text of the thesis, one of the strongest evidences is the lack of acceptance among mother tongue speakers of these groupings.

[23]Some of the information on the leftward spreading of the ATR roots is found in footnote 28. For a complete explanation of this see McCord (1998:34-35,89-92).

In the previous section it was noted that the evidence of a remnant Bantu-like noun class system in Mayogo is lacking. Furthermore, if only one noun class (that for single syllable nouns of what is referred to here as 'Class I' nouns) remains, then it seems that the reasons for this class to exist are more likely due to the phonological demands described by McCord (1989) as opposed to it being the vestigial remnants of an entire noun class system.

A particular noun can only take one of the two prefixes, *e-* or *i-*, but not either one of them. Most monosyllabic nouns take the *e-* prefix as opposed to those that take the *i-* prefix, which is extremely few. An example of one single syllable noun that does take this *i-* prefix is *i-li* 'name'. There are so few instances that it is uncertain if the prefix *i-* would undergo the same variation due to ATR influences that the *e-* prefix does. If so, then the *i-* prefix would be phonetically realized as [ɨ] or [ɪ], depending upon the ATR feature of the CV noun root to which it is attached.[24]

Nouns that take the singular prefix *e-* or *i-* cannot exist without either the prefix, a modifier, a preposition, in a reduplicated form, or some other associative type construction.

A few examples of these single syllable nouns that require a prefix are included here and many others are found throughout examples in the thesis. As mentioned in the introductory chapter, it would be overly redundant to indicate the morpheme breaks and write the glosses for these prefixes, so for stylistic purposes this work has not included them in any examples given.

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[24]An alternate analysis would be that *i-* on *ili* is not a prefix at all but an initial vowel on a CVC noun that often functions like the e- prefix does on single syllable nouns. This is possible, however, nouns of the CVC pattern that begin with other vowels (*aga* 'fence', *ulu* 'grass') have not been found to also elide their initial vowels as *ili* does.

(48)	elɨ́	'spleen'	ilɨ	'name'
	eta	'rear'	ehi	'mother'
	eli	'voice'	esu	'feather'

3.1.2 Class II nouns: single syllable nouns without a prefix

Class II nouns are single syllable nouns that do not take the *e-* prefix, or the more rare *i-* prefix, but like Class I nouns they must have either the plural prefix, a modifier or exist in a reduplicated structure for the singular form. Class II nouns are a fairly limited group and only about fourteen examples from a lexicon of over 1,600 words could be found. The total that have been found are listed in three different forms seen in table 8.

Table 8. Class II Mayogo nouns

Duplicated forms		Plural form		With a modifier	
lí-lí	'fruit'	o-lí	'fruits'	lí ngulu	'palm nut'
du-du	'origin'	o-du	'origins'	du ma	'my origin'
*		o-dho	'uncles'	dho ma	'my uncle'
gba-gba	'package'	o-gba	'packages'	gba bongo	'package of clothes'
ta-ta	'cause'	o-ta	'causes'	ta engú	'cause of a problem'
li-li	'base'	o-li	'bases'	li ndula	'foot of a tree'
du-du	'remainder'	o-du	'remainders'	du 'zu	'leftovers'
*		o-'i	'bundles'	'i kpadhi	'bundle of manioc leaves'
ku-ku	'scale'	o-ku	'scales'	ku 'nu	'animal scale'
da-da	'place'	o-da	'places'	da poso	'market place'
tu-tu	'minimum'	o-tu	'minimums'	tu 'he	'minimum of something'
ko-ko	'knot'	o-ko	'knots'	ko 'kpu	'knot in a rope'
ya-ya	'part'	*		ya kpála	'body parts'
zi-zi	'light'	*		zi 'kpi	'sky light'

The fact that there exists a group of single syllable nouns that do not take the prefix *e-* or *i-*, and that these single syllable nouns can have meaning in isolation, (although they do not occur unless with a modifier or in a duplicated form) can be argued as evidence that there might indeed be some reason to posit the existence that there are the remnants of a noun class system in Mayogo. Still there seem to be no single syllable 'free' nouns as mentioned by Welmers (1963:436), so restraints on word structure seen to be the most forceful requirement for positing any word classes.

3.1.3 Plural nouns

There are at least four mechanisms that are used to express the notion of plural in Mayogo. These four mechanisms are prefixes, the use of modifiers (such as adjectives and numerals), reduplication and lastly, the context in which the noun is used. Complications result because more than one mechanism can operate at the same time. Furthermore, the mechanisms of using prefixes and reduplication occur not only on the noun itself but also on modifiers such as the adjectives that can either come before or after the head noun. A good example of every one of these possible combinations of four plural mechanisms could not be found in the data; however, this description will start with some simple examples and illustrate a few of the possible combinations of the four mechanisms. Many of the examples and ideas for this section were taken from Mapuma (1996).

To indicate the plural, a single syllable noun of Class I type can exchange the singular prefix (*e-* or *i-*) for the plural prefix *o-*. Nouns of Class II or nouns of more than one syllable can simply add the *o-* prefix. This is the simplest and often the most common way to form the plural. Examples are shown (49).

(49)	eti	'thorn'	o-ti	'thorns'
	da-da	'place'	o-da	'places'
	ɬusa	'pot'	o-ɬusa	'pots'
	kalanga	'year'	o-kalanga	'years'

Very often, however, the plural marker is omitted when an adjective precedes the noun.

(50) bili ɬusa
black pot
black pots

The context of the phrase would indicate whether or not one was referring to only a single pot or to several, or an additional modifier would indicate that only one of something was intended as seen in (51).

(51)	bili ɬusa bini	bili ɬusa bhe-nde
	black pot one	black pot this-then
	one black pot	this black pot

Very often, especially for mass nouns, the notion of plural is understood even if the singular prefix is present.

(52)	eba	ndula
	termite	tree
	termite/termites	tree/trees

An example of a mass noun with the singular form that has the semantic meaning of a plural is shown in (53). This form of the plural is common in many languages as well as Mündü (Jeffrey 1981), which is closely related to Mayogo.

(53) Ani nga-tsia eba.
3s PROG-burn termite
He is catching termites.

If one wanted to specify a single item then a quantifier would be added as seen

previously in (51) or in (54).

(54) eba bini ndula bhe-nde
termite one tree this-then
one termite this tree

Next, consider what happens when the noun can retain the singular prefix and also add on the plural prefix. For example, to indicate the totality of a sort of noun, the singular prefix remains with the addition of the *o-* prefix as shown in example (55). In this way the singular prefix interestingly now acts as a determiner, expressing concepts like 'the' or 'some'.

(55) **enʉ** 'animal' **o-nʉ** 'animals' **o-enʉ** 'all the animals'

Another example showing how the singular prefix acts as a determiner is shown in the contrast of these two sentences in (56) and (57).

(56) Ya a-sɨ na-li **o**-tsi na-toko.
1p.EXC PAST-lay to-sing PL-song to-bless
We laid (around) singing worship songs.

(57) Ya a-sɨ na-li **o-e**tsi.
1p.EXC PAST-lay to-sing PL-song
We laid (around) singing some songs.

Plurals of some nouns, probably mass nouns, can be formed through the addition of the plural prefix and reduplication of the noun root as seen in (58).

(58) o-kpá 'kpá
PL-REDUP leaf
leaves

Just as modifiers can be used to indicate the singular as seen in (51) or (54), modifiers can also be used to indicate the plural. In such cases, the use of the plural prefix is

unnecessary and adding it may be redundant.

(59)	bʊlʊ bhisi	o-bhʊlʊ bhisi
	dog two	PL-dog two
	two dogs	two dogs

Phonological agreement across words makes the plural prefix the natural form with the numeral nine that begins with an *o*.

(60)	o-kpála	odukpabini
	PL-person	nine
	nine people	

For single syllable nouns that form the plural in ways other than adding the *o-* prefix such as with a numeral, various combinations may be possible of having either no prefix, the singular prefix or the plural prefix. The different uses are due to context or slight nuances such as the need to be explicit. Some examples are seen in (61).

(61)	'kpá bhisi	'(simply) two leaves'
	ekpá bhisi	'two (sorts of, or somehow different) leaves'
	o-kpa bhisi	'(the) two leaves'

The plural marker has also been found to occur on the adjective that precedes the noun as shown in (62). Compared with (50), the plural marker on (62) is used to act as a determiner, whereas in (55) the singular prefix *e-* was analyzed as functioning as a determiner.

(62)	o-bɨlɨ	lʊsa
	PL-black	pot
	the black pots	

The adjective can also reduplicate to indicate both the plural as well as function as a determiner as seen in (63).

(63) bi-bili lusa
REDUP-black pot
the black pots

Furthermore, the plural prefix can also occur on the reduplicated adjective as seen in (64) and (65).

(64) o-bi-bili lusa
PL-REDUP-black pot
the black pots (they are all generally black)

(65) o-ngbe-ngbe bulu
PL-REDUP-big dog
the big dogs (they are all generally big)

The plural marker may occur both on the adjective and the noun as in (66). The difference in meaning between (65) and (66) is unclear. It may be that the plural marker on the noun signifies that the dogs are viewed more as individuals and each of them is big as opposed to (65) in which there is a more ambiguous group of large dogs and the focus is not upon each of them being large.

(66) o-ngbe-ngbe o-bulu
PL-REDUP-big PL-dog
the big dogs (each one of them are big)

The plural marker, however, occurring both on the noun and on the adjective, or on the adjective only, is only possible when the adjective precedes the noun. Compare example (67) in which the adjective become nominalized by following the noun it modifies and the nominalized adjective is preceded by the associative marker *na,* with example (68) in which the noun has the plural prefix. Example (69) illustrates that the plural marker only on the adjective that is following the noun is disallowed.

(67) bulu na ngbe-ngbe
dog ASSOC REDUP-big
dog which (has the quality of) bigness

(68) o-bulu na ngbe-ngbe
PL-dog ASSOC REDUP-big
the dogs which (have the quality of) bigness

(69) *bulu na o-ngbe-ngbe
dog ASSOC PL-REDUP-big
dogs which (have the quality of) bigness

The prefix *o-* can also be added to proper names but in some cases the prefix *oma-* is preferred to distinguish the members of a group as in example (71).

(70) o-Madyego
PL-Mayogo
the Mayogo people

(71) oma-Nana
PL-Nana
the members of (the) Nana clan

The plural prefix *o-* can be added to proper names and nouns as an honorific.

(72) O-dyi ya Ebhe
PL-father 1p.EXC God
Our Father God

(73) O-Sunolide a-go.
PL-S. PAST-come
Sunolide's family came.

3.1.4 Plural of kinship terms

Kinship terms usually have variations other than simply adding the *o-* prefix. Interestingly, the terms show a morphological concordance according to the distance of the

kinship relationship. This first group in (74) shows examples of nouns of a class that end in *-a, -e,* or *-o* and take the *o-* prefix as well as the *-si* suffix. This suffix is probably left over from a prototypical language form or is a borrowed suffix from some other language.[25] These words have no other consonant or vowel changes as seen in the next group.

(74)	dhongba	'cousin'	o-dhongba-si	'cousins'
	ngama	'chief'	o-ngama-si	'chiefs'
	bhele	'adult'	o-bhele-si	'adults'
	bhuko	'twin'	o-bhuko-si	'twins'
	dhoko	'uncle'	o-dhoko-si	'uncles'

In this next group the words all begin the plural forms with an *o-* prefix and end the plural with a *-si* suffix, but they also show other changes in vowels or consonants.[26] All these terms are those of the immediate family.

(75)	~~e~~l~~e~~	'woman'	olisi	'women'
	bhoko	'man'	obhosi	'men'
	ndili	'child'	ongisi	'children'

A few nouns of this next class ending in *-i* in their singular forms take the *o-* prefix as well as another suffix *–se* to form the plural.

(76)	ndai	'sibling'	o-ndai-se	'siblings'
	bali	'slave'	o-bali-se	'slaves'
	makombi	'youth'	o-makombi-se	'youths'

For nouns that already begin with an *o*, the plural form takes only a *-si* or *-se* suffix.

(77)	okala	'aunt'	o-kala-si	'aunts'
	ogili	'brother-in-law'	o-gili-se	'brothers-in-law'

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[25] In Gur languages *-se* is a plural marker (Naden 1989:158).

[26] Because these are suppletive forms that would be meaningless without the prefixes or suffixes the morpheme breaks are not indicated with hyphens in these examples.

3.1.5 Possessed nouns

When two nouns follow each other the second may serve as a modifier of the first noun. This has already been discussed in chapter 2 where it was noted that there is no marker indicating the relationship between these words, but rather only word order is used to distinguish which noun is possessed. (78) and (79) include some examples.

(78)	kɯte kpála	pala 'ngɯ	lɯsa 'ngu
	body person	egg chicken	pot water
	human body	chicken egg	water pot
(79)	'dyɨ ndɨlɨ	gudho zuo	'tɨ 'dhu
	father child	hole rat	house bird
	child's father	rat hole	bird nest

3.1.6 Compound nouns

Compound nouns are like possessed nouns but differ from possessed nouns in that they are thought of as a unit and have become more a fixed part of the vocabulary. Tone alternation that occurs across morphemes in compound nouns is described in McCord (1989:23). The difference between compound nouns and possessed nouns is that they represent a common single concept as is reflected in the English translations. This is usually reflected in the orthography since they are written as a single word as is seen in two of these three examples.

(80)	'kpa 'pe	kpeke-kpí	lɨ-djila
	hand moon	difficult-day	fruit-eye
	month	midnight	eyeball

3.2 Noun phrase

Examples in chapter 2 demonstrated the word order and headedness features of the Mayogo noun phrase. Some of these examples will be repeated here in order to list the basic features of the Mayogo noun phrase.

(81) NOUN + MODIFYING NOUN

N N
pala 'ngu
egg chicken
chicken egg

(82) INALIENABLE NOUN + PROPER NOUN

N N
'kpa Malu
hand M.
Malu's hand

(83) NOUN + REFERENCE MARKER

eti-e
house-REF
that house

(84) ADJECTIVE + NOUN

ADJ N
ngbe 'ti
big house
a big house

(85) NOUN + NUMERAL

N NUM
eti bini
house one
one house

(86) NOUN + QUANTIFIER

N QUANT
o-eti hana
PL-house all
all the houses

(87) NOUN + DETERMINER

N DET
eti bhe-nde
house this-then
this house

The following three constructions all have a linkage between the constituents.

(88) ALIENABLE NOUN + GENITIVE NOUN PHRASE

N GEN PRO
eti gba ma
house GEN 1p
my house

(89) NOUN + ASSOCIATED NOUN PHRASE

N Pr N
eti na ngbe-ngbe
house ASSOC REDUP-big
house which (has) bigness (=a big house)

(90) NOUN + NUMERAL PHRASE

N	Pr	NUM
etɨ	na	bini
house	ASSOC	one

the first house

An attempt to illustrate the possible ordering of constituents in the Mayogo noun phrase can be seen in figure 5. The adjective phrase included in this ordering would include the plural marker that can be place on the adjective and any reduplications of the adjective itself.

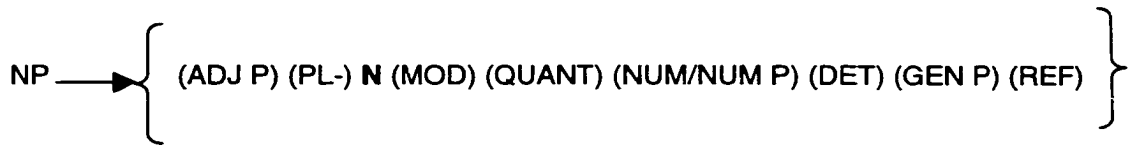

Figure 5. Mayogo noun phrase structure.

The Mayogo noun phrase as illustrated in figure 5 is strongly head initial. Excluding the plural marker, because it is analyzed as an attached morpheme, only an adjective can precede the noun. The presence of the adjective before the noun has already been discussed in chapter 2. Mayogo does not often link more than one or two modifiers to a noun. Although theoretically possible, it is not likely that every slot in the noun phrase structure would be filled.

3.3 Reduplication in nouns

Reduplication in nouns occurs in the central noun of a noun phrase. It may also occur when a noun functions as a modifier of a plural noun as described in section 2.2.2.6. Another way to interpret the function of reduplication in nouns is to say that the reduplicated particle

functions as a possessive pronoun. An example of this is seen in the comparisons of (94) and (95).

Reduplication in nouns appears to be motivated by economic referential reasons that seek to use as few terms as possible. In other words, an object already cited can be quickly referred to more economically by a reduplicated particle than to repeat its full citation again. In some reduplications the length of the reduplicated constituent is actually longer than the constituent that it replaces. So any economic gain is not necessarily to shorten the length of the phrase, but the advantage to reduplication is the phonetic ease of repeating a unit that has already been articulated.

In nouns, the reduplication that occurs is usually the repetition of the first syllable, or in some cases of especially longer words, repetition of the entire word. The reduplication of single syllable nouns that do not take a prefix has been mentioned in the section on nominal morphology. It is important to note that these single syllable nouns can only exist in three forms, one of which is the reduplicated form. Nouns of one syllable that take the *e-* or *i-* prefix can also be reduplicated as illustrated in (91) for the noun *ili* 'name'.

(91) A **'li** **'li** **bhu** **Madyogo** **pi** ?
it REDUP name in Mayogo what
What (is) its name in Mayogo?

Nouns that have roots of more than one syllable can exist in reduplicated forms by reduplicating the first syllable as shown in (92) and (93).

(92) A ka **mu** ne **tia** **kulu**.
it POSS 2s with tool work.
It has you with work tools (=You have with you work tools.)

(93) A ka mu ne **ti-tia**.
it POSS 2s with REDUP-tool.
It has you with (work) tools. (=You have with you (work) tools.)

Other nouns may reduplicate the word entirely as shown for the word *kute* 'body' in (95). The function of these reduplications is the same, that is, to replace the second or determining noun of the noun phrase in bold in examples (92) and (94).

(94) na-tulu **kute eti** ne doto
to-put body house with dirt
to put mud on (the) body of (a) house

(95) na-tulu **kute** **kute** ne doto
to-put REDUP body with dirt
to put mud on (the) body of it

When a noun functions as a modifier after the associative marker *na* as in example (96) the first syllable of the noun is reduplicated. This particular example shows reduplication of both the nouns *ọlọ* 'woman' and *bhoko* 'man'.

(96) Ogbi ma na **bho-bhoko** ne bhe na **ọ-ọlọ,**
in-laws 1s ASSOC REDUP-man and that ASSOC REDUP-woman

u a-go na-tsia ya.
3p PAST-come to-look 1p.EXC

My father and mother in law, they came to see us.

Regarding the reduplication of nouns, there is a unique instance found in the data in which the word for 'man' *bhoko* has an irregular plural of *obhosi* 'men'. When this word functions as a modifying noun only the root and not the plural prefix *o-* is reduplicated.

(97) Abule, a ko ili gba obhukosi na o-bhosi-bhosi
Abule it is name GEN twins ASSOC PL-REDUP-men.
Abule, it is (a) name for twins which are male.

In other instances, the purpose of reduplication seems to be motivated by significant structural requirements. One such requirement is that for a noun to have meaning it must have at least two syllables (McCord 1989:23). Examples (98) to (101) show some instances of reduplication for body parts in which the reduplication seems necessary than for no other reason than for the noun to have meaning.

(98) A li mu ne ebho.
it on 2s with mouth
You have (a) mouth (like anyone has a mouth)

(99) A li mu ne **'bho** 'bho.
it on 2s with REDUP mouth
You have (a) mouth.

(100) A li mu ne **'dhu** 'dhu bhisi na-dhuku ne-di.
it on 2s with REDUP leg two to-walk with-it
You have two legs to walk with.

(101) A li mu ne **likpa** likpa na-holo ehe ne-di.
it on 2s with REDUP finger to-hold thing with-it
You have fingers to hold things with them.

When the direct object is incorporated into the verb the noun can be reduplicated as shown in examples (102) and 0 to replace the second object.

(102) Ngámá a-pa suta bula ndjindji.
chief PAST-say close meeting well
(The) chief closed (the) meeting well.

(103) Ngámá a-pa **suta** suta ndjɨndjɨ.
chief PAST-say REDUP close well[27]
(The) chief closed it well.

3.4 Pronouns

3.4.1 Nominative case pronouns

The Mayogo pronouns in the nominative case are shown in table 9.

Table 9. Mayogo nominative pronouns

Singular Forms		
	Full Forms	Reduced Forms
1st	ma	
2nd	mʉ/mo	
3rd	anɨ	na, ana, a
Plural forms		
1st exclusive	ya	
1st inclusive	nɨ́	
2nd	yi	
3rd	uo	u

Table 9 shows that the second singular pronoun has a variant form *mo*. This variant form is due to vowel coalescence.[28] The third person singular pronoun *anɨ* can take the forms

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[27]This example presents a special problem as to whether or not to gloss the first instance of *suta* or the second as the REDUP gloss. It seems more natural here to keep the incorporated object which follows immediately after the verb root *-pa* as the main gloss and the second instance of *suta* as the reduplication. Wilbur describes this predicament in trying to determine which form is the reduplication and which is the base from which the reduplication occurs when she states,

> it should not be surprising that often there is no qualitative or quantitative difference between the two at the surface level by which a determination of which is the original and which is the copy can be made. The most important consideration in making a decision should be to keep the analysis of reduplicated forms in line with the analysis of the rest of the language. (Wilbur 1973:11)

Therefore in taking this cue from Wilbur, I have consistently chosen the first form as the reduplicated portion, however it would be good to ask mother tongue speakers if they have any insight into examples like this.

[28]McCord's 1989 work gives an autosegmental analysis of the vowel harmony system in Mayogo that includes several rules including one stating that the advanced tongue root feature when present in vowels

ana, na, or *a* in colloquial speech as shown in the following examples. It is uncertain if these are simply free variants or if their use is determined by phonological or pragmatic factors.

(104) Na a-dji bhʉ gʉdhʉ.
3s PAST-go to town
He-she went to town.

(105) Ana a-dji bhʉ gʉdhʉ.
3s PAST-go to town
He-she went to town.

(106) A nga-go.
3s PROG-come.
He is coming.

The reduced form *u* of the third person plural pronoun *uo* is commonly used as a free variant in the subject position in colloquial speech. It is shown in examples (107) and (108), but the full form is also possible in (107) and (108).

([+ATR]), spreads in only one direction, which is leftward, and this feature changes in vowels which lack it. That is, [–ATR] vowels become [+ATR] due to the leftward spreading. The [–ATR] feature spreads neither to the left or right (McCord 1989:92).

These rules help explain vowel harmony in many instances but because it was also discovered that the central vowels *a* and *ɵ* block the spreading of the advanced tongue root feature, those rules would not apply to all examples. The context of this vowel harmony occurs only in the context of the *a-* prefix which is a central vowel. Further research hasn't fully explained what occurs in this coalescence. It seems that when the vowel of the second person singular pronoun *mʉ* is followed by the vowel of the past or future prefix, *a-*, that the two vowels have a mutual influence upon each other that have not yet been fully explained. It seems likely, however, that the feature of rounding plays a greater role than the feature of advanced tongue root for this assimilation.

Comparing an example of the future tense with the same example after it is negated, in which the *a-* prefix is omitted, provides some evidence that it is the nature of these two vowels *ʉ* and *a* that causes a mutual assimilation: ***Mo o-gó mambi***. 'You will come tomorrow.' When the *a-* prefix is omitted there is no change although the verb root has the [+ATR] feature: ***Mʉ gó mambi de***. 'You will not come tomorrow.'

In this phrase, however, ... ***ka bhomʉ-o mo hí naki me*** '...because that (matter is why) you will see today that', the vowel does undergo the assimilation. This assimilation may also be due to roundedness of the vowel *ʉ* of the verb root since the *h* consonant seen here in Mayogo has been added in order to make this verb uniform with the CV syllable pattern found throughout the language. See footnote 6.

The vowel coalescence is also seen in the demonstrative ***bhomʉ*** 'that_near' which can have a form of ***bhomo*** before the a- prefix as in ***Nedhinga inde li makombi bhomo adje etsi*** 'When the youth nearby heard the song. . .'

(107) U a-mene
3p PAST-do
They did (it).

(108) U nga-li etsi
3p PROG-sing song
They are singing (a) song.

The full form of the pronoun *uo* is usually used when the verb is understood as in examples (109) and (110).

(109) Uo sii.
3p here
They (are) here.

(110) Uo abhu gudhu.
3p into town
They (left) to town.

Mayogo, like other Niger-Congo languages, can also substitute the plural personal nominative pronouns for the singular nominative pronouns. This may be done for various reasons including politeness or to distinguish someone. Example (111) from a Mayogo text definitely refers to a single young man who is on a journey by himself. After hiding a pot the third person singular form is used to refer to him.

(111) Ani a-ha lusa-a, ani a-wo, **u** a-mene ne emi.
3s PAST-transfer pot-REF 3s PAST-hide 3p PAST-do with trip
He took (the) pot and hid (it), they (i.e. he) began with (the) trip.

3.4.2 Pronouns in indirect discourse

Except for one irregular form for the third person singular, the Mayogo pronouns for direct and indirect discourse are all regular and they use the same forms for the nominative pronouns that were listed in table 9. The one irregular form has an anaphoric reference to the identical subject. For indirect quotations the third person singular pronoun takes the form *ni*.

(112) and (113) contrast these two forms of the third person singular.

(112) Pasitele a-pa me **ni** i mu mai.
Pastor PAST-say that 3s.ANA ask 2s hello
Pastor said that he (Pastor) sends you his greetings.

(113) Pasitele a-pa me **ani** i mu mai.
Pastor PAST-say that 3s ask 2s hello
Pastor said that he (someone else) sends you their greetings.

3.4.3 Possessive pronouns

The possessive, emphatic, and reflexive pronouns in Mayogo are all formed in a similar fashion by the addition of prefixes onto a basic pronoun root and are therefore listed together in this part of the chapter.

The Mayogo possessive pronouns are formed with the addition of *naa-* as a prefix attached to the nominative base forms. The third person singular and third person plural use special reduced forms of *-e* and *-o* respectively when in the possessed case. The prefix *naa-* is phonetically realized as [nă-] with a single vowel that has a low-high tone glide. It is indicated in Mayogo orthography with a double vowel however, and for stylistic purposes is written as such here.

The Mayogo possessive pronouns are shown in table 10.

Table 10. Mayogo possessive pronouns

Singular Forms		
1st	naa-ma	'mine'
2nd	naa-mɯ	'yours'
3rd	naa-anɨ	'his'
3rd anaphoric	naa-e	'his'
Plural forms		
1st exclusive	naa-ya	'ours'
1st inclusive	naa-nɨ́	'ours'
2nd	naa-yi	'yours'
3rd	naa-uo	'theirs'
3rd anaphoric	naa-o	'theirs'

The possessive phrase in Mayogo is formed with a stative *ka* that is further explained in chapter 4. The following example illustrates how the thing possessed becomes represented by the demonstrative neutral pronoun in the subject position and the possessor is the object of that clause. Two examples of the possessive pronouns in sentences follow.

(114) N STA O Pr PRO
A ka anɨ ne **naa-e.**
it POSS 3s with POSS-3s.ANA
It possesses him with his. (= He has his.)

(115) STA PP Q STA PRO
Ko na da? Ko **naa-anɨ.**
be ASSOC who be POSS-3s
Whose is it? It is his.

3.4.4 Emphatic pronouns

The emphatic pronouns follow the same system seen in the possessive pronouns of using the personal nominative pronoun as a base to which a prefix is added. The emphatic pronouns add the prefix *nga-* to the personal pronoun form. This prefix is phonetically realized as [ngā]. The syntactic placement of this prefix, its attachment to a personal

pronoun, as well as its mid tone differentiate it from the progressive tense particle *nga-* which has a high tone. An example of the progressive tense prefix is included in (118).

(116) Ma a-mene **nga-ma.**
1s PAST-do EMPH-1s
I did it myself.

(117) A a-mene da ? **Nga-uo.**
it PAST-do who EMPH-3p
Who did that? They (did).

3.4.5 Reflexive pronouns

Languages have often developed a reflexive pronoun from a prominent word. For example, some African languages have used a word related to 'head', English has used 'self' (as in *myself*) and French the word for 'even', *même* (as in *moi même*). The reflexive pronoun in Mayogo may be derived from the Class II noun *li* meaning 'fruit'. This word also has extended meanings of 'body' or 'form'. The reflexive pronoun marker in Mayogo is *li-* which is phonetically realized as [lɨ́-]. The reflexive pronouns follow the same system as the emphatic and possessive pronouns described above, adding the prefix before the pronoun base as seen in the following example.

(118) Ma nga-tsia **li-ma.**
1s PROG-look REFL-1s
I'm looking at myself.

The following example sentences show the contrasting inclusive and exclusive first person plural pronouns. Note that Mayogo, like French, uses the reflexive pronouns with verbs like 'return'.

(119) Nɨ́ a-gie **li-nɨ́.**
1p.INC PAST-return REFL-1p.INC
We all returned.

(120) Ya a-gie **li-ya.**
1p.EXC PAST-return REFL-1p.EXC
We returned.

3.4.6 Demonstrative pronouns

There are six demonstrative pronouns in Mayogo that will be discussed here. Three have been found to occupy the subject position of the clause and the other three seem to most often fill the object position of the clause. Those that occupy the subject position are very short words, either a single vowel or single syllable. Those that occupy the object position are two to three syllables in length. Another important factor in Mayogo demonstrative pronouns is the distance the object referred to is from the other referent, which is most often the speaker.

First considered is the demonstrative pronouns that fill the subject slot. The first listed here is the pronoun *a*, which can best be labeled as a non-referential pronoun or a demonstrative neutral pronoun. Rosendall (1998:61) analyzed a similar pronoun with the identical form *a* as a non-referential pronoun in Gbari. This work on Mayogo has chosen to group it as a demonstrative neutral pronoun since *a* has been translated as 'it' and the pronoun is used when the identity of the subject is without specific reference, is uncertain, or unimportant. In (121) the pronominalized noun is the subject of a question.

(121) **A** 'li 'li bhu Madyogo pi ?
it REDUP name in Mayogo what
Its name in Mayogo is what?

This pronoun *a* has a greater usage than 'it' does in English. For example, the pronoun can be followed by the determiner *inde* as seen in (122). The translation is difficult in English. More will be said about how determiners work in chapter 6.

(122) S DET
A ~~i~~nde ngbe 'ng~~á~~
it this big affair
It this (matter is a) big problem.

I is a non-referential pronoun translated as 'it' or 'this' which always occupies the subject position of the clause. Phonetically this pronoun is realized as [í]. This pronoun can also be used as a relativizer and this function will be explained in the next section. (123) is an example of its use as a pronominalized inanimate noun.

(123) S V ADV V DO
~~I~~ zu de, k~~u~~ b~~ulu~~.
it birth NEG raise dog
It (who) doesn't give birth, raises (a) dog. (fig. Be content with what you can do.)

This pronoun is widely used in the conditional constructions as in example (124).

(124) S V ADV S V S V
~~I~~ d~~u~~ me m~~u~~ yala, m~~u~~ 'ó.
it be that 2s refuse 2s FUT-leave
If you refuse, (then) you will leave (it).

Another demonstrative pronoun found to fill the subject slot is *bha.* It has been translated as 'this'. In the following example the phrase that fills the subject slot begins with the pronoun *bha.*

(125) _____S_____ V
Bha gba Malu a-ndjia.
this GEN M. PAST-finish
This (matter) of Malu is finished.

The first of the three demonstrative pronouns found to fill the object slot is *bhe-nde* and is translated as 'this one'.

(126) Ma a-kunda **bhe-nde.**
1s PAST-like this-then
I like this one.

Reduplication of the first syllable of the determiner *bhomu* 'this' forms the demonstrative pronoun *bho-bhomu* meaning 'this one' and it is used to refer to objects that are nearby. The difference between *bho-bhomu* and *bhe-nde* is relative distance from the speaker. An example of its use is in (127).

(127) Ma a-kunda **bho-bhomu.**
1s PAST-like REDUP-this
I like that one there.

Nganga is translated as 'it'. Section 3.8.2.2 explains how this demonstrative pronoun is unique from others in the beneficiary slot in that it does not take any prepositions before it.

(128) Jean a-ha mapunga **nganga.**
John PAST-transfer rice 3p.IMP
John gave rice to them.

3.4.7 Relativizers

This short section will include only one example of how Mayogo uses relativizers. Other relativizers such as *li* and *bhe-nde* are discussed in chapter 6. The relativizer *inde* 'this' functions to introduce the relative clause that is in bold in example (129).

(129) V N REL V DET
Tsia ndili **inde** **nga-ku** **'gba** bhomu.
look child this PROG-cry tears that_near
Look at (the) child that is crying here.

3.5 Adjectives

The essential parts of forming a noun phrase with an adjective have already been described in chapter 2 under the discussion of headedness, while other morphological

characteristics of adjectives are included in this chapter in the section regarding the formation of plurals. In addition a few other points on adjectives are included here, especially on reduplication in adjectives, since reduplication is a common topic throughout this thesis.

Like an adverb modifying an adjective in English, a reduplication of the first syllable of an adjective before the noun intensifies the nature of the adjective. This intensification occurs in more than one way. Compare examples (130) and (131).

(130) Ma a-k**u**nda na-z**u** **bádha ezu** gba m**u**.
1s PAST-like to-eat good food GEN 2s.
I wanted to eat your good food

(131) Ma a-k**u**nda na-z**u** **bá-bádha** **ezu** gba m**u**.
1s PAST-like to-eat REDUP-good food GEN 2s.
I wanted to eat your (always) very good food.

Whether reduplication actually brings different aspects such as the habitual in the last example is uncertain and could not be researched further since no mother tongue speakers were available during the writing of this paper. Such aspectual qualities in modifiers probably are determined by context and intonation than by morphology alone.

As already stated elsewhere, adjectives follow the normal reduplication rule of repeating only the first syllable and attaching this to the root as shown in example (131). Some adjectives, however, of three syllables have been found to reduplicate the entire word. Example (132) has the word *bukudhu* 'not_full' and in (133) this word is reduplicated to show plurality of the noun.

(132) kulutu na bukudhu
barrel ASSOC not_full
a barrel which (have the quality of being) not full

(133) kulutu na bukudhu bukudhu
barrel ASSOC REDUP not_full
barrels which (have the quality of being) not full

Some adjectives like *djedje* 'small' that appear to repeat the first syllable and appear to be in a reduplicated form cannot be shortened. This is not a general word structure pattern in the language. Adjectives like these can only occur with count nouns as in example (134).

(134) Mo o-dolo djedje ndula bhu-bhu hana?
2s PAST-cut small stick REDUP-in all
Have you cut all (the) small sticks there?

One can reduplicate the first syllable of djedje however, when the adjective is nominalized following the associative marker.[29]

(135) ndula na dje-djedje
stick ASSOC REDUP-small
sticks which (have) smallness (= small sticks)

3.6 Location words and iconicity

Locative case of nouns is treated separately in section 3.8.2.3. There is, however, a small set of words that are referred to as 'locatives' or 'locative nouns' in Mayogo that do not have to do with case and will be treated separately here. This group of location words displays the proximal-distal relationship of constructive iconicity mentioned by Bailey (1982). It has been suggested that *iconicity* (the phenomenon in which the physical form of linguistic expressions closely corresponds to the characteristics of the entities to which they refer) is an example of how form follows function in human language. Examples of iconicity can include the *Linguistic Doppler effect* that can be seen in a study of the vowels of the deictic demonstratives. The outcome of this effect states that there is a greater probability

[29]See the section on adjective and noun phrases in chapter 2 for a fuller explanation of the function of *na*.

that proximals are formed with high vowels (like English 'this' and French 'ici') while distals are formed with low vowels (as seen in the English 'that' or the French 'là-bas').

Table 11 lists some of these location words grouped into distal and proximal groupings.

Table 11. Proximal-distal iconicity in Mayogo locative nouns

Proximal	Undetermined	Distal
sii 'here'	uu 'are present'	abhe 'there'
ei 'here'		hoo 'there'
eki 'here'		eko 'there'

(136) to (139) are a few examples in context showing how these location words are used.

(136) Ani sii
3s here.
He (is) here.

(137) Yi a-go ei !
2p PAST-come here.
You've come here!

(138) Mu hoo !
2s there.
You (are) there!

(139) Mu uu.
2s present
You (are) present.

Of the Mayogo determiners discussed in this section, *i, inde, bhe* and *bhe-nde* contrast phonologically with the more back vowel demonstratives of *a, bha, bhomu* and *nganga*. Of these the high front vowels of *i* and *inde* are likely candidates of showing the

qualities of being "better known to the hearer, thus definite" that Givón (1984) describes. Likewise *bhomu* would be an example of a determiner with the iconic qualities hinting at what is "less well known to the hearer, thus indefinite."

Givón (1984:418–9) goes on to discuss how demonstratives also often display spatial deixis,[30] but this phenomenon has not been seen in Mayogo.

3.7 Reference and emphasis marking

Mayogo attaches the reference markers *-a, -e,* and *-o* as suffixes on grammatical constituents to indicate reference to some noun previously mentioned or to add emphasis. The degree of reference implied by these markers is uncertain. Throughout the thesis this reference marking has been analyzed as being comparable to the level of reference marking that determiners like 'a', 'an', 'the' or 'that' have in English. Since Mayogo has no other morphemes that function solely as determiners[31] it is likely that the reference markers fill this grammatical niche; however, the level of reference is probably greater than that given by determiners in English but less than that of a full relative clause.[32]

Since the reference markers are analyzed as functioning like determiners, whenever a reference marker is present, the corresponding determiner in the free translations of the

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[30]An example of this is Swahili in which the word order of the demonstrative and its complement determines the syntactic role of the modifiers.

[31]The formation of plurals with the prefix *o-* and reduplication has also been analyzed as having a determinative function. See section 3.1.3 for further explanation.

[32]An alternate analysis attempted to analyze the reference markers as type of anaphoric pronoun strategy. For example the reference marker in (140) could be translated as referring back to that 'which his father gave him' which would be an example of a relative clause on the object of the verb. The translation then of (140) would be 'He took (a) pot (**which his father gave him**) and hid (it), they (i.e. he) began with (the) trip.'

The examples of anaphoric pronoun strategy, however, presented by Givón (1990:655) do not depend upon an anaphoric marker alone but also a relativizer. Such a relativizer is absent in the Mayogo examples and therefore this analysis was rejected.

Mayogo examples have been put into parentheses as has been done in examples in which the reference marker is absent.

The different forms for the reference markers, *-a, -e,* and *-o*, of course relate to their phonological environment as seen in these next examples. The different forms *-a, -e,* and *–o* are likely to assimilate to surrounding vowels as seen in (140) in which the reference marker *-a* is influenced by the vowels *a* before and after it.

(140) Ani a-ha lusa-a, ani a-wo, u a-mene ne emí.
3s PAST-transfer pot-REF 3s PAST-hide 3p PAST-do with trip
He took that pot and hid (it), they (i.e. he) began with (the) trip.

(141) Banga ndula na eti-e kpe-kpeke.
stick tree ASSOC house-REF REDUP-hard.
Stick (the) poles of this house in (the) ground hard.

(142) Má gala kolo me kpulu a-koto. Ngbe kpulu-o.
like quick PAST-arrive that snake PAST-appear big snake-REF
Quickly (it) arrived that (a) snake appeared. (A) big snake (it was).

(143) Nedhinga inde u a-kolo lie li kpadji-e, ani a-tsia
When this 3p PAST-come COM on road-REF 3s PAST-look

a-dje numu.
PAST-felt shame

When they (i.e. he) had arrived on that road, he then felt ashamed.

Notice that in (144) the speaker uses three reference markers. One on a verb, one on a pronoun and the last instance is on a location word.

(144) Ekpa lɨ olia a-sɨ-e a kʉtɨ, na konge gba
day that namesake PAST-lay-REF at village ASSOC vacation GEN

anɨ-e, ma a-dʉ a-sɨ lɨe sɨɨ-e.
3s-REF 1s PAST-IMPF PAST-lay COM here-REF

(The) day, that that namesake was lying in his village, which (was) his vacation, I was lying about near here.

A second function of these markers seems to be for emphasis. (145) shows an example from the folk tale *The Story of Pindjo*, which is in appendix B, in which the suffix cannot be analyzed as a reference marker functioning as a determiner. In examples like (144) and (145) it appears that emphasis or simply style of speech is the only grammatical function of some suffixes.

(145) Pindjo anga ya ne ndɨlɨ-e kpangɨ hana-e.˝
P. because 1p.EXC is child -3s. ANA leaf all -REF
Pindjo because we are **your** child(ren), leaves and **all!**

3.8 Noun phrase case

Having looked at many aspects of the noun phrase this chapter will now conclude with a look at how case is indicated on Mayogo nouns. Since Mayogo was found in chapter 2 to be low on the index of fusion, it thus lacks the morphological variations in word forms that traditionally are analyzed in terms of case roles. No word forms exhibit in their medial or marginal portions what is normally categorized as case marking; rather case is indicated in Mayogo through either word order or prepositions. Therefore, much of the discussion in this section is an investigation more of the semantic case roles as opposed to morphological case roles.

3.8.1 Introduction

Word order, covered in chapter 2, is one mechanism to differentiate between subjects

and objects in a clause. There are, however, other mechanisms besides word order, such as agreement marking on the verb and case marking which is one of the most central parameters of language is case marking (Givón 1984). Givón (1984:146) also cites intonation (or tone) besides morphology and word order as a major coding device to code the subject case-role. He refers to evidence from Maddieson and Okello (1973) that a present tonal distinction is a leftover from an earlier morphological distinction. Welmers (1963:438) also mentions the loss of the segments of an associative marker in Mande, for example, but the bare tone remains and is attached to another particle. This is a common phenomenon in African tonal languages but has not yet been found to occur in Mayogo. In general, it is important to remember that the term 'case' here, following the functional typological approach, is not limited only to morphological marking on noun phrases but includes word ordering that shows a syntactic function.

Besides some common cases such as dative-recipient, benefactive, and instrumental, case-marking systems consider how languages contrast transitive and intransitive sentences. From this perspective, there are three types of case-marking systems that a language may have: nominative-accusative, ergative-absolutive, and active/non-active. Most of the world's languages have a nominative-accusative system. In the nominative-accusative system the nominative coding is the same for the subject of both transitive and intransitive clauses and there is a different accusative coding for the object of the transitive clause. Most often the nominative case is the unmarked case. Many of these languages commonly apply a rigid word order to differentiate between the two case roles (Givón 1984:148). Mayogo falls into this category.

The three common syntactic or pragmatic case roles are subject, direct object, and indirect object. Morphologically these are often referred to as nominative, accusative, and dative, respectively. Semantically the subject can encode the agent, recipient, patient,

instrument, locative or even manner case. The direct object can encode the recipient, patient, or location semantic cases. The indirect object can encode the recipient or benefactive semantic cases. This can be illustrated as in figure 6 from Herring (2000).

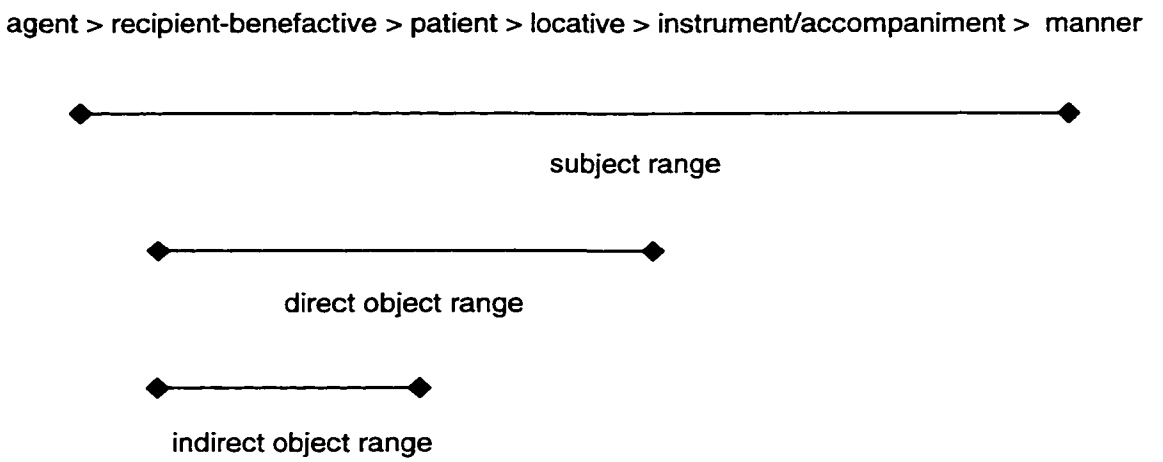

Figure 6. Hierarchy and range of S, DO and IO case roles.

About 19 percent of the world's languages have an ergative-absolutive system (Herring 2000). In this system the object of a transitive verb and the subject of an intransitive verb are encoded the same and are referred to as the absolutive coding. The subject of a transitive sentence is referred to as the 'ergative'. The absolutive form is more likely the unmarked form. Dixon writes that "ergativity is remarkably rare among languages of the African continent. However, it is found in a number of Western Nilotic languages, from the southern Sudan... in Mandara and other languages from the Chadic branch of the Afroasiatic family" (1994). An even lower number of languages have the active/non-active system in which the contrast is between non-agent subjects and agent subjects regardless of the transitivity of the clause. The non-agent subject is more likely the case that is not marked in these systems.

Helpful to this introduction to case marking is a mention of what is meant by the arguments of a verb. Obligatory arguments are those nominal participants in a clause that are essential for explicating the core meaning of the verb. For example, an intransitive clause has only one obligatory argument, which is normally the subject, while a transitive clause would have two obligatory arguments: the subject and the object. A bitransitive clause has three obligatory arguments in that it needs a recipient as well as a subject and an object. An optional argument, also called an adjunct, is one that is not essential in that the clause could still stand alone without it.

3.8.2 Mayogo case roles

Some languages are noted for their great number of inflected cases. Finnish is the classical example with sixteen cases (Lyons 1968). As already stated, Mayogo does not have inflected case systems but uses prepositions and word order to encode the case roles. While the most common case-roles such as dative-recipient, patient, benefactive, instrumental, associative, locative, ablative and goal are often found in languages, languages will encode them in typologically divergent ways. This paper presents examples of six different case roles for Mayogo: nominative, accusative, dative-recipient, genitive, locative, and instrument/accompaniment. Instrument and accompaniment are joined together into one case role since they have the same function and are formed with the same preposition *ne*. Since in many languages, case marking on pronouns is often marked differently than other nouns are marked, in some examples and tables, phrases with both pronouns and noun arguments are included. These however, end up illustrating that in Mayogo, case is marked the same on common nouns as on pronouns with few exceptions.

Table 12 gives an overview of how six case roles are expressed in Mayogo.

Table 12. Some common Mayogo case-marking mechanisms

Case role	Morphosyntactic expression		
Nominative	word order		
example	See tables 13 and 14		
Accusative	word order		
example	See tables 13 and 14		
Dative-recipient	preposition		reduplication of prepositions
examples	pɨ ya for/to 1p.EXC for us	mʉ ma for/to 1p for me	pɨ-pɨ REDUP-for/to for it
Genitive	preposition		
example	ndɨlɨ gba ma child GEN 1s my child		
Locative	preposition	reduplication of prepositions	reduplication of verb
examples	sa ndula under tree under the tree	sa-sa REDUP-under under it	Sɨ kuto! > Sɨ! Sɨ! sit down REDUP-sit Sit down! Sit down!
Instrument/Accompaniment	preposition		
examples	ne ngise with knife with a knife	ne mʉ with 2p with you	

3.8.2.1 Nominative and accusative case

Mayogo has a nominative-accusative case marking system with few overt morphological markings for these case roles. Instead, a rigid word order is used to distinguish nominative and accusative cases. There is no case marking on Mayogo nouns in relation to whether the noun is active and volitional, versus it being non-active and non-volitional. There are generally no markings on intransitive versus transitive constructions either, although the passive intransitive forms often are marked with *lie* as explained in chapter 4.

Furthermore, any differences in nouns or pronouns regarding the tense, aspect and mood of the verbs have not been found. Tables 13 and 14 list examples on a transitive/intransitive versus active/non-active and volitional/non-volitional agents paradigm that illustrate that only word order is used to differentiate the nominative and accusative cases.

Table 13. Nominative and accusative case with nouns

Example sentences with nouns		
	Active Agents	Non-Active Agents
Intransitive	Bulu a-tsi ne holo. dog PAST-ran with speed The dog ran fast.	Bulu a-ndala naali. dog PAST-tire much The dog is very tired
Transitive	Bulu a-numu pame. dog PAST-bit pig The dog bit the pig.	Bulu a-dje 'li ma. dog past hear voice 1s The dog heard my voice.

Table 14. Nominative and accusative case with pronouns

Example sentences with pronouns		
	Active Agents	Non-Active Agents
Intransitive	Ma a-tsi ne holo. 1s PAST-ran with speed I ran fast.	Ma a-ndala naali. 1s PAST-tire much I was very tired
Transitive	Ani a-numu pame. 3p PAST-bit pig He bit the pig.	Ani dje Madyogo. 3s know Mayogo He knows Mayogo.

Thus in summary, the nominative and accusative cases are indicated by word order only.

3.8.2.2 Dative-recipient case

Although word order is the only mechanism used to indicate nominative and accusative cases, Mayogo does also use prepositions to express other cases. For the dative-recipient case the preposition *pɨ*, phonetically realized as [pɨ̄], meaning 'to' or 'for' is used with most pronouns and nouns. (146) is an example with the Mayogo verb *na-ha* which can mean either 'to give' or 'to receive'. Which translation is used is dependent upon the context. Here it is glossed as 'to transfer'.

(146) Jean a-ha mapunga pɨ ya.
John PAST-transfer rice to/for 1p
John gave rice to us.

Another preposition *mʉ* also meaning 'to' is used only with the first person pronoun. The difference between *mʉ ma* and *pɨ ma* is not clear. It seems that the former might used for a more socially reserved usage. (147) and (148) are examples.

(147) Jean a-ha mapunga mʉ ma.
John PAST-transfer rice to 1s
John gave rice to me.

(148) Jean a-ha mapunga pɨ ma.
John PAST-transfer rice to/for 1s
John gave rice to me.

The preposition *pɨ* 'to' or 'for' can be reduplicated. The reduplicated portion functions to refer to the recipient that is omitted. Transforming example (146), the reduplicated preposition refers to 'us' as illustrated in (149).

(149) Jean a-ha mapunga pɨ-pɨ.
John PAST-transfer rice REDUP-to/for
John gave rice to us.

Prepositions are not used before the demonstrative pronoun *nganga*, which is used

for an understood object. (150) is an example.

(150) Jean a-ha mapunga nganga.
John PAST-transfer rice 3p.IMP
John gave rice to them.

3.8.2.3 Locative case

Locative case is indicated with locative prepositions. These locative prepositions can undergo reduplication of the first syllable to form locative nouns. Several examples in (151) to (152) show both the preposition before a noun and then the reduplication of the prepositions to form the locative noun.

(151)	Pr	N	LOC
	de	'ti	de-de
	near	house	REDUP-near
	next to (the) house		next to it

(152)	Pr	N	LOC
	kala	kiti	ka-kala
	front	chair	REDUP-front
	in front of (the) chair		in front of it

Reduplicated locative nouns are only used to replace inanimate beings as shown in (153) but not for animate beings as shown in (154).

(153)	sa	ndula	sa-sa
	under	tree	REDUP-under
	under (the) tree		under it

(154)	sa	ani	*sa-sa
	under	3s	REDUP-under
	under him		under him

Two locative prepositions that do not have reduplicated forms are shown in (155).

(155) pí mesa li mesa
on table on/inside table
on (the) table on/inside (the) table

It is interesting, however, that semantically corresponding reduplicated locative nouns for *pí,* phonetically realized as [pɨ́], 'on' and *li* that have the qualities of meaning both 'on' and 'inside of' do exist; however, their unreduplicated forms do not. In other words, for the previous examples in (155) there are no reduplicated forms of **pípí*[33] and **lili* but the following locative nouns do exist in their place as shown in (156).

(156) pepe tete
above-it on-it
above it on it

No reduplicated forms could be found for the locative *masakpa* meaning 'near' shown in (157) and the preposition *bhusu* meaning 'in, between' shown in (158).

(157) Tuto li mu masakpa !
push on 2s near
Push yourself closer!

(158) Gbo-gbo bhusu ní !
REDUP-divide between 1p.INC
Let's divide it between us.

3.8.2.4 Instrument/Accompaniment

Instrument and accompaniment are combined into one grouping because in Mayogo there is no difference in their form or function.

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[33] *Pipi* does exist for the dative-recipient preposition as seen in (149) which means 'to' or 'for' however the tone of the dative-recipient preposition differs from the locative preposition *pí.*

Instrumental case in Mayogo is often indicated with the preposition[34] *ne* meaning 'with'.

(159) ne ngise
with knife
with (a) knife

Accompaniment is often indicated with the same preposition *ne* meaning 'with', 'and' or 'or' as seen in example (160).

(160) ne mʉ
with 2s
with you

Ne can undergo vowel harmony in the presence of *o* and *a* respectively to become *no* and *na*, however it remains distinct from the associative morpheme *na*.

(161) Kangba si-si **no** o-sungu bhʉ gudho.
crab REDUP-sleep with PL-fish in hole.
Crabs sleep with fish in (a) hole.

(162) Ya a-tsia a-mene **na** ani bhʉ kʉva, kalanga ndjikpa.
1p.EXC PAST-look PAST-do with 3s in marriage year ten

bata
three

We then did with him in marriage thirty years. (= I was married to him for thirty years.)

3.9 Summary

In conclusion, as stated also in chapter 2, chapter 3 has shown that the Mayogo noun phrase is strongly head initial. The exception to this is that adjectives occur before the noun.

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[34]Ne also functions as a conjunction as in example (288).

Adjectives can follow the associative marker *na* and reduplicate to become noun-like and then occur after the noun. Prepositions like *na* and others play a major role in the Mayogo noun phrase. For example, the pronominal system of Mayogo forms the reflexive, emphatic and possessive pronouns all with prefixes that are nothing more than attached prepositions. Reduplication of nouns is common and there are at least four functions of reduplication in nouns. Concerning the formation of plurals forms of nouns, both the plural prefix *o-* and reduplication, among other devices can be used. Different combinations of plural formation of the singular or plural prefix on nouns can act as determiners. Reduplication of personal pronouns has not been found, although some relativizers have been found in reduplicated forms. The demonstrative pronoun *nganga* has a 'reduplicated like' form because it is composed of repeated syllables and furthermore, it functions as if it was reduplicated because it takes no preposition before it as other pronouns would. Not taking a preposition exhibits the characteristics of reduplicated particles in that prepositions themselves, when reduplicated form locative nouns making the need for a preposition obsolete. Finally, regarding case marking Mayogo does not have any inflected case forms except for a few instances of special prepositions that are used only with the second person singular pronoun. Instead, word order and prepositions as well as the reduplication of prepositions are the only ways in which case can be expressed.

CHAPTER 4

THE VERB

This chapter examines some core features of the Mayogo verbal system. It builds upon what has already been described in McCord (1989), which included the basics of how Mayogo constructs the past and future tense, and described in detail the function of grammatical tone for these tenses. In this work mainly two sub-systems of the Mayogo verb-phrase grammar will be considered. Section 4.1 looks at the sub-system of tense and aspect as well as including a short description of two modal type constructions that have been found. Then, section 4.2 describes how the concepts of voice and valency function with in the verbal system.

4.1 Tense and aspect

4.1.1 Introduction to tense and aspect

Since nouns can often be omitted by ellipsis, but verbs must always be present, one can generally say that the verb, as opposed to the noun, is the most important part of nearly all language systems. Tense, aspect and modality, abbreviated TAM, are most often marked on the verb, and the study of TAM is one of the most important grammatical sub-systems that a linguist can study.

The verb may be considered especially important in languages like Mayogo since Niger-Congo languages have a relatively high ratio of verbs to non-verb words used in any one text. For example, in a comparison of three French texts, which had an average of 7.5 non-verb words for every verb used, a study of eight Mayogo texts resulted in a ratio of 5.0

non-verb words for every verb used (Badhahenebua, 1995b, Sunolide, 1996). A count of word forms in a procedural text in Mayogo gave a result as high as one verb word for every 3.1 non-verb words.

Early in this chapter a chart of the Mayogo verbal system showing three tenses on one axis and major aspects on the other is presented. Some African linguists, however, like Welmers (1973:343) try to avoid altogether such attempts to categorize Niger-Congo languages in terms of "a bi-dimensional or multi-dimensional grid with intersecting categories such as tense, aspect and mode." Instead of seeking to categorize verbal declensions, Welmers simply prefers to describe the "verbal constructions" that can occur. As Payne (1997:234) says, the concepts of "tense, aspect, and mode are sometimes difficult to tease apart" and this may be due to these categories being less distinct in African languages than they are in the Indo-European languages from which these paradigms have developed. Aspect in many African languages is more pervasive in its importance than tense. Wright (1995:52) notes that Goyvaerts (1986) says that Logo "has no absolute tense categories like 'past', 'present' and 'future'" and Wright further cites that Tucker (1940:180) "points out that absolute time reference in Moru-Madi languages can only be achieved through the use of adverbials (e.g. 'now', 'yesterday', 'tomorrow', etc.)". Wright posits that Logo has a system of "relative time reference" involving three basic systems combining aspect, relative time reference and modality. Such a system is probably at work in Mayogo also, but for this thesis, which is a basic overview of Mayogo grammar, a simple paradigm of tense and aspect has been presented as a starting point for the study of the verbal system.

The 'modality' or 'mood' of verbs is that which reflects the attitude of the speaker to the fact or possibility of an action. In this chapter, information is given on the imperative mood and also two other constructions that appear to be 'modal like.' Regarding what was cited from Payne's comment previously that the categories of tense, aspect and mode are less

distinct in African languages, this difficulty of fitting grammatical phenomena from African languages into Indo-European grammatical systems contribute to some of the difficulties in describing the two constructions presented that this work has labeled as 'modal like.' More information on the indicative mood is included in chapter 6.

Givón (1985) adds to the warnings about the analysis of the tense-aspect-modality sub-systems of languages saying that they are probably "the most complex and frustrating to the linguist." He defines 'tense' as that which has to do with precedence and subsequence in relation to a point of reference on a time axis. For Comrie (1989), 'tense' is the grammaticalized location in time of a situation. Comrie's definition of 'aspect' has to do with the internal temporal development of a situation, whether it is viewed as completed (perfective) or on-going (imperfective). Givón's definition of 'aspect' has to do with the boundedness of time spans. Givón's and Comrie's definitions are both helpful to consider. Although they do not entirely concur with each other, there is more useful overlap than disagreement.

This paper has tried to use the least complex and most easily accepted definitions for tense that are given by Crystal (1985). First, let us define the basic tenses as saying that 'present tense' relates to the span of time that relates to 'the now' of speech time as well as omni-temporal spans of the present used for statives. 'Past tense' relates to the span of time that is precedent, and 'future' to that time span which is subsequent to the time that the sentence is uttered. A span of time is necessary because a single point in time is too minute and fleeting to be useful.

Secondly, for a discussion of what is meant by 'aspect' it is helpful to consider the example of a time line. When the situation is viewed as a single point or a complete whole on the time line this is considered the 'perfective aspect'. The perfective aspect refers to seeing a situation as a whole regardless of the time contrasts that may be a part of it. The following

simple figures from Shoebox (1995) illustrates that the sentence 'He wrote a letter' is viewed as a whole event that has a bounded start and a bounded completion point. In other words the action surrounding what happened in the sentence is viewed as a bordered unit that had a start and a finish.

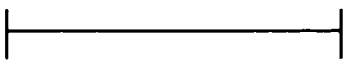
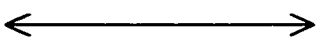
'He wrote a letter.' 

Figure 7. Representation of perfective aspect.

One can also consider an open span of the time line. When the situation is viewed as a span of time then this is the 'imperfective aspect'. Imperfective aspect draws attention to the internal time structuring of a situation as a span of time. In the sentence 'He is working' the start or completion of his action is not in focus but only the notion of doing the work. This is illustrated in figure 8.



'He is working.'

Figure 8. Representation of imperfective aspect.

Perfect aspect refers to a past situation where the event has some present relevance. This can be illustrated in the following figure where 'X' indicates the moment at which the utterance is said. In the sentence 'He has come', the beginning point of his coming is not in focus but how his coming relates to the present is in focus.

'He has come.' ——————————|X

Figure 9. Representation of perfect aspect.

4.1.2 Infinitive

In a study of the Mayogo verb, it is helpful to begin by first looking at the infinitive construction. The infinitive is formed with the addition of the prefix *na-* to the verb root. This prefix is phonetically realized as [ná-] and in the orthography system it is joined to the root. The first syllable of the verb root of the infinitive also has a high tone, but the marking of these particular tenses is not necessary in the orthography and thus will not be marked in this thesis either. The infinitive form can be said in isolation as in (163) and have meaning, or it can occur with objects or other verb forms as will be seen in the following sections.

(163) na-mene
to-do
to do

Infinitives are easily embedded after the primary verb with the same subject as seen in (164).

(164) U a-kunda **na-sia** tia.
3p PAST-like to-get money
They want to get money.

When the subject of the infinitive is different, then an indicative complement is formed, which is explained in chapter 6.

(165) is an example of an infinitive following a preposition *ne* 'with' that is used here like a stative and its complement. Statives are described in section 4.1.4.

(165) Ma ne gumu **na-dji** engu.
1s with need to-drink water
I have (a) need to drink water.

4.1.3 Mayogo tenses

Grammatical tone, which is manifested both on the verb root and on any prefix attached to the verb root, is the most important factor in distinguishing tense in Mayogo. Although a prefix is usually present for what is being referred to as the past and future tenses, the segments of the prefix are sometimes omitted. The tone change that results with the change of tense on the verb root, however, cannot be omitted and it of course remains to indicate the tense even if the vowel of the prefix is absent.

Mayogo orthography leaves the high tone of the past tense prefix unmarked. The orthography marks the high tone on the first syllable of the verb root for the future tense only. For stylistic purposes this thesis follows these conventions. In table 15 the past and future forms are symbolized respectively as 'ROOT' and 'RóOT' with the high tone marked on the first vowel of the future tense root.

A description of the past and future tenses has already been included in McCord's 1989 work but a short review will be included here with examples included in the following sections to illustrate each tense. Table 15 summarizes the three most frequent verb tenses that are found.

4.1.3.1 Past tense

In Mayogo the past tense is usually formed with an *a-* prefix, phonetically realized as [á-] with a high tone on it, attached to the verb root while the first syllable of the verb root

may have either a mid or low tone[35] (McCord 1989:40, 93). The following is a simple example of the past tense as written in Mayogo orthography.

(166) Ani **a-go**.
3s **PAST-come**
He came.

The past tense is the pervasive tense in Mayogo occurring with greatest frequency in narrative and also in everyday descriptions of events. An example of this can be seen in the following example in which the first clause in the past tense is joined in a multi-clause proposition with a second clause that is in the present tense. Together these clauses are used to express an overall present tense notion.

(167) Bhe-nde **a-mbila** me kuo bho-bholo kpála, ani lila li-e.
this-then **PAST-know** that sickness REDUP-kill person 3s guard REFL-3s
Whoever **knows** (lit. knew) that sickness can kill, he guards himself (against it).

Example (168) is another instance in which Mayogo uses the past tense to refer to time frames in which Indo-European languages would more often employ a present tense time notion, or as in this example with *na-ti da* 'must'. *Na-ti da* literally means 'to fall place'. The concept of 'must' expressed by this verb carries with it a future tense notion as 'must' does in English. This example will be considered again in a study of serial verbs later in this chapter.

(168) N V O V O
José **a-ti** **da** na-kpe kpulu.
José **PAST-fall place** to-fear snake
José must fear snakes.

---

[35]These variations in tone may be due to various factors many of which have been well documented by McCord (1989). They include for example the effect of depressor consonants (b, d, dj, g, gb, v, z, h) and tone change across morpheme boundaries.

The frequency with which Mayogo uses the past tense to describe time frame notions, in which speakers of Indo-European languages would use the present tense, or even the future tense, is significant. Apparently the form described here as Mayogo's 'past tense' has a much farther reach into 'non-past' notions than the limits that the 'past tense' has in languages like English for example.[36]

4.1.3.2 Future tense

The segments that form the future tense parallel the past tense in their morphology but the tone is different. The future is also formed with an *a-* prefix but one that is phonetically realized with a mid tone as [ā-] and a high tone occurs on the first syllable of the verb root. This high tone is written in the orthography as in (169).

(169) Anɨ **a-gó**.
3s **FUT-come**
He will come.

Since the grammatical weight of the future tense, like the past tense, is also carried by the tone on the first syllable of the verb root and not on the prefix, the prefix can often be omitted as shown in example (170). Phonological reasons such as the presence of another vowel preceding the prefix may be a factor determining when the prefix is elided.

(170) Anɨ **há** 'he.
3s **FUT-transfer** thing
He will give something.

---

[36]It is also possible that the high frequency with which the past tense is used relates to the Mayogo view of time and cosmology in which the present world, which is in existence, is moving into the past world. This view is considered here in comparison to most Western cosmological views which see the future overtaking the present. It is true that the most of the Mayogo texts studied are either real or fictional accounts of distant or recent past events, but no occurrences of narrative texts situated in the future could be found in the data.

4.1.3.3 Present tense

The present tense is uncertain in Mayogo. It certainly exists in the imperative and progressive forms, as well as in statives, but some forms of what appear to be the past tense with an elided *a-* prefix seem best interpreted as a present tense. For example, McCord (1989:101–20) gives the following example of the verb *na-dje* 'to hear' which is extended to mean 'to understand'.

(171) Nɨ **dje** uo.
1p.INC **hear** 3p
We understand them.

(171) seems to best be interpreted as present tense while (172) gives an example of the past tense of the same verb.

(172) Nɨ **a-dje** uo.
1p.INC **PAST-hear** 3p
We understood them.

The tone on the first syllable of the root of both (171) and (172) are mid and differences between the present tense and a past tense with an elided prefix is not clear from the data available. The boxes that contain a dashed line in table 15 indicate that no form for that paradigm exists or at least no form has been analyzed from the data. Thus the table shows that Mayogo has the least number of forms for the present tense. The following are other examples of the simple present, imperative forms and progressive forms.

(173) Anɨ **go**.
3s come
He comes.

(174) Go ! Go !
REDUP come
Come![37]

(175) Anɨ **nga-go**.
3s PROG-come
He is coming.

4.1.3.4 Negation and tense

In Mayogo negation is formed by adding *de* or *ade* to the end of the clause as well as a change in the form of the verb itself. The two forms of *de* and *ade* seem to be in free variation. The change to the verb that occurs is an omission of the *a-* prefix on the verb root for the past and future tenses. An example of the affirmative past tense is shown in (176) and the negated form is shown in (177).

(176) Anɨ **a-go**.
3s PAST-come
He came.

(177) Anɨ **go de**.
3s come NEG
He didn't come.

Example (178) shows the affirmative future tense and the negated form is shown in (179).

(178) Anɨ **a-gó**.
3s FUT-come
He will come.

---

[37]Notice here is an instance of a reduplication across word boundaries. This could be written as *Gogo*! Which form, if either is preferable, is uncertain and may only be determined as the written language develops.

Secondly, it is more uncommon for a mother tongue speaker to say simply *Go!* one time so the more natural translation is reflected here as the English equivalent of 'Come!' as opposed to 'Come! Come!'

(179) Ani **gó** **de.**
3s FUT-come NEG
He will not come.

4.1.4 Statives

Mayogo expresses states with stative words or simply through the use of verb-less clauses. First considered is the use of stative words.

When stative words are used they are most likely copulas, relationals, defunct verbs or prepositions that are used in verb-less clauses. These statives are usually short words of only one or two syllables that have a simple morphology and no inflection. They have the meaning of 'to be', 'like' or 'to have'. Welmers (1973:308) includes an entire chapter discussing how African languages handle the concepts of 'being' and 'having' along with verbs in general. The scope and limits of the data available for this paper permit us to include only a few of the forms that are used. A study, however, of these words in predications such as identification, description, location and association are topics that remain for future research.

The statives, *ne, e, ko, maka* and *mana*, are in bold in the following examples. A stative may be followed by a noun as in (180), a noun phrase as in (181), or adjectives as in (182) and (183). As already mentioned in chapter 3 concerning adjectival noun phrases, it does not appear that adjectives are derived from verbs even in these "verb-less" clauses. The adjective *wa* 'hot' in example (182) contrasts with the verb root *-wa* that means 'to slice'.

(180) Ma **ne** Madyɵgɵ.
1s **is** Mayogo
I am Mayogo

(181) A mambi **ne** 'kpɨ́ sita.
it tomorrow **is** day six
It tomorrow is Saturday. or It is Saturday tomorrow.

(182) Ekpí **e** wa-wa.
day **is** REDUP-hot
It's hot today.

(183) Dábíli **e** su-sulu.
space **is** REDUP-narrow
(The) space is narrow.

(184) Bhisi ne bhisi a **ko** badha.
two and two it **is** four
Two plus two equals four.

(185) Egbe ngbungbulu **maka** kongu.
squash round **like** calabash
(A) squash is round like (a) calabash.

(186) Li bumu **mana** li ebe.
fruit tree (spec.) **like** fruit tree (spec.)
(The) fruit of (the) tree (spec.) is like that of (the) tree (spec.).

The origin for the forms *mana* and *maka* undoubtedly have connections to the adverb *ma* meaning 'like' that has a mid tone,[38] and the associative morpheme *na* and the preposition *ka* that is used for possession. *Ma* can be considered a shortened form of either *mana* or *maka* and an example of its use like this can be seen in (347). Either *mana* or *maka* can be used interchangeably as in the example of the following Mayogo proverb.

(187) Gandji kuti **mana/maka** na-ngita.
strange village **like/like** to-lose
(A) strange village is like being lost. (= fig. There is no place like home.)

[38] The morpheme *má* used to mark ideophones as seen in (1) has a high tone and also can be glossed as 'like'. There is also the aspect marker *má* with a high tone seen in (217) that added qualities of certitude.

Example (188) is of the stative *ka*, which is used only for possession. Note in this example that the morpheme *ne,* which is a preposition that also functions as a stative, is also present. Other examples of *ne* as a stative were seen in (180) and (181).

(188) A **ka** Malimʉ ne tía.
it **POSS** teacher with money.
Teacher has money.

Such verb-less clauses are often linked via connecting morphemes that include prepositions, conjunctions, and adverbs. One example is seen in where *ka-ka* 'therefore' is used in second clause.[39] Other examples of connecting morphemes are discussed in chapter 5.

(189) O-kpála mene kulu de; **ka-ka** gʉmʉ naali.
PL-person do work NEG **REDUP-because** need much
(The) people don't work; therefore (there is) much hunger.

4.1.5 Aspects

Compared with the study of tense, the study of aspect in Mayogo is more complicated and varied. While Mayogo uses tone and prefixes to distinguish major tenses there are at least six different devices used to express what is considered as aspects. For example, the imperfective and perfect aspects use auxiliaries while the perfective aspect for the past tense is the unmarked aspect and does not use an auxiliary. The progressive aspect uses a prefix and the habitual or repetitive aspect is encoded by reduplication. Sequentiality can be expressed through the use of serial verbs and lexical constituents are used to encode notions like the iterative aspect.

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[39]There are no examples of non-finite verbs in Mayogo, however the formation of statives through the use of connecting morphemes such as this example is considered to be non-finite verbal constructions that are dependent clauses. Another such example is given in (319).

Table 15 summarizes some of the information on two major aspects found in Mayogo. The sections after the table treat in detail three of the major aspects: perfective, imperfective and perfect, and give examples for each. Because the perfective aspect is normally only considered to function in the past tense it was omitted from table 15. More minor aspects such as sequential, iterative, and habitual are possible also and these aspects are discussed afterwards.

Table 15. Major verb tenses and aspects

Tenses		Aspects: Imperfective	Aspects: Perfect
Past	a-ROOT	a-dʉ principal verb	de principal verb
Present	ROOT	nga-ROOT	-------
Future	a-RóOT	a-dɨ́ principal verb	de principal verb

4.1.5.1 Perfective aspect

The perfective aspect is used in the past tense to indicate a completed action. It is the unmarked and is therefore considered to be the default form of Mayogo aspects. No inflection is added to the verb root and it is not preceded by auxiliaries as are the imperfective and perfect aspects. (190) shows a past perfective example.

(190) Ani **a-go.**
3s **PAST-come**
He came.

4.1.5.2 Imperfective aspect

The imperfective is formed by placing the auxiliary *a-dʉ* before the principal verb of the predicate. The principal verb for the imperfective aspect is often in the infinitive or progressive forms but can also be in the perfective unmarked form or some other form such as an habitual aspect seen later in (203). The *a-* prefix on the auxiliary, *-dʉ,* always corresponds to the prefix *a-* used for the past or future tenses. For example, the prefix on the auxiliary takes a high tone when the principal verb is in the past tense. For the future tense the high tone will be on the auxiliary root like it would be in the first column of the verb forms shown in table 15. The prefix has also been found to be omitted as in seen in (204).

The imperfect auxiliary *-dʉ* is probably grammaticalized from the infinitive form of the verb *na-dʉ* that means 'to be' or 'to sit'. The use of verbs of existence or placement like this is a common source of imperfective marking in other languages as well (Herring 2000). Lexical evidence indicates that the primordial meaning of *na-dʉ* is most likely 'to sit' as opposed to existence.[40]

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[40]One evidence that the origin of this verb is 'to sit' as opposed to its origin being 'to be' is that 'sit' is a primordial action event as opposed to the ethereal notion of simply 'being'. Moreover, for the Mayogo, the act of sitting has a special significance of being content or at ease, as 'being in one's niche' or proper station. This can be seen in the Mayogo proverb *Ebhe ne tsigbʉlʉ gba ma* 'God is my chair.' 'Chair' here figuratively can mean 'my resting place/fortress/shelter.'

An item for further research on this tense is included in this example: *...ya a-dʉ a-li o-etsi.* '...we sat (and) sang songs' or '...we were singing songs.' There are at least two possible analyses as indicated by the two translations. The first analysis is to assume that this is a case of serial verbs with the verb root *-dʉ* translated with its literal meaning of 'sit'. The second analysis is that the second verb form is neither the infinitive nor the progressive as in (191) and (192), but what we are referring to as the unmarked form that had been used in the perfective tense. If this is the correct analysis then there seems to be no way to translate this into English, but the closest form would be the English progressive. This second analysis would indicate that the imperfective aspect contained within the auxiliary *a-dʉ* overrides the perfective principal verb contained in *a-li* 'sang.' Because it was not possible to contact mother tongue speakers for clarification, both possibilities are presented in this footnote.

(191) shows the past simple imperfective example compared with the past progressive imperfective example in (192). The semantic differences between the two forms will be discussed in a moment.

(191) Ani **a-du** **na-nu** bhu Isiro.
3s **PAST-be** **to-go** to Isiro
He was to go to Isiro.

(192) Ani **a-du** **nga-zu** 'he.
3s **PAST-be** **PROG-eat** thing
He was eating something.

(193) shows the future imperfective example compared with the present progressive imperfective example in (194).

(193) Ani **a-dú** **nga-go**.
3s **FUT-be** **PROG-come**
He will be coming.

(194) Ani **nga-go**.
3s **PROG-come**
He is coming.

In Mayogo, when the infinitive form follows either an auxiliary, as in the case of some imperfective or perfect constructions, or when the infinitive follows another verb, the infinitive then seems to express more the idea of a 'state of being' as opposed to what happens when the progressive form fills this slot which then puts an emphasis upon an action involved. (195) shows the future imperfective example; the future progressive imperfective example is in (196).

(195) Ma **a-dú** **na-mene** kulu.
1s **FUT-be** **to-do** work
I will be (in the state of) doing work. (= working).

(196) Ani **a-dɨ́** **nga-zʉ** 'zʉ.
3s **FUT-be** **PROG-eat** food
He will be eating food.

(197) ??Ani **a-dɨ́** **na-zʉ** 'zʉ.
3s **FUT-be** **PROG-eat** food
He will be (in the state of) eating food.

With some verbs such as *na-mene* 'to do' the use of the infinitive is more natural. The last of these previous three examples seems more contrived.

4.1.5.3 Perfect

The perfect aspect is formed by adding *de* before the principal verb forms. The principal verbs that have been found either take the *a-* prefix or the progressive *nga-* prefix. The perfect aspect auxiliary *de* does not take the *a-* prefix as does the imperfective aspect auxiliary. (198) shows a past perfect example.

(198) Ma **de** **a'ʉ** bhotɨ pɨ ndɨlɨ-e nga-ma.
1s **PFT** **PAST-open** door to/for child-REF EMPH-1s
I had opened (the) door for this child myself.

These next two examples compare the past progressive perfect in (199) with example (200) which is the present imperfective progressive tense that does not have the *de* perfect marker that (199) has.

(199) Kpála bini **de** **nga-gɨlɨ** mʉ.
person one **PFT** **PROG-search** 2s
One person had been looking for you.

(200) Kpála bini **nga-gɨlɨ** mʉ.
person one **PROG-search** 2s
One person is looking for you.

The perfect aspect indicated by *de* is close in form and meaning to the 'then' notion

of the temporal adverb *nde*[41] often found in Mayogo conditional clauses. The two are easily confused by non-native speakers. These two forms will be discussed later in this chapter. For now, compare in example (201) the phrase with the perfect aspect using *de* and the phrase with *nde* 'then'.

(201) ...mʉ **de** há lʉ or mʉ **nde** há lʉsa...
2s **PFT** FUT-transfer pot 2s **then** FUT-transfer pot
...you **will have taken** (a) pot..... you **then will take** (a) pot...

We turn now to include a discussion of two other aspects that had not been included in the major aspects already discussed.

4.1.5.4 Habitual and repetitive aspect

An habitual or repetitive aspect is often indicated through the phenomenon of reduplication of the first syllable of the verb root. This aspect can be used to indicate that something occurs regularly or over and over again. Other Niger-Congo languages, for example, Fula, have also used reduplication to indicate repeated action (Rojanski 1991). An example from Mayogo in the present tense follows.

(202) Uo **me-mene** ngbɔdhɔkɔ lɨ ngulu.
3p **REDUP-do** palm_butter from palm
They make palm butter from palm (nuts).

Example (203) shows reduplication on the principal verb *na-mene* 'to do' while (204) shows the reduplication occurring on the auxiliary *dʉ*. The difference in the translations is uncertain; however, (204) puts the emphasis more upon a distant past time while (203) seems to put the emphasis upon the action.[42]

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[41]In fast speech, especially before the vowel *a*, the adverb *nde* is phonetically realized as *nda*.

[42]It would be interesting to ask a mother tongue speaker if both the auxiliary and the verb root itself can be reduplicated in one clause as in *Ani dʉ-dʉ me-mene 'he.* 'In the past, he used to make things.'

(203) Ani **a-du** **me-mene** 'he.
3s **PAST-be REDUP-do** thing
He used to make things. Lit: He was repeatedly making something.

(204) Ani **du-du** **a-mene** 'he
3s **REDUP-be PAST-do** thing
In (the) past he always had made things.

Reduplication of the verb root does not always indicate habitual action. Reduplication is also used in the imperative mood which is explained in section 4.1.10.

The habitual aspect can also be inferred lexically or from the context without any reduplication of the verb root. An example is indicated in (205). Here the context indicates the habitual aspect even though the second verb is in its simplest form of the present non-habitual.

(205) Kpalá, a ko zuo. Ani **zu** ngulu.
squirrel pro STA rodent 3s **eat** palm
(A) squirrel, it is (a) rodent. He eats palm (nuts).

4.1.5.5 Iterative

There are probably two ways that the iterative or repetitive aspect can be encoded in Mayogo. One way is through the use of lexical aspect, in which the nature of the verb itself contains aspectual qualities. Examples from English of lexical aspect for the iterative aspect are 'jump, bounce, hammer'.[43] (206) is an example of the past tense with the iterative aspect expressed lexically through the verb *na-ko* 'to cough' with *naali* 'much'.

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[43]Lexical aspect is related to Aktionsart or 'mode of action' (Spencer 1991:196). Other examples of lexical aspect include 'sleep' which is inherently imperfective or 'explode' being inherently perfective. Lexical aspects of a verb can be overridden through the influence of other contextual clues.

(206) Ndɨlɨ-e, **a-ko** koko nakɨ **naali**, anɨ la ndjɨndjɨ de.
child-REF **PAST-cough** cough today **much** 3s sleep well NEG
This child coughed (a cough) a lot today, he didn't sleep well.

Different from lexical aspect, example (207) shows reduplication of the verb root *-'o* meaning 'put'. This is an example of how repetitive aspect is encoded instead through the morphosyntax of the verb. Like example (206) in which the adverb *naali* 'much' contributes to the aspect, in (207) the adverb *mata* 'again' adds notions of repeated action.

(207) Anɨ mata **nga-'o-'o-'o**.
3s again **PROG-REDUP-REDUP-put**
He is repeatedly putting (it).

This type of reduplication in particular is productive in Mayogo and can be used with many telic verbs.

4.1.6 Mood

There are two constructions in Mayogo that appear to be more modal than aspectual. They are similar in form and function. One form seems to indicate that the action is completed and the other adds notions of certitude, persistence, normalcy and evidentiality. The completive notion is often considered as an aspect in many verb systems, but because in Mayogo it is so similar in form to the construction showing certitude, which is a modal notion, that this analysis has included the completive with the analysis of mode.

4.1.6.1 Completive

From the data available it appears that to form the completive Mayogo treats transitive and intransitive sentences differently. Examples from the texts of transitive sentences show that the completive mood is formed by repetition of the verb root with an

addition of an *a-* prefix.[44] If the object is overt as in (208) then the repeated verb and its prefix is placed after the object. If not, then it may be stated as in (209).

(208) S V O COM
Ma **a-lu** e-~~zu~~ **a-lu.**
1s PAST-plant food PAST-plant
I already planted food.

(209) S V (O) COM
Ma **a-lu** **a-lu.**
1s PAST-plant PAST-plant
I already planted (food).

Completive mood in transitive sentences in Mayogo can also be indicated in other ways such as with verbs like *na-ndjia* 'to finish' as in (210). Note that in (211) that the first verb differs from that which gives the completive mood. The second verb in (211) has inherent qualities of what has been referred to as lexical aspect.

(210) Ma **a-ndjia** kulu **a-ndjia.**
1s PAST-finish work PAST-finish
I completely finished (the) work.

(211) Ani **a-meme** kulu **a-ndjia.**
3s PAST-do work PAST-finish
He did (the) work – it's finished.[45]

For intransitive sentences the particle *lie* has been analyzed as a completive marker as seen in (212) and (213).

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[44]This is repetition as opposed to reduplication, since reduplicated forms must be juxtaposed and not separated by non-repeating morphemes. In this case for example, they are separated by the object of the verb.

[45]An English translation of 'He completely finished the work' could give nuances of completing each step of the work that are not intended in this example.

(212) Abelegu ma a-bhele **lie** bhu 'ti Ebhe, ...
Although 1s PAST-grew COM in house God
Although I grew up in (the) church...

(213) A bhomu ma a-ziba **lie**.
it that_near 1s PAST-accept COM
Like that, I accepted.

Note that in examples (214) and (215) the marker *lie* occurs in the same sentence with the imperfective auxiliary *-du*. These aspect and mood markers frequently occur together.

(214) Nedhinga ma **a-du** a-si **lie** sii...
When 1s PAST-be PAST-sleep COM here
When I had slept here...

(215) Ya **a-du** **lie** abhu da kuo ya a-du a-li
1p.EXC PAST-be COM in place death 1p.EXC PAST-be PAST-sing

o-etsi
PL-song

When we had been at (the) funeral we were singing songs.

This marker can occur without any verbs present as seen in (216). In the dependent adverbial clause the only morpheme with verb-like qualities is the adverb *nde*. The word *ye-ye* may appear to be functioning as a verb because it is reduplicated, however instead it is simply a noun derived from reduplicating the adjective *ye* 'small'.

(216) DEPENDENT INDEPENDENT
Abana li edhu nde **lie** ye-ye, uo zu bha ani má-zu.
Although body bird then COM REDUP-small 3p eat only 3s CER-eat
Although (a) bird's body then (is) small, they chew (it) still he (is) certainly chewed. (= one chews it.) (fig.: Although the task is small, do it with care.)

4.1.6.2 Certitude, persistence, normalcy and evidentiality

A construction expressing the notions of certitude, persistence, normalcy and evidentiality is formed similarly to the completive construction. It is so morphologically close that it is likely related to the completive mood. The slight differences between certainty, persistence, normalcy or evidentiality of course is cued largely by the pragmatics of the situation including such things as the immediate context and intonation. Therefore, a gloss of 'CER' is used here for all these notions of mood although it is possible that one or another of the several possibilities could serve as the translation.

This mood is formed by repetition of the verb root with an addition of the *má-* prefix to the second verb root. Like completive, if the object is overt as in (217) then the repeated verb is placed after the object. If not, then it may be stated as in (218).

(217) Ma **a-lu** ezɯ **má-lu**.
1s PAST-plant food CER-plant
I certainly planted food.

(218) Ma **a-lu** **má-lu**.
1s PAST-plant CER-plant
I certainly planted.

Other examples showing normalcy are in (219) and (220).

(219) Kpála **kpi má-kpi**.
person die CER-die
People die (as usual).

(220) Edje **dje** 'kpɨ́ **má-dje**.
ear hear place CER-hear
Ears hear sound (as usual).

An example showing persistence is in (221).

(221) Djua **tsi** **má-tsi**
fire burn CER-burn
Fire burns (on and on).

Another example that could show evidentiality is in (222).

(222) Ani **a-gó** **má-go.**
3s FUT-come CER-come
(It's certain from our past experience that) he will come.

This aspect marker has grammaticalized into forms such as *mai* meaning 'hello' as previously seen in (112).

4.1.7 Time words

Mayogo frequently uses time words to express the concepts of very recent, recent past and distant past. As adverbials, these time words can be placed anywhere in the phrase either before or after the verb. From an analysis of four Mayogo texts Mapuma (1996) compiled a list of 19 temporal expressions and a list of eight expressions used to express duration. This list is seen in table 16.

Table 16. Mayogo expressions of time and duration

Time		Duration	
ekpɨ lɨ́	'the day when'	dɨdɨlɨ	'long time'
ɨgɨnɨ	'present thought'	dɨdɨuma	'forever, eternity'
galikpe	'after a future while'	ekpɨ bini	'a day'
galikpe galikpe	'in the distant future'	gɵmɵ	'often'
kala	'before'	bhɨtsi naali	'many times'
kɵkpɨ	'morning'	ndɨ 'kpɨ hana	'each day'
lɨ́	'when'	pɨko	'often'
mambi	'tomorrow'	sɨkɨ	'season'
mbɨa (ɨnde)	'now here'		
nakɨ	'today'		
nakɨ nakɨ	'this particular day'		
nanɨ	'in former times'		
nanɨ nanɨ	'past-past'		
nedhɨnga	'when'		
ngbɨkpɨ	'daytime'		
pɨta	'after'		
sukpe	'nighttime'		
sukpe bhisi	'two nights from now'		
tagolo	'evening'		

We note that three of the time expressions listed *nakɨ*, *nanɨ*, and *galikpe* are reduplicated into the forms of *nakɨ nakɨ, nanɨ nanɨ,* and *galikpe galikpe.* In each instance the reduplication intensifies the semantic meaning of the word.[46] Furthermore, it is interesting that reduplication here occurs for the entire word, while two of the duration words *dɨdɨlɨ,* and *dɨdɨuma,* have the first syllable appearing as a reduplicated form. Actually *dɨlɨ* 'old, used' exists as well as *dɨ* means 'origin' or 'being'. There is an obvious time connection to each of these nouns so it can be assumed that the duration words listed here have originated from them. These two words are now however, are now considered as a single unit and therefore no morpheme breaks are indicated.

[46]Other words from the list have reduplicated in other texts so this list is not meant to be exhaustive but rather show the occurrences that have been listed by the researcher credited with this table.

Examples (223) and (224) are of the time word *igini* that indicates a very recent time frame. Mapuma (1996) said that *igini* was used to mark the 'pensé proche' or that which is in one's present thinking.

(223) Mo o-go **igini**.
2s PAST-come just_now
You have just come.

(224) Mo o-du **igini** nga-zu 'zu.
2s PAST-be just_now PROG-eat food
You were just eating food.

Example (225) is of the recent past. *Nako* means 'today' but is also used to indicate the recent past that could be anywhere from a day ago up to one year ago. It may also possibly be used to indicate 'the past time' that something was done.

(225) Ani a-go **nako**.
3s PAST-come recent
He came recently. or He came (the) past time.

Examples (226) to (228) are uses of *nako* as a time word to indicate up to a year ago.

(226) Ma a-kunda **nako** ani ne bhobua ma hana.
1s PAST-like recent 3s with heart 1s all
I loved him (until now) with all my heart.

(227) Ma a-lu ndula bhe-nde **nako**.
1s PAST-plant tree this-then recent
I planted this tree recently.

(228) Ya a-iki bhasa bhomo **nako**.
1p.EXC PAST-build shelter this recent
We built this hut recently.

Examples (229) to (231) are included to show that the time word can be placed

anywhere in the phrase. (229) is an example of the time word in a terminal position. (230) is an example of a medial location and (231) has the time word in a frontal position.

(229) Ma a-go bhʉ Isiro **nako**.
1s PAST-come to Isiro recent
I came to Isiro recently.

(230) Ma a-go **nako** bhʉ Isiro.
1s PAST-come recent to Isiro
I came recently to Isiro.

(231) **Nako** ma a-go bhʉ Isiro
recent 1s PAST-come to Isiro
Recently I came to Isiro.

Nani is used to indicate the distant past. This can include a time span from several years ago to an indefinitely long time in the past. Examples are shown in (232) and (233).

(232) A a-dʉ **nani** bhoko bini...
it PAST-be distant_past man one
It was long ago one man, (= There once was (a) man...)

(233) Ma a-bhʉ **nani** ɵlɵ gba ma nedhinga bha bhʉ kelasi.
1s PAST-choose distant_past woman GEN 1s when still in class
I chose long ago my wife when still in class.

4.1.8 Sequentiality

Givón (1984:273) says that there are two fundamental features involved in the concept of time as reflected in verbal systems. One is the point of reference, from which the most common universal point of reference is the 'time of speech' from which the 'past' precedes and the 'future' follows. This is basic to almost all languages, including Mayogo, and it need not be explored further here. The other fundamental feature is sequentiality of which a few examples are included.

Sequentiality is expressed frequently through *-tsia,* which functions as an auxiliary. *-Tsia* has most likely been grammaticalized, although not completely so, from the verb *na-tsia* 'to look'. It is not completely grammaticalized as the auxiliary *de* has been, since *de* does not take any verbal inflections. Instead, *-tsia* reflects the verb tense, taking the *a-* prefix, like the auxiliary *-dɯ* that has been analyzed for the imperfective aspect. Throughout this thesis the gloss of 'look' has been retained to be consistent with the root meaning and the *a-* prefix which is always attached to it is glossed as with verbs; however, a simple gloss of 'then' for *atsia* would be closer to what is usually in the free translation of the example sentences. Another analysis of *-tsia* would be to consider it as a verb serially preceding another verb since it takes the *a-* prefix like verb roots and has the morphological shape of a verb, however it is appears so frequently that it seems best to analyze it as an auxiliary.

An example of the past sequential perfective is in (234).

(234) ...ani **a-tsia** a-dje nɯmɯ,...
3s PAST-look PAST-feel shame
...he then felt shame...

(235) shows an example with the future simple sequential.

(235) Ani **a-tsía** a-djé nɯmɯ.
3s FUT-look FUT-feel shame
He then will feel shame.

4.1.9 Serial verbs

This section explores how Mayogo links verbs in succession. Mayogo commonly uses some verbs with meanings such as 'to be able' or 'can' or 'must', 'to like' or 'want' or 'to go' to form serial constructions.

The verb 'want' is analyzed as a complement-embedding verb in most languages. To express this notion Mayogo uses the verb *na-kɯnda* which has a wide range of uses including

'to like', 'to love' and ' to want'. Throughout this thesis it is glossed as ' to like' as in (236).

(236) N DET V V ADJ O Pr PRO
Bhoko bhe-nde **a-kʉnda** na-zʉ bádha ezʉ gba mʉ.
man this-then PAST-like to-eat good food GEN 2s
This man wants to eat your good food.

Likewise, the verb *na-nʉ* 'to go' functions similarly. According to Badhahenebua (1995b) this verb does not always add the sense of 'go' relating to a change of location but it adds the meaning of a future action or next step that will be done, as seen in example (237).

(237) Uo **nú** bhá ongisi bhe gba-o no olisi bhe
3p FUT-go FUT-gather children that GEN-REF with women that

gba-o.
GEN-REF

They will gather their children and their women.

The verb *na-ti da* can carry either the notion of ability as in 'to be able' or the notion of obligation as in 'to be required to do something'. Literally this verb means 'to fall (in) place' and is an example of one of many Mayogo verbs that frequently occur with a specific object complement, which in this case is *da* 'place'. (238) is an example of this verb used before the central verb of the verb phrase *na-kpe* 'to fear'.

(238) N V O V O
José **a-ti** **da** na-kpe kpʉlʉ.
José PAST-fall place to-fear snake
José must fear snakes.

In comparison to example (238), the verb root *-ti* 'fall' and its complement *da* 'place' can be separated by an adverb as shown in example (239). These separated parts, however, both occur before the main verb of the verb phrase, which is here in its infinitive form, *na-*

gie 'to run'.

(239) N V ADV O V
Ani **ti** bha **da** na-gie li-e ne holo.
3s fall really place to-run REFL-3s with speed
He can really run back fast.

The following example contains five verbs with the adverb *pi-pita*[47] meaning 'afterwards' used to help link the clauses of successive events.

(240) Nu, tsia, mu dje, **pi-pita** mu go, pa mu ma !
go look 2s listen REDUP-after 2s come say to 1s
Go, look, you listen, afterwards you come, (and) tell me!

It appears that no more than two verbs can follow each other serially without the interruption of a pronoun, adverb or some other word. The following example shows a simple example of what may be the limit of serial verbs in Mayogo. In this example, the second verb is not marked in any way as being subordinate. According to Thompson and Longacre (1985:175) this serial verb construction is used to express purpose they have noted how this type of syntax is also used in other African languages.[48]

(241) Ani go 'o de 'ti.
3s come put near house
He comes to put (it) near (the) house.

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[47]The conjunction *pita* can be reduplicated to refer to what it replaces. Compare *Pita kulu, mu go na-tsia ma* 'After work, you come see me' with *Pi-pita, mu go na-tsia ma* 'Afterwards, you come see me.' In the second example the conjunction is reduplicated, and it then functions as an adverb with pronominal like qualities.

[48]An example is given in Thompson and Longacre (1985:175) from Nupe, a Kwa language of Nigeria that is very similar: *Musa bé lá èbi (*Musa came took knife) 'Musa came to take (the) knife'.

Example (242) shows three verb forms in a series; however, the first two verbs function as adverbs. Mayogo adverbs like *-kolo* and *-tsia* take on the form of a verb using the *a-* prefix described for tense marking earlier in the chapter.

(242) Na **a-kolo** **a-tsia** **a-sula**, "Hee ! Hee !"
3s **PAST-quickly PAST-look PAST-shout** Oh_my! Oh_my!
He quickly then cried, "Oh my! Oh my!"

Mayogo does not allow verb forms, other than the infinitive and the modal form that uses the particle *ma* described in chapter 4, to function as adjectives. Neither does it allow non infinitive forms of the verbs to switch their reference easily. For example, (243) shows an ungrammatical sentence in which the second verb cannot function as it does in English as a complement clause. Rather, it is required that the subject of the second verb be repeated and the clauses coordinated as in (244).

(243) *Ya a-hu o-kpála nga-mene kulu.
1p.EXC PAST-look PL-person PROG-do work
We saw people doing work.

(244) INDEPENDENT INDEPENDENT
Ya a-hu o-kpála, u nga-mene kulu.
1p.EXC PAST-look PL-person 3p PROG-do work
We saw people, they were doing work.

Some examples of switch reference involving the infinitive forms involving valency raising operations of causation are included later in section 4.2.3.

4.1.10 Reduplication in verbs

Instances of reduplication of the verb root have been seen to occur in the aspects such the habitual and iterative, as well as in the moods such as imperative, completive, and the mood that gives a notion of certitude, persistence, normalcy, or evidentiality.

For the reduplication in the imperative mood, it appears that the reduplicated syllable on the verb root can have several functions. Reduplication is the default form of the imperative. Short verbs of one syllable naturally reduplicate as in example (245).

(245) Go ! Go ![49]
REDUP come
Come!

Transitive verbs may reduplicate to replace the object that is omitted. Comparing examples (246) and (247) illustrates this.

(246) Dolo enu inde !
cut animal this
Cut up this meat!

(247) Do-dolo !
REDUP-cut
Cut (it) up!

The reduplication in the imperative mode can also replace the location as seen in the next two examples.

(248) Si kuto !
sit floor
Sit (down on the) floor!

(249) Si ! Si !
REDUP-sit
Sit (down on the floor)!

[49]See the footnote that accompanies example (174) for an explanation of why two imperative commands in Mayogo translate into one English sentence in this example.

The following example illustrates how the present tense imperative and the progressive imperfective aspect combine. In non-imperative sentences the prefix *nga-* is before the verb but it takes a different detached position here.

(250) Pa ! Pa nga !
REDUP-speak PROG
Keep speaking!

In each instance of reduplication that has been seen above, the first syllable of the verb root is reduplicated, or as in the case of the auxiliaries for the perfective and imperfective, which are only one syllable, the entire auxiliary is reduplicated. The reduplication can occur in transitive or intransitive verbs. In transitive verbs the reduplication can be analyzed as replacing the object that has been omitted. Consider, however, the problematic example in Mayogo in which the word for 'food' *ezʉ* can exist in its abbreviated form *'zʉ* in connection to the verb 'to eat' *na-zʉ*.

(251) Mo o-dʉ igini nga-zʉ 'zʉ.
2s PAST-be just_now PROG-eat food
You were just eating food.

In (251) the object is overt, but one could also write the phonologically identical phrase as in (252) to illustrate an habitual aspect.

(252) Mo o-dʉ igini nga-zʉ-zʉ.
2s PAST-be just_now PROG-REDUP-eat
You were just always eating.

This seems to be a natural ambiguity in the language and it is difficult to find a consensus even among mother tongue speakers to know which form should be the standard.[50]

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[50]Interestingly, Kouwenberg and LaCharité (1999:4) in citing an example from Caribbean Creole languages used the word for 'eat' from Sranan to show how reduplication in Creoles can change a verb to a noun that function in the same way that Mayogo reduplicates the word for 'food' and 'eat.'

Two verbs have been found, *na-popo* 'to help' and *na-papa* 'to lay' that seem to have inherent aspects of reduplicated forms. That is, there are no forms for these verbs in which the root is not repeated[51] and the verbs seem to function as they are naturally reduplicated. Furthermore, it seems that the verbs cannot undergo further reduplications. In the first example the verb is in the imperative and is not further reduplicated.

(253) Popo ma masuda !
help 1s little
Help me (a) little.

In examples (254) and (255) the verbs have the aspects of reduplicated forms showing the habitual or repetitive aspects.

(254) Olisi nga-popo ole a-bu kpadhi bhu lusa.
children PROG-help woman PAST-place pondu in pot
(The) children are (repeatedly) helping (the) woman put pondu in (a) pot.

(255) Abobo ne kadha kíli, u a-kodho-e ngu na-papa
basket (spec.) STA old basket 3p PAST-cut-REF for to-lay

tabhu kíli koko.
back basket other

Abobo is (an) old basket, they cut it to (usually) lay in (the) back of another basket.

Hyman mentions that in Nupe, another Niger-Congo language, the process of reduplication in verbs creates nouns (1975:77,120). This use of reduplication has not been found in Mayogo, but instead verbs undergo no functional changes like Mayogo nouns or prepositions do when they reduplicate. Verbs remain stable in their constituent class when

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[51]The verb *na-po* 'to gather together' does exist and may have some etymological relation to *na-popo;* however, they are recognized as separate verbs in the lexicon.

reduplicated. Table 19 in the final chapter presents each constituent and any changes in constituent classes that occur.

This analysis now turns to the second major sub-system of the study of the Mayogo verb, that of voice and valency.

4.2 Voice and valency

4.2.1 Introduction

The term 'valency' is used in chemistry to refer to the number and type of bonds that are formed when elements join with each other. In linguistics, this term is applied to the grammatical joining of syntactic elements, typically the verb and its arguments that are linked. Simply put, 'valency' refers to the number of arguments in a clause. It is a general term that includes the concept of voice. 'Voice' is used to describe sentence or clause structure with reference to verbs "to express the way sentences may alter the relationship between the subject and object of the verb, without changing the meaning of the sentence" (Crystal 1985:375). The following sections describe valency-lowering mechanisms in Mayogo.

4.2.2 Passive voice in Mayogo

The presence of a true passive is questionable in many Niger-Congo languages but it appears to occur frequently in Mayogo. It is used in Mayogo primarily for the purpose of avoiding any immediate reference to an agent. The passive form for nominative-accusative and ergative-absolutive languages is defined here as a construction having three things: One, the patient is promoted to the subject position. Two, the agent is demoted to an oblique or absent position. And three, and the verb is detransitivized. There are two possible forms of passive constructions in Mayogo that can be used. These involve a promotional form and an impersonal passive construction.

4.2.2.1 Promotional passive

In this type of passive construction the patient is promoted, and the agent is demoted while the clause is detransitivized. Besides these three factors there are many others relating to transitivity that can be explored. For example, Hopper and Thompson (1980:252) described transitivity as a cluster of attributes including such things as the number of participants, the level of kinesis, whether telic verbs versus atelic verbs are used, volitionality and other attributes. For Mayogo, the strongest attribute seems to be none of these mentioned but rather a cultural attitude based upon the perceived positive or negative outcome of the action involved. The data indicate that a personal agent is more likely to be specified when the action is perceived to be positive, for example, with a verb meaning 'accomplished' or 'work done'. Conversely, when the action is perceived negatively, such as with a verb meaning 'lost' or 'broken', the agent can be specified, however, cultural criteria prefer that it be omitted. This omission of the agent does not need to occur when an impersonal agent is utilized.

The most common form of the Mayogo passive construction has the patient in the subject position and the agent left unspecified. The verb is changed from transitive to intransitive semantically only. There are no morphological changes to the verb but there is often the addition to the phrase of the particle *lie*.

The particle, *lie*, was introduced previously in an earlier section in this chapter as being used to mark the completive mood in intransitive sentences. This is, however, only one of several its uses. Later in this chapter, in order to explore in detail the relationship between the passive and the reflexive, a section on its use as a reflexive particle is included. All of these functions, as an aspect marker, reflexive marker and a marker for the middle voice, have been found to grammaticalize into passive voice in some languages (Herring 2000),

hence their clustering in Mayogo is not unexpected.[52] In short, there is likely an overlap of functionality if the particle *lie* is used for detransitivization as well as adding modal qualities.[53]

(256) to (258) are some examples to contrast the passive and active constructions. Note (258) which shows both the passive use of *lie* and completive use of *lie*.

(256) ACTIVE
O-soda a-lila lata.
PL-soldier PAST-guard tomb
(The) soldiers guarded (the) tomb.

(257) PASSIVE
Lata a-lila lie.
tomb PAST-guard PASS
(The) tomb was guarded.

(258) PASSIVE WITH COMPLETIVE MOOD MARKER
Lata a-lila lie lie.
tomb PAST-guard PASS COM
(The) tomb was completely guarded.

4.2.2.2 Middle voice

Given the previously mentioned preference against specifying an agent in a culturally perceived negative outcome, one way to analyze the passive is to see it as a middle voice construction. True passives are always derived from transitive clauses and since Mayogo prohibits the agent to be identified these can be analyzed as middle voice constructions. Examples (259) and (261) are not preferred speech, not because the verbs are inherently

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[52]In Spanish, for example, the particle *se* functions similarly.

[53]The use of this particle to mark the passive was so frequent that *lie* was first analyzed as a periphrastic addition of an auxiliary functioning as an intransitive verb marker. Because of its placement syntactically, however, it doesn't appear to function as other auxiliaries do.

passive – they are not, but because of the need to hide the agent. Therefore, one way to look at this is to consider examples (260) and (262) to be the middle voice.

(259) ACTIVE
* Ani a-gumu ndula.
3s PAST-break tree
He broke (the) tree.

(260) MIDDLE VOICE
Ndula a-gumu.
tree PAST-break
(The) tree broke.

(261) ACTIVE
* Ani a-ngita ngise.
3s PAST-lose knife
He lost (the) knife.

(262) MIDDLE VOICE
Ngise a-ngita.
knife PAST-lose
(The) knife was lost.

The middle voice of examples (260) and (262) are of course lacking a specified agent. The intent of using the middle voice construction is to conceal the agent with regards to accountability (but not necessarily existence), that is, to subtract qualities such as volitionality and also perhaps potency from the agent. Omission of the agent is usual for any promotional passive; however, as already mentioned, it seems to be almost obligatory in Mayogo such that the active forms, such as in (260) and (262), have not been found in the data. The exception to this is when the agent is impersonal as will be seen in a following section.

4.2.2.3 Promotional passive with a specified agent.

As stated above, the agent is not usually specified in passive sentences. The agent can be added, however, after the preposition *ka* that means 'by', 'of', 'for' or 'because'. This particle is considered to be separate from the particle *ka* that was seen previously to mark the possessive stative clauses. An example with the specified agent follows:

(263) AGENT

Ngbʉ basa a-'e lie **ka** ya.

roof shelter PAST-remove COM by 1p.EXC

(The) roof (of the) shelter was removed by us.

Again because the action is perceived as positive, which is the strongest attribute determining transitivity, the agent can be specified here. Taking example (262) again and utilizing the *ka* construction, it is possible to say 'The knife was lost by us'; however, cultural influences would want to avoid this construction.

(264) AGENT

??Ngise a-ngita **ka** ya.

knife PAST-lose by 2p.EXC

(The) knife was lost by us.

The following examples (265) and (266) are not examples of agents, but rather intransitive clauses with circumstances as adverbials, that are included here for contrast. Since no agent can be identified, no true passive is formed.

(265) CIRCUMSTANCE

Kukpa 'dhʉ ma a-gbe **ka** eka.

nail toe 1s PAST-remove because wound

My toenail fell out because (of a) wound.

(266) CIRCUMSTANCE

Ndje ndɨlɨ, anɨ holo na-ku 'gbá **ka** gumu.
small child 3s began to-exude tears because hunger
(The) baby started to cry because of hunger.

4.2.2.4 Reflexive voice and *li-e*

As already mentioned, it is common for middle voice or passive constructions to evolve from the reflexive forms in languages (Herring 2000).[54] This seems to be the case in Mayogo, so to adequately grasp the use of the particle *lie* used in the passive, and reflect upon its origin and where the linguistic progression may be headed, some details on the reflexive voice will be included here.

The use of *lie* as an aspect marker as opposed to a reflexive particle, *li-e,* when the subject is of the third person is confusing since both have the same form in Mayogo orthography where no hyphens are used to indicate morpheme breaks. The third person singular anaphoric addition to the reflexive pronoun *li-* is *-e*. When the reflexive particle is used with other pronouns such as first person, the form is then instead *li-ma*, taking the *-ma* first person singular base form.

The particle *li-e* is referred to as a reflexive particle in Mayogo grammar specifically only for third person singular pronouns. Note how it is used in the following list of examples for 'he/she' and 'it'.

(267) Ma nga-tsia **li-ma**.
1s PROG-look REFL-1s
I am looking at myself.

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[54]Another possibility is that some of these uses of *lie* are unrelated and are homophonic to its use as a reflexive particle. Although this appears to be doubtful it is worth considering here.

(268) M**u** nga-tsia **li-mu**.
2s PROG-look REFL-2s
You are looking at yourself.

(269) An**i** nga-tsia **li-e**.
3s PROG-look REFL-3s
He-she is looking at him/herself.

(270) A nga-tsia **li-e**.
it PROG-look REFL-3s
It is looking at itself.

Therefore, when comparing examples like (257) with (269) or (270) one can see how the passive voice in Mayogo is obscured with the reflexive voice like it does in other languages. Comparing example (256) and the following illustrate that the agent can be specified and that the most probable analysis is to interpret *lie* as the passive marker in (257).[55]

(271) PASSIVE
PAT AG
Lata a-lila ka o-soda.
tomb PAST-guard because PL-soldiers
(The) tomb was guarded by soldiers.

4.2.2.5 Impersonal passive

Some linguistic theories include an impersonal passive construction that uses a generic agent in the study of the passive. Keenan (1985b:274) includes many variations of what can be called an 'impersonal passive' including one in which there is an "overt

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[55]To analyze the completive aspect maker *lie* as the reflexive *li-e* with an agent combined with the patient would result in the following rendering of this example: *Lata a-lila li-e* '*The tomb was guarded (=The tomb self-guarded).

This possible analysis was rejected because it seems unlikely that Mayogo speakers would consider the tomb to be guarding itself if asked who the agent was in this sentence. Rather they would respond that the agent is left unspecified.

impersonal subject." Keenan says that as in German or Dutch the subject of the impersonal passive will be the "third singular (neuter if gender is marked)."

Since such a form exists in Mayogo it is included in this analysis even though there are no other elements of the Mayogo passive present. The other elements being particles relating to the verb such as *lie,* or prepositions like *ka.* In the Mayogo impersonal passive construction the agent is demoted, not to an absent position but rather to a generalized and impotent position, and the patient is in focus. In Mayogo the third person plural pronoun *uo* refers to a non-referential or non-actual discourse participant.

(272) AG VTR PAT
Uo me-mene ngb~~o~~dh~~o~~k~~o~~ l~~i~~ ngulu.
3p REDUP-do palm_butter from palm
They make palm butter from palm (nuts).

(273) AG VTR PAT
Uo po t~~i~~a mang~~i~~mbo bh~~u~~ 't~~i~~ de.
3p save money debt in house NEG
They don't keep money for debts in (the) house.

4.2.3 Valency raising operations

The valency, or the number of arguments in a clause, can be raised through valency raising operations such as causation. In Mayogo, causation is expressed lexically with verbs such as *na-tima* meaning 'to send'. The verb following the patient of the causative clause changes to the infinitive form.

(274) ACTIVE
Kpála a-mene kulu.
person PAST-do work
(The) person did (the) work.

(275) CAUSATIVE
Ani a-tima kpála na-mene kulu.
3s PAST-send person to-do work
He sent (a) person to do (the) work.

Causation could also be expressed with verbs such as *na-popo* 'to help', and *na-mene* 'to do' as seen in (276) and (277).

(276) Jean a-mene ma na-to djua li edyi.
John PAST-do 1s to-put fire to garden
John made me put fire to (the) garden

(277) Ani a-popo mu na-tsi ne holo.
3s PAST-help 2s to-run with speed
He helped you to run fast.

4.2.4 Summary

The passive exists in Mayogo most frequently as a middle voice construction. Its most common form is to have the patient as the subject and the agent left unspecified. The form *lie* has many uses in Mayogo including the formation of the passive and its form is identical to the third person singular reflexive particle *li-e*. The form *lie* has also been seen to mark the completive mood marker for intransitive sentences. The overlapping or uncertainty in the use of this particle may be due to processes of grammaticalization occurring over time. Finally, causative verbs can be used to raise the valency of sentences.

CHAPTER 5

CLAUSE COMBINING

This chapter studies some basic concepts regarding clause combining in Mayogo. Section 5.1 begins with an introduction to several fundamental clause combining terms. Section 5.2 discusses paratactic constructions and examples of seven types of these are included. Next, section 5.3 studies hypotactic constructions and adverbial clauses. Much of the organization and information in the section regarding adverbial clauses is taken from Thompson and Longacre (1985). According to their definition, adverbial clauses are those that modify a verb phrase or an entire proposition (1985:172). The chapter ends in section 5.4 by stating some conclusions as well as including a summary table that lists the word forms and devices used to combine clauses.

5.1 Introduction to clause combining

Clauses can be combined in multi-clause propositions through either embedding or clause combining. Two ways to embed clauses are through either complements or relative clauses. These two ways to embed clauses are presented in chapter 6, while this chapter looks at the two ways that clauses can be combined when they are not embedded. One of these two ways that clauses can be combined when not embedded is through parataxis. Parataxis refers to the joining of clauses of equal status, which are linked through either coordination or the juxtaposition of clauses. The second way in which clauses may be combined when they are not embedded is through hypotaxis. Hypotactic constructions use subordination of dependent constructions through the use of constituents like conjunctions or adverbs or they use non-restrictive relative clauses (Quirk et al. 1985:918–9).

Concerning the use of word order to combine clauses, Mayogo displays the characteristics of a co-ranking language as opposed to the characteristics of a chaining language. Co-ranking languages are those in which clauses in the nucleus are more-or-less equal with respect to syntactic status especially with regards to the finiteness of the clauses. More on the finiteness of clauses will be discussed in chapter 6, but for now it can be said that the only Mayogo examples found that include a non-finite type verb construction are those that use a stative or those that express stative notions with no verb present.[56]

Co-ranking languages tend to relate clauses to each other by conjunctions or simply by phonological cues. In chaining languages, a greater percentage of clauses than the percentage of clauses found in co-ranking languages, are syntactically dependent upon another clause. All the verbs may exhibit some inflection, but they depend upon some other following verb to give a full specification of subject reference and/or marking of tense, aspect and mode (Longacre 1985:238). Chaining languages make up a smaller percentage of languages worldwide.

Mayogo is an SVO language that makes use of co-ranking strategies to encode interclausal relations. Morphemes such as conjunctions and adverbs or time words as well as some instances of reduplications of conjoining morphemes and juxtaposition of clauses have all been found to join clauses. 'Conjoining morphemes' here includes words that can function as either conjunctions or prepositions to join clauses or prepositions. The use of conjunctions is the predominate mechanism used to join clauses as opposed to the juxtaposition of clauses. It should be noted that conjunctions, like prepositions in Mayogo, have a wide range of usages. For example, a single Mayogo conjunction can function where seven or more different English conjunctions are employed. The first of the following examples that are

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[56]See example (319).

included in the following section on contrast is just such an instance in which the conjunction has a wide semantic range.

5.2 Paratactic constructions

The combinations of predication types used here are taken mainly from Longacre (1996). Each of the clauses in all of these examples is an independent clause.

5.2.1 Contrast

Two conjunctions have been found to join contrast relations in Mayogo. One way to indicate contrast is to use the conjunction *la*. It can denote 'and', 'then', 'so', 'thus', 'but', 'however' or 'also'. In example (278) the conjunction *la* occurs at the beginning of the second clause. Both clauses are considered to be independent since the verb in each clause is finite.

(278) Ma a-kunda naki na-nu bhu 'dyi, **la** ma a-ndala naali.
1s PAST-like today to-go to field but 1s PAST-tire much
I wanted to go to (the) field today, but I was very tired

The conjunction *la* does not have to occur immediately before the second clause. Example (279) shows it within the second clause. Each of these clauses is still considered independent since the verb forms remain finite. The second clause uses the possessive verb *ka* that functions like a stative.

(279) Wala ma a-kunda mandjingi; mandjingi **la** ka
wife 1s PAST-like sweet_potatoes sweet_potatoes but POSS

ani ade.
3s NEG

My wife likes[57] sweet potatoes; sweet potatoes however aren't possessed by her. (That is, "... but she doesn't have any sweet potatoes.")

A second way to indicate contrast is with the conjunction *engú bini* that means 'one thing', 'but' or 'the only thing'. (280) shows an example of this conjunction joining two independent clauses.

(280) Ma a-kunda na-ye Madyogo naali, **engú bini** ma mbila
1s PAST-like to-write Mayogo much matter one 1s know

na-ye-ye de.
to-REDUP-write NEG

I wanted to write Mayogo a lot, but I don't know how to write it.

5.2.2 Temporal succession

The conjunctions *mpe* 'and' and *pita* 'after' are two conjunctions that can be used to link clauses in temporal succession. (281) is an example with *pita*.

(281) Ma nga-nu abhu 'ti **pita** ma mene 'he.
1s PROG-go into house after 1s do thing
I'm going into (the) house after I do something.

Example (282) shows the use of *mpe*. This example also uses *-tsia,* which is an adverb previously mentioned in chapter 4. The second instance of *-tsia* is the verb *na-tsia* 'to look' and must not be confused with the grammaticalized adverb *-tsia* that precedes the verb

[57]See section on past tense in chapter 4 as to why this same example from that chapter is glossed as present tense.

in this example. The adverb *-tsia* was described in section 4.1.8 for its role in the sequential aspect. The sequential aspect expressed through the adverb overlaps with the clause level notion of temporal sequence clauses presented in this chapter. This example is included here as it illustrates how both the conjunction and the adverb contribute to the temporal succession notion in linking these two finite clauses.

(282) Ma a-tapa a kuti **mpe** ma a-tsia a-tsia
1s PAST-go to village and 1s PAST-look PAST-look

'kpi bhu 'ti.
place in house

I went to (the) village and I then looked in (the) house.

Temporal succession can occur through the use of the adverb *-tsia* 'then' without the use of any other clause combining morpheme.

(283) Isaka a-djeke ya naali, ana **a-tsia** a-tapa.
Isaac PAST-wait 1p.EXC much 3p PAST-look PAST-leave
Isaac waited for us a lot, he then left.

Temporal succession can occur without any connecting words as in example (284). The middle clause in this example employs a gap strategy for the object of the transitive verb *na-wo* 'hide'. This gap corresponds to the object *lusa* 'pot' in the preceding clause.

(284) Ani a-ha lusa-a, ani a-wo, u a-mene ne
3s PAST-transfer pot-REF 3s PAST-hide 3p PAST-do with

emi.
trip

He took (the) pot and hid (it), they (i.e. he) began with (the) trip.

5.2.3 Temporal Overlap

(285) is an example of temporal overlap in which there is no connecting morpheme between the clauses, although there is the adverbial phrase *bha me* that occurs at the end of the second clause. This adverbial phrase functions to close the boundaries of the situation described by the clauses that come before it.

(285) A ~~du~~ nako ekp~~i~~ bini tagolo, ya a-d~~ulu~~ **bha me.**
it be recent_past day one evening 1p.EXC PAST-sit_around just that
It was one day, (the) evening, (while) we were all sitting just like that.

5.2.4 Alternation and addition

The data have yielded three different forms that Mayogo uses to express the concepts of alternation and addition. Although this chapter is about grammatical clause combining some simple examples of alternation and addition between individual words such as in (286) and between phrases as in (287) are included here to simplify the presentation and illustrate more clearly what is meant by the semantic notions of alternation and addition in the language.

In Mayogo these two notions of alternation and addition seem to overlap to a far greater extent than these two notions do in Indo-European languages. Indo-European languages usually have a clear semantic distinction and different morphological forms to distinguish alternation from addition; however, Mayogo uses the same morphological form for both notions, and the semantic difference between notions of alternation and addition seem less important also. Simply put, the same Mayogo word for 'and' is used to express the notion of 'or', and which semantic notion is intended is determined by the surrounding context including the pragmatics of the situation. For example, *ne* in (286) could mean either 'and', 'plus' or 'with'.

(286) Bhisi ne bhisi, a ko badha.
two and two it STA four
Two plus two equals four.

In example (287) however, *ne* is translated as 'or' to join two phrases in an alternation relationship. In this example because of the two options given within the two phrases are opposed to each other, the notion expressed must be that of alternation as opposed to addition.

(287) ...li kpadji na 'kpi **ne** li kpadji na mukobho.
on road ASSOC death or on road ASSOC salvation
...on (the) road to death or on (the) road to salvation.

In the following example, because each verb in the two clauses is in the progressive tense, the actions are going on simultaneously and *ne* is used to express an addition notion.

(288) Ebha nga-dhi **ne** itimeli nga-bala.
rain PROG-rain and/or hail PROG-fall
It's raining and hail is falling.

Because of this overlapping of the two notions, alternation and addition, Mayogo speakers would use two independent statements to clarify an ambiguous situation as opposed to depending upon a difference in a single morpheme as is done in English. Furthermore, Mayogo has borrowed a word *to* 'or' from the trade language, Bangala. This word is used to indicate alternation between two words as seen in (289).

(289) Ko akpoku **to** embo ?
be toad or frog
Is (it a) toad or (a) frog?

The notion of addition can be expressed between independent clauses with the adverb *dí* meaning 'as well', 'also', 'too'. The second clause lacks a subject but uses a gap strategy to refer to the subject in the previous clause. It is semantically dependent upon the presence

of the subject in the first clause. The clauses are both syntactically independent because the verb forms remain finite. In this example, each clause uses a stative as opposed to a full verb form.

(290) Nvunvu ne ulu abhu 'gu **dí** ne sa ngulu.
fern STA plant in savanna also STA under palm
(A) fern is (a) plant (found) in (the) savanna as well as under palm trees.

The subject of the two clauses can also differ of course as seen in (291) when *dí* is used again to connect two independent clauses.

(291) Bulu a-numu pame; pame a-numu bulu dí.
dog PAST-bite pig pig PAST-bite dog also
(The) dog bit (the) pig; (the) pig bit (the) dog as well.

Ne-di is a morpheme meaning 'with it' but it differs from *ne* in that it refers to whatever object or objects it represents. Obviously, *ne-di* is derived from conjunctions *ne* and *dí*.[58] Although these two clauses in example (292) are punctuated as being two sentences, they are included in this discussion of clause combining because of the relationship of *ne-di* with the conjunctions *ne* and *dí*. One could suspect that *ne-di* can occur within a single sentence to join clauses, although no suitable examples were found in the data.

(292) Uo ha-ha vulu. Uo vulu 'bho lusa ne-di.
3p REDUP-transfer wash 3p wash mouth pot with-it
They take (a) smoother. They smooth (the) mouth of clay pot with it.

[58]*Ne-di* is phonetically realized as [nèdī]. The orthography does not mark the high tone on *ne-di* while it is marked on the conjunction *dí*.

5.2.5 Causation

To express the notion of causation, consequence, or result of something, the conjunction *ka* that can mean 'because', 'so' or 'that is why' is used. An example is shown in (293).

(293) CAUSE CONSEQUENCE

Ani a-mene ani kpe-keke, **ka** bhomu-o mo hí naki me
3s PAST-do 3s REDUP-hard because that-REF 2s see today that

gbelende ne sia uo bhu da bíli bini ade.
antelope and leopard 3p in place space one NEG

He treated him harshly, because that (matter is why) you will see today that antelope and leopard aren't in one place. (fig.: ...there is not collaboration between the antelope and the leopard.)

Ka functions as a conjunction and can be reduplicated into *ka-ka*. It then functions as an adverb and takes on the meaning of 'therefore'.

(294) CAUSE CONSEQUENCE

O-kpála mene kulu de; **ka-ka** gumu naali.
PL-person do work NEG REDUP-because need much
(The) people don't work; therefore (there is) much hunger.

(295) CAUSE CONSEQUENCE

A li-ma ne sele. Ma nga-kasia **ka-ka**.
it REFL-1s with mucus 1s PROG-sneeze REDUP-because
It to me with mucus. I am sneezing as (a) result.

In this form it has always been found to be clause initial or clause final unlike *ka* that can be placed within a single clause as seen in example (303) included in the next section on the conditional.

5.2.6 Conditional clauses

A conditional relation is a logical relation in which the illocutionary act employing one of a pair of propositions is expressed or implied to be true or in force if the other proposition is true (Loos 1999). The clause that expresses the condition in a conditional relation is referred to as the 'protasis', while that clause that expresses the conclusion or the result is referred to as the 'apodosis'. For this section, the protasis and apodosis are indicated for most examples that contain them.

Thompson and Longacre (1985:190–8) identify five different ways to classify conditional clauses. These five are: (1) conditionals and time clauses, (2) predictive clauses that are 'real' or 'unreal', (3) imaginary conditionals with hypothetical and counterfactual clauses, (4) negative conditionals, and (5) concessive conditionals. This presentation however, has not classified the Mayogo conditional clauses according to these five types, but instead the limits of this paper necessitated that they be grouped into a single category.

In Mayogo there are several constituents commonly used to signal a conditional clause. These possibilities include *i dɯ me, nde, li, me* or various combinations of these as well as the simple juxtaposition of clauses without any connecting words. As noted in chapter 4 in the discussion of the perfect tense, the particle *de* is close in form and function to the particle *nde*[59] 'then'. Both are frequently found in Mayogo conditional constructions.

The adverbial expression *i dɯ me* 'it be that' or more loosely translated as 'if that' and *i dɯ* 'it be' which is loosely translated as 'if' is used frequently to introduce the conditional part of a clause.[60] The following two examples are of 'positive protasis', which is when the condition precedes the conclusion. Moreover, Mayogo does not have an "if-

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[59]In fast speech, especially before the vowel *a*, the adverb *nde* is phonetically realized as *nda*.

[60]See footnote number 8 for an introduction to *i dɯ me*.

protasis, then-apodosis" ordering in its conditional clauses. Rather, the Mayogo form is more often to have the 'then' part of the conditional statement within the protasis. Therefore, Mayogo conditional clauses have an "if-then protasis, apodosis" ordering. For example, n*de* is the 'then' constituent and note how it is positioned within the protasis of the following example.

(296) PROTASIS ADOPOSIS
~~i~~ ~~du~~ me kpála **nde** ne kuo, ani ~~má~~ na-bhaka bh~~ulu~~ mambengu.
it be that person then with sick 3s FUT-go to-meet master feticher
It be that (a) man then (is) with sickness, he will go to meet (a) feticher. (= If a man is sick....)

Example (297) shows that variations of omitting *nde* and *me* are possible.

(297) PROTASIS ADOPOSIS
~~i~~ du ka ma ne tia, ma de a-kála bádha ngise.
it be POSS 1s with money 1s PFT FUT-buy good knife
It be I had money, I would buy (a) nice knife. (= If I had money...)

Note that in this last example the conditional future perfect was used in the translation of the apodosis. Without the conditional protasis statement the second clause would then be as follows with a different translation reflecting the future perfect.

(298) Ma de a-kála bádha ngise.
1s PFT FUT-buy good knife
I will have bought (a) nice knife.

Obviously then, the conditional notions of 'would', 'should' and 'could' only appear in Mayogo through a transformation of the perfect aspect in a conditional statement.

The temporal adverb *nde* meaning 'then' can also be used to indicate the conditions under which an action takes place. Example (299) is an instance of when the conclusion precedes the condition.

(299) ADOPOSIS PROTASIS
Emi a-~~tili~~ má-~~tili~~, m~~u~~ **nde** nga-gama eng~~ú~~ ko.
tongue PAST-move CER-move 2s then PROG-talk matter such
(The) tongue moves back and forth, (if) you then are talking such.

(300) presents another example of a conditional clause. This adverb, *nde*, is also used frequently with the conditional morpheme *li* as seen in (301). *Nde* can also stand alone in a clause as seen in (302).

(300) PROTASIS ADOPOSIS
~~i~~ ~~du~~ me Malu **nde** z~~u~~ de, an~~i~~ de 'o
pro be that Malu then eat NEG 3s PFT leave
It be that Malu then doesn't eat, she should leave. (=If Malu then...)

(301) PROTASIS ADOPOSIS
Li Malu **nde** z~~u~~ de, an~~i~~ de 'o
COND Malu then eat NEG 3s PFT leave
If Malu then doesn't eat, she should leave.

(302) PROTASIS ADOPOSIS
Malu **nde** z~~u~~ de, an~~i~~ de 'o
Malu then eat NEG 3s PFT leave
(If) Malu then doesn't eat, she should leave.

Another variation shown in (304) illustrates the use of the morpheme *ka* and the conditional construction. Section 5.2.5 explained the use of *ka* and *ka-ka* to express the notion of causation. Example (303) shows how *ka* can be used to form a concessive conditional relationship.

(303) **~~i~~ ~~du~~ me** an~~i~~ **nda** a-bhuka an~~i~~ nak~~i~~, ko **ka** 'dy~~i~~ an~~i~~.
it be that 3s then PAST-believe him today STA because father 3s
If he believes in Him today, it is because of his dad.

The adverb *me* has a wide range of uses. It can be translated to mean 'that', 'when', 'that is', 'like that', 'like' or 'this'. Some examples follow. Although (305) is composed of

only one clause, this example is included to demonstrate how *me* functions at the end of the final clause.

(304) ADOPOSIS PROTASIS
Ma a-~~mí~~ **me**, ní nda a-~~nu~~ ne ~~mu~~.
1s FUT-go that 1p.INC then PAST-go with 2s
I will go that (is), (if) we then go with you.

(305) O-bhasa mene bha mbo djikidhi ~~kuti~~ **me**.
PL-pygmy do only small encircled village that
Pygmies make only small encircled villages like that.

(306) ADOPOSIS PROTASIS
Ma a-kó **me**, a nda a-mbe.
1s FUT-pick that pro then PAST-ripe
I will pick that (is), (if) it then is ripe.

The conjunction *li* 'if' is commonly used to show conditionality. The following four examples show that if the present tense or the future tense occurs in the protasis whatever other tense there is will occur in the apodosis.

(307) PROTASIS ADOPOSIS
PRES FUT
L~~i~~ sia bhike ~~mu~~, ~~mu~~ '~~ú~~ mbalanga.
if leopard follow 2s 2s FUT-climb ant (spec.)
If (a) leopard is chasing you, you will climb (up a tree covered by) ants.[61]

(308) PROTASIS ADOPOSIS
FUT PRES
L~~i~~ ndj~~ili~~ ~~dú~~ li ~~mu~~, ~~mu~~ dho eb~~i~~.
If joy FUT-be in 2s 2s dance dance
If joy is in you, you will dance.

[61]This species of painful biting ants has its habitat in a particular type of tree.

Conditional clauses can be joined without any connecting word as seen in the next two examples, (309) and (310).

(309) PROTASIS ADOPOSIS

FUT PRES

Mu dé ngele naali-e, tikpa mu du ake.

2s FUT-cut tree (spec.) much-REF hand 2s be pain

(If) you cut lots of trees, your hand hurts.

(310) PROTASIS ADOPOSIS

FUT PRES

Mu a-dí bhu biti, ndili li-djila du ngbengbe.

2s FUT-sit in dark child fruit-eye be large

(If) you will sit in darkness your pupils are large.

Several generalities about conditional constructions in Mayogo can be surmised from the previous examples. One, the 'if-then' conditional constituents in Mayogo, such as *i du me* or *nde,* when present are contained within the protasis. Second, the protasis, most often precedes the apodosis. The verb tense of the protasis is most often the present tense but the future tense has also often been found to fill this slot.

When the apodosis precedes the protasis it will contain some constituent, such as the adverb *me* 'that', which does not allow the apodosis to function as an independent clause. This works similarly to the way that the English citation clause "He said that, . . ." is dependent upon the complement clause to complete it. The verb tense of the apodosis, when it is preceded by the protasis, is most often the present tense but has also been found to be in the future tense.

In general, the normal order in Mayogo conditional sentences is for the protasis to precede the apodosis. When the apodosis precedes the protasis, several changes occur to the apodosis: one, it no longer is independent, and two, there is greater variety of verb tense

combinations between the two clauses with this ordering.

5.3 Hypotactic constructions

Only one type of hypotactic construction, that of adverbial clauses, is considered in this chapter. Non-restrictive relative clauses, the other type of hypotactic construction, have not been covered in this thesis although they can probably be found in the language as well.

5.3.1 Adverbial clauses

Thompson and Longacre define adverbial clauses as "a set of two-clause constructions in which one clause can be said to modify the other in a way similar to the way in which an adverb modifies a proposition" (1985:171). The data indicate that Mayogo makes use of one of the three devices described by Thompson and Longacre (1985:172) for forming subordinate clauses. It uses subordinating morphemes to combine clauses, while special verb forms and special word order devices, which are the other mechanisms used to mark subordinating clauses, have not been found.

Regarding the use of subordinating morphemes to mark subordinate clauses, some examples of these have already been seen within the previous chapters but their function is now considered here in detail. Thompson and Longacre list twelve types of adverbial subordinate clauses. Three types of clauses that can be substituted for a single word are time clauses, manner clauses, and location clauses. Nine types of clauses that cannot be substituted for by a single word are purpose clauses, reason clauses, circumstantial clauses, simultaneous clauses, conditional clauses, concessive clauses, substitutive clauses, additive clauses, and lastly, absolutive clauses (1985:177). The Mayogo data available have yielded five of these groupings of adverbial subordinate clause types. These five clause types are of course not an exhaustive list of what is possible in Mayogo but, again this is indicative of what could be retrieved from the corpus of available data.

Following the order of clause types given in Thompson and Longacre, this section will first consider the time clauses of temporal sequence clauses and 'before' clauses. Next three other types of clauses that cannot be substituted for by a single word will be considered. The Mayogo data yielded examples of purpose and reason clauses, simultaneity clauses, and concessive clauses.

5.3.2 Time clauses

Two types of time clauses are included here: Temporal sequence clauses, and 'before' clauses.

5.3.2.1 Temporal sequence clauses

Temporal sequence clauses or succession adverbial clauses can be indicated through the use of the subordinating morpheme *nedhinga* 'when' as seen in the following example.[62]

(311) Nedhinga inde u a-kolo lie li kpadji-e, ani a-tsia
when this 3p PAST-come COM on road-REF 3s PAST-look

a-dje numu.
PAST-felt shame

When they (i.e. he) had arrived on that road, he then felt ashamed.

5.3.2.2 'Before' clauses

"'Before' clauses are different from 'when' and 'after' clauses in that it is always the case that the event named in the 'before' clause has not happened yet by the time of the event named in the main clause" (Thompson and Longacre 1985:182). The 'before' clause has a

[62]The notion of 'when' is commonly considered to be an adverbial relation while the notion of 'while' is considered to function as a conjunction. *Nedhinga* displays characteristics of both an adverb and a conjunction as can be seen compared with the examples in section 5.3.4 on simultaneity clauses. This paper has listed this morpheme on the summary table as a 'conjoining morpheme' displaying the characteristics of both an adverb and a conjunction.

sense of being conceptually negative from the point of view of the event in the main clause. The following is an example of a 'before' clause.

(312) Kalanu ndula a-ti, ani a-gu holo.
before tree PAST-fall 3s PAST-run fast
Before (the) tree fell, he ran fast.

5.3.3 Purpose and reason clauses

There are three different subordinating morphemes found that express the notions of purpose and reason or consequence in Mayogo. The three that will be considered here are *anga, amba,* and *'ngú bula.*

Mayogo uses the subordinating morpheme *anga* 'because' or 'for' to express the notions of reason or causation as seen in the following example.

(313) Kele 'kpa ma a-ngbongbo **anga** ma a-ti.
wrist hand 1s PAST-swell because 1s PAST-fall
My wrist is swollen because I fell.

Two conjunctions have been found that are used to express purpose. The conjunction *amba* can mean 'so that'.

(314) Yi pú li kpadji inde **amba** yi kolo magala.
2p FUT-follow on road this so_that 2p arrive quick
You should follow this road so that you arrive quickly.

The conjunction *'ngú bula* can mean 'in order to' or 'because' and literally it means 'matter reason'. It is also used to express purpose.

(315) Ma a-djí abhu gudhu **'ngú bula** ma kunda na-kala 'he.
1s FUT-go to market because 1s want to-buy thing
I'm going to (the) market because I want to buy something.

5.3.4 Simultaneity clauses

According to Thompson and Longacre (1985:188), for a language to mark when two events occur simultaneously appears to be universal. Another term often used to refer to simultaneity clauses is 'overlap' and one way to express this notion in Mayogo is through the use of subordinating morphemes like *nedhinga* which can mean 'when', 'while' or 'as'. This morpheme has previously been mentioned as a time word in chapter 4 and as a means to link temporal sequence adverbial clauses. The distinction between 'when' which is a temporal sequence notion, and 'while' which is a simultaneity notion, has the same dual function as occurs in other languages.[63] Hwang writes regarding the use of *when*-clauses in English,

> Adverbial clauses with *when* prototypically mark a temporal relation, and specifically a prior time, but they may encode other temporal relations like concurrent or subsequent time. They may also express a logical relation, such as condition, cause, or concession, in which there is a fusion with the temporal notion. (Hwang 2000:464)

Example (316) shows simultaneity because of the durative lexical nature of the verbs, 'eating' and 'sleeping', that are in the clauses.

(316) DEPENDENT INDEPENDENT

Nedhinga u a-zu 'he, ndili-e a-si kuto.
while 3p PAST-eat thing child-REF PAST-sleep down
While they ate something, this child slept on (the) floor.

5.3.5 Concessive clauses

Thompson and Longacre (1985:196–8) refer to 'concessive' as a general term "which makes a concession, against which the proposition in the main clause is contrasted." These are different from concessive conditional clauses, which the authors refer to as 'even if' clauses in English, or the 'frustrated implication' clauses. There are three conjunctions found to link concessive clauses in Mayogo: *abelegu*, *abenegu* and *abana*. The first two are

[63]See footnote 62.

obviously related forms of the same subordinating morpheme, and all three have the meaning of 'although'. The reason for the variation in these three forms is not known.

(317) **Abelegu** ma a-bhele lie bhu 'ti Ebhe, ma
Although 1s PAST-grow COM in house God 1s

a-ziba nani de me Ebhe uu-o de.
PAST-believe distant_past NEG that God exist-REF NEG

Although I grew up in (the) church, I didn't believe that God existed.

Followed by the conditional morpheme *li* 'if' the concessive conditional 'even if' is formed.

(318) **Abenegu** li ebha a-dhi lie, ani a-go kokpi.
Although COND rain PAST-rain COM 3s PAST-come early
Even if rain fell (it rained), he came early.

The dependent clause in example (319) contains no verbs; although adverb *nde* 'then' and the aspectual marker *lie* are present. The connecting morpheme *abana* 'although', like in a previous example seen in (216), makes this clause an instance of a non-finite verb construction in Mayogo.

(319) DEPENDENT INDEPENDENT
Abana li edhu nde lie ye-ye, uo zu bha ani má-zu.
Although body bird then COM REDUP-small 3p eat only 3s CER-eat
Although (a) bird's body then (is) small, they chew (it) still he (is) certainly chewed. (= one chews it.) (fig.: Although the task is small, do it with care.)

5.4 Summary

Seven different ways to form paratactic constructions and five different ways to form adverbial clauses have been found in the data. More research is needed in this area, and there are likely clause combinations that have not yet been documented.

Conjunctions are the most common means of clause combining but adverbs or time words are also used frequently. Some conjunctions can either reduplicate or join with another conjunction. These forms then result in adverbial expressions that refer to what they have replaced.

Mayogo is strongly co-ranking as opposed to being a chaining language. The only constructions found in the data that could be analyzed as being non-finite are those that use a stative or simply a connecting morpheme. Every other construction contained finite verb forms. The future tense and the present tense are the most frequent tenses used in clause combining relations. Previously, the chapter on verb tense stated that the past tense is the most frequent tense found in narrative discourse. The past tense also occurs in the clause combinations, however, the future and present tenses have been found to occur with greater frequency when Mayogo uses clause combining relations.

Table 17 illustrates the possibilities that have been found in this research. Note that only a few of the conjoining morphemes have been found to reduplicate. Examples of two that have been included here are *pita* and *ka*.[64] Although verbs, nouns, prepositions, and adjectives, use reduplication frequently, conjunctions have been found to reduplicate less readily. For example, neither the conjunction *ne* nor the conjunction *dí* have been found to reduplicate but instead they join together. Example (292) shows this combined form functioning as a reduplicated particle would, referring to the object of the previous clause.

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[64]Examples of the reduplicated *pi-pita* are found in section 4.1.9 on serial verbs.

Table 17. Clause and phrase combining devices

Clause combining type	Conjoining morphemes		Juxta-position
	Unreduplicated	Reduplicated or combination strategies	
Parataxis			
Contrast	la, 'ngu bini		
Temporal succession	mpe, pita, atsia	pi-pita	+
Temporal overlap	bha me		
Alternation	ne, to		
Addition	ne, dí	ne-di	
Causation	ka	ka-ka	
Conditional	li, i du me, i du, me, nde-nda		+
Adverbial clauses			
Temporal sequence clauses	nedhinga		
'Before' clauses	kalanu		
Purpose and reason	anga, amba, 'ngu bula, ka		
Simultaneity	nedhinga		
Concessive	abelegu, abenegu, abana		

CHAPTER 6

COMPLEMENTATION AND RELATIVE CLAUSES

Mayogo complementation and relative clauses are included as two types of subordinate constructions considered in this chapter. Section 6.1 introduces what is meant by complementation and includes two types of complementation in Mayogo. It also explains in detail some aspects of quotations in Mayogo. Section 6.2 introduces relative clauses and studies relativizers used in the language.

6.1 Complementation

6.1.1 Introduction

Chapter 5 looked at multi-clause propositions that used clause combining through parataxis or hypotaxis. Mechanisms used for parataxis were coordination and the juxtaposition of clauses. Hypotactic constructions presented include those that use subordination through adverbial clauses.

In contrast to parataxis and hypotaxis, clauses can also be combined through embedding. Clauses can be embedded through either complementation or by the use of restrictive relative clauses. A complement is a proposition that functions in the role of a subject argument or object argument of the predicate of the main clause. For example, in the following example the phrase 'that you are doing good work' is the object of the predicate.

(320) S V O
I know that you are doing good work.

Another example, in which the embedded clause occupies the subject slot is seen in (321).

(321) _____S_____ V
For them to go home in the dark on foot wasn't good.

This research will explore the various ways in which complement clauses can be embedded. Michael Noonan (1985) listed six types of complements: indicative, subjunctive, paratactic, infinitive, nominalization and participle. Some linguists have the impression that among the languages of the world the complement types in order of occurrence are first of all the indicative type, secondly the infinitive, nominalized types or some reduced form of these, and lastly, the subjunctive and participle forms would be the least common (Herring 2000). The Mayogo data available yielded only two complement types: indicative and infinitive.

One of several comments that will be made on every type of complementation concerns the finiteness of the clauses and the strength of the bond between the main clause and the complement clause. Givón (1990:515) refers to the strength of the bonds as the "degree of integration between the two propositions coded in the main and complement clauses." Bonds are considered to be either weak bonds or strong bonds. He adds that, "The stronger the semantic bond is between the two events, the more intimately is the syntactic integration of the two positions into a single clause" (Givón 1990:516).

A finite clause is one in which the verb phrase is in a form that can occur in its own independent clause. Finite clauses permit contrasts in tense and mood. Non-finite forms would occur "on their own only in dependent clauses and lack tense and mood inflections" (Crystal 1985:137). Therefore, some criteria for determining the finiteness of a complement clause are whether or not tense, aspect and mode contrasts, and whether or not subjects are marked for case, and the presence or absence of subordinating morphology such as complementizers like 'that', 'for' or 'to'. This analysis has not found anything in Mayogo

that can be classified as a non-finite verb form except for statives (which are not considered actual verbs) or clauses that are verb-less and are dependent, non-finite constructions joined by connecting morphemes to finite clauses. Every verb within a clause can stand alone. Clauses themselves, however, can be considered to be dependent due to the presence of some constituent such as a conjunction or adverb that makes the clause an adverbial dependent clause. These have already been presented in chapter 5.

6.1.2 Types of complement constructions

6.1.2.1 Indicative

Mayogo uses the complementizer *me* 'that' to embed indicative complement clauses. An example with the past and progressive tense follows.

(322) PAST PROGRESSIVE
Ma a-mbila **me** mu nga-mene kulu ndjindji.
1s PAST-know that 2s PROG-do work good
I know (lit. knew[65]) that you are doing good work.

Indicative complement clauses have full verb forms of either modality, manipulative, or cognition-utterance verbs. Syntactically the verbs are finite.[66]

The following are some additional examples of the indicative complement constructions with manipulative verbs in which the independent clause is in the present tense and a complementizer is used.[67] A subjunctive mood, which is in contrast to the indicative or

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[65]See section 4.1.3.3 for an explanation of why the past tense is translated as present here.

[66]Semantically the verbs are considered to be non-finite in that they require a complement. For example, the Mayogo verbs *na-mbila* 'to know' and *na-pa* 'to say' require a complement. Consider example (322) when it is separated into *Ma a-mbila* 'I know' in which the complementizer is removed and *Mu nga-mene kulu ndjindji* 'You are doing good work.' Although both are syntactically finite verbs, the first clause requires a complement. This clause can stand alone only when one knows what the speaker is referring to. If not, then the listener is left asking 'What does he know?'

[67]Compare these examples with (236) in which the complementizer is not used and the verb is in the infinitive form.

imperative forms, that expresses attitudes of uncertainty or vagueness, for example, has not been found in Mayogo. There is, however, a degree of hypothetical attitude that one normally associates with the subjunctive that can be seen in the following examples. This subjunctive quality is, however, due to the lexical aspects of the main clause verb itself and not due to any morphological characteristics of the verbs in the complement clause.

(323) PROGRESSIVE PRESENT
Ma nga-kunda **me** ma **nu** bhu gudhu.
1s PROG-like that 1s go to town
I'm wanting that I go to town.

(324) PAST PRESENT
Mado a-yo **me** yi **li** etsi-e kpe-kpeke.
M. PAST-ask that 2p sing song-REF REDUP-hard
Mado asks that you sing this song louder.

(325) PAST PRESENT
A a-le **me** Jean **nu**.
it PAST-try that John go
It is necessary that John go.

6.1.2.2 Infinitive complement constructions

Infinitive complement constructions are possible in Mayogo. The infinitive forms of verbs can be used as complements to function as the subject or object of the main clause without an object following. (326) has a verb in the infinitive form filling the object slot and (327) has verb phrase filling the subject position.

(326) Yi du ne na-buka !
2p be with to-believe
Have faith!

(327) Na-yo ko ndjɨndjɨ.
to-ask STA good
Praying is good.

Infinitive complement constructions in Mayogo are non-finite by definition. They require the presence of the main clause.

6.1.2.3 Direct and indirect quote

Forming direct and indirect quotes in Mayogo are no different from the indicative constructions already considered and the general statements regarding finiteness and strength of the bonds also applies to how quote constructions are formed. Furthermore, the same complementizer *me* 'that' seen in the indicative constructions is used for both indirect and direct quotes.[68] The next two examples show that there is no change of verb tense between the direct and indirect quotes as there is in the English translations of the following examples.

(328) PAST PROGRESSIVE
Ana a-pa pɨ anɨ me, "Ndɨlɨ na ɵlɵ gba ma nga-kpi."
3s PAST-say to/for 3s that child ASSOC woman GEN 1s PROG-die
He said to him, "My daughter is dying."

(329) PAST PROGRESSIVE
Ana a-pa pɨ anɨ me ndɨlɨ na ɵlɵ gba anɨ nga-kpi.
3s PAST-say to/for 3s that child ASSOC woman GEN 3s PROG-die
He said to him that his daughter was dying.

Besides using punctuation in written Mayogo, the following factors are used to distinguish between direct and indirect quote complements. One, direct quotes in Mayogo frequently have the quotation precede the quotation formula, while this ordering has not been

[68]In other languages the 'that' complementizer is often a morpheme meaning 'say.' Therefore, one might expect that there was a primitive verb form in Mayogo of **name* 'to say' or perhaps of the alternate form **namo*. This is in fact a lexical hole in Mayogo and no evidence that either existed has been found.

found with indirect quotes. Furthermore, the complementizer *me,* when at the end of a quotation formula that is preceded by the quotation, takes the form of *mo.*

(330) QUOTATION QUOTATION FORMULA
"Yi Nʉ! Nʉ!", ngámá a-pa **mo.**
2p REDUP Go chief PAST-say that
"You go!", (the) chief said like that.

Third, direct quotes are often found to stress the important points or peak of a discourse (Sawka 1996). This example marks a peak of *The Snake Story.* The completed text is found in appendix B.

(331) QUOTATION FORMULA QUOTATION
Ma me, "Yaka Malimʉ! Go! Go!"
1s that come teacher REDUP come
I (said), "Come Teacher! Come!"

Lastly, indirect quotes can differ in form from direct quotes for pronoun usage according to the deictic expressions related to who is speaking, among other factors. The following examples all have the first sentence as an example of direct discourse compared to the corresponding indirect discourse that follows it.

(332) FIRST PERSON SING > THIRD PERSON SING

Anɨ a-pa lili me, "**Ma** a-mɨ́ mambi."
3s PAST-say yesterday that 1s FUT-go tomorrow
He said yesterday, "I will go tomorrow."
Anɨ a-pa lili me, **nɨ** a-mɨ́ mambi.
3s PAST-say yesterday that 3s.ANA FUT-go tomorrow
He said yesterday that he (subject of the main clause) will go tomorrow.

(333) SECOND PERSON SING >FIRST PERSON SING

"**Mo** o-djí su ?", ani a-i mo.
2s FUT-go where 3s PAST-ask that
"Where will you go?", he asked.
Ani a-i ma, **ma** a-djí su ?
3s PAST-ask 1s 1s FUT-go where
He asked me where I will go.

(334) THIRD PERSON SINGULAR > SECOND PERSON SINGULAR

Hi mu a-pa me, "**Ani** a-mí mambi."
mother 2s PAST-say that 3s FUT-go tomorrow
Your mother said, "He will go tomorrow."
Hi mu a-pa me, **mo** o-mí mambi.
mother 2s PAST-say that 2s FUT-go tomorrow
Your mother said that you should go tomorrow.

(335) FIRST PERSON PLURAL EXCLUSIVE > THIRD PERSON PLURAL

U a-pa me, "**Ya** a-méne **nga-ya**."
3p PAST-say that 1p.EXC FUT-do EMPH-1p.EXC
They said, "We will do it ourselves."

U a-pa me **u** a-méne **nga-uo**.
3p PAST-say that 3p FUT-do EMPH-3p
They said that they will do it themselves.

(336) SECOND PERSON PLURAL > FIRST PERSON PLURAL INCLUSIVE

"**Yi** go ne tɨa pɨ **ma**," anɨ a-pa mo.
2p come with money to/for 1s 3s PAST-say thus
"You come with money for me", he said.
Anɨ a-pa me **nɨ́** nʉ ne tɨa pɨ **nɨ**.
3s PAST-say that 1p.INC go with money to/for 3s.ANA
He said that we should come with money for him (subject of the main clause.)

(337) THIRD PERSON PLURAL > SECOND PERSON PLURAL

"**U** a-zʉ **nga-o**," 'dyɨ ma a-pa me.
3p PAST-eat POSS-3p.ANA father 1s PAST-say that
"They ate theirs," my father said.
'Dyɨ ma a-pa me, **yi** a-zʉ **nga-yi**.
father 1s PAST-say that 2p PAST-eat POSS-2p
My father said that you ate yours.

(338) IMPERATIVE WITH ZERO > FIRST PERSON SING

"Nʉ ! Nʉ !", mo o-pa mo.
REDUP go 2s PAST-say thus
"Go", you said.

Mo o-pa me **ma** nʉ nʉ.
2s PAST-say that 1s REDUP go
You said that I should go.

6.1.2.3.1 Some commonly used quotation verbs

A review of some Mayogo verbs that are commonly used to introduce quotations follows.

Na-sʉla is used to mean 'to cry'.

(339) Anɨ **a-sʉla** kpe-kpeke **me** ma nʉ nʉ.
3s PAST-cry REDUP-hard that 1s REDUP go
He cried loudly that I should go.

Na-pa is used to mean 'to say'.

(340) Anɨ **a-pa** pɨ anɨ **me** ma nʉ nʉ.
3s PAST-say to/for 3s that 1s REDUP go
He said to him that I should go.

Na-i means 'to ask' or 'question'

(341) Anɨ **a-i** anɨ **me** ma nʉ nʉ.
3s PAST-question 3s that 1s REDUP go
He questioned him that I should go.

Na-lopolo lie is used to mean 'to ask pardon'.

(342) Anɨ **a-lopolo** **lie** pɨ anɨ **me** ma nʉ nʉ.
3s PAST-ask pardon REFL-3s to/for 3s that 1s REDUP go
He begged his pardon that I should go.

Na-ha lílí is used to mean 'to give advice'

(343) Ana **a-ha** **lílí** pɨ anɨ **me** ma nʉ nʉ.
3s PAST-transfer advice to/for 3s that 1s REDUP go
He gave him his advice that I should go.

Na-yo means 'to pray'.

(344) U **a-yo** ka anɨ **me** ma nʉ nʉ.
3p PAST-pray because 3s that 1s REDUP go
They prayed regarding him that I should go.

6.1.2.3.2 Verb omission in quotation formula

The quotation formula, which is also more simply referred to as the 'citation', often has the verb omitted leaving at a minimum the morpheme *me*. This phenomenon is found to some extent in colloquial English in constructions such as "He's like, he doesn't care" in which "He's like" substitutes for "He said that" The following four examples show an increasing simplification in the quotation formula clause. The subject of the quotation formula is the reduced form, *a*, used in colloquial speech for the third person singular pronoun *ani* mentioned previously in chapter 3.

(345) A **a-pa** **pi** ani **me**, "Yi ma mambi."
3s PAST-say to/for 3s that 2p FUT-go tomorrow
He said to him that, "You will go tomorrow."

(346) A **pi** ani **me**, "Yi ma mambi."
3s to/for 3s that 2p FUT-go tomorrow
He (said) to him, "You will go tomorrow."

(347) A **ma** **me**, "Yi ma mambi."
3s like[69] that 2p FUT-go tomorrow
He (said) like that, "You will go tomorrow."

(348) A **me**, "Yi ma mambi."
3s that 2p FUT-go tomorrow
He (said) that, "You will go tomorrow."

6.2 Relative clauses

6.2.1 Introduction

While complements function as the subject argument or object argument of the verb, relative clauses function as modifiers of a noun phrase within the same sentence. In other

[69]Although glossed the same as the word *má* 'like' in (1), the tone on this word is mid.

words, a relative clause functions as a nominal modifier (Keenan 1985a). Relative clauses are syntactically distinct from adverbial clauses that have been presented in chapter 5. A relative clause "modifies a noun and is embedded within a noun phrase," while an adverbial clause "modifies a verb or the whole proposition in the main clause and is combined with the main clause" (Hwang 1994:675).

Before describing the distinguishing features of the syntactic types of relativization in Mayogo, it is helpful to review the parts of a relative clause as outlined by Thomas Payne (1997:325–6) and also mention some strategies that have been found in languages to encode the syntactic typology of relativization.

The 'head' of a relative clause is the noun phrase that is modified by the clause while the 'restricting clause' is the relative clause itself. The "'relativized noun phrase' is the element within the restricting clause that is coreferential with the head noun" (Payne 1997:325–6). Lastly, the 'relativizer' is the morpheme that sets off the restricting clause as relative clause. Most important to this discussion of Mayogo relativizers, is that Payne states that relativizers of a language need to reflect some properties of the relativized noun phrase within the restricting clause before they can be referred to as a 'relative pronoun' (Payne 1997:326). Most commonly relative pronouns are thought to reflect the grammatical relation in the restricting clause such as noted next in the difference between 'who' and 'whom' in English. A bit more on this will be explained below. In some languages however, the relative pronoun reflects other qualities such as the humanness of the relativized noun phrase. This analysis has not found any morphemes in Mayogo that reflect the relativized noun phrase so there are only 'relativizers' in Mayogo but not 'relative pronouns'.

Regarding the different strategies used for relativization, one strategy is for a language to use relative pronouns. This is the case in English, in which the case marking is on the relative pronouns. For example, in the sentence "The man *who* ate it is my brother"

the relative pronoun is 'who' and the phrase 'who ate it' is the relative clause that distinguishes this particular man from others. The form of the relative pronoun 'who' relates to the subject position of 'the man' to which it refers. This is in contrast to the sentence "The man to *whom* I gave the letter is my brother" in which the relative pronoun 'whom' is marked for the dative case since the person receiving the letter would be the indirect object of the relative clause.

Some languages such as Hebrew may use anaphoric pronouns to refer back to something previously stated, and a nominalization strategy is used in languages like Turkish (Givón 1990:652–3). Mayogo does use reference markers to refer to nouns that have been previously mentioned in discourse and these have been discussed in chapter 3. Because these reference markers can attach to any constituent and not just to a relativizer this analysis did not consider Mayogo to use the anaphoric pronoun strategy. Other languages such as Tamil and Japanese have no relative pronoun but rely on a gap strategy in which the "coreferential argument may be missing ('deleted') *without a trace*" (Givón 1990:658). Payne adds that often languages in which the gap strategy is insufficient will use a more explicit device termed 'pronoun retention'. "In this strategy a pronoun that explicitly references the grammatical relation of the relativized noun phrase by its position, its form, or both is retained within the relative clause" (1997:331). Furthermore, many languages use a relativizer that is the same form of the complementizer as in the English examples in (349) from Payne (1997:333). Mayogo, however, has a different morpheme for the complementizer *me* 'that' than what it may use as a relativizer, (such as *inde* 'this'). This phenomenon of using relativizer that is the same form of the complementizer is pointed out here to avoid confusion, since English, which is used in the free translations of the Mayogo examples, functions in this way.

(349) The man **that** I saw
The man **that** saw me.
The bed **that** I slept in.
??The house **that** I went to.

These last two sentences can be compared with the use of relative pronouns in the sentences 'The bed **which** I slept in' and 'The house **to which** I went'.

Payne (1997) argues that the use of 'that' in English is not a relative pronoun but a relativizer used with a gap strategy. This is the type of strategy that Mayogo relative clause formation follows. Mayogo uses an uninflected relativizer with a gap strategy. A quantitative analysis of which type, either subject-head or object-head relative clauses, has not been done in this introduction to Mayogo relativization although the majority of relative clauses found were subject-head relative clauses.[70] This section only seeks to begin to explore the process of relativization in the language.

6.2.2 Determiners and relativizers

Before looking further at relativization in Mayogo it is helpful to review that Mayogo adds determiners after the noun or pronoun that they modify. Example (350) illustrates how the determiner *inde* modifies the word that precedes it, that is *kpála* 'person'.

(350) S V O DET
Ma mbila kpála **inde** de.
1s know person this NEG
I don't know this person.

Morphemes that function as determiners in Mayogo are also used to function as relativizers. Similarly, German uses determiners to function as relative pronouns.[71] Some

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[70]In English, for example, object-head relative clauses, are reported by Fox and Thompson (1990:307) as being twice as frequent as subject-head relative clauses.

[71]Because the German determiners have inflected forms such as *der, dem, den* they are 'relative pronouns' and not simply 'relativizers.'

examples of determiners that have been found to function as relativizers in Mayogo are *inde*, *bhe-nde*, *li*, *bhe*, and *bhomu*. The following is an example of *inde* used as a relativizer on the subject-head clause. When *inde* is used as a relativizer it has been translated in the free translation as 'that' or 'this', although no relative pronouns such as 'who' and 'whom' exist a free translation using 'who' or 'whom' could be included in these examples as well. The relative clauses in this section are in bold.

(351) REL V O

'Dyi mu **inde a-zu** **mu** a-há pi mu lili na
father 2s this PAST-birth 2s FUT-transfer to/for 2s advice ASSOC

bá-bádha.
REDUP-good

Your dad **that (or 'who') fathered you** will give to you good counsel.

Example (352) shows how *inde* functions as a relativizer on an object-head clause.

(352) Ma dje engá **inde mu nga-pa-e** **ma** de.
1s PAST-hear affair that 2s PROG-say-REF 1s NEG
I don't understand (the) problem **that you are talking to me about.**

Example (353) has no overt verb in the Mayogo relative clause except for the understood stative notion of 'is' as included in the free translation.[72]

(353) Ma kala machete **bhe na** **mbia de.**
1s PAST-buy machete that ASSOC new NEG
I bought (a) machete that which doesn't (have the quality of) newness.
(or ...that is not new.)

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[72]See section 4.1.4 on the construction of Mayogo statives.

Example (354) shows how *bhomʉ* 'that_near' functions as a determiner outside the relative clause. Keenan mentions that in headed relative clauses that include a determiner, the determiner can occur at either end of the relative clause or else between the head noun and the relative clause (1985a:145).[73]

(354) V N REL V DET
Tsia ndɨlɨ **ɨnde** **nga-ku** **'gba** bhomʉ.
look child this PROG-cry tears that_near
Look at (the) child **that is crying** here.

Example (355) shows the same sentence but the relative clause has the subject slot of the relative clause filled with *i*, a non-referential demonstrative pronoun.

(355) V N REL S V DET
Tsia ndɨlɨ **ɨnde** **i** **nga-ku** **'gba** bhomʉ.
look child this it PROG-cry tears that_near
Look at (the) child **that it is crying** here.

Another example from a Mayogo proverb shows the same structure in (356).

(356) N REL S V
Ndɨlɨ **ɨnde** **i** **dje-dje** **'kpɨ** **de** kina lɨ-e.
child this it REDUP-listen space NEG regret REFLEX-3s
(The) child that it repeatedly doesn't listen regrets it.

An example of the relativizer *li* meaning 'which' or 'that' follows in which the subject of the embedded clause immediately follows the relativizer. Notice that the associative marker *na* also functions as a relativizer to embed a second clause also. There was insufficient data and access to mother tongue speakers to evaluate when *li* is used as opposed to other relativizers.

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[73]Keenan (1985:145) gives an example from Yoruba, a Kwa language of Nigeria, which follows this same pattern of having the determiner outside of the relative clause.

(357) Ekpa **li olia a-si-e a kuti, na konge gba**
day that namesake PAST-lay-REF at village ASSOC vacation GEN

ani-e, ma a-du a-si lie sii-e.
3s-REF 1s PAST-IMPF PAST-lay COM here-REF

(The) day, that (the) namesake was lying in his village, which was his vacation, I was lying about near here.

6.2.2.1 Use of *inde* and *bhe-nde*

We will now attempt to compare the forms and functions of two relativizers, *bhe-nde* and *inde*, to discover if either reflect some properties of the relativized noun phrase within the restricting clause. If either does then they could be referred to as 'relative pronouns' as opposed to simply 'relativizers' (Payne 1997:326). Each morpheme occurs with people, animals and inanimate objects. The relativizer *bhe-nde* cannot have the subject slot of the headless relative clause filled by some other noun or pronoun, but *inde* allows another noun or pronoun to fill this slot. Examples (358) and (359) illustrate this.

(358) REL V
Bhe-nde a-mbila me kuo bho-bholo kpála, ani lila li-e.
this-then PAST-know that sickness REDUP-kill person 3s guard REFL-3s
Whoever knows[74] that sickness can kill, he guards himself (against it).

(359) S REL V
A **inde a-mbila me kuo bho-bholo kpála**, ani lila li-e.
3s this PAST-know that sickness REDUP-kill person 3s guard REFL-3s
He **who knows that sickness can kill,** he guards himself (against it).

Regarding the structure and possible origins of these two morphemes, it is noted that they both end in *nde*. Alone by itself, *nde* functions as a conjunction translated 'then' and is

[74]See chapter 4 for an explanation of how the past tense functions in a present tense rendering for this sentence.

used to mark conditional phrases as explained in chapter 5. *Bhe* is a demonstrative distal deixis pronoun translated as 'that', and *i* is a neutral deixis pronoun translated as 'it'. Further study of their occurrence in discourse leads to a conclusion that *inde* is used for somewhat more particular references than *bhe-nde*, which is used more for generalities or to refer to a larger situation. There does not appear to be any inflection on either form that indicates the type of properties that one normally expects in relative pronouns. Table 18 summarizes the comparison between these two words.

Table 18. Comparison of two relativizers

	bhe-nde	inde
Derivation	bhe + nde	i + nde
With headed noun phrases	+	+
Requires a preceding noun	-	+
reference	generalities, larger situation	more particular, precise
translations	which, who, that, anyone, anything, anytime	which, who, that one, the one
occurrence with people, animals, inanimate	no limitations	no limitations

6.2.3 Headless relative clause

It is possible to form headless relative clauses in Mayogo. Example (358) above is an example of a headless relative clause in which *bhe-nde* takes the subject position. Example (360) shows how *inde* can also be used to form a headless relative clause by using an ambiguous noun like 'anyone' to fill the head noun position. Here *ko da* which literally means 'be who' is translated as 'anyone'.

(360) S REL S V

Ko da **inde i pa 'ngú gba-e hana de,** ani 'e 'kpa-e bhula

be who this it say matter POSS-3s all NEG 3s lift hand-3s up

Anyone **who hasn't said all of his thoughts,** he (should) lift his hand up.

6.3 Summary

Mayogo forms complement clauses through indicative and infinitive complement strategies. Ordering of the quotation formula and quotation as well as the forms of pronouns, and the form of the complementizer, among other factors, are used to distinguish direct from indirect quotes.

Regarding the possibilities in Mayogo for the features of relativization types, only one strategy has been found. Mayogo uses a gap strategy with relativizers that have no inflection for the grammatical relations in the restricting clauses. Mayogo uses determiners to function as relativizers. Both subject-head and object-head clauses have been included as examples but no further analysis of the role of the relativizer was included in this introductory study.

CHAPTER 7

SUMMARY AND DIRECTIONS FOR FURTHER RESEARCH

This chapter draws attention to some of the significant grammar topics that have been included in this study. It includes an overview of the functions of reduplication in the language, and concludes with a few thoughts on directions for further research.

7.1 Summary

Mayogo is an Adamawa-Ubangi language. There are 15 languages of the Ngbaka subgroup of which Mayogo is a member. Previous work on the language was on the vowel system and found that Mayogo has an asymmetric vowel system with two [-ATR] central vowels (McCord 1989:114).

The main purpose of this thesis was to examine some basic aspects of grammatical structures in hopes that this research might help and encourage additional development of the Mayogo language. Although much work has been done on the language by nationals and expatriates, the Mayogo people have yet to obtain many vernacular publications.

Chapter 2 presented a formal analysis of the morphological typology and word order typology of the language. Mayogo was found to have a basically rigid SVO word order. It is an isolating language as opposed to being an agglutinating language. Morpheme boundaries in Mayogo are always clear. These findings are important for determining the word breaks within the language. Mayogo is influenced by several Bantu languages that have tended to be

much more agglutinating, at least in their orthography, and there is a temptation to join words in Mayogo due to such sociolinguistic influences.

Abundant work on particles that can be joined to other words was also included in chapter 2. Some of these particles, for example, are past and future prefixes that attach to verb roots; prefixes on pronouns; and reference markers that are suffixes to whatever precedes them.

Mayogo was found to be almost completely harmonious as a head initial language. The one exception was the head final position of adjectives that was presented in chapter 2 and covered further in chapter 3. In many Niger-Congo languages there are no adjectives, but instead, words derived from verbs or nouns function as modifiers. This thesis, however, presented evidence that there is a class of words that function differently than how nouns or verbs function, and thus they have been classified as true adjectives.

Besides adjectives, chapter 3 discussed several aspects of the noun phrase. A general overall structure for the Mayogo noun phrase was included. Many pronoun cases were presented including the nominative, accusative, possessive, genitive, emphatic, and reflexive cases. These latter four cases are all formed by adding different prefixes to the pronoun root forms. Mayogo has special forms for the third person singular and third person plural pronouns to distinguish between the same third person subject and some other third person pronoun subject. Mayogo also has a special pronoun form for the quotation formula of same subject third person singular.

This work found it helpful to define two classes of Mayogo nouns. Class I nouns have single syllable root but cannot exist without either the singular noun prefix of either *e-* or *i-*, in reduplicated form or with a modifier. Class II is composed of a small and special class of single syllable nouns that do not take the singular prefix of either *e-* or *i-*. Only about 14

nouns from a lexicon of over 1,600 morphemes, have been found to occur in Class II. Similar though to other nouns, nouns of Class II also exist only with a modifier, in a reduplicated form, or with the plural prefix.

Plurals were found to have special functions and forms in Mayogo. The plural prefix *o-,* for example, can be added to both the noun and the modifying adjective to fulfill different functions. The plural prefix when on both the adjective and the noun seems to indicate that every item in a group has that quality as opposed to the quality being more generally distributed over the entire group.

Mayogo was not found to have inflected case forms except for some accusative forms for a few pronouns. Instead of inflected case forms, strategies used to indicate case roles are word order and prepositions, including the reduplication of some prepositions.

Chapter 4 mainly presented two views of the Mayogo verb phrase: One, is the relation between tense, aspect and mode. The other view considered the verb in the relation to its voice and valency. The unmarked tense in Mayogo is the present tense which is formed only by the bare root. The past and future tenses are marked by prefixes on the verb, as is the progressive aspect. Other devices to encode aspects included auxiliaries, reduplication, or the use of lexical aspect.

Of special concern in studying the verb phrase was the difference between middle voice, passive and the reflexive constructions. There appears to be some overlapping of these constructions, which is probably due to grammaticalization of the particle *lie.*

Chapter 5 dealt with issues of clause combining. The research found that Mayogo exhibits those characteristics one would expect in a co-ranking language such as having the majority of clause combinations joined through the use of conjunctions. In a few cases there was the use of reduplication of the conjunctions to join clauses or two different conjunctions

joined together to function as a single unit to join two clauses. In the conditional constructions, Mayogo places all of the "if. . . then" constituents within the protasis clause.

Chapter 6 continued with the discussion of the verb phrase but looked in detail at complementation and relative clauses. Two types of complement constructions were found in the data: indicative and infinitive. Direct quotes, which are important in that they are often used to mark the peak of a discourse, are distinguished from indirect quotes by the clause order, the form of the complementizer used, or the form of the pronouns used. For example, direct quotes frequently have the quotation clause precede the quotation formula but indirect quotes often have the quotation formula precede the quotation clause.

The only strategy to form relative clauses found in the data is a gap strategy with relativizers.

7.2 Overview of reduplication

Besides covering many aspects of Mayogo grammar this thesis seeks to glean some information on reduplication that occurs within the language. Over 350 examples of glossed examples were included in this thesis and 22 percent of them contained instances of reduplication. Obviously, Mayogo makes much use of reduplication and table 19 attempts to summarize some of the occurrences.

Table 19. Summary of reduplication

	Constituent	Morphology	Function	Constituent classification change	Example
1.	noun	first root syllable or entire word	reference to an object	none	A 'lɨ 'lɨ bhʉ Madyɵgɵ pɨ ? it REDUP name in Mayogo what What (is) its name in Mayogo?
2.		first root syllable	single syllable noun cannot exist in isolation	none	lɨ́ ngulu lɨ́-lɨ́ fruit palm REDUP-nut palm nut fruit 'bhɵ 'bhɵ. REDUP-mouth a mouth.
3.		first root syllable	indicates plural	none	o-kpá 'kpá PL-REDUP leaf leaves
4.		first root syllable or entire word	when noun functions as an adjective of a plural noun after associative marker	modifier (adjective like)	Ogbi na bho-bhoko in-laws ASSOC REDUP-man father-in-law obhukosɨ na o-bhosɨ-bhosɨ twins ASSOC PL-REDUP-men. twins which are male

Table 19–*Continued.*

	Constituent	Morphology	Function	Constituent classification change	Example
5.	verb	first syllable of root	habitual or repetitive aspect	none	me-mene REDUP-do to do repeatedly
6.		first syllable of root	imperative	none	Go! Go! REDUP come Come!
7.		first syllable of root	imperative with reference to an object	none	Dolo enu inde! -----> Do-dolo! cut animal this REDUP-cut Cut up this meat! Cut it up!
8.	adjective	first syllable	adjective follows the associative marker	'noun'	ezu na bá-bádha food ASSOC REDUP-good food which (has) goodness
9.		first syllable or entire word	makes possessed noun plural	'noun'	ndula na dje-djedje stick ASSOC REDUP-small sticks which (have) smallness kulutu na bukudhu bukudhu barrel ASSOC REDUP not_full barrels which are not full
10.		first syllable	intensifies meaning when before the noun it modifies	none	bádha ezu --> bá-bádha ezu good food REDUP-good food good food very good food
11.		first syllable	distinguishes the noun it modifies as a determiner does.	acts as a determiner	bili lusa --> bi-bili lusa black pot REDUP-black pot black pots the black pots
12.		first syllable	always occurs when adjective precedes a plural noun it modifies	none	ngbe-ngbe o-bulu REDUP-big PL-dog big dogs

Table 19–*Continued.*

	Constituent	Morphology	Function	Constituent classification change	Example
13.	auxiliary	first syllable	habitual or repetitive aspect	none	Ani du-du a-mene 'he 3s REDUP-sit PAST-do thing In the past he always had made things.
14.	numeral	entire word	distribution	numeral phrase	bini bini one one one (by) one = one at a time
15.	preposition	first syllable	reference to an object	locative	sa ndula -----> sa-sa under tree REDUP-under under the tree under it
16.	conjunction	first syllable	reference to a clause	adverb	pita -----> pi-pita after REDUP-after after afterwards
17.	adverb and time words	entire word	increase intensity	none	nani nani REDUP distant_past long long ago
18.	phrase	verb + noun within a word	used to name things	noun	i-du-ngulu-du-ngulu-kpa it-REDUP-REDUP-pierce-neck-hand praying mantis
19.	determiner	first syllable	reference to an object	demonstrative pronoun	bhomu -----> bho-bhomu this REDUP-this this this one
20.	ideophones	entire word following marker	increase intensity	none	má gala gala like REDUP quick very quickly
21.	exclamations	entire word	increase intensity	none	"Hee ! Hee !" Oh_my! Oh_my! "Oh my! Oh my!"

A few observations can be made before concluding this summary of reduplication: The most common morphological change that occurs in reduplication for any word forms is for the first syllable (usually a CV or V syllable pattern) to reduplicate and precede the root from which it is derived. The stipulation of only the first syllable is unnecessary for many words in Mayogo that are only composed of a single syllable. Since economy is one of the motivating factors for the process of reduplication, it can be expected that the reduplication of the entire word would occur less frequently. This tends to be the case, although there are a few instances of reduplication of the entire word form despite the fact that it produces longer utterances. It seems that single syllable nouns and verbs are more likely to undergo reduplication than are longer words. This is true not because multi-syllable nouns and verbs are less common in the language, but because shorter words are often joined with other short words to form words of multi-syllables. Sometimes the process of reduplication itself is used to form compound words.[75]

Constituents that have been found to reduplicate are nouns, verbs, auxiliaries, adjectives, prepositions, conjunctions, adverbs, time words, ideophones and exclamations. Those that have not been found to reduplicate are personal pronouns, demonstratives, and interrogative particles. Attached particles like prefixes on verbs, prefixes on nouns or prefixes on pronouns and suffixes like the reference markers, do not duplicate either. This is an argument for joining certain particles in the orthography as opposed to not joining them together. For example, Mayogo has nine different uses for the element *li*.[76] Those forms of *li*

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[75]An example given previously in example (80) of a compound noun in which there is no reduplication is *'kpa 'pe* 'month', and a compound noun formed through the process of reduplication is *i-dи-ngиlи-dи-ngиlи-kpa* 'praying mantis' given previously in example (11).

[76]A listing of all nine possible occurrences of this form is included here. Some of these particles, however, are distinguished from others by tonal differences.

One use of l*i* is as a conjunction meaning 'if' and it is phonetically realized as [lɪ̀]. This conjunction has not been found to reduplicate.

that can reduplicate have been found to be nouns while those forms that cannot are usually affixes or aspect markers. Since the nouns can reduplicate it is obvious that that they are independent forms and can stand alone in their unreduplicated forms, while those forms of *li* that are affixes must be attached.

One of the aims of this research was to discover if there was an implication hierarchy for reduplication. That is, which constituents of the grammar, such as nouns, pronouns, verbs, adjectives, prepositions, conjunctions, and adverbs, use reduplication to the greatest creative capacity in the language and which forms are most frequent.

Figure 10 is an index of occurrences of reduplication in Mayogo. It indicates that nouns and adjectives, for example, have the overall highest frequency of reduplicated forms. This index is not adjusted according to the frequency of these forms in the language. In other words, there are more instances of reduplication in the language in nouns than in adverbs simply because nouns occur with greater frequency in any text.

Another use of *li* is as a preposition meaning 'on/inside' of something and it is phonetically realized as [lɨ̄]. This preposition has not been found to reduplicate. This is explained further in section 3.8.2.3.

Another use of *li* is as a relative pronoun meaning 'that' or 'when' and it is phonetically realized as [lɨ̄]. As a relative pronoun it has not been found to reduplicate.

Another use of *li* is as adverb meaning 'then' and is it phonetically realized as [lɨ̄]. As an adverb it has not been found to reduplicate.

Another use of *li-* is as a reflexive pronoun explained in chapter 3 and it is phonetically realized as [lɨ́-]. Prefixes like this do not reduplicate.

Nali is a verb meaning 'to enter' and is phonetically realized as [nálɨ̄]. It can occur in the present tense or in the imperative modes as simply *li*. This can reduplicate.

Ili is a noun meaning 'name' and is phonetically realized as [ɨ́lɨ̄]. It regularly appears as *'li* when the initial vowel is elided as in *'li* ma 'my name'. This can reduplicate.

Lílí is a noun meaning 'fruit' or 'grain' and is phonetically realized as [lɨ́lɨ́]. It can occur with a determiner in the form of *'lí*. This can only exist without a determiner in a reduplicated form.

Elí is a noun meaning 'spleen' and is phonetically realized as [èlɨ́] and can occur as *'lí*. This should be able to reduplicate as other nouns can.

nouns adjectives	>	verbs prepositions	>	conjunctions adverbs time words ideophones exclamations	>	auxiliaries

Figure 10. Index of reduplication occurrences in Mayogo.

If the index is calibrated to show the rate at which forms reduplicate, then the hierarchy would look something like figure 11 since ideophones and adverbs reduplicate more often than do nouns or adjectives, although ideophones occur less frequently in the language.

adverbs ideophones exclamations	>	nouns adjectives	>	verbs prepositions	>	conjunctions auxiliaries time words

Figure 11. Index of reduplication rate in Mayogo.

Figure 12 indicates the hierarchy of functions for reduplication. Adjectives (including adjectives which become nouns through reduplication) have five functions of reduplication. Nouns exhibit four functions of reduplication. Reduplication in nouns, for example, can function to reference an object, function to satisfy word structure requirements, to indicate plural, or to function as a modifier of a another plural noun. Table 19 shows that verbs have three functional uses of reduplication while other constituents have only one function.

adjectives > nouns > verbs > conjunctions
adverbs
time words
ideophones
prepositions
auxiliaries
exclamations

Figure 12. Index of function of reduplication in Mayogo.

Although not included here, a fourth hierarchy could be included to show the hierarchy of morphological forms that constituents have. For example, nouns reduplicate either the first syllable or the entire word while verbs only reduplicate the first syllable. (In the case of single syllable verbs when the first syllable is reduplicated, the entire root is reduplicated.) Such a hierarchy would probably be very similar to that proposed in figure 12. That is, the greater the number of functions that reduplication fills, the greater the number of morphological forms that it will be exhibited in.

Summary table 19 shows at least five different functions of reduplication in Mayogo. Four of these five are common to other languages that use reduplication: Verbs in many languages reduplicate to show aspects such as habitual or repetitive or the imperative mood. Secondly, reduplication is used in other languages to indicate the plural of something or the numbering of something as in *bhisi bhisi* 'two by two'. Nouns, adjectives and numerals can all reduplicate to fulfill this second function. A third function of reduplication seen in Mayogo that is also common in other languages is to intensify. This function is seen in the adjectives, adverbs, exclamations and ideophones. A fourth function of reduplication found in other languages is related to word formation or syllable constraints. An example of this is seen in *lílí* 'fruit' or the example of 'praying mantis' in which reduplication is used to form a compound word.

One other function of reduplication in Mayogo is reference marking. This appears to be a less common function of reduplication in other languages but it is mentioned by Kouwenberg and LaCharité (1999:4). Reference marking as a function of reduplication is seen in the nouns, imperative transitive verb forms, prepositions, conjunctions and determiners. Examples of all of these are contained in table 19.

7.3 Directions for further research

Throughout, this thesis has indicated where there are uncertainties or where access to mother tongue speakers could have improved the analysis. Several points mentioned the need to do further research and refine some issues in the orthography.

Some discourse analysis has been done in Mayogo; however, much still remains to be done in this area. Research needs to be done to discover the general Mayogo discourse structures including profiles of texts, participant reference, peak marking and bands of salience for example.

Additional research needs to be done to compare the languages of Ngbaka Eastern subgroup: Mündü, Bangba, and Mayogo. Language development work has progressed in Mündü and is progressing in Mayogo, however nothing known beyond an initial survey (Boone 1994a) report has been done in Bangba. Since there are accepted orthographies and grammar research done in two of these three languages, Bangba is now in a position to benefit from the previous research that has been done both in Mündü and Mayogo.

APPENDIX A

MORPHEME ANALYSIS OF THE SNAKE STORY

Morpheme count of 100 words from a Mayogo narrative for the index of synthesis and the index of fusion measurement.

The Snake Story

10th word

A a-dᵾ nako e-kpí bini tagolo, ya a-dᵾlᵾ bha me. Ya a-lᵾ kpadhi. Kpadhi
1 2 1 2 1 1 1 2 1 1 1 2 1 1

20th word

a-bhᵾ. Ne ma mama Janete, ne '-ko e, ne '-ko ma, no o-ngᵻsᵻ. Kpadhi a-bhᵾ
2 1 1 1 1 1 2 1 1 2 1 1 2 1 2

30th word *40th word*

lᵻe. Ya a-'o kala ya. Ya nga-zᵾ-zᵾ ....Má gala kolo me, kpᵾlᵾ a-koto.
1 1 2 1 1 1 3 1 1 1 1 1 2

50th word

Ngbe kpᵾlᵾ-o. Ma a-tsia '-kpᵻ lᵻ ngo ma me, anᵻ nga-kodho '-kpᵻ.
1 2 1 2 2 1 1 1 1 1 2 2

60th word

Gala kpᵾlᵾ de: "Siliba." Ma a-yie bhᵾlá. Ma a-nᵾ a-lᵾ maka ahoo.
1 1 1 1 1 2 1 1 2 2 1 1

70th word

Ma me, "Yaka malimᵾ Go! Go! Kpᵾlᵾ! Kpᵾlᵾ! Kpᵾlᵾ!"
1 1 1 1 1 1 1 1 1

80th word

O-ngᵻsᵻ hana a-tsi ne holo. U a-nᵾ a-lᵾ-lᵾ maka ahoo. Malimᵾ a-ha ndula, na
2 1 2 1 1 1 2 3 1 1 1 2 1 1

90th word *100th word*

a-go ne holo. Anᵻ a-sᵾ kpᵾlᵾ-o. Anᵻ a-mata a-sᵾ anᵻ. Ya
2 1 1 1 2 2 1 2 2 1 1

APPENDIX B

TEXTS:

THE SNAKE STORY
THE QUAIL AND THE VIPER
THE STORY OF PINDJO
THE MARKET

THE SNAKE STORY

(1) Engú pindji kpulu
e- 'ngú pindji kpulu
PRE- affair about snake
PRE- N ADV N
A Snake Story

(2) A adu nako ekpí bini tagolo,
a a- du nako e- 'kpí bini tagolo
it PAST- sit recent PRE- place one afternoon
DEM TNS- V TIME PRE- N NUM N
It was one evening ago,

(3) ya adulu bha me. Ya alu kpadhi.
ya a- dulu bha me ya a - lu kpadhi
PRO.EXC TNS- V ADV ADV PRO.EXC TNS- V N
1p.EXC PAST- sit only that 1p.EXC PAST-cook manioc_leaf
we were sitting down. We cooked cassava leaves.

(4) Kpadhi abhu. Ne ma mama Janete, ne 'ko e,
Kpadhi a- bhu ne ma mama Janete ne 'ko e
manioc leaf PAST-simmer with 1s mom Janete with husband 3s.ANA
N TNS V CJ PRO N N CJ N PRO
The leaves were simmering. With me was Mama Janete, her husband,

(5) ne 'ko ma, no ongisi. Kpadhi abhu lie.
ne 'ko ma ne ongisi kpadhi a- bhu lie
with husband 1s with children manioc_leaf PAST- simmer COM
CJ N PRO CJ N N TNS- V ADV
my husband and the children. The leaves were done.

(6) Ya a'o kala ya.
ya a- 'o kala ya
1p.EXC PAST- put front 1p.EXC
PRO.EXC TNS- V Pr PRO.EXC
We put (the food) before us.

(7) Ya ngazu 'zu ....Má gala kolo me,
ya nga- zu 'zu má gala kolo me
1p.EXC PROG- eat food like quickly arrive that
PRO.EXC TNS- V N ADV IDEO V ADV
We (were) eating food... when suddenly then

(8) kpulu akoto. Ngbe kpulu-o. Ma atsia 'kpí li
kpulu a- koto ngbe kpulu -e ma a- tsia 'kpí li
snake past- exit big snake -REF 1s past- look place on inside
N TNS- V ADJ N -REF PRO TNS- V N Pr
snake came out. A big snake. I looked on

(9) ngo ma me, ani ngakodho ʼkpí. Gala kpulu de:
ago ma me ani nga- kodho ʼkpí gala kpulu de
near 1s that 3s PROG-cut place other snake NEG
Pr PRO ADV PRO TNS- V N ADJ N ADV
my side that, he is cutting across the place. No other snake:

(10) "Siliba." Ma ayie bhiiá. Ma anu aiu
siliba ma a- yie bhiiá ma a- nu a- lu
snake 1s PAST-come.from up 1s PAST-go PAST-stand
N PRO TNS- V N PRO TNS- V TNS- V
(but a) Siliba. I stood up from (there). I ran (and) stood

(11) maka ahoo. Ma ame, "Yaka malimu gogo!
maka ahoo ma a- me yaka malimu REDUP- go
like there 1s past- that come teacher Imperative- come
REL LOC PRO TNS- ADV V N redup- V
like over there. I said, "Come teacher. Come! Snake!

(12) Kpulu! Kpulu! Kpulu!" Ongisi hana aisi ne holo. U
kpulu kpulu kpulu ongisi hana a- tsi ne holo u
snake snake snake children all PAST- burn with speed 3p
N N N ADJ TNS- V CJ N PRO
Snake! Snake! Snake!" All the children ran so quickly. They

(13) anu alulu maka ahoo.
a- nu a- REDUP-lu maka ahoo
PAST- go PAST- REDUP-stand like there
TNS- V TNS- redup- V REL LOC
went and all stood over there.

(14) Malimu aha ndula, na ago ne holo. Ani
malimu a- ha ndula ani a- go ne holo ani
teacher PAST- transfer tree 3s PAST- come with speed 3s
N TNS- V N PRO TNS- V CJ N PRO
Teacher took a stick, he came quickly. He

(15) asu kpulu-o. Ani amata asu ani. Ani
a- su kpulu-e ani a- mata a- su ani ani
PAST-beat snake-REF 3s PAST- again PAST- beat 3s 3s
TNS-V N -REF PRO TNS- ADV TNS- V PRO PRO
hit that snake. He hit him again. He

(16) amata asu ani. Ya ago masekpe.
a- mata a- su ani ya a- go masekpe
PAST-again PAST- beat 3s 1p.EXC PAST- come near
TNS-ADV TNS- V PRO PRO.EXC TNS- V Pr
hit him again. We came close by.

(17)	Ya	atsia.	Ya	ahu	me	kpulu			
	ya	a- tsia	ya	a- hu	me	kpalu			
	1p.EXC	PAST-look	1p.EXC	PAST-see	that	snake			
	PRO.EXC	TNS- V	PRO.EXC	TNS- V	ADV	N			
	We looked. We saw that the snake								

(18)	akpi.	Ya	atsia	agie		pi	Ebhe	me	
	a- kpi	ya	a- tsia	a-	gie	pi	Ebhe	me	
	PAST-die	1p.EXC	PAST-look	PAST-	return	to/for	God	that	
	TNS- V	PRO.EXC	TNS- V	TNS-	V	Pr	NOM	ADV	
	was dead.	We returned to God							

(19)	heni.	A	andjia.	
	heni	a	a-	ndjia
	thanks	it	PAST-	finish
	EXC	DEM	TNS-	V
	Thanks. That's finished.			

05/Apr/2001

THE QUAIL AND THE VIPER

(1) Gbitaku gba Kubhatsa ne mbuma
gbitaku gba kubhatsa ne mbuma
proverb GEN quail with viper
N Pr N CJ N
The folk tale of the quail and the viper.

(2) Mbuma ne kubhatsa u adu nani bhu gandja.
mbuma ne kubhatsa u a- du nani bhu gandja
viper with quail 3p PAST- sit distant past in alliance
N CJ N PRO TNS- V ADV Pr N
The viper and the quail, they long ago made an agreement.

(3) Mbuma apa pi alia e me, "Ni
mbuma a- pa pi alia e me ni
viper PAST- say to/for friend 3s.ANA that 1p.INC
N TNS- V Pr N PRO ADV PRO.INC
The viper said to his friend there, "We

(4) amemene siti 'ngú sunda ni de."
a- REDUP- mene siti 'ngú sunda ni de
PAST- Habitual- do sin affair between 1p.INC NEG
TNS- redup- V N N Pr PRO.INC ADV
haven't been in the habit of doing bad between us."

(5) U adu nadhuku, uo ngamene engú
u a- du na- dhuku uo nga- mene e- 'ngú
3p PAST- sit to- walk 3p PROG- do PRE- affair
PRO TNS- V TNS- V PRO TNS- V PRE- N
They were walking, they did something

(6) sunda o ndjindji. Ekpi bini obhasa
sunda o ndjindji e- 'kpi bini o- bhasa
between 3p.ANA good PRE- day one plurial- pygmy
Pr PRO ADJ PRE- N NUM PLU- N
between them (that was0 good. One day the pygmies

(7) anu nc bhike bhita, u ahu cnu bini,
a- nu ne bhike bhita u a- hu e- 'nu bini
PAST- go with chase hunt 3p PAST- see PRE- meat one
TNS- V CJ V N PRO TNS- V PRE- N NUM
went on a hunt, they saw one animal,

(8) a 'li ani me "ngabhi." Ana akpe uo ne holo
a 'li ani me ngabhi ani a- kpe uo ne holo
it name 3s that antelope 3s PAST- flee 3p with speed
DEM N PRO ADV N PRO TNS- V PRO CJ N
that is named "antelope." He fled them with speed

(9) abhu 'gu. Obhasa aha djua
abhu 'gu o- bhasa a- ha djua
into savannah plurial-pygmy PAST- transfer fire
Pr N PLU- N TNS- V N
into the savannah. The pygmies got fire

(10) ato li egu-o.
a- to li e- 'gu -e
PAST- put on_inside PRE- savannah -REF
TNS- V Pr PRE- N -REF
(to) put on the savannah.

(11) Egu aholo natsi.
e- 'gu a- holo na- tsi
PRE- savannah PAST- hold to- burn
PRE- N TNS- V TNS- V
The savannah caught fire.

(12) Mbuma ne kubhatsa u aholo nagu holo.
mbuma ne kubhatsa u a- holo na- gu holo
viper with quail 3p PAST- hold to- do speed
N CJ N PRO TNS- V TNS- V N
The viper and the quail ran.

(13) U atapa atu gu.
u a- tapa atu 'gu
3p PAST- leave between savannah
PRO TNS- V ADV N
They left between the savannah.

(14) Djua atsi, a akolo de uo masekpe.
djua a- tsi a a- kolo de uo masekpe
fire PAST- burn it PAST- arrive near 3p near
N TNS- V DEM TNS- V Pr PRO Pr
The fire burned, it arrived near them.

(15) Mbuma pi kubhatsa me, "Alia ma, 'e ma li 'ngbu mu."
mbuma pi kubhatsa me alia ma 'e ma li 'ngbu mu
viper to/for quail that friend 1s remove 1s on_inside back 2s
N Pr N ADV N PRO V PRO Pr N PRO
The viper said to the quail, "My friend, take me on your back."

(16) Kubhatsa pi ani me, "A ndjindji." Kubhatsa akita
kubhatsa pi ani me a ndjindji kubhatsa a- kita
quail to/for 3s that it good quail PAST- stoop
N Pr PRO ADV DEM ADJ N TNS- V
The quail said to him that, "That's good." The quail stooped

(17) ne kuto. Mbuma a'u li 'ngbu ani; na 'ulu na
ne kuto mbuma a- 'u li 'ngbu ani ani 'ulu ne
with down viper PAST-mount on_inside back 3s 3s fly with
CJ ADV N TNS- V Pr N PRO PRO V CJ
down. The viper mounted on his back, he flew with

(18) ani, na atapa ali ngo pa 'ngu, na ke li
ani ani a- tapa ali ngo pa 'ngu ani ke li
3s 3s PAST-leave on near towards water 3s lower on_inside
PRO PRO TNS- V Pr Pr Pr N PRO V Pr
him, he left to near the water, he descended on

(19) ngo pa 'ngu. Kubhatsa pi mbuma me, "Ke! Ke!"
ngo pa 'ngu kubhatsa pi mbuma me ke ke
near towards water quail to/for viper that lower lower
Pr Pr N N Pr N ADV V V
near the water. Quail (said) to the viper, "Get off!"

(20) Mbuma pi kubhatsa me, "A mo ade ! Ndai ma, li
mbuma pi kubhatsa me a mo ade ! ndai ma li
viper to/for quail that it thus NEG sibling 1s if
N Pr N ADV DEM ADV ADV N PRO CJ
The viper (said) to the quail that, "That's not so! My brother, if

(21) lele inde tagolo-e, li ma tse 'kpa li mu
lele inde tagolo -e li ma tse 'kpa li mu
precise this afternoon-REF if 1s release hand on inside 2s
ADV DEM N -REF CJ PRO V N Pr PRO
at evening like this, if I release my hand off you

(22) mata, ma nde si su ?
mata ma nde si su ?
again 1s then then where
ADV PRO ADV ADV INTER
again, where will I then sleep?

(23) Ma tsé 'kpa li mu de.
ma tse 'kpa li mu de
1s release hand on_inside 2s NEG
PRO V N Pr PRO ADV
I won't let you go.

(24) Ma así bhu 'bu ma ne mu ndai ma."
ma a- si bhu 'bu ma ne mu ndai ma
1s FUT- lay in stomach 1s with 2s sibling 1s
PRO TNS- V Pr N PRO CJ PRO N PRO
I will pass the night with you, my friend in my stomach."

(25) Ma gala kolo me mbuma anumu de ngulu kubhatsa.
ma gala kolo me mbuma a- numu de nguiu kubhatsa
1s quickly quickly that viper PAST-bite near neck quail
PRO IDEO ADV ADV N TNS- V Pr N N
So quickly thus the viper bit near the quail's neck.

(26) Na agala so e.
ani a- gala so e
3s PAST- turn tail 3s.ANA
PRO TNS- V N -REF
He turned on his tail.

(27) A ato bhu 'ku ani, na asuo
ani a- to bhu 'ku ani ani a- suo
3s PAST- put in thigh 3s 3s PAST- perforate
PRO TNS- V Pr N PRO PRO TNS- V
He pierced into his thigh, he jabbed

(28) tungu ani ne so e.
tungu ani ne so e
breastbone 3s with tail 3s.ANA
N PRO CJ N PRO
his breast with his tail.

(29) Na ambila lie me kuo akolo li ani.
ani a- mbila lie me kuo a- kolo li ani
3s PAST- know COM that sickness PAST-arrive on_inside 3s
PRO TNS- V ADV ADV N TNS- V Pr PRO
He knew for sure that death arrived on him.

(30) Na akolo atsia asula, "Hee ! Hee !
Ani a- kolo a- tsia a- sula hee hee !
3s PAST-quickly PAST-look PAST- shout Oh_my! Oh_my!
PRO TNS-ADV TNS-ADV TNS- V EXC EXC
He quickly then cried, "Oh my! Oh my!

(31) Ngayi omaha kubhatsa, ko ma ogbi kubhatsa;
nga- yi omaha kubhatsa ko ma ogbi kubhatsa
EMPH- 2p family quail be 1s in.law quail
EMPH- PRO N N REL PRO N N
Yourselves, quail family, it's me, in-law quails;

(32) ma akpi ei-e akpi,
ma a- kpi ei -e a- kpi
1s PAST- die here -REF PAST- die
PRO TNS- V LOC -REF TNS- V
I'm certainly dead here.

(33) anga	ma	kina	ndjinga	mbuma.	
anga	ma	kina	ndjinga	mbuma	
because	1s	think	sorrow	viper	
CJ	PRO	V	N	N	

because I thought kindness (towards) the viper.

(34) Ma	akpi.		Ani	ngazu		ma.
ma	a-	kpi	ani	nga-	zu	ma
1s	PAST-	die	3s	PROG-	eat	1s
PRO	TNS-	V	PRO	TNS-	V	PRO

I'm dead. He is eating me.

(35) Yi	amáta		akódho		gandja	no	mbuma	de."
yi	a-	mata	a-	kodho	gandja	ne	mbuma	de
2p	FUT-	again	FUT-	cut	alliance	with	viper	NEG
PRO	TNS-	ADV	TNS-	V	N	CJ	N	ADV

You will not cut an agreement with vipers."

05/Apr/2001

PINDJO

(1) Tsingu pindji Pindjo ne 'dyi e
tsingu pindji Pindjo ne 'dyi e
story about P. with father 3s.ANA
N ADV N CJ N PRO
The story about Pindjo and his father.

(2) A du nani bhoko bini, ani azu
a du nani bhoko bini ani a- zu
it sit distant_past man one 3s PAST- birth
DEM V ADV N NUM PRO TNS- V
There once was a man, he fathered

(3) ndili, a 'li ani me Pindjo
ndili a 'li ani me Pindjo
child it name 3s that P.
N DEM N PRO ADV N
a child called Pindjo.

(4) Nedhinga inde li ndili-e abhele lie, ani a'i olo.
nedhinga inde li ndili- e a- bhele lie ani a- 'i olo
time this that child -REF PAST-mature COM 3s PAST- call girl
N DEM REL N -REF TNS- V ADV PRO TNS- V N
When the child had grown up, he called a woman.

(5) 'Dyi ani atsia apa pi ani moko me, "ndia ma
'Dyi ani a- tsia a- pa pi ani moko me ndia ma
Father 3s PAST-look PAST-say to/for 3s so that child 1s
N PRO TNS-V TNS- V Pr PRO ADV ADV N PRO
His father then said to him that, "My son

(6) i du me mu nda dji libhadja,
i du me mu nde dji libhadja
it sit that 2s then go downpayment
DEM V ADV PRO ADV V N
if you are going to pay a dowry,

(7) mu de ha lusa, mu du anu dika bhubhu,
mu de ha lusa mu du a- nu dika bhubhu
2s PFT transfer pot 2s sit PAST-go feces inside
PRO V V N PRO V TNS- V N N
you then take a pot, you then will go defecate in it,

(8) mo nu dika kuto de.
mu nu dika kuto de
2s go feces down NEG
PRO V N ADV ADV
you don't defecate on the ground.

(9) Nedhinga li ndili-e a'e ne nu lie,
nedhinga li ndili -e a- 'e ne nu lie
time that child -REF PAST-remove to go COM
N REL N -REF TNS- V Pr V ADV
When the child was to leave and go on his own,

(10) ani ha ndili bini, uo adhuku ne ani,
ani ha ndili bini uo a- dhuku ne ani
3s transfer child one 3p PAST-walk with 3s
PRO V N NUM PRO TNS- V CJ PRO
he gave the child one, they (he) went with him,

(11) ani aha lusa, ani ato li kpele ndili-o.
ani a- ha lusa ani a- to li kpele ndili -e
3s PAST-transfer pot 3s PAST-put on_inside arm child -3s.ANA
PRO TNS- V N PRO TNS- V Pr N N -REF
he took the a pot he put it under the child's arm

(12) Nedhinga inde uo akolo lie li kpadji-e,
nedhinga inde uo a- kolo lie li kpadji -e
time this 3p PAST-arrive COM on_inside path -REF
N DEM PRO TNS- V ADV Pr N -REF
When they came on the path

(13) ani atsia adje numu,
ani a- tsia a- dje numu
3s PAST-look PAST-hear shame
PRO TNS- V TNS- V N
he then felt shamed,

(14) ani aha lusa-a ani awo .
ani a- ha lusa-e ani a- wo
3s PAST-give pot-REF 3s PAST-hide
PRO TNS- V N-REF PRO TNS- V
he took the pot, he hid it

(15) uo aneme ne 'mi
o a- neme ne 'mi
3p PAST-leave to trip
PRO TNS- V Pr N
they left on the trip.

(16) Nedhinga uo aneme ne 'mí lie,
Nedhinga uo a- neme ne 'mí lie
time 3p PAST-leave to trip COM
N PRO TNS- V Pr N ADV
When they left on the trip,

(17) gumu dika ake ani, ani ane
gumu dika a- ke ani ani a- ne
need feces PAST-feel 3s 3s PAST-pass
N N TNS- V PRO PRO TNS- V
the need to defecate was felt by him, he passed

(18) bhu bíli dika-o, ani akuo lie ne kpangi,
bhu bíli dika -e ani a- kuo lie ne kpangi
in place feces-REF 3s PAST-collect COM with leaf
Pr N N -REF PRO TNS-V ADV CJ N
into that (like a) latrine (located in the) bush , he collected together some leaves,

(19) ani a'o pepe ani akoto,
ani a- 'o pepe ani a- koto
3s PAST-put above 3s PAST-exit
PRO TNS- V LOC PRO TNS- V
he put them over, he covered (it),

(20) ani aneme ne mí Nedhinga abhue masudha,
ani a-neme ne 'mí nedhinga a- bhue masudha
3s PAST-leave with trip time PAST-wait little
PRO TNS-V CJ N N TNS- V ADV
he left on the trip. After a little while,

(21) dika ayie bhu bíli ne
dika a- yie bhu bíli ne
feces PAST-come .from in place with
N TNS- V Pr N CJ
the feces came out of the forest with

(22) kpangi-e pí 'ndji e,
kpangi-e pí 'ndji e
leaf-REF on head 3p.ANA
N -REF Pr N PRO
The leaves on its head,

(23) akama nakpata ani, ani akama nali
a- kama na- kpata ani ani a- kama na- li
PAST-begin to- follow 3s 3s PAST- begin to- sing
TNS- V TNS- V PRO PRO TNS- V TNS- V
(he) began to follow him, he began to sing

(24) etsi, "Pindjo djeke ma uu,
e- tsi Pindjo djeke ma uu
PRE-song P. wait 1s present
PRE-N N V PRO LOC
A song "Pindjo wait for me there,

(25) Pindjo Pindjo djeke ma uu,
Pindjo Pindjo djeke ma uu
P. P. wait 1s present
N N V PRO LOC
Pindjo wait for me there,

(26) Pindjo anga ya ne ndɨlɨ e kpangɨ hana-e."
Pindjo anga ya ne ndɨlɨ e kpangɨ hana -e
P. because 1p.EXC with child 3s.ANA leaf all -REF
N CJ PRO.EXC PR N PRO N ADJ -REF
Pindjo because we are your child, leaves and all."

(27) Nedhinga inde lɨ makombi bhomo adje etsi bhomo
nedhinga inde lɨ makombi bhomʉ a- dje e- tsi bhomʉ
time this that youth that_near PAST- hear PRE- song that_near
N DEM REL N DEM TNS- V PRE- N DEM
When the youth nearby heard that song,

(28) lie, anɨ alʉ ,
lie anɨ a- lʉ
COM 3s PAST- stand
ADV PRO TNS- V
he stopped,

(29) anɨ atsia ahu dika-o, anɨ aha anɨ,
anɨ a- tsia a- hu dika -e anɨ a- ha anɨ
3s PAST- look past- see feces -REF 3s PAST- transfer 3s
PRO TNS- V TNS- V N -REF PRO TNS- V PRO
he then saw the feces, he took him

(30) anɨ agbi- gbite gba anɨ, anɨ aiki bhʉ bílɨ tsu tsu,
anɨ a-REDUP gbite gba anɨ anɨ a- iki bhʉ bílɨ tsu tsu
3s PAST -tie pack 3s 3s PAST- throw in place far far
PRO TNS V N PRO PRO TNS- V Pr N ADJ ADJ
he tied him into a bundle, he threw it far into the bush,

(31) anɨ apa pɨ ndɨlɨ-e
anɨ a- pa pɨ ndɨlɨ -e
3s PAST- say to/for child -REF
PRO TNS- V Pr N -REF
he said to the child

(32) me, "Nɨ́ gʉ holo."
me nɨ́ gʉ holo
that 1p.INC do speed
ADV PRO.INC V N
that, "Let's run"

(33) Uo aneme ne 'mɨ́,
uo a- neme ne 'mɨ́
3p PAST- leave with trip
PRO TNS- V CJ N
He left on the trip,

(34) dɨka-a akpata anɨ ne 'tsi bhomo hana
dɨka-e a- kpata anɨ ne ' tsi bhomʉ hana
feces-REF PAST- follow 3s with song that_near all
N -REF TNS- V PRO CJ N DEM ADJ
the feces followed him with all that song

(35) lɨ bhɵ 'tɨ gba ogbi anɨ.
lɨ bhɵ 'tɨ gba ogbi anɨ
enter mouth house GEN in.law 3s
V N N Pr N PRO
to the door of the house of his in-laws.

(36) Anɨ aha dɨka, anɨ pɨ
anɨ a- ha dɨka anɨ pɨ
3s PAST- transfer feces 3s to/for
PRO TNS- V N PRO Pr
he took the feces, he said to

(37) ndɨlɨ-e me, "Mʉ nʉ iki anɨ
ndɨlɨ-e me mʉ nʉ iki anɨ
child-REF that 2s go throw 3s
N -REF ADV PRO V V PRO
the child, "You go throw him

(38) abhʉ pedu tsu tsu. Anɨ anʉ aiki anɨ.
abhʉ pedu tsu tsu anɨ a- nʉ a- iki anɨ
into outhouse far far 3s PAST- go PAST- throw 3s
Pr N ADJ ADJ PRO TNS- V TNS- V PRO
in the outhouse far away." He went and threw him.

(39) Nedhinga inde anɨ aiki anɨ lɨe,
nedhinga inde anɨ a- iki anɨ lɨe
time this 3s PAST- thro 3s COM
N DEM PRO TNS- V PRO ADV
After this he threw him out,

(40) makombi bhomo me ɵlɵ-o uo alɨ abhʉ 'tɨ.
makombi bhomʉ me ɵlɵ-e uo alɨ abhʉ 'tɨ
youth that_near that girl-REF 3p on into house
N DEM ADV N -REF PRO Pr Pr N
this youth said to the girl (that) they (should) go in the house.

(41) Dɨka, akoto abhʉ pedu ne kpangɨ-e hana
dɨka a- koto abhʉ pedu ne kpangɨ-e hana
feces PAST-exit into outhouse with leaf-REF all
N TNS- V Pr N CJ N-REF ADJ
The feces came out of the outhouse with the leaves and all

(42) anɨ akpata nganda anɨ abhʉ 'tɨ.
anɨ a- kpata nganda anɨ abhʉ 'tɨ
3s PAST-follow line 3s into house
PRO TNS- V N PRO Pr N
he followed after him into the house.

(43) Ɵlɵ-o atsia apa me
ɵlɵ-e a- tsia a- pa me
girl-REF PAST-look PAST-say that
N -REF TNS- V TNS- V ADV
The girl then said that

(44) "'Dyɨ ma-e, bhoko ɨnde a'ɨ ma
'dyɨ ma- -e bhoko ɨnde a- 'ɨ ma
father 1s -REF man this past- call 1s
N PRO -REF N DEM TNS- V PRO
" My father, this man called me

(45) ma akʉnda nako anɨ ne bhobua ma hana,
ma a- kʉnda nako anɨ ne bhobua ma hana
1s PAST-like recent 3s with spirit 1s all
PRO TNS-V TIME PRO CJ N PRO ADJ
I loved him before with all my heart,

(46) ka engʉ́ ma nʉmʉ akpata anɨ ɨnde,
ka e- 'ngʉ́ ma nʉmʉ a- kpata anɨ ɨnde
because PRE- affair like shame PAST-follow 3s this
Pr PRE- N ADV N TNS- V PRO DEM
because this matter like shame follows him this,

(47) ma aziba bhata anɨ-ɨ de."
ma a-ziba bhata anɨ-e de
1s PAST-agree again 3s-REF NEG
PRO TNS- V ADV PRO-REF ADV
I don't agree with him any more."

(48) La a nak~~i~~ p~~i~~ m~~u~~ makombi~~i~~nde na
la a nak~~i~~ p~~i~~ m~~u~~ makombi~~i~~nde na
likewise it recent_past to/for 2s youth this ASSOC
CJ DEM N Pr PRO N DEM Pr
Likewise today for you this youth of

(49) nak~~i~~-o, ka n~~i~~, anga ~~i~~ d~~u~~ me
nak~~i~~-e ka n~~i~~ anga ~~i~~ d~~u~~ me
recent_past-REF because what because it sit that
N -REF Pr INTER CJ DEM V ADV
today, what because if

(50) 'dy~~i~~ m~~u~~ ne 'hi m~~u~~, uo
dy~~i~~ m~~u~~ ne hi m~~u~~ uo
father 2s with mother 2s 3p
N PRO CJ N PRO PRO
your father and your mother, they

(51) nda yoko m~~u~~ me "Mo mene engá ~~i~~nde-e de"
nde yoko m~~u~~ me m~~u~~ mene e- 'ng~~á~~ ~~i~~nde -e de
then warn 2s that 2s do PRE- affair this -REF NEG
ADV V PRO ADV PRO V PRE- N DEM -REF ADV
are warning you that "You don't do this thing"

(52) Do m~~u~~ me "Ní dje uo de."
? m~~u~~ me ní dje uo de
? 2s that 1p.INC ear 3p NEG
? PRO ADV PRO.INC V PRO ADV
Do you say, "We don't hear you."

(53) Mo osía siti 'ng~~á~~-o, ko da ko m~~u~~ makpe,
M~~u~~ a- sia siti 'ng~~á~~ -e ko da ko m~~u~~ makpe
2s FUT-get bad affair-REF be who be 2s really
PRO TNS-V ADJ N -REF REL INTER REL PRO ADV
You will get bad things, whoever it may be,

(54) anga mook~~u~~nda
angam~~u~~ m~~u~~ a- k~~u~~nda
because 2s PAST-like
CJ PRO TNS- V
if you really

(55) nadje l~~i~~l~~i~~ gba 'dy~~i~~ m~~u~~ ne 'hi m~~u~~-o de.
na-dje l~~i~~l~~i~~ gba 'dy~~i~~ m~~u~~ ne hi m~~u~~-e de
to-hear advice GEN father 2s with mother 2s- REF NEG
TNS-V N Pr N PRO CJ N PRO-REF ADV
don't want to hear the advice of your father and your mother.

(56) Ka 'ngú ango nakɨ-e nahu moko
ka 'ngú ango nakɨ -e na- hu moko
because affair there recent_past-REF to- see so
Pr N ADV N -REF TNS-V ADV
because of the things of today to see so

(57) me ongɨsɨ na nakɨ
me ongɨsɨ na nakɨ
that children ASSOC recent_past
ADV N Pr N
that children of today

(58) engú ngabhaka uo anga uo ngadje
e- 'ngú nga- bhaka uo anga o nga- dje
PRE-affair PROG-meet 3p because 3p PROG-hear
PRE-N TNS- V PRO CJ PRO TNS- V
things are meeting them and they are not listening

(59) o'dyɨ o no hi o ade.
o- 'dyɨ o ne hi o ade
PL-father 3p with mother 3p NEG
PLU-N PRO CJ N PRO ADV
to their fathers and mothers.

(60) A ndjɨndjɨ pɨ mʉ me dje 'dyɨ mʉ,
a ndjɨndjɨ pɨ mʉ me dje 'dyɨ mʉ
it good to/for 2s that hear father 2s
DEM ADJ Pr PRO ADV V N PRO
It is good for you that you listen to your father,

(61) mʉ dje hi mʉ, mʉ dje
mʉ dje hi mʉ mʉ dje
2s hear mother 2s 2s hear
PRO V N PRO PRO V
you listen to your mother, you hear

(62) la dí Ebhe ɨnde abho mʉ-o maka
la dí Ebhe ɨnde a- bho mʉ -e maka
likewise as well God this PAST-create 2s -REF like
CJ ADV NOM DEM TNS- V PRO-REF REL
likewise as well God who made you.

(63) anɨ aha mʉ-o, ato sa 'kpa hi mʉ
Anɨ a- ha mʉ -e a- to sa 'kpa hi mʉ
3s PAST-give 2s -REF PAST-put under hand mother 2sF
PRO TNS-V PRO-REF TNS- V Pr N N PRO
he gave you, put under your mother's hand

(64) ne 'dyɨ mʉ, anga ɨ dʉ me
ne 'dyɨ mʉ anga ɨ dʉ me
with father 2s because it sit that
CJ N PRO CJ DEM V ADV
your father, because if

(65) mʉ nde dje uo de, mʉ dje la dí
mʉ nde dje uo de mʉ dje la dí
2s then hear 3p NEG 2s hear likewise as.well
PRO ADV V PRO ADV PRO V CJ ADV
you then don't hear them, you as well won't hear

(66) Ebhe de, anga Ebhe a'o okpála
Ebhe de anga Ebhe a- 'o o- kpála
God NEG because God PAST-put PL- person
NOM ADV CJ NOM TNS- V PLU- N
God, because God put people

(67) bhomo ngae
bhomʉ nga- -e
that_near EMPH-3s.ANA
DEM EMPH-PRO
near him.

(68) Heni naali.
heni naali
thanks many
EXC ADV
Thank (you) much.

(69) Tsingʉ gba ma-a, apise moko.
tsingʉ gba ma -e a- pise moko
story GEN 1s -REF PAST-finish so
N Pr PRO- -REF TNS- V ADV
My story ends thus.

06/Apr/2001

MARKET TEXT

(1) Yi akolo ie!
Yi a- kolo ie
2p past-arrive emphasis
PRO TNS-V ADV
You've come!

(2) Yi akolo wa!
yi a- kolo wa
2p PAST-arrive so
PRO TNS- V ADV
So you've come.

(3) Yi adji su?
yi a- dji su
2p PAST-go where
PRO TNS- V INTER
Where are you all going?

(4) Ya adji bhu poso.
ya a- dji bhu poso
1p.EXC PAST-go in wares
PRO.EXC TNS- V Pr N
We are going to the market.

(5) Namene ni?
na- mene ni
to- do what
TNS-V INTER
To do what?

(6) Natsia ohe 'ngá nambila mase ango.
na-tsia o- he 'ngá na- mbila mase ango
to-look PL- thing affair to- know price there
TNS-V PLU- N N TNS- V N ADV
To see things to know the price of them.

(7) Mu bha si?
mu bha si
2s only here
PRO ADV LOC
You (re) still here!

(8) Heni, ma bha si.
heni ma bha si
yes 1s only here
EXC PRO ADV LOC
Yes, I'm still here.

(9) Ma akunda nakala bongo.
ma a- kunda na- kala bongo
1s PAST-like to- buy cloth
PRO TNS- V TNS- V N
I want to buy clothes.

(10) A ko bongo bhe dho?
a ko bongo bhe dho
it be cloth that what
DEM REL N REL INTER
What is that (kind of) clothes?

(11) A ko bongo gba olisi.
a ko bongo gba olisi
it be cloth GEN women
DEM REL N Pr N
These are women's clothes.

(12) Mase kpe-kpeke ade. Ka-kala!
mase REDUP-kpeke ade ka kala
price difficult-difficult NEG REDUP-buy
N ADJ ADV V
The price is not bad. Buy!

(13) Mase ango madho?
mase ango madho
price there how
N ADV INTER
How much is the price of it?

(14) Anga tia le ka ma naki de.
anga tia le ka ma naki de
because money can of 1s recent_past NEG
CJ N V Pr PRO N ADV
Because my money isn't sufficient today.

05/Apr/2001

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BIOGRAPHICAL INFORMATION

Kenneth S. Sawka (1959–) graduated in 1981 from The University of Steubenville in Steubenville, Ohio with a Bachelor or Arts degree in Biology. In 1985 he married Susan Dugan and they began to study linguistics at The University of Texas at Arlington in 1986. That same year they became members of Wycliffe Bible Translators and SIL International. After studying French at the University of Laval in Quebec Canada they worked in the Democratic Republic of Congo. In 1991 they began work among the Mayogo language group and were last able to visit with the Mayogo people in 1998. The author received his Master of Arts in Linguistics from The University of Texas at Arlington in August 2001.

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THE EFFECT OF CASINO GAMING ON FINANCING EDUCATION IN MISSISSIPPI: AN IMPACT ASSESSMENT

By

Rodney Earl Stanley

A Dissertation
Submitted to the Faculty of
Mississippi State University
In Partial Fulfillment of the Requirements
For the Degree of Doctor of Philosophy
In Public Policy and Administration
in the Department of Political Science

Mississippi State, Mississippi

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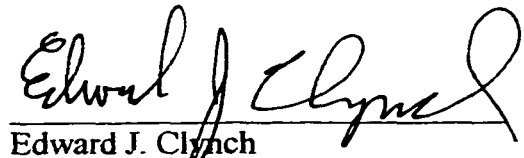

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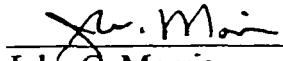

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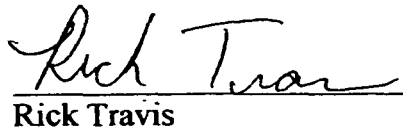

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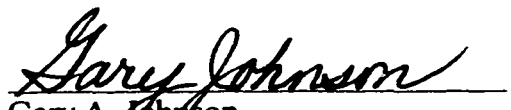

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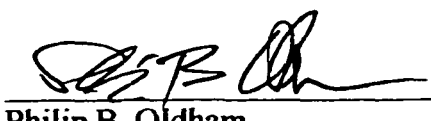

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Title of Study: THE EFFECT OF CASINO GAMING ON FINANCING EDUCATION IN MISSISSIPPI: AN IMPACT ASSESSMENT

Pages in Study: 261

Candidate for the Degree of Doctor of Public Policy and Administration

Financing education is a controversial issue in education policy. While several scholars argue that the problem with education is not funding, others argue that financing education is the most dramatic issue presently facing American schools. Attempts at eradicating this funding disparity have taken many faces. Education funding in America is determined through various formulas used by states to determine the amount of resources school districts will receive for education. These resources are collected through various taxes levied by state and local governments. With tax payers demanding more services, policy makers have been forced to look for alternative means to funding social intervention programs, such as education. One of the most recent attempts for generating revenue for education is the adoption of casino gaming.

This project uses an elaborative mixed method approach, comparing school districts in Mississippi, for empirically testing the hypotheses stated in this dissertation. The proposed research questions are as follows: Do revenue and spending patterns differ

in similar school districts with casino tax revenue from school districts without casino revenue? Does the presence of casinos lead to increases in the total assessed property values in these districts compared to the matching districts? How are the casino tax revenues being spent? This research fills the gap in the existing literature on casinos because no other research deals with the impact of casino dollars on education, and is important as it intends to suggest that casino dollars may assist in alleviating some of the financial constraints that the State of Mississippi faces regarding education funding. The comparison groups in this study will be created using population data, assessment values, and per pupil expenditures on education by local school districts in Mississippi.

The statistical findings of this dissertation suggest that Mississippi school districts receiving casino tax revenue are spending more per pupil on education, compared to matching non-casino school districts. The case studies used in this dissertation to elaborate on the findings of the statistical analysis are mixed and suggest that assessment values of casino school districts have increased substantially, compared to matching non-casino school districts. This data supports the notion that increased assessment values have resulted in increased property tax revenues for per pupil expenditures for casino school districts in Mississippi. When elected and bureaucratic school officials were asked if either capital or operating budgetary expenditures were benefiting more than the other, a definitive answer was not postulated. This dissertation provides policy makers with empirical evidence suggesting that casinos are increasing per pupil expenditures on education in casino school districts in Mississippi, compared to matching non-casino school districts.

DEDICATION

I would like to dedicate this research to my Lord and Savior Jesus Christ for giving me the knowledge, skills, and abilities to complete this rigorous task. I would also like to dedicate this research to my parents, Marsha and Bruce Stanley, and my sister, Heather Stanley, for the financial and moral support they provided me with in my efforts to finish this research project. Furthermore, I would like to dedicate this research to my grandparents, the late Dorothy Irene Kennedy, Helen and Guirney Pendry, and my Aunt Deana, Uncle Tim, and his wife Melissa, for their moral and financial support in this academic endeavor.

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CHAPTER I

INTRODUCTION

Casino revenue in Mississippi is spent on a number of different government sponsored programs. One such governmental program that Mississippi has chosen to enhance with casino revenue is education. Because of Mississippi's traditional lag in per pupil expenditures compared to other states over time, policy makers viewed additional supplemental revenue from casinos as a possible panacea for alleviating this legendary funding problem in Mississippi. This research fills the gap in the existing literature on casinos because no other literary piece deals with the impact of casino dollars on education. It addresses the following research questions: Do revenue and spending patterns differ in similar school districts with casino tax revenue from school districts without casino revenue? Does the presence of casinos lead to increases in the total assessed property values in these districts compared to the matching districts? How are the casino tax revenues being spent? The research findings of this dissertation suggest that casinos are a supplemental source of revenue for local school districts in Mississippi. The following chapter introduces the argument for assessing the impact of casino revenue on per pupil expenditures in Mississippi.

When American society embraced the concept of educating it's citizenry, local public school districts began emerging across this great nation. Because education is a means of socializing citizens to embrace the norms, values, and customs of a society, policy makers felt that the only way universal support for public education would emerge was to allow local governments to control education (Odden and Picus, 1992). By allowing local governments to control education, students could be socialized to accept each local government's norms and values. In their view, if local governments could teach students the "right world view" (the world view advocated by each local government), local governments would support the idea of funding these socialization mechanisms, and in turn society would become better because it was more educated. Inevitably, control meant allowing local governments to fund education through various means and dictate what each student would learn in the classroom (Grissmer, Flanagan, and Williamson, 1997). The mechanism chosen to fund education at the local level was the property tax. However, policy makers soon discovered that the property tax was an inadequate means of providing efficient and effective education to all American students, because more affluent school districts were receiving more revenue for education compared to those less affluent school districts (Lewis and Maruna, 1996); (Burns, 1994).

Property taxes as the funding mechanism for generating educational revenue began receiving immense criticism in the early 1970s. During the 1970s and 1980s, state governments began assuming more of a role in funding educational programs. The average state's share of total educational funding increased from 41 percent in 1968 to about 50 percent in 1986. With this increase in state funding for education, local funding

decreased to about 50 percent in the 1960s compared to 43 percent in the 1980s. Elementary and secondary education expenses now consume nearly a quarter of the average state budget and post-secondary education accounts for another 12 percent of state budgets (Wong, 2000). Education, according to the National Center for Education Statistics (1999), accounts for the single largest expense in most state and local government operating budgets. For instance, in the educational year of 1992-93, expenditures were estimated at more than $375 billion for all public schools and colleges. Despite these figures, many scholars argue that the American education system is still under-funded.

The primary reason for inadequate education, according to Picus (1995), is a lack of funding. Contrary to the judgment of Picus, there are those scholars who stipulate that a lack of funding for education is not the major problem with America's education system. For instance, Tierney (2000) posits that the sole problem with education in America is the curriculum. The author contends that no matter how much money America spends on education, if the curriculum is not changed, America's system of education will continue to decline. Picus argues that a lack of funding is why American schools have a curriculum problem. Due to a lack of funding, school districts do not receive the materials and training that are necessary to provide a quality education for their students. Therefore, Picus posits that funding education is the most important policy problem presently facing governmental and educational administrative officials today.

This is the most important issue in education because revenues are drastically declining, due to taxpayer revolts across the nation, while demands on government services are dramatically increasing (Picus, 1995). In order to adequately fund education, it is imperative that state and local governmental entities receive the most "bang for their bucks" (Ryen, 1992). Policy makers across the American states are using their ingenuity in determining alternative funding mechanisms for social intervention programs, such as education. One recent attempt at offsetting the cost of education for taxpayers, in the state of Mississippi, is the adoption of casino gaming. The Mississippi Legislature authorized dockside casino gaming in 1990, with certain restrictions. Dockside casino gaming is limited to counties on the Gulf of Mexico and counties along the Mississippi River (Oliver, 1995). Mississippi policy makers brought casino gaming to the state for a number of different reasons. First, policy makers wanted to extract revenue to supplement the state's general fund account without increasing direct taxes on their constituents. Secondly, casino gaming was adopted for the purpose of revitalizing the economy of several poverty stricken areas in Mississippi. Third, administrators wanted to increase spending on education without raising taxes on the polity (Mississippi Gaming Commission, 2000).

Using casino revenue for education was quite appealing to many of Mississippi's educational and governmental administrators because the State has historically failed to provide adequate resources for primary and secondary education. Mississippi's current per pupil expenditure average among all 152 school districts is $5,588 (National Center for Education Statistics, 1999).

Administrators of Mississippi's Department of Education contend that Mississippi is starting to realize the importance of adequately funding education, but they believe that much work is needed in this policy area (Mississippi Department of Education, 2000). They believe the casino offers potential increases for funding education, but collectively, both elected and appointed political functionaries must receive empirical evidence that supports this notion to lobby for continued reliance on casino revenue for education. In other words, empirical evidence is needed to support the idea that casino related taxes have increased the amount of spending on education among local school districts in Mississippi housing these facilities. Since the adoption of casino gaming no attempts have been made to measure the impact of casino-generated tax dollars on per pupil expenditures in Mississippi school districts with casinos.

This project measures the impact of casino revenue on education in casino school districts by using an elaborative mixed method research approach comparing school districts in Mississippi for answering the following research questions: Do revenue and spending patterns differ in school districts with casino tax revenue from similar school districts without casino revenue? Do casinos lead to increases in the total assessed property values in these districts compared to the matching districts? How are the casino tax revenues being spent? This dissertation compared school districts in the state of Mississippi to determine if the mechanism of casino gambling is the panacea for assisting in per pupil expenditures that many policy makers articulated, or just an enormous hoax. This study fills a gap in the literature because no one has written about the impact of casino dollars on per pupil expenditures in Mississippi school districts with casinos, or in

casinos, or in any other states that currently uses casinos as a revenue-generating source to fund public programs. The only literature that exists pertaining to games of chance impacting per pupil expenditures deals specifically with lotteries. The published literature available on lotteries explores various aspects of this highly debated issue (Mikesell and Zorn, 1986; Mikesell, 1989; Livernois, 1987; Jones and Amalfitano, 1994; Barry, 1995; Bracey, 1995; Spindler, 1995; Rodgers and Stuart, 1995; Fields, 1996; Miller and Pierce, 1997; Stanley and French, 1999; 2000).

Researchers and scholars examining the efficiency and effectiveness of lotteries as a source of supplemental public revenue for education debate the device's successes and failures. Several authors stipulate that contributions from lotteries earmarked for social intervention programs, such as education, assist in eradicating educational disparities aggravating the populace. Many scholars have presented information regarding the negative aspects affiliated with lotteries among lower income, and less educated, members of society. The literature concludes that lotteries present both desired revenues and undesired consequences for state and local governments in per pupil expenditures. Furthermore, the lottery literature specifically deals with supplemental income distributed by states for per pupil expenditures. Local school districts receiving lottery funds (revenue generated from taxes placed on state operated lotteries) have virtually no say in how much supplemental income (revenue used to assist in funding education) they will receive from the state in any given year. It is important to note that most of the money that school districts in Mississippi receive for education is allotted to them by the state. For instance, in 1993, the Meridian Public school district spent a total

of $3,747.06 per pupil on education, $3, 499.22 of which was allotted to them by the state of Mississippi (Mississippi Report Card, 2000). Mississippi local school districts are different than other state school districts that receive lottery dollars because the school districts in Mississippi with casinos were influential in determining the amount of supplemental revenue they would be receiving from gaming taxes. These school districts assisted the legislature in establishing specific pieces of legislation, which allowed them to disperse the money in a manner they deem most appropriate. This project's primary concern is with the supplemental income (measuring the 3.2 percent of gaming revenue to local governments with the option of an additional .8 percent tax for a total of 4 percent of the 12 percent tax placed on casinos in Mississippi) that school districts receive from casino tax dollars, and the impact this alternative source of revenue is having on per pupil expenditures in Mississippi.

Why is this research important? This informative study will assist policy makers in Mississippi in their efforts to measure the impact that casino revenues have made on per pupil expenditures in Mississippi school districts with casinos. In doing so, this project will trace the spending patterns in school districts with casino revenue and compare them to matched school districts without casinos in order to determine spending differences in education. Furthermore, this study will measure the effects that casinos are having on the assessed property value of school districts with casinos compared to non-casino school districts, to see if any increases have occurred since the adoption of this revenue-generating device.

Increases in assessment values mean more revenue for education in Mississippi. According to the literature regarding funding education, the more funds spent on education usually results in higher achievement scores among students (Picus, 1995).

From a more holistic point of view, this projects serves as a guide in demonstrating how casino gaming policy can effect the long term and short term effects on funding education. Using gambling money to fund education is nothing new; the lottery literature is saturated with scholarly endeavors suggesting that using lottery money for education is nothing more than a hoax. However, this report suggests that the short-term effects casinos are having on education in Mississippi school districts with casinos are statistically significant, according to the data analysis reports. Casino revenues have become more static in the past few years due to the newness of casinos wearing off among customers. Therefore, this research suggests that policy makers should proceed cautiously when considering the use of casino revenue for education. If policy makers place too much emphasis on casino revenue to pay for education, and reductions in general revenues from casinos occur, states like Mississippi may experience an actual decrease in the amount of spending on education.

In regards to assessment value, casino school districts have witnessed a sharp increase in property values. The long term implications for such an increase in property values tend to suggest that policy makers could possibly generate valuable revenue from assessment values, over time, to assist in financing education without placing emphasis on revenue from the tax on gaming receipts. This will allow policy makers to estimate, with more certainty, the amount of revenue they will receive for financing education.

For example, from 1992 to 1997, the assessed value of property in Tunica County rose from $16.1 million to $566.1 million. As a result, the school millage rate declined from 11.4 cents per $1,000 assessed value to 4.2 cents per $1,000. In other words, the tax bill on an $80,000 home dropped from $912.08 to $338.40 in five years.

Finally, this project paints a picture of how casino tax revenues are being spent by Mississippi school districts. This research will provide community leaders interested in employing a casino with a blue print on how to spend the revenues from casino gaming. Empirically testing the impact of casino revenue on per pupil expenditures in Mississippi will fill a current gap that exists in the academic literature regarding casinos. Filling the literature gap is important to the disciplines of public administration and political science because policy makers will have evidence to support, or decline, any future attempts considering the adoption of casino gaming for per pupil expenditures.

The primary components of this dissertation prospectus used to frame the importance of this dissertation topic are as follows. A review of the literature will address the past and current scholarly efforts that address the issues associated with legalized gambling, and it's effect on per pupil expenditures. Furthermore, this document will discuss the conceptual and operational definitions used in defining and coding the data for this research project, followed by a concise discussion on the mixed method approach used to test the data. In dealing with the elaborative mixed method approach, an argument is made for using both the comparative means test and pooled time series cross-sectional regression analysis.

The latter sections of this dissertation will deal with the limitations of this study. The conclusions derived from this research, appendices that will assist readers in understanding this dissertation, and the references of other scholars that are necessary in framing this argument will also be discussed.

CHAPTER II

CASINO GAMING IN MISSISSIPPI

This chapter of the dissertation discusses the development of the casino gaming industry in Mississippi. The data in this section of Chapter Two was gathered, first hand, through personal interviews with several policy stakeholders that were influential in bringing casino gaming to the Magnolia state (see Chapter Four for interviewing techniques used in this dissertation). This chapter will also discuss the provisions of the Mississippi casino tax law used to direct casino gaming in Mississippi. Other sections discussed in this chapter include the gaming industries impact on economic development and tourism, municipal revenues, and taxation in the state.

The Development of Casino Legislation In Mississippi

The Mississippi Gaming Control Act (75-76-100) paved the way for economic revitalization in the state of Mississippi by legalizing gambling under certain conditions. These provisions included no gambling on Mississippi soil. Gambling in Mississippi was only going to occur on floating vessels. These dockside sites were restricted to counties along the Mississippi River and the Gulf coast, provided that a majority of Mississippi counties voted to approve them (75-76-195).

Although the Act was passed in 1990, it was not until 1992 that casino gambling became officially instituted in the state. Before applying for a gaming license to conduct legal gaming aboard a cruise vessel a person, corporation, or other legal entity must provide the Mississippi Gaming Commission with a written notice of intent to apply for a license, stating in which county they wish to conduct legal gaming. Within 10 days after the receipt of a notice of intent to apply for a gaming license, the commission requires the person, corporation, or legal entity to publish the notice once each week for 3 consecutive weeks in a newspaper having general circulation in the county in which the intending licensee desires to conduct legal gaming aboard a cruise vessel (King, 1994).

If a petition signed by 20 percent, or fifteen hundred persons, whichever is less, of registered voters of a county in which a notice of intent to apply for a gaming license is published, is filed within thirty days of the date of the last publication with the circuit clerk of the applicable county, the board of supervisors of the county will authorize the circuit clerk to hold an election on the proposition of allowing legal gaming to be conducted aboard cruise vessels, as the case may be in the county. The referendum is to be held not less than 30 days, nor more than 60 days, after the certification by the circuit clerk to the board of signatures and percentage. However, if the petition is certified within 90 days of a general election, the referendum will be held at the same time as the general election. The referendum will be advertised, held, conducted, and the result thereof, canvassed in the manner provided by law for advertising, holding, and canvassing county elections.

If less than a majority of the qualified electors who vote in the election vote in favor of allowing legal gaming, then gaming aboard cruise vessels as the case may be, is prohibited in the county and no subsequent election on such issue will be held for 1 year (King, 1994). If no petition is filed with the board of supervisors of the applicable county within thirty days after the date of the last publication, the board of supervisors of the county shall adopt a resolution stating no petition was timely filed and that legal gaming may henceforth be conducted aboard cruise vessels, as the case may be, in the county (King, 1994).

In any county in which gaming is legal, whether by vote or by failure to timely file a petition calling for a vote, no election shall thereafter be held in that county pursuant to the section of the proposition of allowing legal gaming to be conducted aboard cruise vessels as the case may be, in that county (King, 1994).

The state of Mississippi allows local governments to develop legislation for directing casino revenues. The process used by local governments to develop these specific pieces of legislation follow a similar format. The residents residing in the county considering a casino must vote on the issue. A majority of the popular vote is needed by county residents in order for the legislation to pass. However, in other counties such as Tunica County, the council members are given the power to adopt casino legislation on behalf of their citizens. The only provision being that the populace be notified of the issue three weeks prior to the vote, in order to allow those in opposition to such legislation time to muster up enough signatures against the bill to stop it from being passed. Once the county has decided to adopt casinos, then residents of cities residing in these counties vote to determine if the casino is going to be placed in the city limits.

For example, all the casinos in Harrison County are located within the city limits of Biloxi and Gulfport. Pass Christian and Long Beach (municipalities in Harrison County) chose not to pass legislation allowing casinos to reside in their community. Once a city adopts a casino, then the council members or aldermen meet to discuss the disbursement of the casino revenue (Mississippi Gaming Commission, 2000).

The development of casino legislation that brought legalized gambling to the Mississippi Gulf coast, and to ports along the Mississippi River, is an interesting story. The following is a brief historical account of how casino gaming came to these areas of Mississippi. This historical analysis is appropriate for understanding the development of casino gaming to see why the disbursement of casino dollars, into various governmental programs, was established in the manner it currently dictates. In other words, the various stages of the development of the casino legislative bill are the reason why the revenue is disbursed into so many different accounts, and why education allotment and disbursement of casino funds, in most casino school districts, follows the revenue and spending patterns they currently pursue.

During the late 80s, the Mississippi Delta was faced with a collapsing oil industry and needed to replace their loss of vital economic dollars before their cities, such as Natchez, Vicksburg, and Greenville, went bankrupt. A concerned citizen in Natchez, Mississippi brought to the attention of a state legislator from the area the possibility of bringing casino gaming to the region. The revenues produced from the gaming industry could offset the economic losses in the collapse of the oil industry. This state official was skeptical of casino gaming because the state lottery had just been defeated by a

substantial margin in the Mississippi Legislature. This citizen, however, was quite persistent and assured this state official that the Iowa gaming market was drying up and that if Mississippi would adopt gaming they could gain the gaming facilities that wanted to relocate out of Iowa. Many of the gaming facilities in Iowa were experiencing low profits because of high taxes regulating the industry. These gaming facilities were looking for a way out of Iowa because their initial profit expectations were not being met.

This Natchez state legislator, despite immense skepticism, brought the idea to the Mississippi Legislature. Once the issue of casino gaming was brought to the Mississippi Legislature, several leading members hopped on board and adamantly pursued it's adoption. Two separate bills originated for bringing casino gaming to Mississippi. The first bill, initiated by the Senate, originated in the Local and Private Committee and the second bill, which originated in the House, was developed by the Local and Private Ways and Means Committee. The bill initiated by the Senate was for bringing casino gaming to coastal counties, and the one originating in the House attempted to bring casino gaming to river counties.

There were two major concerns expressed by many of the legislative members regarding the two bills. The first issue dealt with how casino gaming would take place in Mississippi and the second dealt with the amount of tax that was going to be placed on the casinos.

A controversial aspect of the initial provision found in the casino bills dealt with the issue of "dock side" gaming. In the initial debates regarding casino gaming in Mississippi, the consensus was that gaming was only going to be allowed on floating vessels. The idea was that people would board the vessels in a port on the Gulf Coast or

on the Mississippi River and the gaming would not begin until they were "under way." This was changed shortly after the Mississippi Legislature got word from the Arkansas DA authorized to oversee activities on the Arkansas portion of the Mississippi River. If the initial bill allowing casino gaming only on vessels "underway" on the Mississippi River had passed, it would have been disastrous for Mississippi and it's casino industry. This Arkansas DA adjacent from Greenville, Mississippi, warned the legislature that if any one of these vessels were to touch one portion of Arkansas water on the Mississippi River, Arkansas would arrest the vessel's captain and everyone on board, and confiscate the vessel and all the gaming devices on the vessel. The casino vessels, when turning around on the Mississippi River, would have to cross over into Arkansas waters. Therefore, to prevent the confiscation of these vessels, the Mississippi Legislature knew that it must reword the bill.

The Mississippi Legislature changed the wording in the bill from casino vessels "underway" to "dock side casino gaming." This turned out to be a win-win situation for Mississippi and the casino industry. The casino industry profited considerably from the rewording of the bill in several aspects. First, more people can come and go when the casinos are stationary. Second, the rewording of the bill allowed the casino industry to build restaurants, hotels, and resorts beside the casino facility, which in turn would bring more profits to the casino industry. Mississippi benefited because they would be receiving additional revenues from sales taxes placed on the facilities associated in conjunction with the casino, such as restaurants, hotels, and resorts. Once all the kinks in the gaming bill were worked out, this unprecedented historical piece of legislation was brought to the legislative floor for a vote. The casino bill passed in the House of

Representatives by a large margin, but in the Senate it was another story. In the Senate, the casino bill faced severe opposition from a number of different individuals who felt that the casino industry would bring crime and corruption to the areas along Mississippi waterways that decided to house casinos. The leading group in opposition to casino gaming in Mississippi was the Southern Baptist Convention, headed by Dr. Paul Jones. The Southern Baptist convention was in strict opposition to casino gaming on moral issues. They believed that casino gaming would increase such immoral behavior as drunk driving, prostitution, gambling, bankruptcy, foreclosures on homes and businesses, divorce and child abuse, and would promote a general idea to younger generations that gambling is an honorable profession to pursue as a career path. Other groups opposed casino gaming on the grounds that increases on the infrastructure such as public safety, transportation, water and sewer, fire protection, and schools would all be hindered by the influx of people that would come to the region to gamble and work at the casinos. These groups were well organized and adamantly opposed the casino bill through a multitude of lobbying efforts. Dr. Jones talked about how, almost every week, he would call the representatives of potential casino communities and urge them to vote against the bill. Dr. Jones, as well as many others at the Southern Baptist Convention, would inform the local churches in the communities to get their members to express the Southern Baptist Convention's concerns about casino gaming, and the negative impact that it will have on those individuals living in a community with legalized gaming. Despite the valiant efforts of Dr. Paul Jones and the Southern Baptist Convention, they were unable to convince enough representatives to reject the bill.

In the final vote on the Senate floor, the casino bill passed on a 22-20 vote. Eight Senators decided to "walk away" from the Senate floor when it was time to vote. When asked why they reframed from voting they commented that they did not feel it was their place to tell the people in South Mississippi, and along the Mississippi River, how they should conduct their business regarding the casino industry. When the Mississippi Legislature had adopted the bill in June of 1990, it was taken to Governor Mabus, where he signed it into law.

The second major issue of casino gaming was the tax policies used on the casinos. Both bills initially stated a provision that would place a $2 boarding fee that would be collected by the casino and paid quarterly to the state. This basically meant that everyone that boarded the casino vessel would be charged a $2 boarding fee. This boarding fee was controversial because several legislatures felt that it would just be too hard to account for the money. Some legislators felt that Mississippi could be cheated out of large amounts of money because of the tax relying on small cash transaction taking place on the gaming vessel itself. They wanted a more responsible taxing mechanism that would assure Mississippi it's portion of the taxable revenue.

In order to establish an appropriate tax on the casino industry, state legislators called on the assistance of a Nevada DA who had been working with the casino industry in Nevada for 40 years. Basically, this individual told the legislators to negotiate a tax rate on gross gaming receipts accompanied by individual taxes on each gaming device. This Nevada DA told the legislators that what they needed to look for was a tax rate that did not place too large of a tax on the casinos, because if the profit margins were not high enough, then the casinos would relocate in some place that would allow them to establish

the profit margin they would like to make for their industry. However, the DA also warned that the tax needs to be high enough so that the community in which the casino is housed receives a considerable amount of revenue, because with the casinos come excessive demands on communities that house the casinos. The DA warned that the casinos were going to be bringing an influx of people to play the casinos, but also that the communities where the casinos were housed would experience an excessive burden on their infrastructures. Therefore, to adequately handle the extra burdens placed on public safety, transportation, water, sewer, schools and other services offered by the community, the tax needed to raise enough revenue to cover the fiscal expense associated with these strains on the infrastructure. The $2 boarding fee idea was scrapped for a more appropriate taxing scheme needed to cover these infrastructure expenses.

Mississippi Casino Tax Law

Mississippi essentially followed the Nevada approach on taxation which included a maximum of 8 percent of gross revenues for the state, and as much as an additional 3.2 and .8 percent of gross revenues for local governments. Towns and municipalities may levy a .8 percent gaming tax on casinos residing within the entity's corporate limits, and counties are allowed to collect taxes from facilities operating in unincorporated areas. Taxes paid by gaming facilities located in municipalities are divided between the city and the county, with the city's share equivalent to the percentage of the county residents living within the city limits. The statute does not require county governments to share revenues with cities that have casinos residing in unincorporated areas.

An additional monthly fee of 3.2 percent is collected by local governing entities based on monthly gross revenues generated by casinos. This is true for all of the local governing entities (both city and county) housing casinos in Mississippi (Mississippi Gaming Control Act, 1990).

In developing the taxing scheme on the casino industry, the legislators interested in casino gaming came to the agreement that an across the board tax on gross receipts was needed, along with a tax placed on each gaming device found in a particular casino. The stakeholders in the Mississippi legislature shortly called a meeting with the executive staff members of the casinos interested in building a casino in Mississippi. In this meeting, with the casino executives on one side and the legislators on the other, the following taxing scheme was generated through hours of negotiations between the two interested parties. Overall, the casinos in Mississippi would be taxed at 12 percent. This twelve percent was to be broken up in the following manner: 8 percent of the gross gaming funds would go to the state, 3.2 percent of the proceeds would be gathered from local municipalities that would be given taxing authority by the state over casinos, and .8 percent would be gathered by counties that would be given taxing authority over casinos by the state. Once this amount had been negotiated between the two parties, the 3.2 percent and the .8 percent was soon be the benchmark for all local pieces of legislation adopted by communities supporting casino gaming. In turn, the casino industry would be taxed at an overall rate of 12 percent. Additional revenue was raised through the taxing of each gaming device, but the amount was so small it is hardly worth mentioning, and

the gaming device taxes ranged from around $100 per slot machine to $250 per card table, depending on the local entity's option of taxing the gaming device, and varied within governmental entities.

The first municipality to adopt casino gaming in Mississippi was Bay St. Louis, and the 3.2 percent and additional .8 percent for the county were the figures used as the taxing scheme for the casinos. What is important to note is that the municipalities did not have to use the 3.2 and .8 percent taxing scheme. This figure was just the maximum tax that a local entity could place on a casino. If the local entity wanted too, they could adopt a taxing policy much lower than the negotiated maximum previously stated. However, all the local governmental entities that adopted casino gaming used the Bay St. Louis model as a benchmark, and currently all casinos in Mississippi are taxed by this taxing policy.

Although the 3.2 and .8 percent taxing scheme is used by all the communities that house casinos, the disbursement of the casino revenues varies quite dramatically among the communities that have chosen to adopt casino gaming in Mississippi. One reason why a menagerie of various disbursement categories exist among casino communities is due to the passage of each governmental entity's casino bill. For instance, Biloxi, Mississippi was one of the first communities in Mississippi to attempt to adopt casino gaming. Those who opposed gaming in the community decisively defeated the first attempt of the passage of casino gaming in Biloxi. However, proponents of the bill reorganized and hired an independent contractor to come into Biloxi and perform an impact assessment of how the community would be influenced by casino gaming. The impact assessment group was out of Las Vegas, Nevada and they chose two similar

communities in Nevada; Lake Tahoe and North Shores, in doing the comparison study. In short, the results of the study were then used to convince the constituents of Biloxi of the many different benefits that the community would receive from casino gaming. Along with great marketing of the impact study, and promises made by local officials that public safety, public transportation, education, and others would receive a portion of the gaming proceeds, the second attempt at passing the local gaming bill was successful, but only by a margin of 14 votes. The local bills passed by Bay St. Louis and Biloxi became the benchmarks for the other casino municipalities and counties when drawing up, and attempting to pass, local bills in favor of casinos.

Local governments receiving casino revenue in Mississippi spend casino proceeds in many different ways. The following chart outlines the local public programs that receive revenue from casino taxes. Part One of the chart outlines the distribution of the 8 percent of revenue received from gross revenue proceeds and the .8 percent that local governments may generate for cities and counties housing casinos. The second section of the chart (Part II), outlines the distribution of the 3.2 percent of revenue received by local governments, based on local and private statutes passed by each governmental entity. Revenue is also generated at the local level through fees charged for each gaming device in a casino. This can range anywhere from $100 per gaming device to $250 for card tables. However, some localities do not charge casinos per gaming device fees. Again, this tax is based on each individual statute passed by the local governing entity.

Table 2.1

MISSISSIPPI GAMING REVENUE

State Application Fee 75-76-183	$5,000	Due at time of application.
State License Fee	$5,000	Due at issuance of license and annually on anniversary date of issuance
75-76-183 75-76-184		License.
State License Fee Based on Number of games 75-76-191		1 Game .....$ 50 2 Games .....100 3 Games .....200 4 Games .....375 5 Games.....875 6-7 Games .....1,500 8-10 Games .....3,000 11-16 Games .....500 each game from 1-16 17-26 Games .....8,000 plus $4,800 each game from 17-26 27-35 Games .....56,000 plus $2,800 each game from 27-35 Over 35 Games ..... 81,200 plus $100 for each game over 35
State Gross Revenue Fee 75-76-177	First $50,000 monthly Gross Revenue Next $84,000 monthly Gross Revenue All monthly Gross Revenue over $134,000	4% 6% 8%
Local Government Fee 75-76-195	First $50,000 Monthly Gross Revenue Next $84,000 Monthly Gross Revenue All monthly Gross Revenue over $134,000	4/10% 6/10% 8/10%

Table 2.2

DISBURSEMENT OF GAMING REVENUE AT THE LOCAL LEVEL

Adams County: Monthly gross revenue fee equal to 3.2% of gross revenue		Distibuted as follows:
SB 3353		25% - Adams County 75% - City of Natchez
City of Biloxi/Harrison County: Monthly fee equal to 3.2% of the gross revenue.		
HB 1504	Annual license tax of $150.00 upon each gaming device	
SB 3358	(Harrison County)	Distributed as follows: 20% - Public Safety 20% - Education 40% - Unrestricted Biloxi Spending 10% Harrison County Schools 10% Harrison County Public Safety
Coahoma County: Monthly fee not to exceed 3.2% of the gross revenue.		Distributed as follows:
SB 3305	Annual license fee not to exceed $150.00 per gaming device.	20% - General Revenue Fund Capital Project 20% - Roads & Bridges 20% - Cities & Schools 20% - Jail Project 20% - Property Tax Reduction
City of Gulfport/Harrison County: Monthly fee not to exceed 3.2% of the gross revenue.		
HB 1520	Annual license tax of $250.00 for each card game or table. Annual license tax of $100.00 per each gaming device	Distributed as follows: 40% Unrestricted Spending 20% - Public Safety

Table 2.2 (continued)

20% - Education
10% - Harrison County Schools
10% - Harrison County Public Safety

Hancock County/Waveland/Bay St. Louis: Monthly fee not to exceed 3.2% of the gross revenue.
HB 1633 Annual license tax of $100.00 per each gaming device.

Distributed as follows:
20% - Sheriff's Dept.
20% - County Schools
10% - Fire Protection
20% - To reduce the *ad valorem* tax levies of the county
30% - General Fund

Tunica County: Monthly fee not to exceed 3.2% of the gross revenue.

HB 930

Distributed as follows:
80% - County General Road Fund
20% - Education

City of Vicksburg/ Warren County:
Monthly fee not to exceed 3.2% of the gross revenue.

SB 3129: Annual license tax of $150.00 per each gaming device.

Distributed as follows:

65% - General Fund

25% - County General Fund Unrestricted
10% - County School District

Table 2.2 (continued)

Washington County/ City of Greenville: Monthly fee not to exceed 3.2% of the gross revenue.
HB 1904/HB 1905 (City of Greenville)

Distributed as follows:
10% - Greenville and Washington County Public School Districts
30% - Unrestricted Spending Washington County
60% - Unrestricted Spending City of Greenville

Currently there are 31 casinos in Mississippi. The casino locations in Mississippi

Philadelphia (Choctaw Indian Casino)	1
Bay St. Louis	1
Biloxi	9
Greenville	2
Gulfport	2
Lula	1
Natchez-Tunica County	1
Vicksburg	10
Total	4
	31

(The Choctaw Indian operated casino in Philadelphia is not used in this dissertation because it is considered federal land not taxed by the state).

Note: The following information was retrieved from the Official Homepage of the Mississippi Tax Commission (http://www.msgaming.com/).

There are a number of distinctions between the school districts in how they spend their casino money. This can be attributed to the fact that each local school district was influential in establishing its own legislation that directs the spending of its casino revenue. Natchez-Adams County places 25 percent of the funds into the Adams County general fund, while 75 percent of the proceeds are placed in the City of Natchez's general

fund (S.B. 3358). The City of Biloxi and Gulfport distribute their revenue as follows: 20 percent goes into public safety, 20 percent into education, 40 percent into the general fund account, 10 percent goes to Harrison County schools and 10 percent to public safety (H.B. 1504, S.B. 3358, H.B. 1520). Coahoma County places 20 percent of the funds into five categories: general revenue fund capital project, roads and bridge fund, cities and schools, the jail project, and property tax reductions (S.B. 3305). Hancock County, which houses the Waveland, and Bay St. Louis school districts, put 20 percent of the funds into the Sheriff's Department, 20 percent into County schools, 10 percent into fire protection, 20 percent into reducing ad valorem tax levies of the county, and 30 percent goes into the general fund (H.B. 1633). Tunica County places 80 percent of the proceeds into the county general fund and 20 percent into education (H.B. 930). The City of Vicksburg and Warren County distribute their funds as follows: 65 percent is placed into the general fund, 25 percent is put into the county general fund, and 10 percent goes to the county schools (S.B. 3129). The City of Greenville places 10 percent of the proceeds into city and county public schools, 30 percent into the unrestricted general fund, and 60 percent into unrestricted spending for the City of Greenville (H.B. 1904 and H.B. 1905). According to the Mississippi Department of Education (2000), the casino revenues are allowing these particular districts to purchase additional educational services (technology, reduced class sizes, better facilities, etc.) that it could not have provided without casino revenue.

The Gaming Industry's Impact on State and Local Government

The idea of the casino as a revenue-generating source for state and local governments is beginning to receive an enormous amount of attention in academic literature. Recent scholarly endeavors have included the impact of casino dollars on economic development (Oliver, 1995; Perniciaro, 1995 Mason and Stranahan, 1996) *marketing and tourism* (Denise von Herrman, Ingram, and Smith, 2000) municipal revenues (Clynch and Rivenbark, 1995; Clynch and Kaatz, 1999) and taxation (Rivenbark and Rounsville, 1996; Rivenbark, 1998).

Economic Development

Oliver (1995) provides the academic community with a detailed description of how casinos were adopted in Harrison County, Mississippi for enhancing economic revitalization. The revitalization of Mississippi occurred in 1990 with the passage of the Mississippi Gaming Control Act, which authorized casino gambling in local communities that chose to adopt this revenue- generating device. During the 1980s, Mississippi was faced with severe budgetary hardships. Mississippi was operating on a budget of around $2 billion, which was not sufficient enough to cover all the expenses that the state was incurring, and they were forced to slash governmental programs. The one program that received the largest cut was education.

Initially the casino was rejected by the voters in Harrison County, but the author contributes the adoption of the casino to educating the populace on the social benefits, primarily economic development aspects, that casino revenue would bring to their community. The Harrison County Development Commission hired an independent

agency from Reno, Nevada to conduct an economic impact assessment on the effects that dockside gambling would have on their community. The independent assessment agency performed the impact analysis by identifying the number and size potential of dockside gambling operations. They determined that each facility would accommodate a certain number of gambling devices due to limited space. Since gambling was new in Mississippi there were no counties to study. Therefore, they selected two comparison groups in Nevada to conduct their study. The two groups used in the analysis were North Shore of Lake Tahoe and Laughlin. Both comparison groups are municipalities in Nevada. The analysis compared anticipated tax revenue to estimated increased costs, and identified deficit or surplus positions to local and state governments. The analysis estimated that revenues from dockside gaming should be around $37 million dollars the first year of operation. Once the impact assessment was completed, the Harrison County Development Commission began arguing that their community would benefit economically through casino revenues.

Residents in Harrison County were eventually convinced that casinos might generate valuable resources for their community. In 1990, the constituency voted on the adoption of dockside gaming. To the surprise of many local governmental leaders, the casino, in its first year, exceeded the amount of revenue that the impact analysis had initially stated. In 1993, the US News & World Report cited Mississippi as the number one state in economic recovery. The magazine credited the casino industry with this success story (Oliver, 1995) (Harrison County does not have any casinos, except in the municipalities of Biloxi and Gulfport. However, D'Iberville has passed legislation that will allow casinos in their community).

Additionally, Perniciaro (1995) reports similar findings to Oliver. However, his work deals specifically with the impact that casinos have had on economic development in Atlantic City, New Jersey. Atlantic City adopted the casino industry in 1976 after several years of population decline. The city was facing bankruptcy due to industry relocation. There were hardly any jobs for it's residents and the city was gradually losing it's tax base because people were relocating to find work. Therefore, the city desperately needed to find new avenues for economic development in order to continue to exist. This is when local policy makers decided to try the casino industry. By the end of 1994, some $5 billion had been invested, and revenues of over $3 billion were being collected annually. The unemployment rate dropped to its lowest level ever in 1994, to 3.4 percent. Mason and Stranahan (1996) support the argument of Perniciaro by arguing that the casino industry in Atlantic City has contributed significantly to economic revitalization efforts in this municipality. However, they are skeptical that the increases in development will level out because of other cities in New Jersey planning to adopt casino gaming, along with neighboring states toying with the idea as well. The authors stipulate that if these surrounding communities decide to adopt casino gaming, the tremendous increase in economic development will begin to decline. Therefore, they warn local political leaders that relying too heavily on casinos for future revenue enhancement will cause economic strains on the community, due to declines in revenue.

Casinos, especially in Mississippi, have been credited with generating enormous amounts of economic growth, which resulted in larger tax revenues. This economic growth is important to education funding both directly and indirectly. For instance, when businesses decide to build in a casino district, the millage rates of the school district are

affected. These taxes are then placed into a general fund account or directly funneled into a specific program such as education. This depends on local legislation passed by school boards, city councils, etc. Clynch and Kaatz (1999) postulated that millage rates would decrease as more businesses decided to relocate in casino districts. They argued that casino districts could afford to lower their millage rates in order to attract business. In theory, attracting more business would increase the amount of revenue local governments would receive from property taxes, even if the rate were decreased. The authors found that millage rates have remained the same in Mississippi, but contend that casinos in Mississippi are still relatively new, and as time passes they claim that millage rates will decrease, resulting in more economic development from future private investment in casino districts.

Casinos, Marketing, and Tourism

Denise von Herrman, Robert Ingram, and William C. Smith (2000), in a gaming impact report on marketing, tourism, and economic development, funded by the Mississippi Legislature, argue that casino gaming in Mississippi has dramatically impacted the areas of tourism. The authors contend that hotels, air services, dining, retail, leisure attractions, convention facilities, and entertainment attractions have all witnessed an increase in the number of individuals served, because of casinos. With this increase in tourism, Mississippi has witnessed an increase in tax revenues from these industries. They recommend that Mississippi should pursue a stronger effort at marketing these ventures in order to increase the amount of taxation from tourism in the future. However, the authors are against any increases in the tax rate on casinos because

Mississippi already taxes its casinos at a higher rate than most other casino states. Furthermore, many of the casinos in Mississippi are operating below the profit margins of similar casinos in other states because of Mississippi's tax rate. They contend that an increase in the tax rate may cause some casinos to go bankrupt, and cause others to find Mississippi unprofitable and completely close their gaming establishment. In their overall assessment of casinos on tourism, marketing, and economic development in Mississippi, Denise von Herrman, Robert Ingram, and William C. Smith posit that casino gaming has made a positive impact on these areas in society.

Casinos and Municipal Revenues

Another issue addressed in the academic literature regarding casinos is the impact that casino generated revenue is having on the fiscal health of municipalities. Clynch and Rivenbark (1995) stated that the casino industry in Mississippi impacted the general fund revenues significantly. The initial projections of this impact were far exceeded by the actual amount of revenue generated by casinos. In turn, Mississippi witnessed a large increase in the general fund revenues. Furthermore, Mississippi began witnessing an increase in revenues from other sources as well. For instance, more jobs resulted in an increase in the amount of individual income taxes received by the state. Clynch and Kaatz (1999) concluded that municipalities in Mississippi have benefited tremendously from casino revenues. The authors argued that assessment values increased dramatically in municipalities housing casinos. Furthermore, the authors found that general revenues increased and expenditures on public works and public safety increased as well, to meet the growing needs of population growth. Basically, many of the municipalities in

Mississippi housing casinos have witnessed population increases that have put a strain on their infrastructures. The casino revenue has made it possible for these municipalities to keep up with these growing demands. The authors conclude that despite millage rates remaining the same, which they predicted to decrease, the overall year-end balances for operating budgets have increased significantly since the adoption of the casino industry in Mississippi.

Casinos and Taxation

A third issue regarding casino gaming in the academic literature deals with taxation. Rivenbark and Roundsville (1995) and Rivenbark (1997) postulate that casino taxation in Mississippi is regressive. Rivenbark and Roundsville stipulate that since policy makers in Mississippi have allowed casino gaming in only specified areas, the tax incidence is placed on Mississippi residents. The authors contend that accessibility to casinos plays a major role in the issue of tax incidence. They argue that casinos are experiencing more play from local residents than people on vacation. The authors attribute this to location. The residents of Mississippi are paying most of the taxes received from casinos. Rivenbark (1998), through telephone interviews, and the use of log-linear regression analysis, demonstrates that the poor in Mississippi have more access to casinos and are paying more of the taxes. From this data he concludes that casino revenues are regressive because Mississippi residents, compared to the rest of the country, are much poorer, and cannot afford to pay these taxes. However, the allure of "get rich quick schemes," such as the casino, attracts those who reside close to them. Therefore, the location of casinos in low-income communities is having a regressive

effect on the economy because of the immense play they are receiving from those individuals residing where casinos are located.

Despite the regressive nature of this revenue-generating device, Mississippi has chosen to continue the operation of its casino industry. Currently there are 31 casinos operating in Mississippi today (Mississippi Gaming Commission, 2000). Thirty are state regulated and the Mississippi Band of Choctaw Indians operates one in Philadelphia, Mississippi. The gaming industry produces 10 percent of the state's annual budget. Nearly $160 million is derived from tax collections on gross gaming revenues in the state-regulated casinos, and $140 million is generated by new sales taxes and income taxes (Mississippi Gaming Commission, 2000). The casino industry currently employs approximately 38,000 people. The payroll of all the casinos in the state is more than $600 million dollars a year. From August 1992 through the present, the casino industry has contributed nearly $3 billion of capital investment in Mississippi. The casino industry has also paid more that $1.2 billion in gaming taxes since July of 1992, and more than $841 million in state taxes, along with nearly $400 million to the local governments where casino gaming is legal (Mississippi Gaming Commission, 2000).

CHAPTER III

LITERATURE REVIEW

The following chapter discusses the relevant literature used to establish the argument of measuring the impact of casino revenues on per pupil expenditures in Mississippi school districts receiving casino tax revenue. The first section of the literature review briefly discusses the historical arguments used to favor legalized gambling in America. This section will then discuss the arguments for and against state operated lotteries in the American states. Later, emphasis is placed on the emergence of casino gaming from proponents valuing the financial contributions of legalized gaming as a revenue-generating device. Special attention is given to other states in the union with casino gaming, and how they disburse casino revenue to see the similarities and differences among the states. The second section of the literature review discusses how education is funded in the United States. Mississippi is specifically noted in this section, especially it's traditionally low spending patterns for education, compared to the rest of the American states. This section addresses how Mississippi is attempting to alleviate these funding disparities, through a new funding formula that is gradually replacing it's

existing, outdated funding formula. The hypotheses derived from the literature that are tested in this dissertation are listed following the literature review.

State Supported Gaming In America

Public administrators and political functionaries, in Mississippi and other American states, experienced a most intense and challenging decade during the 1990s. State governments witnessed a tremendous increase in demands on their governmental services, and an unprecedented number of un-funded mandates from the federal government, along with a tax- payer revolt (Ryen, 1992). As the demand for social intervention programs increased, and the amount of available resources for funding these programs decreased, governmental officials used their ingenuity in generating revenue to offset the cost of running their government, its policies, and programs. "Games of chance," in one variation or another were the mechanism chosen by many state governments as their "economic savior" (Rivenbark and Rounsaville, 1995: p.3).

One of the primary arguments used to rally support for legalized gambling is per pupil expenditures. Numerous political and appointed bureaucratic functionaries stipulate that legalized gambling, whether lotteries, casinos, or other types of gambling, generate enough revenue to significantly enhance per pupil expenditures. In theory, these government officials are asking the populace to invest in the future of their community and country by using gambling dollars to educate the younger generations. The basic premise of their argument is that the education system in America is lagging behind most countries, and the only way America is going to compete in the global economy is by investing in the education of it's children. They paint a desperate picture that some sort

of gaming device must be adopted in order to allow our children a chance for survival in the newly emerging global economy. Many proponents of legalized gambling believe that the education system in America has traditionally been under-funded, and they view legalized gambling as a means to end this disparity. The basic argument used to defend the issue of under funding in education criticizes the formulas used, by states, in determining "who gets what, how and why" (Dye, 1995) in per pupil expenditures (Alexander and Salmon, 1995).

Legalized gambling is the mechanism used by policy makers to offset the cost of education for taxpayers. The type of legalized gambling that is most popular is the lottery, but the literature suggests that lotteries have not turned out to be the panacea that policy makers had originally intended. However, Florida and Georgia do represent specific cases where the lottery has displayed some success in funding education (Miller and Pierce, 1997).

State Operated Lotteries

Lotteries have proven to be appealing mechanisms for producing revenue because they are considered a voluntary tax: individuals pay the tax because they want to, instead of having to pay the tax because the government demands it. The voluntary aspects of lotteries are extremely appealing to governors and legislators because resources for social intervention programs are generated without unpopular tax increases (Rubin, 1993). Theoretically, legalized gambling intends to raise revenues without increasing the tax burdens of the lower class (Mikesell, 1989).

The utilization of gambling in the United States for raising revenues to pay for the colonial Army began as early as the 1700s (Rodgers and Stuart, 1995). During the next two centuries, various forms of gambling were inscribed to finance road repairs and elevate revenues for universities and colleges, while insuring the availability of expenditures for other social intervention programs. However, corruption emerged as an unwanted side effect of sanctioned gambling and many states chose to drop their support of such revenue generating ventures (Geary 1997). New Hampshire was the first state to reinstate gambling in the form of a lottery in 1964. By 1988, only Nevada and New Jersey operated legal casino gambling. Presently, forty-two states engage in some form of legalized gambling, while only Hawaii and Utah forbid wagering entirely (Gross, 1998). Numerous state and city political leaders, as a panacea for ailing local economies, now promote gambling enterprises of various kinds. The prospect of new jobs for workers, and revenues supplementing state and local budgets encourage numerous public officials to join forces with gambling developers for actively promoting the expansion of the industry (Livernois, 1987).

The most popular gambling device today is by far the lottery (Mikesell and Zorn, 1986). The allure of lotteries and other forms of gambling as a source of revenue enhancement for state and local governments ascribes amply to the continued emergence of legalized gambling over the past two decades. Currently, thirty-seven states and the District of Columbia operate lotteries, while other states debate their legalization. Legalized gambling accounts for one of the fastest growing industries in the United States. From 1982 to 1990, expenditures on legalized gaming increased at almost two

times the rate of income; and by 1992, revenues from state sanctioned gambling operations averaged approximately $30 billion a year (Gross, 1998).

A lottery is a game of chance in which individuals have an equal opportunity of winning prizes. It is defined as a form of gambling in which chances to share in a distribution of prizes are sold (Mikesell and Zorn, 1986). For centuries lotteries have provided fun and entertainment. The first state-organized lottery began in Italy in 1530. England soon adopted the idea, and during the early 1600s, the first settlers imported the lottery to America. In America, the first lottery was held in Jamestown in 1612 and provided half the budget for the town's operations. George Washington used a lottery to assist in the funding of the continental army, and Thomas Jefferson used a lottery to fund public projects. Prior to taxation, lotteries were especially popular in the South because the proceeds were used to fund the construction of bridges, toll roads, and schools. From 1790 until the Civil War, lottery proceeds funded the construction of 300 schools, 200 churches, and 50 colleges, including Harvard, Yale, and Princeton (Department of Audits and Accounts, State of Georgia, 1998).

Many states contend that they have recently benefited financially from adopting a lottery. In 1993, the lottery became a long-term solution to Georgia's decrepitated educational system, and the program has contributed significantly to Georgia's educational system since its inception. Barry (1995) postulates that lottery profits in Georgia in 1995 yielded $85 million in scholarships, which allowed more than 100,000 Georgia high school graduates to receive post secondary educations. Also, $157 million allowed 48,000 four year olds to attend pre-kindergarten. In 1995, other beneficiaries of the Georgia lottery included public schools, (which purchased computers, satellite dishes,

and media technology) and the state university system, which obtained $98.7 million in computer equipment. Profits from the lottery support the Help Outstanding Pupils Educationally (HOPE) Scholarship Fund, which allows students who maintain a B average in high school to receive free tuition at instate colleges and universities. This scholarship fund improved the standards within the Georgia university system since fewer students go out of state to college, and as a result, Georgia Tech's SAT average score is one of the highest in the nation among public universities.

Florida was the first southern state to pass the lottery in 1986. Over a ten-year period, the lottery earned more than $7.8 billion for education. Florida law requires that $.38 of each $1.00 spent on the lottery be directed into the state's Educational Enhancement Trust Fund. These funds are distributed to the state's 67 public school districts, 28 community colleges, and 9 universities. Preschool programs, minority teacher scholarship programs, the Bright Futures College Scholarship Program (determined by each school district's community college, and state university), symbolize the use of lottery profits. The Bright Futures College Scholarship Program, in 1995, yielded $85 million in scholarships, which allowed more than 100,000 Georgia high school graduates to receive a post secondary education. Also, $157 million allowed 48,000 four year olds to attend pre-kindergarten.

The implementation of a college scholarship program, similar to Georgia's and Florida's, recently received attention in Kentucky. In the fiscal year 1999, the Kentucky Educational Excellence Scholarships (KEES) began giving students who stay in Kentucky to attend a college, university, or other approved post secondary educational system, tuition vouchers. Also, Kentucky plans to award need based scholarships

financed by lottery profits. Current beneficiaries of FY 1998 profits for the Kentucky lottery include Kentucky Vietnam Veterans (who received a one-time bonus), the State's educational system, which received $214 million, and the State's General Fund, which obtained the remainder of more than $850 million (Rodgers and Stuart, 1995).

While lotteries are touted by many as a means of increasing funds for needy state programs, opponents contend that lotteries are not the panacea that policy makers and voters raved about. Miller and Pierce (1997) examined the financial aspects of education lotterie's short-term and long-term effects. They found that states that adopted lotteries increased spending on education per capita during the early years of the lottery, but as time passed, these same states witnessed an overall decrease in spending for education. In turn, through pooled time series analysis, the authors were able to determine that states without lotteries actually increased their spending on education over time. Four major problems permeate the literature on why lotteries, as a source for generating revenue are a "fiscal hoax. (p.34)." They are: 1) lottery proceeds decline over time; 2) lottery dollars are actually shifted to other programs (fungibility); 3) lottery revenues are used to finance a tax cut; and finally 4) states with lotteries receive less federal funding for education compared to states without lotteries.

Stanley and French (1999) used a model similar to Miller and Pierce in studying the impact of lottery dollars on education. The authors incorporated pooled time series regression analysis as the research methodology to determine if lotteries were indeed having an impact on increasing the amount of spending on education by states with this gambling device. The unit of analysis used by the authors was ten southern states: five with lotteries and five without lotteries. The difference in this piece from the Miller and

Pierce piece was that Stanley and French incorporated six exogenous variables explaining one endogenous variable. Pierce and Miller only studied the effects of three variables in their regression model: the lottery proceeds, year of adoption (a counter variable coded by the year of inception), and a dummy variable (coded 0 for states with a lottery and 1 for states without a lottery). Despite both pieces finding similar results, the Stanley and French piece was much more comprehensive because it measured lottery proceeds, federal spending on education, gross state product, governor's ideology, and a dummy variable similar to the one measured by Pierce and Miller. Stanley and French concluded that lotteries in southern states are not significantly increasing the amount of revenue spent on per pupil expenditures.

In the initial inception of lotteries into a state, the mechanism receives intense play by individuals trying to "get rich quick" (Mikesell and Zorn, 1986: 312) During the infancy years of the lottery in a particular state, especially those states with lotteries that are surrounded by states without lotteries, (i.e., Georgia is surrounded by Tennessee, Alabama, and South Carolina, all of which have rejected the inception of a lottery) the amount of players is quite high. However, as the newness of the lottery wears thin the mechanism receives less and less play, especially if a bordering state adopts a lottery or another form of gambling such as casinos. If states earmark lottery dollars to pay for a large portion of their education expense (based off prior figures), and lottery proceeds decline because of lack of play, the educational expenses of a state may not be covered (Mikesell, 1989). Bracy (1995) points out that on the average, lotteries account for approximately 3.8 percent of a state's education budget, even though the general public is led to believe that schools are receiving more money and that the lottery provides a large

portion of their needed funds. Furthermore, all lotteries tend to decline in revenue production for public programs over time.

The second major problem with lotteries funding education is the idea of fungibility. Spindler (1995) reinforces the notion of fungibility in reference to lottery dollars for education. Spindler examines the lotteries of New York, New Hampshire, Ohio, Michigan, California, and Montana to determine their impact on educational revenue enhancement of public education expenditures. Through ARIMA time-series modeling, the author successfully supports the notion that lottery revenues are fungible. He attributes this fungibility to the "politics of the budgetary process" because education expenditures are highly visible to the public, and are plagued with fiscal and political restraints (p. 60). Spindler contends that in states where lottery revenues are earmarked for education, revenues actually substitute for general fund expenditures. Hence, Spindler concludes by postulating that state lotteries "are robbing Peter to pay Paul" (p.61). Fields (1996) supports Spindler's notion, and contends that the failure of Florida's lottery in meeting everyone's expectations of success expounds on the limitations of this revenue enhancing mechanism. He points out that even though Florida's educational system has received billions of dollars from lottery proceeds, the state legislature has taken non-lottery monies previously designated for education for the funding of other state commitments. Public education's share of the state budget in Florida has decreased more than 5 percent over the past decade since the lottery began in 1986 (National Education Association, 1997). Even though revenues from lottery sales were intended to enhance the state's educational system, the legislature was not legally bound to boost education with these profits. As a result, the earmarking of revenues from

lotteries to replace regular, budgeted educational funds, instead of enhancing education, depicts Florida's education policy.

A third major problem with lotteries occurs when the proceeds are used to finance a tax cut. Lotteries have proven to be appealing mechanisms for producing revenue because they are considered a voluntary tax: individuals pay the tax because they want to, instead of have to, pay the tax. The voluntary aspects of lotteries are extremely appealing to governors and legislators because resources for social intervention programs are generated without unpopular tax increases, and in some cases tax cuts occur because a surplus of revenue exists from the lottery (Rubin, 1993). This is quite appealing to governors and legislators in their reelection bids for office. Rodgers and Stuart (1995) stipulate that "the revival of lotteries," despite immoral concerns and "negative distributional effects," has occurred because of the belief that lotteries, instead of other tax instruments, raise additional revenue by generating smaller efficiency losses than other taxes; therefore, lotteries are less painful to voters (p. 244). In turn, political leaders will endorse tax cuts and replace the lost revenue with lottery dollars. Tax cuts are highly favorable political platforms used by incumbents for being reelected. Unfortunately, many times social intervention programs, such as education, will be the first to suffer so politically ambitious individuals can maintain their tenure in office (Jones and Amalfitano, 1994).

Casino Gaming

A second type of gambling device that is receiving attention among public administrators is the casino. Since the precursor to casinos is the lottery, and lotteries are

receiving mixed emotions towards their impact on education, casinos must also be addressed and evaluated to determine if they are having the impact originally envisioned by policymakers. However, critics raise moral issues concerning casinos and argue that the social costs are not worth the economic advantages (Jones, Holmes, Garner, and Perkins, 1999). Other scholars see this revenue-generating device much differently.

The moral issues of casino gambling have received attention in the academic literature by such scholars as Madhusudhan, Browne, and Kubasek. Madhusudhan (1996) and Browne and Kubasek (1997) all contend that casinos have both positive and negative aspects. The authors agree that the economic impacts of casinos are unprecedented and the revenues generated from these devices for state and local governments do contribute to increases in government revenues for social intervention programs and infrastructure development. Madhusudhan addresses the concern of increased crime in such areas as theft and credit card fraud in Nevada. He notes that the number of cases have increased in communities that operate casinos compared to communities of similar size and structure that do not operate casinos. He also addresses the increase in gambling addicts in these communities as well. The author stipulates that society needs to determine if the financial implications from casinos are worth the moral decay that is associated with them. Furthermore, Madhusudhan believes that the financial implications of casinos, in many studies, fail to represent reality because of biases either for or against the industry. He wants to see more empirical analysis in determining the financial implications of casinos before social costs are weighed against financial gain. Browne and Kubasek, on the other hand, contend that considering the moral implications of casinos is a waste of time. They stipulate that yes, crime increases

in communities with casinos, but they also contend that crime increases in communities with large numbers of bars as well. Yet, communities still have facilities where one can serve alcohol. The authors argue that casinos must be thought of from the libertarian point of view when studying the impact they have on society. Libertarians believe that government should not get involved with the moral implications of policies. Hence, they posit that the moral aspects of casinos should not be considered when determining whether or not a community should adopt a casino or not. The authors then claim that an enormous amount of evidence will suggest that casinos benefit society economically and therefore should be considered as a viable mechanism for generating revenue.

Many states, despite the moral concerns mentioned by Madhusudhan, Browne, and Kubasek, have adopted casino gambling as a device for generating supplemental income to assist in paying social intervention expenses. According to Franckiewicz (1993), ten states have adopted casino gaming as a supplemental revenue-generating device. They are: Colorado, Illinois, Iowa, Louisiana, Mississippi, Missouri, Montana, Nevada, New Jersey, and South Dakota. Recently, in 1997 the states of Michigan and Indiana also adopted casino gambling (National Gambling Impact Study, 2000). Each of these twelve states disperse the revenue they receive from casino taxing in several distinct ways. For example, the general revenue funds of the states with casinos receive a large portion of the proceeds, while law enforcement and education receive a fare share of casino revenue as well. Lets take a closer look at where states spend the money they receive from casinos.

Colorado

The Colorado Revenue Statute 12-47.1-101, known as the Colorado Limited Gaming Act, established casino gaming in Colorado. The state of Colorado places its casino revenue in a multitude of public programs. Included among these programs are: the state Bureau of Investigations, fire safety programs, the Colorado State Patrol Department, the State Auditors Department, the Department of Revenue, the Colorado Department of Law, and 17 local counties receive revenue for general operating expenses (Colorado Gaming Commission, 2000). Local governmental entities are given the opportunity to use the casino proceeds in the manner in which they choose, and a small portion of the revenue is placed into education. These portions differ from locality to locality because their disbursement procedures are based on individual pieces of legislation adopted by each locality (Colorado Department of Education, 2000).

Illinois

The Illinois Riverboat Gambling Act (Ill. ANN. Statute 120-2405) created casino gambling in Illinois. The money is dispersed to the following agencies and programs: 5 percent of the revenue is allotted to local government bodies that house casinos, and The Gambling Commission Board receives a certain percentage based on total gross revenues for operating expenses (e.g., 1999 received $14 million). The remainder of the revenue is placed into a general revenue fund (Illinois Department of Revenue, 2000). From the general fund balance, the state legislature makes a yearly appropriation that is dispersed to higher education institutions in the state. This figure fluctuates from year to year, because it is based on the amount of revenue that is placed into the general fund. When

fines and levies are placed on casino operators, this money is put into what is called an Education Assistance Fund. This fund is used to assist in funding primary and secondary education in the state of Illinois. In the fiscal year 1999, 240 million dollars was appropriated from casino taxes and placed into the Education Assistance Fund (Illinois Department of Education, 2000).

Indiana

The Indiana Gaming Act (IC-4-33) established casino gaming in the Indiana. Indiana receives most of its gaming revenue from an admissions and wagering tax on each casino. A majority of the revenue generated from this tax is then placed into the state's general fund. The remainder of the money is used to pay for the administrative expenses incurred by the Indiana Gaming Commission. The Indiana State Police Department also receives a portion of the revenue. The amount they receive is based on expenses incurred while dealing with unlawful acts performed in the state that relate to casinos (Indiana Gaming Commission, 2000). According to the Indiana Department of Education, local school districts are given the opportunity to apply for grants to assist in capital projects from the "Build Indiana Capital Fund". This fund is supported primarily with lottery dollars, however, a small portion of casino funds are also placed in this account (Indiana Department of Education, 2000).

Iowa

The Iowa statute 99f.7(3), which established dockside gaming in Iowa, placed the dispersion of casino dollars into the hands of nonprofit organizations. Iowa is unique

because a "qualified sponsoring organization" (Franckiewicz 1993: 4)(that must be a nonprofit organization) is used to collect and disperse the revenue that is generated from casino taxes. This dispersion of revenue takes place in charitable donations from the qualified sponsoring organization. For example, if the qualified sponsoring organization decides one year to donate the funds to education, it may do so. But the following year the same nonprofit organization may spend its proceeds on public safety programs (Iowa Gaming and Racing Commission, 2000). The Polk County school district has petitioned one of the nonprofit organizations in an attempt to receive a grant to assist in funding the district's operating budget. The petition was negotiated through what is known as a "gentlemen's agreement" between interested stakeholders. The grant has yet to be administered, but sometime within the next year administrators believe the grant will receive approval (Iowa Department of Education, 2000).

Louisiana

Louisiana enacted two entirely independent casino statutes. The Louisiana Riverboat Economic Development and Gaming Control Act (LA. Acts 753: 1993), and the Gaming Corporation Act (LA. Acts 384: 1993), which authorized a single land-based casino in New Orleans. Eighteen percent of the revenue generated from Louisiana casinos goes into the general fund and the remainder of the money is placed in the following programs: the Office of State Police to cover administrative costs, the Department of Justice Division on Gaming to cover administrative costs, a Horseman Benevolent Fund, the State Economic Development Fund, and the State Treasury's Bond Security and Redemption Fund. Local governments also receive a portion of the revenue,

however, each local entity develops their own legislation that directs where the casino revenue is appropriated. The local programs receiving most of the revenue across the state are school boards and Sheriff's offices. Most of the local governmental entities place a portion of the revenue into their community's general fund (Louisiana Gaming Commission, 2000) (Louisiana Department of Education, 2000).

Michigan

Michigan is one of the most recent states choosing to adopt casino gaming. Currently the revenues generated from casinos are placed directly into the state's general fund and then dispersed to the following specific locations; The Gaming Board to cover administrative costs, the Attorney Generals Office, to cover expenses incurred by the office that relate to casinos, and the State Police Department to assist in covering operating expenses (Michigan Gaming Control Board, 2000). In Michigan, all lottery dollars left over after paying administrative costs are used to fund education. The city of Detroit is the only exception in Michigan. The city of Detroit receives lottery money, but it also receives a portion of the casino revenue. Detroit taxes it's casinos at 18 percent, of which anywhere from 8.1 to 9.9 percent of these proceeds will be used to fund education, but only in the city. 1999 was the first year that Detroit was eligible to receive these proceeds and the amount was less than 1 percent of total spending on education (Michigan Department of Education, 2000).

Mississippi

The Mississippi Gaming Statute (75-76-100), adopted in 1990 by the Mississippi Legislature, endorsed casino gaming in Mississippi. Public city and county schools receive a portion of the revenues generated from casinos based on individual pieces of legislation that were adopted by each locality. The state of Mississippi taxes casinos at 8 percent. According to the Mississippi Gaming Statute (75-76-100), municipalities may assess a .8 percent gaming tax on casinos operating within their corporate limits, and counties may collect taxes from facilities operating in unincorporated areas. Additionally, a 3.2 percent local government tax is levied on the monthly gross revenues generated by casinos. The .8 percent paid by gaming facilities located in municipalities are divided between the city and the county, with the city's share equivalent to the percentage of the county residents living within the city limits. County governments with casinos operating in unincorporated areas are not obligated to share gaming revenue with cities (Mississippi Gaming Control Act, 1990). With the 3.2 percent local tax, revenue may be earmarked for public transportation, public safety, county and municipal general revenue funds, and public education (Mississippi Gaming Commission, 1990).

Missouri

The Missouri statute S.B. 11 (Vernon), legalized "excursion gambling boats" on the Mississippi and Missouri Rivers (Missouri Gaming Commission, 2000: p.4). The state of Missouri appropriates its casino dollars in several different social intervention programs. However, the primary purpose of the revenues from casinos is allotted to the Gaming Commission to cover administrative costs. The first five hundred thousand

dollars is distributed to cities and counties that provide homeless shelters and programs to deter gang violence. The Veterans Commission Capital Improvement Trust Fund receives a portion of the proceeds for construction, maintenance, renovation, and equipment needs of veterans' homes and cemeteries. The Missouri National Guard receives a portion of the proceeds for various administrative and equipment needs (Missouri Gaming Commission, 2000). In regards to education, Missouri appropriates casino revenue to the Missouri College Fund and to Early Childhood Development Education and Care, which is credited with giving parents choices in child-care and education to meet the needs of their families. In 1999, the lottery in Missouri generated 64 million dollars for education and casino gaming added another 1.7 million dollars to the operating budgets of state supported schools (Missouri Department of Education, 2000).

Montana

Montana's law 23-5-306(1) adopted video poker gambling and card games as legalized gambling devices that can be used to generate revenue. Once the revenue is dispersed, the state general revenue fund receives a majority of the money, while local city and county governmental entities receive a portion of these proceeds. The amount of revenue and it's allocation in local governments is based on specific pieces of legislation that were passed by these governing bodies. The revenue from casino gaming in Montana is distributed to three separate entities: local governments, which receive 65 percent of the proceeds, the Gambling Control special revenue account, which receives 5 percent of the funds, and 30 percent is placed into the state's general fund account

(Montana Department of Justice Gaming Control, 2000). The general fund account is used to cover the education expense for Montana. Casino revenues are placed in the general fund account and are indirectly used to support education. As previously mentioned, local governments in Montana receive a portion of the casino revenue, but the disbursement of these funds are premised on specific local government bills passed by these governing bodies. Therefore, a portion of the money may be allotted to education by local governments (Montana Department of Education, 2000).

Nevada

The Nevada Statute 463.010, known as the Nevada Gaming Control Act, regulates casino gaming throughout the state. Most of the revenue generated from Nevada casinos comes from wagering fees. Ninety-seven percent of this revenue is placed into a general fund account where it is used to cover the state's general operating expenses. Three percent of the revenue is allotted to seventeen counties where it is dispersed into two separate education funds. One fund is devoted to financing higher education, while the other fund is concerned with primary and secondary education expenses (Nevada Gaming Commission, 2000). It is important to note that Nevada's general fund is used to finance education, and a majority of the casino revenues are placed in the general fund. Again, casino revenues are indirectly assisting in the financing of education in Nevada. Also, Nevada places an annual "slot tax" on slot machines in the state. All of this money is placed in the state education fund to cover operating costs (Nevada Department of Education, 2000).

New Jersey

The New Jersey Statute 5:12-1, regulates the casino industry in New Jersey. New Jersey is quite different in allotting it's revenue from casinos compared to the other states. The lottery existed in New Jersey prior to the casino. Policy makers needed a reason for adopting casino gaming, but could not use education, because it was the selling point for the lottery. The selling point New Jersey used for getting casino gaming passed emphasized programs to assist the elderly and disabled. Currently, New Jersey places an eight percent tax on casinos, and allots the money into several different programs that assist the elderly and disabled. The following are the programs funded by casino dollars in New Jersey: a pharmaceutical assistance program where prescription drugs cost the elderly and disabled five dollars per prescription, the Life-Line Credit program, transportation assistance, community care assistance, home delivered meals, and a property tax reduction for the elderly and disabled. Since the adoption of casinos in New Jersey, the mechanism is credited with generating 4.2 billion dollars for the elderly, 120 million of which came from interest incurred from these proceeds (New Jersey Casino Control Commission, 2000) (New Jersey Department of Education, 2000).

South Dakota

Statute 42-7B-48.2 established casino gaming in the state of South Dakota. South Dakota taxes the casino industry at eight percent, with a two-thousand dollar tax per gambling device, which is dispersed in the following manner; ten percent goes towards tourism, forty percent to the Lawrence County general fund (the only county where casino gaming is legal in the state), and fifty percent of the revenue is used to pay the

operating expenses of South Dakota's Gaming Commission. If the revenues from casinos exceed 6.8 million dollars, the exceeding amount goes to the following programs; seventy percent goes into the state general fund, ten percent is placed in the Lawrence County school district (the school district for the City of Deadwood), the City of Deadwood receives ten percent for historic preservation, and ten percent goes into municipalities that are in Lawrence County. Furthermore, aside from the ten percent of exceeding revenue that the City of Deadwood receives for historic preservation, each year the city receives a grant of $100,000, regardless of the amount of revenue generated from casinos. However, tax revenues from casinos in South Dakota have yet to exceed 6.8 million. Revenues are expected to reach 6.2 million in the year 2000. If this projection is met, it will be the largest amount of revenue received by the state since the adoption of casino gaming (South Dakota Commission On Gaming, 2000). General fund revenues are used to pay education expenses in South Dakota and lottery dollars are placed into the general revenue fund. The total amount spent on K-12 education in South Dakota was 303 million dollars, approximately 77 million dollars of which came from the state operated lottery in 1999 (South Dakota Department of Education, 2000).

In summary, per pupil expenditures with casino revenues is a re-occurring theme found in a majority of the twelve states previously discussed, regarding states with casino gaming. In theory, the casino offers supplemental income that will assist states in eradicating a large portion of the funding disparities between local school districts, as well as other programs associated with police protection, veterans affairs, and even programs for the elderly and disabled. Mississippi, like many other states such as Illinois, Missouri, Nevada, and South Dakota, places casino revenue into education

programs because of the lack of funding that education has historically received in the state. Mississippi's funding disparities are a direct result of outdated funding formulas that rely predominantly on the property tax for funding education. The property tax remains the dominant source of revenue at the local level for education. However, as previously mentioned, alternative mechanisms for generating revenue are desperately needed to assist state and local governments in their efforts to adequately fund education.

Funding Education In Mississippi

The funding formulas used by many local governments and special districts (school districts) for funding education rely predominantly on property taxes. The property tax is stable, easy to administer, and it generally taxes wealth. Everyone pays property taxes in some form or another. For the farmer it may serve as a tax on his capital investment; for the renter it is included within the rent payment; for the merchant it is part of the overhead that is ultimately passed on to the consumer in the price of goods or services (Wood and Honeyman, 1998).

Once the local governmental entity determines the local dollar amount to be raised through taxes, they issue what is called a millage rate to raise the funds. A millage rate is administered by taxing the total assessed property value within the boundaries of the school district. The assessed valuation is a percentage of the assessed value of the property. The millage rate is used in conjunction with assessed value to raise local money for education. The rate may be expressed as a mill or hundred rates. Once the rate is established, the rate is applied to the individual assessed value of each parcel of real estate, and improvements therein to determine the individual tax each property owner

must pay. An example of this formula is as follows: A school district determines that its local levy is to be $900,000 pursuant to state regulations and local need. The assessed valuation is $60,000,0000. The tax rate would be 15 mills or $.15 per $1000. Thus, a home with an assessed value of $50,000 would pay $750 per tax year (Wood and Honeyman, 1998). Therefore, the literature suggests that the assessment value, which determines the amount of property tax each individual will pay, is a major factor in the amount of revenue each school district will receive for education across America.

Today, each state has a constitutional requirement that calls for a system of funding public schools. Although there are many variations of each formula used by the states to calculate their share of the cost of education, the formulas most often used are as follows: Flat Grants, Categorical or Entitlement Programs (Wood and Honeyman, 1998); Full State Support or Funding Programs, Foundation Programs, Guaranteed Tax Based Programs, Combination Foundation and Guaranteed Tax Based Programs, and Equalization Aid Programs (Odden and Picus, 1992).

The State of Mississippi currently uses what is called a "Minimum Foundation Program" as it's funding formula for allotting state revenue to local school districts. The formula is driven by the average daily attendance of students, along with calculating the number of teachers in each school district, to determine the amount of state funding each school district will receive. The teachers considered in this calculation are those positions established as necessary for conducting the bare minimum requirements of teaching. Also, school districts in Mississippi hire other teachers that are not covered under the Minimum Foundation Program. Those excluded from the calculation are special education teachers, substitute teachers, and other teachers hired on a temporary

basis. This formula has existed in Mississippi since 1953, and is currently in the process of being replaced. Mississippi is slowly incorporating what is known as the "Mississippi Adequate Education Program" as its funding formula.

The Mississippi Adequate Education Program is the result of a study required by Senate Bill 2849 of the 1993 Regular Legislative Session. The bill established a task force comprised of the following:

Chairmen of the House and Senate Education Committees
Chairmen of the House and Senate Appropriations Committees
Two members of the Senate Appointed by the President of the Senate
Two members of the House appointed by the Speaker
Three members appointed by the Governor
One local school board member
One teacher
The State Superintendent of Education

The task force began meeting in May of 1993 and met regularly up until the time the report was issued in December of 1993. The Mississippi Adequate Education Program was placed on the books during the 1994 Regular Legislative Session. No funds were provided for the program until the1997 Regular Legislative Session at which the Governor vetoed the bill. The veto was subsequently overridden by one vote in the Senate, enabling funding of the bill and resulting in the program currently being phased into existence today. The program utilizes a per student cost and provides for a local contribution based on the wealth of the school district. The purpose of changing the formula for funding public education in Mississippi was to provide a more equitable method of providing adequate funding for the poorer school districts (Mississippi Department of Education, 2001).

This formula is also a type of Combination Foundation and Guaranteed Tax Based program, but accounts for more variables in determining the amount of revenue

each local school district will receive from the state. This funding formula is different than the Minimum Foundation Formula in several ways. The most important difference between the two is that the Mississippi Adequate Education Program is premised on what is called cost-based education. The Mississippi Adequate Education Program relies on data that assesses the initial cost of each school district in Mississippi and, from this analysis, determines the amount of revenue for education each district will receive from the state (Mississippi Department of Education, 2000).

The casino gaming revenues received by the local school districts do not currently have any impact on state funding for education. The increased assessment value, however, may have an impact on state funding under the Mississippi Adequate Education Program (the new state funding mechanism that will replace the current Minimum Program effect July I, 2002). Under that program, the impact depends upon whether the district's contribution to the overall cost is less than 27 percent of the operating cost for education. Given that situation, the increased assessment would result in a loss of state funding. The increased assessment does not have any impact on the current Minimum Program funding, but the casino school districts do receive casino funds. These funds are based on the individual pieces of legislation passed by each county and municipality that houses a casino (Mississippi Department of Education, 2000).

Public school districts in Mississippi use what is called a "fund" accounting concept in determining financial transactions, or how the money is dispersed. A fund is a self-balancing set of accounts that represent a certain segment of education or programs of operation. For example, some of these accounts included, but were not limited to, the General Fund, Title I, Food Service, Athletics, Construction, Debt Service, etc. Any

balance remaining in a fund at the end of the fiscal year is transferred to the next fiscal year, in that same fund. These funds are financed through revenues generated by state, federal, and local governmental entities. According to funding statistics provided by the Mississippi Department of Education for the fiscal year 1998-1999, the state provided 54.47 percent of education revenues while the federal government assisted with 13.87 percent, and the local government share was 31.66 percent. A listing of federal, state, and local sources of revenue that provide funding for these accounts are listed in the fourth appendix of this document (Mississippi Department of Education, 2000).

Currently under the Minimum Foundation Formula, the wealth of a school district is considered in the overall funding calculations used by the state. One particular program, the Uniform Millage Assistance Funding Program, assists those districts in Mississippi that are considered poor in the amount of local revenues they spend on education. However, this program is going to be repealed in 2002-2003 when the Mississippi Adequate Education Program (MAEP) is fully implemented. As previously mentioned, the MAEP, which premises it's allotments off educational costs, will take funding equity issues into consideration when dispersing state revenues among school districts. In other words, for those local school districts that cannot place adequate revenues into their specific educational programs, the MAEP will provide the additional revenue to cover the expense. However, under MAEP, local school districts are required to maintain a certain tax rate. For instance, the MAEP does require a minimum ad valorem tax contribution by the school district. That contribution is the dollar value of 28 mills, or 27 percent of the cost of MAEP, whichever is less (Mississippi Department of Education, 2000).

Federal funds appropriated to states and localities are determined by a formula similar to the funding formulas used by individual states. In determining the amount of federal spending for education in each state, federal administrators use the following formula: income of taxpayers + population of each state / number of students. The formula is the number of dollars of revenue raised for each student from each $100 of income received by each member of the population. In 1996, the national effort for elementary and secondary education was 23.5 percent, a slight decrease of 3.2 percent from 1994. Federal spending per pupil was 20.6 in 1996, 10.7 points below it's benchmark of 31.3 in 1966. However, according to the Department of Education, federal education spending per student has been relatively stable since 1970, except for a drop in the early 1980s. After remaining relatively stable during the 1980s, elementary and secondary public education revenue, as a percentage of Gross Domestic Product (GDP), rose between 1988 and 1992. Higher education spending as a percentage of GDP has remained about 1 percent since 1970 (Department of Education, 1999). Therefore, the federal government plays a role in the amount of revenue spent on education in local school districts.

Despite these virtuous intentions of federal and state public educational administrators to end funding disparities among school districts, educational expenditures from the federal government vary from year to year, again leaving states with the problem of adequately funding education. With America's emergence into a global economy, it is perilous for the United States to establish an education system second to none (Grissmer, Flanagan, and Williamson, 1997). In order to establish this type of school system, states and local school districts must generate tax dollars to fund social

intervention programs like education. One state receiving national recognition for such an attempt is Mississippi.

The academic literature addresses the impact that casinos have had on economic development, municipal revenues, tourism, and taxation. What the academic literature fails to address is the impact that casino dollars have had on per pupil expenditures. In theory, the idea behind the adoption of state lotteries, in many states, was to generate enough revenue to assist in funding education. Other states such as Georgia, have opted to place all their lottery revenue into funding education. This idea of funding education with gaming revenue was transported from states opting for lotteries to states that adopted casino gaming. Numerous articles have been written assessing the impact of lottery tax dollars on education, yet no one has measured the effect of casino tax revenues on education. Therefore, the purpose of this study is to empirically assess these stated questions: Do revenue and spending patterns differ in school districts with casino tax revenue from matching school districts without casino revenue? Do casinos lead to increases in the total assessed property values in these districts compared to the matching districts? How are the casino tax revenues being spent? Empirically testing the impact of casino revenue on per pupil expenditures in Mississippi will fill a current gap that exists in the academic literature regarding casinos. Filling this gap is important to the discipline of public administration and political science because policy makers will have evidence to support the notion that casino gaming revenues have significantly impacted per pupil expenditures in Mississippi. Furthermore, from a holistic point of view, other states considering the use of casino revenue for per pupil expenditures may see Mississippi as a model after which to pattern their casino gaming industry. In order to

to provide policy makers with empirical evidence in support of, or in opposition to, casino revenue's impact on education, this project will test three hypotheses in answering the previously stated research questions.

Scholars such as Mikesell (1989), Spindler (1995), Miller and Pierce (1997), and Stanley and French (2000), have measured the impact of state operated lotteries on funding education in the American states. The conclusions reported by all of these scholars indicate that lotteries are an enormous hoax because hardly any of the proceeds from taxes received from lotteries are ever used to enhance education. Operating state lotteries is expensive, and usually much of the tax revenue generated by lotteries is used to cover administrative costs. Despite these empirical results, 38 states now operate lotteries with a large portion of the proceeds earmarked for education. Tennessee is going to bring a referendum before the people in 2001, allowing them to decide whether to adopt a state operated lottery. Again, the argument being used by policy makers in Tennessee is that "education will receive a tremendous boost" if the state chooses to adopt the lottery (Knoxville News Sentinel, 2001). Earmarking gaming funds for education is popular among policy makers because almost everyone supports better education. Policy makers in Mississippi local governments sold the idea of casinos in many municipalities and counties by earmarking casino funds for education (Tisdale, personal interview, February, 16, 2001). If casino revenue is impacting per pupil expenditures in Mississippi school districts with casinos, these school districts, in theory, should be spending more on per pupil expenditures because the casino revenue is additional supplemental income for this policy expense. In other words, the spending and revenue differences in casino school districts and non-casino school districts should be

quite different in regards to per pupil expenditures. Since much of the gaming revenue addresses the impact of lottery dollars on education, literature is also needed to measure the degree of casino revenue's impact on education. To address the question; Do revenue and spending patterns differ in school districts with casino tax revenue from matched school districts without casino revenue? the following hypothesis was tested in this study: School districts receiving casino revenue tend to spend more per pupil on education, compared to matching school districts without casinos.

In addition to measuring the impact of casino revenue on per pupil expenditures in Mississippi school districts with casinos, three additional statistical tests are conducted to measure the effect of casino gaming dollars on each level of government spending for education (federal, state and local). This is important for distinguishing the differences between each level of government so policy makers can make provisions to account for losses, say in federal education dollars, due to increased dollars from state and local government entities (Mississippi Department of Education, 2000). For instance, much of the lottery literature (Spindler 1995, Pierce and Miller 1997, and Mikesell 1989) measured the impact of lotteries only on state spending for education; while Stanley and French (2000) measured the lottery's impact on federal allotments for per pupil expenditures among the American states. Therefore, this project intends to carry the analysis much further than the previously stated authors by measuring the casino's impact at the federal, state, and local levels of government spending for education. The hypotheses tested by these statistical computations are as follows: Casino school districts in Mississippi tend to receive more in per pupil education dollars, compared to matching school districts without casinos.

Secondly, the literature addressing the taxation and revenue generating capabilities of casinos stipulates that counties and municipalities with casinos are receiving more tax revenue for operating and capital budgets (Clynch and Kaatz, 1999); (Clynch and Rivenbark, 1995). The contention is that casinos have increased the value of the land in the communities in which they reside. With an increase in the value of land comes an increase in property taxes. Furthermore, land values have increased because a number of businesses, according to the economic development literature regarding casinos, have moved to these communities. In theory, if land values have increased, resulting in more property taxes because of casinos, then the assessed value of this land has presumably increased as well. Therefore, the second hypothesis tested in this study addresses the question; Do casinos lead to increases in the total assessed property values in these districts compared to the matching districts?, and, is stated as follows: School districts in Mississippi with casinos have witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos.

If school districts in Mississippi are receiving more revenue to spend per pupil compared to school districts without casinos, whether assessed value has increased or not, then spending patterns among these school districts must have changed. For instance, Barry (1995) contends that public schools in Georgia have been able to spend more money on computers, satellite dishes, and media technology than many other states with similar demographics. Barry posits that the purchase of these capital budget items would not have been possible without lottery funds. Hence, if lottery funds in some states have increased spending for capital items for public schools, then in theory, the same argument can be made for school districts receiving casino revenue. If lottery funds are being spent

on capital expenses, then how are the casino tax revenues being spent? Therefore, the third hypothesis tested in this study addresses the previously stated question and is as follows: School districts in Mississippi with casinos spend more money on capital budgets, compared to operating budgets. The data gathering methods and testing procedures for the stated hypotheses are discussed in the following chapter. These are the stated research questions and hypotheses that were tested in this research project.

Research Questions

Do revenue and spending patterns differ in school districts with casino tax revenue from similar school districts without casino revenue?

Do casinos lead to increases in the total assessed property values in these districts compared to the matching districts?

How are the casino tax revenues being spent by casino school districts in Mississippi?

Hypotheses

H_1: School districts receiving casino revenue tend to spend more per pupil on education, compared to matching school districts without casinos.

H_2: School districts in Mississippi with casinos have witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos.

H_3: School districts in Mississippi with casinos spend more money on capital budgets, compared to operating budgets.

CHAPTER IV

DATA AND METHODOLOGY

This chapter addresses the conceptual definitions and operationalization of the variables used to frame the formal statistical model, followed by the research methods chosen for testing the data in this study. It will identify and discuss the arguments for the statistical tests used in this project, accompanied by an argument framing the necessity for using qualitative data to clarify the statistical findings reported in this document. A visual model is presented in this chapter to assist readers in understanding the formal model that was used to test the data, followed by the regression equations used to test the model. In this chapter, emphasis is placed on the paradigmatic stance taken in the dissertation to assist readers in understanding why a mixed method research approach was appropriate for this study. Finally, this chapter identifies the case studies used for elaborating on the statistical findings of this project.

The conceptualization and operationalization of the variables is necessary to understand what is actually being measured in this research project, and how these measures are going to be achieved. Therefore, conceptual definitions of the data are offered to assist readers in understanding the measures used to test the casino's financial

impacts on per pupil expenditures on casino school districts in Mississippi. Operational definitions are identified to inform the reader as to how these measures are going to be computed.

Conceptual Definitions

The conceptualizations of the variables used in this research project to create the hypotheses are as follows:

- Total Spending Per Pupil by School District (Dependent Variable) – the amount of spending per pupil by state, local and federal governments.

- Local Spending on Education Per Pupil (Dependent Variable) - the amount of local spending per pupil by each school district.

- Casino Tax Revenue - the amount of revenue casino school districts in Mississippi
  receive from the gaming tax placed on casinos.

- Control Variables: The following control variables are added to the empirical analysis to Determine whether it affects the relationship between casino proceeds and spending per pupil on education in Mississippi. The concept behind the use of control variables is that the values of the control variables are held constant while the relationship between the other two variables is being analyzed (O'Sullivan and Rassel, 1995). According to educational leadership scholars, the following variables are appropriate to serve as control variables in the analysis of the data (Mississippi Department of Education, 2000).

- Per Pupil Assessment Value – Average Per Pupil Assessment Value based on Average Daily Student Attendance (measured in $100 thousand)[1]

- Number of Students - the number of students in each Mississippi school district.

- Millage Rates – the percentage of taxable income levied on real and personal property in each Mississippi school district.

- Casino Presence – Dummy variable coded 0 = casino school districts; 1 = Non-casino school districts.

[1] However, due to the absence of a law stipulating the timing that school districts must re-assess land, the results of these statistical tests may be skewed. Timing means that after 1992 school districts must re-assess 25 percent of their land every four years according to Mississippi law. Prior to the passage of this law, school districts were not required to re-assess 25 percent of their land every four years.

- Education Spending Over Time Lagged One Year – Independent Variable Accounting For Education Spending Over Time (In the statistical tests using per pupil assessment value as the dependent variable, the TARGET VARIABLE is the independent variable accounting for per pupil assessment value in Mississippi school districts with and without casino gaming, over time)

- Unemployment Rates – Unemployment rates in school districts used as a proximity variable to test casino tax revenue's impact on per pupil assessment value. It is measured in terms of county data.

Operational Definitions

The two models tested in this research project for empirical results using pooled time series analysis are: (1) Total spending on per pupil expenditures for education; and (2) the amount of dollar change from year-to-year on per pupil expenditures for education. The time frame used in this analysis is eleven years: 1989 – 2000.

- Total Spending Per Pupil by School District – Mississippi State Superintendent's Report on Education

- Local Spending on Education Per Pupil - Mississippi State Superintendent's Report on Education

- Casino Tax Revenue – Mississippi Department of Education, total casino spending on education

Control Variables

- Per Pupil Assessment Values – Mississippi Report Card on Education, Mississippi Department of Education

- Number of Students – Mississippi Statistical Abstracts, Mississippi State University

- Millage Rates - Mississippi State Superintendent's Report on Education

- Education Spending – Target variables were computed for each dependent variable in the regression analyses to account for changes in the dependent variable over time. The following are the target variables used in the regression models of this dissertation: spending for education, local government spending for education, and assessed value based on average daily attendance of students.

The qualitative data of this dissertation was gathered through personal interviews and analysis of state auditor documents. Personal interviews will assist this project by elaborating on the statistical inferences drawn from the findings of the empirical analysis (Denzin and Lincoln, 1998). The emphasis placed on personal interviews is discussed in more detail in the latter part of this dissertation. Secondly, the qualitative component of this dissertation relies on the observation of archival records and document analysis of school district audits to determine where much of the casino tax revenue is being spent. Reviewing archival records and documents helps the researcher understand, in this case, where the money is actually being spent: on capital budgets or operating budgets (Yin, 1994).

Secondary Data

This project relies predominantly on secondary data for its findings. There are many benefits as well as costs when using secondary data. First, the researcher can significantly reduce the cost of doing the project. The researcher can dispense with the costs of instrument design, data collection, and compilation. It has other benefits as well. Secondary data analysis enables researchers to conduct studies that are otherwise infeasible. For example, secondary data analysis is preferable if a researcher wants to perform a comparative, longitudinal study. Since comparing school districts over time is

the primary concern of this project, secondary data analysis is appropriate for this study (Dunn, 1994).

Several limitations exist when using secondary data analysis, especially when governmental statistics are involved in a study. Researchers must determine what data is comparable and reliable. This is usually subjective in nature and is left up to the researcher and his discretion for determining. Biases, however, may result from comparable analysis. Also, certain years of data may be missing. The design may have to be modified if data for certain years are missing. Such modifications may introduce biases to the study. Furthermore, it must be assumed that the initial researchers knew what they were doing, and computed and recorded the statistics correctly (Weimer and Vining, 1999).

Methodology

This research dissertation will use an "elaborative mixed method" research approach (qualitative technique expanding the understanding of the phenomenon being studied through refinement and development of the findings found in the research) to test the previously stated hypotheses. However, mixed method research projects are controversial in nature because many scholars perceive them to be cross-paradigmatic views in the analysis process of determining project outcomes. Therefore, appropriate consideration of this method needs to be addressed before continuing (Greene and Caracelli, 1997: p.6).

In the grand scheme of conducting research there are a number of paradigmatic stances one may choose (White, 1994). Some of the more popular ones are positivism, postpositivism, critical theory, interpretive, postmodernism, and poststructuralism. Positivism and postpositivism share a common theme that there is one reality out there that can be studied and analyzed. They differ, however, in how to go about studying this reality. Positivism posits that empirical tests are the only true science that can explain reality. Postpositivism accepts this premise, but adds that qualitative interpretations are also viable sources in determining reality. Both stipulate the importance of using objective techniques for verifying data (Farrokh, 1987). The critical theorist, interpretivest, postmodernist, and poststructuralist argue that multiple realities exist, and that the qualitative research method techniques are the most reliable means for explaining and interpreting reality. They support the notion that subjective reality is as viable a research method as objective reality (Jick, 1979). This is where the controversy exists in using mixed method approaches for studying social phenomenon. Scholars argue that it is not possible to work simultaneously within different paradigms because they are conflicting and at certain points in the research process, adhering to the tenets of one entails violating those assumptions of another paradigm (Bednarz, 1985). Despite these concerns, mixed method approaches to research have witnessed recent popularity in the social sciences (Greene and Caracelli, 1997).

Three schools of thought currently exist in the literature regarding mixed method research approaches: the purist, situationist and the pragmatic school of thought (Rossman and Wilson, 1985). The purist view holds to the positivistic paradigm that only one reality exists and there is only one way to know this reality. The situationist, on

the other hand, adheres to the interpretivest paradigm that multiple realities exist and there are copious ways to achieve an understanding of this reality. The pragmatic view lends itself to using both qualitative and quantitative approaches to understanding social phenomenon. Therefore, it is considered postpositivistic in nature (that one reality is out there but there are multiple ways of understanding this reality).

The pragmatic view of social science research assumes that just because one may chose multiple methods of verifying reality, they will eventually cross paradigmatic stances regarding research (Rossman and Wilson, 1985). For instance, simply using a statistical method for determining if a relationship exists between variables, and discussing this finding using personal interviews, does not mean one is crossing paradigms. This is referred to as triangulation and is the basic tenet that provides mixed methods approaches in social science research with validity. Triangulation is the use of two or more methods in verifying the existence of social phenomenon (Bednarz, 1985). Triangulation was used in this dissertation in the following manner: a comparative means test, pooled time series cross-sectional regression analysis, and personal interviews.

Rossman and Wilson (1985) add that three types of mixed method research designs dominate the literature. They are: corroborative, elaboration, and initiation. Corroborative approaches use qualitative methods to support the findings of empirical tests. Elaborative studies use qualitative techniques to expand the understanding of the phenomenon being studied, through refinement and development of the findings of the research. Initiative studies uncover paradoxes and contradictions that may exist in the final analysis of the research project. The authors contend that it is up to the researcher to

determine which mixed method is most appropriate for the phenomena which they intend to study.

In regards to this study, the use of research methods incorporating triangulation are necessary in order to explain reality. The statistical tests will determine what reality is out there, and why it exists, and the qualitative data will justify and elaborate on those findings. The research methodology used in this study is considered an "elaborative mixed method" approach to empirically testing relationships between one dependent variable and seven independent variables. The elaborative approach is chosen because the qualitative research that I intend to perform will assist in explaining, in more detail, why the empirical findings that I received specified a certain reality. The qualitative data used in this project was gathered through personal interviews (discussed later).

The quantitative methods chosen for this study are: a comparative means test for independent samples and pooled time series cross-sectional regression analysis. The comparative means were conducted in the manner of the traditional pretest-posttest method of testing data. Four groups were constructed in performing this pretest-posttest analysis. They are: pre-casino school districts that now have casino tax revenue, pre-casino school districts that do not currently receive casino revenue, post-casino school districts with casino tax revenue and post-casino districts without casino tax revenue. This allowed for the researcher to determine if actual increases or decreases in funding education have occurred between these school districts in Mississippi.

Unfortunately, the arithmetic mean is limited when trying to explain why a relationship has occurred between exogenous and endogenous variables. The arithmetic mean is useful in telling the researcher what relationships exist, but is quite limited when

trying to explain why an affiliation has occurred between variables (O'Sullivan and Rassel, 1999). Therefore, a more advanced statistical method is necessary in order to explain why particular causal relationships exist (McClendon, 1994). The advanced statistical method chosen for this dissertation project is pooled time series cross-sectional regression analysis (Stimson, 1985).

Pooled time series cross-sectional data analysis is chosen as the advanced measuring device for testing the previously stated hypotheses (Sayers, 1989). One of the most promising advantages of using pooled time series cross sectional analysis is its ability in offering explanations of the past, while simultaneously predicting the future behavior of exogenous variables in relation to endogenous variables. Pooled time series cross sectional analysis allows the researcher to focus on more than one case in predicting social phenomenon, whereas simple time series analysis strictly deals with a specific case at different time points, causing data management complications. The dimensions of the pooled time series used in this study are 26 school districts and 12 points in time (years).

Furthermore, accurate findings on the effects of casinos over a long period of time may fail to represent reality when multivariate regression models of data analysis are used to explain revenue development. Spindler, writing on lotteries, noted that multivariate regression for data analysis in revenue enhancement over time possesses problems of high levels of multicollinearity between variables and collinearity in the time series (Spindler, 1995). Spindler opted for an ARIMA model (simple time series analysis) of time series to correct for this problem. ARIMA time-series methods of data analysis place an overwhelming emphasis on the burden of controlling for autocorrelation and heteroskedasticity to ensure data dependability. Autocorrelation and

heteroskedasticity do pose threats to data analysis, however, according to Beck and Katz (1996) they are more of a "nuisance" than a real threat when the N is larger than the T in the pooled time series regression model (p. 3). ARIMA models of time-series analysis focus more on controlling autocorrelation and heteroskedasticity than discovering and explaining social phenomenon (McDowall et. al, 1980).

Despite the numerous advantages of pooled time series analysis using N (number of cases) at T (time points) for predicting the future of a particular social intervention program, a number of methodological disadvantages limit the usage of this data measuring device. The basic assumptions underlying traditional Ordinary Least Squares (OLS) regressions are violated in a pooled model, and such departures may exhibit severe consequences for the reliability of the estimators (Stimson, 1985). For instance, the following assumptions are usually made in regards to the error term in pooled time series regression.

- The error term has a mean of zero,
- The error term has a constant variance over all observations,
- The error terms corresponding to different points in time are not correlated (Ostrom, 1978).

The accuracy of the regression model is inevitably measured by the error term. Hence, if the standard error is small, then all of the sample estimates based on the sample size tend to be similar and are considered representative of the population parameters. The exact opposite is true if the error term is large, then the statistics fail to represent the population parameters. Of the previously mentioned assumptions, the error term corresponding to different points in time failing to correlate is the most important assumption violation. When this violation occurs autocorrelation is present, creating estimators that negate true

representation of social phenomena. Autocorrelation violates an assumption of the regression model that the residuals are independent of one another. Its presence affects the accuracy of the error term, which biases the model's t-ratios and the confidence limit. Autocorrelation may be eliminated from a research project by identifying and including an independent variable that explains part of the unexplained variance. Beck and Katz (1996) address the issue of autocorrelation by calling it more of a nuisance than a real problem. They contend that lagging the endogenous variable(s) will often assist in controlling for serial correlation. A lagged regression model relates a current endogenous variable to past values of the exogenous and endogenous variables, reducing the risk of autocorrelation.

All the financial indicators in this data set were lagged one year (spending on education, casino proceeds, and per pupil assessment values). These predictors were lagged one year because the budgetary cycle used by the state and local governments are determined one year before the actual proceeds are allotted to specific programs. Therefore, the availability of the data for the research is at least one year behind current figures.

By July 15 of each year, the school board must submit a formal request to the levying authority (county board of supervisors or city board alderman) for the ad valorem tax needs for the ensuing fiscal year. The levying authority will determine the necessary millage rate to generate the ad valorem tax requested by the schools. That millage rate will be in effect October 1 of that year because the fiscal school year for school districts in Mississippi begins on October 1 and runs through September 30. When considering the current school year (2000-2001), the millage is generally referred to as the 2000-2001

millage rates that are applied to the 1999-2000 assessment rolls. Therefore, since millage rates are determined and set in the same year, this financial variable was not lagged. Again, these efforts were made to prevent autocorrelation in the data set (Beck and Katz, 1996).

According to Beck and Katz (1995), to test the data analysts should proceed by first examining the "temporal properties" of their data (p.645). This is done through lagging the dependent variable. Once the data has been transformed, OLS (best linear unbiased estimate) can be used to estimate the model's parameters. Through the use of Monte Carlo evidence, Beck and Katz demonstrate that the data did not lose any efficiency in its estimates when the dependent variable was lagged. They contend that standard errors should be calculated by using PCSEs (panel-correlated standard errors). The combination of "OLS and PCSEs allows for accurate estimation of variability in the presence of panel error structures without inducing the severe problems caused by inflated standard errors produced by most TSCS (time series cross-sectional) models" (p. 645). The authors also claim that researchers concerned with heteroskedasticity or contemporaneous correlation of the errors can check for these problems by examining the structure of the OLS residuals.

A second major methodological problem with pooled time series cross-sectional data analysis is heteroskedasticity. In pooled data, some units, for a variety of reasons, are inherently more various than others at all times. Such differential variability is usually of modest concern in un-pooled data because it affects only a single case at a time. In pooled data, however, it is likely to inflict a larger amount of harm to data sets. For instance, basic size differences between units are one such endemic source of

heterogeneity. For example, Miller and Pierce (1997), when studying the effect of lotteries on education across the American states, found that the error terms for California and New York are more likely to be greater than those for New Hampshire and North Dakota. This is simply because California and New York budgetary data used for the pooled time series analysis was larger than New Hampshire and North Dakota. To account for the differences among states, intercepts for the cross-sectional unit are often employed. On the reasonable assumption that variation is roughly a fixed proportion of size, analysis of units of substantially different sizes induces heteroskedasticity in any regression. But the problem can take on considerable proportion that causes concern when each cross section consists of T cases in time. Therefore, the size problem of the sample is often reduced by standardizing the data (Beck and Katz, 1995). This project is concerned primarily with the impact that casinos will have on per pupil expenditures. The emphasis of this study is concerned more with changes across time, rather than across states.

Stanley and French (2000) measured the effects of lottery revenue on per pupil expenditures in the American states. The authors were more concerned with changes across time rather than changes in cross-sections (states). They incorporated a dummy lottery variable, which was measured 0 for states with a lottery and 1 for states without a lottery. The authors found that the dummy variable was relevant for explaining some of the unexplained variance that was taking place in their regression model. The authors, in a recent piece on the effects of lotteries on federal spending on education, incorporated a similar dummy variable in this regression model. The authors concluded that despite no existing significant relationships in the model, that LSDV again assisted in explaining

some of the unexplained variance. The authors concluded from these two works that pooled time series regression analysis was the most appropriate statistical test for the research questions they were addressing in their work (those questions being are lotteries having an impact on state spending on education and federal spending on education). It's failure to deal with the concerns of cross-sectional differences such as interest groups strength, state liberalism, media influence, etc. is irrelevant for this study.

The standardization of the data set, according to Beck and Katz (1995), assists in alleviating heteroskedasticity problems in the data set. Controlling for panel heteroskedasticity, Stimson contends (1985), and later Beck and Katz (1995 and 1996), argue that adding a dummy variable will assist in the prevention of this problem. Stimson (1985) also stipulates that adding dummy variables to "shallow pools (small data sets)" will also control for autocorrelation. Despite these concerns, this data set is not considered shallow because it is measuring 26 school districts over a period of twelve years ($n = 286$).

In creating the pooled time series cross-sectional regression model, the dependent variable (total spending on education) was lagged one year to control for autocorrelation. In using the Lagrange multiplier, the residuals are regressed from an OLS estimation of the equation on the first lag of those residuals, along with all the independent variables used in the OLS estimation. The estimated coefficient on the lagged residual term yields an estimate of the remaining serial correlation of the errors. If serial correlation remains present in the model, instrumental variables are employed as well as dummy variables. Placing dummy variables in the equation offers explanations of the unexplained variance

controlling for autocorrelation. Before determining the utility of employing dummy variables, the tests offered by Jay Durbin (1970) should be given consideration.

The Durbin-Watson statistic of *d* reported in SPSS (Statistical Package for the Social Sciences) gives the researcher a heads-up on the amount of serial correlation in the regression model. Many scholars argue that using SPSS to compute time series regression analysis is limited in dealing with the problems of autocorrelation or serial correlation, heteroskedasticity, and multicollinearity. One argument against using SPSS in testing for autocorrelation is that the Durbin-Watson statistic *d* is inappropriate when one of the explanatory variables is a lagged dependent variable. Durbin (1970) adds that an *h* test or m test should be considered when the researcher is using one or more lagged explanatory variables. These tests can be most easily described in the context of the following regression model:

$$Y_t = a + BX_t + yY_{t-1} + e_l$$
$$E_t = pe_{t-1} + u_t$$

The null hypothesis that p = 0 is to be tested against a one-sided or a two-sided alternative. The h test is based on the test statistic where d is the usual Durbin-Watson test statistic and s^2_y is the estimated variance of the least squares estimate of *y*. Under the hull hypothesis h is distributed as N (0,1). This test cannot be used when $ns^2_y > 1$. Therefore, Durbin proposed the use of the *m* test to calculate the least squares residuals and applying the least squares method to

$$E_t = B_1 + B_2X_t + B_3Y_{t-1} + B_4 e_{t-1} + \text{error}$$

and testing the significance of the estimated coefficient of et-1 by the standard *t* test. The *m* test is intuitively plausible and does not suffer from the indeterminacy that may be encountered in using the *h* test. It's further advantage lies in the fact that the test can easily be extended to involve autoregression of an order higher than one, by including further lagged residuals in the equation. Since *ns2y* was greater than one in this analysis, the *m* test of the Durbin-Watson statistic was computed in favor of the *d* and *h* tests. After the computation of the *m* test the Durbin-Watson still revealed an acceptable figure 1.9, suggesting that autocorrelation was not a problem in the regression (Durbin, 1970). White's (1980) test for heteroskedasticity is used in this regression model for testing for, and controlling for, this methodological nuisance. White offers the following process for testing and correcting for heteroskedasticity using SPSS.

The variance inflationary factor (VIF), provided by the SPSS program, checks for multicollinearity among the variables (a situation in the data set where two or more variables are highly correlated) in the regression equation. Instead of, however, accepting the validity of this statistic on the assumption that SPSS is right, measures were taken to test for this statistical problem. All the variables in the equation were regressed against one another to ensure that, according to Fox (1991), no variables indicated a VIF of 5.6 or more. Fox further contends that it is more appropriate to view the tolerance levels instead of the VIF reports. According to Fox (1991), if the tolerance variable reports levels of .9 and 5.6 (VIF) or less, multicollinearity is not a problem in the data set.

The arguments presented by the previously mentioned scholars were taken into account when computing the regression equation. After all computations were complete,

autocorrelation, heteroskedasticity and multicollinearity were not problems in the regression equation (see chapter 4 which contains all the statistical analyses).

Table 4.1

POOLED TIME SERIES REGRESSION EQUATIONS FOR MODEL ONE

The following regression equations were used to test *Model One* in this study:

1) Y (**TOTALSPEDU**) = a + (B_1) CASINO $_{t-1}$ + (B_2) PER PUPIL ASSESSMENT $_{t-1}$ + (B_3) NUMSTUD $_{t-1}$ + (B_4) MILLAGE $_{t-1}$ + (B_5) EDUCATE $_{t-1}$ + (B_6) CASINO PRESENCE + E

2) Y (**LOCAL-SPEDU**) = a + (B_1) CASINO $_{t-1}$ + (B_2) PER PUPIL ASSESSMENT $_{t-1}$ + (B_3) NUMSTUD $_{t-1}$ + (B_4) MILLAGE $_{t-1}$ + (B_5) EDUCATE $_{t-1}$ + (B_6) CASINO PRESENCE + E

Table 4.2

POOLED TIME SERIES REGRESSION EQUATIONS FOR MODEL TWO

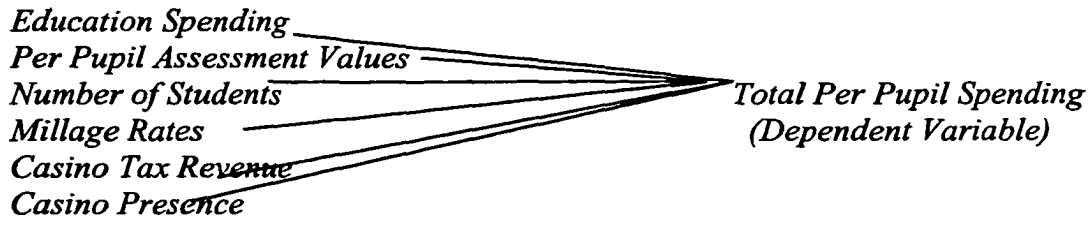
The following regression equations were used to test *Model One* in this study:

2) 1) Y (**Dollar Change in TOTALSPEDU**) a + (B_1) CASINO $_{t-1}$ + (B_2) PER PUPIL ASSESSMENT $_{t-1}$ + (B_3) NUMSTUD $_{t-1}$ + (B_4) MILLAGE $_{t-1}$ + (B_5) EDUCATE $_{t-1}$ + (B_6) CASINO PRESENCE + E

3) 2) Y (**Dollar Change in LOCAL-SPEDU**) a + (B_1) CASINO $_{t-1}$ + (B_2) PER PUPIL ASSESSMENT $_{t-1}$ + (B_3) NUMSTUD $_{t-1}$ + (B_4) MILLAGE $_{t-1}$ + (B_5) EDUCATE $_{t-1}$ + (B_6) CASINO PRESENCE + E

Table 4.3

Models One & Two: 1989-2000

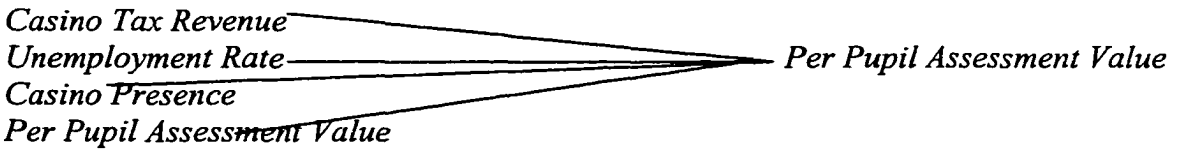


A third regression model was tested in this dissertation to address the second hypothesis: school districts in Mississippi have witnessed an increase in per pupil assessment values, compared to matching non-casino school districts. The findings of the statistical results measuring assessment value as the dependent variable are questionable, due to timely occurrences in Mississippi law pertaining to re-assessment. For instance, in Harrison County a twelve-year span of time passed before the county re-assessed it's land value in compliance with a 1992 law passed in Mississippi. Since the time period covered in this dissertation begins in 1989, per pupil assessed value of land has been impacted in a number of ways. First, the law stipulates that each county must re-assess 25 percent of their land every four years. Reassessment, in and of itself, usually results in modest increases in a county's per pupil assessment values. Secondly, with the influx of economic development that is taking place on the Gulf Coast of Mississippi, land values are also increasing. Furthermore, the impact the casino industry has had on this increase in economic development, which has in turn impacted assessment values, is a concern of this dissertation. Although finding appropriate measures to test the data was a problem in the statistical analyses measuring the impact of casino gaming on per pupil assessment values, these analyses are important in identifying statistical relationships. The statistical relationships reported in this dissertation lend themselves to further analyses, if the appropriate variables can be identified to account for the casinos impact on per pupil assessment value. In other words, the statistics reported in regards to per pupil assessment value as a dependent variable are the beginning stages of future research that will be conducted in trying to measure this social phenomenon.

The unemployment rates were gathered for each school district in Mississippi used in the model, and added to the equation. The unemployment rate variable is used to explain increased per pupil assessment values. In other words, if assessed values were to increase in casino school districts compared to matching non-casino school districts, then the unemployment rate would be expected to decline. The following model and regression equation depicts model three.

Table 4.4

Model Three: 1989-2000



The following regression equations were used to test *Model Three* in this study:

1) Y (ASSESSED VALUE) = A + (B_1) CASINO TAX REVENUE $_{T-1}$ + (B_2) UNEMPLOYMENT RATES $_{T-1}$ + (B_3) CASINO PRESENCE + (B_4) PER PUPIL PER PUPIL ASSESSMENT VALUE $_{T-1}$ + E

2) Y (DOLLAR CHANGE IN ASSESSED VALUE) = A + (B_1) CASINO TAX REVENUE $_{T-1}$ + (B_2) UNEMPLOYMENT RATES + (B_3) CASINO PRESENCE + (B_4) PER PUPIL PER PUPIL ASSESSMENT VALUE $_{T-1}$ + E

Once the measures are calculated for the impact of casinos on total per pupil expenditures in Mississippi school districts, a second regression model was computed to test actual dollar change. The theoretical argument for measuring actual dollar change among school districts is to find out why some school districts spend more than others, per pupil and what causes this change (Odden and Picus, 1992). This argument is addressed further in the qualitative section of the dissertation; however, identifying the

statistical impact in dollar change is first necessary before the qualitative data can elaborate why change is occurring and how it has occurred. In order to perform this measure the dependent variable was computed from total dollars spent on education per pupil, to dollar change from year to year per pupil expenditures. The same computation was used to transform the independent variables into dollar change.

Case Study Research

The concepts found in this project focus on the various revenue sources that the state of Mississippi uses to fund education. The quantitative aspect of this project conceptualizes casinos as a possible supplemental revenue-generating source, and intends to measure the impact of this device on funding education in Mississippi. The qualitative component of this project intends to go further than simply measuring the impact of casino tax revenue on education, to focus on why and how policy makers decided to spend casino tax revenue on education, and what education programs get funded by these revenues. It attempts to provide a detailed description of how casino tax revenues are being spent in Mississippi. Therefore, the research question driving this section of the project is stated as follows: How are the casino tax revenues being spent? In other words, what education programs are school districts in Mississippi actually enhancing when they receive casino tax revenue? Are casino funds being used as supplemental or replacement revenue for education programs? In essence, this section serves to provide policy makers in local governments with casinos, empirical evidence that "elaborates" (Babbie, 1995) on the disparities among local school district's disbursement of casino tax revenues. The qualitative section of this project intends to "paint a picture" of how and

why policy makers in school districts with casinos spend the casino tax revenues in the manner they have chosen (Berstein and Dyer, 1992). Secondly, the qualitative component of this dissertation will serve as a guideline for local school districts without casinos in several ways. It will demonstrate to those school districts without casinos that if their community decides to adopt gaming, this is what casino gaming may look like in their community. For example, elected officials may have wanted to disburse the revenue across many different programs for election purposes, while actual school officials may have wanted to see that most of the revenue went towards specifically funding education. This, in essence, may have contributed to the disbursement disparities of casino tax revenues among local governments in Mississippi. Therefore, providing an in-depth analysis of why and how casino tax revenues have impacted education is necessary.

First, the case study aspect of this project will address the formulation of the statute adopted by each local school district, the guidelines for revenue disbursement, and a brief history of educational funding in local school districts (discussed in Chapter II). The primary and secondary stakeholders was identified, their years of service to the community were gathered, and their opinions regarding casino gaming were addressed. Also, this section will attempt to understand why the disbursement statute looks the way it does. For instance, this project will look at why education receives a certain percentage of casino tax revenue (e.g., 20 percent in Biloxi) at the local level, but it will also seek to determine why some districts spend the revenue on capital budgets while others spend the proceeds on operating budgets. Secondly, this project will attempt to understand the implementation processes used in disbursing the revenue to see if the funds are being

spent in the manner the statute dictates. The latter section of the qualitative component will address how casino tax revenues have impacted education in local school districts in Mississippi.

Operationalization

The qualitative component of this mixed method research approach used to gather data is personal interviews (Yin, 1994). Personal interviews allow researchers to obtain large amounts of data, perform in-depth probing, and ask more complicated or sensitive questions regarding the issue at hand (Rossi and Freeman, 1993). Its popularity has decreased because of increased costs in traveling and improvements in telephone interviewing (Denzin and Lincoln, 1998). Nevertheless, for some studies it offers distinct advantages. Personal interviews are virtually the only feasible data collection method for some populations, such as homeless people (O'Sullivan and Rassell, 1999).

Personal interviews work well for studies with lengthy, or complex data gathering instruments. Researchers have noted that respondents become fatigued if they are kept on the telephone too long, whereas personal interviews can last for quite a while. Visual clues usually allow the interviewer to determine if the respondent is telling the truth. Furthermore, it also allows for the use of visual aids when explaining confusing or complicated questions. Personal interviews are more likely to receive responses to sensitive questions that are more concise and accurate, compared to other forms of interviewing such as using the telephone. Over the course of the interview, the

interviewer may elicit the respondent's trust, thus setting the stage for asking sensitive questions (Denzin and Lincoln, 1998).

The primary reason that personal interviews are being conducted in this dissertation project is to elaborate on the findings of the statistical analyses. The qualitative component of this dissertation will assist the statistical findings by offering in-depth analyses of how and why statistical relationships exist. For example, if the statistical findings report a significant impact between casino tax revenue and funding education, the qualitative analyses will explain how policy makers used this money to impact education in their specific school district, thus establishing a linkage between the quantitative and qualitative sections of this project. The qualitative portion of this project will also enrich ones understanding of why these policy makers deemed it necessary to spend a portion of casino proceeds on education. Was it because the school district has traditionally been under-funded compared to surrounding school districts? The qualitative component will go beyond just determining if casino proceeds are influencing spending on education, but it will look at where the revenues are being placed in education and what motivated policy makers to place them in education. It will also explain what policy maker's expectations were in allotting casino tax revenue for education. Are local school districts spending the money on capital projects, operating budgets, and special education programs, or are they using the revenue to hire more teachers and administrators? Why did each district choose to spend the casino proceeds in this manner? Did specific individuals in the legislative process influence the disbursement procedures, or was a collective consensus reached among stakeholders on how the money would be spent? Who were the stakeholders and why was it in their

interest to spend the casino proceeds in this manner? Also, if the quantitative analysis fails to report a significant relationship between casino tax revenue and funding education the qualitative aspect of this project can be used to determine if fungibility (the replacement of education dollars with casino tax revenue) is occurring among local policy officials.

The data used to answer this research question, conducted through personal interviews, was collected from a series of questions found in the first appendix of this document. The first set of questions were asked of career and appointed local school officials. The second set of questions were asked of political figures that had a direct or indirect influence on the legislative processes that brought casino gaming and revenues to their respected governing districts (Findings reported in Chapter Two). Together, these questions intended to paint a picture of the formation, implementation, and impact that casino tax revenues have played, and will continue to play, in funding education in Mississippi.

It is important to note that gathering the qualitative data from personal interviews may not be feasible in all cases. Therefore, when personal interviews could not be arranged, the researcher used telephone surveys to obtain the data. Telephone surveys, although sometimes costly, offer data gathering techniques that are faster than personal interviews. But there is no guarantee that the researcher is actually talking to the person they intended to talk to, creating one problem with this technique (Rossi and Freeman, 1993).

A "reputation sampling technique," known as "snow ball sampling" (Babbie, 1995: 287) was used in determining the current and retired political and bureaucratic

stakeholders that played a direct or indirect role in the development of legislative statutes that direct the disbursement of casino tax revenues on education. This sampling technique is appropriate because it allows the researcher to talk with individuals, through referrals, who played a role in the adoption and disbursement of casino tax revenue in local school districts in Mississippi (Babbie, 1995). However, the problem with snowball sampling is that the referrals received may only be those individuals who view the world through the same license of the person giving the referral. This could bias the results because the researcher would only be hearing from one side of the argument about a specific social policy or issue.

The governmental positions selected from local governing bodies for conducting the interviews will include: school superintendents, school board members, local school employees, local government officials such as mayors, city and county managers, aldermen, and council members, and any state legislators that may have had an influence on the adoption of casinos in a specific locality and the disbursement of casino tax revenue.

Units of Analysis

The following school districts were used in the analysis of the data for this project.

Table 4.5

MISSISSIPPI SCHOOL DISTRICTS USED IN THE STUDY

With Casinos	*Without Casinos (comparison groups)*
Natchez-Adams County School District	Benton County School District
Coahoma County School District	Carrol County School District
Clarksdale School District	Ocean Springs School District
Hancock County School District	Lee County School District
Bay St. Louis School District	Hattiesburg Municipal School District
Harrison County School District	Jackson County School District
Biloxi City School District	Long Beach City School District
Gulfport City School District	Pascagoula City School District
Tunica County School District	Ranking County School District
Vicksburg City School District	Tupelo City School District
Leland School District	Oxford School District
Western Line School District	Webster County School District
Greenville City School District	Yazoo City School District

According to the Mississippi Gaming Commission (2000), 1993 was the first year that casinos began contributing revenues to state and local governments. However, according to the Mississippi Department of Education (2000) the first casino dollars used to fund education did not come until 1995. The comparison groups for the quantitative aspect of this project were chosen based on number of students, spending on education per pupil, and per pupil assessment values in 1994 (year before casino tax revenues were allotted to local school districts); (Mississippi Department of Education, 2000). The casino school districts are in bold.[2]

[2] The variables per pupil assessment value, per pupil expenditures, and number of students are considered by education finance scholars as appropriate indicators at which to base comparison groups when studying the financial impact that a social intervention program (such as casinos) is having on education (Dr. Gary Johnson, January 8, 2001, 2:08 p.m.). Charles Shivers, Director of Financial Accountability, Mississippi Department of Education notes that the Mississippi Department of Education, when conducting comparative studies, relies primarily on the project being studied. In other words, if a study is concerned with financial matters then those indicators expressing financial data are most appropriate. Mr. Shivers

Table 4.6

COMPARISON SCHOOL DISTRICT DATA FOR 1989-95 SCHOOL YEAR

School District	*Number of Students*	*Spending On Education $*	*$ Per Pupil Assessment Values*
Bay St. Louis	**2448**	**3782**	**27843**
Benton County	1429	3902	14329
Biloxi	**6798**	**4069**	**22370**
Carroll County	1240	3994	27499
Clarksdale City	**4492**	**3464**	**10876**
Coahoma County	**2320**	**4136**	**20661**
Greenville City	**8448**	**3621**	**15882**
Gulfport City	**6529**	**4557**	**28426**
Hancock County	**3122**	**3736**	**35636**
Harrison County	**11354**	**3466**	**22737**
Hattiesburg Municipal	5555	4462	28559
Jackson County	7309	4789	28248
Lee County	5479	3541	20511
Leland City	**1759**	**4199**	**16438**
Moss Point Municipal	5338	4091	18324
Natchez-Adams County	**5768**	**4367**	**27207**
Ocean Springs	4340	3510	18279
Oxford Municipal	2762	4064	23806
Pascagoula City	7828	4342	38623
Rankin County	13360	3125	24095
Tunica County	**1999**	**4115**	**17082**
Tupelo City	7019	4285	34636
Vicksburg City	**9586**	**3990**	**27196**
Webster County	2072	3385	16644
Western Line	**2355**	**3463**	**36387**
Yazoo City	3593	4339	40223

adds that the Mississippi Department of Education has used the following indicators in the past to determine comparative school districts in various studies: average daily attendance, 1st month enrollment, property per pupil assessment values, whether the districts have 16th section trust lands, whether they are municipal or county districts, or rural or urban, per pupil spending, and total federal spending. Mr. Shivers endorses the indicators (population, per pupil assessment value and spending per pupil) chosen by this study for generating the comparative school districts that were studied (Charles L. Shivers, CPA, Tuesday, January 9, 2001, 3:28 p.m.).

Table 4.7

PRELIMINARY COMPARATIVE MEANS TEST ON PER PUPIL SPENDING FOR EDUCATION: 1989 – 1994

Group Statistics

	Dummy	Mean	St.D.	T – Score	p.>
(0 = Casino School Districts Before Casino Gaming) **(1 = Non-Casino School Districts Before Casino Gaming)**					
Total Spending Edu.	.00	3651	396.08	.905	.367
	1.00	3588	465.31		
Number of Students	.00	5117	3120.43	.016	.987
	1.00	5110	3106.38		
Assessment Value	.00	24355	8727.492	-.307	.760
	1.00	24753	7469.109		

Table 4.7 offers analysis to demonstrate that the differences between the casino school districts and comparison groups used in the study were virtually the same before casino gaming was passed in Mississippi. The comparative means test displayed above suggests that per pupil expenditures for education between the two groups were relatively the same. For instance, casino school districts spent around $3,651 per pupil for education and non-casino school districts spent $3,588 per pupil. This statistical report is important because it lays the foundation of the study by suggesting that the casino school districts and matching non-casino school districts reported no statistically significant differences in per pupil spending on education before casino gaming came to Mississippi.

Upon the completion of the statistical analyses in this dissertation, case study research was conducted on four outlying casino school districts in Mississippi. The four case studies demonstrating the largest impact of casino tax revenue on per pupil

expenditures, resulting in these school districts being chosen for the case study research, are as follows: Biloxi City School District, Gulfport City School District, Harrison County School District, and Tunica County School District. In identifying the outliers the following residual statistics were examined.

- Leverage Values – identifies outliers among the independent variables.
- Studentized Deleted Residuals – identifies outliers among the dependent variables.
- Cook's D – the combination of independent and dependent outliers are identified.

Once the outliers were determined in the data set they were excluded from the comparison means calculations and regression models in order to measure their impact on the statistical analyses. Chapters Five and Six report the statistical and case study findings of this dissertation.

CHAPTER V

STATISTICAL FINDINGS

In this chapter the statistical findings of the comparative means test, and results from the pooled time series cross-sectional regression analysis, are reported and discussed. Descriptive statistics are offered in order to demonstrate just how much casino revenue is being contributed to school districts for per pupil expenditures in education. Shortly following the descriptive statistics are the results of the comparative means test. A graph that plots the results of the comparison means, along a time line, provides the reader with a visual display of how much the two comparative groups (casino and non-casino school districts) have differed, over time, in per pupil expenditures for education. For a more sophisticated statistical analysis, two pooled time series cross-sectional (casino school districts) regression analysis models were utilized, and the results are reported for Model One (total spending on education), and Model Two (the dollar change from year to year between the variables). Finally, a pooled time series cross-sectional regression model, along with comparative means tests, are

reported, assessing the impact of casino tax revenue on assessment values (dependent variable). The variable headings used to explain the data that is being tested in this chapter are as follows:

- SPEDU - Total Spending Per Pupil by School District lagged one year (Dependent Variable)
- LOCAL SPEDU - Local Spending on Education Per Pupil (Dependent Variable)
- CASINO TAX REVENUE - Gaming Tax Revenue For School Districts (measured in $100 thousand)
- PER PUPIL ASSESSMENT VALUE – Average Per Pupil Per pupil assessment value based on Average Daily Student Attendance lagged one year (measured in $100 thousand)
- STUDENTS - Number of students in each school district
- MILLAGE - Millage Rates in each school district
- EDUCATION SPENDING – Independent Variable Accounting For Education Spending Over Time
- CASINO PRESENCE – Dummy variable coded 0 = casino school districts; 1 = noncasino school districts.
- UNEMPLOYMENT RATES – Unemployment rates in school districts used in conjunction with the casino tax revenue variable to test casino tax revenues impact on per pupil assessment value. The variable is measured in terms of county data.
- ASSESSMENT VALUE PER PUPIL - Independent Variable Accounting For Per Pupil Assessment Value Over Time

Despite several limitations with these regression models, they serve to identify an important trend that is occurring in the data set. These three models intend to identify revenue and spending patterns that are occurring as a result of casino gaming in Mississippi. Limitations such as why and how these trends are occurring fail to be addressed by the statistical models, calling for further analysis through other means than statistical tests. Chapter five of this dissertation is devoted to answering the questions not addressed by these statistical findings.

Table 5.1

ARITHMETIC MEANS ON PER PUPIL SPENDING FOR EDUCATION: 1989-2000

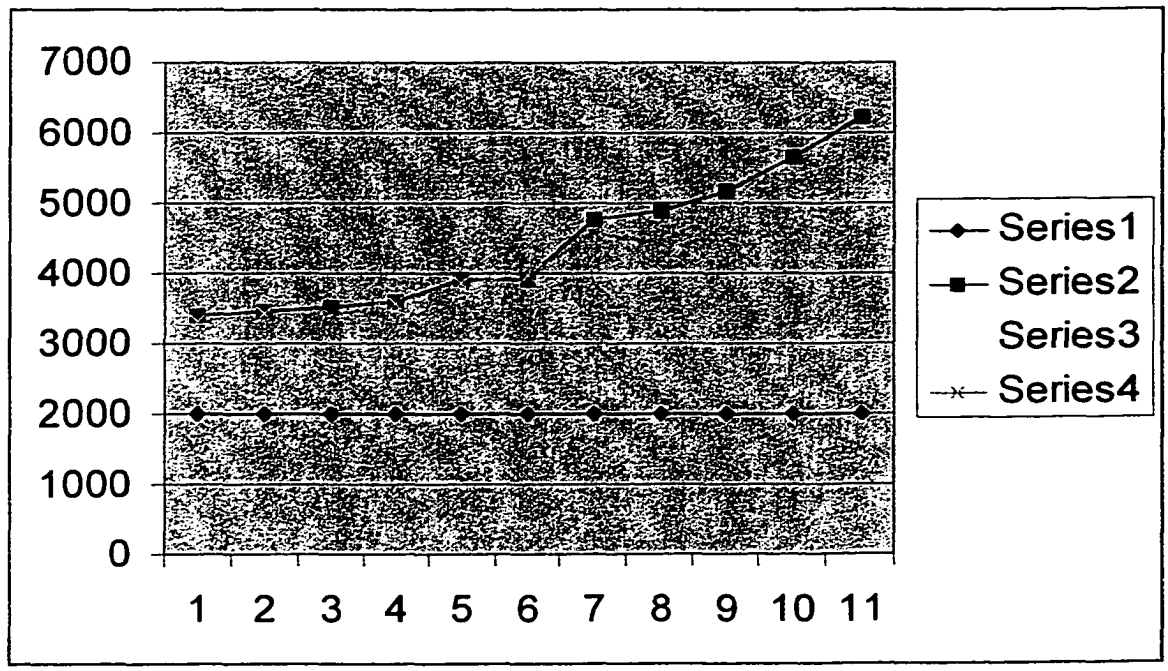
School Districts With Casinos 1989-1994: Group One
School Districts Without Casinos 1989-1994: Group Two
School Districts With Casinos 1995-1999: Group Three
School Districts Without Casinos 1995-1999: Group Four

	Group1	*Group 2*	*Group 3*	*Group 4*
1989	**3401**	**3315**	**X**	**X**
1990	**3457**	**3423**	**X**	**X**
1991	**3522**	**3409**	**X**	**X**
1992	**3613**	**3583**	**X**	**X**
1993	**3901**	**3844**	**X**	**X**
1994	**3923**	**3977**	**X**	**X**
1995	**X**	**X**	**4770**	**4565**
1996	**X**	**X**	**4893**	**4426**
1997	**X**	**X**	**5175**	**4906**
1998	**X**	**X**	**5659**	**5257**
1999	**X**	**X**	**6229**	**5692**

Table 5.1 lists the comparative means that were broken up into four comparison groups in a similar manner as a pretest/posttest analysis. The groups were categorized as follows: school districts with casino tax revenue 1989-1994, school districts without casino tax revenue from 1989-1994, school districts with casino tax revenue 1995-1999, and school districts without casino tax revenue from 1995-1999. The means reported in this table are intended to show how much casino school districts have spent per pupil compared to matching non-casino school districts over time. The following T – tests indicate the significance of the difference between the variables.

Table 5.2

ARITHMETIC MEANS GRAPH FOR PER PUPIL SPENDING ON EDUCATION: 1989 – 2000



Note:
Line with boxes represents casino school districts.
Lines with Xs represents non-casino school districts.
Horizontal line on bottom represents years.
Vertical line represents per pupil expenditures among Mississippi school districts.

In Table 5.2 casino school districts in Mississippi are represented on the top line in the graph, while the second line identifies matching non-casino school districts. The bottom line of the graph (1-11) is the year of the data points on the line. Between the data points of 7 and 8 (year 1994 and 1995), the graph begins to show a gradual increase among casino school districts, in per pupil expenditures for education, compared to non-casino school districts. From 1995 until 2000, the gap between the lines on the graph suggests that casino school districts have continuously out-spent non-casino school

districts on per pupil expenditures for education. The graph plotting the comparative means is important for identifying trends in the data that have occurred over time. However, to statistically measure the differences between the two groups, Independent Sample T – tests were conducted on the data. The following tables report those findings.

Table 5.3

COMPARATIVE MEANS TEST CASINO SCHOOL DISTRICTS VERSUS NON-CASINO SCHOOL DISTRICTS 1989 - 2000

Group Statistics

	Dummy	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Casino School Districts) **(1 = Non-Casino School Districts)**					
Per Pupil Sp. Edu.	.00	4404	1048	1.416	.158
(Total Spending)	1.00	4239	917		
Casino Tax Revenue	.00	393480	1087817	4.325	.001
	1.00	.0000	.0000		
Number of Students	.00	5095	3121	-.212	.832
	1.00	5175	3257		
Millage Rate	.00	43.6031	10.2640	-3.797	.001
	1.00	49.2446	14.5016		
Assessment Value	.00	29731	15176	1.296	.196
	1.00	27800	9337		

Table 5.3 is the comparative means test assessing the difference between the means of casino school districts and matching non-casino school districts in Mississippi between the1989 and 2000 fiscal school years. This statistical analysis reports that there is a significant difference between casino tax revenue and millage rate. Also, the millage rate variable displays a significance value that is acceptable by statistical standards,

meaning that the increase in this variable has an impact on total per pupil spending for education.

Table 5.4

COMPARATIVE MEANS TEST FOR CASINO SCHOOL DISTRICTS VERSUS CASINO SCHOOL DISTRICTS BEFORE AND AFTER THE ADOPTION OF CASINO GAMING1989 – 2000

Group Statistics

	Dummy	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Casino School Districts Before Casino Gaming) **(1 = Casino School Districts After Casino Gaming)**					
Total Spending Edu.	.00	3656	396.128	-15.759	.001
	1.00	5334	833.035		
Casino Tax Revenue	.00	.0000	.0000	-5.200	.001
	1.00	879182	1494464		
Number of Students	.00	5154	3123	.166	.869
	1.00	5067	3148		
Millage Rate	.00	43.3904	9.2919	-.214	.831
	1.00	43.7633	11.4546		
Assessment Value	.00	24300	8769	-5.097	.001
	1.00	36367	18544		

Table 5.4 reports a comparative means test assessing the difference between casino school districts before and after the adoption of casino gaming in Mississippi school districts. The above table indicates that there is a difference between casino tax revenue and assessment value. This table also reports that a significant difference exists between the two school districts in the amount of per pupil spending allotted for education.

Table 5.5

COMPARATIVE MEANS TEST FOR NON-CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING VERSUS NON-CASINO SCHOOL DISTRICTS AFTER CASINO GAMING 1989 - 2000

Group Statistics

	Dummy	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Non-Casino School Districts Before Casino Gaming) **(1 = Non-Casino School Districts After Casino Gaming)**					
Total Spending Edu.	.00	3588	465.314	-14.768	.001
	1.00	5019	687.868		
Number of Students	.00	5110	3106.38	-.262	.794
	1.00	5253	3452.75		
Millage Rate	.00	48.6832	14.3307	-.506	.614
	1.00	49.9183	14.7874		
Assessment Value	.00	24753	7469.10	-4.564	.001
	1.00	31456	10070.71		

Table 5.5 is a comparative means test assessing the difference between non-casino school districts before and after the adoption of casino gaming in Mississippi. The per pupil assessment value variable suggests that a significant difference exists before and after casino gaming. The statistical inferences suggested by this table indicate that a statistically significant difference exists in per pupil spending on education among matching non-casino school districts before, and after casino gaming in Mississippi. Since the casino tax revenue variable is not a factor in this comparative means test an interesting finding is reported by this table. Since the time frame used in this statistical test was1989 to 1994 (before casino tax revenue started impacting education) and 1995 to 2000 (after casino tax revenue started impacting education), a significant difference

occurred in the amount of per pupil spending on education in non-casino school districts used in this study. One explanation for this impact may be the booming economy that Mississippi experienced during the 1990's. With the unprecedented economic growth that occurred in Mississippi during the 1990's, more revenue was available for education, especially during the mid to late 90's, which may have impacted the results of this statistical test. Were there any differences between casino school districts and matching non-casino school districts before the adoption of casino gaming?

Table 5.6

COMPARATIVE MEANS TEST FOR CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING VERSUS NON-CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING 1989 - 1994

Group Statistics

	Dummy	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Casino School Districts Before Casino Gaming) **(1 = Non-Casino School Districts Before Casino Gaming)**					
Total Spending Edu.	.00	3651	396.08	.905	.367
	1.00	3588	465.31		
Casino Tax Revenue	.00	.0000	.0000	XXXX	XX
	1.00	.0000	.0000		
Number of Students	.00	5117	3120.43	.016	.987
	1.00	5110	3106.38		
Millage Rate	.00	43.47	9.2616	-2.709	.008
	1.00	48.68	14.3307		
Assessment Value	.00	24355	8727.492	-.307	.760
	1.00	24753	7469.109		

Table 5.6 is an important statistical test because it compares differences between casino school districts and matching non-casino school districts before the adoption of

casino gaming in Mississippi. One statistically significant finding worth noting is the impact that millage rate is reporting in the analysis. The millage rate variable, with a p>. value of .008, indicates a substantial difference in millage rates between the comparison school districts before casino gaming began to impact education in Mississippi. This statistical analysis suggests that both casino school districts and matching non-casino school districts were virtually the same in the amount of fiscal resources each group of school districts spent on per pupil education expenditures.

One explanation for this difference in millage rates may be due to the amount of industrial development in the comparison school districts. A large portion of the school districts used in the non-casino control group are residential, and located in rural counties. For instance, the Ocean Springs School District is located in a residential community, and borders the Biloxi City School District. When these two school districts are compared, the millage rates between them are quite different. The Biloxi City School District has been able to maintain a steady millage rate over the time period in this study compared to Ocean Springs. Because of the Ocean Springs School District's residential location, in order to generate enough revenue to pay for its education expense, the Ocean Springs School District must maintain a higher millage rate than the Biloxi City School District. The Biloxi City School District can maintain a much lower millage rate due to the large amount of industrial and residential development that existed in the school district before the adoption of casino gaming in Mississippi. Therefore, with the introduction of casino gaming by school districts such as Biloxi, they have been able to maintain a relatively stable millage rate compared to non-casino school districts, such as Ocean Springs.

Table 5.7

COMPARATIVE MEANS TEST FOR CASINO SCHOOL DISTRICTS AFTER CASINO GAMING VERSUS NON-CASINO SCHOOL DISTRICTS AFTER CASINO GAMING 1995 - 2000

Group Statistics

	Dummy	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Casino School Districts After Casino Gaming) **(1 = Non-Casino School Districts After Casino Gaming)**					
Total Spending Edu.	.00	5334	833.03	2.337	.021
	1.00	5019	687.86		
Casino Tax Revenue	.00	879182	1494464	4.743	.001
	1.00	.0000	.0000		
Number of Students	.00	5067	3148.12	-.320	.749
	1.00	5253	3452.75		
Millage Rate	.00	43.76	11.4546	-2.640	.009
	1.00	49.91	14.7874		
Assessment Value	.00	36367	18544.40	1.873	.063
	1.00	31456	10070.71		

Table 5.7 is the final comparative means test that reports the actual differences that have occurred between casino school districts in Mississippi, as compared to matching non-casino school districts on per pupil spending for education. Since the casino tax revenue began impacting per pupil education expenditures in Mississippi, a noticeable difference has occurred between the two comparison groups. The reported means of total spending on education indicates that since 1995, casino school districts have out-spent matching non-casino school districts in per pupil expenditures on education. The casino tax variable, with a statistically significant *p* value, seems to be one indicator that is influential in this spending discrepancy between casino school

districts and matching non-casino school districts. Although the *p* value reported by per pupil assessment values fails to be statistically significant, the high T – score lends itself to suggest that the variable may have had some impact on the statistical model.

According to Johnson and Joslyn (1995), a pre-test/post-test experimental test provides for statistical measures of the dependent variable before the actual stimulus occurs, while also accounting for the maturation of the dependent variable over time, along with the possibility of extraneous factors, that may cause the dependent variable to change during the time period cover in this analysis. The following pre-test/post-test model was used in comparative means tests computed in this dissertation.

Total Impact =
(Non-Casino Before - Non-Casino After) - (Casino Before - Casino After)
(Non-Casino Group) – (Casino Group)
Difference

When all of the comparative means tests are examined, what has occurred between casino school districts, and matching non-casino school districts in Mississippi, is the following:

Total Impact =
(5334 – 5019) - (3656 – 3588)
315 - 63 =
$252

The inferences extrapolated from the comparative means tests suggest that casino school districts receiving tax revenue from gaming facilities have spent $252 more per pupil on education, compared to matching non-casino school districts since 1989.

However, due to the limitations of statistical tests utilizing measures of central tendency for testing data, further analysis is needed to explore these causal and correlation differences. The exploratory tests used in these analyses of the data is pooled

time series cross-sectional regression because it allows the researcher to compute more advanced tests for measuring the impact of casino tax revenues on per pupil expenditures for education in Mississippi. Before the advanced statistical tests are reported and discussed, descriptive statistics are offered to assist the reader in understanding exactly how much casino revenue is going towards per pupil expenditures in Mississippi.

Table 5.8

SUPPLEMENTAL CASINO TAX REVENUE FOR PER PUPIL EXPENDITURES ON EDUCATION: 1995-96

School District	Governmental Sources of Revenue	Casino Revenue	% From Total Revenue
Bay St. Louis City	11,355,606	3,376	.03%
Biloxi City	33,068,311	3,155,283	10%
Clarksdale City	16,852,391	33,117	.20%
Coahoma County	10,303,110	33,117	.32%
Greenville City	34,632,011	332,611	1.15%
Gulfport City	35,146,375	916,023	2.60%
Hancock County	43,426,518	71,493	.16%
Harrison County	47,142,200	0	0%
Leland City	7,605,685	14,003	.18%
Natchez-Adams County	26,467,201	0	0%
Tunica County	12,911,768	2,611,665	20%
Vicksburg City	4,341,516	627,035	1.41%
Western Line Municipal	9,523,129	17,980	.19%

Note: Harrison County was in litigation over casino tax revenue during this time period. That is why a zero is recorded for this school district.

The following descriptive statistics displayed in Tables 5.8 – 5.13 are offered to show the amount of per pupil spending that each casino school district provides for its students. Furthermore, it lists the amount of total casino tax revenue that is contributed to the school district, and the percentage from total spending that the casino tax revenue accounts for. The percentage is figured by dividing the casino tax revenue by total spending on education

In Table 5.8 the 1995-96 school year is shown as the first year that school districts housing casinos began to receive casino tax revenue. Two important things to note about this chart is that the Harrison County and the Natchez-Adams County school districts failed to receive any casino funding. The Harrison County School District was tied up in litigation over casino tax revenue (discussed more in the chapter reporting the case study findings). The Natchez-Adams County School District officials decided that more pressing concerns, such as transportation and safety, were more important than education, and chose to disburse the monies elsewhere. The local ordinance disbursing the 3.2 percent of casino tax revenue received by the Natchez-Adams County School District does not provide any for education. Many of these local governmental leaders speculate that the school district has benefited from casinos, indirectly in the form of increased per pupil assessment values, which have in turn increased the amount of revenue available for per pupil expenditures. Furthermore, the Harrison County School District reports a zero amount because the money they would be receiving was tied up in an escrow account until the court case between the Harrison County School District and Long Beach School District could be decided. Again, this is covered in more detail in the case study section of this dissertation.

Table 5.9

SUPPLEMENTAL CASINO TAX REVENUE FOR PER PUPIL EXPENDITURES ON EDUCATION: 1996-97

School District	Governmental Sources of Revenue	Casino Revenue	% From Total Revenue
Bay St. Louis City	11,046,907	5,200	.04%
Biloxi City	33,055,566	3,300,874	10%
Clarksdale City	17,777,547	137,279	.77%
Coahoma County	10,051,068	29,630	.29%
Greenville City	35,468,005	339,240	.96%
Gulfport City	37,054,689	997,946	2.69%
Hancock County	15,891,448	12,415	.08%
Harrison County	49,448,816	0	0%
Leland City	7,361,752	34,548	.47%
Natchez-Adams County	26,804,893	0	0%
Tunica County	11,154,752	3,339,911	30%
Vicksburg City	45,551,903	613,860	1.35%
Western Line Municipal	9,727,939	54,001	.56%

After reviewing Table 5.9, four school districts seem to stand out as major recipients of casino tax revenue. The are: the Biloxi, Gulfport, Vicksburg, and Tunica County school districts. The Biloxi City School District received 10 percent of its general fund budget for per pupil expenditures from casino tax revenues during this fiscal school year. The Tunica County School District reported an increase in casino tax revenues for education of 10 percent during this period of time. This substantial increase in casino funds, by far, makes the Tunica County School District the largest beneficiary of casino tax revenue at 30 percent of its general fund budget for per pupil expenditures. A majority of the school districts in Mississippi, which receive casino tax revenue, disburse around 1 to 2 percent of the casino tax revenue into their school districts general fund for per pupil expenditures. Again, two primary reasons for this small amount of casino tax revenue for education can be attributed to the lack of stakeholder desire to

increase education expenditures in these school districts, and the relatively small number of casinos that are operating in the counties and municipalities which house the casino school districts in this study. A lack of stakeholder desire is evident in the initial local levels of legislation because most of these casino disbursement guides deposit the casino tax revenues into various other programs than education. Furthermore, when education receives a portion of the proceeds, the amount is usually minimal due to the existence of only one or two casinos operating in these school districts.

Table 5.10

SUPPLEMENTAL CASINO TAX REVENUE FOR PER PUPIL EXPENDITURES ON EDUCATION: 1997-98

School District	Governmental Sources of Revenue	Casino Revenue	% From Total Revenue
Bay St. Louis City	11,369,751	2,627	.02%
Biloxi City	21,115,907	3,521,840	17%
Clarksdale City	18,601,388	89,870	.48%
Coahoma County	11,496,595	924,489	.80%
Greenville City	36,411,972	413,500	1.13%
Gulfport City	36,921,421	984,233	2.7%
Hancock County	19,155,860	0	0%
Harrison County	53,807,928	0	0%
Leland City	8,012,066	43,352	.54%
Natchez-Adams County	27,791,152	0	0%
Tunica County	14,958,377	3,350,107	22%
Vicksburg City	48,751,353	626,582	1.29%
Western Line Municipal	10,385,742	53,689	.52%

In Table 5.10, the revenue trends occurring in the fiscal school year of 1997-98 resemble what has taken place in the previous fiscal school years, regarding the disbursement of per pupil expenditures in education among school districts in Mississippi with casinos. One change that happened in this school year worth noting pertained to the Hancock County School District. The Hancock County School District failed to receive

casino tax revenue in the 1997-98 fiscal school year because the casino housed in this county went bankrupt. The Hancock County casino market is small, and one of the casinos was failing to reach profit margins acceptable for its shareholders, therefore it closed down. The only school district in Hancock County that currently receives casino tax revenue is located in the municipality of Bay St. Louis. However, the Bay St. Louis School District receives a small donation from the casino annually for school operations or capital projects, which ever needs are most pressing for that particular school year. The local leaders in Bay St. Louis felt that placing most of the revenue into the reduction of property taxes was more feasible and appealing to its constituency than funding education. Local leaders were successful in getting the initial legislation passed by stipulating that property taxes would be "severely reduced" if the community decided to support casino gaming. The reason being is that Bay St. Louis is a retirement community with a large portion of its citizens living on a fixed income. Placing the revenues into the reduction of property taxes would free up a large portion of their resident's disposable income, which turned out to be extremely popular among its citizens. Bay St. Louis was the first local community to pass casino gaming in Mississippi, and the local leaders were true to their word. Property taxes in Bay St. Louis have been reduced by almost 80 percent since the adoption of casino gaming by this municipality.

Table 5.11

SUPPLEMENTAL CASINO TAX REVENUE FOR PER PUPIL EXPENDITURES ON EDUCATION: 1998-99

School District	Governmental Sources of Revenue	Casino Revenue	% From Total Revenue
Bay St. Louis City	8,885,248	1,385	.02%
Biloxi City	39,553,172	6,030,940	15%
Clarksdale City	18,622,106	89,870	.48%
Coahoma County	12,155,673	414,246	.03%
Greenville City	38,732,597	289,532	.74%
Gulfport City	41,032,595	3,059,089	8%
Hancock County	21,319,797	0	0%
Harrison County	56,576,077	2,451,866	4%
Leland City	8,083,416	49,532	.61%
Natchez-Adams County	29,524,241	0	0%
Tunica County	16,989,670	3,907,301	23%
Vicksburg City	49,253,055	664,180	1.35%
Western Line Municipal	11,281,627	54,362	.48%

Table 5.11 indicates that casino gaming revenue has remained relatively the same since it's adoption in the amount of casino tax revenue it contributes to per pupil education expenditures in Mississippi school districts with casinos. An increase occurred in casino tax revenues in the Biloxi City School District and the Gulfport City School District in the 1998-99 school year. The Tunica County School District remained the big winner in the amount of casino tax revenue it has continued to receive for per pupil education expenditures with 23 percent of its total expenditures coming from casino tax revenue. However, this was a slight decrease from the previous year's figure of 30 percent. One important aspect to note about this chart is that the Harrison County v. Long Beach School District Mississippi Supreme Court case was settled and the Harrison County School District began receiving casino tax revenue that had been tied up in an

escrow account since 1995. The Harrison County School District became the fourth largest school district to benefit from casino gaming for per pupil expenditures in 1998, with 4 percent of its general fund's expenditures coming from gaming tax dollars. The Long Beach City School District and Pass Christian Municipal School District began receiving casino tax revenue as well, but since neither one of these municipalities house a casino they are excluded from this study (discussed in more detail in chapter five).

Table 5.12

SUPPLEMENTAL CASINO TAX REVENUE FOR PER PUPIL EXPENDITURES ON EDUCATION: 1999-00

School District	Governmental Sources of Revenue	Casino Revenue	% From Total Revenue
Bay St. Louis City	14,989,865	11,157	.07%
Biloxi City	43,223,310	6,002,572	14%
Clarksdale City	20,550,648	208,806	.01%
Coahoma County	12,530,224	155,643	.01%
Greenville City	41,394,238	341,459	.80%
Gulfport City	45,483,974	1,876,185	4.12%
Hancock County	24,160,355	0	0
Harrison County	63,541,713	1,318,174	2%
Leland City	8,757,936	38,895	.40%
Natchez-Adams County	33,096,772	0	0
Tunica County	19,281,684	4,876,216	25%
Vicksburg City	52,572,859	728,346	1.4%
Western Line Municipal	11,837,138	53,951	.50%

Table 5.12 reports the findings for the fiscal school year 1999-2000. After assessing all the descriptive data regarding the percentage of casino tax revenue on per pupil expenditures among casino school districts in Mississippi, two school districts stand out as major beneficiaries of casino gaming: the Biloxi City School District and the Tunica County School District. The Gulfport School District ranks third in the amount of

casino tax revenue it receives for per pupil expenditures, followed by the Vicksburg City School District. The rest of the casino school districts in Mississippi receive only a small portion of per pupil expenditures on education. This can be attributed to the local bills that were put together by community leaders that disburse the casino tax revenue. Secondly, many of these school districts are in small casino markets where there are only one to two casinos that operate in their community's jurisdiction. This too, is why many of these casino school districts receive such a small portion of casino tax revenue for per pupil expenditures on education. As the 1999-00 figures indicate, eleven of the school districts in Mississippi that are located in counties and municipalities that have adopted casino gaming receive some portion of casino tax revenue for per pupil expenditures.

Table 5.13

TOTAL SUPPLEMENTAL CASINO TAX REVENUE FOR PER PUPIL EXPENDITURES ON EDUCATION: 1995-00 TOTALS

School District	**Governmental Sources of Revenue**	**Casino Revenue**	**% From Total Revenue**
1995-96	332,775,821	7,815,703	2.35%
1996-97	310,395,286	8,864,904	2.86%
1997-98	332,907,685	10,010,289	3.00%
1998-99	352,009,274	17,012,303	4.83%
1999-00	391,420,743	15,611,404	3.87%
TOTALS	**1,719,508,809**	**59,314,603**	**3.50%**

Table 5.13 is a summary table that shows the amount of total revenue spent by all 13 casino school districts in Mississippi, the amount of casino tax revenue that went into total per pupil expenditures for each year, and what percentage of casino tax revenue makes up the total per pupil expenditures in these 13 Mississippi school districts with

casinos. A gradual increase in the amount of casino tax revenue has been occurring for school districts receiving casino money, except for the last school year of 1999-2000. One explanation for this decline in revenue is that the newness of the casino industry in Mississippi is wearing off, and the once escalating profit margins reported by the casinos are starting to level off. Some policy makers in these school districts believe that the downturn in the economy is partially why casino tax revenues have declined in the 1999-2000 school year, compared to the other school years. The reason being that when there is a down turn in the economy, the first industries hit are those that are considered entertainment industries. People are forced to spend a large portion of their disposable income on the necessities in life and very little of their income is left over for entertainment purposes. For instance, in the1998-1999 school year the net contribution of casino tax revenue to the thirteen school districts in Mississippi with casinos was $17,012,303. This figure slightly declined in the 1999-2000 school year to $16,213,176, a net loss of $799,127. This was the first decline in casino spending on education since Mississippi school districts began receiving casino tax revenue in 1995. According to the 1999-00 descriptive data, 3.87 percent of casino school districts general funds per pupil expenditures are comprised of casino tax revenue. What have the comparative means tests and descriptive statistics suggested about the impact of casino tax revenue on per pupil education expenditures in Mississippi?

Assessment of Comparative Means and Descriptive Statistics

A couple things to note about Hancock County and Natchez-Adams County school districts in regards to casino money for per pupil expenditures are as follows. In

the initial legislation drafted by the Hancock County local government, officials failed to incorporate school districts in the disbursement of casino tax revenue. The Hancock County elected officials chose to place a large portion of the casino tax revenue into the reduction of property taxes. The municipality of Bay St. Louis, the other school district in Hancock County, receives casino tax revenue because local officials decided that the school system needed extra revenue to meet the needs of its students. The local officials in Bay St. Louis negotiated a deal with the local casino to provide funds to the school system. The Bay St. Louis school district receives an annual donation from the casino each year that is based on the previous years profits. Because this figure fluctuates so dramatically, the school district does not rely heavily on the revenues for operating costs. They primarily use the proceeds for capital projects such as renovations, however some of the proceeds have been used to purchase new computers for the classroom.

The City of Natchez's local private law passed by the state legislature failed to incorporate the school district into the initial local casino legislation that would allow them to receive casino funds. Local officials, because of the demise of the oil industry, felt that infrastructure development, public safety and transportation were immediate concerns that needed to be addressed by supplemental revenue. Local officials felt that once these issues were "adequately" addressed that schools, in turn, would benefit indirectly from the casinos. The idea was to increase economic development so more property taxes could be generated for the community. Once "adequate" property taxes were received, schools would receive the needed funds to offer appropriate levels of education for their students. When asked what "adequate" meant, those interviewed could not provide a definite answer.

One thing that seems to stand out among the schools districts is the amount of per pupil spending that comes from the supplemental casino tax revenue. There are two major reasons why the supplemental casino tax revenue is being used in some school districts to considerably enhance per pupil expenditures, while in others it is only being used sparingly. The first is the commitment of the local elected leaders to draw up legislation that considered schools as a major beneficiary of casino tax revenue. The second is the number of casinos that are located in the county or municipality that have decided to allow casino gaming in their community (a more in- depth discussion of these two issues is provided in the latter section of this chapter).

Despite these exceptions, the casino tax revenue is being used as supplemental revenue for enhancing per pupil expenditures in 11 of the 13 casino school districts used in this study. Tunica County is, by far, making the most of its supplemental casino tax revenue for education. In the 1999-2000 school year, 25 percent of Tunica County's total spending per pupil was from casino tax revenue. Fourteen percent of the Biloxi City School District's total per pupil expenditures were comprised of supplemental casino tax revenue, 4 percent in Gulfport and 2 percent in Harrison County.

The descriptive statistics, through time, suggest that the four outlying school districts defined in terms of casino tax revenue for education are the Biloxi, Gulfport, Tunica, and Vicksburg school districts. However, due to extraneous factors such as the Mississippi Supreme Court case that has tied the Harrison County School District up in litigation, the school district has been hindered throughout most of this time period in receiving casino tax revenue. The figures reported from 1998 through 2000 indicate that the Harrison County School District would, through this time period be the fourth largest

recipient of casino tax dollars for education. Therefore, the Harrison County School District is chosen over the Vicksburg City School District as one of the outlying school districts used throughout this dissertation.

The comparative means test and the descriptive statistics are appropriate statistical tests in order to understand what is taking place in per pupil expenditures among casino and non-casino school districts in Mississippi. However, they are limited in a number of different ways. For instance, the comparative means test to measure the significance of the spending differences between the two comparison groups. Furthermore, it fails to account for other variables that may play a major or minor role in the social phenomenon that is being explained.

The descriptive statistics are valid in helping one to understand what is taking place in Mississippi casino school districts regarding casino tax dollars for education. For instance, the descriptive statistics demonstrate that casino school districts are receiving casino tax revenue for per pupil expenditures, but are also limited because other facts associated directly or indirectly to casinos may or may not have influenced this supplemental income. Hence, a more advanced statistical method is needed to answer the questions not addressed by the comparative means test or the descriptive statistics.

The deficiencies of the comparative means test are adjusted for by using pooled time series cross-sectional regression analysis. Pooled time series cross-sectional regression analysis is a more robust analysis of the impact that casino tax revenue is having on total spending for education in Mississippi. Miller and Pierce (1997) contend that pooled time series cross-sectional regression analysis provides the researcher with an appropriate comparative analysis of state and local level data because it controls for

sampling error. Sampling error operates across space and time and can be a result of changes in spending among local school districts. Sampling error could hinder this project because there are considerable spending differences in the amount of casino spending on education, as each school district in Mississippi created their own disbursement percentages for education. Miller and Pierce also argue that pooled time series cross-sectional regression analysis is appropriate for determining the effect of an intervention variable across space and time. This procedure is performed by measuring units (school districts) with and without the intervening casino tax revenue variable over time. For instance, researchers will have difficulty determining if significant long term effects of casino tax revenue have played a major role in the Biloxi City School district unless we look at other school districts without casino tax revenue. How are we to know for certain that the casino tax revenue variable is what is causing the increase in per pupil expenditures or something else?

The first set of pooled time series cross-sectional regression analyses addresses H_1: School districts receiving casino tax revenue tend to spend more per pupil on education, compared to matching school districts without casinos.

Table 5.14

TOTAL PER PUPIL SPENDING ON EDUCATION IN ALL SCHOOL DISTRICTS
POOLED TIME SERIES MODEL ONE
1989 - 2000

	b	st.e	beta	t	p.
(Constant)	118.261	114.557		1.032	.303
Casino Tax Revenue	.648	.281	.052	2.307	.022
# of Students	-.00489	.006	-.016	-.802	.423
Millage Rate	-.207	1.586	-.003	-.130	.896
Assessment Value	35.171	19.210	.045	1.831	.068
Education Spending $_{t-1}$	1.018	.027	.899	37.593	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-12.952	38.534	-.007	-.336	.737

R	*.951*
R^2	*.904*
Adjusted R^2	*.902*
Df	*6*
F	*440.189*
Sig. Of F	*.001*
N =	*286*

Note: letters mean the following:
b- slope of the regression line
st.e – standard error
B – Beta
T – t-test
p>. Significance Value

Note: See Appendix three for all tests checking for Heteroskedasticity and Autocorrelation in the pooled time series cross-sectional regression models.
Note: Education Spending represents spending on education over time as an independent variable.

Table 5.14, displaying the results for Model 1 (measure of richness in school districts), is the regression equation that measures the amount of total spending for each school district in Mississippi from 1989 through the 2000 school year. The statistics from the F-test (a statistical test that evaluates the ratio between the total amount of variance in a dependent variable that is explained by a set of variables) of 440.189, with a significance of .001, indicates that a strong difference exists between the seven independent variables and the one dependent variable. The adjusted R^2 of .902 suggests that the model is explaining a large amount of the variance occurring in the equations between the variables (90 %). The overall statistics reported in the model tend to suggest that the regression equation is valid and reliable for explaining the social phenomenon in the data set.

The casino tax revenue variables *B* of .052 (beta weight which measures the amount of change in the dependent variable in terms of standard-deviation units for each of the independent variables), signifies it as being a valid predictor in the regression model. The regression coefficient of *b* (the slope of the regression line) indicates how much the dependent variable changes with unit increases or decreases among the independent variables. The casino tax revenue variable signifies that a positive difference is occurring between the seven independent variables and the one dependent variable. Therefore, for every unit increase for casino, an increase of .648 will occur in total spending on education in Mississippi school districts with casinos. Although the casino tax revenue variable signifies a statistical relationship, the casino presence variable does not. However, the inverse relationship of the variable is indicative of what was expected, despite the absence of a significant p>.

This t - test indicates how many standard deviations the sample *b* is above or below the mean of the sampling distribution of *b*. The t test is important because in regression it is used to test the null hypothesis (that the population slope is zero) (McClendon, 1994). The t - test is important for this equation because the null hypothesis was rejected. The null hypothesis that: school districts in Mississippi receiving casino tax revenue tend to spend the same per pupil, compared to matching non-casino school districts in Mississippi, is rejected.

Table 5.15

LOCAL PER PUPIL SPENDING ON EDUCATION ALL SCHOOL DISTRICTS
POOLED TIME SERIES MODEL ONE
1989 - 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	-17.802	52.689		-.388	.736
Casino Tax Revenue	.388	.156	.054	2.487	.013
# of Students	001.855	.003	.010	.551	.582
Millage Rate	2.084	1.038	.047	2.008	.046
Assessment Value	53.648	13.385	.119	4.008	.001
Education Spending $_{t-1}$	.877	.033	.830	26.593	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-18.426	21.473	-.016	-.858	.392

R	*.954*
R^2	*.910*
Adjusted R^2	*.908*
Df	*6*
F	*472.474*
Sig. Of F	*.001*
N	*286*

Model 5.15 shows an adjusted R^2 of .91, suggesting that 91 percent of the variance is being explained by the equation. The F value of 472.474 with a p>. accepted at the .001 level of significance, suggests that the model is valid.

The casino tax revenue variable indicates a p>. statistical significant suggesting that per pupil expenditures for education are increasing. The casino presence variable, although not significant, is indicating a directional relationship that was expected in the model. One additional finding of this model is the p>. of per pupil assessment values. The significance level of .001 in per pupil assessment values suggests that local per pupil spending for education is increasing. The t - ratio of 2.487 for the casino tax revenue variable indicates that rejecting the null hypothesis is suitable for this model.

Table 5.16

TOTAL PER PUPIL SPENDING ON EDUCATION POST CASINO GAMING
POOLED TIME SERIES MODEL ONE
1995 – 2000

	b	st.e	beta	t	p.
(Constant)	1047.862	242.132		4.328	.001
Casino Tax Revenue	.656	.326	.096	2.009	.047
# of Students	-1.883	.010	-.080	-1.952	.053
Millage Rate	1.922	2.526	.033	.761	.448
Assessment Value	60.652	26.708	.117	2.271	.025
Education Spending $_{t-1}$	.824	.052	.769	15.846	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-70.559	63.146	-.046	-1.117	.266

R	*.911*
R^2	*.830*
djusted R^2	*.821*
Df	*6*
F	*99.912*
Sig. Of F	*.001*
N	*130*

One the most important aspects of Table 5.16 is the value of the per pupil assessment variable. The *b* of per pupil assessment value indicates that for every unit increase in per pupil assessment value (measured in $100 thousands) an increase of 60.652 will occur in local dollars appropriated for per pupil expenditures in Mississippi. Again, these findings are consistent with the funding mechanisms used by governmental entities in generating revenue for education. The casino tax revenue variable indicates that for every unit increase in casino tax revenue received by school districts for per pupil

expenditures, an increase of .656 will occur in total spending for education. The t - ratio of 2.009 allows the null hypothesis to be rejected. The casino presence variable, although not significant, is indicating a directional relationship that was expected in the model.

The casino tax revenue variable's impact on total per pupil expenditures can best be explained by reviewing the local statutes that direct the disbursement of casino tax revenue in each casino school district in Mississippi. In the development of these statutes, many local governmental entities opted to spend a large portion of the casino tax revenue on education expenditures. The data therefore suggests that casino tax revenues have played a major role in increasing the local per pupil expenditures in Mississippi school districts housing casinos compared to matching non-casino school districts.

Table 5.17

LOCAL PER PUPIL SPENDING ON EDUCATION ALL SCHOOL DISTRICTS
POST CASINO GAMING POOLED TIME SERIES MODEL ONE
1995 - 2000

	b	st.e	beta	t	p.
(Constant)	98.317	81.605		1.205	.231
Casino Tax Revenue	.239	.163	.057	1.798	.075
# of Students	001.22	.005	.007	.259	.796
Millage Rate	2.222	1.501	.051	1.481	.141
Assessment Value	54.366	17.260	.139	3.150	.002
Education Spending $_{t-1}$	.836	.043	.825	19.359	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-47.802	31.771	-.041	-1.505	.135

R	*.962*
R^2	*.925*
Adjusted R^2	*.921*
Df	*6*
F	*252.152*
Sig. Of F	*.001*
N	*130*

Table 5.17 is measuring the impact of casino gaming on local education revenue since gaming dollars began influencing per pupil expenditures in 1995. The casino tax revenue variable failed to display a significant difference, indicating that it had little to no impact on the regression model. The casino presence variable, although not significant, is indicating a directional relationship that was expected in the model. The per pupil assessment value variable demonstrated a significance level at .01, suggesting that local

per pupil spending on education has increased. For every dollar increase in per pupil assessment value, an increase of 54.366 will occur in local spending on education.

The descriptive statistics indicate that really only four casino school districts were significantly benefiting from casino gaming in Mississippi: the Biloxi City, the Gulfport City, the Harrison County and the Tunica County School Districts. An argument could be made that these four school districts are skewing the regression models and what is really being displayed in the statistical reports and analyses fails to represent reality. However, descriptive statistics are limited in trying to identify outliers in the data set, so alternative methods were used to determine which cases were the outliers in the data set. In order to address this question the previously mentioned school districts were considered outliers in the comparative means test and regression models and were excluded from the data set for addressing the impact of casino gaming. In identifying outliers in the regression models the following residual statistics were examined.

- Leverage Values – identifies outliers among the independent variables.
- Studentized Deleted Residuals – outliers of dependent variables are identified.
- Cook's D – the combination of independent and dependent outliers are identified.

Once the outliers were determined in the data set they were excluded from the comparison means calculations and regression models in order to measure their impact on the statistical analyses.

Table 5.18

ARITHMETIC MEANS FOR EDUCATION SPENDING WITH OUTLIERS EXCLUDED: 1989 - 2000

School Districts With Casinos 1989-1994: Group One – Outliers Excluded
School Districts Without Casinos 1989-1994: Group Two
School Districts With Casinos 1995-1999: Group Three – Outliers Excluded
School Districts Without Casinos 1995-1999: Group Four
Outlying School Districts 1989 – 1994: Group Five – Four Outlying School Districts
Outlying School Districts 1995 – 2000: Group Six – Four Outlying School Districts

	Group1	*Group 2*	*Group 3*	*Group 4*	*Group5*	*Group6*
1989	**3534**	**3315**	**X**	**X**	**3297**	**X**
1990	**3339**	**3423**	**X**	**X**	**3443**	**X**
1991	**3412**	**3409**	**X**	**X**	**3545**	**X**
1992	**3442**	**3583**	**X**	**X**	**3677**	**X**
1993	**3512**	**3844**	**X**	**X**	**3990**	**X**
1994	**3505**	**3977**	**X**	**X**	**4020**	**X**
1995	**X**	**X**	**3792**	**4565**	**X**	**4891**
1996	**X**	**X**	**3893**	**4426**	**X**	**5062**
1997	**X**	**X**	**3853**	**4906**	**X**	**5333**
1998	**X**	**X**	**4309**	**5257**	**X**	**5777**
1999	**X**	**X**	**4728**	**5692**	**X**	**6315**

Table 5.18 is the comparative means of both casino and non-casino school districts in Mississippi, with the four outlying casino school districts excluded from the analysis. Groups five and six represent the four outlying school districts before, and after, the adoption of casino gaming in Mississippi.

Table 5.19

COMPARATIVE MEANS TEST FOR ARITHMETIC MEANS OUTLIERS EXCLUDED: 1989 – 2000

Group Statistics

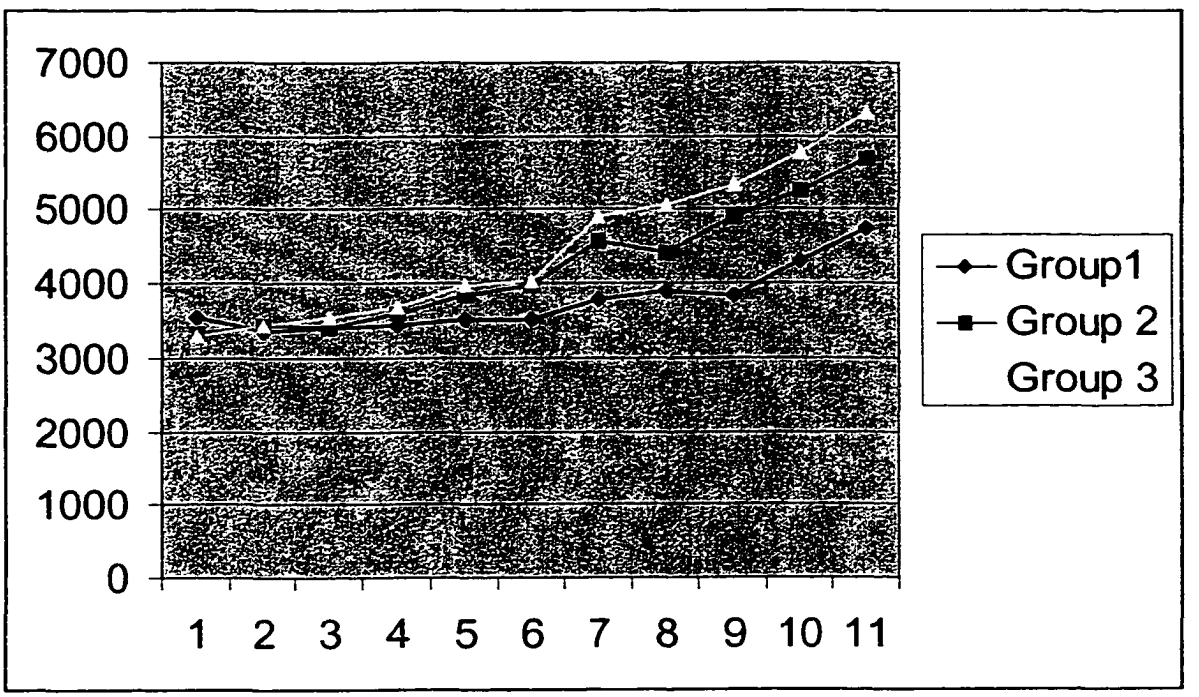
	Dummy	Mean	St.D.	T – Score	p.>
(0 = Casino School Districts Before Casino Gaming) (1 = Non-Casino School Districts Before Casino Gaming)					
Total Spending Edu.	.00	4367	1035	1.016	.311
	1.00	4239	917.67		
Casino Tax Revenue	.00	195885	750192	3.125	.002
	1.00	.0000	.0000		
Number of Students	.00	3583	2093	-4.285	.001
	1.00	5175	3257		
Millage Rate	.00	42.51	11.22	-3.884	.001
	1.00	49.24	14.50		
Assessment Value	.00	2.9106	1.761	.748	.455
	1.00	2.7800	.9337		

With the four outlying school districts excluded from the model, Table 5.19 reports no significant difference in total spending for education between casino school districts and matching non-casino school districts in Mississippi. The casino tax revenue variable reports a significant difference in the model, despite the fact that four of the dominant casino school districts were excluded from the model. With the exclusions of the outliers from the model a significant difference occurred between number of students and millage rates. The inverse relationship indicated by the negative sign suggests that the matching non-casino school districts have witnessed a faster increase in number of

students and millage rates during this time period, compared to the casino school districts.

Table 5.20

ARITHMETIC MEANS GRAPH WITH OUTLIERS EXCLUDED FOR PER PUPIL EXPENDITURES: 1989 - 2000



Line with triangles represents four outlying school districts.
Line with squares represents non-casino school districts with outliers excluded.
Line with diamonds represents casino school districts.

Table 5.20 offers a nice visual of the difference in per pupil expenditures on education, since the adoption of casino gaming between the four outlying casino school districts, the casino school districts, and the matching non-casino school districts. The comparative means graph suggests that a difference between the variables is taking place, while identifying the four cases that are benefiting most from casino gaming. Further

analysis is needed to determine just how much of an influence the four outlying school districts are having on the regressions models used in this dissertation.

Table 5.21

TOTAL PER PUPIL SPENDING ON EDUCATION
ALL SCHOOL DISTRICTS POOLED TIME SERIES MODEL ONE
OUTLIERS EXCLUDED
1989 – 2000

	b	st.e	beta	t	p.
(Constant)	913.701	264.151		3.459	.001
Casino Tax Revenue	.847	.670	.078	1.264	.209
# of Students	-02.06	.012	-.082	-1.701	.092
Millage Rate	1.961	2.700	.036	.726	.469
Assessment Value	49.025	34.631	.102	1.416	.160
Education Spending $_{t-1}$	.859	.058	.786	14.699	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-52.947	70.792	-.034	-.748	.456

R	*.908*
R^2	*.825*
Adjusted R^2	*.814*
Df	*6*
F	*80.747*
Sig. Of F	*.001*
N	*110*

In Table 5.21, the only variable with a statistically significant p>. is education spending. Again, although the casino tax revenue variable and casino presence variable are failing to offer significant values, the inverse relationship displayed by the casino presence variable was expected in the regression model. Eliminating the four dominant school districts (Biloxi, Gulfport, Harrison County and Tunica County school districts)

from the regression model paints a whole different picture of the impact of casino tax revenues on per pupil expenditures in Mississippi. According to the results, what appears to be occurring is that four casino school districts in Mississippi are receiving a disproportionate amount of casino tax revenue, compared to the other nine school districts with casinos, and the other thirteen that receive no casino tax revenue. The insignificant p>. for the casino tax revenue variable and per pupil assessment value further suggest that when the four outliers are excluded from the analysis, the other nine casino school districts are only receiving a small portion of casino tax revenue. This social phenomenon may be occurring for two distinct reasons. First, the portion of casino tax revenue allotted to education in these four outlying groups is considerably larger than other casino school districts. For instance, the Biloxi City School District contributes 20 percent of its gross casino tax revenues to public schools, whereas the Vicksburg City School District disburses 10 percent of its casino tax revenues towards per pupil expenditures. Secondly, the Biloxi City School District houses nine casinos, whereas the Vicksburg City School District accommodates only four. In turn, the more casinos located in a municipality, town or county results in more casino tax revenue. The findings then suggest that if you are a school district in Biloxi, Gulfport, Harrison County, or Tunica County that houses and receives casino money, you are going to spend more on education. If you are one of the other nine casino school districts receiving casino money, the amount of revenue received for per pupil expenditures will be minimal.

Table 5.22

LOCAL PER PUPIL SPENDING ON EDUCATION
ALL SCHOOL DISTRICTS POOLED TIME SERIES MODEL ONE
OUTIERS EXCLUDED
1989 – 2000

	b	st.e	beta	t	p.
(Constant)	157.560	88.243		1.786	.077
Casino Tax Revenue	.762	.338	.093	2.259	.026
# of Students	.001	.006	.005	.174	.862
Millage Rate	1.334	1.574	.032	.848	.399
Assessment Value	32.478	20.868	.089	1.556	.123
Education Spending $_{t-1}$	.860	.047	.847	18.34	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-27.607	35.775	-.023	-.772	.422

R	*.960*
R^2	*.922*
Adjusted R^2	*.917*
Df	*6*
F	*202.990*
Sig. Of F	*.001*
N	*110*

When the casino school district's outliers were excluded from the regression model in Table 5.22, the casino tax revenue variable remained significant at the .05 level of significance, suggesting that for every unit increase in the casino tax revenue variable, an increase of .762 will occur in total per pupil expenditures for education. The casino presence variable again reported an inverse relationship, which was expected. At least in regards to local spending for education, the nine casino school districts used in this model are increasing spending as a result of casino revenue for education. Although the

conclusion that total spending in nine casino school districts is statistically significant, local spending has diverged significantly from the control group.

Model II: Dollar Change From Year to Year

The next set of statistical tables will measure the actual dollar change that has occurred over time in Mississippi school districts. The following variables are used in the pooled time series cross-sectional regression models. Each variable is coded as rate of dollar change from year to year from 1989 – 2000 (except for the casino presence variable which is coded as a dummy variable 0 = casino school districts; 1 = non-casino school districts. The number of students variable is coded as rate of change in the number of students from year to year).

- SPEDU - Total Spending Per Pupil by School District lagged one year (Dependent Variable)
- LOCAL SPEDU - Local Spending on Education Per Pupil (Dependent Variable)
- CASINO TAX REVENUE - Gaming Tax Revenue For School Districts (measured in $100 thousand)
- PER PUPIL ASSESSMENT VALUE – Average Per Pupil assessment value based on Average Daily Student Attendance - lagged one year (measured in $100 thousand)
- STUDENTS - Number of students in each school district
- MILLAGE - Millage Rates in each school district
- EDUCATION SPENDING – Independent Variable Accounting For Education Spending Over Time
- CASINO PRESENCE – Dummy variable coded 0 = casino school districts; 1 = non-casino school districts.
- UNEMPLOYMENT RATES – Unemployment rates in school districts used in conjunction with the casino tax revenue variable to test casino tax revenue's impact on per pupil assessment value. The variable is measured in terms of county data.

Measuring dollar change allows the researcher to focus on the impact that casino tax revenues have made in terms of increases or decreases in casino tax revenues from year to year between cross-sections (school districts). It will ultimately answer the question: do greater periods of dollar change result into greater growth? In turn, the researcher can view the results to determine if revenue patterns have increased, decreased, or remained the same on a year-to-year basis, and how these changes have impacted per pupil expenditures of Mississippi school districts housing casinos compared to matching non-casino school districts.

Table 5.23

TOTAL DOLLAR CHANGE ON PER PUPIL SPENDING FOR EDUCATION
ALL SCHOOL DISTRICTS POOLED TIME SERIES MODEL TWO
1989 - 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	268.802	32.279		8.328	.001
Casino Tax Revenue	2.016	.434	.292	4.651	.001
# of Students	-.0449	.083	-.034	-.544	.587
Millage Rate	-.668	3.107	-.013	-.215	.830
Assessment Value	29.832	42.878	.044	.696	.487
Education Spending $_{t-1}$	-.213	.064	-.210	-3.355	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-19.148	39.540	-.030	-.484	.629

R	*.382*
R^2	*.146*
Adjusted R^2	*.123*
Df	*6*
F	*6.446*
Sig. Of F	*.001*
N	*286*

Table 5.23, the first table dealing with dollar change from year to year, reports the findings of all school districts. The R^2 of .123 indicates that 12 % of the variance is being explained in the model. The F – value of 6.446, with a significance level accepted at the .001 level of significance, further indicates that the regression model is valid for explaining the social phenomenon that is being reported in the regression equation.

The casino tax revenue variable is a major indicator for measuring dollar change over time among Mississippi school districts housing casinos compared to matching non-casino school districts. The casino presence variable is again reporting an inverse relationship, which was expected. This table is inferring that the rate of change in the casino tax revenue for casino school districts has contributed to an increase in the rate of change in total per pupil spending for education.

Table 5.24

LOCAL DOLLAR CHANGE ON PER PUPIL SPENDING FOR EDUCATION ALL SCHOOL DISTRICTS POOLED TIME SERIES MODEL TWO
1989 - 2000

	b	st.e	beta	t	p.
(Constant)	102.548	19.068		5.378	.001
Casino Tax Revenue	1.137	.272	.269	4.173	.001
# of Students	-3.458	.052	-.004	-.066	.947
Millage Rates	1.108	1.952	.036	.568	.571
Assessment Value	12.875	28.026	.031	.459	.646
Education Spending $_{t-1}$	-.0955	.064	-.100	-1.490	.138
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-35.919	24.960	-.092	-1.439	.152

R	*.314*
R^2	*.2099*
Adjusted R^2	*.075*
F	*4.151*
Sig. Of F	*.001*
N	*286*

In Table 5.24, the regression equation reports an increase in the amount of variance that is being explained by the social indicators in this model. The adjusted R^2 of .075 suggests that 7 percent of the variance is being explained in this model. Despite the casino tax revenue variable having relatively no effect on the regression equation, it is important to note the impact that per pupil assessment value imposed on this statistical computation.

The casino presence variable is again reporting an inverse relationship, which was expected. The casino tax revenue variable is a major indicator for measuring dollar

change over time among Mississippi school districts housing casinos compared to matching non-casino school districts. From this table it can be inferred that the rate of change in the amount of casino tax revenue for casino school districts has contributed to an increase in the rate of change in local per pupil spending for education.

Table 5.25

TOTAL DOLLAR CHANGE ON PER PUPIL SPENDING FOR EDUCATION
ALL SCHOOL DISTRICTS POST CASINO GAMING
POOLED TIME SERIES MODEL TWO
1995 – 2000

	b	st.e	beta	t	p.
(Constant)	474.155	57.924		8.186	.001
Casino Tax Revenue	1.356	.505	.254	2.688	.008
# of Students	-3.948	.098	-.036	-.403	.688
Millage Rate	2.186	5.061	.039	.432	.667
Assessment Value	55.858	82.518	.062	.677	.500
Education Spending $_{t-1}$	-.296	.087	-.312	-3.400	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-105.360	67.273	-.146	-1.566	.121

R	*.470*
R^2	*.221*
Adjusted R^2	*.173*
Df	*6*
F	*4.593*
Sig. Of F	*.001*
N	*130*

In Table 5.25, although the Adjusted R^2.173 is only explaining 17 percent of the variance, the casino tax revenue variable is considered significant. The casino presence variable is demonstrating an inverse relationship as expected. The model is suggesting

that since the funneling of casino tax revenues to casino school districts began, the rate of change in total per pupil spending for education in all school districts has increased.

Table 5.26

LOCAL DOLLAR CHANGE ON PER PUPIL SPENDING FOR EDUCATION
ALL SCHOOL DISTRICTS POST CASINO GAMING
POOLED TIME SERIES MODEL TWO
1995 - 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	152.925	30.873		4.953	.001
Casino Tax Revenue	.932	.282	.322	3.309	.001
# of Students	-.0130	.055	-.022	-.238	.812
Millage Rate	-.384	2.832	-.013	-.136	.892
Assessment Value	26.062	47.625	.053	.547	.585
Education Spending $_{t-1}$	.5738	.087	.065	.660	.511
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-62.453	37.990	-.160	-1.644	.103

R	*.408*
R^2	*.166*
Adjusted R^2	*.115*
Df	*6*
F	*3.224*
Sig. Of F	*.006*
N	*130*

In Table 5.26, again the adjusted R^2 of .115 is only explaining 11 percent of the variance in the model, but the casino tax revenue variable is considered significant. The casino presence variable is demonstrating an inverse relationship as expected. Therefore, this model is suggesting that since the funneling of casino tax revenues to casino school

districts, the rate of change in local per pupil spending for education in all school districts has increased.

Table 5.27

TOTAL DOLLAR CHANGE ON PER PUPIL SPENDING FOR EDUCATION
ALL SCHOOL DISTRICTS OUTLIERS EXCLUDED MODEL TWO
1995 - 2000

	b	st.e	beta	t	p.
(Constant)	273.979	38.708		7.078	.001
Casino Tax Revenue	1.931	.663	.203	2.914	.004
# of Students	-3.394	.090	-.026	-.377	.707
Millage Rate	-.647	3.283	-.014	-.197	.844
Assessment Value	33.469	47.484	.050	.705	.482
Education Spending$_{t-1}$	-.212	.070	-.211	-3.015	.003
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-89.763	65.356	-.123	-1.373	.173

R	*.312*
R^2	*.097*
Adjusted R^2	*.069*
Df	*6*
F	*3.434*
Sig. Of F	*.003*
N	*110*

In Table 5.27, despite another low Adjusted R^2, the casino tax revenue variable is considered significant and the casino presence variable is demonstrating an expected inverse relationship. Although the four outlying casino school districts are excluded from the model, the table is suggesting that since the funneling of casino tax revenues to casino school districts began, the rate of change in total per pupil spending for education in all school districts has increased.

Table 5.28

TOTAL DOLLAR CHANGE ON LOCAL PER PUPIL SPENDING FOR EDUCATION
ALL SCHOOL DISTRICTS OUTLIERS EXCLUDED MODEL TWO
1995 - 2000

	b	st.e	beta	t	p.
(Constant)	99.500	22.852		4.354	.001
Casino Tax Revenue	1.542	.412	.262	3.741	.001
# of Students	.0032	.056	.004	.057	.954
Millage Rate	.993	2.038	.034	.487	.627
Assessment Value	-13.972	30.580	.033	.457	.648
Education Spending$_{t-1}$	-.0876	.070	-.092	-1.255	.211
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-33.533	28.188	-.083	-1.190	.236

R	*.299*
R^2	*.089*
Adjusted R^2	*.061*
Df	*6*
F	*3.118*
Sig. Of F	*.001*
N	*110*

In Table 5.28, the final regression table which measures the local dollar change with outliers excluded from the model reports that the casino tax revenue variable is considered significant, and the casino presence variable is demonstrating an expected inverse relationship. Although the four outlying casino school districts are excluded from the model, the table is suggesting that since the funneling of casino tax revenues to casino school districts began, the rate of change in total per pupil spending for education in all school districts has increased.

The regression analyses reported in the various equations measuring dollar change over time suggest that the casino tax revenue variable has impacted the amount of per pupil spending change that has occurred in casino school districts, compared to matching non-casino school districts, since the adoption of casino gaming. With local per pupil tax revenues for education extending from the per pupil assessment values, further analyses was carried out measuring the impact of casino tax dollars, and the presence of casino gaming on per pupil assessment values. Therefore, the rate of dollar change has impacted the growth of per pupil expenditures in casino school districts in Mississippi.

Per Pupil Assessment Value As A Dependent Variable: Model Three

The following set of statistical analyses measures the impact of casino tax revenue on per pupil assessment value to see if any statistical differences exist that may assist in understanding why the per pupil assessment value variable, in the previously tested per pupil expenditure models, are impacting the statistical tests. However, due to the absence of a law stipulating the timing within which school districts must re-assess land, the results of these statistical tests may be skewed. Timing means that after 1992 school districts must re-assess 25 percent of their land every four years according to Mississippi law. Prior to the passage of this law, school districts were not required to re-assess 25 percent of their land every four years. Despite this possible problem with the data, the analyses still serve an important purpose by indicating that the per pupil assessed value of casino school districts have changed since the adoption of casino gaming in Mississippi.

Table 5.29

ARITHMETIC MEANS FOR PER PUPIL ASSESSMENT VALUE

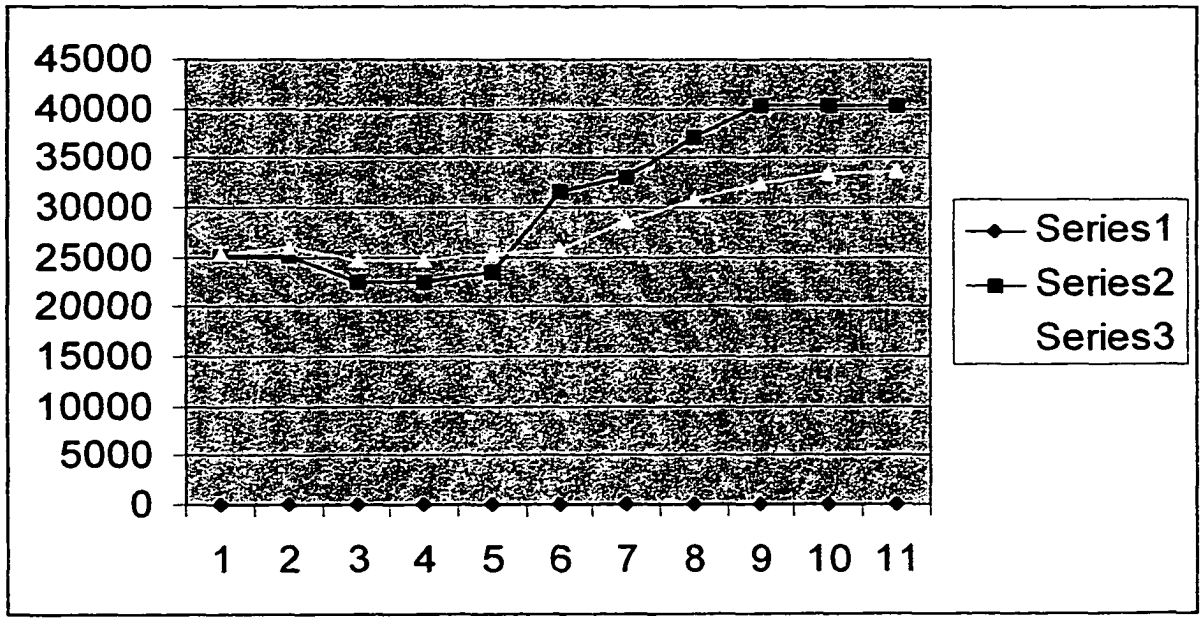
School Districts With Casinos 1989-1994: Group One
School Districts Without Casinos 1989-1994: Group Two
School Districts With Casinos 1995-1999: Group Three
School Districts Without Casinos 1995-1999: Group Four

	Group1	*Group 2*	*Group 3*	*Group 4*
1989	25182	25389	XXX	XXX
1990	25208	25920	XXX	XXX
1991	22437	24645	XXX	XXX
1992	22492	24744	XXX	XXX
1993	23461	25264	XXX	XXX
1994	31637	25784	XXX	XXX
Casino Tax Revenue				
1995	XXX	XXX	31705	28655
1996	XXX	XXX	37331	30730
1997	XXX	XXX	41274	32443
1998	XXX	XXX	41261	33487
1999	XXX	XXX	41361	33565

In Table 5.29, the comparative means table for per pupil assessment value offers a nice depiction of per pupil assessment value's change over time, prior to and after school districts began receiving casino tax revenues in Mississippi. Although casino school districts in Mississippi began receiving casino tax revenue in 1995, casino gaming was legalized in 1990, with the first casinos contributing tax dollars to municipalities and counties in 1992. As the chart indicates, the casino school districts in Mississippi faired better over the remaining years on increased per pupil assessment values than the matching comparison non-casino school districts. The non-casino group fared slightly better in the early nineties, compared to casino school districts in 1994.

Table 5.30

ARITHMETIC MEANS GRAPH FOR PER PUPIL ASSESSMENT VALUE



Note:
Line with boxes represents casino school districts.
Horizontal line on bottom represents years in study.
Vertical line represents per pupil assessed value of real and private property based on average daily attendance of students.

The top line of the graph in Table 5.30 represents the amount of increase in casino school districts, and the second line represents the increase in per pupil assessment value among matching non-casino school districts. The series of numbers across the bottom of the graph represent the years being studied (1989 – 90 school year = 1; through 1999 - 2000 = 11). The graph supports the notion that casino school districts have faired much better in the amount of increase in per pupil assessed value compared to matching non-casino school districts used in the study.

Table 5.31

COMPARATIVE MEANS TEST CASINO SCHOOL DISTRICTS VERSUS NON-CASINO SCHOOL DISTRICTS 1989 – 2000: PER PUPIL ASSESSMENT VALUE

Group Statistics

Casino Presence (0 = Casino School Districts) (1 = Non-Casino School Districts)		**Mean**	**St.D.**	**T – Score**	**p.>**
Assessment Value	.00	29731	15176	1.296	.196
	1.00	27800	9337		
Casino Tax Revenue	.00	393480	1087817	4.325	.001
	1.00	.0000	.0000		
Unemployment Rate	.00	8.1839	2.7847	6.145	.001
	1.00	6.3643	2.1872		

Table 5.31 is a comparative means test measuring the difference of casino tax revenue on the per pupil assessed value of land in casino school districts compared to matching non-casino school districts. The comparative means test indicates that a difference between casino school districts and non-casino school districts has occurred since the adoption of casino gaming, and the proceeds were funneled to school districts. The table also reports a significant difference between the comparison groups in reference to unemployment rates. The per pupil assessment value is reporting no statistically significant difference between the two comparison groups.

Table 5.32

COMPARATIVE MEANS TEST FOR CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING VERSUS CASINO SCHOOL DISTRICTS AFTER CASINO GAMING 1989 - 2000: PER PUPIL ASSESSMENT VALUE

Group Statistics

	Casino Presence	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Casino School Districts Before Casino Gaming) **(1 = Casino School Districts After Casino Gaming)**					
Assessment Value	.00	24136	8563.39	-5.263	.001
	1.00	36444	18409.59		
Casino Tax Revenue	.00	.0000	.0000	-5.146	.001
	1.00	865656	1486747		
Unemployment Rate	.00	8.9923	2.8395	3.998	.001
	1.00	7.2138	2.3986		

Table 5.32 is a comparative means test measuring the difference of casino revenue on per pupil assessment value before and after the adoption of gaming among only those school districts that receive casino tax revenue for education. The comparative means test indicates that a significant difference has occurred between casino school districts before and after the adoption of casino gaming in reference to the per pupil assessment value. The casino tax revenue variable and unemployment rate also indicate that significant differences have occurred before and after the adoption of casino gaming.

Table 5.33

COMPARATIVE MEANS TEST FOR NON-CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING VERSUS NON-CASINO SCHOOL DISTRICTS AFTER CASINO GAMING 1989 - 2000: PER PUPIL ASSESSMENT VALUE

Group Statistics

	Casino Presence	**Mean**	**St.D.**	**T – Score**	**p.>**
(0 = Non-Casino School Districts Before Casino Gaming) **(1 = Non-Casino School Districts After Casino Gaming)**					
Assessment Value	.00	24753	7469.10	-4.564	.001
	1.00	31456	10070.71		
Casino Tax Revenue	.00	.0000	.0000	XXX	XX
	1.00	.0000	.0000		
Unemployment Rate	.00	7.2333	2.1565	5.765	.001
	1.00	5.3215	1.7305		

Table 5.33 is a comparative means test assessing the impact of per pupil assessment value among non-casino school districts before and after the adoption of casino gaming. This statistical test was conducted to account for other factors that may have been driving an increase in per pupil assessment value over the period of time that this study was primarily concerned. The model reports a statistical difference before and after casino gaming, but due to the model's limited amount of variables, the results are hard to decipher. Without other variables in the model such as per capita income, population, and a proximity variable measuring the amount of economic development that may have occurred over this time period, the only thing that can really be determined by this model is that the difference in per pupil assessment value before and after casino gaming in Mississippi is statistically significant. One reason why this phenomenon may

have occurred is due to Mississippi's economic growth in the 90s. However, until additional variables are added to the model, this notion of economic growth impacting per pupil assessment values is only a speculative assumption of what might be occurring. Again, more variables are needed in the model before generalizations can be made about the statistical findings of this statistical test.

Table 5.34

COMPARATIVE MEANS TEST FOR CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING VERSUS NON-CASINO SCHOOL DISTRICTS BEFORE CASINO GAMING 1989 - 1994: PER PUPIL ASSESSMENT VALUE

Group Statistics

Casino Presence		Mean	St.D.	T – Score	p.>
(0 = Casino School Districts Before Casino Gaming) **(1 = Non-Casino School Districts Before Casino Gaming)**					
Assessment Value	.00	24136	8563.39	-.479	.633
	1.00	24753	7469.10		
Casino Tax Revenue	.00	.0000	.0000	XXX	XX
	1.00	.0000	.0000		
Unemployment Rate	.00	8.9923	2.8395	4.357	.001
	1.00	7.2333	2.1565		

Table 5.34 is a comparative means test measuring the difference between casino school districts and matching non-casino school districts before the adoption of casino gaming in Mississippi. This statistical model is important because it suggests that virtually no difference existed between the per pupil assessed values of property in Mississippi between casino school districts and non-casino school districts before casino

gaming, giving further statistical support for the notion that the two groups used in this study were virtually identical before the adoption of casino gaming in Mississippi.

Table 5.35

COMPARATIVE MEANS TEST CASINO SCHOOL DISTRICTS AFTER CASINO GAMING VERSUS NON-CASINO SCHOOL DISTRICTS AFTER CASINO GAMING 1995 - 2000: PER PUPIL ASSESSMENT VALUE

Group Statistics

Casino Presence		Mean	St.D.	T – Score	p.>
(0 = Casino School Districts After Casino Gaming) **(1 = Non-Casino School Districts After Casino Gaming)**					
Assessment Value	.00	36444	18409.59	1.916	.058
	1.00	31456	10070		
Casino Tax Revenue	.00	865656	1486747	4.694	.001
	1.00	.0000	.0000		
Unemployment Rate	.00	7.2138	2.3986	5.158	.001
	1.00	5.3215	1.7305		

Table 5.35 is a comparative means test assessing the difference between casino school districts compared to matching non-casino school districts in Mississippi after casino tax revenues began impacting education. Although the statistical significance of per pupil assessed value is above the significance level of .05, this model is still important because it suggests that the per pupil assessed value of land between the two groups is remarkably different since casino gaming came to Mississippi. The difference between the school districts in reference to the casino tax revenue was an expected finding, but the variation in unemployment rates is quite interesting. What this model seems to be suggesting is that a significant difference between the school districts exists

in reference to unemployment rates. In other words, unemployment rates have fallen faster in non-casino school districts compared to casino school districts. In order to further test the impact of casino tax revenue's impact on assessment value, pooled time series regression analyses was conducted on the data. The following tables report these results.

Table 5.36

CASINO TAX REVENUES IMPACT ON PER PUPIL ASSESSMENT VALUE: ALL SCHOOL DISTRICTS POOLED TIME SERIES REGRESSION ANALYSIS 1989 - 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	-305.147	1377.295		-.222	.825
Unemployment Rate	101.691	115.112	.021	.883	.378
Casino Tax Revenue	2.571	4.676	.013	.550	.583
Assessment Value $_{t-1}$	1.035	.027	.938	38.865	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-349.173	605.497	-.013	-.577	.565

R	*.941*
R^2	*.886*
Adjusted R^2	*.884*
Df	*4*
F	*495.246*
Sig. Of F	*.001*
N =	*286*

Table 5.36 is the first analysis presenting the findings of the pooled time series cross-sectional regression analyses. This model presents the findings of the regression equation that measured the impact of casino tax revenues on per pupil assessment value among all twenty-six school districts before and after casino gaming. The adjusted R^2 of

the model reports an impressive variance of 88 percent, but nonetheless the model is identifying no statistically significant differences among the four exogenous variables and the one endogenous variable (the Education Spending is not counted as a significant indicator because it is only in the model to demonstrate that increases in per pupil assessment value have been accounted for in the regression model). Neither of the two casino variables reported any significant findings.

Table 5.37

CASINO TAX REVENUES IMPACT ON PER PUPIL ASSESSMENT VALUE: POST CASINO GAMING POOLED TIME SERIES REGRESSION ANALYSIS 1995 – 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	-869.751	1240.714		-.701	.484
Unemployment Rate	146.254	110.643	.030	1.322	.187
Casino Tax Revenue	2.673	4.603	.014	.581	.562
Assessment Value $_{t-1}$	1.030	.027	.934	37.518	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	458.304	627.890	.017	.730	.466
R	*.941*				
R^2	*.886*				
Adjusted R^2	*.884*				
Df	*4*				
F	*495.683*				
Sig. Of F	*.001*				
N =	*130*				

Table 5.37 also fails to offer any significant differences between the four exogenous variables and the one endogenous variable. Again, the adjusted R^2 of the

model reports an impressive variance of 88 percent, yet it cannot provide conclusive evidence that allows for a significant difference among any of the variables in the model. Further analyses of this statistical model were computed in order to determine if the amount of change among the variables offered any explanation of the social phenomenon that may have occurred in the model. The casino tax revenue variable and casino presence variable failed to report any significant findings.

Table 5.38

TOTAL DOLLAR CHANGE IN CASINO TAX REVENUES IMPACT ON PER PUPIL ASSESSMENT VALUE ALL SCHOOL DISTRICTS POOLED TIME SERIES REGRESSION ANALYSIS
1989 - 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	830.853	534.734		1.554	.122
Unemployment Rate	-371.690	179.496	-.119	-2.071	.039
Casino Tax Revenue	-7.717	5.842	-.080	-1.321	.188
Assessment Value $_{t-1}$	.636	.078	.487	8.186	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	-1424.231	738.382	-.112	-1.929	.054

R	*.514*
R^2	*.264*
Adjusted R^2	*.251*
Df	*4*
F	*20.628*
Sig. Of F	*.001*
N =	*286*

Table 5.38, the first of two models testing the amount of change in per pupil assessed value of property in Mississippi school districts receiving casino tax revenue,

compared to matching non-casino school districts that do not receive casino tax revenue, reports the following. As expected, when per pupil assessment values increase, the unemployment rate decreases both before and after the adoption of casino gaming. The case study data (reported in Chapter Five) supports this finding because many of the individuals interviewed claimed that an increase in jobs had occurred since the establishment of casino gaming in their school district. The casino presence variable in the model suggests that the dollar change between casino school districts and non-casino school districts is statistically significant. However, the casino tax revenue variable failed to offer any significant findings.

Table 5.39

DOLLAR CHANGE IN CASINO TAX REVENUES IMPACT ON PER PUPIL ASSESSMENT VALUE ALL SCHOOL DISTRICTS POST CASINO GAMING POOLED TIME SERIES REGRESSION ANALYSIS
1995 - 2000

	b	**st.e**	**beta**	**t**	**p.**
(Constant)	35.215	446.754		.079	.937
Unemployment Rate	-348.326	180.757	-.111	-1.927	.055
Casino Tax Revenue	-5.632	5.952	-.058	-.946	.345
Assessment Value $_{t-1}$	.633	.079	.485	8.034	.001
Casino Presence (0 = Casino Districts) (1 = Non-Casino Districts)	165.025	807.767	.012	.204	.838

R	*.502*
R^2	*.252*
Adjusted R^2	*.239*
Df	*4*
F	*19.399*
Sig. Of F	*.001*
N =	*130*

Table 5.39 is a measure of casino school districts and the amount of change that has occurred in per pupil assessed value as a result of the casino industry. Again, as expected, the unemployment rate is reporting a statistically significant p>. which suggests that as unemployment rates increase, the per pupil assessment values, after the adoption of casino gaming, decrease. Neither of the two casino variables offered any statistically significant findings.

Table 5.40

ARITHMETIC MEANS FOR PER PUPIL ASSESSMENT VALUE 1989 – 2000: OUTLIERS EXCLUDED

School Districts With Casinos 1989-1994: Group One
School Districts Without Casinos 1989-1994: Group Two
School Districts With Casinos 1995-1999: Group Three
School Districts Without Casinos 1995-1999: Group Four

	Group1	*Group 2*	*Group 3*	*Group 4*
1989	**22976**	**23588**	XXX	XXX
1990	**23849**	**25048**	XXX	XXX
1991	**24067**	**25620**	XXX	XXX
1992	**21585**	**24239**	XXX	XXX
1993	**22118**	**24346**	XXX	XXX
1994	**23112**	**25675**	XXX	XXX
Casino Tax Revenue				
1995	XXX	XXX	**32180**	**28328**
1996	XXX	XXX	**39193**	**30400**
1997	XXX	XXX	**36280**	**32122**
1998	XXX	XXX	**40862**	**34472**
1999	XXX	XXX	**40939**	**31749**

Table 5.40 reports the arithmetic means with the four outlying school districts excluded from the model. The calculated means by year suggest that per pupil assessment values have increased, despite the exclusion of these outliers. However, the amount of increase in per pupil assessed value is not as high as in the comparison means test conducted with these school districts. Since the passage of the Mississippi law requiring counties to re-assess 25 percent of their land every four years, the casino school districts, despite the exclusion of the four outliers, have benefited quite well compared to the matching non-casino school districts. In 1999, there is a difference of $6,739 between casino school districts and matching non-casino school districts in per pupil assessed value of land even with the four dominant school districts excluded from the analysis.

One important finding of this table pertains to the increase in assessment value in 1992. In 1992 the non-casino school districts reported a per pupil assessed value of $24,239, which meant that non-casino school district's per pupil assessment values were $2,654 higher than casino school districts. However, by 1999, casino school districts were witnessing per pupil assessment values that were $9,190 higher than non-casino school districts. This table suggests that even the nine casino school districts in Mississippi were benefiting from the presence of casinos.

Table 5.41

COMPARATIVE MEANS TEST FOR PER PUPIL ASSESSMENT VALUE
OUTLIERS EXCLUDED: 1989 – 2000

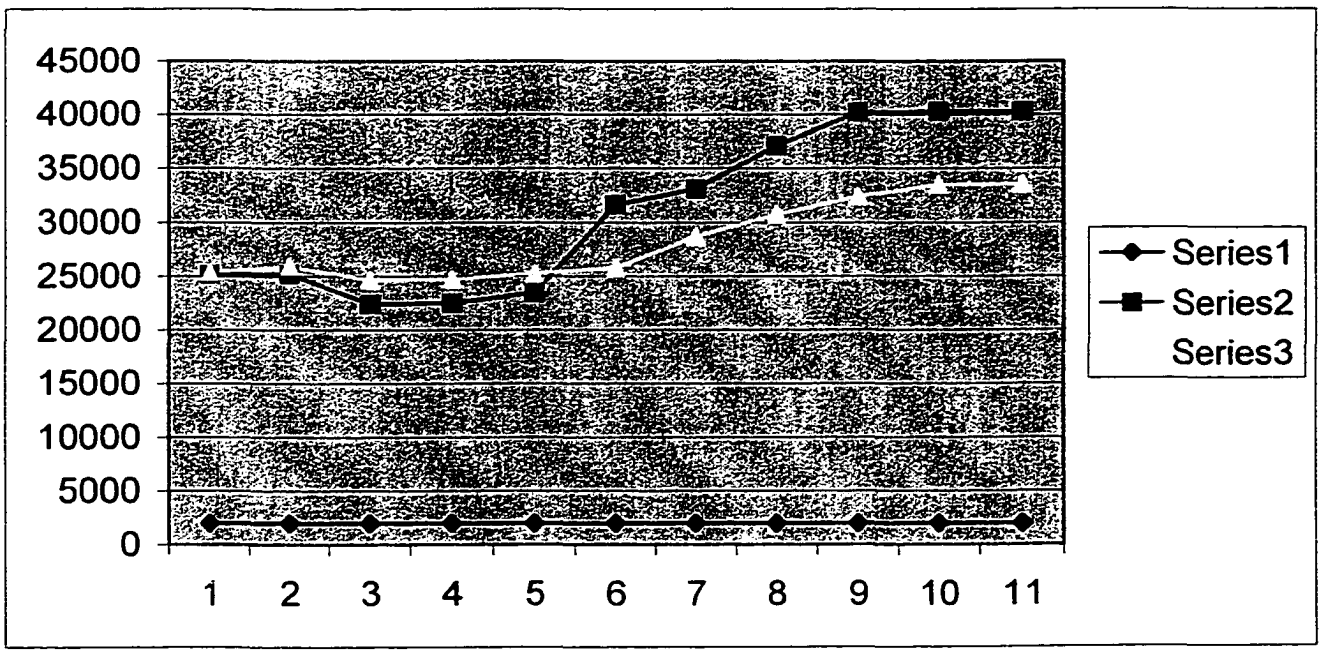
Group Statistics

	Dummy	Mean	St.D.	T – Score	p.>
Assessment Value	.00	29105	17614	.748	.455
	1.00	27800	9337		
Casino Tax Revenue	.00	195885	750192	3.125	.002
	1.00	.00000	.00000		
Unemployment Rate	.00	9.0364	2.8462	8.249	.000
	1.00	6.3643	2.1872		

Table 5.41 is a comparative means test measuring the impact of casino gaming on per pupil assessment values, excluding the four outliers. The statistical analysis is reporting no significant difference between per pupil assessment values between the two school districts. Despite the exclusion of the four dominant casino school districts from the model, the casino tax revenue variable is still indicating a significant difference between the two school districts. One unanticipated finding was the difference reported between the two groups regarding unemployment rates. The data suggests that the unemployment rate in casino school districts are higher than matching non-casino school districts.

Table 5.42

ARITHMETIC MEANS GRAPH FOR PER PUPIL ASSESSMENT VALUE 1989 - 2000: OUTLIERS EXCLUDED



Note:
Line with boxes represents casino school districts.
Horizontal line on bottom represents years.
Vertical line represents per pupil assessed value of real and private property based on average daily attendance of students.

In Table 5.42, when just casino school districts were measured in model two, per pupil assessment value demonstrated a small t – ratio, indicating that the null hypothesis failed to be rejected. Basically, the third model measuring the impact that casino tax revenues have had on per pupil assessment values, and the change in per pupil assessment values, fails to offer conclusive evidence that will allow for the rejection of the null hypothesis in any of the models testing per pupil assessment value. Again, the low R squares reported in the two regression models measuring change in per pupil assessment value causes one to have reservations about accepting the statistical findings of these two models.

Variables that measure the distance of casinos to real and private property may assist in explaining other factors that have influenced per pupil assessment value not measured in the regression equations. This may shed some light on the theoretical assumption that casinos have impacted the increases that are occurring in per pupil assessment values. Also, variables measuring the amount of recent industrial development such as the Dupont and GE Plants in Bay St. Louis, the Halter Marina in Gulfport, the Wellman Plant in Hancock County, and the Super Wal-mart in Harrison County would assist in further explaining the increases that have occurred in per pupil assessed value not measured in the previously tested regression models. A leading economic administrator in Harrison County commented that the land in the county had not been appraised for nearly twelve-years before 1992. This may explain why such a sharp increase occurred in per pupil assessment value since the time of casino gaming. This administrator commented that policymakers knew the gaming industry needed quick support to ensure that it would stay for a while, and showing the people a dramatic increase in per pupil assessment value could have been a ploy for gaining support for the casino industry. This individual also commented that the casino industry has contributed to an increase in per pupil assessment value, but this person attributes the failure of reappraisal as the primary factor in the sharp increase in per pupil assessment value. In 1997, the State of Mississippi passed a law requiring counties to reappraise personal and real property every four years.

What Have We Learned From These Statistical Tests?

Looking back on the literature used to frame the arguments set forth in this dissertation, the lottery information was highly influential in establishing the formal models tested in this research project. Many scholars such as Mikesell (1989), Spindler (1995), Miller and Pierce (1997), and Stanley and French (2000) measured the impact of state operated lotteries on education policies in the American states. The literature has repeatedly suggested that the administrative costs of operating state sanctioned lotteries prohibit this revenue-generating device from significantly contributing funds to social policies such as education. On average, the literature suggests that only 2 to 3 percent of the proceeds generated by lotteries are actually spent on the programs which government officials have earmarked them for. Many ideas from the formal models used to test the lottery data were used to comprise and test the casino data set in this dissertation. Despite the fact that the casino literature is critical of state sanctioned lotteries as a valid revenue generating device for education, the statistical findings in this study tend to suggest that casino tax revenues have indeed impacted fiscal resources for education. In other words, in regards to Mississippi school districts receiving casino tax revenue compared to matching school districts without casinos, casino school districts have spent more money, per pupil, than non-casino school districts. Further, it is also the case that casino revenue is directly related to change in both total and local education spending. As the casinos rose, so rose education spending.

Inferring that casinos have impacted per pupil assessment values is an assumption that cannot be made as of yet. Other factors such as economic development and demographic locations of casinos would need to be incorporated into a formal model to

account for the location of casinos in school districts with casinos. Since such variables are unachievable at this time, case study data was incorporated in this dissertation to test H_2: School districts in Mississippi with casinos have witnessed an increase in total assessed property values, compared to school districts in Mississippi without casinos. Furthermore, the case study data is used to test a third hypothesis that: school districts in Mississippi with casinos spend more money on capital budgets, compared to matching school districts in Mississippi without casinos. The case study data enriched the understanding of hypothesis one by providing specific examples of just how Mississippi school districts are receiving casino tax revenue, and how they are spending this excessive supplemental revenue compared to school districts without casinos.

In essence, the statistical information suggests to us that casinos have increased the amount of per pupil expenditures in Mississippi school districts with casinos, compared to matching non-casino school districts. Statistics are good for generalizing to the larger community and for understanding the holistic aspects of the findings as a whole, but the problem with relying on statistical inferences by themselves is that statistics do not provide the reader with specific case in point examples of how the revenue is being generated or spent. Hence, statistics are valid measures in understanding the deductive side of social phenomenon, but are limited when trying to make inducted presumptions.

The case study data will enrich the understanding of hypothesis one by providing specific examples of just how Mississippi school districts receiving casino tax revenue have spent more per pupil on education, compared to school districts without casinos, through the use of inductive reasoning (generalizations from the specific to the whole).

Furthermore, the following questions addressed by this dissertation: Do casinos lead to increases in the total assessed property values in casino school districts in Mississippi compared to the matching districts? and How the casino tax revenues being spent, are better served using case study data because again, the deductive aspects associated with statistical inferences do not necessarily address specific questions concerned with why and how something is done or performed (Yin, 1994).

The four case studies chosen for this dissertation are: the Biloxi Municipal School District, the Gulfport School District, the Harrison County School District and the Tunica County School District. These specific cases were chosen because they are benefiting more financially from casino tax revenues on per pupil expenditures than any of the other casino school districts in Mississippi. The following chapter uses these four case studies to answer the previously stated questions, by testing those hypotheses associated with these questions, through the post-positivist interpretation of data gathered from personal interviews, telephone interviews, and document analysis.

CHAPTER VI

CASE STUDY RESEARCH OF CASINO SCHOOL DISTRICTS IN MISSISSIPPI

This chapter reports the case study information gathered through personal interviews, telephone interviews, audit reports, and the Mississippi Department of Education Reports used to answer the research questions: do casinos lead to increases in the total per pupil assessed property values in casino school districts compared to the matching non-casino school districts? If so, how are the casino tax revenues being spent? Two hypotheses were tested in this section in answering the previously stated questions. They are as follows: school districts in Mississippi with casinos have witnessed an increase in total per pupil assessed property values, compared to matching school districts in Mississippi without casinos, and secondly, school districts in Mississippi with casinos spend more money on capital budgets, compared to operating budgets. According to information provided by the Mississippi Department of Education, similar comparison studies such as this project have been performed by the Department of Education, and the findings reported from this study, in particular, will help Mississippi Educators get an understanding of how the casino revenue is being used in Mississippi to enhance education. The information presented and discussed in this section is done so in tax revenue for education in Mississippi.

a case study format of the four primary school districts receiving the largest portion of casino tax revenue for education in Mississippi. The four case studies demonstrating the largest impact of casino tax revenue on per pupil expenditures, resulting in these school districts being chosen for the case study research, are as follows: Biloxi City School District, Gulfport City School District, Harrison County School District, and Tunica County School District. In identifying the outliers, the following residual statistics were examined.

- Leverage Values – identifies outliers among the independent variables.
- Studentized Deleted Residuals – identifies outliers among the dependent variables.
- Cook's D – the combination of independent and dependent outliers are identified.

Once the outliers were determined in the data set they were excluded from the comparison means calculations and regression models in order to measure their impact on the statistical analyses. Since these school districts impacted the regression models more than any of the other school districts, they should offer the best explanation for understanding why revenue and spending patterns differ in school districts with casino tax revenue compared to school districts without casino tax revenue. The four school districts chosen in this study receive more casino tax revenue on per pupil expenditures for education than any of the other school districts used in the study. Therefore, these outlying school districts were chosen for the case study research used in this dissertation to answer the following questions: Do casinos lead to increases in the total assessed property values in casino school districts compared to matching non-casino school districts? If so, how is the supplemental casino tax revenue being spent in Mississippi?

The following individuals were interviewed in the case study component of the dissertation: school superintendents, principals, teachers, administrators of school finances such as the financial manager, school board members, local representatives such as the mayor and council members, representatives, religious leaders, and state representatives in both the House of Representatives and the Senate. Due to anonymity concerns, the names of these individuals are excluded from the study and any direct references to their positions are purposely not mentioned at the interviewees' request. The interviews took place from February 1, 2001 to April 1, 2001.

The descriptive statistics, gathered from document analysis, help present a historical overview of the four school districts used in this study by examining the spending and revenue patterns they have used in the past 11 years. These statistics begin in the fiscal year 1989-90 and go through the fiscal school year of 1999-2000. These historical data are presented so the reader can see what spending and revenue patterns were represented before and after the adoption of casino gaming by Mississippi school districts with casinos. The information presented in these tables are as follows: the school year being examined, the number of students in each school district, the millage rate in each school district, and the per pupil assessment value based on average daily attendance of each school district. Overall totals are provided before the adoption of casinos and after they began contributing to per pupil expenditures in Mississippi school districts with casinos. These figures are given to assist the reader in seeing just how much the four casino school districts have benefited from casino tax revenues for education.

Finally, the most important aspect that needs attention in regards to the case study research is the notion of generalization. Case studies are inherently weak when trying to generalize the findings (Yin, 1994). The case study information provided in this dissertation is reported to elaborate on the statistical findings found in chapter four. In other words, when each case study is analyzed, and concluding inferences are made about the findings, the policy implications drawn from the research are only applicable in the specific case study at hand. Despite the limitations of case study research, they assist the statistical data by "painting a picture" of how and why policy makers in school districts with the most casino tax revenue spend the casino tax funds in the manner they have chosen (Berstein and Dyer, 1992).

The Case of the Biloxi City School District

Table 6.1

REVENUE DATA FOR THE BILOXI CITY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$3,319	6,568	36.96	$22,299
1990	$3441	6729	36.96	$24279
1991	$3513	6748	39.09	$22,385
1992	$3684	6702	39.00	$22,385
1993	$4070	6798	38.79	$22,385
1994	$4069	6798	38.00	$22,370
Casino Tax Revenue				
1995	$5384	6399	38.50	$37,047
1996	$5666	6376	37.35	$42,651
1997	$5868	6223	37.60	$42,076
1998	$6052	6243	37.42	$44,806
1999	$6875	6096	39.10	$44,806

In Table 6.1, the data shows a relatively stable per pupil assessment value ranging from an average of $22,299 in 1988 to $22,370 in 1994, an increase of $71 in the average assessed value of land in the Biloxi City School District. Between 1994 and 1995, the year school districts began receiving casino tax revenue, the average assessed value of land in the Biloxi City School District rose from $22,370 in 1994 to $37,047 in 1995, an increase of $14,677. In 1999, the average per pupil assessment value in the Biloxi City School District was reported to be $44,806, an increase from 1995 of $7,759. The data obtained from the State Superintendent's Report on Education suggests that casino tax revenues may have influenced the dramatic increases in per pupil assessment value in the Biloxi City School District. Further analysis of personal interviews and telephone interviews tend to support this notion as well.

To carry the analysis of per pupil assessment value a step further, school administrators in the Biloxi City School District were asked if they felt that total per pupil assessment values have increased as a result of casino gaming in their school district. The following information outlines how they responded to this question.

Twelve Biloxi City School District officials responded to the question regarding per pupil assessment values affirming that casino tax revenues have played a major role in increasing per pupil assessment values since the adoption of casino gaming by the community of Biloxi, Mississippi. One employee went on to say that he believed that the per pupil assessment values have more than doubled since casino gaming came to Biloxi. The consensus among those individuals interviewed is that the casinos have brought an enormous amount of wealth to Biloxi. For instance, the Beau Rivage Casino and Resort

cost $660 million to build. When industries such as casinos make investments of this magnitude into a community, the surrounding property values increase because location is the primary component that makes land valuable. The Beau Rivage is considered the premier casino in Biloxi; however, Biloxi has nine more casinos that are illustrious architectural structures and also cost millions of dollars to build. All these casinos are stretched across the Biloxi coastline in a manner where the land between these casinos is located relatively close to one or more casinos. Because there is no more developmental land in Biloxi, land is in high demand. Since there is a limited supply of land in Biloxi for development, the value of the land has considerably increased. This is one reason why per pupil assessment values have sky rocketed in Biloxi. Furthermore, other industries have flourished in Biloxi, which has increased the demand for developmental land. More restaurants, shopping centers, motels, and hotels have been built since casinos came to Biloxi. These various businesses have been competing for a small amount of developmental land in the Biloxi community, causing an increase in the value of this important commodity.

Another interesting point about per pupil assessment values that was mentioned by several of the interviewees dealt specifically with the millage rate. One school employee provided an example of how the current millage rate in Biloxi was 39.10; whereas Ocean Springs, the school district that borders the Biloxi school district to the east, has a millage rate of 78.00. The consensus among school officials is that the large increase in per pupil assessment values has allowed Biloxi to maintain a lower millage rate than other school districts, such as Ocean Springs, that do not allow casino gaming.

Since per pupil assessment value is the major factor in determining how much local revenue is going to be spent on education, it can be assumed that increases in per pupil assessment value have also meant an increase in the amount of spending per pupil in Mississippi school districts with casinos. The statistical information in Chapter Four supported this notion of increased per pupil expenditures among casino school districts when compared to matching non-casino school districts. The information provided in the interviews tends to suggest that casino school districts tend to spend more per pupil because per pupil assessment values, along with additional supplemental casino revenue for per pupil expenditures, have increased since casinos came to Biloxi. This increase in per pupil assessment value has given casino school districts a supplemental income source that non-casino school districts do not currently possess. If casino school districts such as Biloxi are experiencing revenue increases on per pupil expenditures through casino contributions (as suggested in Chapter Four), and increases in per pupil assessment values, are they spending this money in such a manner that is conducive with enhancing education in their school district?

Table 6.2 is a list of the amount of casino gaming money received by the Biloxi City School District throughout the school years of 1995-2000. Accompanying these gross figures is the percentage of total spending that the casino tax revenue makes up in total per pupil expenditures on education by the Biloxi City School District.

Table 6.2

BILOXI CITY SCHOOL DISTRICT CASINO TAX REVENUES

School Year	Gross Casino Tax Revenues	Percentage of Casino Tax From Total Revenues
1995 - 1996	$3,155,288	10%
1996 - 1997	$3,300,874	10%
1997 – 1998	$3,521,840	10%
1998 – 1999	$6,030940	15%
1999 – 2000	$6,002,572	14%

The previously listed table identifies the amount of gross casino tax revenues that the Biloxi City School District has received from casinos for per pupil expenditures. This table tends to suggest that the Biloxi City School District has ventured well in the amount of revenue it receives from the casino industry. The Biloxi City School District ranks first in the total amount of casino tax revenue (gross dollars) it receives for per pupil expenditures on education among school districts in Mississippi that receive casino tax revenue. The Biloxi City School District currently ranks second in the percentage of casino tax revenue it receives for per pupil expenditures among the school districts in Mississippi that receive casino tax revenue. Only the Tunica County school district, percentage wise of total per pupil expenditures, receives more than the Biloxi City School District.

If per pupil assessment values have increased, resulting in more revenue for per pupil expenditures, along with the supplemental income of casinos, how is the Biloxi City School District choosing to spend its per pupil revenue for education?

Table 6.3

BILOXI CITY SCHOOL DISTRICT REVENUE AND SPENDING CATEGORIES

	1991	1994	1995	1999
Revenues				
Local	5,853,963	8,358,775	9,595,979	15,985,713
Casino Tax Revenue	0	0	3,155,288	6,002,572
Percentage of Local Tax Revenue From Casino Revenues			33%	38%
State	10,357,159	12,604,136	13,633,679	14,622,228
Federal	5,628,275	6,521,577	2,404,286	2,003,646
Sixteenth Section	2,078	7,201	0	0
Total Revenues	**21,841,475**	**27,491,689**	**25,633,944**	**32,611,587**
Expenditures				
Instruction	13,464,577	15,987,523	15,593,452	18,031,189
Support Services				
Students	854,029	1,134,434	966,810	1,175,481
Instructional Staff	437,035	967,545	658,081	883,084
General Administration	885,771	633,520	565,141	413,751
School Administration	995,077	1,205,467	1,188,754	1,837,184
Business	396,796	500,407	559,623	614,333
Operations and Maintenance	1,849,951	2,405,591	3,507,937	3,518,499
Transportation	702,578	987,780	828,303	1,204,234
Central	55,545	75,988	65,122	192,734
Noninstructional Service	1,890,948	1,839,150	0	175,000
Facility Construction	31,103	280,429	1,020,756	175,000
Debt Service (Principal)	20,030	0	0	0
Total Expenditures	**21,583,440**	**26,018,134**	**24,953,979**	**29,795,489**

Note: The casino tax revenue is a subset of local taxes and is only displayed so the reader can see just how much casino tax revenue the case study is reporting.

The chart above, Table 6.3, lists the categories where local school districts spend their fiscal appropriations for education. The data presented in this table are recorded from the Biloxi City School Audits in the following years: 1991, 1994, 1995, and 1999. This information was chosen in order to see the revenue and spending patterns used by school districts in Mississippi with casinos. The four time periods chosen shows the progression of these revenue and spending patterns through time. School officials were then asked to elaborate on these figures.

One Biloxi school official stipulated that a majority of the casino tax revenue received for education is placed in capital budgets because the school board is skeptical of banking on casino tax revenues for operating expenditures. The consensus among school officials in Biloxi is that casinos are a nice source of supplemental income for per pupil expenditures, but with revenues fluctuating from year to year, school officials believe that until casino tax revenues for education begin to show a consistent figure, placing the funds in operating budgets is too risky when it comes time to pay the bills. They are afraid that if they plan on putting so much into the operating budgets to pay for such things as teachers' salaries, that the casinos will fail to produce the revenues needed to cover this important education expense.

Instead of placing revenues into operating budgets, Biloxi has chosen to place a majority of the revenue in capital budgets. According to the interview responses provided by various public school officials in Biloxi, the school district has been able to purchase such things as: more computers for the classrooms, building upgrades, new high school and elementary school construction, electronic language programs that teach students various foreign languages, new school buses, school nurses, art and music programs, lower teacher/student ratio, eight biology labs, renovations of administrators offices, a host of math programs, new classrooms in older school buildings, and new computers for teachers. Despite the concerns previously mentioned about placing casino tax revenues into operating budgets, one school official did stipulate that some of the casino tax revenue was used to give Biloxi school teachers a raise in salary and as a result of this raise, teacher salaries in Biloxi are the second highest in the state. However, most of the casino tax revenue is placed into the Biloxi School District's general fund.

Other programs that casino tax revenues have been used for are bond issues. Several school officials in Biloxi noted that a bond referendum was voted on by the community in an effort to raise money to build a new high school. When the initial bond referendum of $60 million was placed on the election ballot, voters in Biloxi decisively defeated it. When city officials pledged that a large portion of the gaming revenue would be used to pay half the cost of building a new high school, the referendum passed because the amount of revenue needed for the bond dropped from $60 million to $30 million.

The Biloxi City School District has also witnessed an increase in accreditation levels since the passage of casino gaming. One school official noted that since the adoption of casino gaming in Biloxi, the school district is now rated as a Level 5 school district by the state (level 1 is the lowest ranking level – level five is the highest ranking that a school district receives from the state). Biloxi was considered a Level 3 school in 1992, a Level 4 by 1995, and a Level 4.5 by 1997. Currently the Biloxi City School District is considered a Level 5 school district by the State of Mississippi. One school administrator attributes Biloxi's increase to a Level 5 school is because it has placed a small portion of casino tax revenue towards paying supplemental teacher salaries that are not covered by the Minimum Foundation Funds (school funding formula used by Mississippi school districts). These funds include, but are not limited to, such salaries as substitute teachers, vocational teachers, and special education teachers.

After reviewing the various categories that have been listed as beneficiaries of casino funds, it seems that facility construction, transportation, school administration, instruction, and debt services are the categories listed in the audit data that receives a majority of the casino tax revenue in the Biloxi City School District. The consensus

among school officials in Biloxi regarding the question of capital or operating budgets tends to support the notion that a majority of the casino tax revenue is being placed into both capital budgets (e.g., new schools) and operating budgets (e.g., supplemental teacher salaries). Facility construction and debt services are the only capital budgets receiving casino tax revenue from the list provided by school officials in Biloxi dispending the casino tax revenue. Transportation, school administration, and instruction are budgetary categories that are recorded as operating budgetary expenditures. It seems that no real plan exists in Biloxi that devotes the casino money towards one budget or the other. From the information given by the respondents in the Biloxi School District, there are a number of different services receiving casino tax revenue.

In reference to the research questions and hypotheses stated prior to this case study, the following generalizations about the data are made. Since the per pupil assessment values have witnessed an increase since the adoption of casino gaming; H_2: the Biloxi City School district has witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos, is supported by the interview and document data. However, due to the failure of any type of formal spending plan disbursing casino tax dollars into a specified category or account; H_3: the Biloxi City School district fails to spend more on capital budgets, compared to operating budgets, is rejected. Does the Gulfport City School District offer any different explanations about revenue and spending patterns of casino tax revenue than the Biloxi City School District?

The Case of the Gulfport City School District

Table 6.4

REVENUE DATA FOR THE GULFPORT CITY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$3,615	6,231	45.55	$32,645
1990	$3,870	6,223	49.02	$30,959
1991	$3,895	6,319	50.70	$30,959
1992	$4,073	6,573	51.31	$29,274
1993	$4,557	6,536	51.31	$29,274
1994	$4,557	6,529	51.11	$28,426
Casino Tax Revenue				
1995	$5,395	6,362	52.85	$36,451
1996	$5,565	6,210	61.78	$38,956
1997	$5,858	6,291	61.78	$38,747
1998	$6,074	6,243	61.78	$38,598
1999	$6,609	5,958	61.78	$38,598

Table 6.4, shows that before casino gaming came to Gulfport the per pupil assessment value from 1989-1994 averaged $30,256. After casino gaming the average assessed value of property is currently $38,342, for an increase in the average assessed value for property of $8,086. One notable difference between the Gulfport City School District and the Biloxi City School District is the millage rate. The Biloxi City School District, according to the figures, reported a recent millage rate of 39.1. The most recent millage rate reported by the Gulfport City School District is 61.78. One explanation for this millage rate discrepancy between two casino school districts adjacent to one another is the number of casinos housed in each school district. Biloxi currently has 9 casinos whereas Gulfport hosts only two. In the 1999-2000 school year, the School District of

Biloxi received $6,030,940 from the casinos, which was 15 percent of their per pupil expenditure funds. The Gulfport City School District received $3,059,089 from the casinos for education expenditures, which comprised only 8 percent of their per pupil expenditure revenues. The per pupil expenditures in the 1999-2000 school year between these two school districts were as follows: Biloxi - $6,875 per pupil and Gulfport - $6,609 per pupil, for a difference of $266. The two school districts, relatively speaking, spent virtually the same per pupil yet Biloxi received $2,971,851 more than Gulfport from casinos for per pupil expenditures. The data suggests that the Biloxi City School District was able to spend more per pupil on education primarily due to the amount of casino tax revenue for education being much larger in Biloxi than the portion received by the Gulfport City School District.

Another reason for these revenue disparities may pertain to per pupil assessment values in the two school districts. The assessed value for Biloxi was somewhat higher than Gulfport's assessed value, which may also have some bearing on the high millage rate of Gulfport compared to Biloxi. The Biloxi City School District's assessed value in 1999-2000 was $44,806 while Gulfport reported an assessed value of $38,598, for a difference of $6,208. Since the assessed value of a school districts is the predominant factor in extracting local revenues for education, and the millage rate is set in order to extract the necessary revenues to cover the education expense for that fiscal calendar year, in order for Gulfport to spend relatively similar amounts per pupil on education it is necessary for them to maintain a higher millage rate until the assessed value of land increases in their school district.

The school officials in the Gulfport City School District responded to the question regarding per pupil assessment value in the following manner. One school official stipulated that per pupil assessment values have increased, but this person could not attribute this increase primarily to casinos because Gulfport only houses two casinos. However, this school official did comment on the amount of economic development (increases in restaurants, motels and hotels, and shopping facilities) that have occurred since the casinos came to Gulfport. When there is a boom in economic development, the price of land increases as the amount of developmental land decreases. This individual commented that Gulfport currently has $3 million worth of building permits outstanding in the community, suggesting that casinos may be one factor in these outstanding building permits.

One school official associates the relative stability of the millage rate in Gulfport to casinos. This individual agreed that the millage rate was higher in Gulfport than it's counterpart in Biloxi, but since the adoption of casino gaming the millage rate has remained virtually the same. Elected and administrative officials in Gulfport expect the millage rates to remain the same for the next few years. These same officials are skeptical, however, that the millage rate will ever decrease because Gulfport relies too much on the revenue generated from the current set millage rate.

If per pupil assessment values have increased, resulting in more revenue for per pupil expenditures, along with the supplemental income of casinos, how is the Gulfport City School District choosing to spend its per pupil revenue for education?

Table 6.5

GULFPORT CITY SCHOOL DISTRICT CASINO TAX REVENUES

School Year	Gross Casino Tax Revenues	Percentage of Casino Tax From Total Revenues
1995 -1996	$916,023	2.6%
1996 -1997	$997,946	6.2%
1997 –1998	$984,233	2.7%
1998 –1999	$3,059,089	8%
1999 –2000	$1,876,185	4%

Relatively speaking, according to Table 6.5, Gulfport is doing quite well in the amount of casino tax revenue it is receiving for per pupil education expenditures. Gulfport only houses two casinos, and in the 1998-99 fiscal school year the school district received over $3 million for education. Gulfport still ranks third in the amount of casino tax revenue it receives for education when compared to the other casino school districts in Mississippi. Only the Biloxi and Tunica County school districts receive more casino tax revenue for per pupil education expenditures than the Gulfport City School District.

Table 6.6

GULFPORT CITY SCHOOL DISTRICT REVENUE AND SPENDING CATEGORIES

	1991	1994	1995	1999
Revenues				
Local	8,330,780	9,421,237	10,717,098	15,411,258
Casino Tax Revenue	0	0	916,023	1,876,185
Percentage of Local Tax Revenue From Casino Revenues			9%	12%
State	9,941,522	11,466,645	13,262,238	14,841,846
Federal	3,845,650	214,103	193,776	103,714
Sixteenth Section	83933	0	0	0
Total Revenues	**22,201,885**	**21,101,985**	**24,173,112**	**30,356,818**
Expenditures				
Instruction	12,595,753	13,867,447	15,492,848	17,774,419
Support Services				
Students	1,174531	1,149,862	1,250,451	2,001,823
Instructional Staff	1,079,860	985,109	1,161,328	1,475,488
General Administration	1,026,152	460,488	482,315	470,011
School Administration	1,103,552	1,424,777	1,560,342	1,850,780
Business	210,811	226,743	257,394	346,680
Operations and Maintenance	2,118,980	2,875,558	3,159,645	3,472,736
Transportation	487,833	42,972	607,626	706,862
Central	101,035	131,583	116,964	184,859
Noninstructional Service	2,088,718	141,803	654	15,123
Facility Construction	59,755	44,539	0	0
Debt Service (Principal)	156,214	46,075	115,841	15,000
Total Expenditures	**22,320,817**	**21,796,956**	**24,205,408**	**28,313,781**

Note: The casino tax revenue is a subset of local taxes and is only displayed so the reader can see just how much casino tax revenue the case study is reporting.

Table 6.6, the eight respondents answers to the questions used to gather the case study information from the Gulfport City School District, reported that Gulfport is undoubtedly banking on casino tax revenue to enhance per pupil education expenditures for short-term projects such as paying off school debt, and for long-term projects such as increasing capital project expenditures. When the spending and revenue patterns of Gulfport are reviewed, no substantial pattern disbursement of casino revenues tends to

stand out. The following is a list of categories given by several respondents that casino money has been used for. This list includes, but is not limited to, building renovations, hiring of new personnel, increasing the number of classes offered (and the creation of new classes such as the arts, theatre, music, dance and drama), computers for teachers in classrooms, increases in the free lunch program, training for teachers, increases in teacher salaries, language programs, a new cafeteria for the high school, a media center for the high school, increased assistant teacher staff, clerical staff, janitorial aid, new math and reading programs, and basic teaching supplies.

When school officials were asked the question pertaining to the disbursement of casino tax revenues into capital or operating budgets, the responses were mixed. The consensus was that both capital and operating budgets were receiving the supplemental casino tax revenue. Pin pointing which one was receiving the most would be an impossible task, commented one school official, because the needs for the school districts change on a yearly basis. One year the casino tax revenue may be spent on computers, while in another year the money is used building renovations.

One school official attributed the success of a bond referendum to casinos, which in turn resulted in a new high school. Gulfport, in a similar manner to Biloxi, issued a bond referendum for building a new high school. The referendum was successful because the local officials pledged a portion of the casino tax revenue towards the building of the school. Since the building of the new school was such an enormous expense, this individual speculated that capital budgets were probably receiving the largest amount of casino tax revenue, but this person could not give a definitive answer to

the question. This individual basically concluded by saying that both operating and capital budgets receive casino tax revenue for per pupil expenditures in Mississippi.

After reviewing the various categories that have been listed as beneficiaries of casino funds, it seems that Gulfport offers no concise plan of action for distributing supplemental casino tax revenue for education. As in Biloxi facility construction, transportation, school administration, instruction, and debt services are the categories listed in the audit data reports benefiting from casino proceeds. Every category listed in the audit data has in one way or another benefited from the supplemental casino tax revenue allotted to education. Some categories have benefited more than others due to stake holder preferences in building renovations to create a learning environment that is professional and conducive to learning, over increases in curriculum offerings stipulated by other stake holders who believe that Gulfport schools should promote more in the area of art appreciation. The Gulfport City School District, until a plan is devised for disbursing supplemental casino tax revenue, will continue to spend the money sporadically, according to the interest of the stakeholders in charge of spending the supplemental revenue generated by casinos. Therefore H_2: the Gulfport City School District has witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos, is supported by the case study data from the Gulfport City School District in this dissertation. However, in reference to H_3: the Gulfport City School District spends more money on capital budgets, compared to operating budgets, was not supported by the information provided by the Gulfport City School District.

The Case of the Harrison County School District

Table 6.7

REVENUE DATA FOR THE HARRISON COUNTY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$2,965	10,816	33.87	$34,875
1990	$3,318	10,991	41.98	$33,720
1991	$3,540	11,224	41.98	$33,720
1992	$3,371	11,401	41.96	$36,890
1993	$3,736	11,354	40.96	$36,890
1994	$3,736	11,915	40.96	$35,636
Casino Tax Revenue				
1995	$4,442	11,996	40.96	$37,287
1996	$4,572	12,369	40.96	$37,214
1997	$4,526	12,100	50.56	$40,814
1998	$5,200	11,966	52.00	$39,049
1999	$5,629	11,832	47.38	$39,409

In Table 6.7, the Harrison County School District is a unique case in regards to casino school districts. Harrison County houses the municipalities of Biloxi and Gulfport, the two school districts that receive the largest amount of casino proceeds from gaming. Yet, the Harrison County school district does not have any casinos currently located in its jurisdiction because all the casinos in Harrison County are either in Biloxi or Gulfport. D'Iberville is being considered as a possible place in Harrison County for a casino; however, there are major concerns about transportation to and from the casinos that are currently prohibiting it from building a casino. However, plans are presently being negotiated by local officials to bring a casino to Harrison County. If a casino is brought to Harrison County, it will be located in D'Iberville.

Harrison County School District v. Long Beach School District

Harrison County is unique in another sense due to casinos. The Harrison County School District just recently began to receive casino tax revenue because they were in a litigation dispute since 1993 with the Long Beach and Pass Christian school districts over casino money (Harrison County School District v. Long Beach School District, 1997), which resulted in the disbursement of a portion of the Harrison County school districts casino tax revenues to be placed in the Long Beach and Pass Christian school districts.

In May of 1992, the Mississippi State Legislature passed three House Bills that were singed into law by the Governor. The bills authorized a specific municipality on the Mississippi Gulf Coast to impose a 3.2 percent tax on the gross revenue of gaming vessels docked within the geographic confines of each municipality. The bills directed the individual municipalities to use the funds collected for specific purposes; one of the most important purposes was the disbursement of casino tax revenues to local school districts.

House Bill 1504 authorized the City of Biloxi to impose fees on the casinos located in their municipality, and House Bills 1505 and 1520 gave this taxing power to the Cities of D'lberville and Gulfport. The municipalities of Gulfport and Biloxi adopted ordinances to implement the authority granted by the Legislature. Each ordinance conformed to the language of the respective House Bill requiring that a percentage of the revenue be expended for "educational purposes in Harrison County" (No. 95-CA-01082-SCT: p, 2).

The State Tax Commission was given authority to collect the revenues from casinos and ordered the cities of Biloxi and Gulfport to distribute the monies to the

Harrison County School District. This made the administrators in Long Beach School District upset and they contacted the Harrison County School District and voiced their concerns. Long Beach officials argued that Harrison County administrators, along with the Attorney General, interpreted House Bills 1504, 1505, and 1520 to include "only the schools in the Harrison County School District" (No. 95-CA-01082-SCT: p, 3).

The school officials of Long Beach were unconvinced that the opinion of the Attorney General was correct and filed a "Complaint for Declaratory Relief in the Circuit Court of Harrison County" (No. 95-CA-01082-SCT: p, 3). Harrison County and Biloxi School officials responded by agreeing with the Attorney General's interpretation of the legislation to mean that only the Harrison County School District will receive the casino tax revenue and not all the school districts in Harrison County. Long Beach argued that the Attorney General's interpretation of the statute is incorrect because it excludes not only the children in Harrison County that live in Long Beach, but also those that live in Pass Christian. Shortly thereafter, Pass Christian joined Long Beach in this fight for casino tax revenue. Long Beach also stipulated that by limiting the distribution of the proceeds to the Harrison County School District, senior citizens' groups, public libraries and adult education programs in Harrison County have failed to receive the benefits they are rightly entitled to.

Cross motions for Summary Judgment were filed and argued before the Honorable Kosta N. Vlahos, Senior Circuit Court Judge. On June 16, 1995, Judge Vlahos entered an order, which granted Long Beach's Motion for Summary Judgment. Judge Vlahos ruled in favor of Long Beach because he found that the clear and unambiguous language of the statute required that the funds generated from the casino

tax be disbursed throughout the entire county. Shortly thereafter, Harrison County School District officials filed a "Motion to Reconsider and a Motion for Stay of Execution of Judgment" (No. 95-CA-01082-SCT: p, 3). Judge Vlahos denied the Motion to Reconsider on September 28, 1995. The trial court convinced the two parties to place the funds into a trust fund until the Mississippi Supreme Court decided the case.

The Mississippi Supreme Court was to decide, did the statue mean "all Harrison County school districts" or just "The Harrison County School District" (No. 95-CA-01082-SCT: p, 3)? Judge Vlahos's decision stipulated that all the Harrison County school districts would receive a portion of the casino tax revenue, not just the Harrison County School District. He stated that if the legislature had wanted the funds specified for the Harrison County School District than the statute would have explicitly stated this to be the case. Judge Vlahos placed the basis of his decision on House Bill 1376. House Bill 1376 contained virtually the same language as House Bill 1520, but it died in committee. The only difference was that House Bill 1376 specifically granted the disbursement of funds to the Harrison County School District. Judge Vlahos considered this change in the language of the bill established the legislatures intent to distribute the funds to all Harrison County School Districts. On July 17, 1997 The Mississippi Supreme Court upheld the trial courts decision arguing that they were in full agreement with Judge Vlahos's interpretation of the statute. Mississippi Supreme Court contended that the language chosen by the Legislature is clear and unambiguous, and that all the school children in Harrison County will benefit from the casino tax revenue.

The first casino monies received by Long Beach and Pass Christian School Districts were in the school year of 1999-2000. The Long Beach share was $378,539

while Pass Christian received $172,702 for a total of $551,241. Another interesting aspect of this case was that Biloxi and Gulfport also were granted a share of the Harrison County portion because they are school districts in Harrison County, ultimately allowing the rich to get richer. In addition to the revenue they already receive from casinos, Biloxi and Gulfport are allotted around 50 to 60 thousand more dollars a year from this court case. Due to the decision passed down by the State Supreme Court favoring the Long Beach School District and the Pass Christian School District, the Harrison County School District has lost $1.5 million dollars to these two school districts.

Case Study Analysis of Harrison County School District

As one might well expect, the school officials are quite upset about the ruling of the State Supreme Court in favor of the Long Beach and Pass Christian school districts. One official was so outraged by the decision that this individual refuses to set foot or drive through the Long Beach or Pass Christian school districts. These officials argue that the Harrison County School District is the 4th largest in the state, with approximately 12,000 students on a yearly basis, and the court decision has prohibited these students from receiving a better education because of the funding cuts as a result of this litigation dispute.

The per pupil assessment value in the Harrison County School District has remained basically the same in the years discussed in this dissertation. For one reason, there are no casinos located in the county. Secondly, most of the economic development that has occurred associated with the casinos has taken place with in the two major municipalities of Biloxi and Gulfport. Until D'Iberville, or any other community in

Harrison County School District brings a casino to the area, the assessed values in the Harrison County School District will fail to be directly impacted by casino gaming. Nevertheless, some school officials speculate that Harrison County School District is going to receive a positive spillover effect in reference to casino gaming in Biloxi and Gulfport, due to the absence of developmental land in these two municipalities. One school official noted an 80-store strip mall that was just completed in the Harrison County School District to offer visitors a place to shop when they come to the area for gambling, or vacationing at the beach.

Secondly, a subdivision was built in the Harrison County School District that will eventually be the home of 20,000 residents. The area is witnessing a massive influx of people coming to work for the casinos and other industries that have recently located in Biloxi, Gulfport, and Harrison County. Since almost all of the land is currently being zoned for industrial development, people seeking residencies in the area are being forced to move into the county because that is the only land available that offers affordable housing. These leaders anticipate that Harrison County School District will continue to receive more and more residents, and economic development, due to the scarcity of land in Gulfport and Biloxi. But as of right now, Harrison County School District still has enough land for both residential and commercial development at a reasonable price, but when the land becomes more scare these officials believe the per pupil assessment value of the land will increase in much the same manner as it did in the municipalities of Gulfport and Biloxi. How is the Harrison County School District choosing to spend its supplemental casino tax revenue on per pupil expenditures in education?

Table 6.8

HARRISON COUNTY SCHOOL DISTRICT CASINO TAX REVENUES

School Year	Gross Casino Tax Revenues	Percentage of Casino Tax From Total Revenues
1995 - 1996	0	0%
1996 - 1997	0	0%
1997 – 1998	0	0%
1998 – 1999	$2,451,866	4%
1999 – 2000	$1,318,174	2%

The Harrison County School District, in Table 6.8, despite the fact that no casinos are located in the county, received the fourth largest share of casino tax revenue for per pupil education expenditures among school districts in Mississippi that receive casino tax revenues for education. Although the Harrison County School District has only received casino tax revenue for two years according to the data presented in this dissertation, school officials and county administrators believe the future of Harrison County is bright in regards to the casino industry.

Table 6.9

HARRISON COUNTY SCHOOL DISTRICT CASINO TAX REVENUE AND SPENDING CATEGORIES

	1991	1994	1995	1999
Revenues				
Local	8,215,844	11,015,431	12,538208	12,213,568
Casino Tax Revenue	0	0	0	1,318,174
Percentage of Local Tax Revenue From Casino Revenues				11%
State	457,895	19,193,646	20,867,066	28,122,515
Federal	407,893	257,794	5,140,567	315,677
Sixteenth Section	0	0	397,370	0
Total Revenues	**9,081,632**	**30,466,871**	**38,943,211**	**40,651,760**
Expenditures				
Instruction	4,761,254	20324464	23,018,346	29,434,962
Support Services				
Students	461,496	1,035,185	1,494,660	1,642,523
Instructional Staff	407,746	872,692	1,100,401	1,245,444
General Administration	360,546	423,914	546,998	736,246
School Administration	368,071	1,980,904	2,010,890	2,688,488
Business	120,744	116,988	116,988	170,748
Operations and Maintenance	1,516,081	2,866,501	2,895,559	3,879,372
Transportation	642,824	1,703,120	1,984,798	2,401,037
Central	114,561	128,559	144,022	186,129
Noninstructional Service	428,008	19,685	2,916,356	10,069
Facility Construction	12,747	67,415	2,205,190	200
Debt Service (Principal)	20,417	10,149	565,149	5873
Total Expenditures	**9,214,495**	**29,549,576**	**38,999,357**	**4,2453,691**

Note: The casino tax revenue is a subset of local taxes and is only displayed so the reader can see just how much casino tax revenue the case study is reporting.

In Table 6.9, The Harrison County School District, despite only receiving casino money for two years, has tried to utilize its supplemental casino tax revenue to the best of it's ability. The consensus among school officials in the Harrison County School District is that casino money allows them to purchase things that the school district would have probably been unable to purchase without the casino tax revenue. Future plans are to incorporate more casino tax revenue into both the operating budget and capital projects equally, but since the school buildings are so old, renovations are desperately needed

before the school district can dispense the revenue into other projects and programs. According to one interviewee, a small portion of the casino tax revenue has been used for operating budgetary expenditures (the school district has been able to increase assistant teacher staff, clerical staff, janitorial aid, add new math and reading programs, and buy basic teaching supplies), but the programs receiving the most casino money in Harrison County include school renovations, along with the addition of four new elementary schools.

Due to the Harrison County School District's preoccupation with the Mississippi State Supreme Court case, litigation rulings, along with the absence of any casinos in its jurisdiction; H_2: the Harrison County School District has witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos, is not supported by the case study data from the Harrison County School District in this dissertation. Furthermore, in reference to H_3: the Harrison County School District spends more money on capital budgets, compared to operating budgets, was not supported either by the information provided by the Harrison County School District, because the Harrison County School District, like the other school districts discussed in this dissertation, spends the casino proceeds on various per pupil expenditures for education. Does the Tunica County School District offer any different explanations about revenue and spending patterns of casino tax revenues than the Harrison County School District?

The Case of the Tunica County School District

Table 6.10

REVENUE DATA FOR THE TUNICA COUNTY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$3,488	1,988	25.75	$16,899
1990	$3,423	1,957	29.77	$20,034
1991	$3,607	1,952	30.31	$18,660
1992	$3,589	1,980	32.82	$18,660
1993	$4,115	1,999	36.11	$15,942
1994	$4,115	1,991	33.04	$17,082
Casino Tax Revenue				
1995	$5,263	1,986	23.95	$61,711
1996	$5,488	1,991	23.95	$58,329
1997	$6,479	2,005	23.95	$85,942
1998	$7,130	1,999	23.95	$98,078
1999	$7,983	1,812	23.95	$110,214

According to the responses given by four school districts officials, the per pupil assessment values for the Tunica County School District, in Table 6.10, have more than doubled since the adoption of casino gaming by the community. Before Tunica County adopted casino gaming, it's average assessed value based on average daily attendance by students, over the pre-casino time period examined in this study, was $17,880. Since 1995, when the school district began receiving casino tax revenue, the assessed value of land has increased to an average of $82,855 (1995 through 2000). From the increases in per pupil assessment value, the Tunica County School District has decreased its millage rates substantially, according to one respondent. The school district decreased its millage rate from 33.04 in 1994 to 23.95 in 1995, once it started receiving casino tax revenue.

Since 1995, the Tunica County School District has been able to maintain a millage rate of 23.95.

Table 6.11

TUNICA COUNTY SCHOOL DISTRICT CASINO TAX REVENUES

School Year	Gross Casino Tax Revenues	Percentage of Casino Tax From Total Revenues
1995 - 1996	$2,611,665	20%
1996 - 1997	$3,339,911	30%
1997 – 1998	$3,350107	22%
1998 – 1999	$3,907,301	23%
1999 – 2000	$4,876,216	25%

In Table 6.11, the Tunica County School District ranks second among the casino school districts in Mississippi in the amount of casino tax revenue they receive for per pupil education expenditures. Only the Biloxi City School District receives more than the Tunica County School District in gross casino funds for education. However, the casino percentage of the per pupil expenditure budget is larger than any other school district in Mississippi. In 1996-97, 30 percent of the Tunica County school budget was made up of casino tax revenue. This figure is by far the largest amount of casino tax revenue ever received by a casino school district for per pupil expenditures.

The Tunica County School District has consistently maintained a per pupil expenditure budget that is reliant on casino tax revenue. Anywhere from 20 to 25 percent of the Tunica County School District's per pupil budget is made up of casino dollars. According to one school official, the Tunica County School District can now afford to purchase the school necessities in order to maintain an adequate education level for its

students. On the other hand, if a downturn in the economy were to occur, entertainment industries such as the casino are hit first, because people lose the disposable income they once had for gambling. In the long run, the Tunica County School District may run into funding problems if they bank too heavily on casinos to cover the education expense. However, right now their students are enjoying the benefits of better education as a result of the casino tax revenue. Tunica County School officials contend that the supplemental gaming revenue allows their school district to finally provide an adequate education for their students, something these officials argue has never before existed in their school district.

Table 6.12

TUNICA COUNTY SCHOOL DISTRICT CASINO TAX REVENUE AND SPENDING CATEGORIES

	1991	1994	1995	1999
Revenues				
Local	937,298	2,922,799	3,699,202	9,200,707
Casino Tax Revenue	0	0	2,611,665	4,876,216
Percentage of Local Tax Revenue From Casino Revenues			71%	53%
State	3,279,303	3,772,806	4,540,850	5,712,568
Federal	2,287,176	2,430,593	2,358,799	2,243,931
Sixteenth Section	0	0	0	0
Total Revenues	**6,503,777**	**9,126,198**	**10,598,851**	**17,157,206**
Expenditures				
Instruction	3,396,612	3,771,647	4,761,294	6,594,575
Support Services				
Students	211,829	221,417	238,359	514,361
Instructional Staff	384,868	666,499	716,423	1,469,797
General Administration	438,454	400,962	481,042	422,341
School Administration	298,191	392,181	590,766	761,852
Business	57,253	99,495	116,478	143,874
Operations and Maintenance	1,125,854	675,767	828,293	2,035,533
Transportation	250,009	596,063	671,979	515,893
Central	8,332	0	963,325	6,446
Noninstructional Service	777,182	904,482	267,469	1,080,901
Facility Construction	0	514,881	0	2,199,396
Debt Service (Principal)	10,797	60,915	60,915	495,079
Total Expenditures	**6,959,381**	**8,304,309**	**30,894,045**	**16,240,048**

Note: The casino tax revenue is a subset of local taxes and is only displayed so the reader can see just how much casino tax revenue the case study is reporting.

Table 6.12 indicates that in all of the school districts in Mississippi receiving casino tax revenue for per pupil expenditures, the Tunica County school district is benefiting far more than any other casino school district. Additional information provided from a series of interviews with leading school officials in the Tunica County School District about the disbursement of casino tax revenue concluded that both capital and operating budgets were receiving a large portion of the casino tax revenue. According to one school official, 14 percent of the revenue that Tunica County receives

from casinos goes into per pupil expenditures for education. Twelve percent of this revenue is placed into projects funded by both capital and operating budgetary dollars, and 2 percent of the revenue is dedicated specifically to teacher salaries.

One school official in Tunica County stipulated that the school buildings in the school district are so old and decrepit that local school officials are funneling a larger portion of the proceeds to capital budget expenditures. For instance, the Tunica County School District, since it began to receive casino tax revenue, has built one new high school and a new elementary school building. This school official commented that the school district does not currently have any kind of formal plan used to disburse the casino tax revenue into the capital or operating budget, nor does it possess any formal plan dispensing the revenue once it is placed into one of these two budgets. The primary stakeholders in the school district identify an important need for the school district. Once this need is identified, the casino tax revenue is used to address it. One school official commented that until all the renovations and new buildings are complete, most of the casino tax revenue for education is going to be placed into the capital budget because this is the most pressing need for the Tunica County School District. Despite the absence of a formal plan to disburse the casino tax revenue into any coherent plan or budget, the school district is counting on the casino tax revenue as a future source of income for funding education. The consensus among Tunica County School officials is that casino tax revenue is going to play a major role in their future efforts to finance per pupil expenditures for education.

In reference to H_2: the Tunica County School District has witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos, it is supported by the case study data from the Tunica County School District in this dissertation because the data suggests that per pupil assessment values in the school district doubled, and in some cases even tripled, since the adoption of casino gaming by Tunica County. In regards to H_3: the Tunica County School District spends more money on capital budgets, compared to operating budgets, it was not supported by the information provided by the Tunica County School District, because the Harrison County School District, like the other school districts discussed in this dissertation, spent the casino proceeds on various per pupil categories for education.

School District Fund Balances

Table 6.13

CASINO SCHOOL DISTRICT FUND BALANCES

Biloxi	Gulfport	Harrison County	Tunica County
1991 – 1,297,698	1991 – 861,299	1991 – 3,480,480	1991 – 281,427
1994 – 5,031,222	1994 – 1,272,334	1994 – 5,030,315	1994 – 1,260,261
1995 – 5,158,806	1995 –1,049,382	1995 – 6,408,339	1995 – 1,111,940
1999 – 8,041,022	1999 – 3,046,948	1999 – 8,032,140	1999 – 4,656,821

Table 6.13 notes one interesting point mentioned by almost every school official in the four casino school districts studied in this dissertation. That was the large increase in each school district's fund balance since the adoption of casinos. The audit data used in the case studies pertaining to fund balances were from the years: 1991, 1994, 1995 and

1999. What the audit data for each school district tends to suggest is that since the adoption of casinos, the fund balances of casino school districts have increased, allowing each school district to have more "breathing room" in paying it's expenses for education. In other words, everybody's job becomes less stressful because the school district will not be left wondering where the money is going to come from at the end of the year when the bills are all due.

Case Study Analysis

Research Question: Do casinos lead to increases in the total assessed property values in casino school districts?

This first research question addresses the issue of whether or not the adoption of casino gaming in Mississippi has had any impact on the assessed value of property in school districts with casino gaming. The responses gathered from the personal and telephone interviews, along with the data gathered from the Mississippi State Superintendent's Reports, overwhelmingly support the notion that since the adoption of casino gaming by the community in which their school district resides, per pupil assessment values have more than doubled, and in some cases even tripled, in places like the Tunica County School District. This is true in all the cases studied except the Harrison County School District. Until casinos begin to locate in the county, or economic development spillovers into the county occur, the assessed value of land in Harrison County will remain the same. Nevertheless, Harrison County's elected and

bureaucratic officials firmly believe that they are going to be witnessing increases in per pupil assessment value in the immediate future, due to the spillover effects beginning to appear such as the absence of developmental land in Biloxi and Gulfport. The data gathered from the State Auditor's Reports from all four school districts studied in this chapter support this notion of increased per pupil assessment values as a result of casino gaming in Mississippi. The best example in support of this conclusion is the Biloxi City School District's per pupil assessment value jumping from $22,370 in 1994 to $37,047 in 1995, the first year that school districts in Mississippi began receiving casino tax revenue. Another good example of dramatic increases in per pupil assessment value is in Tunica County. The Tunica County School District witnessed an increase from $17,082 average per pupil assessment value in 1994 to $61,711 in 1995. The latest figures reported by the Tunica County School District claim that the average assessed value is $110,214 based on the average daily attendance of students.

Although the Harrison County school district failed to report remarkable figures in increased assessed values such as the Biloxi and Tunica County school districts, and more modest increases in Gulfport, they still have quite impressive results. In 1994, the Harrison County School District had an average assessed value of $35,636, which only increased to $37,287 in 1995. The Harrison County School District reports an average assessed value of $39,409 in 1999. The casino industry, when moving to the region, opted for more metropolitan areas like Biloxi and Gulfport, compared to rural Harrison County. One reason being is that the casino legislation required them to be on the "dock;" and the dock in this area meant Biloxi or Gulfport. Although D'Iberville is eligible for a casino, it first needs to take care of its transportation problems to be more

attractive for the casino industry. Harrison County public administrators know that the developmental land in Biloxi and Gulfport is running out and that the casino industry and those industries associated with casinos, such as restaurants, hotels, and shopping centers will need developmental land for locating in the region.

Table 6.14

REVENUE DATA FOR THE OCEAN SPRINGS CITY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$3,265	10,400	62.45	$19,212
1990	$3,192	10,400	68.13	$19,212
1991	$3,215	10,700	68.35	$18,827
1992	$3,176	10,800	70.60	$18,442
1993	$3,150	10,800	78.36	$18,442
1994	$4,007	11,300	73.53	$18,279
1995	$4,119	11,400	73.47	$18,959
1996	$4,194	11,500	75.70	$22,905
1997	$4,690	11,600	77.80	$21,884
1998	$4,877	11,600	76.54	$23,145
1999	$5,159	11,600	75.77	$23,145

In Table 6.14, over the five years since casino school districts began receiving casino tax revenues for education, the Ocean Springs School District, a non-casino school district, has averaged to maintain a per pupil expenditure of $4,608, whereas the Biloxi City School District has maintained an average of $5,969 on per pupil expenditures for education. The Ocean Springs School District's (with comparable similarities in the 1994 base year among per pupil assessment values) per pupil expenditures on education and total number of students shows recent comparisons that are quite surprising. In 1994,

Ocean Springs had an average assessed value of $18,279, which only increased to $18,959 in 1995, an increase of $680. In 1999, the Ocean Springs School District reported an average assessed value of $22,007. From 1995-1999 the average assessed value has only increased a mere $3,272. The Ocean Springs School District borders the Biloxi City School District, and voted not to adopt casino gaming. Furthermore, the Ocean Springs School District has one of the highest millage rates in the region at 75.77 in the 1999 – 2000 school year. This is attributed to the need of the school district to generate its education revenues strictly from assessed values.

Table 6.15

REVENUE DATA FOR THE PASCAGOULA CITY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$3,841	8,091	48.40	$36,500
1990	$3,872	7,948	49.01	$36,171
1991	$3,859	8,068	48.76	$36,171
1992	$4,098	7,944	49.15	$35,843
1993	$4,342	7,836	57.48	$35,843
1994	$4,268	7,828	48.34	$38,623
1995	$5,144	7,717	59.10	$44,259
1996	$5,334	7,596	48.53	$43,500
1997	$5,321	7,601	51.94	$44,926
1998	$5,666	7,436	50.23	$45,700
1999	$6,565	7,028	52.19	$45,700

In Table 6.15, another interesting comparison to consider is the Pascagoula City School District with the Gulfport City School District. Notice in 1989 that the Pascagoula City School District spent $3,841 for education, whereas the Gulfport City School District spent $3,616 (Table 6.4). Today, the Gulfport City School District out-

spends the Pascagoula City School District by $44.00 per student. This is not a large difference, but what is surprising is the difference in assessed value between the school districts. In other words, the Gulfport City School District is able to offset it's lack in assessed value tax revenue for education with casino proceeds that allow it to spend more per pupil than Pascagoula City School District. The Pascagoula City School District, just around the corner from the Gulfport City School District, chose not to adopt casino gaming. The Pascagoula City School District, relatively speaking, is one of the wealthiest school districts in the region and the statistics indicate that its assessed value is high compared to the relative norm in Mississippi (the statistical mean for average assessed value in Mississippi is $27,521 in 1999). Pascagoula currently ranks seventh in average assessed value among all school districts in Mississippi ($44,817). From 1994 to 1995, Pascagoula witnessed an increase in average assessed value of $7,734, from $36,525 to $44,259 This figure is astonishing when compared to the growth in assessed value among other non-casino school districts in this period of time. One reason the Pascagoula City School District's assessed value has increased from $44,259 to 44,817 in 1999 may be attributed to Ingall's Shipyard. What is happening in Pascagoula is that people are moving to the casinos to work, and relocating their residences in the Pascagoula area because it is an upscale residential district, with an above average public education system for their children to attend. Because of this influx of people wanting to live in the Pascagoula area property values have increased, resulting in an increase in average assessed values.

One aspect of the Pascagoula City School District that has probably affected per pupil assessment values is Ingall's Shipyard. Ingall's Shipyard is one of the largest

employers in Mississippi, with around 13,000 employees. Therefore, industries moving into the Pascagoula City School District, for the sake of catering to the shipyard, have also attributed to an increase in per pupil per pupil assessment values.

Table 6.16

REVENUE DATA FOR THE HATTIESBURG MUNICIPAL SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per Pupil Assessment Value
1989	$3,951	5,707	57.34	$29,390
1990	$4,019	5,606	57.06	$28,893
1991	$3,980	5,565	60.85	$28,645
1992	$4,096	5,579	60.85	$28,397
1993	$4,462	5,580	59.85	$28,397
1994	$4,493	5,555	61.85	$28,559
1995	$5,170	5,355	63.85	$30,727
1996	$5,370	5,341	62.73	$31,068
1997	$5,641	5,262	58.93	$35,658
1998	$5,790	5,170	61.87	$37,478
1999	$7,060	4,685	60.67	$37,478

In Table 6.16, similarities again exist between two county school districts in regards to per pupil expenditures on education and per pupil assessment value. The Hattiesburg Municipal School District held a slight edge over the Harrison County School District in per pupil expenditures for education, but the Harrison County School District had a higher assessed value. Currently, the Harrison County School District has a higher assessed value than the Hattiesburg Municipal School District, and a considerably lower millage rate. The latest millage rate recorded by the Harrison County School District was 47.38, while the Hattiesburg Municipal School District levied a millage rate of 60.67. In other words, the Hattiesburg Municipal School District may

out-spend the Harrison County School District in per pupil expenditures for education, but they do so at the expense of their taxpayers by levying a much higher millage rate on assessed value than the Harrison County School District.

Table 6.17

REVENUE DATA FOR THE BENTON COUNTY SCHOOL DISTRICT

Year	Standardized Per Pupil Expenditures	Students	Millage Rate	Per pupil Assessment Value
1989	$3,077	1,522	38.25	$11,554
1990	$3,276	1,534	33.00	$11,554
1991	$3,222	1,500	34.50	$14,081
1992	$3,737	1,509	34.50	$14,081
1993	$3,902	1,429	36.50	$14,081
1994	$3,953	1,411	35.30	$14,329
1995	$4,528	1,339	38.97	$15,564
1996	$4,593	1,323	41.39	$17,275
1997	$4,605	1,314	40.22	$17,275
1998	$5,122	1,292	36.00	$19,014
1999	$5,580	1,202	36.00	$19,014

In Table 6.17 the Benton County School District, although quite similar in 1989 and again in 1994, in comparison to the Tunica County School District, has not experienced the increases in per pupil spending for education or assessed value that the Tunica County School District has. The Benton County School District, in the base year of 1994, had similar characteristics based on the comparison group variables of per pupil assessment value, total per pupil expenditures, and number of students. But since the funneling of casino gaming funds to casino school districts in 1995, the Benton County School District has witnessed an increase in average assessed value of $4,348 from 1995-1999. The Tunica County School District, on the other hand, has witnessed an increase

in average assessed value of $82,854 between 1995 and 1999. The Tunica County School District, between the years 1994 and 1995, witnessed an increase of $44,629. The reason why the Tunica County School District's assessed values are so unique is because at one time Tunica County was considered the poorest county in the country. Tunica County witnessed an immense migration of wealth when the casinos came to their community because there was literally nothing in this community before their arrival. The figures in relation to Tunica County's profits from the casino industry are unprecedented, but due to the community's poverty stricken status they still have a long way to go before they can bring such programs as education to the sufficient levels required by the state. The Tunica County School District has been under the court ordered direction of what is known as a Conserver to assist Tunica County's transformation of it's educational system to the required minimum basics that the state requires of all its school district. According to school officials in the community, the casino tax revenues have made this transformation much easier and more possible than if the casino funds were not available. These school officials credit the increase in per pupil assessment values as one mechanism that influenced this abundance of revenue for enhancing per pupil expenditures in the school district.

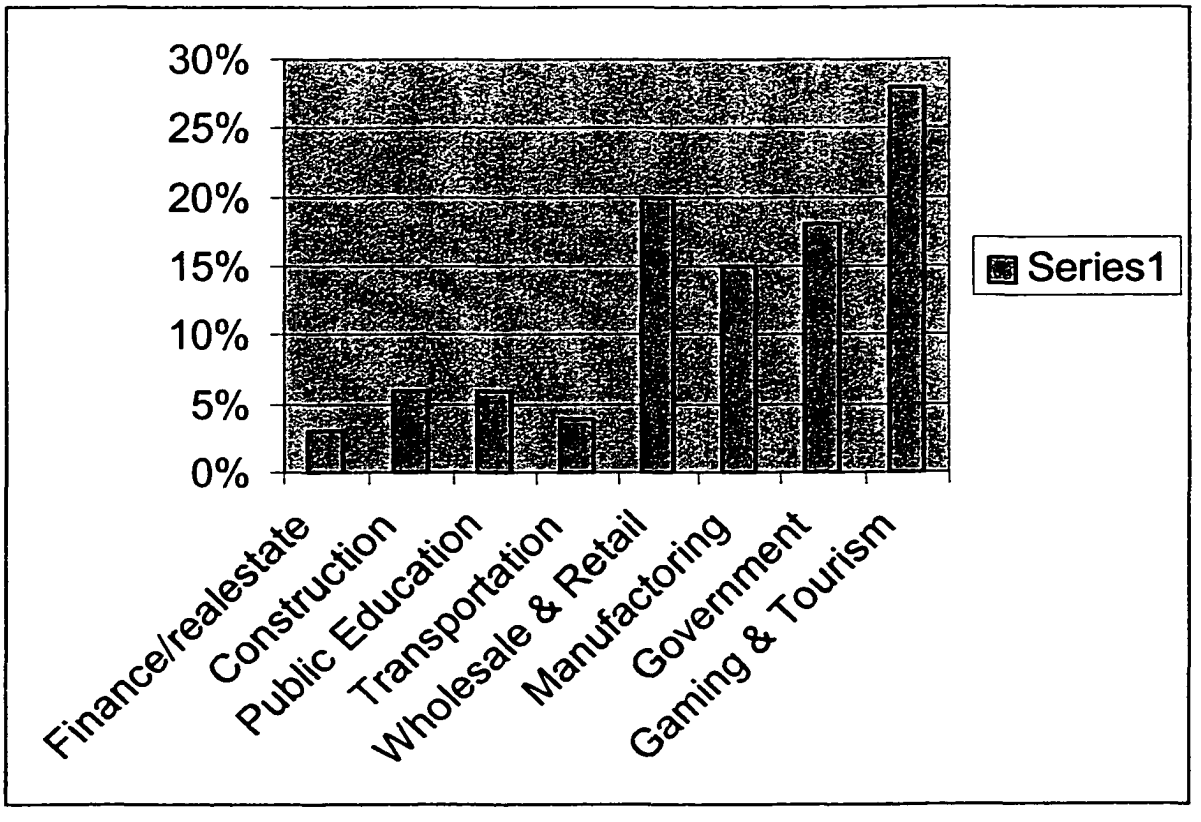
Economic Factors on the Mississippi Gulf Coast

In the in-person and telephone interviews, several interviewees suggested that per pupil assessment values were increasing as a direct result of the casino industry. Others indicated that the casino industry has contributed significantly to per pupil assessment value increases, but other economic factors were also influential in this dramatic increase

in per pupil assessment values. The following chart identifies other economic factors that have also contributed to economic growth which has, in turn, impacted per pupil assessment values.

Table 6.18

THE MAJOR ECONOMIC FACTORS DRIVING THE MISSISSIPPI GULF COAST ECONOMY



According to Table 6.18, over the last decade, the Mississippi Gulf Coast has emerged into the national limelight for it's economic prosperity. This region, which includes the counties of: Harrison, Hancock, and Jackson, has been called the economic engine that is driving the unprecedented economic prosperity in Mississippi. The Mississippi Gulf Coast economy is driven by 5 key growth areas: gaming/tourism,

manufacturing/distribution, military and federal governmental installations, retail trade, and transportation. The Mississippi Gulf Coast houses 12,000 businesses, 7,000 of which are located in Harrison County alone (Harrison County Development Commission, 2001).

Gaming and Tourism on the Mississippi Gulf Coast is now a 2.8 billion dollar industry with over 19 million visitors annually. Hotel room inventory now totals over 17,000 units to meet growing demand. Non-gaming related expenditures account for nearly 75 cents of every visitor dollar. Gaming revenues topped $1 billion in 1999 and are anticipated to surpass that level in 2000 with continued expansions and new jet service (Harrison County Development Commission, 2001).

Since 1992, more than $2.4 billion has been invested in Mississippi Gulf Coast casino facilities. This includes 12 hotels offering 6,779 luxury accommodations, and 61 restaurants. Even though the Mississippi Gulf Coast is beginning to be called the gambling capital of the South, the fastest-growing revenue producers for Coast casinos are lodging, retailing, and entertainment (Harrison County Development Commission, 2001).

One reason the gaming and tourism industry has impacted the Mississippi Gulf Coast in such a manner is due to legislation that was passed in 1998. The Mississippi Legislature passed a law requiring casinos to spend equal amounts on land development and casino development. In other words, if a casino owner invests $1 million dollars in developing a casino, they must also invest $1 million dollars in land development. In turn, the additional hotels, restaurants, golf courses and resorts have increased the value of property in casino communities because of this land-based development (Mississippi

Gaming Commission, 2001). According to educational administrators in the Harrison County School District and the Biloxi and Gulfport School Districts, this increase in real and personal property values has allowed the school districts to receive more fiscal resources for per pupil expenditures on education. However, these administrators are also quick in pointing out that the casino industry, although a large player, is not the only economic growth factor that is impacting per pupil assessment values in their respected communities.

In the area of industrial development, over $1.3 billion in new projects, including relocations/expansions by 20 companies the Mississippi Gulf Coast area, have been announced and are expected to take place in the two years. Marine fabrication, deep-water offshore drilling rig construction, polymer/chemical processing plants, and military shipbuilding contracts are just a few examples of the industrial development that will be occurring on the Mississippi Gulf Coast in the near future (Harrison County Development Commission, 2001).

Over $90 million dollars is being invested in new healthcare facilities including one new hospital, a new medical mall, and several outpatient facilities and medical office buildings. Furthermore, increased visitor traffic, combined with a large increase in the population, has prompted the addition of over 1.35 million square feet of new mall space. This new retail development will bring 20 new retailers to the market on the Mississippi Gulf Coast (Harrison County Development Commission, 2001).

Economic analysts are anticipating that the Coast's strong economy and future job growth is sufficient to attract nearly 10,000 new households for the next two to three

years, bringing the Mississippi Gulf Coast's population to nearly 525,000 by the year 2003 (Harrison County Development Commission, 2001).

Research Questions Addressed By The Case Studies

Do revenue and spending patterns differ in school districts with casino tax revenue from school districts without casino tax revenue? The information provided by the personal interviews, telephone interviews and document analysis answer the research question posed at the beginning of this section: Do casinos lead to increases in the total assessed property values in casino school districts compared to the matching school districts? The data tends to suggest that the per pupil assessment values, in Mississippi school districts with casinos, has increased since the adoption of casino gaming by the state. Therefore, the null hypothesis is rejected in favor of hypothesis two that: the four school districts that receive the most casino tax revenue have witnessed an increase in total assessed property values. These findings were expected from the case study research and again, the generalizations made about these four school districts are not applicable to the other nine casino school districts, only those specifically chosen for the case studies.
How are the casino tax revenues being spent by the four casino school districts in Mississippi with a noticeable difference in the amount of casino revenue they receive for per pupil expenditures on education?

The four Mississippi casino school districts studied in this dissertation display various spending patterns in regards to casino tax revenue. The consensus among school officials in Biloxi, Gulfport, Harrison County and Tunica County, in regards to the disbursement of casino tax revenue, is that their school district has been able to purchase

additional supplies such as more computers for the classrooms, upgrades on buildings, new high school and elementary school buildings, the purchase of electronic language programs that teach students various foreign languages, new school buses, school nurses, art and music programs, lower teacher/student ratios, biology labs, renovations of administrators offices, a host of math programs, new classrooms in older school buildings, and new computers for teachers. Tunica County and Gulfport have even placed some of these funds in teacher salaries, raises, and benefits. These school officials suggest that the casino tax revenue has provided the needed fiscal resources to purchase such supplies and programs, and without the casino tax revenue much of what has been done to improve their school systems would not have been possible.

Despite the additional programs, supplies, building renovations, and new schools that have been purchased with casino dollars, the attitudes of many school officials towards the gaming industry is still tainted by large amounts of skepticism, especially in Biloxi and Harrison County. Many school officials agree that the school district in which they work is banking on casino tax revenues to solve both long-term and short-term fiscal problems that have hindered Mississippi schools for decades. A number of these school officials contend that the casino industry is providing valuable resources, but in the past few years those resources have been leveling off compared to the first few years the casinos contributed revenue to the school system. They warn that if their school district relies too heavily on casino tax revenues for covering the cost of education, when downturns in the economy occur there will not be enough revenue to pay the education costs. Overall, they support the casino industry, they just warn policy makers that relying

too heavily on casino proceeds to pay the bills may come back and bite them in the future.

School officials in Tunica County and Gulfport seem to place a little more faith in the casino industry than Biloxi and Harrison County. They tend to believe that the casino industry is going to continue to thrive and support education through the disbursement of casino dollars to the school system. They tend to believe that in economic slow downs, the school system may suffer a bit from a lack of casino dollars, however in the long-run, the school districts will be better off because of the casino tax revenue. Due to the menagerie of various budgets that receive casino tax revenue, the null hypothesis that; The four casino school districts in Mississippi with the most casino tax revenue tend to spend relatively the same amount of casino tax revenues on capital budgets and operating budgets, has failed to be rejected. What the data seems to be suggesting is that each specific school district used as a case study is spending the additional supplemental casino tax revenue on a number of different educational policies and programs. Therefore, no general conclusions can be made except that each of the four casino school districts spends their supplemental casino tax revenue quite differently.

What Have We Learned From the Case Study Data and Analyses?

The data provided by the interviews and document analysis suggests to us that the four Mississippi school districts receiving the most casino tax revenue have witnessed an increase in per pupil assessment values. Due to this increase in per pupil assessment values and casino tax revenues, many of the casino school districts have been able to

maintain, and even in some cases decrease, the millage rate and can still receive the fiscal resources needed to adequately support education through per pupil expenditures.

Initially, 13 school districts in Mississippi received casino tax revenue. This allowed for increased spending on operating and capital expenditures in these school districts. Now, with the decline in revenues as a result of the newness wearing off, the disbursement of the monies to four more school districts means that 17 school districts are now receiving casino tax revenue for per pupil expenditures as a result of the court case Long Beach School District v. Harrison County School District. The sum of casino tax revenue allotted to Mississippi school districts with and without casinos (those school districts benefiting from the court case that do not house casinos) is getting smaller and smaller in the portion of money each school district receives from the casinos. Many of the respondents interviewed for this dissertation speculate that eventually the casino dollars will probably be disbursed to so many districts that the amount of money received by entitled agents will be so small that no one benefits from this revenue-generating device. What this court case means is that more people are getting a piece of the casino pie. With the pie shrinking and being given to more people, researchers can expect to see casino tax revenue in Mississippi to have less of an impact in the future years than it has previously had for school districts and municipalities as a whole.

A portion of the literature addressed in Chapter Three of this dissertation articulated the theory that more money equals better test scores and higher overall rankings among those school districts measured as more affluent in terms of higher per pupil spending. Since the data tested in this dissertation suggests that casino school districts are receiving more revenue for per pupil expenditures directly from casinos, and

even more from the increased assessed values as a result of economic development from casinos, what does this mean for academic test scores and overall school rankings for Mississippi school districts with casinos?

The overall school rankings of Mississippi, compared with other states, has changed little since the casinos began contributing financially to per pupil expenditures in Mississippi. The statistics reported by the U.S. Census Bureau since 1991 (Mississippi spent a total of $1,640,000 on per pupil expenditures) rank Mississippi in comparison to other states in per pupil expenditures, between thirty-first (1991) to thirty-third (1999). The highest-ranking Mississippi experienced during this time was thirty-fourth in 1995, but during this time frame Mississippi has consistently ranked in the lower 30s in per pupil expenditures when compared to other states. Since casino tax revenue is only distributed to primarily 13 school districts in Mississippi (not counting those school districts receiving casino tax revenue due to the Long Beach v. Harrison County School District Court case), casino revenue was not expected to have a major impact on the whole state of Mississippi and it's per pupil expenditure rankings compared to other states. However, when individual school districts with a significant casino presence such as Biloxi, Gulfport, Harrison County and Tunica County are concerned, the casino tax revenue may have contributed to better test scores and higher academic ratings for these districts compared to non-casino school districts in Mississippi.

One category that casino tax revenues may have influenced in these four school districts deals with the accreditation levels assigned to all school districts in the state of Mississippi. The Biloxi City School District, for instance, is currently registered as a Level 5 school district in Mississippi. When the state sets these accreditation levels

several factors are included in the equation such as ACT scores, per pupil spending, teacher salaries, and so forth. Since the 1995-96 academic school year when Biloxi was ranked as a Level 4.5 school district, it has progressed to a Level 5, which is the highest ranking that a school district can receive from the state. The Gulfport City School District, in the 1995-96 school year, was ranked as a 3.9 school district. Over this five year time period the Gulfport School District has maintained its 3.9 accreditation ranking. The Harrison County School District, as is the case in Gulfport, is currently ranked as a 3.5 school district, which it has maintained since 1995. The Tunica County School District is the only school district examined in this study that has witnessed a decline in its accreditation level. In the 1995-96 school year the Tunica County School District received an academic rating of 1.6. Today its current rating is 1.0. The Tunica County School District for a number of years was under the control of what is known as a Conserver. A Conserver is a person assigned by the courts to oversee the operations of a school district that is experiencing administrative difficulties. In a recent interview with this individual, they claimed that the school district is beginning a gradual climb back up to an acceptable accreditation level. Although the Conserver basically operates the school district, this individual claims that the Tunica County School District has made remarkable improvements in recent years and can expect to be under it's own control in the next year or two.

One of the reasons the Conserver gives for Tunica County's poor school conditions is that the school district operated for a number of years as the poorest school district in the state. There were insufficient funds to provide adequate education services and, due to a lack of funds, the school district was unable to hire qualified school

teachers. Although the Tunica County School District ranks towards the bottom in almost all categories in education, the Conserver believes that the casino funds are going to allow the school district to provide many of the programs, projects, and competitive teacher salaries that are necessary to sufficiently increase the school district's ranking by the state.

The consensus among public administrators in the four school districts discussed in the case study research suggests that the casino tax revenue has allowed their school districts to maintain their current accreditation rankings, or slightly increase those rankings, because the additional supplemental income has allowed them to do things such as increase teacher salaries, purchase new technology and programs, or offer more classes for their students to take, which impact the rankings the state assigns each school district. Although the Tunica County School District has experienced a slight decrease in their accreditation ranking, the Conserver is quite confident that the their ranking will begin to increase now that the school district has hired more professional administrators, or trained those already employed by the school district to be more professional.

In reference to the disbursement of casino dollars, formal policies exist that distribute the casino tax revenues at the local level from the 3.2 tax. Furthermore, a plan exists to distribute, say in Gulfport's case, the 20 percent of the 3.2 tax that goes to the education system in the community. Once the 20 percent of the 3.2 tax is distributed to the school system there is no formal plan or account that the revenue is placed in, unless one chooses to call the school districts general education budget a formal plan. First, this absence of a formal plan may suggest that local officials are still skeptical of casino gaming about placing it's revenues in special accounts for education. Policy makers may

be holding out on the development of a formalized plan to earmark casino tax revenues for teacher salaries until the casino industry has proven itself over the long run. Whatever the reason, none of the casino school districts have any type of formal plan to disburse casino tax revenue, they just place it into the general fund and whatever the stakeholders determine is important for that fiscal year is what gets funded.

The problem with such an informal plan is that certain stakeholders may think that building renovations are the most important aspect of maintaining an adequate education and choose to place most of the funds into these types of projects, totally neglecting the new technological needs of the school district, or vice versa. A formal plan or budget directing portions of the casino tax revenues across the board will allow a large majority of the school district's needs to be met. However, the lack of a formal plan has its advantages as well. It allows school officials to pay for needs as they arise and prohibits the continued funding of projects that are no longer needed by the school district.

The increased amount of revenue placed in all four of the school district's fund balances suggests that policy makers, before casino gaming, used to sweat during the fiscal end of the year when the bills were due. Many of the school officials who responded to the questions made reference to the amount of "breathing room" they now have when it is time to pay the bills. The Biloxi City School District, for example, was in such debt that it literally would take money out of one account to pay a debt on another account. For several years the community operated in debt, especially the school district. This debt carried over into the school district because school officials used to worry where the next dollar was going to come from to pay the bills. Now, according to these

school officials, the Biloxi City school system can operate with more ease knowing that a large balance fund is accessible if they need to pay a bill, something that was not available before casino gaming.

One of the primary reasons the Biloxi, Gulfport, Harrison County, and Tunica County School Districts benefit from casino tax revenues is due in fact to the visionary leadership displayed by local and state political and administrative functionaries who drew up the initial state and local pieces of legislation directing the 3.2 and .8 percent of casino tax revenue in the manner in which it currently is disbursed. Three normative political theories seem to have permeated the thought processes of the primary stakeholders who created the initial casino legislation. A host of other public policy theories exist as well that may shed some light on what took place during the initial adoption of the casino bill.

Although most of the individuals interviewed in the four case studies of this dissertation endorse casino gaming, a relatively small number of individuals oppose casino gaming. One of the most vocal groups that oppose casino gaming in Mississippi is the Southern Baptists. The Southern Baptist Convention quotes a verse from Isaiah 65:11-12 in their opposition against casino gaming.

> But ye are they that forsake the LORD that forget my holy mountain, that prepare a table for that troop, and that furnish the drink offering unto that number. Therefore will I number you to the sword, and ye shall all bow down to the slaughter: because when I called, ye did not answer; when I spake, ye did not hear, but did evil before mine eyes, and did choose that wherein I delighted not.

They contend that state sanctioned gaming does not follow God's commandments for us as individuals, but it is a policy in and of itself that displeases God. Therefore, since God

is displeased by gaming policy, the state should not support it because God will eventually bring down his wrath on those who disobey his commands.

They cite case after case of anecdotal evidence in support of their opposition to casino gaming on moral grounds. In an interview with Dr. Paul Jones, the leader of the Southern Baptist Convention in Mississippi, he talked about a woman who was married with two kids and a nice job, but was overcome by the addiction of casino gaming. It resulted in her turning to prostitution so she could finance her gambling addiction. It led to the loss of her job, marriage, and family. In another interview with a state legislator opposed to casino gaming, this individual talked about his neighbor, who had a six-figure income, a nice house paid for, and loving family. However, his addiction to casino gambling cost him his job, house, and family and the end result in this man's life was suicide. When he realized what he had lost, he woke up one day and shot himself. These are some of the compelling arguments made against the casino industry that are worth noting. A multitude of these stories exist, but these two serve to prove the point argued by the Southern Baptists, that when individuals go against God's will, prepare for severe consequences.

Despite opposition groups such as the Southern Baptists arguing for the abolishment of casino gaming in Mississippi, these four school districts, since the adoption of casino gaming in Mississippi, have witnessed an increase in per pupil expenditures for education that has allowed them to spend money on programs and projects that many other school districts in Mississippi have had the misfortune of doing without. Yes, there are many social costs associated with casino gaming such as increased crime, divorce, bankruptcy, traffic congestion and strains on the infrastructure

in communities with casinos. But as many of the respondents reported, the consensus in their school district is that they would not be experiencing the benefits they are currently enjoying without the casino industry. Hence, Mississippi school districts with casinos are planning on the future enjoyment of the fiscal benefits associated with casino gaming, whereas matching non-casino school districts in Mississippi will continue to find alternative sources to fund education, other than relying on the casino industry.

CHAPTER VII

POLICY IMPLICATIONS AND CONCLUSION

This research project utilizes concepts and methods assessing the impact of state operated lotteries on financing education for measuring the impact of casino tax revenues on education school districts for per pupil expenditures in Mississippi. The casino literature fails to report any attempts among scholars measuring the impact of casino tax revenues on education, which leaves a gap in the current literature regarding casino gaming in America. Furthermore, many casino school districts are receiving casino tax revenues for financing education and no literature currently exists that measures the impact of casino revenue on per pupil expenditures in Mississippi. Since Mississippi is such a poor state, it is imperative that Mississippi adopt policies that impact the target groups local and state policy makers originally intended. To address such a concern for Mississippi, this research project addresses the following research questions pertaining to the impact of casino gaming on per pupil expenditures in Mississippi school districts with casinos, compared to matching non-casino school districts.

- Do revenue and spending patterns differ in school districts with casino tax revenue from similar school districts without casino tax revenue?

- Do casinos lead to increases in the total assessed property values in these districts compared to the matching districts?

- How are the casino tax revenues being spent by casino school districts in Mississippi?

A series of hypotheses were derived from the literature on legalized gaming and tested in conjunction with these research questions:

- H_1: School districts receiving casino revenue tend to spend more per pupil on education, compared to matching school districts without casinos.

- H_2: School districts in Mississippi with casinos have witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos.

- H_3: School districts in Mississippi with casinos spend more money on capital budgets, compared to operating budgets.

Do revenue and spending patterns differ in school districts with casino tax revenue from school districts without casino tax revenue?

Historically, the Mississippi education system has ranked toward the bottom in all categories in comparison to other states. In the development of gaming policy, elected and bureaucratic policy makers insisted that casino tax revenues were going to help alleviate many of the funding problems that have plagued Mississippi's education system for years. Since 1992, local policy makers in Mississippi have disbursed a large sum of the casino tax revenue to the school districts eligible for a portion of casino tax revenue. In a series of statistical tests formulated in conjunction with the literature pertaining to casino gaming in Mississippi, this project attempted to measure the impact of casino tax revenue on per pupil expenditures in Mississippi. Two models were tested in these

statistical tests. Model one focused on measuring the impact of total per pupil expenditures in education by casino school districts, compared to matching non-casino school districts in Mississippi. Model measuried the impact of casino tax revenues on the amount of dollar change from year to year between casino school districts and non-casino school districts. Measuring the dollar change from year to year allows the researcher to assess the impact that the casino tax revenue has made on revenue patterns in terms of revenue increases or decreases on per pupil expenditures. This allows the researcher to determine if the actual amount of change caused by the casino tax revenue has increased or decreased fiscal resources in a manner that has made a significant impact in revenue patterns. In almost all the statistical reports, the casino tax revenue variable displayed evidence suggesting that the supplemental income produced from this revenue generating device has allowed casino school districts in Mississippi to spend more than non-casino matching school districts. Therefore, the consensus suggested by these statistical reports indicates that the revenue patterns of casino school districts have been much different since the adoption and allotment of casino dollars to school districts with casinos. Hence, H_1: School districts receiving casino tax revenue tend to spend more per pupil on education, compared to matching school districts without casinos, was successfully supported in this research project.

The statistical analyses conducted in this project are valid in making generalized inferences of the reported findings in this report. For instance, policy makers could assume that if other school districts in Mississippi were to adopt casino gaming, their revenue patterns in regards to per pupil expenditures would increase in a similar manner

as the school districts that already exist with casino gaming. However, some may argue that the casino market may not currently be stable enough to support additional casinos in other parts of Mississippi. Also, the legislation at the state level allowing only coastal and river counties to adopt casino gaming will need changing if casino gaming was going to be opened up to all counties in Mississippi, which is something that is probably not going to happen because of the controversial nature of casino gaming in Mississippi.

Although the statistical information in this research project offers explanations as to what has happened to the revenue patterns of casino school districts compared to matching non-casino school districts in Mississippi, this deductive (from general to specific) form of reasoning is weak as a way to provide explanations as to why these revenue patterns have changed. Therefore, to gain a clearer understanding as to why revenue patterns have changed in per pupil expenditures, qualitative case studies were conducted in order to provide explanations that the statistical information has a hard time explaining. Due to the inductive nature of case study data (reasoning from specific to general), this research method allows the researcher to use specific cases to explain those things "between the lines" that statistical information fails to provide (Rossi and Freeman, 1995). For instance, the conclusions from the statistical analyses conducted in this dissertation allowed generalized inferences about all the casino school districts in Mississippi, whereas the specific case study data only allowed for specific conclusions in reference to each of the four outlying casino school districts. This allowed for the use of the case study data to clarify in a specific manner as to how the casino revenue has

impacted per pupil expenditures in Mississippi. The specific "between the line" references to the case study data included such examples as to where the money was being spent and did this increase in per pupil expenditures impact the accreditation levels of the casino school districts.

Do casinos lead to increases in the total assessed property values in these districts compared to the matching districts?

This project used a series of four case studies of the most dominant casino school districts in Mississippi as defined by the amount of casino tax revenue they have received for per pupil expenditures. In identifying the outliers, the following residual statistics were examined.

> *Leverage Values* – identified outliers among the independent variables.
>
> *Studentized Deleted Residuals* – identified outliers among the dependent variables.
>
> *Cook's D* – the combination of independent and dependent outliers are identified.

Once the outliers were determined in the data set they were excluded from the comparison means calculations and regression models in order to measure their impact on the statistical analyses. The four case studies used in this project were the Biloxi City School District, the Gulfport City School District, the Harrison County School District, and the Tunica County School District. The data-gathering device used in the case studies was a structured questionnaire administered by in-person interviews and telephone interviews with prominent players and stakeholders in these four casino school districts in Mississippi. These individuals included: school superintendents, assistant

school superintendents, principals, teachers, administrators of school finances such as financial managers, school board members, local representatives such as the mayor and council members, representatives, religious leaders, and state representatives in both the House of Representatives and the Senate. To support the data gathered through the various interviews of these prominent stakeholders, this project relied on document analysis of financial and demographic data over a time period of eleven years. This time period began in the school year of 1989 and persisted through the 1999 school year.

The consensus among the data collected through the interviews was that the casino industry has played a major part in the increased assessed value of land in school districts with casinos, compared to matching school districts without casinos. Those interviewed in the casino school districts reported massive amounts of economic development in the form of restaurants, hotels and motels, shopping centers, and outlet malls that cater to the increased tourist needs for such industries. Since the assessed value of a school district's land is the primary force behind the amount of revenue that school districts receive to cover the fiscal costs of operating a school district, it is assumed that not only has the casino industry impacted per pupil expenditures through direct revenue contributions to the school district, but indirectly the casino has impacted the fiscal allocations received by school districts from increased assessed values. The data gathered from the documents used in this project support the findings of the interview data as well. Both types of data complemented each other in this dissertation.

Although the casino school districts began receiving casino tax revenues in 1992, the amount was so insignificant that very few records were kept by the localities housing

casinos. The assessed value in these school districts witnessed a sharp increase during the period between 1994 and 1995. But in some cases, such as the Tunica County School District, the assessed value of property almost tripled. However, since the formal statistical models fail to support the notion that casino tax revenues have significantly increased assessment values H_2; School districts in Mississippi with casinos have witnessed an increase in total assessed property values, compared to matching school districts in Mississippi without casinos, was unsuccessfully supported in this research project. Although the t – scores reported by the comparative means test indicate that casino tax revenues have impacted assessment values, the pooled time series results do not allow for the rejection of the null hypothesis. Therefore, the only available inferences from both the case study data and the statistical data in regards to assessment value are that assessment values have increased in the four outlying casino school districts in Mississippi. Further analysis using a geographic variable measuring the distance of casinos from real and personal property, along with other variables measuring various industrial development ventures, are necessary before more conclusive suggestions can be made regarding casino tax revenue's impact on assessment value.

How are the casino tax revenues being spent by the four casino school districts in Mississippi with a noticeable difference in the amount of casino revenue they receive for per pupil expenditures on education?

If revenue patterns have increased as a direct result of casino contributions to school districts in Mississippi housing casinos, and indirectly through increased assessed land values as a result of casinos, how are the casino tax revenues being spent by casino

school districts in Mississippi? Again, this research question was answered through the combination of data collecting techniques of interviews and document analysis. In reference to the data gathered by document analysis, the audit reports by the Mississippi State Department of Audit were reviewed, along with the financial data from the Mississippi Report Card, and The Superintendent's Report on Education to support the data gathered through the in-person and telephone interviews. The results of the findings pertaining to this research question were somewhat mixed. The in person and telephone interviews reported that schools have been able to purchase additional computers for the classrooms, upgrade buildings, build new high schools and elementary schools, purchase electronic language programs that teach students various foreign languages, new school buses, school nurses, art and music programs, lower their teacher/student ratio, biology labs, renovations of administrators offices, a host of math programs, new classrooms in older school buildings, and new computers for teachers. However, all four of the school districts have chosen to place the casino tax revenue into the school district's general fund instead of earmarking the revenues for specific budgets, such as the operating or capital budget. Basically, what was reported by these respondents, was the fact that the school districts purchase those things considered by the individuals "in charge" to be the most pressing needs of the school district for that year. For example, one year the Biloxi City School District may choose to spend the additional casino tax revenue on computers, but then the following year use it towards debt services, such as bond issues, to build new schools.

Education to support the data gathered through the in-person and telephone interviews. The results of the findings pertaining to this research question were somewhat mixed. The in person and telephone interviews reported that schools have been able to purchase additional computers for the classrooms, upgrade buildings, build new high schools and elementary schools, purchase electronic language programs that teach students various foreign languages, new school buses, school nurses, art and music programs, lower their teacher/student ratio, biology labs, renovations of administrators offices, a host of math programs, new classrooms in older school buildings, and new computers for teachers. However, all four of the school districts have chosen to place the casino tax revenue into the school district's general fund instead of earmarking the revenues for specific budgets, such as the operating or capital budget. Basically, what was reported by these respondents, was the fact that the school districts purchase those things considered by the individuals "in charge" to be the most pressing needs of the school district for that year. For example, one year the Biloxi City School District may choose to spend the additional casino tax revenue on computers, but then the following year use it towards debt services, such as bond issues, to build new schools.

Despite these school district's unconformity in their spending patterns of casino tax revenue, there is a sense of uniformity. The audit data presents the fact that all four of the school districts have increased their fund balances by a large margin since the additional casino tax revenue has been added to their school budgets. Furthermore, most of the respondents that would have anything to do with the school district's fund balances made reference to the "breathing room" they now have

County and the courts favored their request for casino funds based on the argument that their school district was being bombarded by students who's parents were coming to work in the casinos. This court case may open the door for future litigation cases among school districts with similar arguments, however; currently there are no such cases pending in the Mississippi courts.

Comparisons Between Casino Gaming and Lotteries

Since the idea for this dissertation topic was extracted from the literature addressing the lottery's impact on education, it is appropriate to briefly discuss similarities and differences between these studies. The findings of this dissertation are consistent with the lottery literature in several aspects. First, the lottery literature stipulates that state operated lotteries are not the enormous panaceas that policymakers envisioned for eradicating the funding disparities in education across the American states. This dissertation reports similar findings as the lottery literature because only four casino school districts in Mississippi are really benefiting from casino tax revenue for per pupil expenditures. Secondly, there have been some cases, such as Georgia, where state operated lotteries have considerably impacted per pupil expenditures for education. Again, this research suggests that four Mississippi school districts have benefited from the casino revenue, such as states like Georgia.

One distinction found in this dissertation, that is absent from the research on state operated lotteries, is the impact that has occurred in reference to assessed values of real and private property in Mississippi. Some of the data in this dissertation suggests that an

indirect relationship between casino revenue and an increase in assessment value has occurred. This increase is attributed to new development that has resulted from casino gaming in Mississippi. Since lotteries are state operated, little to no economic development occurs as a result of the adoption of state lotteries, unless a portion of the proceeds are specifically earmarked for economic development.

Finally, the statistical analyses conducted in this dissertation reported the casino variable statistically significant in many of the regression equations, suggesting that since the adoption of casino gaming in Mississippi a considerable difference between casino school districts and matching non-casino school districts in the amount of revenue they spend for per pupil expenditures. In all the lottery works discussed in the literature review section of this dissertation, none of the research utilizing formal models to test data reported any significant findings between state operated lotteries and per pupil expenditures for education.

One reason for this discrepancy in the research is the size of the units of analysis used in the data set. Only 26 school districts were used in this research project, whereas such scholars as Miller and Pierce (1997) and Stanley and French (2000) used fifty states as the units of analysis. The casino industry in Mississippi is relatively new and has received an immense amount of play since it's adoption in 1990. However, casino tax revenues are continuing to decline due to a slow down in the economy, as well as the newness of the casinos wearing off. State lotteries have been in existence since 1964 and the revenue produced by state operated lotteries, after the administrative costs are paid, is estimated at about two to three percent of the education revenue used by states

(Mikesell, 1989). This is one reason why state lotteries are not impacting per pupil expenditures for education as expected. Although casino school districts in Mississippi are in the most part banking on the continued presence of casino revenue for education, the school administrators anticipate a reduction in casino tax revenues as the casino industry loses it's excitement over time.

Policy Implications

Future policy implications in reference to casino gaming include the following: In Mississippi, school districts with casinos should consider establishing a formal policy that earmarks a portion, or maybe even all, of the casino tax revenue for specific programs or budgets. This will allow the school district to plan for such a large expense, as the building of a new school, so bond referendums are no longer needed for these capital projects. These districts may consider placing the revenue into an operating account that is specifically earmarked for teacher salaries and benefits. The absence of any type of formal plan dispersing the revenue allows certain stakeholders in the school district to spend the revenues in a manner they deem most appropriate, regardless of whether or not the school district's present needs are those articulated by this specific stakeholder or group of stakeholders.

The absence of a formal plan dispersing the revenue does allow the school districts to spend the money on unplanned needs that may arise during the school year such as weather related damage to a school, or transportation problems. However, if a

formal plan were in place that set aside a portion of the revenues to account for unexpected expenses, these problems could also be accounted for when they arise.

Describing the casino industry as a panacea for eligible school districts that receive casino tax revenue is a bit premature. When the four statistical outliers (the Biloxi, Gulfport, Harrison County, and Tunica County school districts) were excluded from the statistical analysis, the casino industry demonstrated a different effect on per pupil expenditures among eligible casino school districts. The casino variable was found not to have a major impact on the amount of revenue that casino school districts receive for per pupil education expenditures, compared to matching non-casino school districts. This means that the other casino school districts in Mississippi are only receiving "crumbs" for per pupil education expenditures. What the data tends to suggest is that the Biloxi, Gulfport, Harrison County, and Tunica County school districts are the primary recipients of the casino proceeds allotted for per pupil expenditures in Mississippi. Elected and bureaucratic local leaders in the casino school districts, as well as the non-casino school districts understand that only four of the casino school districts are really benefiting from casino tax revenue. This is one reason why a large amount of skepticism still exists among local leaders regarding the casino industry, and its impact on per pupil expenditures in Mississippi.

Another problem associated with the casino industry that has fostered a large amount of skepticism in the minds of several school officials and local leaders regarding the casino industry, is the reduction in casino visitors. The amount of play and taxable revenues generated for local governments is beginning to decline because the newness of

the casino industry is wearing off. Many policy makers are worried that some officials may be placing too much emphasis on paying school expenses using casino dollars, which may come back to haunt them in the long run. The current slowdown in the economy is reinforcing this notion of skepticism. When the economy displays a slowdown, the first industries to suffer are usually the entertainment industries because less disposable income is available for entertainment. Since the casino industry is considered an entertainment industry, local school leaders and officials are worried that casino dollars may sharply reduce, causing the school district to operate on less revenue than the prior years when the economy was booming. In turn, these policy makers are skeptical of using the casino tax revenues for long-term projects, but instead favor short-term projects because of the elasticity of the casino industry. This is another reason that a formal plan is needed by local casino school districts that earmarks the casino tax revenue for certain projects or programs. It will help in paying expenses when the entertainment economy has bad years. Taxes tied to industries premised on entertainment tend to suffer during times of recession because less disposable income is available for such ventures as gaming. Other forms of tax generating devices, such as property taxes, tend to provide a stable flow of income for governmental entities because people who own property do not have the option of not paying the tax. Since gaming is considered by many as a voluntary tax, tax payers can choose not to pay the tax by refusing to play, causing revenue shortfalls for many governmental entities reliant on tax revenues from legalized gaming. What does this research mean to the field, sub field, discipline, or craft of Public Administration? From a more holistic point of view, this project serves as a guide in

demonstrating how casino gaming policy can affect the long term and short term effects of education funding. Using gambling money to fund education is nothing new; the lottery literature is saturated with scholarly endeavors suggesting that using lottery money for education is nothing more than a hoax. However, this research suggests that the short-term effects casinos are having on education in Mississippi are statistically significant according to the data analysis reports. Casino tax revenues have become more static in the past few years due to the newness of casinos wearing off among customers. Therefore, this research suggests that policy makers should proceed cautiously when considering the use of casino tax revenue for education. If policy makers place too much emphasis on casino tax revenue to pay for education, and reductions in general revenues from casinos occur, states like Mississippi may experience an actual decrease in the amount of spending on education.

Implications For Public Administration

This research impacts the various aspects of public administration in a number of ways. This research impacts the public policy spectrum of public administration by examining the impacts of the casino industry on various aspects of education policy in Mississippi. Dye (1995) contends that education is the largest policy expense for states. Policy makers in Mississippi argue that the casino industry will provide additional revenues to assist in funding the fiscal cost of state government's largest expense - education. The lottery literature addresses gaming as a budgeting issue (Spindler, 1995; Mikesell and Zorn, 1989; Miller and Pierce, 1997). The issue of budgeting is the primary

focus of this research because this project set out to measure the amount of supplemental income that local casino school districts in Mississippi were receiving from casinos in order to determine if the difference between the comparison groups were substantial, or remained virtually the same, on per pupil expenditures for education. One area of human resources management was addressed by this research as well. Klinger and Nalbandian (1995) address the issue of compensations plans for motivating public sector employees. The authors claim that improvements sometimes occur in the performance of public sector employees when they receive sufficient salaries. The case study data reported that the four casino school districts receiving a noticeable difference in casino revenue were placing some of the casino tax revenue into teacher salaries and benefits. The case study data in this project tends to support this idea because several public school employees commented that the supplemental casino tax revenue was welcomed because the teachers in these school districts had not received a raise in salary or benefits in quite sometime. The sub field of organizational theory is also addressed in this research. Trice and Beyer (1993) contend that organizations operate in a constant state of change. They identify things that hinder or promote change in the organization. When organizations operate with enough revenue to adequately support their goals and missions, positive change is usually the result. When revenues are insufficient to meet organizational goals and missions, change is hindered because employees within the organization display low levels of moral. The local school district (as the organization in receipt of attention) receiving casino tax revenue has experienced a change in it's operating procedures since the adoption of casino gaming. These organizations have

changed in a number of ways. First, casino school districts in Mississippi are operating currently with more per pupil expenditures than their counterparts without casinos. This has allowed them to change their spending patterns. The changes in spending patterns have allowed casino school districts to purchase such things as computers. Since computers are expensive, many Mississippi school districts can ill afford such technology. As a result, many of the non-casino school districts are failing to teach teaching their children in technology, which is currently and more so to come, the wave of the future. Other changes such as increases in number of students have caused the school districts to operate differently as well. Larger classrooms are needed, along with more teachers.

Despite the skepticism expressed by many local school district leaders and local elected leaders, the general consensus among most of these individuals is that the casino industry is going to continue to exist in Mississippi for a long time. These local school district leaders need to proceed cautiously in the revenue and spending patterns changes that have occurred as a direct and indirect result of the casino industry. Making accusations that the casino industry is the revenue generating panacea that will eradicate all of Mississippi's fiscal problems for education is a bit premature, especially since this study has only measured thirteen school districts in Mississippi that receive casino tax revenue, compared to thirteen similar school districts that do not. There are one hundred and twenty six more school districts that were not mentioned in this study. Since only twelve (Natchez-Adams County School District is excluded because they do not receive any casino revenues directly) casino school districts in Mississippi are fortunate enough

to have supplemental income generated by the casino industry, it is up to both elected and administrative political functionaries to continue using wise judgment in the dispersion of these casino tax revenues. Mississippi cannot make the mistake of many lottery states that have banked too much on the gaming industry to pay their education expenses, only to find out that the lottery has turned into an enormous hoax!

APPENDIX A

QUESTIONNAIRE ONE: APPOINTED AND CAREER SCHOOL OFFICIALS

QUESTIONNAIRE ONE: APPOINTED AND CAREER SCHOOL OFFICIALS

SCHOOL DISTRICT: _____

1) What is your position in the _____ School District?

2) How long have you been employed by the _____ School District? (Only asked when relevant)

3) Can you provide some examples of how your school district has benefited or been hindered by the adoption of casinos?

4) Do you believe that casino revenues redistributed to local school districts offer a short term or long-term solution to the problems associated with per pupil expenditures in your school district? Could you please explain?

5) In your judgment did any specific individuals have more of an influence on the development of the legislative statute directing the disbursement of the casino revenue or was it reached through a collective consensus among stakeholders? Why do you feel this way?

6) In your opinion do you agree with the disbursement procedures outlined by the statute or should the allocation of casino revenue be directed to other programs? Why do you think this way?

7) Could you explain the community's opinion towards gaming before casinos were passed in Mississippi? Why did it change?

8) Could you please specify which educational programs are receiving casino funds? For example, are casino revenues being placed in capital projects, operating budgets, etc?

9) Has your school district witnessed any academic curriculum related increases since the adoption of casino gaming? Could you please provide some examples?

10) In your judgment were their any differences in opinion between elected and appointed local political figures (in this question I will address the appropriate individuals) in regards to casino gaming in your community? If so, could you briefly discuss those differences?

11) Should policy makers in the state of Mississippi consider using casino revenues to fund school districts in counties and cities without casinos or just continue to reward governmental entities that house casinos?

12) Is your community witnessing more economic investment and job opportunities since the adoption of casino gaming? Can you offer some explicit examples?

13) In your professional judgment would you agree or disagree that your community's economic status is better since the adoption of casino gaming?

14) Could you please refer me to any other individuals in your community that may be able to provide me with useful information about the impact of casino gaming on education in Mississippi?

APPENDIX B

QUESTIONNAIRE TWO: ELECTED LOCAL AND STATE GOVERNMENT OFFICIALS

QUESTIONNAIRE TWO: ELECTED LOCAL AND STATE GOVERNMENT OFFICIALS

1) How were the political and appointed local government leaders able to convince
the community to adopt casino gaming?

2) Do you believe that casino revenues redistributed to local school districts offer a short term or long-term solution to the problems associated with per pupil expenditures in your school district? Could you please explain?

3) Who were the primary and secondary stakeholders that determined the legislation adopted by your school district directing the disbursement of casino revenue?

4) Could you please explain the process used to formulate the legislation that directs the disbursement of casino dollars in your school district?

5) Why did the stakeholders feel the need to disburse the casino revenue in the manner in which the legislative statute specifies?

6) Could you please specify why specific educational programs are receiving casino funds? For example, are casino revenues being placed in capital projects, operating budgets, etc?

7) In your judgment did any specific individuals have more of an influence on the development of the legislative statute directing the disbursement of the casino revenue or was it reached through a collective consensus among stakeholders? Why do you feel this way?

8) In your opinion do you agree with the disbursement procedures outlined by the statute or should the allocation of casino revenue be directed to other programs? Why do you think this way?

9) Could you explain the community's opinion towards casino gaming before the statue was passed by Mississippi? Did this perception change?

10) Has casino revenues towards education in your school district been appropriated as the statue dictates?

11) Should policy makers in the state of Mississippi consider using casino revenues to fund school districts in counties and cities without casinos or just continue to reward governmental entities that house casinos?

12) Is your community witnessing more economic investment and job opportunities since the adoption of casino gaming? Can you offer some explicit examples?

13) In your professional judgment would you agree or disagree that your community's economic status is better since the adoption of casino gaming?

14) Could you please refer me to any other individuals in your community that may be able to provide me with useful information about the impact of casino gaming on education in Mississippi?

APPENDIX C

SOURCES OF REVENUE FOR EDUCATION IN MISSISSIPPI

SOURCES OF REVENUE FOR EDUCATION IN MISSISSIPPI

State Funds

- Homestead Exemption
- Severance Tax
- Chickasaw Funds
- Drivers Education
- Minimum Program & Per Capita
- School Ad Valorem Tax Reduction
- Education Enhancement Fund
- MAEP
- Educational Technology Enhancement
- Textbook
- Vocational & Technical Education
- Public School Building Fund
- Adult Education
- Child Nutrition
- Uniform Millage Assistance
- Educable Children
- Education Reform Act
- Other

Federal Funds

- Unrestricted Grants in Aid Direct From Federal Government
- Wildlife Refuge
- Unrestricted Grants in Aid from Federal government thru State
- Flood Control
- Mineral Leases
- Restricted Grants in Aid Direct from Federal Government
- Impact Aid Const. Pl 81-815
- Impact Aid Maintenance & Operation Pl 81-874
- Goals 2000
- Chapter 1
- Chapter 2
- Social Services
- Education Handicapped Act (EHA 94-142)
- Adult Education
- Vocational & Technical Training Education
- Drug Free
- Technology Literacy Challenge
- Child Nutrition
- Economic Security
- JPTA
- TVA
- National Forest
- Other

Local Funds
- Ad Valorem Taxes
- Tuition
- Transportation Fees
- Earnings on Investments
- Food Service
- Student Activity
- Community Service
- Other Local Revenue Sources
- Intermediate Sources
- Operational Sixteenth Section
- Bond and Interest Funds Receipts

Expenditures For Mississippi Public Schools

Instruction
- Regular Programs
- Special Programs
- Guidance & Attendance Services
- Staff Development & Library/Media
- Principal's Office
- Student Activities
- Athletic Activities

Administration
- Board of Education & Superintendent's Office
- Business Services

Support Services
- Operation & Maintenance of Plant
- Transportation

Noninstructional Services
- Food Service
- Community Services
- Other Noninstructional Services

Nonrevenue Transactions
- Facility Acquisition & Construction
- Interest-Bond Fund
- Interest-Borrowed Money
- Bonds Redeemed & Principal on Borrowed Money
- Other Debt Service

Other Expenditures

Local District Administration

District Administration

Regular (ADA) Teacher Salaries

Special Education Teacher Salaries

Gifted Education Teacher Salaries

Vocational Education Teacher Salaries

Assistant Teacher Salaries

Support Services

Transportation

Insurance
Alternative Schools
Extended School Year
Bus Driver Training
Orthopedic & Aphasic

Note: The following information was found in the State Superintendent's Report published by the Department of Education.

APPENDIX D

TESTS FOR AND CORRECTING HETEROSKEDASTICITY AND AUTOCORRELATION (SERIAL CORRELATION) USING SPSS

Table D.1

TESTS FOR AND CORRECTING HETEROSKEDASTICITY AND AUTOCORRELATION (SERIAL CORRELATION) USING SPSS

The La Grange Multiplier was used for testing for Autocorrelation
White's test was used for identifying Heteroskedasticity

Results of Statistical Tests for Heteroskedasticity & Autocorrelation

Table 5.15

	b	st.e	beta	t	p.
(Constant)	-11.646	235.651		-.049	.961
Casino Tax Revenue	5.485	.001	.050	.692	.490
# of Students	7.514	.021	.032	.352	.725
Millage Rate	1.803	5.039	.031	.447	.656
Assessment Value	-8.984	.005	-.014	-.196	.845
Dummy	-5.059	.248	-.013	-.204	.838

White's Test For Heteroskedasticity
Calculated Value: 5.148
Critical Value: 15.067

Table 5.16

	b	st.e	beta	t	p.
(Constant)	66.614	155.016		.430	.668
Casino Tax Revenue	9.420	.001	.034	.290	.773
# of Students	2.572	.015	.003	.017	.986
Millage Rate	-2.112	2.973	-.071	-.710	.479
Assessment Value	-8.999	.002	-.045	-.385	.701
Dummy	.365	.417	.091	.875	.383

White's Test For Heteroskedasticity
Calculated Value: 5.940
Critical Value: 15.067

Table 5.17

	b	st.e	beta	t	p.
(Constant)	45.722	55.709		.817	.414
Casino Tax Revenue	-1.575	.001	-.061	-.858	.392
# of Students	9.783	.005	.018	.197	.844
Millage Rate	-.247	.938	-.018	-.264	.792
Assessment Value	-1.254	.001	-.084	-1.189	.236
Dummy	-.379	.694	-.073	-.545	.586

White's Test For Heteroskedasticity
Calculated Value: 5.004
Critical Value: 15.067

Table 5.18

	b	st.e	beta	t	p.
(Constant)	85.605	77.145		1.097	.275
Casino Tax Revenue	-1.215	.001	-.087	-.752	.453
# of Students	-2.616	.007	-.005	-.036	.972
Millage Rate	-1.230	1.480	-.083	-.831	.408
Assessment Value	-1.327	.001	-.132	-1.141	.256
Dummy	.541	.622	.057	.869	.386

White's Test For Heteroskedasticity
Calculated Value: 5.800
Critical Value: 15.067

Table 5.22

	b	st.e	beta	t	p.
(Constant)	-46.273	105.356		-.443	.658
Casino Tax Revenue	-6.493	.001	-.084	-.983	.326
# of Students	-1.845	.010	-.018	-.180	.857
Millage Rate	.375	1.833	.017	.205	.838
Assessment Value	9.054	.002	.036	.424	.672
Dummy	.698	.551	.082	1.267	.206

White's Test For Heteroskedasticity
Calculated Value: 3.388
Critical Value: 15.067

Table 5.23

	b	st.e	beta	t	p.
(Constant)	-143.715	197.595		-.727	.469
Casino Tax Revenue	-6.499	.001	-.154	-.805	.423
# of Students	-3.486	.039	-.216	-.901	.370
Millage Rate	2.309	5.316	.081	.535	.594
Assessment Value	2.374	.004	.131	.665	.508
Dummy	.709	.549	.083	1.291	.198

White's Test For Heteroskedasticity
Calculated Value: .528
Critical Value: 15.067

Table 5.24

	B	st.e	beta	t	p.
(Constant)	.602	12.079		.050	.960
Casino Tax Revenue	1.892	.001	.060	.770	.442
# of Students	1.481	.012	.101	1.197	.232
Millage Rate	3.380	1.539	.136	2.196	.029
Assessment Value	5.517	.002	.018	.228	.820
Dummy	1.156	.223	.003	.052	.959

White's Test For Heteroskedasticity
Calculated Value: 5.415
Critical Value: 15.067

Table 5.25

	b	st.e	beta	t	p.
(Constant)	.982	15.319		.064	.949
Casino Tax Revenue	1.489	.001	.083	.610	.543
# of Students	1.044	.017	.099	.615	.540
Millage Rate	-1.867	2.300	-.082	-.812	.419
Assessment Value	-3.605	.003	-.224	-1.323	.188
Dummy	4.722	.532	.006	.089	.929

White's Test For Heteroskedasticity
Calculated Value: 1.179
Critical Value: 15.067

Table 5.26

	b	st.e	beta	t	p.
(Constant)	6.011	19.908		.302	.763
Casino Tax Revenue	5.086	.001	.064	.837	.403
# of Students	-.194	.080	-.157	-2.433	.016
Millage Rate	-1.414	2.988	-.031	-.473	.637
Assessment Value	6.520	.005	.104	1.361	.175
Dummy	-.150	.250	-.041	-.597	.551

White's Test For Heteroskedasticity
Calculated Value: 2.340
Critical Value: 15.067

Table 5.27

	b	st.e	beta	t	p.
(Constant)	-16.162	37.127		-.435	.665
Casino Tax Revenue	-1.098	.001	-.212	-1.211	.230
# of Students	5.446	.220	.029	.248	.805
Millage Rate	-5.964	5.438	-.130	-1.097	.277
Assessment Value	1.684	.007	.417	2.410	.019
Dummy	.447	.615	.051	.728	.468

White's Test For Heteroskedasticity
Calculated Value: 3.280
Critical Value: 15.067

Table 5.28

	b	st.e	beta	t	p.
(Constant)	-46.273	105.356		-.443	.658
Casino Tax Revenue	-6.493	.001	-.084	-.983	.326
# of Students	-1.845	.010	-.018	-.180	.857
Millage Rate	.375	1.833	.017	.205	.838
Assessment Value	9.054	.002	.036	.424	.672
Dummy	9.300	.310	.021	.300	.765

White's Test For Heteroskedasticity
Calculated Value: 3.388
Critical Value: 15.067

Table 5.29

	b	st.e	beta	t	p.
(Constant)	7.711	.871		.089	.930
Casino Tax Revenue	-1.695	.001	-.164	-.777	.440
# of Students	7.886	.002	.101	.329	.743
Millage Rate	-2.449	.130	-.026	-.189	.851
Assessment Value	1.027	.001	.155	.645	.521
Dummy	.520	.611	.059	.851	.395

White's Test For Heteroskedasticity
Calculated Value: 9.944
Critical Value: 15.067

Table 5.38

	B	St.e	Beta	t	p
(Constant)	381.604	955.705		.400	.690
Casino Tax Revenue	2.250	.001	.155	1.897	.059
Assessed Value	-2.023	.033	-.049	-.614	.540
Unemployment	68.020	687.254	.007	.099	.921
Dummy	-1.538	3.038	-.077	-1.183	.238

White's Test For Heteroskedasticity
Calculated Value: 1.768
Critical Value: 11.070

Table 5.39

	b	st.e	beta	t	p.
(Constant)	-5362.729	6968		-.770	.444
Casino Tax Revenue	8.973	..002	010	.052	.959
Assessed Value	2.268	.085	.057	.265	.792
Unemployment	445.740	332.739	.016	.118	.907
Dummy	-1.094	1.399	-.053	-.782	.435

White's Test For Heteroskedasticity
Calculated Value: 2.00
Critical Value: 11.070

Table 5.40

	b	st.e	beta	t	p.
(Constant)	-241.489	380.568		-.635	.527
Casino Tax Revenue	5.724	.002	.040	.356	.722
Assessed Value	.119	.113	.118	1.053	.294
Unemployment	-411.491	253.136	-.124	-1.626	.106
Dummy	-2.215	1.267	-.113	-1.749	.082

White's Test For Heteroskedasticity
Calculated Value: 5.400
Critical Value: 15.067

Table 5.41

	B	st.e	beta	t	p.
(Constant)	-210.603	1075.002		-.196	.845
Casino Tax Revenue	-7.233	.001	-.066	-.619	.537
Assessed Value	.435	.042	.072	.680	.498
Unemployment	-142.302	531.160	-.029	-.268	.789
Dummy	-.527	1.368	-.026	-.385	.700

White's Test For Heteroskedasticity
Calculated Value: 2.448
Critical Value: 15.067

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