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Establishing Reference in Máihǎ̀kì

by

Stephanie Jo Farmer

A dissertation submitted in partial satisfaction of the
requirements for the degree of
Doctor of Philosophy

in

Linguistics

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Lev D. Michael, Chair
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Summer 2015

Establishing Reference in Máihǎ̀kì

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Abstract

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Doctor of Philosophy in Linguistics

University of California, Berkeley

Lev D. Michael, Chair

In this dissertation, I investigate the hierarchical nominal lexicon of Máíhìkì, an endangered Western Tukanoan language spoken in northern Peruvian Amazonia. With data from original fieldwork, I establish eight types of nouns in Máíhìkì, each of which patterns distinctly from the others with respect to at least seven different morphosyntactic behaviors. I argue that these patterns can be predicted from the inherent semantic properties of the nouns, and provide a formal account of the parameters that govern the structure of the proposed hierarchy. In particular, I establish the notion of a ‘reference ratio’—the ratio of properties that are *requisite* to the entities in some set to the properties that are *incidental* of those entities.

The first half of the dissertation provides an in-depth grammatical description of Máíhìkì. A chapter on Máíhìkì phonetics and phonology includes a detailed description of the language’s nasal spreading and tone systems, and a chapter on Máíhìkì morphosyntax includes extensive treatments of deixis, event structure, and clause-linking devices.

The latter half of the dissertation discusses the semantics of Máíhìkì nouns and nominal morphology. I provide a summary of the literature on nominal hierarchies, then argue for one such hierarchy in Máíhìkì based on the distinct morphosyntactic behaviors of nouns. I look at two of these morphosyntactic behaviors—the availability of plural morphology and the ability to be suffixed with or serve as a nominal classifier—in depth. A chapter on noun classification provides background on the typology of the phenomenon, including a discussion of the features of noun categorization devices common to northwest Amazonia. In addition to the typological survey, I provide a novel semantic analysis of Máíhìkì classifiers that has implications for the theory of both classification and nominal compounding. In a chapter on plurality, I provide a formal semantic analysis that addresses the complexities of number marking in Máíhìkì, including the availability of multiple pluralization strategies and their apparent optionality. The role of both classifiers and plurals in altering the reference ratio of nouns is examined throughout.

For the Máihùnà

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Chapter 1

Introduction

1.1 The goals and contributions of this dissertation

Determiners, classifiers, and plural markers seem to pattern in a non-random way across the world's languages. The presence or absence of any one of these features has been claimed to be tied up in the presence or absence of another, e.g. by Greenberg (1974), Chierchia (1998b), and Corbett (2000). The question that drives this dissertation is, why might such a correlation exist (if it does at all)? I explore this question through a detailed semantic investigation of the plural and classifier systems of Máíhîkì, a Western Tukanoan language spoken in northern Peruvian Amazonia. In particular, I investigate the roles of plurality and classification in creating referential nouns.

The contributions of this dissertation to the study of noun classification and nominal plurality are both typological and theoretical. The amount of literature on noun classification in Amazonia has increased significantly in recent years but is still sparse in comparison to what has been written about East Asian and African classifiers. The growing body of work on Amazonian classifier systems, of which this dissertation is a part, has the potential to inform our understanding of the connection between gender systems and numeral classifier systems, as the languages of Northwest Amazonia (including Máíhîkì) tend to have elements of both. The formal semantic analysis of classification in Máíhîkì provided herein is, as far as I know, the first of its kind for an Amazonian language. Because of the similarities between Máíhîkì classifier constructions and nominal compounds, this analysis has important theoretical implications for the study of compounding as well as classification.

The descriptive literature on plurality in Amazonia is likewise extremely lacking. Where discussions of plurality exist, they tend to mention only that a pluralizing morpheme is present in the language without going into detail about its distribution and usage. The Máíhîkì system of nominal plurality, which is complicated by multiple pluralizing morphemes, some of which may occur simultaneously on the same element, and by 'optional' plural morphemes, whose distribution is semantically conditioned, suggests that such an approach to the description of plurality is inadequate. The formal semantic analysis of plu-

rality in Máíhǎ̀kì provided in this dissertation is a response to both the inadequacies of many descriptions of plurality in Amazonian languages, and the failure of the formal semantic literature on plurality in general to address plural data from understudied languages.

In accounting for the distribution of plural markers and classifiers in Máíhǎ̀kì, this dissertation addresses the issue of a tiered or hierarchical nominal lexicon—that is, a lexicon in which elements exhibit different morphosyntactic behavior based on their inherent semantic properties. In Máíhǎ̀kì, the presence of a hierarchy that governs the morphosyntactic behavior of nouns is extremely apparent: I show that there are eight distinct classes of nouns, no two of which pattern in precisely the same way. My hope is that the treatment of Máíhǎ̀kì nouns provided in this dissertation, which makes distinctions much finer than ‘mass’ vs. ‘count’ or ‘animate’ versus ‘inanimate’, will serve as a model for descriptive work on the morphosyntax of nominal elements in other understudied languages.

The remainder of this introduction will be divided into two parts. First, in §1.2 through §1.3, I will provide background on Máíhǎ̀kì and its speakers as well as a summary of the collection and presentation of my data. This will serve as an introduction to Part I of the dissertation, which is a grammatical sketch of Máíhǎ̀kì. Next, in §1.4 and 1.5, I will discuss the notions of reference and the Nominal Mapping Parameter (Chierchia 1998b) in preparation for Part II of the dissertation, which explores the establishment of referential noun phrases.

1.2 Background: The language and its speakers

1.2.1 Language classification

Máíhǎ̀kì¹ is one of four living members of the Western Tukanoan subgroup of the Tukanoan language family. The extant Western Tukanoan languages include **Máíhǎ̀kì**, spoken in the Napo and Putumayo River basins of Peru; **Siona**, spoken in the Sucumbíos province of Ecuador along the Aguarico, Cuyabeno, and Eno Rivers (Bruil 2014) and in the Putumayo River basin of Colombia along the Orito and Hacha Rivers (Wheeler 1987); **Sekoya**, spoken in the Sucumbíos province of Ecuador and in northern Peru (Johnson & Levinsohn 1990); and **Koreguaje**, spoken in the Caquetá and Putumayo provinces of Colombia along the Ortegua and Caquetá Rivers (Cook & Criswell 1993). Extinct languages attributed to the Western Tukanoan subgroup include **Teteté**, reportedly spoken in the Sucumbíos province of Ecuador; **Tama**, reportedly spoken along the Ortegua River in Colombia; and **Macaguaje**, reportedly spoken in the Putumayo province of Colombia along tributaries of the Caquetá River.

¹Throughout this dissertation, I will use the word *Máíhǎ̀kì* to refer to the language in question and *Máíhùnà* to refer to the ethnic group that includes the people who speak this language. *Máíhǎ̀kì* is morphologically composed of *máí*, which means ‘people’ or ‘we (inclusive)’, and *hǎ̀kì*, which means ‘speech’ or ‘language’. *Máíhùnà* is morphologically composed of *máí* plus the group classifier *-huna*.

Mason (1950) was the first to propose Tukanoan as a linguistic family and the first to offer an internal classification of the languages based on the linguistic comparative method. He argues for a Western clade consisting of a ‘Piojé-Sioni’ group including what he calls ‘Secoya-Gai’ (Sekoya) and ‘Sioni’ (Siona); a ‘Correguaje-Tama’ group including ‘Correguaje’ (Koreguaje); and a ‘Coto’ group including ‘Coto’ (Máíhìkì).

Since Mason first proposed a Western Tukanoan subgroup, its internal classification has been somewhat of a matter of debate. Waltz & Wheeler (1972), equipped with comparative lexical data gathered by linguists affiliated with the Summer Institute of Linguistics (SIL) in the 1970s, suggests an internal classification of the Western Tukanoan clade in which Máíhìkì was the first language to diverge, followed by Koreguaje. Like Mason, the authors propose a Siona-Sekoya subgroup. Chacon (2014) supports this account, suggesting based on that Máíhìkì is the most divergent Western Tukanoan language. However, Skilton (2013) (2013) argues that Chacón’s reconstruction relies too heavily on the dubious presence of preglottalized stops in the phonological inventory of Máíhìkì (see §2.1.1 for a discussion of this phenomenon). Her own phonological and morphological comparison suggests that Koreguaje is the most divergent Western Tukanoan language, followed by Máíhìkì, and that Siona and Sekoya indeed form an ‘Upper Napo’ subgroup.

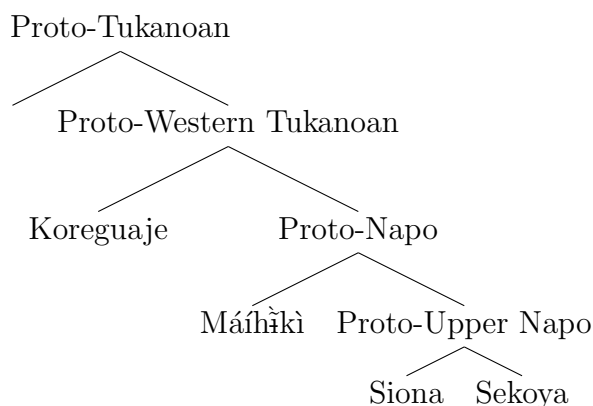


Figure 1.1: Western Tukanoan internal classification (Skilton 2013)

As will become apparent in the discussion of linguistic variation within Máíhìkì (§1.2.3), the speech varieties subsumed under the label ‘Máíhìkì’ are diverse but mutually intelligible. The continuum between varieties of Siona and Sekoya is likely more complex, as a comparison of the work by Wheeler on Colombian Siona, Bruil on Ecuadorian Siona, Schwartz on Ecuadorian Sekoya, and Vallejos on Peruvian Sekoya suggests.

1.2.2 Present-day communities

The Máíhùnà, with an ethnic population of around 400, live primarily along the Yanayacu, Sucusari, and Algodón rivers. The Yanayacu (Máíhìkì *Táídiyà*), a tributary of the

Napo (Máíhǎ̀kì *Háíyà*), is home to the Máíhùnà communities of Puerto Huamán and Nueva Vida (Máíhǎ̀kì *Mámádàdì*). Several Máíhùnà families have moved upstream from Nueva Vida to found a community they call Nuevo Progreso. The community of Sucusari (Máíhǎ̀kì *Sókósàni*²) is located on the Sucusari River, another tributary of the Napo, and the community of San Pablo de Totolla (Máíhǎ̀kì *Tótòyà*) is located on the Algodón River, a tributary of the Putumayo (Máíhǎ̀kì *Chúchíyà*).

Speakers of Máíhǎ̀kì and other ethnic Máíhùnà have also settled in the urban centers of Mazán (on the Napo River), San Antonio del Estrecho (on the Putumayo River), and Iquitos. A small number of Máíhǎ̀kì speakers live in the community of Tutapishco, located at the confluence of the Yanayacu and Napo, and in the community of Zapote on the Zapote River. These communities are shown below in Figure 1.2.2.

²The use of the term *Sókósàni* ‘tip of the *capirona* (*Capirona decorticans*)’ to refer to the community of Sucusari is a recent phenomenon likely spurred by folk etymology.

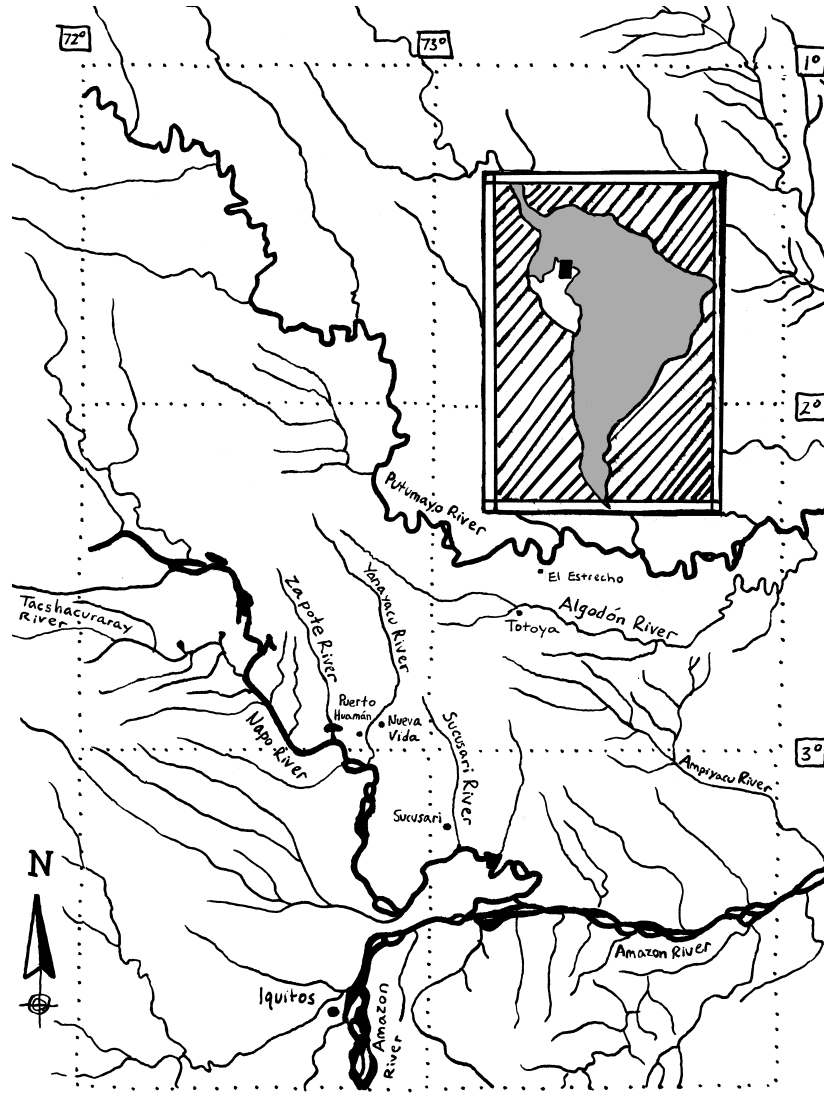


Figure 1.2: The locations of Málhùnà population centers

1.2.3 Linguistic variation

The varieties of Málh̀̀k̀̀ spoken in each of the major geographical zones described above (i.e., the Yanayacu, Sucusari, and Algodón River basins) are characterized by a number of distinctive phonological and grammatical features. While linguistic diversity in Málh̀̀k̀̀ cannot be described solely in terms of geography (see Skilton (2015) for a fascinating account of the numerous and nuanced sociological factors that have likely contributed to the development of Málh̀̀k̀̀ dialects and idiolects), it will be helpful nevertheless to refer to three broad geographical varieties: Western Málh̀̀k̀̀ (WM, spoken in the Yanayacu River basin); Eastern Málh̀̀k̀̀ (EM, spoken in the Sucusari River basin), and Northern Málh̀̀k̀̀ (NM,

spoken in the Algodón River basin and in the town of San Antonio del Estrecho, situated on the Putumayo River). What follows is a description of the major points of phonological and morphosyntactic variation among these three dialects.

Phonological variation

EM may be distinguished phonologically from both WM and NM by the absence of morpheme-initial /g/. The absence of /g/ holds for nominal and verbal roots like *áá* ‘water snail’ (cf. WM, NM *gáá*) or *àbà* ‘coil up’ (cf. WM, NM *gàbà*); for noun classifiers like *-ara* ‘clump’ (cf. WM, NM *-gara*); and for certain verbal suffixes, like *-oño* ‘causative’ (cf. WM, NM *-goño*) or *-ani* ‘iterative’ (cf. WM, NM *-gani*). The past tense inflectional suffixes *-gi* and *-go*, however, maintain initial /g/ in EM.

EM is also characterized by the absence of the voiced labialized velar stop, /g^w/, which has merged with /b/.³ In nasal contexts, this /b/ surfaces as [m] (see §2.4.2 for a description of nasal allophony). Examples of the correspondence between EM /b/ and WM and NM /g^w/ are shown below in Table (1.1).

WM	NM	EM	GLOSS
g ^w ásá	g ^w ásá	básá	‘think’
g ^w énà	g ^w énà	ménà	‘dent (tr.)’
g ^w î	g ^w î	bî	‘be afraid’

Table 1.1: The absence of voiced labialized velars in EM

NM has three distinctive phonological features. First, morpheme-internal intervocalic /h/ has been lost, as evidenced by words like *níò* ‘wife’ (cf. EM, WM *níhò*) or *gáè* ‘go down’ (cf. EM, WM *gáhè*). Second, in NM, high tone does not spread from inherently high-toned verb roots to adjacent inflectional morphology. This is apparent in the contrast between NM *sáíyì* ‘I am going’ with EM/WM *sáíyí* ‘I am going’. (The Máíhìkì system of tone will be described in greater detail in §2.4.1.) Finally, the sequence /k^wV/ EM and WM corresponds in NM to /ko/ (in the case of a low or mid vowel) or /ku/ (in the case of a high vowel) if it is the initial mora of a root. Note that this generalization does not hold for the second mora of NM roots that correspond to /k^wV/ sequences in EM/WM, as is exemplified by the root meaning ‘count’ in Table 1.2 below. In this case, the vowel quality is preserved while labialization is absent. A possible explanation for this state of affairs is that /k^wVk^wV/ roots in EM and WM arose via labial harmony; that is, Proto-Máíhìkì /kwVkv/ became /kukV/ or /kokV/ in NM and /kwVkwV/ in EM/WM.

³For several speakers of EM, /g^w/ has merged with /w/. Both /wègì/ and /bègì/, for example, exist as variants of the word meaning ‘grandfather’ in the EM speech community, which corresponds to WM and NM /g^wègì/.

WM	NM	EM	GLOSS
kwàkò	kòkò	kwàkò	‘cook’
kwékwé	kóké	kwékwé	‘count’
kwírí	kúrí	kwírí	‘extract by pulling’

Table 1.2: NM correspondences with EM, WM voiceless labialized velars

Morphosyntactic variation

Much of the work on morphosyntactic variation among dialects of Máíhǎkì was carried out by Amalia Skilton in 2012 and 2013 and reported in Skilton (2014).

A major locus of variation between the three dialects is past tense inflection. In WM, the non-third person past tense declarative suffix *-gu* exists alongside *-bi*. Speakers of WM tend to use one or the other (*-gu* is the preferred form for JMM, NMM, and HMR, and has been attested in the speech of LMM). This suffix has not been noted outside of the Yanayacu River basin.

Also unique to WM is the presence of a distinct local person/plural present tense interrogative suffix, *-ye*, in the speech of certain individuals. Speakers of both other dialects, along with a majority of speakers of WM, use *-yi* as the local person/plural present tense interrogative.

Several speakers of NM use *-ai* and *-ao* as third person singular masculine past declarative and third person feminine past declarative suffixes, respectively, where all other speakers use *-gi* and *-go*.

Finally, the past tense of *-ni*-class verbs (a class of verbs with irregular inflectional suffixes—see §3.9 for a more detailed description) exhibits considerable variation within the NM dialect. This variation, exemplified below in Table (1.3) with the verb *sáí* ‘go’, is the subject of Skilton’s (2015) investigation into the sociolinguistic parameters governing dialect and idiolect formation in Máíhǎkì. The speakers represented are all biological or classificatory siblings. The past tense form in the first row is standard for both WM and EM; both other forms are innovative and unattested in WM and EM.

SPEAKER	Form
SLA	sáhì
PLA	sáíbì
OLG	sààbì

Table 1.3: Past tense of *-ni* verbs for four speakers of NM

Both the form of the copular suffixes and the syncretism of the copular paradigm is subject to variation across dialects of Máíhǎkì. In WM, the copular suffixes *-agi* and *-ago* are used for third person masculine and feminine singular nouns, while *-ha* is used for inanimates, local persons, and plurals. This pattern of syncretism is also found in EM, but the masculine and

feminine singular forms are *-gi* and *-go*, respectively.⁴ In NM, the phonological counterparts to WM *-agi* and *-ago*—*ai* and *ao*—are used for singular animate nouns of all persons, while *-ha* is reserved for inanimates and plurals.

	COPULAR SUFFIX
PL.ANIM	- <u>ha</u>
1SG.FEM	- <u>ha</u>
1SG.MASC	- <u>ha</u>
2SG.FEM	- <u>ha</u>
2SG.MASC	- <u>ha</u>
3SG.FEM	-ago/-go
3SG.MASC	-agi/-gi
INAN	- <u>ha</u>

Table 1.4: Declarative copular paradigm: EM, WM

	COPULAR SUFFIX
PL.ANIM	- <u>ha</u>
1SG.FEM	-ao
1SG.MASC	-ai
2SG.FEM	-ao
2SG.MASC	-ai
3SG.FEM	-ao
3SG.MASC	-ai
INAN	- <u>ha</u>

NM

The interrogative copular suffixes exhibit similar diversity. In EM and WM, the third person singular animate interrogative copular suffixes are identical to their declarative counterparts. The interrogative counterpart to *-ha* is *-ayi* (or *-aye* for those speakers of WM who also have the interrogative suffix *-ye* described above). In NM, *-aye* is used for 1st person animates and inanimates, while *-ai* and *-ao* are used for 2nd and third person masculine and feminine singulars.

	COPULAR SUFFIX
PL.ANIM	-aye/ayi
1SG.FEM	-aye/-ayi
1SG.MASC	-aye/-ayi
2SG.FEM	-aye/-ayi
2SG.MASC	-aye/-ayi
3SG.FEM	-ago/-go
3SG.MASC	-agi/-gi
INAN	-aye/-ayi

Table 1.6: Interrogative copular paradigm: EM, WM

	COPULAR SUFFIX
PL.ANIM	-aye
1SG.FEM	-aye
1SG.MASC	-aye
2SG.FEM	-ao
2SG.MASC	-ai
3SG.FEM	-ao
3SG.MASC	-ai
INAN	-aye

NM

⁴These forms are also attested in the speech varieties of some individuals on the Yanayacu basin, including HMR, LTN, and EMR. HMR also uses *-hi* instead of *-ha* as the inanimate/plural copular suffix.

1.2.4 Language endangerment and attitude

The Máíhùnà ethnic population is around 400. A recent survey by the Máíhìkì Documentation Project estimates that there are approximately 80 to 90 fluent speakers of Máíhìkì, 75 of whom live in one of three major zones described above, and the rest of whom live either in the urban centers of Iquitos or Mazán or in multiethnic communities along the Napo River. The youngest known speakers of Máíhìkì were born in approximately 1980; although they are able to communicate effectively in Máíhìkì with others, their language diverges significantly from that of older speakers both phonologically and morphosyntactically. The oldest living speakers of Máíhìkì were born in approximately 1935. All speakers are bilingual in Spanish to varying degrees.

A series of interviews conducted by Goodrich (2014) (2014) indicate that the intergenerational transmission of Máíhìkì in the Yanayacu River basin ceased in the 1970s as a result of a surge in the presence of *mestizos* in the Máíhùnà communities. The arrival of *mestizos* led to an increase in the utility and prestige of Spanish among the Máíhùnà, as well as the devalorization of indigeneity in general. Skilton (p.c.) reports that the shift to Spanish in the Putumayo River basin occurred slightly later as a result of the activities of Franciscan missionaries. Women in the Putumayo basin recall that until the 1970s, Spanish was almost never used in the Northern Máíhùnà communities.

This rapid shift has led to a situation in which the language has nearly been wiped out in the course of a lifetime. The oldest generation—the great-grandparents—are most comfortable speaking Máíhìkì, and were monolingual for much of their lives. Their children—the grandparents—are fluent in both Spanish and Máíhìkì. The older members of this generation seem to have acquired Spanish in early childhood as a second language, while the younger members report both Spanish and Máíhìkì as native languages. The generations of grandchildren and great-grandchildren are effectively monolingual in Spanish, although recent efforts by the Máíhìkì Documentation Project to revitalize and revalorize the language have resulted in a push to communicate with the youngest generation in Máíhìkì. In general, the youngest generation is enthusiastic about learning to speak Máíhìkì, and it is reported that several infants may be acquiring the language via their grandparents and great-grandparents.

Despite the apparently dire state of the language, Máíhìkì remains the preferred means of communication among many of its older speakers. In my experience on the Yanayacu River, Máíhìkì is spoken daily and is used in all domains of local life.

1.3 Data collection and presentation

The research for this dissertation was conducted from June through August of 2010, 2011, 2012, 2013, and 2014, funded by the National Science Foundation as part of the Máíhìkì Documentation Project (Grant #1065621). Additional funding for the winter of 2013 and the summer of 2014 was provided by the Robert L. Oswalt Graduate Student Support

Endowment for Endangered Language Documentation.

Linguistic fieldwork was conducted primarily in the community of Nueva Vida on the Yanayacu River with speakers of WM. During the summers of 2011, 2012 and 2013, a linguistic workshop was held with representatives from Nueva Vida, Puerto Huamán, Sucusari and Tótòyà. Additional fieldwork was carried out by Amalia Skilton on NM (in San Antonio del Estrecho) and EM (in Sucusari) from the fall of 2013 to the spring of 2014.

Data for this dissertation comes both from bilingual (Spanish/Máíhìkì) grammatical elicitation and from a corpus of approximately 500 recorded and written texts, collected and transcribed by various members of the Máíhìkì Documentation Project from 2010 to 2015. These texts are of a broad range of genres, including personal and cultural histories, conversations, procedures, oral literature, songs, and ethnographies. Throughout the dissertation, examples obtained through elicitation will be tagged with the letter ‘E’, followed by the consultant’s initials, the elicitor’s initials, and the date, month, and year of the elicitation. Examples obtained from texts are cited using a three-letter text code followed by the line of the text in which the example appears. A list of three-letter codes for texts and their corresponding authors can be found in Appendix C. In most cases, I have provided both a Spanish and English translation of the Máíhìkì sentences. In the case of textual examples, the Spanish translation was provided by the consultant. In the case of examples taken from elicitation contexts, the Spanish was typically provided by the linguist as a prompt. I have noted cases where a consultant’s back-translation disagreed with the linguist’s original prompt. It should also be noted that the variety of Spanish spoken in the Loreto region of Peru is non-standard, and that Spanish is in most cases the native language of neither the linguistic consultant nor the linguist.

Grammatical elicitation was conducted by one or more linguists with one or more linguistic consultants. Sessions were recorded with a solid-state digital recorder using either shotgun or lavalier microphones. All linguists also kept written records of elicitation session in notebooks. Beginning in 2012, I used a Livescribe Echo pen during all elicitation sessions as a convenient method for time-aligning my written notes with an audio recording of elicitation. A variety of elicitation techniques were employed over the course of the Máíhìkì Documentation Project, tailored to the varied skills of the consultants and the varied needs of the linguists. These methods ranged from simple translation from Spanish into Máíhìkì or vice versa, to targeted text elicitation (e.g., “tell me a story in which someone says ‘X’”), to elicitation via audio, video, or interactional prompts. Where possible in this dissertation, I have attempted to support my analyses with ‘natural’ (i.e. textual) data. The nuanced semantics of the questions I explore in my discussion of nominal reference, however, often require speaker introspection (for example, judgments of scopal properties); in these cases, I typically rely on elicited data, and always try my best to document the context and commentary have caused me to arrive at a given analysis.

The orthography used in this dissertation is based on the one developed by speakers of Máíhìkì in collaboration with the linguists of the Máíhìkì Documentation Project during the linguistic workshops of 2011, 2012, 2013. It is a modified version of the alphabet developed by Daniel and Virginia Velie during their fieldwork and employed in Velie (1975), Velie et al.

(1976), and Velie & Velie (1981), in addition to various pedagogical materials. Modifications to the Velies' orthography include:

- the replacement of <c> and <qu> with <k> to represent /k/;
- the replacement of <cu> with <kw> to represent /k^w/;
- the replacement of <gu> with <g> before front vowels;
- the replacement of <j> with <h> to represent /h/;⁵
- the addition of <w> to represent [w];
- the addition of <r> to represent [r]

During the linguistic workshop, Máíhùnà linguists were trained to recognize phonemic contrasts, and opted to remove redundant or ambiguous graphemes from their alphabet. Many of these changes (<c>/<qu> → <k>, <gu> → <g>, <j> → <h>) represent the de-hispanicization of the alphabet. The Máíhùnà also voted to introduce the non-phonemic graphemes <w> and <r>, and to mark tone on every vowel (the Velies, by contrast, marked tone only where they were aware of a tonal minimal pair involving the form). The correspondences between IPA symbols, the Máíhǎ̀kì orthography developed by the Máíhǎ̀kì Documentation Project, and the Velies' orthography are shown below in Table 1.8.

⁵This convention is used for English-speaking audiences. For Spanish-speaking audiences, <j> is maintained.

IPA	Máíhǎ̀kì orthography	Velie orthography
a	a	a
ã	<u>a</u>	<u>a</u>
b, β	b	b
tʃ, ʃ	ch	ch
d, r	d, r	d
e	e	e
ẽ	<u>e</u>	<u>e</u>
g, ɣ	g	g, gu
g ^w	gw	gu
h	h	j
k	k	c, qu
k ^w	kw	cu
m	m	m
n	n	n
ɲ	ñ	ñ
o	o	o
õ	<u>o</u>	<u>o</u>
p	p	p
s, ts	s	s
t	t	t
u	u	u
ũ	<u>u</u>	<u>u</u>
w	w	u
j, dʒ	y	y
ˊ	ˊ	ˊ
ˋ	ˋ	ˋ

Table 1.8: Correspondences between the IPA and two orthographies

The characters <f>, <l>, and <ll>, taken from standard Spanish orthography, are often used to spell loan words or proper names, and correspond to IPA [ɸ]/[f], [l], and [dʒ]/[j], respectively.

In all examples and interlinear glosses, the Máíhǎ̀kì Documentation Project orthography will be used as a broad transcription of the phonetic (surface) form. In the interlinear gloss, tone will only be marked where it is underlying. (For a description of tone in Máíhǎ̀kì, see §2.4.1.)

1.4 Reference

This section will introduce and define the concept of ‘reference’, which will play a significant role in the discussion of the latter half of this dissertation.

The term ‘reference’ has historically been used in two subtly different ways. First, reference may be thought of as a *relationship* that holds between a linguistic sign and some object when that sign identifies that object. A term may be said to ‘have reference’ or ‘be referential’ or ‘refer’⁶. These terms are often called ‘referring expressions’, and include proper names, pronouns, and definite noun phrases.

Second, as a translation of Frege’s *Bedeutung*, ‘reference’ has been used in opposition to ‘sense’ (Frege’s *Sinn*). In this case, a term’s reference is the object in the world that it identifies, rather than the relationship that holds between that term and that object. The reference of ‘the morning star’ is the particular planet that we call ‘the morning star’; the reference of ‘John’ is the particular man that we call ‘John’, etc.

Throughout this dissertation, I will use the term ‘reference’ in the first sense (i.e., to mean an identificational relationship between an expression and an object). I will also speak throughout of the morphosyntactic mechanisms, including noun classifiers, determiners, and plural markers, involved in ‘establishing’ or ‘promoting’ reference. I will argue that while referentiality is binary (an expression is either a referring expression or it isn’t), non-referring expressions vary with respect to the ease with which they may be made referential, and thus in the morphosyntactic properties that they exhibit.

To illustrate this idea, let’s imagine two languages: Language A and Language B. In Language A, everything you encounter has a distinct label—a proper name. Each grape in each bunch has a name, and each bunch on each vine has a name. Each hair on your head and everyone else’s has a name, and even the parts of those hairs, so long as you can distinguish them, have separate names. In some sense, this is a very good naming scheme, as there is absolutely no ambiguity: wherever we perceive differences, we assign labels. But Language A is of course not a very good *language*, as it does not allow us to make generalizations, and is altogether inefficient.

Next, let’s imagine Language B, which is equally peculiar: everything in Language B shares a label. Each grape in each bunch is called ‘grape’, as is the bunch of grapes itself. Each hair on each head is also called ‘grape’. You and I are called ‘grape’, and so is my cat and the sky and everything else. In contrast with Language A, Language B is an extremely efficient naming scheme; like Language A, however, it is not a good system of communication. Such a language would require us to perpetually rely on context to understand one another. We would essentially need to be mind readers.

Finally, we can imagine an actual human language as a compromise between the clarity of assigning a separate label to each item at the expense of economy and the economy of assigning the same label to each item at the expense of clarity. We can expect this

⁶Strawson (1950:326) disputes the felicity of saying that an expression refers: “referring is not something an expression does; it is something that someone can use an expression to do.”

compromise to be apparent in the nominal lexicon of a language: some terms, like proper names, will denote single, spatially discrete entities that we wish, for whatever reason, to distinguish from everything else. Other terms, like mass nouns, will apply more liberally to possibly spatially discontinuous substances whose parts we cannot or do not wish to distinguish. Between these extremes, certain common nouns will denote sets of individuals that have some but not all properties in common, and we can expect there to be some mechanism that allows us to specify (i.e., to make more like a proper name) or to generalize (i.e., to make more like a mass). This dissertation is a study of those mechanisms in Máfhàkì.

1.5 Determiners, classifiers, plurals, and the Nominal Mapping Parameter

In his influential 1998 paper (Chierchia 1998b), Gennaro Chierchia observes that the absence of definite and indefinite determiners, the presence of numeral classifiers, and the absence of obligatory plural marking pattern together crosslinguistically⁷. Similar observations had long been made, for instance by Greenberg (1974), who states that ‘numeral classifier languages generally do not have compulsory expression of nominal plurality’ (25). Chierchia attempts to account for this apparently non-coincidental distribution by appealing to the notion of a ‘semantic parameter’—some semantic feature of a given language’s lexicon from whose variable specification falls out a particular set of morphosyntactic operators (plural markers, classifiers, determiners) related to the apportionment and specification of nouns. The parameter in this case, which he calls the Nominal Mapping Parameter, is the argumental or predicative status of bare nouns. Languages, according to Chierchia, come in three types: 1) those for which bare nouns are in the lexicon as already argumental; 2) those for which bare nouns are predicative and must project D in order to serve as the arguments of verbs; and 3) those whose nouns may ‘choose’ to be either argumental or predicative. Chierchia claims that in languages of the first type, all nouns have mass denotations, and thus “come out of the lexicon already pluralized” (347). This observation follows from Chierchia’s somewhat non-standard view of massness, first developed in Chierchia (1996) and reconsidered in Chierchia (2010), which abandons the commonly held notion that mass denotations are non-atomic and instead proposes that the atoms of masses are “somewhat vague” but discrete nonetheless. This leads Chierchia to posit that masses are simply the “neutralization of the singular/plural distinction” (347) and may be represented as a complete join semilattice in the style of Link (1983), shown below in Figure 1.3.

⁷The set of languages on which Chierchia bases this his crosslinguistic claim is rather small; it includes English, Chinese, Russian, and several Romance languages.

$$\begin{bmatrix} & \{a,b,c\} & \\ \{a,b\} & \{a,c\} & \{b,c\} \\ a & b & c \end{bmatrix}$$

Figure 1.3: The extension of ‘furniture’, Chierchia (1998b:347)

The idea here is that if *a*, *b*, and *c* represent atomic units (pieces) of furniture (which Chierchia considers here to be a mass noun—cf. Chierchia (2010) for a different approach), then any plurality formed of those atoms will also be furniture. Because mass nouns are in this way a “neutralization” of singular and plural, languages with exclusively argumental nouns will have no need for plural markers. Because they are already argumental, they will have no need for determiners. And because nouns in these languages are exclusively mass, they will need to recruit apportioning morphology (i.e., classifiers) in contexts of enumeration. Chierchia suggests Mandarin Chinese as representative of a $[+arg, -pred]$ language.

Languages of the second type—those in which nouns are inherently predicates—will have a mass/count distinction, and count nouns will be sensitive to a further distinction in singularity versus plurality. These nouns will always need to project *D* in order to be argumental—that is, they will never surface bare. Chierchia suggests Italian as representative of a $[-arg, +pred]$ language.

Finally, some languages—those that are $[+arg, +pred]$ in Chierchia’s typology—will allow bare nouns to be either argumental or predicative. Mass nouns are inherently argumental in these languages, while count nouns are predicative. Predicative nouns may become argumental via Chierchia’s ‘down-operator’ $\cap$, which turns properties into kinds. The down-operator, $\cap$, is undefined for singular properties, so all count kinds will be plural. Therefore, $[+arg, +pred]$ languages are expected to have bare mass nouns, bare plurals, and no bare singulars (i.e., singular nouns will require a determiner to be argumental). Chierchia cites English as an example of a language of this type.

The analysis presented in Chierchia (1998b) is in many ways appealing. It seems to account for a pattern in the distribution of plurals, classifiers, and determiners, that, due to their shared ‘apportioning’ function, feels non-coincidental. But there are several problems with Chierchia’s typology. First, some authors (e.g. Cheng & Sybesma (1999)) have disputed the claim that $[+arg, -pred]$ languages do not have a mass/count distinction. Second, Chierchia’s definitions of plurality and massness have been challenged in ways that threaten the coherence of the Nominal Mapping Parameter, e.g. by Schwarzschild (2011) and by Chierchia himself in later work. Third, it appears that the distribution of these three features (classifiers, plurals, and determiners) is not as straightforward as the Nominal Mapping Parameter predicts, as numerous authors have provided contradictory evidence from a variety of languages (e.g. Schmitt & Munn (1999, 2002) for Brazilian Portuguese, Chung (2000) for

Indonesian, Li (1999) for Mandarin, among others).

Máíhǎ̀kì is among the languages that pose a challenge for the Nominal Mapping Parameter: it has no definite or indefinite articles (like a $[+arg, -pred]$ language), but does exhibit a robust mass/count distinction and an extensive system of noun classification. For these reasons, Máíhǎ̀kì makes an interesting case study for the investigation of where the Nominal Mapping Parameter goes wrong. In particular, we will see that a more nuanced understanding of classification, plurality, and even massness will be required before we can make typological predictions based on these phenomena. The theoretical part of this dissertation will be dedicated to elucidating the nuances of these phenomena in Máíhǎ̀kì through formal semantic analyses. We will see, particularly in Chapter 4, that Chierchia’s typology might work better as a typology of *nouns* than a typology of *languages*.

1.6 Outline

The sketch grammar of Máíhǎ̀kì is confined to Chapter 2 (phonetics and phonology) and Chapter 3 (morphology and syntax). Chapter 4 will address the notion of a ‘hierarchical’ lexicon—one whose nouns exhibit different morphosyntactic behaviors based on their inherent semantic properties. I will survey previous literature on nominal hierarchies, as well of a range of morphosyntactic behaviors in Máíhǎ̀kì that may be attributed variably to nouns based on their position in a hierarchy. I will propose a formal semantic analysis of this hierarchy based on what I call the ‘reference ratio’, which is a means of calculating degree of similarity between the members of some set. In Chapter 5, I turn to the semantics and morphosyntax of noun classification in Máíhǎ̀kì. This chapter is framed in terms of a discussion about the place of Amazonian classifier systems in the broader typology of noun categorization devices, and focuses on the wide range of syntactic functions and morphosyntactic loci of classifiers in these systems. I argue that Máíhǎ̀kì classification may be analyzed as part of a broader system of compounding, and that classifiers serve a primarily lexicogenerative role. In Chapter 6, I address the apparent optionality and multiplicity of nominal plural marking in Máíhǎ̀kì and provide a formal analysis before concluding in Chapter 7.

Part I

The grammar of Máihǎ̀kì

Chapter 2

Phonetics and phonology

This chapter will examine the phonetics and phonology of Máíhìkì, including the vowel and consonant inventories, allophonic processes, phonotactics, and suprasegmental phenomena. The tonal system of Máíhìkì will be described in detail, as it provides a foundation for the discussion of morphosyntax in Chapter 3.

2.1 Phonemic inventory

2.1.1 Consonants

Across all varieties of Máíhìkì there are ten phonemic consonants, listed below in Table 2.1. The voiced labialized velar stop, /g^w/, is only found in the speech varieties of the Yanayacu and Algodón river basins (WM and NM).¹ Otherwise, the inventory is uniform across all varieties of Máíhìkì.

	Bilabial	Alveolar	Postalveolar	Velar	Glottal	Labiovelar
Voiceless Stop	p	t		k, k ^w		
Voiced Stop	b [b, β, m]	d [d, r, n]		g [g, γ], g ^w		
Affricate			tʃ [tʃ, ʃ], dʒ [dʒ, j, ɲ]			
Fricative		s [ts, s]			h	
Approximant						w

Table 2.1: Máíhiki Phonemic Consonant Inventory

The phonemic consonant inventory above differs from that presented by Velie (1975) in that Velie describes two preglottalized consonants, /ʔb/ and /ʔd/, which contrast with /b/ and /d/. I am skeptical of the proposed contrast for two reasons: first, later work by Virginia and Daniel Velie (Velie & Velie 1981) makes no mention of preglottalized consonants and

¹In EM, /k^w/ corresponds to /b/. In NM, /k^w/ before /a/ has become /go/, but has been preserved in all other environments.

collapses the distinction in his transcription of what were cited in earlier work as minimal pairs. Second, phonetic work by members of the Máíhǎ̀kì Documentation Project, including an analysis of the speech of one of Daniel Velie’s primary linguistic consultants, showed no sign of a phonemic contrast between preglottalized and non-preglottalized consonants.

The phonemic inventory presented above also includes /g^w/ and /k^w/ as phonemes, whereas Velie (1975) treats them as consonant-vowel sequences. My reasons are primarily phonotactic: if these were consonant-vowel sequences as Velie suggests, then roots such as those in (1) would need to be analyzed as trimoraic; consequently, nearly all trimoraic roots would begin with /gu/ or /ku/, as trimoraic roots are otherwise unattested.

- (1) a. /g^wásá/ ‘think’
 b. /g^wásé/ ‘order’
 c. /k^wái/ ‘roast’
 d. /k^wǎǎ/ ‘serve seconds’

Further evidence is that in EM, segments corresponding to /g^w/ have become /b/, while /g/ has simply been lost before vowels, including /u/. Examples of these correspondences are shown in Table (2.2).

WM	EM	GLOSS
ǎǎí	ǎí	‘dig’
ǎú	ú	‘go get’
ǎà	à	‘bad’
g ^w ásá	básá	‘think’
g ^w ásé	másé	‘order’
g ^w ǎ	bǎ	‘fear (v)’

Table 2.2: Voiced labialized velar correspondences

For these reasons, I have included /g^w/ and /k^w/ as phonemes in the Máíhǎ̀kì consonantal inventory.

2.1.2 Vowels

Máíhǎ̀kì has six contrastive vowels (Table 2.3), each of which has an oral and a nasal allophone. For a discussion of the non-phonemic status of nasal vowels, see §2.4.2.

	FRONT	CENTRAL	BACK
HIGH	i [i, ĩ]	ɨ [ɨ, ɨ̃]	u [u, ũ]
MID	e [e, ẽ]		o [o, õ]
LOW		a [a, ã]	

Table 2.3: Máíhìkì Phonemic Vowel Inventory

2.2 Allophony

As noted above in Tables 2.3 and 2.1, vowels and voiced consonants in Máíhìkì (with the exception of /g/) have nasal allophones. This allophony will be discussed below in §in the broader context of nasalization.

In addition to [n], /d/ has two allophones: [d] and [r]. The conditions of this allophony are not well understood, and are complicated by dialectal variation, as an extended discussion by Máíhùnà Linguistic Workshop participants revealed. In general, I have observed that [d] occurs somewhat reliably word-initially and after HL sequences, while [d] and [r] appear to be in free variation elsewhere, with [r] more frequent in fast speech. Because this phenomenon awaits further investigation, I have transcribed these phones throughout as l or other linguists heard them. This is in keeping with the Máíhìkì orthography.

Other fast speech phenomena, which occur particularly in intervocalic contexts, include the realization of /dʒ/ as [j], /tʃ/ as [ʃ], and /b/ as [w] or [β]. Additionally, /s/ may be realized as [ts] word-initially.

2.3 Phonotactics

All bimoraic² roots are of the shape (C)V(C)V. Examples of the four logical possibilities for roots are shown below in (2.4) for nouns and verbs.

	EXAMPLE	GLOSS
VV	áó	‘food’
VCV	íchí	‘pineapple’
CVV	yái	‘jaguar’
CVCV	hàsò	‘manioc’

Table 2.4: Possible root shapes

Unattested vowel-vowel sequences include /ei/, /oi/, /ui/, /ii/, and /iu/. Even when there is an intervening consonant (i.e., in a CVCV root), vowels may not occur in these

²There are no prosodic or segmental phenomena that require me to posit the existence of syllables in Máíhìkì.

sequences. The sequence /ae/ is only found in NM, where intervocalic /h/ has been lost; for instance, WM/NM *gáhè* ‘go down’ corresponds with NM *gáè*. Further phonotactic constraints are that before /o/, there is no contrast between /i/ and /u/, and that after /a/, there is no contrast between /o/ and /u/. The phonotactics of nasality will be addressed in §2.4.2.

2.4 Suprasegmental phenomena

2.4.1 Tone

Máíhǎ̀kì is one of two living Western Tukanoan languages, along with Koreguaje (cf. Gralow (1985)), that has been analyzed as exhibiting contrastive tone. A pretheoretical summary of the tonal system of Máíhǎ̀kì is provided below. A more detailed description and analysis can be found in Farmer & Michael (Forthcoming) (forthcoming). As noted in §1.2.3, tone in NM is systematically different from tone in EM and WM. I will begin with a description of the properties that the three dialects share before discussing the ways in which NM diverges.

In all varieties of Máíhǎ̀kì, there are two contrastive tone heights (H and L) and three basic tonal root shapes (HH, HL, and LL). A minimal triplet showing the three-way contrast between HH, HL, and LL nominal roots is shown in (2.5).

TONE SHAPE	EXAMPLE	GLOSS
HH	tótó	‘buttress root’
HL	tótò	‘clay’
LL	tòtò	‘Brazilian porcupine (<i>Coendou prehensilis</i>)’

Table 2.5: A minimal triplet showing possible nominal tone shapes

The tone-bearing unit is the mora, and the overwhelming majority of both nominal and verbal roots are bimoraic.³ There are a handful of trimoraic nominal elements (e.g. *méníyò* ‘land tortoise’ (*Chelonoidis denticulata*) or *pìpìrì* ‘vulture’ (*Coragyps atratus*)) that are synchronically unanalyzable as multimorphemic. The leftmost morpheme in a noun will exhibit surface HH, HL, or LL tone, and the subsequent morphemes will be assigned tone according to following rules:

- If a single mora follows the leftmost root, that mora will be assigned L tone.
- If more than one mora follow the leftmost root, the first of these morae will be assigned H tone in case of a LL root, and low tone otherwise. All subsequent morae will be assigned L tone.

³There is a bimoraic minimality constraint on all roots except the singular pronominal roots *yì* ‘I’ and *mì* ‘you’.

These rules are exemplified in (2) and (3). In (3a), we see an example of a HH nominal root, *kíú* ‘metal’ followed by a monosyllabic classifier suffix, *-ro* ‘CL: concave’. The inherently toneless classifier suffix receives low tone after the HH root. This is also true in (3b) and (3c), where inherently toneless classifier suffixes surface low after HL and LL roots, respectively.

- (2) a. **kíórò** (HH)
 kíú *-do*
 metal -CL:CONCAVE
 ‘metal pot’
 b. **ínègà** (HL)
 ~í*dè* *-ga*
 peach.palm -CL:seed
 ‘peach palm fruit’
 c. **hàsòñì** (LL)
 hàsò ~*d̥zi*
 manioc -CL:stalk
 ‘manioc plant’

In (3), we see that the first mora of a multimoraic morpheme receives H tone following a LL root like *hàsò* in (3c), but L tone after a HH (3a) or HL (3b) root.

- (3) a. **kíúgàbà** (HH)
 kíú *-gaba*
 metal -CL:loop
 ‘ring’
 b. **ínègònò** (HL)
 ~í*dè* ~*godo*
 peach.palm -CL:beverage
 ‘peach palm beverage’
 c. **hàsòtíkà** (LL)
 hàsò ~*tika*
 manioc -CL:stick
 ‘manioc stick’

The status of a morpheme as a root or a suffix does not affect its tonal behavior; all that matters is whether it is leftmost. In cases of adjectival modification and noun-noun compounding, the modified root will lose its inherent tone and will instead be assigned tone based on the rules above. We call this process, exemplified in (4), ‘tonal erasure’. In (4a), the inherently HH nominal root *táké* (~/*táké*/) becomes LL after the inherently HH adjectival root *bóó* (/bóó/) ‘white’. In (4b), the inherently HH root *hóhó* (/hóhó/) ‘toad’ becomes

LL after the HL root *ínè* ([ínè]) ‘peach palm’. In (4c), the inherently LL root *wèè* ‘house’ ([/‘uè/]) becomes HL after the LL root *yàri* (/dʒàdì/) ‘small’ and before the diminutive suffix *-maka* (/~baka/). In all cases, the inherent tone of each morpheme is shown in the interlinear gloss.

- (4) a. bótākè
 bóó ~táké
 white monkey
 ‘White-fronted capuchin monkey (*Cebus albifrons*)’ (lit: white monkey)
- b. ínèhòhò
 ~ídè hóhó
 red peach.palm
 ‘toad sp.’ (lit: peach palm toad)
- c. dʒàrìwémàkà
 dʒàdì wè - ~baka
 small house -DIM
 ‘small house’

Tonal erasure does not occur in possessive constructions or proper names. To reflect the prosodic independence of the components, they are transcribed as separate prosodic words, as shown below in (5).

- (5) órápèrè dʒíòsàrò
 ódápèrè dʒíò -sado
 proper.name swidden -CL:opening

‘tributary of the Sucusari River’ (lit: ‘passage to Orapere’s swidden’)

EM and WM differ from NM with respect to the assignment of tone to verbal suffixes. In both EM and WM, there are four classes of verbal suffixes, while in NM there are three.

In all varieties of Máfhǎkì, Class I suffixes include the sentential negator *-ma* (/~ba/) and the single patient suffix *-hó* (/~hó/). These have inherent H tone in present and past tense declarative contexts. In EM and WM, this H tone is spread rightward to adjacent Class II suffixes. Class II suffixes include all present tense inflectional suffixes as well as all regular (i.e., non-*ni*-class) past tense inflectional suffixes. These have no inherent tone, and in EM and WM, are always assigned the same tone as the mora to their left. In NM, the suffixes that belong to EM and WM Class II pattern instead with the suffixes of Class III, which include non-finite verbal inflection, aspectual suffixes, future tense suffixes, past tense *-ni*-class suffixes, and all interrogative inflectional suffixes. These suffixes, which may be monomoraic or bimoraic, exhibit the same tonal behavior as the non-leftmost morphemes in nominal constructions: they have L(L) tone after a HH or HL root and an H(L) tone after a LL root. An exception is when a monomoraic suffix following a LL root is word-final, in which

case it surfaces with L tone. In the case of multiple Class III verbal suffixes, all subsequent suffixes will exhibit low tone. Finally, in all varieties of Máǎ̀hǎ̀kì, Class IV suffixes include the causative *-(g)oño* ($\sim$ /-(g)odzo/), the benefactive *-kai* (/ -kai/), and the terminative *-tii* (/ -tii/). These suffixes surface as LL after a HH root, HH after a HL root, and HL after a LL root.

In Tables 2.6 and 2.7, we see a summary of the tone of the various verbal suffix types for EM/WM and NM, respectively. Class IIIa shows the behavior of a bimoraic Class III suffix or a monomoraic Class III suffix that is not word-final. Class IIIb shows the behavior of a word-final monomoraic Class III suffix. Note that Table 2.7 reflects the absence of Class II suffixes, as all would-be Class II suffixes belong to Class III in NM.

ROOT	CLASS I	CLASS II	CLASS IIIA	CLASS IIIB	CLASS IV
HH	H	H	L(L)	L	LL
HL	H	L	L(L)	L	HH
LL	H	L	H(L)	L	HL

Table 2.6: Tone assignment to verbal suffixes in EM and WM

ROOT	CLASS I	CLASS IIIA	CLASS IIIB	CLASS IV
HH	H	L(L)	L	LL
HL	H	L(L)	L	HH
LL	H	H(L)	L	HL

Table 2.7: Tone assignment to verbal suffixes in NM

Serial verb constructions, in which two verb roots form a single prosodic word, exhibit different tonal behavior from verb + suffix sequences. All possible tonal patterns for two-root SVCs are exemplified below in Table 2.4.1.

ROOT 1	ROOT 2	SVC TONE	EXAMPLE	GLOSS
HH	HH	HHHH	déró + tíyó	bend and break
HH	HL	HHLL	háńú + títò	awaken by dousing
HH	LL	HHLL	sáá + chímà	jump and slip
HL	HH	HLHH	géò + yété	learn to set a trap
HL	HL	HLLL	nágù + títò	step on and awaken
HL	LL	HLLL	nágù + chímà	step and fall
LL	HH	LLHH	bòtè + tómé	break apart and fall
LL	HL	LLHL	chímà + tánì	slip and fall
LL	LL	LLLL	tòtè + tètè	pound and break up

2.4.2 Nasality

As mentioned in §2.1, vowels and voiced consonants (with the exception of /g/) have nasal allophones. Minimal pairs exhibiting a contrast in the nasality of vowels is shown in (6) and of consonants in (7).

- (6) a. gáá ‘a water snail’
 b. gáà ‘meat’
 c. hùùyì ‘I am wearing’
 d. hùùyì ‘I am sick’
- (7) a. béà ‘corn’
 b. méà ‘ant sp.’
 c. dòàyì ‘I am rowing’
 d. nòàyì ‘I am carving out’
 e. ñià ‘Look (imperative)’
 f. yíà ‘egg’

While the presence of minimal pairs suggests that nasality is phonemic in Máíhìkì, the distribution of nasal segments is rather peculiar. For instance, if T, D, N, V, and $\tilde{V}$ are voiceless oral consonants (plus /g/), voiced oral consonants (minus /g/), nasalized consonants, oral vowels, and nasalized vowels, respectively, then Table 2.8 shows attested and unattested morae types in Máíhìkì.

Attested Oral	Attested Nasal	Unattested Nasal
TV	$T\tilde{V}$	—
DV	NV	$*D\tilde{V}$, $*N\tilde{V}$
V	$\tilde{V}$	—

Table 2.8: Nasal and oral syllables in Máíhìkì

Due to these distributional facts, Sylak-Glassman et al. (In prep.) analyze nasality in Máíhìkì as a floating, morpheme-associated feature that docks to the leftmost nasal target. If the nasal feature first docks to a vowel, it may spread rightward from to an adjacent tautomorphemic vowel. If the nasal feature first docks to a consonant, it will spread rightward to other tautomorphemic consonantal nasal targets, skipping over intervening vowels. This leads to the bimoraic root types shown in Table 2.4.2.

ROOT	EXAMPLE	GLOSS
ṼṼ	áí	‘eat’
TṼṼ	táí	‘fall’
TṼTV	táké	‘monkey’
NVV	mái	‘people’
NVNV	mímì	‘hummingbird’
NVTV	níká	‘stand’
VV	ái	‘old’
TVV	sái	‘go’
TVTV	tútù	‘wind’
DVV	dòà	‘row’
DVDV	dótò	‘creep’

Table 2.9: Attested patterns of nasality in Máíh̀̀k̀̀ roots

The account provided in Sylak-Glassman et al. (In prep.) treats /h/ as transparent to nasal harmony, as evidenced by forms such as those in 8.

- (8) a. [h́́h́́] ‘be sick; lose consciousness (pluractional)’
 b. [ǵ́h́́] ‘tooth’

In the above example, the nasal feature docks to the leftmost nasal target (in these cases, the leftmost vowel), then spreads rightward in spite of the presence of intervocalic /h/.

Chapter 3

Morphosyntax

3.1 Introduction

This chapter will provide a sketch of Máíhǎ̀kì morphosyntax. After discussing basic constituent order, the chapter will be divided generally into nominal phenomena (including case marking, classification, plurality, and nominal modification) and verbal or clausal phenomena (including inflectional paradigms, negation, event structure, and clause-linking devices).

A recurring theme throughout this chapter will be the distinction between ‘regular class’ and ‘*-ni*-class’ verbs. *-ni* class verbs are an irregular morphological class with cognates throughout the Western Tukanoan subgroup. The stem alternations that they exhibit are summarized in Appendix B.

3.2 Constituent order

3.2.1 Basic constituent order

When prompted to translate Spanish declarative SV sentences, speakers of Máíhǎ̀kì consistently produce SV translations. Declarative SVO sentences with two non-pronominal arguments are consistently translated into Máíhǎ̀kì using SOV word order. Examples of intransitive (SV) and transitive (SVO) sentences are shown below in (9) and (10), respectively. While the translation of sentences in isolation is certainly a problematic method for eliciting word order—a phenomenon whose characterization in many languages relies heavily and delicately of the management and transfer of information across discourse—it can be helpful in establishing what has been variably called ‘basic’ or ‘neutral’ word order. The examples in (9) and (10) have in common that none of the referents have been mentioned in previous discourse, and that the speaker is not contesting his or her interlocutor’s beliefs about the reference of any of the event’s participants. As might be expected, transitive sentences in which both S and O arguments are full, never-before-mentioned noun phrases are rather rare in our corpus despite being in some sense ‘basic’.

- (9) a. [bíbí]_S [bìyàkò]_V
bíbí bìyà -ko
 dolphin swim -3.SG.FEM.PRES.DECL
 ‘The dolphin is swimming’ (E.SJF.AMM.7feb2013)
 ‘El bufeo está nadando’
- b. [yái]_S [yìhì]_V
yái yì -hì
 jaguar roar -3.SG.MASC.PRES.DECL
 ‘The jaguar is roaring’ (E.LTN.SJF.26jul2013)
 ‘El tigre está rujando’
- c. [ókò]_S [tóméhì]_V
ókò tómé -hì
 water fall -3.SG.MASC.PRES.DECL
 ‘It’s raining’ (lit: ‘Water is falling’)
 ‘Está lloviendo’
- (10) a. [báróbì]_S [hàñà]_O [áíkó]_V
báró -bì hàñà áí -ko
 sloth -CL:sing leaf.PL eat -3.SG.FEM.PRES.DECL
 ‘The sloth is eating leaves’ (E.SJF.EMR.21jan2013)
 ‘El pelejo está comiendo hojas’
- b. [mámákò]_S [kìòrò]_O [dóákó]_V
mámáko kíò -ro dóá -ko
 child.FEM metal -CL:concave wash -3.SG.FEM.PRES.DECL
 ‘The girl is washing the pot’ (E.SJF.AMM.LMM.30jun2010)
 ‘La niña está lavando la olla’
- c. [Mámàsò]_S [áñànàrè]_O [kwèèkò]_V
Mámàsò áñà -na -re kwèè -ko
 proper.name snake -ANIM.PL -NON.SUBJ look.for -3.SG.FEM.PRES.DECL
 ‘Mámàsò is looking for snakes’ (E.SJF.EMR.22jan2013)
 ‘Mámàsò está buscando víbora’

3.2.2 Argument elision and non-basic constituent orders

While the ‘basic’ constituent order in Máfhìkì is SOV, both syntactic subjects and objects may be omitted when their reference is clear from context. Examples are shown in (11) for the verb *kúkú* ‘bite (pluractional)’. In (11a), the consultant omits the subject *yáíhòyì* ‘dog’, which had been established earlier in the elicitation session. In (11b), the consultant has

been talking about the tendency of the collared peccary to bite dogs, and omits both the subject and object. Finally, in (11c), the consultant omits only the object.

- (11) a. [tèrè]_O [kúkúgĩ]_V
 tè -i -re kúkú -gĩ
 one -CL:masc -NON.SUBJ bite.PLACT -3.SG.MASC.PAST.DECL
 ‘It bit (something) multiple items’ (E.EMR.SJF.2jul2013)
 ‘Ha mordido a uno varias veces’
- b. [kúkúméáhĩ]_V
 kúkú méá -hĩ
 bite.PLACT kill -3.SG.MASC.PRES.DECL
 ‘They bite and kill them’ (gus 44.1)
 ‘(El sajino) puede morder y matar (al perro)’
- c. káókwà tèà kúkùrè húníhó téáhàyè
 káókwà tèà kúkú -re húníhó téáhàyè
 Pecari.tajacu also bite.PLACT -DS.SEQ die same.manner
 ‘The peccary also bites (the dog) and then it dies’ (gus 45)
 ‘Después de que el sajino muerde (al perro), está muriendo’

Perhaps the most commonly omitted arguments are pronominal subjects. Examples of this phenomenon are shown in (12). In cases where verbal inflection renders the reference of the omitted subject ambiguous (as is the case with the present-tense suffix *-yi*, which may mark first person singular, second person singular, or plural), the reference of the subject is inferred. The declarative sentence in (12a) is interpreted as having a first person singular subject absent of any previously mentioned first person pronoun. The interrogative sentence in (12b) is interpreted as having a second person singular subject absent of a previously mentioned second person pronoun.

- (12) a. sáiyí
 sáí -yi
 go -1.SG.PRES.DECL
 ‘I’m leaving’ (aho 68.1)
 ‘Me voy’
- b. kárò sáíkò?
 ká -ro sáí -ko
 which -CL:place go -3.SG.FEM.PRES.INTERR
 ‘Where are you going?’ (iy4 68.1)
 ‘Adónde vas?’

3.3 Case marking

In comparison to other Western Tukanoan languages, Máíhìkì has a very limited system of case marking. A single case suffix, *-re*, marks non-subject arguments. In (13), we see that *-re* may be suffixed to nouns with the semantic role of patient (13a), experiencer (13b), recipient (13c), subject matter (13d), or instrument (13e). The precise semantic role of the argument in question is apparently pragmatically inferred.

- (13) a. *ñîrè hásóbí*
 ñîò *-re* *hásó* *-bí*
 3.SG.FEM.PRON -NON.SUBJ shoot -1.PL.PAST.DECL
 ‘We shot her (the tapir)’ (bek 16.1)
 ‘Le hemos matado’
- b. *yìrè hùìgíàhì*
 yì *-re* *hùì* *gíá* *-hì*
 1.SG.PRON -NON.SUBJ deteriorate.in.health feel -3.SG.MASC.PRES.DECL
 ‘I feel ill’
 ‘Siento enfermo’
- c. *tèònàrà màmákìnàrè ákwébì íchísàòbì*
 tè *-o* *-na* *-ra* *mámákì* *-na* *-re* *ákwé* *-bí*
 one -CL:fem -ANIM.PL -LIM child.MASC -ANIM.PL -NON.SUBJ fruit -CL:round
 íchí *-sao* *-bí*
 give -UNIV.QUANT -3.PL.PAST.DECL
 ‘Each woman gave a fruit to the children’ (E.LTN.SJF.20jun2013)
 ‘Cada mujer ha dado a cada niño una fruta’
- d. *ígèrè óíkò?*
 ígè *-re* *óí* *-ko*
 what -NON.SUBJ cry -3.SG.FEM.PRES.INTERR
 ‘What are you crying about?’ (mbd 226.1)
 ‘¿Por qué estás llorando?’
- e. *díòrè kwééyí, díòrè...*
 díò *-re* *kwéé* *-yí*, *díò* *-re*
 ax -NON.SUBJ cut -1.PL.PRES.DECL ax -NON.SUBJ
 ‘We cut it with an ax’ (yo3 8.1)
 ‘Cortamos con hacha’

By contrast, *-re* is not used to mark agents, locations, or goals.

3.4 Noun classification

Máíhǎ̀kì has a large number of classificatory morphemes, listed in Appendix E, that may be suffixed to mass and abstract nouns as well as to verbal, adjectival, demonstrative, and numeral roots, deriving count nouns. In general, Máíhǎ̀kì classifiers specify information about the shape, consistency, or utility of the nouns that they derive. Examples of various classifiers suffixed to the mass noun *kíù* ‘metal’ are shown below in (14).

- (14) a. *kíùgò*
 kíù *-go*
 metal -CL:loop
 ‘chain’
- b. *kíùgàni*
 kíù *-gani*
 metal -CL:skin
 ‘corrugated metal’
- c. *kíùmè*
 kíù *-me*
 metal -CL:rope
 ‘wire’
- d. *kíùñàkà*
 kíù *-ñaka*
 metal -CL:pointy
 ‘nail’
- e. *kíùtòtò*
 kíù *-toto*
 metal -CL:flat.rigid
 ‘sheet of metal’

For a more detailed description and semantic analysis of noun classification in Máíhǎ̀kì, see Chapter 5.

3.5 Nominal plurality

As the topic of nominal plurality plays a major role in the second part of this dissertation (in particular in Chapter 6), it will be given a cursory treatment here. There are two plural suffixes in Máíhǎ̀kì: the animate plural *-na*, shown below in (15), and the inanimate plural *-ma*, shown in (16). These morphemes may be suffixed directly to a count nominal stem, which may either be monomorphemic or consist of a root (mass nominal, verbal, or adjectival) plus a noun classifier.

- (15) a. kámà há sóbí dóéàkìnà
 kámà há só -bí dóé -aki -na
 thus shoot -3.PL.PAST.DECL before -CL:masc.being -ANIM.PL
 ‘That’s how the ancestors hunted’ (bek 22.1)
 ‘Así mataban los antiguos’
- b. túkùnà tà yèkínàrè néséhí
 túkù -na tà yè -kí -na -re nésé
 firefly -ANIM.PL pass.PLACT -MASC.SS.SIM -ANIM.PL -NON.SUBJ grab.PLACT
 -hí
 -3.SG.MASC.PRES.DECL
 ‘When fireflies passed by, he would grab them’ (hab 8.1)
 ‘Luciernago que pasaba, él les agarraba’
- (16) a. máí wèè mà dó tòkò ásá kó Sókìtìrò
 máí wèè -ma dó tò -ko ásá -ko
 people house -INAN.PL creep -FEM.SS.SIM listen -3.SG.FEM.PRES.DECL
 Sókìtìrò
 proper.name
 ‘Sókìtìrò crept around people’s houses, listening’ (soc 4.1)
- b. márò mà chíhí tóáyí nó mí
 márò -ma chíhí -hí tóáyí -yí nó mí
 hat -INAN.PL wear.hat -PL.SS.SIM grind -3.PL.PRES.DECL women
 ‘The women, wearing hats, grind’ (pfv 19.1)
 ‘Las mujeres, poniendo gorras, están moliendo’

In addition to these plural suffixes, there are some inherently plural animate roots, listed in Table 3.1 below with their masculine and feminine singular counterparts. Inherently plural animates may *not* be suffixed with *-ma* or *-na*.

PLURAL		MASC SG		FEM SG	
dòì	‘siblings’	dòìkì	‘brother’	dòìkò	‘sister’
hòyà	‘domestic animals’	hòyì	‘domestic animal’	hòyò	‘domestic animal’
máí	‘people’	mái	‘máìhùnà man’	méò	‘máìhùnà woman’
náhé	‘grandchildren’	náhì	‘grandson’	náhèò	‘granddaughter’
nómí	‘women’	-		nómíò	‘woman’
ññ	‘children’	ñítù	‘child’	ñítù	‘child’

Table 3.1: Inherently plural animates and their masculine and feminine singular counterparts

Inherently plural animates may also be suffixed with the group classifier *-huna* or the dual classifier *-pe*, as in *nómípe* ‘pair of women’ or *hòyàhùnà* ‘group of domestic animals’.

A subset of noun classifiers may undergo a regular pluralization process involving rightward nasal spreading plus the suffixation of *-ña* or *-a*. These forms are listed below in Table (3.3).

SINGULAR FORM	PLURAL FORM	THINGS CLASSIFIED
-bi	-mia	round fruits
-bi	-mia	buckets, canoes, plantains
-ga	-gaña	small round objects
-go	-goña	loops, pulleys, chain links
-gohe	-goña	holes
-hao	-haña	leaves, sheets of paper
-ka	-kaña	branches
-ka	-kaña	cloth-like objects
-kwa~-ko	-kwaña~-koña	sheets, blankets
-ñaka	-ñaña	spines, needles, quills
-ñi	-ña	trees, stalks
-raka	-ñaña	portions of water
-reo	-neña	disc-shaped objects
-ro	-noa	pots, inner ears
-ri	-nia	hammocks, machetes, paddles
-tete	-teña	temporary shelters, gourd vessels
-toto	-toña	scales, tables, planks
-yo	-ñoa	slender sticks, digits

Table 3.3: Singular and plural classifiers

Animate plural subjects, whether they are inherently plural, bear a classifier, or are suffixed with *-na*, trigger plural agreement on the predicate. Inanimate subjects, both singular and plural, trigger singular subject agreement on the predicate.

3.6 Diminutives and augmentatives

The inanimate diminutive suffix *-maka~-aka* or its plural counterpart *-maña* may be suffixed to count nouns to express the small size of or the speaker's affection toward the referent, as shown in (17) below. The diminutive may be suffixed directly to roots, as in (17a) and (17b), or may follow noun classifiers, as in (17c) and (17d).

- (17) a. fhàwè**màkà** bàiyì
 fhà wèè -maka bài -yi
 small house -INAN.DIM live -1.SG.PRES.DECL

‘I live in a small house’ (E.LTN.SJF.31jul2014)

‘Yo vivo casa pequeña’

- b. méákìrè dòbèyì ókómìà**màñà**

méá -kire dòbè -yì ókó
 drip -MASC.DS.SEQ fill.container.with.liquid.PLACT -3.PL.PRES.DECL water
-mìa -maña
 -CL:vessel -INAN.DIM.PL

‘While it dripped, they would fill their little dishes’ (by1 27.1)

‘Cuando goteando, ellos llenaban otra vez sus mocahuitas’

- c. ìò chó**màkà** étàràìhì

ìò chó -maka étá -rai
 3.SG.FEM.PRON head -INAN.DIM emerge -ASS.MOT.TOWARD.SPEAKER
-hì
 -3.SG.MASC.PRES.DECL

‘Her little head is emerging’ (nm4 63.1)

‘Su cabecita está saliendo’

- d. tótòdèò**màkà** ìnì dòè sáìhì dòè

tótò -reo -maka ìnì dòè sáí -hì dòè
 clay -CL:disc -INAN.DIM already grasp.NI go -3.SG.MASC.PRES.DECL already

‘Grabbing his little dish, he left’ (nm6 10.1)

‘Agarrando su tazoncito, él se fue ya’

-maka~aka may also be suffixed to numeral, quantificational, and adjectival roots. In these cases, the resultant form has adverbial meaning, as is exemplified in (18). The adverbializing function of the inanimate diminutive marker is, by token, its most common function.

- (18) a. tèm**ákà** táyòhì

tè -maka táyò -hì
 one -INAN.DIM pass -3.SG.MASC.PRES.DECL

‘[The illness] passes once’ (epi 86.1)

‘Pasa una sola vez’

- b. díà**màkà** ásábí

díà -maka ásá -bí
 slow -INAN.DIM perceive -1.PL.PAST.DECL

‘We learned slowly’ (tc2 108.1)

‘Hemos aprendido despacio’

- c. béóbèsè**àkà** dáóhì bàhì

béóbèsè -aka dáó -hì bà -hì
 UNIV.QUANT -INAN.DIM walk -PL.SS.SIM HABIT.PAST.NI -3.PL.PAST.DECL.NI
 ‘We used to wander all over’ (apa 63.1)
 ‘Vivíamos andando en varios lugares’

The animate diminutive suffix, *-ñi~-i*, is suffixed to nominal roots to express small size or the speaker’s affection, as in (19) below.

- (19) a. *mámákìñà dáóhì hìkàyì*
mámákì -i -na dáó -hì hìkà -yi
 child.MASC -ANIM.DIM -ANIM.PL walk -PL.SS.SIM speak -3.PL.PRES.DECL
 ‘The little children were walking and talking’ (iy6 567.1)
 ‘Los niños andando estaban conversando’ (iy6 567.1)
- b. *bàòñínàhà*
bàò -ñi -na -hà
 Callicebus.torquatus -ANIM.DIM -ANIM.PL -PL.COP
 ‘They’re little yellow-handed titi monkeys’ (ada 35.1)
 ‘Son toconitos’

Like *-maka~-aka*, *-ñi~-i* also has an adverbializing function. In (20a), the adverb *tèòí* ‘alone (feminine)’ is formed via the suffixation of the animate diminutive marker to the numeral *tè* ‘one’, which has been nominalized via the feminine classifier *-o*. In (20b), the noun *bósá* ‘deer’ has been suffixed with *-ñi* to indicate that the person in question left *as a deer*.

- (20) a. *tèòí níkákò hìkàyì*
tè -o -i níká -ko hìkà -yi
 one -CL:fem -ANIM.DIM stand -FEM.SS.SIM speak -1.SG.PRES.DECL
 ‘I was standing speaking alone’ (iy6 357.1)
 ‘Solita estaba hablando’
- b. *bósáñi sánìhò*
bósá -ñi sání -hó
 deer -ANIM.DIM go.NI -PERF
 ‘He left as a little deer’ (iy6 468.1)
 ‘En forma de venado se fue’

The augmentative counterpart to *-maka~-aka* and *-ñi~-i* is *-ai*, which indicates the large size of the referent. *-ai* may be suffixed to inanimate or animate roots, as shown in (21a) and (21b), respectively. When a classifier is present, *-ai* follows the classifier, as in (21a).

- (21) a. *bàipérèàì dáàhì, mínì bàipérè*

bàì -pere -ai dáà -hì, mìnì bàì -pere
 meat -CL:parallel -AUG bring -3.SG.MASC.PRES.DECL fish.sp meat -CL:parallel

‘He brought a huge *capillejo*, a *capillejo* of *paco*’ 9 (hab 67.1)

‘Ha traído tremendo capillejo de paco’

- b. *bíákò àìrè ísèhèòrè hásoáì*

bíákò -ai -re ísè -he -o
 fish.sp -AUG -NON.SUBJ GESTURAL.DEM -CL:physical.aspect -CL:fem
-re háso -ai
 -NON.SUBJ shoot -3.SG.MASC.PAST.DECL

‘He shot a *sábalo* this big’ (bag 1038.1)

‘El había baleado un sábalo enorme’

Whereas the diminutive suffix indicates the speaker’s affection toward the referent of the NP, the augmentative suffix may indicate distaste or disdain. In the following example, a woman and a deer exchange a series of insults, all of which consist of a body part marked with the augmentative *-ai*.

- (22) a. “*ñámà kópè àì*,” *óòkò*

ñámà kó -pe -ai óò -ko
 deer nail CL:pair -AUG say.angrily -3.SG.FEM.PRES.DECL

‘“You big-cloven-hooved deer!” she said angrily’ (bdm 39)

- b. “*mì nóépè àì*,” *óòhì, óòkì*

mì nóé -pe -ai óò -hì
 2.SG.PRON genital -CL:pair -AUG say.angrily -3.SG.MASC.PRES.DECL
óò -kì
 say.angrily -MASC.SS.SIM

‘“You, with your big labia!” he said angrily’ (bdm 40)

- c. “*ñámà úkwèsùrù àì*”

ñámà úkwè -suru -ai
 deer nose -CL:goop -AUG

‘“You big, slimy-nosed deer!”’ (bdm 41)

- d. “*mì nóésùrù àì*,” *óòhì*

mì nóé -suru -ai óò -hì
 2SG.PRON genital -CL:goop -AUG say.angrily -3.SG.MASC.PRES.DECL

‘“You, with your big, slimy genitals!” he said angrily’ (bdm 42)

- e. “*ñámà ñákò àgà àì*”

ñámà ñákò -àgà -ai
 deer eye -CL:malformed -AUG

“‘You big, goggle-eyed deer!’” (bdm 42)

f. “mì nóéàgààì”

mì nóé -àgà -ai
2.SG.PRON genital -CL:malformed -AUG

“‘You with your big, misshapen genitals!’” (bdm 43)

-ai is not regularly used to form adverbials, although there are a small number of examples in our corpus, such as the one shown in (23), that indicate that adverbialization is a potential function of the augmentative suffix. In these cases, the semantic contribution of augmentation is maintained, unlike in the cases of adverbs formed by -*maka*~*-aka*, which have no transparent link to diminutive size.

(23) a. ñîtààì bèèkò déékó

ñî ìtà -ai bèè -ko déé -ko
children belly -AUG lie.in.hammock -SG.SS.SUB hang -3.SG.FEM.PRES.DECL

‘She was lying pregnant (hanging in her hammock)’ (hab 132.1)

‘Estaba echada embarazada’

It seems that augmentative and diminutive suffixes in Máìh̀k̀ì have both a semantic and grammatical function. They provide information about either the size of the referent or the speaker’s attitude toward it, but they may also indicate that the NP is an adjunct rather than an argument.

3.7 Nominal modification

3.7.1 Possession

Possession is expressed via the juxtaposition of two NPs: a possessor and a possessum. The possessor always precedes the possessum, and neither NP is marked. Pronouns do not have distinct possessive forms. The possessive construction expresses a relationship between kin, between a whole and its parts, or between an owner or caretaker and his or her property. Examples are shown below in (24).

(24) a. [nómíò]_{possessor} [íhí]_{possessum} ábìhì

nómíò íhí ábì -hì
woman husband bathe -3.SG.MASC.PRES.DECL

‘The woman’s husband is bathing’ (E.JMM.KCN.09jul2012)

b. [békí]_{possessor} [chóbì]_{possessum} kòkòrè áítà

békí chó -bì kòkò -re áí -ta

Tapirus.terrestris head -SING cook -SS.SEQ eat -INFO

‘We cooked and ate head of tapir’ (hgt 95.1)
 ‘Hemos cocinado y comido cabeza de sachavaca’

- c. [yì]_{possessor} [wè]_{possessum} ímì bàìhì
 yì wèè ímì bàì -hì
 1.SG.PRON house man be -3.SG.MASC.PRES.DECL
 ‘There’s a man in my house’ (E.SJF.NMM.24jan2013)
 ‘Hay hombre en mi casa’

Possessive constructions may be nested, as in (25). While consultants readily produced examples of this type, nested possession is extremely rare in the text corpus.

- (25) Mámàsò dòikò māmákò bíákì ñùisèuhà

Mámàsò dòikò māmákò bíákì ñùì -seu -hà
 proper.name sister child.FEM father sit -CL:contraption -INAN.COP

‘It’s Mámàsò’s sister’s daughter’s father’s chair’ (E.LMM.KCN.07jul20120)

3.7.2 Adjectival modification

There is a small number of basic adjectival roots, listed below in Table 3.4. These may take neither nominal morphology (i.e., plural or non-subject marking), nor verbal inflection.

ROOT	MEANING
bóó-	‘white, shiny’
bìhè-	‘short’
dèò-	‘good’
dóá-	‘long, tall’
háí-	‘big’
máá-	‘red’
mámá-	‘new’
míñá-	‘green, young’
néá-	‘black, dark’
sìñò-	‘yellow’
yàrì-	‘small’

Table 3.4: Adjectival roots

Other properties may be attributed to nouns via stative verbs, such as *díkí-* ‘be thick, be heavy’ and *díí* ‘be deep’, exemplified below in (26).

- (26) a. núí **díkíhí**

- núí díkí -hí*
a.lot be.heavy -3.SG.MASC.PRES.DECL
‘It’s really thick’ (yo3 42.1)
‘Muy pesado es’
- b. *dèi díímáǵí ñíàkì*
dèi díí -má -ǵí ñíà -kí
really be.deep -NEG -3.SG.MASC.PAST.DECL ASP -SG.SS.SIM
‘It’s not really deep’ (dbt 126.1)
‘No es muy hondo’

In addition to stative predicates and adjectival roots, there is an attributive construction. In this construction, the verb root *báá* ‘have’ follows a nominal or verbal root expressing some attribute, has the tonal behavior of a suffix, and inflects normally.

- (27) a. *chìchìbáhì ñáméyí*
chìchì báá -hì ñámé -yí
mud have -PL.SS.SIM not.want -1.PL.PRES.DECL
‘It’s muddy and we don’t want (to live here)’ (src 7.1)
- b. *mìñàbátò*
mìñà báá -to
spot.PL have -CL:clothing
‘Polka-dot shirt’ (E.LTN.SJF.15aug2015)

3.8 Demonstratives, pronouns, and reference tracking

There are a number of Máíhìkì roots used to keep track of reference through spatial and discourse deixis. These demonstrative roots are in complementary distribution. They have masculine, feminine, and neuter/plural pronominal forms, and may also be suffixed with a specific classifier (see §5.3.2 for a discussion of general versus specific classification). The demonstrative roots plus their masculine, feminine, and neuter pronominal forms, are listed below in Table 3.5.

ROOT	FEM PRON	MASC PRON	NEUT PRON	GLOSS
ígè-	ígìò	ígì	ígè	‘what (kind)’
ítì-	ìò	ì	ítì	‘the aforementioned’
íí-	íkò	íkì	ígè	‘the near’
ísà	-	-	ísà	‘this (gestural)’
ká-/ké-	kákò	kákì	kée	‘the far’/‘which’
ká-	káo	kái	káà	‘the far (from speaker)’
mìnà-	-	-	mìnà	‘separate’
nà-	nàò	nàì	nàà	‘the same as before’
né-	dékò	dékì	née	‘the unknown’
té-	téò	téì	téá	‘the same’
tí-	tíò	tíì	tíñé	‘the different; the foreign’
yéké-	yékò	yékì	yéké	‘the one or other’

Table 3.5: Demonstrative roots

3.8.1 Spatial deixis

There is a three-way contrast in spatial deictics. *í-* indicates proximity to the speaker; *ká-* indicates proximity to the interlocutor; and *ké-* indicates remoteness from the speech act (i.e., from both the speaker and interlocutor).

An example of the proximal root *í-* suffixed with the classifiers *-rari* ‘CL:location’ and *-we* ‘CL:building’ is shown below in (28). Its feminine, masculine, and neuter/plural pronominal forms are shown in (29). The pronominal forms may occur either in isolation or as modifiers.

(28) *ígè bààchì íràrì, íwè?*

ígè *bàà* *-chi* *í* *-rari,*
 INAN.INTERR.PRON exist.FUT.NI -3.SG.MASC.FUT.DECL.NI PROX.DEM -CL:location
í *wè?*
 PROX.DEM house

‘What will there be here in this house?’ (cim 2.1)

‘Qué va a haber aquí en esta casa?’

(29) a. *íkò mùsù, kímà íkòàò?*

íkò *mùsù* *kímà* *íí* *-ko* *-ao*
 FEM.PROX.PRON cricket how say -FEM.SS.SIM -ANIM.FEM.COP

‘This cricket, what’s it saying?’ (atj 74.10)

‘Qué cosa está diciendo este grillo?’

b. *íkì yáíhòyì*

íkì *yáíhòyì*
 MASC.PROX.PRON dog

‘This dog’ (E.SJF.AMM.30jul2014)

‘Este perro’

c. àyì, **ígè**tà **áógà**!

àyì ígè -ta **áo** -ga!
older.brother NEUT.PROX.PRON -INFO food -TOP

‘Brother, now this is food!’ (dos 19.1)

‘Hermano, ésta es comida!’

The interlocutor-proximal demonstrative, *ká-*, is exemplified below in (30). In (30a), the speaker asks his/her interlocutor to hand her a machete that she cannot reach herself. In (30b), a shop owner points to a pencil that is far from her but near her customer. Further evidence that *ká-* indicates a referent that proximal to the interlocutor is that it is often translated with the Spanish interlocutor-proximal demonstrative *de allí*, as below.

(30) a. **ká**rì kíùrì ínìchìmà

ká -rì kíù -rì ínì **íchì** -ma
INT.PROX.DEM -CL:manufactured metal -CL:manufactured pick.up give -IMPER

‘Hand me that machete’ (E.EMR.SJF.30jul2014)

‘Alcánzame ese machete’

b. **ká**ñàkà sáà

ká -ñaka sáà
INT.PROX.DEM -CL:pointy take

‘Take that one (pencil)’ (E.EMR.SJF.21jan2013)

‘Lleva esa (lápiz) de allí’

The feminine, masculine, and neuter/plural pronominal forms of *ká-* are shown in (31). In (31b), the speaker is asking a woman whether the man who is standing next to her, and presumably across from the speaker herself, is her husband.

(31) a. ígèrè yòòkò **káo**?

ígè -re yòò -ko
INAN.INTERR.PRON -NON.SUBJ work.on -3.SG.FEM.PRES.INTERR
káo
FEM.INT.PROX.PRON

‘What’s she doing?’ (iy6 461.)

‘Qué está haciendo?’

b. **kái**da, mì **íà** **kái**?

kâi -ra mî îi -aî
MASC.INT.PROX.PRON -INFO 2.SG.PRON husband -MASC.ANIM.COP

káî
MASC.INT.PROX.PRON

'That's your husband?' (fsl 203.1)

‘Ese hombre es tu marido?’

c. **káà** mì áóhá, **káà**

káà mɪ áo -hà káà
INT.PROX.PRON 2.SG.PRON food -INAN.COP INT.PROX.PRON

‘That’s your food’ (vil 279.1)

‘Eso es tu comida’

The speech-act-distal demonstrative, *ké~ká-*, indicates that the referent is far from both the speaker and the interlocutor. This demonstrative is used, for instance, to talk about the other side of the river, the far end of town, or a distant village. *ké~ká-* does not encode a greater degree of distance than *ká-*; the speaker's choice of demonstrative depends entirely on the location of the interlocutor relative to the entity in question.

Both *ká*- and *ké*- trigger the lenis allomorphs¹ of certain classifiers, such as *-ti* for manufactured objects (fortis *-ri*), *-to* for places (fortis *-ro*), etc.

In example (32a), shown below, the speaker uses the associated motion suffix *-hai*, which indicates motion away from the speaker. The request that the interlocutor go elsewhere to pick the fruit in question provides clear evidence that the distal demonstrative *ké-* indicates a referent that is far from all speech act participants.

(32) a. **kégà** tíhàhài

ké *-ga* *tíà* *-hai*
SPACT.DIST.DEM -CL:seed pluck -ASS.MOT.AWAY.FROM.SPEAKER.

‘Go pick that fruit’ (hol 89.1)

'Véte a coger ese huayo'

b. **kátò** hééchì

ká *-to* *héé* *-chi*
 SPACT.DIST.DEM -CL:place cross.FUT.NI -1.SG.FUT.DECL.NI

'I'm going to cross over there' (aho 67.1)

Although *ké-* and *ká-* are in complementary distribution, the synchronic conditions of their allomorphy are unclear. In our corpus, *ké-* appears with a more restricted set of classifiers, listed below in 3.6.

¹Certain Máihìkì morphemes exhibit an allomorphy that can be traced to a historical lenis/fortis distinction.

CLASSIFIER	CLASSIFIED THINGS
-bese	worlds, environments, open spaces
-ga	seeds, small round objects
-go(h)e	holes
-gunu	upright sides
-huna	groups, herds
-huru	vicinities and inexact locations
-rari	locations
-we	houses, buildings
-yigo	spans of space and time
-ti	opposite sides
-ruru	directions

Table 3.6: Classifiers that may be suffixed to *ké*

3.8.2 Discourse deixis

In addition to its spatial deictic function, *ká-* may be used to track a referent previously mentioned in discourse. In (33), the speaker introduces a place, *Béáhògàyà*, describes it briefly, and refers back to it with the demonstrative pronoun *kádàdì*, which consists of the demonstrative root *ká-* suffixed with the classifier *-rari* ‘CL:location’. In (33b), the speaker mentions a species of fish, *yáká*, and refers to later it with the pronoun *káo*.

- (33) a. **Béáhògàyà** bàì nùí bàìkò
Béáhògàyà bàì nùí bàì -ko
proper.name fish a.lot exist -3.SG.FEM.PRES.DECL
‘There are lots of fish in Béáhògàyà’ (bhg 2.1)
‘Hay mucho pescado Béáhògàyà’
- dékò, *ísíbàìsìyòkò* bàìkò
dékò ísíbàìsìyòkò bàì -ko
UNKNOWN.FEM.PRON fish.sp exist -3.SG.FEM.PRES.DECL
‘There’s what’s-it-called—a certain *mojarra*’ (sla 3.1)
‘Hay mucho pez mojara de la clase *ísíbàìsìyòkò*’
- kádàdì** nùí níkáhì béáhò
ká -rari nùí níká -hì béáhò
DEM -CL:location a.lot stand -3.SG.MASC.PRES.DECL plant.sp
‘In that place (Béáhògàyà) there’s a lot of *béáhò*’ (sla 4.1)
- b. **yáká** nùí bàkò

yáká núi bá -ko
 fish.sp a.lot exist.PAST.NI -3.SG.FEM.PAST.DECL.NI

‘There were a lot of *carachama*’ (syk 75.1)
 ‘Había harta carachama’

káònàrè báhì
káò -na -re bá -hì
 DIST.PRON -ANIM.PL -NON.SUBJ kill.PAST.NI -3.PL.PAST.DECL.NI
 ‘They (our ancestors) killed them’ (syk 73.1)

The functional difference between the discourse deictics *ká-* and *ítì-* (whose feminine, masculine, and neuter/plural pronominal counterparts are *íò*, *î*, and *ítì*, respectively) is as yet not well understood; like *ká-*, *ítì-* may refer to a previously mentioned referent. Example (34) shows the tracking of two referents—a man named Órápèrè and the stream named after him—over the course of several utterances. Both referents are introduced in the first utterance, (34a). In (34b), the speaker uses *ká-* to refer to the place, and then *î* to refer to the man, whose name he specifies again. Finally, in (34c), the speaker switches to *ítì-* to refer to the place.

- (34) a. **órápèrè** bàchíkì bàkì **Órápèrè Yíòsàrò**
órápèrè bà -chi -kì bà -kì
 proper.name exist -PAST.REL -CL:masc live.PAST.NI -3.SG.MASC.PAST.DECL.NI
Órápèrè. Yíòsàrò
 proper.name

‘The late Órápèrè lived on the Órápèrè Yíòsàrò (stream)’ (ora 71.1)
 ‘El antiguo Órápèrè vivía en Órápèrè Yíòsàrò’

- b. **ká**dàrì yíò báágí **î** Órápèrè bàchíkì
ká -rari yíò báá -gí
 DIST.ANAPH.DEM -CL:location swidden have -3.SG.MASC.PAST.DECL
ñí Órápèrè bà -chi -kì
 3.SG.MASC.PRON proper.name exist -PAST.REL -CL:masc

‘In that place he had his swiddens, the late Órápèrè’ (ora 72.1)
 ‘Allá tenía el finado Órápèrè sus chacras’

- c. kámà **íhì**, “Órápèrè Yíòsàrò” **íhì ítì, ítìdàrì**

kámà *í* *-hí* *Órápèrè* *yíò* *-saro* *í*
 thus say -3.SG.MASC.PRES.DECL proper.name swidden -CL:opening say
-hí *ítì* *ítì* *-rari*
 -3.SG.MASC.PRES.DECL PROX.ANAPH.PRON PROX.ANAPH.DEM -CL:location

‘Thus it’s called “The passage to Órápèrè’s swidden,” this place’ (73.1)

‘Así han llamado a ese lugar “Órápèrè Yìòsàrò”’

The ‘proximal’ discourse deictics (*ítì*, *ítì*- + classifier, *íò* and *ìì*) are far more common in our corpus than the ‘distal’ discourse deictics (*káà*, *ká*- + classifier, *káò* and *káì*). The latter occur primarily following utterances in which there is a full NP that is being introduced for the first time, while the former may be used throughout discourse to refer back to the most recent referent that agrees in noun class. The difference here may be that *ká*- indexes the explicitly aforementioned, while *ítì* indexes the referent that the speaker expects the listener, for whatever reason, to have in mind.

3.8.3 Interrogatives

The speech-act-distal demonstrative *ké*~*ká*- has a discourse deictic counterpart which indicates the speaker’s lack of knowledge about the identity of the individual in question. This demonstrative can be used in questions, in which case it may be translated as ‘which’ or ‘where’, as shown in (35) below.

- (35) a. **kátì** kíùrì kwéèchò?

ká *-tì* *kíù* *-rì* *kwéè*
 INTERR.DEM -CL:manufactured metal -CL:manufactured cut.stick.FUT.NI
-cho?
 -2.SG.FEM.PRES.INTERR.NI

‘With which machete will you cut?’ (E.EMR.SJF.2aug2014)

‘Con cuál machete vas a cortar?’

- b. **kéwè** bàikò mî?

ké *-we* *bàì* *-ko* *mî*
 INTERR.DEM -CL:building live -3.SG.FEM.PRES.INTERR 2.SG.PRON

‘Which house do you live in?’ (E.NMM.SJF.21aug2014) ‘En cuál casa vives usted?’

- c. **kákò** àò?

kákò *-ao?*
 FEM.INTERR.PRON -ANIM.FEM.INTERR.COP

‘Where is she?’ (nao 79.1)

‘¿Dónde está ella?’

- d. **kéè** yì áótòtò

kée *yì* *áo* -*toto*
 INTERR.PRON 1.SG.PRON food -CL:flat.rigid

‘Where is my food?’ (dos 11.1)

‘¿Dónde está mi comida?’

- e. *yì* *kiùnà* *tíásèniàmà* *háyé* *bááñiàbì*. **Kénìààyè** *kiùnà*, *Mákòbè*?

yì *kiù* -*nia* *tíá* -*se*
 1.SG.PRON metal -CL.PL:manufactured sharpen -PAST.REL
 -*nia* -*ma* *háyé* *báá* -*ñia* -*bì*.
 -CL.PL:manufactured -INAN.PL multiple.instances have -ASP -1.SG.PAST.DECL
Ké -*nia* -*aye* *kiù*
 INTERR.DEM -CL.PL:manufactured -INAN.INTERR.COP metal
 -*nia* *Mákòbè*
 -CL.PL:manufactured proper.name

‘I had a bunch of sharpened machetes. Where are they, *Mákòbè*?’ (E.LTN.SJF.6feb2013)

ké~ká may also be used in situations where the speaker does not know the identity of the entity in question, but is also not seeking this information from his or her interlocutor. This may be the case either when the speaker is resigned to his or her ignorance about the identity of the entity in question, for instance because the identity cannot be known (e.g. in an irrealis context), in which case the demonstrative may be translated as ‘whichever’; or because the speaker wishes to use his or her ignorance to a rhetorical end (e.g., the speaker wishes to highlight that there *is* no referent). Examples of each of these uses of *ké~ká* are shown below in (36). In (36a), the speaker cannot predict precisely which houses will have crying children; in (36b), the speaker highlights her inability to pick out referents in an effort to draw the listener’s attention to the fact that there *are* no referents.

- (36) a. *nà* *kàró* *sáí* -*ko* *ké* -*we* *béè* -*hì*

again where go -FEM.SS.SIM INTERR.DEM -CL:building imperf -PL.SS.SIM
ññ *óí* -*yi*
 children cry -3.PL.PRES.DECL

‘She would go to whichever house had crying children’ (soc 7.1)

‘En cuál casa hay niños que lloran, ella va allá’

- b. **kée** *bìonànù* *bááhì* *kááyò*?

kée *bìonànù* *báá* -*hì* *káá* -*yo*
 INTERR.PRON bed have -PL.SS.SIM sleep.FUT.NI -1.PL.FUT.DECL

‘What bed do we have to sleep in?’ (bag 447.1)

‘Qué cama tenemos para dormir?’

A number of lexicalized interrogative pronouns appear to be historically derived from *ké~ká-*. These include *kárò* ‘where’ (*ká* + *-ro* ‘CL:place’), *kémà~kímà* ‘how’ (*ké* + *-ma* ‘CL:path’), *késò* ‘how many/much’ (*ké* + *-so* ‘CL:quantity’), etc.

The interrogative *ígè-* (whose pronominal counterparts are *ígè* (neuter/plural), *ígìdò~ígò* (feminine singular), and *ígì* (masculine singular)), is used when the speaker wishes to know *what* or *what kind of thing* the referent is. Whereas the answer to a question posed with *ké~ká* would yield a response containing another demonstrative (e.g. ‘this book’ or ‘that house’), a felicitous response to a question posed with *ígè-* would yield a bare noun (or a clause, in cases where *ígè* means ‘why’). Examples are shown below in (37).

- (37) a. **ígè**àyè **káà**?
 ígè -*aye* káà
 INTERR.DEM -INAN.COP.INTERR DISTAL.DEM
 ‘What is that?’ (iy6 543.1)
- b. **ígè**tìkààyì?
 ígè -*tika* -*ayi*
 INTERR.DEM -CL:stick -INAN.COP
 ‘What kind of stick is it?’ (E.AMM.LMM.SJF.2jul2010)
 ‘Qué es este palito?’
- c. **ígì**àgì **káì**?
 ígì -*agi* káì
 MASC.INTERR.DEM -ANIM.MASC.COP MASC.DIST.PRON
 ‘What is that (a dog)?’ (E.JMM.SJF.19jun2013)
 ‘Qué es éso?’

A third demonstrative root may be used interrogatively. This is *né-*, which, like *ké~ká-*, indicates that the speaker does not know the identity of the entity in question. *né-* is the standard interrogative for local speech-act participants, as shown in (38) below.

- (38) a. **né**àyì (**mì**)?
 né -*ayi* mì
 ANIM.INTERR.PRON -2.SG.INTERR.COP 2.SG.PRON
 ‘Who are you?’ (E.AMM.SJF.21aug2014)
 ‘¿Quién eres?’
- b. **né**àyì yì?
 né -*ayi* yì
 ANIM.INTERR.PRON -1.SG.INTERR.COP 1.SG.PRON
 ‘Who am I?’ (E.AMM.SJF.21aug2014)
 ‘¿Quién soy yo?’
- c. **né**àyì yíkí?

né *-ayi* *yíkí*
 ANIM.INTERR.PRON -1.PL.INTERR.COP 1.PL.INCL.PRON
 ‘Who are we?’ (E.AMM.SJF.21aug2014)
 ‘¿Quiénes somos?’

For non-speech-act participants whose gender is known, *ígì* or *ígìò~ígò* is used, as in (39).

- (39) a. **ígì**àgì?
 ígì *-agi*
 MASC.INTERR.PRON -ANIM.MASC.INTERR.COP
 ‘Who is he?’ (E.AMM.SJF.21aug2014)
- b. **ígò**àgò?
 ígò *-ago*
 FEM.INTERR.PRON -ANIM.FEM.INTERR.COP
 ‘Who is she?’ (E.AMM.SJF.21aug2014)

In cases where the gender of the referent is unknown, *né-* is used. When the unknown referent is an agent, *-bí* is suffixed to *né-*, as in (40a).

- (40) a. **nébì** yìrè nèèkì?
 né *-bí* *yì* *-re* *nèè -kì*
 INTERR.DEM -SING 1.SG.PRON -NON.SUBJ do -3.SG.MASC.PRES.INTERR
 ‘Who did this to me?’ (bdb 32.1)
 ‘¿Quién ha hecho esto a mí?’

When the unknown referent is not an agent, it is assigned case accordingly. Example (41) shows *né-* suffixed with the non-subject marker *-re*.

- (41) **mì** nère hìkàkò?
 mì *né* *-re* *hìkà -ko*
 2.SG.PRON INTERR.DEM -NON.SUBJ speak -3.SG.FEM.PRES.INTERR
 ‘Who are you talking to?’ (chi 49.1)
 ‘¿Con quién estás conversando?’

As a possessor, *nèè* surfaces bare, as in (42) below.

- (42) a. **nèè** yáíhòyìàgì?
 nèè *yáíhòyì -agi*
 ANIM.INTERR.PRON dog -ANIM.MASC.INTERR.COP
 ‘Whose dog is it?’ (E.AMM.SJF.21aug2014)
 ‘¿De quién su perro?’

When the demonstrative root *né-* appears with a classifier, it means ‘some kind of X’, as in *némè* ‘some (unspecified) kind of rope’ or *nédòrù* ‘some (unspecified) kind of basket’. By itself, the neuter pronoun *née* is used as a lexical-search hesitation word, or can mean something like ‘thingamajig’.

The animate pronominal forms of *né-* are likely² *dékò* ‘unknown feminine being’ and *dékì* ‘unknown masculine being’. These are generally reserved for situations in which the speaker is searching for the name of a person or an animal that he or she has temporarily forgotten, as exemplified in (43).

- (43) a. **dékì**, mànú háíhùnà bàìkínà, dékìàì
dé *-kì* *mànú háí -huna* *bàì -kì* *-na*
 INTERR.DEM -CL:masc more big -CL:group live -MASC:cl -ANIM.PL
dé *-kì* *-aì*
 FORGOTTEN.DEM -CL:masc -ANIM.MASC.COP
 ‘Another group, a bigger group, what’s it called?’ (yar 42.1)
- b. **dékò**, úhíbàkònà háyé nògìbì
dé *-ko* *úhí* *báá -ko* *-na* *háyé nògì*
 FORGOTTEN.DEM -CL:fem tooth have -CL:fem -ANIM.PL a.lot fish.with.hook
-bì
 -1.SG.PAST.DECL
 ‘I also caught a lot of—what’s-it-called—of piranhas’ (aho 63.1)

In sum, *ígè-*, *ígè*, *ígì*, and *ígìdò~ígò* are used in situations where the speaker does not know what *kind* of thing an inanimate, third person masculine animate, or third person feminine inanimate entity is, and *ké~ká-*, *kée*, *kákì*, and *kákò* are used when the speaker does not know which *individual* an inanimate, third person masculine animate, or third person feminine animate entity is. *né-* is used interrogatively when asking about speech-act participants, and assertively when indicating that one does not know what *kind* of inanimate object something is. The animate counterpart to the assertive *née* is *dékò* (feminine) or *dékì* (masculine).

3.8.4 Temporal and spatial continuity

There are a number of demonstrative roots in Máíhìkì that indicate temporal or spatial continuity between mentions of an entity. For instance, the demonstrative root *nà-*, whose feminine, masculine, and neuter/plural pronominal counterparts are *nàò*, *nàì*, and *nàà*, respectively, indicates that some event participant is the same as the participant in a previous event. Examples of *nà-* are shown below in (44).

²I suggest allomorphy here based on the semantic and phonological similarity of these forms, and the fact that *né-* is in complementary distribution with *dé-* inasmuch as there is no other masculine or feminine pronominal element derived from *né-*.

- (44) a. **nà**dàrì síòñià nà **ká**dàrì
 nà *-rari* *síò* *-ñia* *nà* *ká*
 SAME.AGAIN.DEM -CL:location light -ASP again SPEAKER.DIST.DEM
 -rari
 -CL:location
 ‘Light it again there in the same place’ (by5)
 ‘Prende en ese mismo lugar otra vez’
- b. yékòrè hásóchikòrè **nà**òrè hásó
 yékò *-re* *hásó* *-chi* *-ko* *-re*
 other.PRON.FEM -NON.SUBJ shoot -PAST.REL -CL:fem -NON.SUBJ
 nàò *-re* *hásó*
 SAME.AGAIN.DEMM.FEM -NON.SUBJ shoot
 ‘The one that I shot, I shot the same one again’ (pvc 130.1)
 ‘Yo he baleado otra vez la misma animal que ya había baleado’

A similar demonstrative root, *té-*, whose pronominal counterparts are *téò*, *téì*, and *téá*, differs from *nà-* in that it indicates a non-sequential continuity of reference. In (45), Mámàsò and Mákòbè are looking for the same snake as each other, rather than the same snake as at some previous point in time, as *nàirè àñàrè* would indicate.

- (45) a. Mámàsò Mákòbèhànù **té**irè àñàrè kwèyì
 Mámàsò *Mákòbè* *-hanu* *téi* *-re* *áñà*
 proper.name proper.name -COM same.SG.MASC.PRON -NON.SUBJ snake
 -re *kwèè* *-yi*
 -NON.SUBJ look.for -3.PL.PRES.DECL
 ‘Mámàsò and Mákòbè are looking for the same snake’
- b. yì **té**áwè bààchì
 yì *téá* *-we* *bàà* *-chi*
 1.SG.PRON DEM.SAME -CL:building live.FUT.NI -1.SG.FUT.DECL.NI
 ‘I’m going to live in the same house (as him)’ (myg 61.1)

The opposite of *té-* is *mìnà-*, which indicates spatially separate event participants.

- (46) **mìnà**tóyápìmà tóyáyí
 mìnà *tóyá* *-pì* *-ma* *tóyá* *-yi*
 DEM.DIF write -CL:stack -INAN.PL write -1.SG.PRES.DECL
 ‘I’m writing in different notebooks’ (E.NMM.SJF.2feb2013)
 ‘Estoy escribiendo diferentes cuadernos’
- (47) **mìnà**bésè dáóànhì bàhì **mìnà**húrùmà

mìnà -bese dáó -ani -hì bà
 DEM.DIF -CL:environment walk -ITER -PL.SS.SIM habit.PAST.NI
-hì mìnà -huru -ma
 -1.PL.PAST.DECL.NI DEM.DIF -CL:vicinity -INAN.PL

‘We would always wander around to different places’ (apa 87.1)

The demonstrative root *tí-* is the opposite of *ítì-* in that it indicates a referent that is different from the one that speaker assumes, for whatever reason, his interlocutor has in mind. This demonstrative is used when the speaker realizes he or she has misspoken, as in (48) below. In (48a), the storyteller establishes a referent—the Yanayacu River—and quickly realizes in that this is not the correct river. He indicates this mistake in (48b), first with the pronoun *tíñé*, and later using the demonstrative *tí-* suffixed with the classifier *-ro* ‘CL:place’.

(48) a. *íyà, íyà máhì yíkí...Táídìyà*

í -ya í -ya má
 PROX.DEM -CL:river PROX.DEM -CL:river go.upriver.PAST.NI
-hì yíkí Táídìyà
 -1.PL.PAST.DECL.NI 1.PL.INCL.PRON proper.name

‘We went up this river, this river, the Yanayacu’ (agn)

b. *tíñéhá! tíñéhá! kàà tíròrè kíáyí—Táídìyà dáómáyí chlà ìtìbàinù*

tíñé -há tíñé -há kàà
 incorrect.PRON -INAN.COP incorrect.PRON -INAN.COP DIST.ANAPH.PRON
tí -ro -re kíá -yi Táídìyà dáó
 INCORRECT.DEM -CL:place -NON.SUBJ tell -1.SG.PRES.DECL proper.name walk
-má -yi chlà ìtì bàì -nu
 -NEG -1.PL.PRES.DECL not.yet PROX.DEM live -CL:time

‘That’s wrong! That’s wrong! I said the wrong place. We weren’t going on the Yanayacu yet at that point in (my) life’ (agn)

Finally, the demonstrative root *yéké-* sets up an opposition between two referents. In the case of (49), where it is established that there are two wives, *yékò* picks out one wife in opposition to the other. Subsequent uses of *yékò* alternate in reference.

(49) a. *dábì pébì báágí nìhò*

dábì pé -bì báá -gì nìhò
 shaman pair -SING have -3.SG.MASC.PAST.DECL wife

‘The shaman had a pair of wives’ (bdm 4.1)

‘El brujo tenía dos mujeres’

b. *yékò ñámékó*

yékò *ñámé* *-ko*
 other.DEM.FEM not.want -3.SG.FEM.PRES.DECL
 ‘One of them didn’t love him’ (bdm 5.1)
 ‘Una mujer no le quería’

By itself, *yéké-* and its pronominal counterparts indicate that the entity in question is different from the previous contextually salient referent. This is shown below in (3.8.4).

(50) **wèè** *néèrè* *bàiséhùnà* *nà* *íràrì* *hànà* *Pacoposahùrù* *nà* *wèè* **yékéwè** *néèbì*

wèè *néè* *-re* *bàì* *-se* *-huna* *nà* *í* *-rari* *hànà*
 house make -SS.SEQ live -PAST.REL -CL:group again PROX.DEM -CL:location now
Pacoposa *-huru* *nà* *wèè* *yéké* *-we* *néè*
 proper.name -CL:vicinity again house other.DEM -CL:building make
-bì
 -1.PL.PRES.DECL

‘We build houses and lived in them, and from there built other houses around Pacoposa’ (apa 60.1)
 ‘Hemos hecho casa y vivido allá, de allí en ese lugar, Pacoposa, hemos hecho casas otra vez’

3.9 Inflectional paradigms

Finite verbs in Máfhìkì bear an inflectional suffix which encodes tense, person, number, and clause type. The inflectional paradigms may be divided into ‘regular class’ and ‘*-ni* class’ paradigms, whose differences are outlined below for both declarative and interrogative clauses.

3.9.1 Declarative paradigms

The declarative inflectional paradigm for regular class verbs is shown in Table 3.7 below. As mentioned in §1.2.3, the local person and plural past tense suffix *-gu* is used primarily in the Yanayacu basin (WM), and the masculine and feminine third person past tense suffixes *-ai* and *-ao* are used by some speakers of NM.

Recall from §2.4.1 that in WM and EM, the present and past tense regular declarative suffixes are Class II suffixes and therefore receive spreading high tone, while the future suffixes are of Class III. In NM, however, all inflectional suffixes are of Class III.

	PRESENT	PAST	FUTURE
PL.ANIM	-yi	-bi, -gu	-yo
1SG	-yi	-bi, -gu	-yi
2SG.FEM	-yi	-bi, -gu	-yi
2SG.MASC	-yi	-bi, -gu	-yi
3SG.FEM	-ko	-go, -ao	-yo
3SG.MASC	-h _i	-gi, -ai	-yi
INAN	-h _i	-gi, -ai	-yi

Table 3.7: Regular declarative inflectional paradigm

Table 3.8 shows the *-ni* class declarative inflectional paradigm. As mentioned in §1.2.3 and shown below, there is considerable dialectal and idiolectal variation in the realization of the past tense of *-ni* class verbs.

Note that in EM and WM, the present tense declarative *-ni* class suffixes are of Class II (i.e., receive spreading high tone), while the past and future suffixes are of Class III. In NM, all inflectional suffixes are of Class III.

	PRESENT	PAST	FUTURE
PL.ANIM	-yi	-hi, -bi, -h _i	-yo
1SG	-yi	-hi, -bi, -h _i	-chi
2SG.FEM	-yi	-ko	-chi
2SG.MASC	-yi	-ki	-chi
3SG.FEM	-ko	-ko	-cho
3SG.MASC	-h _i	-ki	-chi
INAN	-h _i	-ki	-chi

Table 3.8: *-ni*-class declarative inflectional paradigm

In the past and future tenses, *-ni* class verbs exhibit stem allomorphy. The past tense stem is equivalent to the first mora of the present tense stem, but always with high tone; the future tense stem consists of the first mora of the present tense stem plus a second vowel of the same quality, which may bear either high or low tone. The tone pattern of the future tense stem corresponds with that of the *-ni* allomorph. (For a summary of *-ni* class verb allomorphy, see §B.

3.9.2 Interrogative paradigms

The regular class interrogative inflectional paradigm is shown below in Table 3.9. All interrogative inflection in all varieties of Máihìkì is of tonal Class III. Note that there is some

variation in the realization of the present tense 1st person and animate plural suffix (*-yi* vs. *-ye*). *-ye* is found in the Yanayacu River basin.

	PRESENT	PAST	FUTURE
PL.ANIM	-yì, -ye	-re	-yo
1SG	-yì, -ye	-re	-yì
2SG.FEM	-ko	-go	-yo
2SG.MASC	-kì	-gì	-yì
3SG.FEM	-ko	-go	-yo
3SG.MASC	-kì	-gì	-yì
INAN	-kì	-gì	-yì

Table 3.9: Regular class interrogative inflectional paradigm

The *-ni* class interrogative inflectional paradigm is presented below in Table 3.10. Like their regular class interrogative counterparts, these suffixes are of tonal Class III. The stem allomorphy is as described for the *-ni* class declarative paradigm.

	PRESENT	PAST	FUTURE
PL.ANIM	-yì, -ye	-te	-yo
1SG	-yì, -ye	-te	-chi
2SG.FEM	-ko	-ko	-cho
2SG.MASC	-kì	-kì	-chi
3SG.FEM	-ko	-ko	-cho
3SG.MASC	-kì	-kì	-chi
INAN	-kì	-kì	-chi

Table 3.10: *-ni*-class interrogative inflectional paradigm

3.10 Negation

The negation of a proposition is achieved in Máìhǎkì via the suffixation of the clausal negator *-ma* to the verb stem, as shown in (51) below. When negating a present-tense or past-tense proposition, *-ma* behaves as a Class I tonal suffix; that is, it has inherent high tone that spreads to adjacent verbal inflection.

- (51) a. yì ùkúmá yì
 yì ùkú -má -yì yì
 1.SG.PRON drink -NEG 1.SG.PRES.DECL 1.SG.PRON

‘I don’t drink’ (jv3 44.1)

b. tíñó**m**ágó

tíñó -má -go

answer -NEG -3.SG.FEM.PAST.DECL

‘She didn’t answer’ (vie 48.1)

In the negation of questions and future-tense propositions, *-ma* behaves as a Class III tonal suffix: it undergoes tonal erasure, surfacing H after LL roots and L after HH and HL roots. Examples (52a) and (52b) show the negated verb *sáí* ‘go’ in the present and future tense, respectively. We can see in (52b) that the negator has undergone tonal erasure, as it surfaces low following a HH verb.

(52) a. sáí**m**áyí

sáí -má -yi

go -NEG -1.SG.PRES.DECL

‘I’m not going’ (bag 112.1)

‘No me voy’

b. sáí**m**àyì

sáí -ma -yi

go -NEG -1.SG.FUT.DECL

‘I’m not going to go’ (con 244.1)

‘No voy a ir’

c. bá**b**è**m**àkì mî?

bábè -ma -kì mî

deliberately.misinform -NEG -2.SG.PRES.INTERR 2.SG.PRON

‘Are you not kidding?’ (vi2 35.1)

‘¿No estás engañando?’

d. bá**b**è**m**áyí

bábè -má -yi

deliberately.misinform -NEG 1.SG.PRES.DECL

‘I’m not kidding’ (vi2 36.1)

‘No estoy engañando’

-ma also behaves as a Class III suffix when negating subordinate or nominalized clauses. Example (53) below shows the negated HH verb *kíá* ‘inform, preach’ in a past tense finite clause and a subordinate clause marked with the different subject suffix *-kire* (see §?? for more on subordination). In (53a), *-ma* maintains its high tone, which spreads to the adjacent inflectional suffix *-gi*. In (53b), *-ma* undergoes tonal erasure and surfaces with low tone following the HH root.

- (53) a. *kíámáǵí*
kíá -má -ǵí
 inform -NEG -3.SG.MASC.PAST.DECL
 ‘He doesn’t preach (anymore)’ (ca3 107.1)
 ‘Ya no predica más’
- b. *kíámàkìrè ñámékì héóñiàbì tèà*
kíá -ma -kìrè ñámé -kì héó -ñia
 inform -NEG -MASC.DS.SIM not.want -MASC.SS.SIM abandon -FRUST
-bì tèà
 -1.SG.PAST.DECL also
 ‘Because he no longer preached, I didn’t want to (go to church) and I abandoned it’ (ca3 116.1)
 ‘Como él ya no enseñaba, yo no quería (ir a la iglesia) y lo he dejado’

3.10.1 The scope of negation

The position of the negative suffix *-ma* with respect to other verbal affixes has implications for its scope. In general, the negator scopes over the suffixes to its left. Example (54) below shows scope interactions between *-ma* and the universal quantificational suffix *-sao*. In (54a), the speaker asks the listener whether she has closed all of the doors. The response in (54b), in which *-ma* follows *-sao*, indicates that not all of the doors have been closed. Example (54c), in which *-sao* follows *-ma*, indicates that *none* of the doors have been closed (i.e., negation scopes under the universal quantifier).

- (54) a. *béóbèsè díbosàògò hátòsàròmà?*
béóbèsè díbo -sao -go hátòsàrò -ma?
 all close -UNIV.QUANT -2.SG.FEM.PAST.DECL door -INAN.PL
 ‘Did you close all the doors?’ (E.JMM.SJF.19jun2013)
 ‘¿Has cerrado todas las puertas?’
- b. *díbosàòmáíbí; chlà hókábí*
díbo -sàò -má -bí chlà hóká -bí
 close -UNIV.QUANT -NEG 1.SG.PAST.DECL still remain 1.SG.PAST.DECL
 ‘I didn’t close all of them; I still have (some) left’
- c. *díbòmásàòbí*
díbo -má -sao -bí
 close -NEG -UNIV.QUANT -1.SG.PAST.DECL
 ‘I didn’t close all of them (i.e., any of them)’ (E.JMM.SJF.19jun2013)
 ‘No he cerrado ninguno’

3.11 The structure of events

This section, which deals with how the structure of events is expressed in Máfhìkì, is divided into three parts. First, I will discuss a paradigm of stem allomorphy which encodes information about the number of states in an event, as well as the number and roles of event participants. Next, I will discuss several verbal suffixes that may be used to alter the basic event structure encoded by the root, for instance by adding event participants or by providing more detailed information about changes in state. Finally, I will describe the role of serial verb constructions in the semantics of event structure.

3.11.1 Event-structural stem allomorphy

Máfhìkì verb stems form an elaborate paradigm that encodes information about the structure of events. This paradigm is sensitive to at least four parameters: 1. how many discrete states the event encodes; 2. how many participants are involved in the event; 3. whether the event involves a change of state; and 4. which of the participants instigate and undergo the change of state if there is one. Most verbs will exhibit at least two allomorphs which may correspond to the following event types:

1. a single state
2. multiple identical states
3. a change of state undergone by a single event participant
4. a change of state instigated and undergone by a single event participant
5. a change of state instigated by one participant and undergone by another
6. multiple changes of state instigated by one participant and undergone by another
7. a change of state instigated by one participant and undergone by both that participant and another
8. multiple changes of state instigated by one participant and undergone by both that participant and another

The first type of stem—the single-state stem—typically ends in /i/, although if initial vowel of the root is /e/, the second vowel of the single state stem will also be /e/ (e.g. *bée* ‘lie in a hammock’). These constitute the so-called *-ni* verbs, which, for the most part, are stative/positional verbs (e.g. *ñùì* ‘be seated’, *sìì* ‘be stuck’, etc.), although they also include activity verbs (e.g. *áí* ‘eat’, *bái* ‘beat’, *túí* ‘follow’). Some verbs that involve progression toward an endpoint or second state (e.g. *dùì* ‘sink’, *hùì* ‘be sick; deteriorate in health’, *tái* ‘fall’) also belong to this morphological class.

The second type of stem—one that encodes multiple identical states—has the form of the reduplicated root. In the case of /d/-initial roots, the second mora will begin with /t/ (e.g. *dútú* ‘sink (plact)’ from *dù* ‘sink’), and in the case of roots with nasal vowels, the second mora will be oral (e.g. *tátá* ‘fall (plact)’ from *tái* ‘fall’). I call this stem type, along with all other stem types that encode multiple states, ‘pluractional’. In particular, this stem type is the pluractional counterpart to the single-state stem described above; it indicates that the same state is...repeatedly

Because the repetition of identical states necessitates discretization, verb stems of this type typically appear in constructions that express an alternation with another state or activity. One common construction of this type involves the serialization of the pluractional root *sàkà* ‘jump’ and a ‘multiple state’ pluractional stem, yielding the meaning ‘repeatedly jump and X’, where X is a positional verb. Examples of this construction are shown below in (55), where *sísí*, *tùtù* and *détè* are the multiple-identical-state counterparts to the single-state *sì* (‘stick’), *túi* (‘sit atop’), and *dée* (‘hang’), respectively.

- (55) a. *sàkàsísí**kó*
 sàkà *sísí* *-ko*
 jump.PLACT stick.PLACT 3.SG.FEM.PRES.DECL
 ‘It (a cricket) is jumping around’ (E.LTN.SJF.10aug2013)
- b. *sàkàtùtùkò*
 sàkà *tùtù* *-ko*
 jump.PLACT sit.atopPLACT -3.SG.FEM.PRES.DECL
 ‘It (a bird) is jumping around’ (E.LTN.SJF.7aug2013)
- c. *sàkàdétèhì*
 sàkà *détè* *-hì*
 jump.PLACT hang.PLACT 3.SG.PRES.MASC.DECL
 ‘It (a monkey) is jumping around’ (E.LTN.SJF.7aug2013)

The third type of stem, which I call ‘middle’ stems, encodes a change of state undergone by a single event participant who did not instigate this change of state. These stems typically end in /u/. Examples include *kwàkù* ‘cook (intr)’, *kwàrù* ‘melt (intr)’, and *úú* ‘burn’ (intr).

These stems differ from the fourth type of stem, which I call ‘reflexive’ stems because the change of state is both instigated and undergone by the same participant. In general, reflexive stems exhibit a low-toned /a/ following the root, although in several cases these stems end in /me/. Examples of /à/ reflexives include *túa* ‘alight’, *húa* ‘insert oneself’, and *mía* ‘rise’; examples of /me/ reflexives include *tómé* ‘fall through the air’ and *nímè* ‘get on all fours’.

The fifth type of stem—the accusative stem—which encodes an event in which one participant causes another to undergo a change of state, is marked with /o/. The sequence /io/ will become /iyo/; the sequence /uo/ will become /io/. The sixth type of event is the pluractional counterpart to the accusative event. There are multiple changes of state in which

one party, himself unaffected, acts on another. In general this stem is of the form /CVCo/ or /CVCu/, where the second consonant is /y/ or /s/. In addition to accusative stems, there are stems which encode a change of state that was undergone both by the instigator and another participant. These stems end in /a/, and crucially do not exhibit the HL tonal contour of the reflexive stems. Examples include *sáà* ‘take’, *túá* ‘run a canoe aground’, *míá* ‘rise with something; climb carrying something’. The pluractional counterparts to these stems are generally of the shape /CVCe/, where the second consonant is highly variable. These pluractional stems indicate that a change of state was realized many times and undergone by both the instigator and another party (e.g. *hùhè* ‘insert oneself (pluractional)’). The /CVCe/ stem may also be used to indicate accusative pluractionality in cases where there is no separate /CVCo/ form. Table 3.11 below shows the Máìhǎkì event structure paradigm.

GLOSS	SINGLE	-a REFLEX- IVE	MUL- TIPLE	ACCOM- PANI- MENT	ACCOM- PANIMENT (PLACT)	ACCU- SATIVE	MIDDLE	ACCU- SATIVE (PLACT)	-me REFLEX- IVE
eat	<u>ái</u>					<u>áo</u>			
split		bátá			mǎñè	bátó		béyó	
lie in hammock	bée					bèò		bésó	
burst	bée				bése	bèò			
carry on back	bèè					bèò			
rise	bìì				bíyè	bíyó			
put in mouth	bìì				bìyè	bíyò			
cover	chî				chìhè	chío			
come	dái					dáo			
hang	dée		dete			déò		néñá	
pour					dòbè	dóò			
close					dìbè	dífbò			
sink	dùì		dútú			dǔò		dísó	
get liquid		éá			ébé				
dump liquid					hǎñè	hǎñò			
throw				héà		héó			
cross	hèè								hèmè
break	híyí				hìyè	hìyò			
insert	hùì	húá							
prick, inject	húí		húhú	húa	hùhè	hǐò		hísó	
ail	húí		húhú						
sleep	kái					káo			
bite	kùì		kúkú			kíó			
cook						kwàkò	kwàkù		
melt						kwàrò	kwàrù		
shoulder	kwái	kwáá		kwáà	kwákwé	kwáo			
heat	kwéné	kwéná							

GLOSS	SINGLE	-a REFLEX- IVE	MUL- TIPLE	ACCOM- PANI- MENT	ACCOM- PANIMENT (PLACT)	ACCU- SATIVE	MIDDLE	ACCU- SATIVE (PLACT)	-me REFLEX- IVE
go upriver	máí			máà		míò			
climb	míí	míá		míà					
grab		néá			nésé				
stand	níí					níò		nínò	nímè
be lit	nìì					níó			
swallow						níó		nínó	
dump					ñàñè	ñátò			
go	sáí	sáá	sàkà	sáà		sáo			
stick	sìì	sìà	sisi			síò		sísò	
fall	táí		tátá			táo		táñú	tómé
float	táí			táà	tátè				
separate	tíí		títí	tíà	títé				
wake up				títà		títò			
crack	tíyí				tìyè	tìyò			
sit atop	túí	túá	tutu	túà					
burn				úà	úé	íó	úú		
lie	úí			úà	úé				úmè

Table 3.11: The event structure paradigm

3.12 Temporal clause-linking devices

Michael (2011a) identifies two types of temporal clause-linking constructions: ‘sequential’ constructions, which indicate that the events in each clause are non-overlapping, and ‘temporal overlap’ constructions, which indicate that the events in each clause overlap to some degree. Michael further identifies a distinction between ‘same-subject’ and ‘different-subject’ sequential constructions. The discussion of temporal clause linking presented here differs from Michael (2011a) in that Michael proposes a single sequential construction, in which the subordinate verb is marked with *-re* or its ni-verb allomorph *-ni*, while I show that there is an additional set of different subject sequential suffixes (shown in Table 3.15).

	REGULAR	-NI
MASC	-gire	-kire
FEM	-gore	-kore
PL	-hìre	-hìre

Table 3.12: Sequential different subject markers

Below, I will discuss the same subject and different subject constructions in turn.

3.12.1 Same subject constructions

In temporal-overlap same-subject constructions with either regular- or -ni-class verbs, the suffixes *-kì* ‘masculine singular/inanimate’, *-ko* ‘feminine singular’, or *-hì* ‘animate plural’ are suffixed to the subordinate verb. These suffixes are shown below in Table 3.13.

MASC	-kì
FEM	-ko
PL	-hì

Table 3.13: Temporal overlap same subject markers

Example (56) shows the masculine temporal-overlap same subject suffix on the subordinate -ni class and regular class verbs *dáí* ‘come’ and *ábí* ‘bathe’, respectively.

- (56) a. *dáíkì, máká dáíkì ágáhì*
dáí- kì máká dáí -kì ágá -hì
 come -MASC.SS.SIM woods come -MASC.SS.SIM shout -3.SG.MASC.PRES.DECL

‘Coming out of the woods, he shouted’ (ttj 101.1)

‘Viniendo del monte él llamaba’

- b. *ábíkì tìkàhì, “ko, ko, ko”*
ábí -kì tìkà -hì ko ko ko
 bathe -MASC.SS.SIM hit.PLACT -3.SG.MASC.PRES.DECL ONOM ONOM ONOM
 ‘Bathing, he was hitting (the water) making it go, “ko, ko, ko”’ (clp 227.1)
 ‘Bañando estaba golpeando con el sonido “ko, ko, ko”’

- (57) a. *yábèsàbìkò sáíko*
yábé sàbì -ko sáí -ko
 hide.INTR crawl -FEM.SS.SIM go -3.SG.FEM.PRES.DECL

‘She went crawling, hiding’ (muj 32.1)

‘Escondiéndose y gateando se fue’

- b. *ísékò áómákó*
ísé -ko áó -má -ko
 be.stingy -FEM.SS.SIM feed -NEG -3.SG.FEM.PRES.DECL

‘Being stingy with food, she didn’t feed [them]’ (hab 40.1)

‘Mezquinaba comida y no les daba de comer’

- (58) a. *kíùhì sáíyí*

- (61) a. ...násorè éorè héótóòhóbí
 násó -re éó -re héó tóò -hó
 woolly.monkey -NON.SUBJ tie.up -SS.SEQ throw make.fall -PERF
 -bí
 -1.SG.PAST.DECL
 ‘...I tied up the woolly monkey and threw it down’ (130.1)
 ‘...he amarrado el choro y le he botado abajo’

- b. *sáàrè kwàkòmà!*
sáà -re kwàkò -ma!
 take -SS.SEQ cook -IMPER
 ‘Take it and cook it!’ (iy6 437.1)
 ‘¡Llévalo y cocínalo!’
- (62) a. *nánì ákwé!*
nánì ákwé
 come.NI eat.soft.things
 ‘Come and eat!’ (by4 71.1)
- b. *máírùrù sánì nògìyì, máírùrù*
máírùrù sánì nògì -yi máírùrù
 upriver go.NI fish.with.hook -1.PL.PRES.DECL upriver
 ‘We’re going upriver and fishing, upriver’ (mak 116.1)
 ‘Vamos arriba para pescar’

3.12.2 Different subject constructions

Different subject temporal-overlap constructions for both regular and ni-class verbs are formed through the suffixation of *-kire* (masculine singular/inanimate), *-kore* (feminine singular), or *-hire* (plural) to the subordinate (regular or ni-class) stem. These suffixes are shown below in Table 3.14.

MASC	-kire
FEM	-kore
PL	-hire

Table 3.14: Temporal overlap different subject markers

Example (63b) shows the subordinate ni-verb *sì* ‘be stuck’ and the regular-class verbs *táò* ‘make fall’ and *béó* ‘not exist’ marked with the masculine different subject temporal overlap suffix *-kire*. In (63a), the subject of the subordinate verbs is the animate masculine *mái* ‘sun’, while in (63b) it is the inanimate *kúchki* ‘money’.

- (63) a. *káhùrù sìkìrè, mái káhùrù táòkìrè étáhógó*
ká -huru sì -kire mái ká -huru táò
 that -CL:vicinity stick.INTR -MASC.DS.SIM sun that -CL:vicinity make.fall
-kire étá -hó -go
 -MASC.DS.SIM emerge -PERF -3.SG.FEM.PRES.DECL
 ‘She emerged around then, when the sun was there’ (nm3 9.1)

- b. kúchki tèà béókìrè kúchìnà íchíhèàbì
kúchki tèà béó -kire kúchì -na íchí -hea
 money also not.exist -MASC.DS.SIM pig -ANIM.PL sell -PERF.PLACT
-bì
 -1.PL.PAST.DECL
 ‘When there was no money, we sold the pigs’ (rtm 12.1)
 ‘Cuando faltaba la plata, vendimos los chanchos’

Example (64) shows the different subject temporal overlap suffix *-kore* on the regular class verbs *ákwé* ‘eat soft things’ and *gáhè* ‘go downriver’.

- (64) a. dóhì ákwé**kòrè** tèà hásoyí ñámì, ñámì
dóhì ákwé -kore tèà háso -yi ñámì ñámì
 plant.sp eat.soft -FEM.DS.SIM also shoot -1.PL.PRES.DECL night night
 ‘When she (the tapir) is eating *uvo*, we hunt her, in the night’ (bek 39.1)
 ‘Cuando ella está comiendo en uvo, le matamos en la noche’
- b. gáhè**kòrè** ágáhì
gáhè -kore ágá -hì
 go.downriver -FEM.DS.SIM shout -3.SG.MASC.PRES.DECL
 ‘He shouted as she went downriver’ (nm3 12.1)
 ‘Él estaba llamando a ella cuando estaba bajando’

Example (65b) shows the plural temporal overlap marker *-hìre* suffixed to the regular class verbs *kíá* ‘inform’ and *séé* ‘sing’.

- (65) a. kíá**hìrè** yétébí yì
kíá -hìre yété -bí yì
 tell -DS.PL learn -1.SG.PAST.DECL 1.SG.PRON
 ‘They taught and I learned’ (ca3 26.1)
 ‘De lo que han dicho yo he aprendido’
- b. bàì séé**hìrè**, ábísàìhí
bàì séé -hìre ábí -sai -hì
 meat singe -DS.PL bathe -ASS.MOT.AWAY.FROM.SPACT -3.SG.MASC.PAST.DECL

‘When they were singing the meat, [Máínè̀̀̀̀̀] went to bathe’ (iy6 222.1)
 ‘Cuando estaban chamuscando, [Máínè̀̀̀̀̀] se fue a bañar’

The different subject sequential construction is formed by suffixing *-gìre* (masculine singular/inanimate), *-gore* (feminine singular), or *-hìre* (plural animate) to the subordinate

regular verb stem, or *kire*, *-kore*, or *-hire* to an allomorph of the ni-class stem. This allomorph is the same in form as the past-tense *ni*-class stem.

The different subject sequential suffixes are shown in Table 3.15 below. Note that there is syncretism between the simultaneous and sequential different subject ni-class suffixes (although this is disambiguated with stem allomorphy), as well as between the plural simultaneous and sequential different subject suffixes for both regular and ni-class verbs.

	REGULAR	NI-CLASS
MASC	-gire	-kire
FEM	-gore	-kore
PL	-hire	-hire

Table 3.15: Sequential different subject markers

Masculine different subject sequential constructions are shown below in (66). In (66a), the unexpressed agent is a worm—a masculine animate creature. In (66b), the unexpressed agent is a storm—an inanimate noun. Finally, in (66c), we see that the subordinate-clause allomorph of the ni-verb *sái* appears suffixed with *-kire*.

- (66) a. *húníhógìrè bíríúáhógó*
húní -hó -gire bírí úá -hó -go
 die.NI -PERF -DS.SEQ.MASC drag lay -PERF -3.SG.FEM.PAST.DECL
 ‘After he died, she dragged him (from the hole) and lay him (on the ground)’
 (iy6 327.1)
 ‘Cuando él había muerto, ella le jaló (del hueco) y le hizo echar en la tierra’
- b. *táyógìrè dáíyí*
táyó -gire dáí -yi
 pass -DS.SEQ.MASC come -1.SG.PRES.DECL
 ‘When it (the storm) passed, I came’ (hur 26.1)
 ‘Cuando ha pasado bien, he venido’
- c. *nà sààkìrè híkàyì...*
sàà -kire híkà -yi
 go.SUB.NI -DS.MASC.SEQ.NI speak -1.SG.PRES.DECL
 ‘After he left again, I said to him...’ (ovi 223.1) ‘Después de que él se ha ido otra vez, yo le dije...’

Feminine different subject sequential constructions are shown below in (67). Examples (67a) and (67b) show the regular class stems *móní* ‘return’ and *sáníhó*³ ‘leave’ suffixed with

³Note that while *sái* is a ni-class verb, the addition of any Class I or Class III suffix will result in a regular-class stem.

-gore. Example (67c) shows that the ni-class verb *sáí* ‘go’ exhibits stem allomorphy and is suffixed with -kore.

- (67) a. *mónígòrè bíákìgà nánì ùkúhí chíchìrà*
móní -gore bíákì -ga nánì ùkú -hí chíchì
 return -FEM.DS.SEQ father -TOP come.NI drink -3.SG.MASC.PRES.DECL mud
-ra
 -CL:body.of.water
 ‘When she returned, her father came and drank (her masato mixed with) mud’
 (clp 191.1)
 ‘Cuando ella ha vuelto, su papá vino a tomar su masato mezclado con tierra’
- b. *yíò sánìhógòrè nà ágáyí na, “hàkò dòè sákò”*
yíò sánì -hó -gore nà ágá -yí na hàkò
 swidden go.NI -PERF -FEM.DS.SEQ again shout -3.PL.PRES.DECL again mother
dòè sá -ko
 already go.PAST.NI -3.SG.FEM.PAST.DECL.NI
 ‘When she left, they shouted, “Mother has left!”’ (by1 21.1)
 ‘Cuando ella se ha ido, otra vez llamaban, “Mamá se ha ido!”’
- c. *ákì sààkòrè hìkàhì...*
ákì sàà -kore hìkà -hì
 foreigner go.SUB.NI -FEM.DS.SEQ.NI speak -3.SG.MASC.PRES.DECL
 ‘When I went, the *mestizo* (nurse) said...’ (ov1 142.1)
 ‘Cuando yo he ido el enfermero dijo...’

Plural different subject sequential constructions are shown in (68c) below. Again, we see two examples of regular class stems (*áómá* ‘not feed’ and *ágá* ‘shout’) suffixed with -hìre in (68a) and (68b), respectively. Example (68c) shows the stem allomorphy exhibited by the ni-class verb *dáí* ‘come’.

- (68) a. *áómáhìrè góòkò*
áó -má -hìre góò -ko
 feed -NEG -PL.DS be.angry -3.SG.FEM.PRES.DECL
 ‘When they didn’t give her food, she got angry’ (hab 111.1)
 ‘Cuando no le han invitado, ella se ha rabiado’
- b. *ágáhìrè nàò dáíkó*
ágá -hìre nàò dáí -ko
 shout -PL.DS same.FEM come -3.SG.FEM.PRES.DECL
 ‘When they shouted, the same one (sloth) came’ (by1 47.1)
 ‘Cuando ellos llamaron, ella misma ha venido’
- c. *dáàhìrè bíákì hìkàásá -hì, “ásé, míàkògà?”*

(70) a. ài máigiàkìni íunderlineíkì **óí**~~kì~~**rè**, kwáábí
àì *máí* -gìá -kì -ñí úí -kí *óí* -kíre
? people -SEEM.LIKE -CL:masc -ANIM.DIM lie -MASC.SS.SIM cry -MASC.DS.SIM
kwá*á* -bí
cradle -1.SG.PAST.DECL

‘Because he was lying there crying like a person, I (picked him up and) cradled him’ ‘Como él estaba llorando parecido a la gente, yo le (he agarrado y) le he marcado’

- b. ókó ñátágìrè áo óíyí

ókó ñátá -*gìre* áo óí -*yi*
water dawn -DS.MASC.SEQ food want -1.PL.PRES.DECL

‘Because it dawned rainy, we want food’ (ada 15.1)

‘Como ha amanecido con lluvia, queremos comida’

- c. hùìkò sáíyí

hùì -*ko* sáí -*yi*
be.sick -FEM.SS.SIM go -1.SG.PRES.DECL

‘I’m going because I’m sick’ (E.LDM.NMM.9jul2012) ‘Estoy enferma, por eso estoy yendo’

- d. áo kwàkòmárè, dáímágó

áo kwàkò -*má* -*re* dáí -*má* -*go*
food cook -NEG -SS.SEQ come -NEG -3.SG.FEM.PAST.DECL

‘She didn’t come because she didn’t cook’ (E.LDM.NMM.9jul2012)

‘Porque no ha cocinado, no ha venido’

While Michael (2012) argues that the *-gìre/-gore/-hìre* paradigm is used only for reason constructions, the examples in (66), (67), and (68c) above show that the suffixes in this paradigm also have a non-reason temporal clause-linking interpretation.

3.13 Purposive constructions

Purposive constructions are those in which the subordinate verb expresses the intended consequence of the action of the main verb. There are two types of purposive construction in Máìhǎkì: the same subject purposive construction and the different subject purposive construction, which will be discussed in turn below.

3.13.1 Same subject purposive constructions

Same subject purposive constructions, in which the subordinate clause event expresses the speaker’s intended goal or outcome for the main clause event (of which he/she/they are also the agent(s)), are formed in Máìhǎkì via the suffixation of one of the purposive suffixes in Table 3.16 to the subordinate verb.

MASC	-yiki	-chiki
FEM	-yiko	-chiko
PL	-yohi	-yohi

Table 3.16: Same subject purposive suffixes

Example (71) below shows a regular class verb (*kíá* ‘inform’) and a *-ni* class verb (*sáí* ‘go’) suffixed with the masculine same subject purposive suffix.

- (71) a. *kíáyìkì* *dáíhì*
kíá *-yiki* *dáí* *-hì*
inform -MASC.PURP come -3.SG.MASC.PRES.DECL
‘He came to teach’ (ca5 29.1)
‘Uno venía para enseñar’
- b. *ímì* *máká* *sáà* *chìkì* *hàsù* *dèbà* *-hì*
ímì *máká* *sáà* *-chiki* *hàsù* *dèbà* *-hì*
man woods go.SUB.NI -MASC.PURP.NI shotgun arrange -3.SG.MASC.PRES.DECL
‘The man was cleaning his shotgun in order to go to the woods (to hunt)’ (am3 1.1)
‘El hombre estaba quiriendo ir a montear, limpiando su escopeta’

Example (72) shows the regular class verb *báá* ‘have’ and the *-ni* class verb *áí* ‘eat’ marked with the feminine purposive suffix *-yiko* and its *-ni* class allomorph *-chiko*, respectively.

- (72) a. *Tódírè* *bááyìkò* *sáíkò*?
Tódí *-re* *báá* *-yiko* *sáí* *-ko*
proper.name -NON.SUBJ live.with -FEM.PURP go -2.SG.FEM.PRES.INTERR
‘Are you going to live with Tódí? (hmr 65.1)
‘Estás yendo vivir con Tódí?’
- b. *hàsò* *útà* *áo* *àà* *chìkò*
hàsò *útà* *-yi* *áo* *àà* *-chiko*
manioc extract -1.SG.PRES.DECL food eat.SUB.NI -FEM.PURP.NI
‘I am harvesting manioc in order to eat food’ (Michael 2011b:1)

In (73), we see that both the regular class verb *tóyáyètè* ‘study’ and the *-ni* class verb *éé* ‘fish with barbasco’ take the plural purposive suffix *-yohi*, but that the subordinate allomorph of *éé* (which has HL instead of HH tone) is used.

- (73) a. *tóyáyètèyòhì* *dáhi*, *ñihùnà*
tóyá *yete* *-yohi* *dá* *-hĩñî* *-huna*
write learn -PL.PURP come.PAST.NI -3.PL.PAST.DECL.NI children -CL:group

‘The children came to study’ (ca5 31.1)

‘Los niños han venido para estudiar’

- b. yíkí mímì -re **éèyòhì** sáyí

yíkí mímì -re éè -yohì sáyí

1.PL.PRON fish.sp -NON.SUBJ fish.with.barbasco.NI.SUB -PL.PURP go

-yì

-1.PL.PRES.DECL

‘We’re going to fish *paco* with barbasco⁴’ (hab 18.1) ‘Nosotros estamos yendo a barbasquear *paco*’

The same subject purposive suffixes described above likely grammaticalized from the 1st person future suffixes *-yi/-chi* (regular/*-ni* class singular) and *-yo/-cho* (regular/*-ni* class plural) plus the verb *ú* ‘say’ suffixed with a same subject temporal overlap marker (*-kì*, *-ko*, or *-hì*). In fact, many speakers of Máìhìkì use this construction (which translates literally to ‘doing action X, Y says, “I will do Z”’) instead of the purposive suffixes in Table 3.16, as the examples in (74) show. This is a major point of variation among speakers of Máìhìkì and does not seem to correspond to geographical dialects.

- (74) a. kíáyì **íkì** dáhì

kíáyì -yì í -kì dá -hì

invite -1.SG.FUT.DECL say -MASC.SS.SIM come.PAST.NI -1.SG.PAST.DECL.NI

‘I came to invite (you)’ (cho 5.1)

‘He venido par invitarte’

- b. yòòyì **ìkò** sáikó

yòò -yì í -ko sáyí -ko

work -1.SG.FUT.DECL say -FEM.SS.SIM go -3.SG.FEM.PRES.DECL

‘She is going in order to work’ (srf 112.1)

‘Está yendo para trabajar’

- c. yíò **néèyò ìhì** sáyí

yíò néè -yo í -hì sáyí -yì

swidden make 1.PL.FUT.DECL say -PL.SS.SIM go -1.PL.PRES.DECL

‘We’re going to make a chacra’

‘Estamos yendo para hacer la chacra’ (iy6 448.1)

3.13.2 Different subject purposives

Different subject purposives are extremely rare in our corpus. Michael (2011b) shows that these are formed through the suffixation of *-haye* to the subordinate verb, as in (75) below.

⁴ *Jacquinia barbasco*, a plant used to stun fish.

- (75) a. Cristina hàsò kwàkòkò máíhùnà áíhàyè
Cristina hàsò kwàkò -ko máí -huna áí
 proper.name manioc cook -3.SG.FEM.PRES.DECL we.EXCL -CL:group eat
 -haye
 -DS.PURP
 ‘Christina is cooking manioc so that we can eat’
- b. Christina bíónànò dèbàkò yì káíhàyè
Christina bíónànò dèbà -ko yì káí
 proper.name mosquito.net fix -3.SG.MASC.PRES.DECL 1.SG.PRON sleep
 -haye
 -DS.PURP
 ‘Christina is setting up the mosquito net so that I can sleep’

The above examples, however, only show subordinate clauses with 1st person agents. Further elicitation is needed in order to determine whether *-haye* is also used for different subject purposives with other persons.

3.13.3 Negative purposive constructions

Negative purposive constructions are those in which an agent performs the action of the matrix verb so that the action of the subordinate verb will not occur. These constructions are formed via the suffixation of one of the suffixes in Table 3.17 below to the subordinate verb. Regular class and *-ni* class verbs alike may take these suffixes.

MASC	-karakì
FEM	-karako
PL	-karahì

Table 3.17: Negative purposives

An example of each of the negative purposive suffixes is shown below in (76).

- (76) a. māmákì áíkàràkì há sóyì íhì
māmákì áí -karakì há só -yì í
 child.MASC eat -NEG.PURP.MASC shoot -3.SG.FUT.MASC.DECL say
 -hì
 -3.SG.MASC.PRES.DECL
 ‘The son, so that [the jaguar] wouldn’t eat him, wanted to shoot’ (iy1 137.1)
 ‘El hijo, para que no le coma, quería balear’
- b. Cristina áo yábékó ñákóchì ánihèàkàràkò

Cristina *áó* *yábé* *-ko* *ñákóchì* *ánì*
 proper.name food hide.INTR -3.SG.FEM.PRES.DECL rat eat.NI
-hea *-karako*
 -PERF.PLACT -NEG.PURP.FEM

‘Christina is hiding the food so that the rats don’t eat it’ (Michael 2001:2)

c. *hùìkàràhì* *étáhéábí*

hùì *-karahì* *étá* *-hea* *-bí*
 be.sick -NEG.PURP.PL flee -PERF.PLACT -3.PL.PAST.DECL

‘So as not to get sick, they fled’ (thl 11.1)

‘Por miedo de no enfermarse, ellos han alargado allá’

3.14 Relative clauses

In this section, I analyze relativized clauses in Máìhǎkì as nominalizations. These constructions consist of a verb stem plus a relative tense marker and a classifier suffix. They may appear alone as ‘headless’ relative clauses, in which case they may serve as the arguments of verbs, or they may follow and modify other nouns. Below, I will address the form and syntax of relativization as well as the formation of event nominalizations.

3.14.1 The form of the relative clause

The relativized verb consists of a stem, which may include any Class I, III, or IV suffixes, plus a tense marker, plus a classifier. The tense markers, which I will call ‘nominal tense’ markers because of the apparent nominal status of the resultant form, are shown below in Table 3.14.1. Note that there are two ‘types’, which differ based the form of the classifier that follows the tense marker. Type 1 tense markers appear when the classifier is of the fortis class, while Type 2 tense markers surface with all other classifiers.

	PAST	PRES	FUT
TYPE 1	-chi	Ø	-ha
TYPE 2	-se	Ø	-hai

Examples of the past and future Type 1 and Type 2 nominal tense markers are shown below in (77) and (78), respectively.

(77) a. *kiùrì tíáchìtì*

kiù *-rì* *tíá* *-chi* *-tì*
 metal -CL:manufactured sharpen -PAST.REL -CL:manufactured

‘the machete that was sharpened’ (E.AMM.SJF.30jul2014)

b. *ábíhàyà*

ábí -ha -ya
 bathe -REL.FUT -CL:river
 ‘the river that will be bathed in’ (E.LTN.SJF.15aug2014)

- (78) a. *balde bátásèbì*
balde bátá -se -bì
 bucket split.INTR -PAST.REL -CL:vessel
 ‘the bucket that broke’ (E.AMM.LDM.16jun2012)
- b. *balde bátáhàibì*
balde bátá -hai -bì
 bucket split.INTR -REL.FUT -CL:vessel
 ‘the bucket that’s going to break’ (E.AMM.LDM.16jun2012)

When no classifier is available (e.g., if the relativized noun is mass, abstract, or a loan word), the nominal past tense marker *-se* may appear without a classifier, as in (79a), or the nominal future tense marker *-hayè* may be used, as in (79b).

- (79) a. *mámákì néàrè tóà íòsè hìsòhéàkò*
mámákì néá -re tóà íò -se hìsò -heà
 child.MASC grab -SS.SEQ cooking.fire burn -PAST.REL scratch -PERF.PLACT
-ko
 -3.SG.FEM.PRES.DECL
 ‘She grabbed her child and scratched at what the cooking fire had burned’ (mbd 387.1)
 ‘Agarrando su hijo, raspaba lo que la candela había quemado’
- b. *yéké, ñámì óàhàyè, pílahà*
yéké ñámì óà -hayè píla -ha
 other.PRON night illuminate -REL.FUT battery -INAN.COP
 ‘Another thing, what will illuminate the night, batteries’ (con 175.1)
 ‘Otra cosa, pilas, para alumbrar en la noche’

Future tense relative clauses differ from past and present tense relative clauses in that there are separate forms for relativized animate nouns. These forms are listed below in Table 3.14.1.

MASC	FEM	PL
-hagì	-hago	-hayè

Examples of the future tense relative clause suffixes are shown below in (80).

- (80) a. *mì mámákìrè yíyèbásóhàgì*

mì *mámákì* *-re* *yíyè* *básó* *-hagì*
 2.SG.PRON child.MASC -NON.SUBJ operate make.feel.better -REL.FUT.MASC

‘(one) who will make operate on your son and make him better’ (lim 16.1)
 ‘Operando en su hijo le va a hacer sanar’

b. *yìgà bírí bàìhàgòàò*

yì *-ga* *bírí* *bàì -hago* *-ao*
 1.SG.PRON -TOP white.lipped.peccary be -REL.FUT.FEM -ANIM.FEM.COP

‘I’m the one who will be a white-lipped peccary’ (cf2 68.1)
 ‘Yo soy ella que va a ser la huangana’

c. *ñìhùna áìhàyèhà*

ñì *-huna* *áì* *-haye* *-ha*
 children -CL:group eat -REL.FUT -PL.COP

‘The children are the ones who will eat’ (E.LTN.SJF.15aug2014)
 ‘Ellos son los que van a comer’

I listed the ‘present’ nominal tense marker as null in Table 3.14.1 above. Another way of saying this is that classifiers may be suffixed directly to verb stems in order to create present tense relative clauses. Constructions of this type may also be interpreted as agent, patient, or instrument nominalizations, as is shown below in example (81). See §5.3.4 for further discussion of the nominalizing function of classifiers.

(81) a. *Leoga Máìhìkì yétéyìkì óìkìàgì*

Leo *-ga* *Máìhìkì yété* *-yiki* *óì* *-ki* *-agi*
 proper.name -TOP Máìhìkì learn -MASC.PURP want -CL:masc -ANIM.MASC.COP

‘Lev is someone who wants to learn Máìhìkì’

b. *tóyáhàò*

tóyá *-hao*
 write -CL:leaf

‘writing leaf’

c. *tóyátìkà*

tóyá *-tika*
 write -CL:stick

‘pencil’ (lit: ‘stick for writing’)

3.15 Conditional and counterfactual constructions

Conditional constructions, which express a situation in which some state of affairs is contingent on another, are expressed in Máìhìkì in two ways:

1. *-tu* may be suffixed to the verb root of the *protasis* (the clause that expresses the state of affairs upon which some event, expressed in the *apodosis*, is contingent); or
2. the *-ni* form of the verb *bàì* ‘be’ (*mání* or *ání*) may follow the verb of the protasis, which is suffixed with a same subject temporal overlap marker.

The first of these strategies is used when the subjects of the protasis and the apodosis are not coreferential; the second is used when they are.

Counterfactual constructions, which are a subset of conditional constructions that express that some state of affairs (the apodosis) is contingent on the non-realization of the state of affairs expressed in the protasis. These constructions are identical to other conditional constructions except that the verb of the apodosis bears the ‘frustrative’ suffix *-ra*.

3.15.1 Same subject conditional constructions

As mentioned above, same subject conditional constructions are formed when the the *-ni* allomorph of the verb *bàì* ‘be’ (*mání* or *ání*) follow the protasis verb, which itself is marked with a same subject temporal overlap suffix. This construction is shown in (82b) below.

- (82) a. *ñámékì mání héómà*
ñámé -kì mání héó -ma
 not.like -MASC.SS.SIM COND leave.behind -IMPER
 ‘If you don’t like me, leave me’ (lim 207.1)
 ‘Si no me quiere, déjame’
- b. *yì húníhókì mání nà óímàyì*
yì húníhó -kì mání nà óí -ma -yì
 1.SG.PRON die -MASC.SS.SIM be.NI again cry -NEG -1.SG.FUT.DECL
 ‘When I die, I won’t cry’ (bag 583.1)
 ‘Cuando yo estoy muriendo, no voy a llorar’

3.15.2 Different subject conditional constructions

Different subject conditional constructions are formed via the suffixation of *-tu* to the verb of the protasis. Constructions of this type are shown below in (83).

- (83) a. *ñátà kwàkòyò ñìò yì nògìtù*
ñátà kwàkò -yò ñìò yì
 tomorrow cook -3.SG.FEM.FUT.DECL 3.SG.FEM.PRON 1.SG.PRON
nògì -tu
 fish.with.hook -COND
 ‘If I go fishing, she’ll cook tomorrow’ (srf 33.1)
 ‘Si yo anzuelo, ella va a cocinar mañana’

- b. *yì húníhòtù, ídàrì bàibài*
yì húníhò -tu, í -rari bàì -bai
 1.SG.PRON die -COND PROX.DEM -CL:location live -PROHIB
 ‘When I die, don’t live here’ (bag 848.1)
 ‘Cuando yo muero, no vivan aquí’
- c. *kúchkì bàitù, chíáyí*
kúchkì bàì -tu, chíá -yi
 money be -COND buy -1.PL.PRES.DECL
 ‘When there’s money, we buy (*farina*)’ (con 190.1)
 ‘Cuando hay plata, compramos’

In addition to the different subject construction exemplified above, Michael (2012) describes second different subject construction that differs in the degree of certainty of the speaker as to whether the events of the protasis will come to pass. In this construction, *bètù* appears after the verb of the protasis, which has been suffixed with a same subject temporal overlap marker, as below.

- (84) *ñìò ñámékò bètù, bíákò góòkò*
ñìò ñámé -ko bè -tu bíákò góò
 3.SG.FEM.PRON not.want -FEM.SS.SIM be.non.visible -COND mother be.angry
-ko
 -3.SG.FEM.PRES.DECL
 ‘If she doesn’t want to (sweep the house), the mother scolds her’ (nin 11.1)
 ‘Si ella no quiere, la madre le riñe’

Skilton (p.c.) reports that this construction is unattested outside of the Yanayacu River basin.

3.15.3 Counterfactual constructions

Like other conditional constructions, counterfactual constructions may be divided on the basis of whether the agents of the protasis and apodosis clauses are coreferential. Same subject counterfactual constructions are identical to the same subject conditional constructions described above, except that the frustrative suffix *-ra* is suffixed to the verb of the apodosis, as shown in (86a).

- (85) *yì áchiràkà úkúkì mání, ótédàbì*
yì áchiràkà úkú -kì mání óté -ra -bì
 1.SG.PRON liquor drink -MASC.SS.SIM be.NI dance -FRUST -1.SG.PAST.DECL

‘If I had drunk liquor, I would have danced’ (E.LTN.LDM.02jul2012)

Different subject counterfactual constructions are also identical to other different subject conditionals except for the suffixation of *-ra* to the verb of the apodosis. Two examples of this construction are shown below in (86).

- (86) a. *yì káhùnà kíámàtù yétémádàbì yì*
yì ká -huna kíá -ma -tu yété -ma
 1.SG.PRON DIST.ANAPH.DEM -CL:group tell.story -NEG -COND learn -NEG
-ra -bì yì
 -FRUST -1.SG.PAST.DECL 1.SG.PRON
 ‘If they hadn’t taught me, I wouldn’t have learned’ (ilv 60.1)
 ‘Si ellos no me hubieran enseñado, yo no hubiera aprendido’
- b. *ñiàkì húnìhòtù, táàrabìtà, ñ òòhì*
ñià -kì húnìhò -tu, táà -ra -bì -ta,
 ASP -MASC.SS.SIM die -COND bury -FRUST -2.SG.PAST.DECL -INFO
ñ òò -hì
 3.SG.MASC.PRON be.angry -3.SG.MASC.PRES.DECL
 “‘If you had died, I would’ve buried you,’ he said angrily” (aho 142.1)
 “‘Si hubieras muerto, yo te hubiera enterrado,” él me dijo rabiando’

Michael (2012) also reports that the ‘less certain’ different subject conditional construction may be used in counterfactual contexts. It appears that in the examples below, *bètù* follows an event nominalization of the protasis verb.

- (87) *Ivan báhùnà áchiràkà dáàsè bètù, ótéràbì*
Ivan báá -huna áchiràkà dáà -se bètù óté -ra
 proper.name have -CL:group liquor bring.NI.SUB -PAST.REL COND dance -FRUST
-bì
 -1.PL.PAST.DECL

‘If Ivan’s people had brought liquor, we would have danced’ (Michael 2012:5)

A translation that is perhaps truer to the fact that *dáàsè* is an event nominalization would be ‘If it were that Ivan’s people brought liquor, we would have danced’.

3.16 Comparatives and similatives

Comparative constructions were first explored in Farmer (2010). They are formed with the adverb *mànù* ‘more’, which indicates that some property holds to a greater extent than in

another time or place. The time or place to which the speaker is drawing a comparison need not be mentioned explicitly, as is shown below in (88) and (89). In (88) it is implied that the children will be hungrier *than now*, and in (89), it is implied that there are more biting flies elsewhere *than here*.

- (88) **mànù** áógiàhì mànù áó -già -hì
 more food -FEEL -3.SG.MASC.PRES.DECL

‘They (the children) will be hungrier’ (jv3 105.1)
 ‘Más (los niños) van a tener hambre’

- (89) yékénòà **mànù** núí bàìhì
 yéké -noa mànù núí bàì -hì
 other.DEM -CL.PL:places more a.lot exist -3.SG.MASC.PRES.DECL

‘In other places there are more (biting flies)’ (m+t 90.1)
 ‘En otra parte hay más (tábanos)’

In our corpus, *mànù* never surfaces with two overt arguments. The elicited examples below show that it is possible to directly compare the extent to which two entities exhibit some property. This is done by juxtaposing two clauses with opposing properties. Neither, either, or both of these clauses may contain *mànù*.

- (90) Mákòbè mànù ímì níkákiàgì; Mámàsò mànù ùìbì níkákó
 Mákòbè mànù ímì níká -kì -agì Mámàsò mànù ùìbì
 proper.name more stand high -CL:masc -3.MASC.COP proper.name more low
 níká -ko
 stand -3.SG.FEM.PRES.DECL

‘Mákòbè is taller than Mámàsò’ (lit: ‘Mákòbè stands higher; Mámàsò stands lower’)
 (Farmer (2010:1) (2010))

- (91) ìkì yáíhòyì mànù háíkìàgì; yékì chlà íáhèiàgì
 ìkì yáíhòyì mànù háí -kì -agì yékì
 PROX.PRON.MASC dog more big -CL:masc -3.MASC.COP other.PRON.MASC
 chlà íá -he -i -agì
 already small -CL:physical.aspect -CL:masc -3.MASC.COP

‘This is dog is smaller than the other one’ (lit: ‘This dog is bigger; the other one is still small’)(Farmer (2010:1))

Part II

Nominal reference

Chapter 4

The Structure of the Máíhĩkì nominal lexicon

The theoretical part of this dissertation, contained in chapters 4 through 6 below, deals with the semantics and morphosyntax of creating referential noun phrases. This chapter takes the nominal lexicon as a starting point for this investigation before we move into the details of noun classification and plurality in Chapters 5 and 6, respectively.

4.1 Introduction

The premise of this chapter is that the morphosyntactic behavior of nouns¹

is sensitive to the nuances of their lexical semantics. Such a premise is not novel and has long been discussed in terms of some sort of hierarchy—one that is sensitive to gradations in animacy or familiarity or empathy or uniqueness or a combination of these and other notions like them—a hierarchy which may have ramifications for the behavior of nouns with respect to determiners, case marking, possession, plurality, and many other corners of a language’s morphosyntax.

In particular, I will address the notion that different nouns have different ‘starting points’ when it comes to establishing reference—a notion that Chierchia (1998b) explored when he posited the existence of $[+arg, -pred]$ languages whose mass nouns are *already* referential but whose count nouns must either be pluralized or take determiners in order to serve as arguments. The position that will be taken here is that these starting points are more nuanced than the binary ‘argumental vs. predicative’ or ‘mass vs. count’.

Example (92) below shows one kind of morphosyntactic ‘irregularity’ exhibited by Máíhĩkì nouns that could conceivably be explained in terms of a hierarchy. The noun *bíákì* ‘father’ patterns differently with respect to non-subject marking with *-re* than *níhò* ‘wife’ and *hĩtĩ* ‘hand’ before the negated verb *báámá* ‘not have’.

¹Throughout this dissertation, I will use the term ‘noun’ to mean ‘nominal root’ or ‘nominal root + classifier’

- (92) a. *ái béèkì dèòrè bíákìrè báámáǵí*
ái béè -kì dèò -re bíákì -re báá -má
 old ASP -CL:masc grow.up -SS.SEQ father -NON.SUBJ have -NEG
-ǵí
 -3.SG.MASC.PAST.DECL
 ‘Having grown up, he didn’t have a father’ (iy1 18.1)
 ‘Ya grande, no tenía padre’
- b. *nǐhò báámáyí*
nǐhò báá -má -yi
 wife have -NEG -1.SG.PRES.DECL
 ‘I don’t have a wife’ (dos 52.1)
 ‘No tengo mujer’
- c. *hǐtǐ báámákó ñìò tèà*
hǐtǐ báá -má -ko ñìò tèà
 hand have -NEG -3.SG.FEM.PRES.DECL 3.SG.FEM.PRON also
 ‘It (the water-cat) doesn’t even have hands’ (hb2 4.1)
 ‘Ella (el gato del agua) no tiene ni manos’

A principled analysis of non-subject marking should account for why *bíákì* takes *-re* as the non-subject argument of *báámá* while *nǐhò* and *hǐtǐ* do not. Such an analysis cannot rely on the mass/count distinction, as all three nouns are count. It cannot rely on an animacy distinction, as both the inanimate *hǐtǐ* and the animate *nǐhò* do not take non-subject marking. It also cannot rely on a kin vs. non-kin distinction, as both *bíákì* ‘father’ and *nǐhò* ‘wife’ might be considered kin.

Likewise, a principled analysis of nominal plurality should account for the variety of plural forms shown in (93) below and discussed in §3.5 above. While the differences in the form of the plural marker seems to be related to animacy, this is clearly not the whole story, as the animate nouns *ákì* ‘foreigner’ and *nómí* ‘women’ behave differently.

- (93) a. *nómí tèà ñáméyí*
nómí tèà ñámé -yi
 women also not.want -3.PL.PRES.DECL
 ‘Women don’t even want to (work)’ (jv1 8.1)
 ‘Las mujeres no quieren (trabajar)’
- b. *ákìnà yékérè hǐkàyi*
ákì -na yéké -re hǐkà -yi
 foreigner.MASC -ANIM.PL other.PRON -NON.SUBJ speak -3.PL.PRES.DECL
 ‘The *mestizos* call it something else’ (cf1 191.1)
 ‘Los mestizos dicen otra cosa’

c. násótìò**mà** ñùìkò súékó

násó tìò -ma ñùì -ko súé
 woolly.monkey intestines -INAN.PL sit -CL:fem composer
 -ko
 -3.SG.FEM.PRES.DECL

‘She was sitting *componiendo* the intestines of the woolly monkey’ (soc 89.1)
 ‘Estaba sentada componiendo la tripa de choro’

The goal of this chapter, ultimately, is to develop a semantic analysis of irregularities in the morphosyntactic behavior of nouns in Máíhǎkì, including the ones shown above, as a starting point for the analyses of noun classification and nominal plurality put forth later in Chapters 5 and 6. In §4.2, I will first provide some history on the notion of a ‘hierarchical’ nominal lexicon, surveying the languages for which it has been proposed and the phenomena it has been invoked to explain. Next, in §4.3, I will motivate eight classes of Máíhǎkì nouns which pattern uniquely with respect to seven morphosyntactic behaviors: 1) the form of the copular suffix; 2) the obligatoriness of non-subject marking; 3) behavior in possessive constructions; 4) the form of plural marking; 5) the presence of singulative marking; 6) the form of diminutive marking; and 7) and the ability to take or serve as a classifier suffix.

Finally, in §4.4, I will propose a formal semantic analysis to account for this diversity of morphosyntactic behaviors. In general terms, this analysis will hold that nouns vary in the *uniformity* of the elements to which they may refer, or, in other words, in the extent to which any member of the set denoted by a noun differs from the *prototype* of that noun. I will propose that this ‘uniformity’ can be calculated by taking the ratio of the number of properties in the **intersection** of the sets to which entities denoted by the noun belong to the number of properties in the **union** of the sets to which entities denoted by the noun belong. This ratio, which I call the reference ratio, will determine the ability of a bare noun in Máíhǎkì to refer to a kind-like individual or an object-like individual, and will, in turn, influence the noun’s morphosyntactic behavior. This analysis will ultimately support others’ intuitions that hierarchies of the sort discussed herein actually consist of two interacting parameters: one related to uniqueness or definiteness and another related to animacy or familiarity. Nouns may vary in the *degree of overlap* between the properties attributable to the entities that they denote—in other words, the degree to which the entities in the set denoted by the noun are unique. Nouns may also vary in the *total* number of properties attributable to the entities that they denote, which will increase as the differences between those entities become more identifiable or familiar.

4.2 Background: nominal hierarchies

Smith-Stark (1974) may have been the first to explicitly invoke the notion of a hierarchy in discussing a morphosyntactic ‘split’—in his case, this split was the marking of nominal plurality. Smith-Stark noted that the ‘organizing principle’ behind the hierarchy seemed

related to animacy, but he instead settled tentatively on the “likelihood of participation in the speech event” (664). Michael Silverstein followed with his influential paper “Hierarchy of Features and Ergativity” (1976), which discusses hierarchies as governing case assignment in split-ergative systems. Since then, scholars have discussed various languages’ lexicons as organized with sensitivity to a ‘hierarchy of reference’ (Zwicky 1977), an ‘agency hierarchy’ (Dixon 1979), an ‘animacy hierarchy’ (Comrie 1981), an ‘empathy hierarchy’ (DeLancey 1981), a ‘precedence rule’ (Frantz 1991), or a ‘prominence hierarchy’ (Aissen 1999), among others. The following is a survey of proposed hierarchies, the languages they appear in, and the morphosyntactic behaviors they are said to govern.

4.2.1 Morphosyntactic alignment: split ergative, inverse, and obviative systems

Hierarchies were invoked early on to address the ‘split’ in so-called split-ergative systems of morphosyntactic alignment. Silverstein (1976) proposes a “hierarchy of what might be called ‘inherent lexical content of noun phrases’,” which “expresses the semantic naturalness for a lexically-specified noun phrase to function as agent of a true transitive verb, and inversely the naturalness of functioning as a patient of such” (164). He argues that nouns at the top of this hierarchy will, in languages with the relevant distinction, exhibit nominative-accusative case marking while nouns at the bottom will exhibit ergative-absolutive case marking. Near the top of Silverstein’s hierarchy are speech-act participant pronouns, followed by non-speech-act participant pronouns and demonstratives, human nouns, other animate nouns, and inanimate nouns. Dixon (1979) proposes a nearly identical ‘potentiality of agency’ scale, reproduced in Figure 4.1 below. From language to language, the “cut-off” for ergative-absolutive case marking will vary, but the hierarchy will always be upheld. That is, in any language, nouns and pronouns with one type of case marking will always be adjacent on the hierarchy presented below in Figure 4.1.

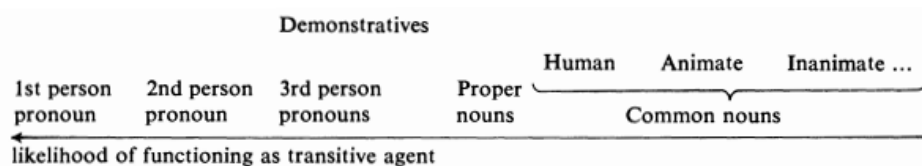


Figure 4.1: Potentiality of Agency, Dixon (1979:85)

Dixon’s proposal is that splits in nominal case marking have their origins in semantics: NPs that refer to likely agents are more often unmarked as transitive subjects and marked as transitive objects. DeLancey (1981:645) notes that this ‘Natural Agentivity Hypothesis’ supported by Silverstein and Dixon fails to explain why the ‘cut-off’ for languages with

split-ergative systems (i.e., the point below which agents must take ergative case marking) is very often between speech-act participants and non-speech-act participants, rather than between animate and inanimate or human and non-human nouns. DeLancey suggests an explanation that is rooted in a comparison between motion events and transitive events, both of which he describes as sensitive to the notions of ‘attention flow’ and ‘viewpoint’.² Attention flow, according to DeLancey, is the order in which the hearer attends to arguments, and can be manipulated by the speaker. This order, in the description of a typical motion or transitive event, is iconic: if a motion event begins at one point in space and ends at another, the most ‘natural’ order of arguments will reflect this transition. Likewise, if a transitive event is conceived of as beginning with the agent and ending with the patient, the ‘natural’ encoding of this event is with the arguments in this order. Viewpoint is the perspective from which the speaker describes the event. DeLancey’s idea is that ergative marking arises when there is a mismatch between attention flow and viewpoint. If the A argument is a speech act participant, then the viewpoint (‘here, where we are’) aligns with the starting point of the transitive event, and no marker of ergativity is needed. If, on the other hand, the A argument is a non-SAP, there is a mismatch between the origin of the event and the speaker’s viewpoint, and ergative marking is needed. The interactions of attention flow and viewpoint as described by DeLancey account neatly for why the ergativity cut-off falls between SAPs and non-SAPs in so many languages. To account for attention flow in events that involve no SAPs, DeLancey borrows the notion of ‘empathy’ from Kuno & Kaburaki (1977), and suggests that humans, being egocentric, are likelier to empathize (i.e., place viewpoint) with entities that are more like them. This, he argues, is why ‘A woman was struck by lightning’ sounds more natural than ‘Lightning struck a woman’ (644). The hierarchy proposed by DeLancey is as follows:

SAPs > 3rd PRONOUNS > HUMAN > ANIMATE > NATURAL FORCES > INANIMATE

Figure 4.2: DeLancey’s Empathy Hierarchy (1981:644)

DeLancey notes that his account is also fitting for languages that exhibit so-called inverse alignment, like most Algonquian languages. These languages distinguish between ‘direct’ constructions, in which A outranks P on some hierarchy, and ‘inverse’ constructions, in which P outranks A on the same hierarchy. Inverse-direct systems are often closely associated with proximate-obviative systems, in which non-SAP arguments are ranked relative to one another at the level of discourse on a hierarchy of animacy, familiarity, or salience. The notion of obviation is addressed by Aissen (1999) in her work on Tzotzil ‘agent focus’. According to Aissen, special verbs used in Tzotzil agent focus constructions are inverse, and are distributed with sensitivity to the relative obviation statuses of the subject and object. Inverse verbs appear only when both arguments in a transitive event refer to non-SAPs, and when the object outranks the subject in obviation status. Aissen proposes that three factors play a

²See Garrett (1990) for an alternate account of split ergative systems.

role in determining obviation status in Tzotzil: humanness, definiteness, and individuation, where she uses “INDIVIDUATION to pick out singular, concrete, and specific as opposed to plural, mass, abstract, and nonspecific” (463). Aissen proposes a ranking for these three factors, shown below in (4.3).

DEFINITE HUMAN > INDIVIDUATED (INDEFINITE) HUMAN > DEFINITE NONHUMAN >
INDIVIDUATED (INDEFINITE) NONHUMAN > NONINDIVIDUATED HUMAN OR NONHUMAN

Figure 4.3: Aissen’s hierarchy of humanness, definiteness, and individuation (1999:463)

When two nouns are adjacent on this scale, their relative obviation status is unclear and the verb may be either direct or inverse. When two nouns are farther apart on the scale, the inverse form of the verb is used when the lower ranked one is the subject. Aissen provides the following explanation for the structure of her scale:

In general, humans are attracted to relations (or positions) of structural prominence over nonhumans, and definites over indefinites. In most languages subject is structurally more prominent than nonsubject, hence the crosslinguistic tendency, realized in various ways, for definite, human nominals to be chosen as subjects over indefinite, nonhuman ones.” (462)

In summary, there is some consensus that systems of morphosyntactic alignment are sensitive to the prototypical grammatical roles of NP arguments, and that these prototypical roles are governed by a hierarchy. There is disagreement as to the precise nature of this hierarchy: what is the organizing principle and how do we label the rungs of the ladder?

4.2.2 Differential object marking

Differential object marking, identified as such by Bossong (1983-1984) but discussed conceptually earlier by Payne (1980), is a crosslinguistically widespread phenomenon in which objects within a given language receive different marking based on some parameter akin to animacy or specificity. For instance, Payne notes that the Rošsani (Indo-Iranian) preposition *az* ‘from’ marks all direct objects, but that “the tendency is particularly strong with personal pronouns and demonstratives” (163).

Bossong’s work differentiates between two kinds of semantic properties that appear to promote object differentiation crosslinguistically: *inherent* features and *referential* features. Inherent features “correspond roughly to what is called animacy,” while referential features “vary as a function of the syntagmatic and pragmatic environment” (8). According to Bossong’s survey, DOM is governed in most languages by the referential features of a noun phrase rather than its inherent semantics. Spanish provides an often-cited example of a DOM system that is sensitive to both: the preposition *a* is required before direct objects that are

both human (or highly animate and familiar) and specific. This results in the contrast in (94):

- (94) a. Estoy buscando un hombre.
 ‘I am looking for a man (and I don’t have a particular man in mind)’
 b. Estoy buscando a un hombre.
 ‘I am looking for a (particular) man’

Bossong proposes an implicational chain of differential object marking, reproduced below in (4.4).

$$\text{CONCR} \supset \text{DISCR} \supset \text{ANIM} \supset \text{HUM} \supset \text{PROPR} \supset \text{DEIX}^3$$

Figure 4.4: Bossong’s implicational chain (1983-1984:9)

Bossong calls this the “dimension of inherence,” noting that it is based on Silverstein’s animacy hierarchy. His idea is that if object marking is obligatory for one category, it will be obligatory on all categories to its right.

Aissen (2003) attempts to reconcile the “fuzziness” of DOM patterns with the strict categoriality required of a formal linguistic analysis by implementing an Optimality Theoretic account. Like Bossong, Aissen sees the relevance of two parameters: one related to animacy (Bossong’s ‘inherent’ features) and another to definiteness (Bossong’s ‘referential’ features). The two scales are reproduced below in 4.5.

$$\begin{array}{l} \textbf{Animacy scale:} \text{ HUMAN} > \text{ANIMATE} > \text{INANIMATE} \\ \textbf{Definiteness scale:} \text{ PERSONAL PRONOUN} > \text{PROPER NAME} > \text{DEFINITE NP} > \\ \text{INDEFINITE SPECIFIC NP} > \text{NON-SPECIFIC NP} \end{array}$$

Figure 4.5: Aissen’s animacy and definiteness scales (2003:3)

According to Aissen, languages may vary in three ways with respect to DOM: 1) they may vary with respect to whether they have DOM at all; 2) they may vary with respect to which dimensions (animacy, definiteness, or both) are important; and 3) they may vary with respect to where the ‘cut-off’ falls along one or both of the scales shown above. Ultimately, in languages with DOM, “the higher in prominence a direct object, the more likely it is to be overtly case marked” (1).

4.2.3 Split possession

Morphosyntactic splits in the encoding of possession are crosslinguistically common. A tendency in European languages, according to Stolz et al. (2008), is for this split to be

manifest in possessor marking, and to be governed by the animacy status of the possessor. For instance, the so-called Saxon genitive in English is preferable to the “of” genitive when the possessor ranks high in animacy, as is shown in (95).

- (95) a. John’s sister
 b. John’s car
 c. ?The sister of John
 d. ?The car of John

Paul Deane was perhaps the first to relate English data like the above to Silverstein’s hierarchy. His 1987 paper argued that “[t]he higher the possessor NP is on the Silverstein hierarchy, the more acceptable it will be in the prenominal possessive, and the less acceptable in the postnominal possessive [and vice versa]” Deane (1987:67-68).

English NPs ranked high on the animacy hierarchy are more likely to appear in genitive constructions where less animate nouns might form noun-noun compounds. Some examples of this phenomenon are shown below in (96), where “dog” and inanimate “pencil,” ranking lower on a typical animacy hierarchy, more naturally form noun-noun compounds, and ‘highly’ animate “woman” is preferable as a possessor. This type of division between possession and compounding (or classification) is discussed with regard to the Máíhǎkì facts in Chapter 5.

- (96) a. pencil lead
 b. ?pencils’ lead
 c. dog clothing
 d. dogs’ clothing
 e. ?woman clothing
 f. women’s clothing

While Stolz et al.’s work is a survey of European languages, split possession phenomena have been described in numerous non-European language families. In Imbabura Quechua (Quechuan), the possessive suffix *-paj* is possible but dispreferred when describing a part-whole relationship between two inanimates. This is shown below in (97).

- (97) a. *alkupaj uma*
 alku -paj uma
 dog -POSS head
 ‘the head of the dog’
 b. ?*yurapaj uma*
 yura -paj uma
 tree -POSS head
 ‘the top of the tree’ (Cole 1985:17)

Lehmann (2002) takes the position that possession is an inherently asymmetric relationship between possessor and possessum, and that the “most relevant parameter governing the morphosyntax of possession is the empathy hierarchy” (5). The empathy hierarchy proposed by Lehmann for Yucatec Maya is shown below in (4.6).

SAP vs. non-SAP > human vs. non-human > animate vs. inanimate > individual object
vs. substance > object vs. location > entity vs. proposition

Figure 4.6: Lehmann’s Empathy Hierarchy (2002:4)

Lehmann describes a relational suffix in Yucatec Maya, *-il*, which marks possessa whose possessors have “insufficient empathy” (43). Example (98) below shows two possessive constructions: one in which the possessor (‘that child’) is high on the empathy hierarchy, and another in which the possessor (‘that child’s head’) is lower on the empathy hierarchy. In the case where there is an “anempathetic” possessor, the relational *-il* is suffixed to the possessum.

- (98) a. *u yuùk’ le pàalo’*
 u y -uùk’ le pàal -o’
 POSS.3 0 -louse DEF child -D2
 ‘that child’s lice’
 b. *u yuùk’ìl u ho’l le pàalo’*
 u y -uùk’ -il u ho’l le pàal -o’
 POSS.3 0 -lice f POSS.3 head DEF child -D2
 ‘the lice of that child’s head’

Nichols (1988) highlights a second type of morphosyntactic split in the marking of possession: the alienability distinction, in which nouns appear to be categorized according to whether they are “inborn, inherent, not conferred by purchase” (568). In Eastern Pomo, for instance, certain kin terms appear in head-marked possessive constructions, while most other nouns are dependent-marked, as in (99) :

- (99) a. *wíbayle*
 wí- bayle
 1sg husband
 ‘my husband’
 b. *wáx šá·ri*
 wáx šá·ri
 my.GEN basket
 ‘my basket’ (McLendon 1975:92, 108)

Nichols notes that in languages where possession is regularly head-marked, there is an “almost inevitable” distinction between alienable and inalienable possession (576). The dimension of variation in this type of split cannot be animacy (typically, both kin terms (animate-animate) and part-whole relationships (inanimate-animate or inanimate-inanimate) fall under the umbrella of ‘inalienable’ possession), but the degree to which the possessee may be seen as having reference outside of its relationship to the possessor.

Deane (1987) wonders why the Silverstein hierarchy should be so applicable to the apparent split in English possessive strategies, since it was originally devised to account for systems of split ergativity. There is an inherent asymmetry in the relationship between possessor and possessum, just as there is between agent and patient: one argument, in Lehmann’s terms, exhibits *control* over another. The prototypical possessor is highly animate, just as the prototypical agent is, and so we might expect to see languages that mark conspicuous divergences from the prototypical relationship.

4.2.4 Plural splits

Another domain in which nouns appear sensitive to some sort of hierarchy is in the distribution of nominal plural markers. Smith-Stark (1974) notes that “the feature of plurality will be shown to divide the class of nouns in a language into two types, one for which the opposition of plurality is significant, the other for which it is somehow neutralized” (657). He presents data showing a plural split in verbal agreement from Georgian (Kartvelian), Turkish (Altaic), Sonsorol (Malayo-Polynesian), and Classical Greek (Indo-European); for a plural split in noun-modifier agreement from Ponca (Siouan); and for a plural split in nominal marking from Orokaiva (Binandere), Kpelle (Niger-Congo), Logbara (Central Sudanic), Kwakiutl (Mosan), Tongan (Malayo-Polynesian), Bini (Niger-Congo), Tlingit (Na-Dene), Hupa (Na-Dene), Coos (Penutian), and Tamil (Dravidian). Smith-Stark notes that in these languages, +/–animate, +/–kin, and +/–human are the features that most frequently divide the lexicon with respect to plurality. Motivated by a large degree of similarity across diverse language families, he proposes the hierarchy below in (4.7).

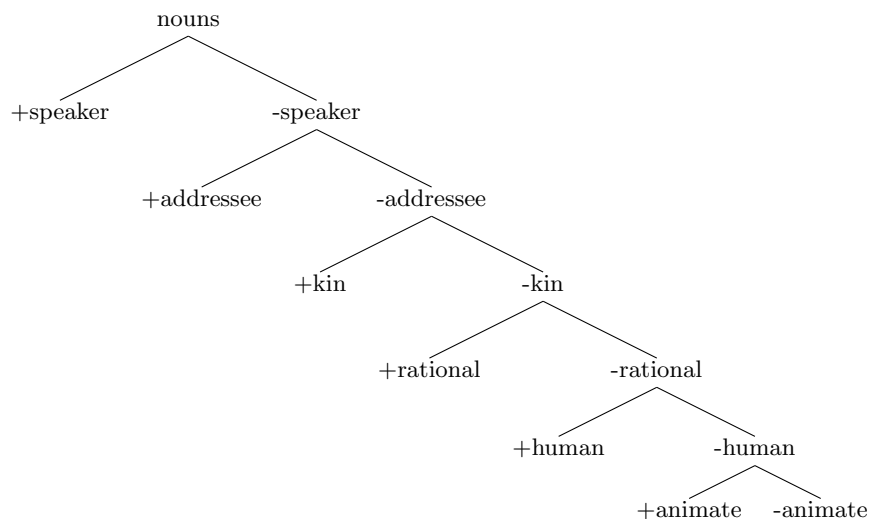


Figure 4.7: Smith-Stark's hierarchy (1974:665)

Corbett (2000) proposes a modified form of Smith-Stark's hierarchy, shown below in Figure 4.8, which discounts the importance of a split between rational and non-rational (i.e., infant) humans.

SPEAKER > ADDRESSEE > KIN > HUMAN > ANIMATE > INANIMATE

Figure 4.8: Corbett's hierarchy (2000:56)

Corbett proposes the constraint that “the singular-plural distinction in a given language must affect a top segment of the Animacy Hierarchy” (56). He agrees with Smith-Stark in noting that the human versus non-human and animate versus inanimate splits are the most widely attested in plural marking of the world's languages, and gives the examples of the Japanese plural suffix *-tati* and the Slave (Athabaskan) plural marker *-ke* (Rice 1989:247), which is reserved for human nouns. To account, perhaps, for the fact that the above ‘animacy’ hierarchy involves more than animacy proper (e.g., a speech-act participant is no more animate than another human), Corbett proposes three complementary hierarchies: a person hierarchy, a nominal hierarchy, and an animacy hierarchy, presented respectively below.

Person hierarchy 1st > 2nd > 3rd
Nominal hierarchy PRONOUNS > NOUNS
Animacy hierarchy HUMAN > ANIMATE > INANIMATE

Figure 4.9: Corbett's Interacting Hierarchies (2000:62)

The idea of several interacting hierarchies was also proposed in Comrie (1981:197-9) and Croft (1990:127). We will return to the notion of interacting hierarchies in §4.4.

4.2.5 Summary

We have seen that nominal hierarchies are prevalent in the world's languages, both in the sheer number of families in which they are relevant and in that they may crop up in many corners of a given language's morphosyntax—verb agreement, case marking, possessive marking, and plural marking all appear to exhibit sensitivity to a semantic hierarchy of some sort. We have also seen that there is some variation in linguists' characterizations of these hierarchies as evidenced by the large number of names and organizing principles attributed to them. One question that emerges, then, is whether the *same* hierarchy is relevant for different morphosyntactic parameters, either within a given language or crosslinguistically. In other words, is everyone talking about the same phenomenon? Deane (1987) seems to claim that this is the case, as he invokes Silverstein's hierarchy (developed originally to account for split ergativity) in order to explain patterns of possessive constructions in English. Silverstein himself also argues that his hierarchy “is, in fact, relevant to many other kinds of phenomenon in the formal structure of languages” (1981:236). With this as our hypothesis, we will take a look at seven morphosyntactic behaviors in Máíhǎ̀kì that appear to be sensitive to a hierarchy of some sort.

4.3 Evidence for nominal hierarchies in Máíhǎ̀kì

This section will present evidence for the hierarchical organization of the Máíhǎ̀kì lexicon in the form of seven morphosyntactic behaviors (the form of the copular suffix, the obligatoriness of non-subject marking, the ability to serve as a possessor or possessee, the form of the plural suffix, the ability to take the singulative suffix *-bi*, the form of the diminutive suffix, and the ability to serve as either a classifier or classified element) that motivate eight distinct types of nouns.

These eight types, no two of which pattern in exactly the same way with respect to the behaviors listed above, are shown below in Table 4.1. The table shows a representative noun from each group, plus a ‘characterization’, which is meant to serve as a useful, preanalytical way of thinking about these categories rather than as a criterial description.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	‘women’	inherently plural animates
2. ókó	‘water’	masses
3. tíká	‘stick’	generic inanimates
4. wèè	‘house’	count inanimates
5. gìì	‘louse’	lower animates
6. bíbí	‘dolphin’	higher animates
7. ímì	‘man’	human animates
8. Tímí	proper name	proper names

Table 4.1: Eight distinct noun types

4.3.1 Differences in the form of the copular suffix

Máíhǎkì nouns differ with respect to the form of the copular suffix that they take. Inherently plural animates (Group 1), masses (Group 2), generic inanimates (Group 3), and count inanimates (Group 4) all take the copular suffix *-hǎ*. Example (100) below shows the Group 1 inherently plural noun *ñû* ‘children’, the Group 2 mass nouns *hàsò* ‘manioc’, *nèè* ‘moriiche palm’, and *míá* ‘*Eschweilera juruensis*’, and the Group 4 count inanimate noun *wèè* ‘house’ suffixed with *-hǎ*.

- (100) a. **ñûhǎ** *mámákìnà*
ñû *-hǎ* *mámákì* *-na*
 children -INAN.COP child.MASC -ANIM.PL
 ‘They’re children’ (ttc 133.1)
 ‘Son muchachos’
- b. **góhébékò áíkó hàsòhǎ, nèèhǎ, ígètì, míáhǎ**
góhébékò *ái* *-ko* *hàsò* *-hǎ* *nèè*
 Agouti.paca eat -3.SG.FEM.PRES.DECL manioc -INAN.COP moriche.palm
-hǎ *ígè* *-ti* *míá* *-hǎ*
 -INAN.COP THIS.KIND -CL:side machimango -INAN.COP
 ‘The paca eats manioc, moriche palm, things like that, *machimango*...’ (mon 42.1)
 ‘El majás come yuca, aguaje, cosas así, machimango...’
- c. **Téro wèèhǎ**
Téro *wèè* *-hǎ*
 proper.name house -INAN.COP
 ‘It’s Téro’s house’ (ttc 56.1)
 ‘Su casa de Téro’

By contrast, ‘lower’ animates (Group 5), ‘higher’ animates (Group 6), human animates (Group 7), and proper names (Group 8) all take either the masculine copular suffix *-aǵi/-aǵi/-ǵi*⁴ or the feminine copular suffix *-ago/-ao/-go*. Example (101) shows this type of copula suffixed to the Group 6 higher animate noun *bàò* ‘yellow-handed titi monkey’ and to the Group 8 proper name *Sári*.

- (101) a. **bàòágò**
bàò *-ago*
 Callicebus.torquatus -ANIM.FEM.COP
 ‘It was the yellow-handed titi monkey’ (ada 19.1)
 ‘Era el tocón negro’
- b. **Sáríàì**
Sárí *-aí*
 proper.name -ANIM.MASC.COP
 ‘It’s Sárí’ (hol 25.1)
 ‘Es Sárí’

Table 4.2 below provides a summary of the noun groups' behavior with respect to the copula, with groups that take *-ha* highlighted gray.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.2: Nouns that take the copular suffix *-ha*

4.3.2 Differential non-subject marking

Máfhà̀̀kì also exhibits an asymmetry in the marking of non-subject arguments. The non-subject marker *-re*, introduced in section 3.3 above, is obligatory on Group 6 nouns (higher animates), Group 7 nouns (human animates), and Group 8 nouns (proper names), and is variably realized on nouns of all other groups.

Example (102) shows the non-subject marker on the Group 6 (higher animate) noun *bíbí* ‘dolphin’, the Group 7 human animate noun *ímí* ‘man’, and the Group 8 proper noun *Angelina*.

⁴These forms are in general associated with the WM, NM, and EM dialects respectively.

- (102) a. Békó bíbíre ñámékó
Békó bíbí -re ñámé -ko
 proper.name dolphin -NON.SUBJ not.like -3.SG.FEM.PRES.DECL
 ‘Békó doesn’t like dolphins’ (E.SJF.JMM.22aug2014)
 ‘A Békó no le gustan los bufeos’
- b. ímìrè báábí dòè
ímì -re báá -bí dòè
 man -NON.SUBJ have -1.SG.PAST.DECL before
 ‘I had a(nother) man before’ (hjb 15.1)
 ‘Antes yo he tenido otro varón’
- c. Angelinarè híábí
Angelina -re híá -bí
 personal.name -NON.SUBJ locate -1.SG.PAST.DECL
 ‘I met Angelina’ (eds 56.1)
 ‘Yo encontré a la Angelina’

Group 5 nouns (lower animates) take *-re* only when they refer to a specific, extensional entity. The contrast between the specific and non-specific forms is shown below in (103) for the Group 5 lower animate noun *gìì* ‘louse’ and (104) for *níhò* ‘wife’.⁵

- (103) a. *gìì* báámàkò, *hítò?*
gìì báá -ma -ko, hitò?
 louse have -NEG -3.SG.FEM.PRES.INTERR niece
 ‘Don’t you have lice, niece?’ (soc 26.1)
 ‘¿No tienes piojos, sobrina?’
- b. *gììrè* híágú
gìì -re híá -gu
 louse -NON.SUBJ locate -1.SG.PAST.DECL
 ‘I found a louse’ (E.SJF.NMM.8aug2014) ‘He hallado un piojo’
- (104) a. *níhò* báámáyí
níhò báá -má -yi
 wife have -NEG -1.SG.PRES.DECL
 ‘I don’t have a wife’ (ccp 9.1)
 ‘No tengo mujer’

⁵Note that certain kin terms like *níhò* ‘wife’, *bìkò* ‘aunt’, and *íhí* ‘husband’ pattern with lower animates like *gìì* ‘louse’. This is not to say that kin are somehow ‘less animate’ than dolphins or men. The semantic analysis provided in §4.4 aims to do away with precisely these unsatisfying gradations in concepts like animacy that must be posited as part of a feature-based account of the variation in the morphosyntactic behavior of nouns.

b. níhòrè góásésáóhógí

níhò -re góásé sáo -hó -gí

wife -NON.SUBJ order send -PERF -3.SG.MASC.PAST.DECL

‘He sent his wife [to their swidden]’ (by1 40.1)

‘Él ha mandado su mujer [a la chacra]’

The behavior of Group 5 nouns is in contrast with that of animates of Group 6, which take *-re* even in generic contexts. Example (105) shows three such nouns: *áñà* ‘snake’; *násó* ‘woolly monkey’; and *míà* ‘bird’.

(105) a. Mámàsò áñàrè gwìkò

Mámàsò áñà -re gwì -ko

proper.name snake -NON.SUBJ be.afraid -3.SG.FEM.PRES.DECL

‘Mámàsò is afraid of snakes’ (E.SJF.AMM 18jan2013)

‘Mámàsò tiene miedo de las víboras’

b. násórè áyí, násórè

násó -re áyí -yí násó

Lagothrix.lagothricha -NON.SUBJ eat -1.PL.PRES.DECL Lagothrix.lagothricha

-re

-NON.SUBJ

‘We would eat *Lagothrix lagothricha*’ (ca5 63.1)

‘Comíamos choro’

c. míàrè hásómáyí

míà -re hásó -má -yí

bird -NON.SUBJ shoot -NEG -1.PL.PRES.DECL

‘We don’t shoot (small) birds’ (mak 123.1)

‘No matamos pájaros (chicos)’

In general, inanimates do not take *-re* in non-subject position, even in non-generic contexts. Example (106) shows two cases with specific, inanimate non-subjects that lack *-re*-marking.

(106) a. māmáyìò bááyí ítìdàdì, yíò

mámá- yíò báá -yí ítì -rari, yíò

new swidden have -1.SG.PRES.DECL this -CL:location swidden

‘I have a new swidden over there, a swidden’ (ohe 20.1)

‘Yo tengo mi chacra nueva por allá’

yóù ííbí

- b. *yóù* íí -bí
 canoe borrow -1.PL.PAST.DECL
 ‘We borrowed a canoe’ (ov2 94.1)
 ‘Hemos prestado otra canoa’

Even in certain cases where the referent is unique in the context (i.e., is definite), *-re* is not needed. The context for (107) below is that there are two pencils, one big and one small, and the speaker is asking his interlocutor to pass him the big one.

(107) **háítìkà** íchímà

háí -tìka íchí -ma
 big -CL:stick give -IMPER

‘Give me the big one (pencil)’ (E.LTN.SJF 9feb2013)
 ‘Alcánzame el grande’

Like inanimates, Group 1 nouns are generally not suffixed with *-re* in non-subject position, as is shown below in (108) for the inherently plural nouns *ñî* ‘children’, *dòì* ‘siblings’, and *hòyà* ‘domestic animals’.

(108) a. *ñî* tèà bááyò

ñî tèà báá -yo
 children also have -3.SG.FEM.FUT.DECL

‘She will have children also’ (ohe 20.1)
 ‘Ella también va a tener sus hijos’

b. *dóí* báámáyí

dóí báá -má -yi
 siblings have -NEG -1.SG.PRES.DECL

‘I don’t have siblings’ (mbl 67.1)
 ‘No tengo hermanos’

c. *hòyà* ñàyì

hòyà ñà -yi
 domestic.animals see -1.SG.PRES.DECL

‘I’m looking at dogs’ (E.SJF.JMM 31jan2013)
 ‘Estoy mirando perros’

While marking with *-re* is not common on either inanimate nouns or inherently plural animates, it is not ungrammatical, as examples (109) and (110) show.

(109) **î** wèèrè gósàrè sákì

ǎi *wèè* *-re* *gósá* *-re* *sá*
 3.SG.MASC.PRON house -NON.SUBJ think -SS.SEQ go.PAST.NI
-kǎ
 -3.SG.MASC.PAST.DECL

‘He thought of his house and went (there)’ (tui 69.1)
 ‘Ha pensado en su casa y se ha ido allá’

(110) *chìànéákò ǎkùrè sáíkó hòyàrè bíyǎ*

chìà néá *-ko* *ǎkú* *-re* *sáí* *-ko* *hòyà*
 still dark -CL:fem drink -SS.SEQ go -3.SG.FEM.PRES.DECL domestic.animals
-re *bíò* *-yǎ*
 -NON.SUBJ hunt.with.dogs -1.PL.PRES.DECL

‘When (the tapir) goes and drinks before dawn, we hunt (her) with dogs’ (hgt 15.1)
 ‘Cuando (la sachavaca) de mañanita está yendo para tomar, le cazamos con perros’

The conditions under which the nouns of these groups surface with *-re* will be explored in greater detail as part of the semantic analysis presented in §4.4. For now, it will suffice to say that *-re* obligatorily marks non-subject arguments of noun groups 6, 7, and 8, while it is optional for nouns of all other groups. The pattern is shown below in Table 4.3, where gray cells indicate the obligatoriness of *-re* on non-subject arguments.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gǎi	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.3: Obligatory *-re*-marking on non-subject arguments

4.3.3 Split possession

Máíhǎkì nouns vary with respect to the roles they may serve in possessive constructions. As described above in §3.7.1 and exemplified below, possessive constructions in Máíhǎkì consist of two juxtaposed, prosodically independent nouns (see §2.4.1 for an analysis of tone in Máíhǎkì). Viable possessors include all animate nouns; that is, those of groups 1, 5, 6, 7, and 8. Possessive constructions may indicate kinship relations, body part relations, and relations of ownership or control.

Possessive constructions indicating kinship relations are shown in (111). In the case of (111a), the possessor is a Group 8 proper name, while in (111b) it is a Group 6 higher animate.

- (111) a. **Manuela Vaca mǎmákòàò**
Manuela Vaca mǎmákò -ao
 proper.name proper.name child.FEM -ANIM.FEM.COP
 ‘It’s Manuela Vaca’s daughter’ (bau 62.1)
 ‘Su hija de la Manuela’
násó mǎmákì étáhógí tèà
 b. *násó mǎmákì étá -hó -gǐ tèà*
 Lagothrix.lagothericha child.MASC escape -PERF -3.SG.MASC.PAST.DECL also
 ‘The woolly monkey’s child fled as well’ (aho 109.1)
 ‘La cría del choro había escapado’

Possessive relations of control or ownership are exemplified below in (112) for the the Group 8 proper noun *Mamerto* and the group 7 human animate *nómíò* ‘woman’.

- (112) a. **téáùnù bàìhǐ Mamerto yíò**
téá -unu bàì -hǐ Mamerto yíò
 same -CL:side be.located -3SG.MASC.PRES.DECL proper.name swidden
 ‘It’s on the same side [as Nancy’s swidden], Mamerto’s swidden’. (hsj 69.1)
 ‘La chacra de Mamerto está al lado [de la chacra de Nancy]’
 b. **nómíò kíùrì tǐyíhúgí**
nómíò kíù -rǐ tǐyí -hú -gǐ
 woman metal -CL:manufactured crack.INTR -PERF -3.SG.MASC.PAST.DECL
 ‘The woman’s machete cracked’ (E.NMM.KCN.09jul2012)

In example (113), we see an example of a ‘body part’ possessive construction with a Group 1 inherently plural animate possessor, *nómí* ‘women’.

- (113) ...**nómí nóébà**

nómí nóébà
 women vagina

‘...women’s vaginas’ (mbd 188.1)

The boundary between viable and non-viable possessors in Máíhǎkì maps neatly onto the boundary between animate and inanimate nouns. Inanimate nouns do not serve as possessors in possessive constructions, but do appear in part-whole constructions consisting of a root and a classifier. Part-whole relationships are distinguished from possessive constructions prosodically: whereas true possessors are prosodically distinct words, the tone of the second element in an inanimate part-whole construction is prosodically subordinate to that of the first. For instance, the root *súkí* ‘tree’—a mass noun of Group 2—has inherently high tone, as does the root *tíká* ‘stick’, a Group 3 generic inanimate noun. In (114), we see that the tone of *tíká* has been ‘erased’ by that of *súkí*. In Chapter 5, we will see an analysis of *tíká* as a classifier in constructions like these.

(114) *súkítíkà*màkà méégó...

súkí tíkà *-maka* *mée* *-go...*
tree -CL:stick -INAN.DIM hang.with.knot -3.SG.FEM.PAST.DECL

‘She hung [the pot] from the branch of a tree’ (hja 27.1)

‘Ella ha amarrado [la olla] a un palito’

In summary, the possessive split is between animate and inanimate nouns in Máíhǎkì. Inanimate nouns may function as ‘possessors’ in part-whole constructions, but these are prosodically distinct from true possessive constructions. The ability of nouns of various groups to serve as possessors is summarized in Table 4.4 below, where viable possessors appear in gray.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.4: Viable possessors

4.3.4 Plural splits

The Máíhǎkì lexicon exhibits two splits with respect to the encoding of plurality on the noun. There is a split between nouns that can and cannot be suffixed with plural morphology, and a split between those that take *-na* versus *-ma*.

Nouns of groups 1, 2, and 8—that is, inherently plural animates, masses, and proper names—cannot take any plural suffix, as is shown for the nouns *hòyà* ‘domestic animals’, *hàsò* ‘manioc’, and *Mámàsò* (a proper name) in (115) below.

- (115) a. **hòyà***nà**
 hòyà -na
 children -ANIM.PL
 attempted: ‘domestic animals’
- b. **hàsò***mà**
 hàsò -ma
 manioc -INAN.PL
 attempted: ‘manioc’ (??)
- c. **Mámàsò***nà**
 Mámàsò -na
 proper.name -ANIM.PL
 attempted: ‘Mámàsòs’ (??)

Table 4.5 shows nouns that may not take plural suffixes shaded in gray.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	‘women’	inherently plural animates
2. ókó	‘water’	masses
3. tíká	‘stick’	generic inanimates
4. wèè	‘house’	count inanimates
5. gìì	‘louse’	lower animates
6. bíbí	‘dolphin’	higher animates
7. ímì	‘man’	human animates
8. Tímí	proper name	proper names

Table 4.5: Nouns that may not take plural marking

Nouns of groups 5, 6, and 7 may only take the plural suffix *-na*. Example (116) shows this for the Group 5 noun *níhò* ‘wife’, the Group 6 noun *yáí* ‘jaguar’, and the Group 7 noun *ímì*.

- (116) a. ákwèrè ìtìhùnà Máínè̀nò níhò**nà** yíóbí nèè
 ákwé -re ìtìhùnà Máínè̀nò níhò -na yíó -bì
 eat.sweet -SS.SEQ they proper.name wife -ANIM.PL gather -3.PL.PAST.DECL
 nèè
 moriche.palm

‘After they, Máínènò’s wives, ate, they gathered moriche palm (fruit)’ (clp 172.1)
 ‘Después de que ellas, las esposas de Máínènò, han comido, han juntado su aguaje’

b. yáínà yìyì

yáí -na yì -yi

jaguar -ANIM.PL roar -3.pl.pres.decl

‘The jaguars are roaring’ (E.LTN.SJF.21jul2013)

‘Los tigres están rujando’

c. ímìnà tèà séréyí

ímì -na tèà séré -yi

man -ANIM.PL also peel -3.PL.PRES.DECL

‘The men also peel’ (ch1.13.1)

‘Los hombres también pelan’

Table 4.6 below shows that *-na* is available for Groups 5-7.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.6: Plural marking with *-na*

The inanimate plural suffix *-ma* is available for nouns of Group 3 (generic inanimates) and Group 4 (count inanimates). It is shown suffixed to the Group 3 noun *tótó* ‘buttress root’ and to the Group 4 noun *wèè* ‘house’ in (117) below.

(117) a. mǐnàinè kwááyòhì tótómà tìkàhì sáyí

mǐnà ínè kwáá -yohì tótó -ma tìkà

green peach.palm pick.fruit -PL.PURP buttress.root -INAN.PL hit.PLACT

-hì sáyí -yi

-PL.SS.SIM go -3.PL.PRES.DECL

‘They went to pick green peach palm (fruit) while hitting buttress roots’ (pvd 7.1)

‘Se iban a cojer pijuayo verde golpeando aletas’

b. ‘wèèmà tátáhèàgì,’ íhì

wèè *-ma* *tátá* *-hea* *-gi* *íí*
 house -INAN.PL fall.PLACT -PERF.PLACT -3.SG.MASC.PAST.DECL say
-hí
 -3.SG.MASC.PRES.DECL
 ‘“The houses fell down,” he said’ (hur 33.1)
 ‘“Ha caído las casas,” me decía’

Table 4.7 summarizes the distribution of the inanimate plural suffix *-ma*, with nouns that may take *-ma* shown shaded in gray.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.7: Plural marking with *-ma*

In summary, the Máíhǎkì lexicon exhibits multiple splits in plural morphology. Inanimate count nouns (groups 3 and 4) take *-ma*; lower, higher, and human animates (groups 5, 6, and 7) take *-na*; inherently plural animates, mass nouns, and proper names take no plural morphology.

4.3.5 The singulative *-bì*

The singulative suffix *-bì* is the defining characteristic of Group 3 nouns (generic inanimates). This suffix, whose behavior is described in greater detail in §5.3.1, is used to indicate a singular, prototypical instance of the root in question. Unlike Group 4 nouns (count inanimates like *wèè* ‘house’), Group 3 nouns cannot refer to specific, singular individuals without first being suffixed with *-bì*. Examples of Group 3 nouns *tíká* ‘stick’ and *chó* ‘head’ suffixed with the singulative marker are shown in (118).

- (118) a. *tíkábì* *táíhí*
tíká *-bì* *táí* *-hí*
 stick -SING fall -3.SG.MASC.PRES.DECL
 ‘The stick is falling’ (cmb 44.1)
 ‘El paito está cayendo’

- b. gǐì hǎyì mì chǒbì
 gǐì hǎyì -yì mì chǒ -bì
 louse locate -1.SG.FUT.DECL 2.SG.PRON head -SING
 ‘I’m going to look for lice on your head’ (clp 119.1)
 ‘Voy a buscar piojos en tu cabeza’

Table 4.8 shows that only Group 3 nouns may take the singulative suffix.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gǐì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.8: The availability of the singulative *-bi*

4.3.6 Diminutive splits

Máìhǎkì nouns differ in the form of the diminutive suffix that they take, as well as in whether they are permitted to take a diminutive suffix at all. In our corpus, the diminutive suffix *-ñi* appears on nouns of groups 5, 6, and 7, while *-maka~_aka* and its plural counterpart *-maña* are reserved for groups 2, 3, and 4 (that is, inanimate nouns). Example (119) shows the animate diminutive suffix *-ni* on nouns of Groups 5, 6 and 7, respectively.

- (119) a. dáíkì ñhàkìrè níhòñì níkákó màrúruàkà níkákó
 dáí -kì ñhà -kìrè níhò -ñì níká
 come -MASC.SS.SIM see -MASC.DS.SIM wife -ANIM.DIM stand
 -ko mà -ruru -aka níká
 -3.SG.FEM.PRES.DECL path -CL:direction -INAN.DIM stand
 -ko
 -3.SG.FEM.PRES.DECL
 ‘He came and saw his wife standing in the path’ (soc 51.1)
- b. bósáñì sàní -hó
 bósá -ñì sàní -hó
 deer -ANIM.DIM go.NI -PERF
 ‘He left as a little deer’ (iy6 468.1)

- c. ímìñì bàkì
 ímì -ñì bà -kì
 man -ANIM.DIM exist.PAST.NI -3.SG.MASC.DECL.NI
 ‘He was a boy’ (hjb 11.1)

The distribution of -ñì is shown below in Table 4.9.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.9: Diminutive marking with -ñì

Example (120) shows the inanimate diminutive suffix *-maka~-aka* on the Group 2 noun *áo* ‘food’, the Group 3 noun *chóó* ‘head’, and the Group 4 noun *yíò* ‘swidden’, respectively.

- (120) a. ásàkì áo, áoàkà, úkúyí
 ásá -kì áo áo -aka úkú -yí
 perceive -MASC.SS food food -INAN.DIM drink -1.SG.PRES.DECL
 ‘I drink it thinking it’s food’ (jv3 71.1)
 ‘Yo tomo eso pensando que es comida’
- b. íó chómàkà étàràhì
íó chó -maka étá -rai
 3.SG.FEM.PRON head -INAN.DIM emerge -ASS.MOT.TOWARD.SPEAKER
 -hì
 -3.SG.MASC.PRES.DECL
 ‘Her little head was emerging’ (nm4 63.1)
 ‘Su cabecita estaba saliendo’
- c. yíkí yíò màkà bàisè ísèhè yíò màkà bàkì
 yíkí yíò -maka bàì -se ísè -he
 1.PL.PRON swidden -INAN.DIM exist -PAST.REL this -CL:physical.aspect
 yíò -màkà bà -kì
 swidden -INAN.DIM be.PAST.NI -3.SG.MASC.PAST.DECL
 ‘What used to be our swidden was this size’ (say 353.1)
 ‘Era una chacra de este tamaño’

The noun groups that may take *-maka~-aka* are shown shaded below in Table 4.10.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.10: Marking with inanimate diminutive *-maka*

In summary, *-ñi* is available for nouns of groups 5, 6, and 7, while *-maka~-aka* is available inanimates (groups 2, 3, and 4). There are no examples in our corpus of proper names or inherently plural animates (groups 8 and 1) suffixed with either diminutive.

4.3.7 Classifier splits

The last split in the morphosyntactic behavior of Máíhǎkì nouns that we will examine is the ability of a given noun to function as a classifier or to take a classifier suffix. As we will see in Chapter 5, providing a precise definition for ‘classifier’ is a difficult task, as there is a continuum between full, exclusively suffixal, highly grammaticalized classifying morphemes and nominal roots that may be used in classifier constructions. For our present purposes, only nouns that may appear suffixed to a numeral will be said to be able to serve as classifiers. These nouns are the ‘repeaters’ and ‘intermediate classifiers’ discussed below in §5.3.1. The ability to serve as a classifier is a property of generic inanimates and inanimate count nouns only—that is, nouns of Group 3 and 4. Whereas animate count nouns have associated gender classifiers that suffix to numerals, nouns of Group 3 and 4 serve as their own classifiers. Example (121) shows that the classifier *-i* must appear suffixed to the numeral *tè* when it modifies the Group 7 noun *ímì* ‘man’, while Group 3 and 4 nouns *tíká* ‘stick’ and *wèè* ‘house’ have classifiers of the same form.

- (121) a. *yì wèè tèì ímì bàìhì*
yì wèè tè -i ímì bàì -hì
 1.SG.PRON house one -CL:masc man live -3.SG.MASC.PRES.DECL
 ‘One man lives in my house’ (E.NMM.SJF.24jan2013)
 ‘Un hombre vive en mi casa’
- b. *tètíkà huàgò*
tè -tíka huà -go
 one -CL:stick insert.pointed.thing -3.SG.FEM.PAST.DECL

‘She planted one stick (of manioc)’ (E.HMR.SJF.25jun2013)

‘Ha sembrado un palo (de yuca)’

c. wèè tèwé úhúgí

wèè tè -we ú -hú -gí
house one -CL:building burn.INTR -PERF -3.SG.MASC.PAST.DECL

‘One house burned down’ (E.SJF.AMM 17jul2013)

‘Una casa se ha quemado’

Table 4.11 shows the groups that may function as classifiers (i.e., be suffixed to numerals) shaded in gray.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.11: Nouns that may serve as classifiers

Defining the class of elements that may *take* classifiers is also difficult, as it seems that a subset of nominal roots (those of Groups 1, 2, 3 and to a lesser extent 4 and 5) are very readily classified, but that other roots (e.g. of Groups 6, 7, and 8) may also be coerced into these constructions. Example (122) below shows nouns of Groups 1, 2, 3, 4, and 5, respectively, suffixed by classifiers.

(122) a. kàmà séréyí, **nómíhùnà** séréyí

kàmà séré -yí **nómí** -huna séré -yí
thus peel -3.PL.PRES.DECL women -CL:group peel -3.PL.PRES.DECL

‘Thus they peel, the women peel’ (iy6 101.1)

‘Así pelan, las mujeres le pelan’

ókóràkà núí míníhó

b. **ókó** -raka **núí** míní -hó
water -CL:water a.lot rise.in.level.NI -PERF

‘The water rises a lot’ (con 64.1)

‘El agua crece mucho’

- wètù híáyí
- c. wèè -tu híá -yi
house -CL:thick.cylinder locate -1.PL.PRES.DECL
'We look for house posts' (ir1 2.1)
'Buscamos los horcónes'
"séòrè tíàmà," hìkàyì nǐhòpè
- d. séò -re tíà -ma hìkà -yi nǐhò -pè
paucar -NON.SUBJ yank -IMPER speak -3.PL.PRES.DECL wie -CL:pair
'"Go yank the paucar('s nest)," said the pair of wives' (clp 5.1)
'Sus dos mujeres le mandaron (a Máínèdò), "Véte arrancar su nido de paucar."'

While consultants have accepted the forms in (123), which consist of a proper name (Group 8) and a highly animate noun (Group 6) suffixed with classifiers, nouns of these groups (as well as nouns of Group 7) do not appear with classifiers in our corpus.

- (123) a. Léòhùnà
Léò -huna
Lev -CL:group
'A group associated with Lev; Lev's posse' (E.NMM.SJF.21june2013)
'Leo y sus compañeros'
- b. óyòrò
óyò -ro
bat -CL:concave
'bat pot' (E.EMR.SJF.28jan2013, E.LMM.SJF.30jan2013)
'olla de murciélago'

Given that it seems *any* noun root may be coerced into a classifier construction, it may be more useful to talk about the *facility* with which a root takes a classifier suffix. The groups that appear naturally and frequently with classifiers in our corpus are shaded in gray in Table 4.12 below.

REPRESENTATIVE	GLOSS	CHARACTERIZATION
1. nómí	women	inherently plural animates
2. ókó	water	masses
3. tíká	stick	generic inanimates
4. wèè	house	count inanimates
5. gìì	louse	lower animates
6. bíbí	dolphin	higher animates
7. ímì	man	human animates
8. Tímí	proper name	proper names

Table 4.12: Nouns that may take classifiers

4.3.8 Summary

We have seen that Máìhǎkì nouns pattern differently with respect to at least seven different morphosyntactic traits: the form of the copular suffix that they take, the obligatoriness of marking with *-re* when they serve as the non-subject arguments of verbs, their ability to be possessors in possessive constructions, the form of the plural and diminutive suffixes they take, their ability to take the singulative suffix *-bí*, and the facility with which they may serve as or take classifier suffixes. Figure 4.10 summarizes these data.

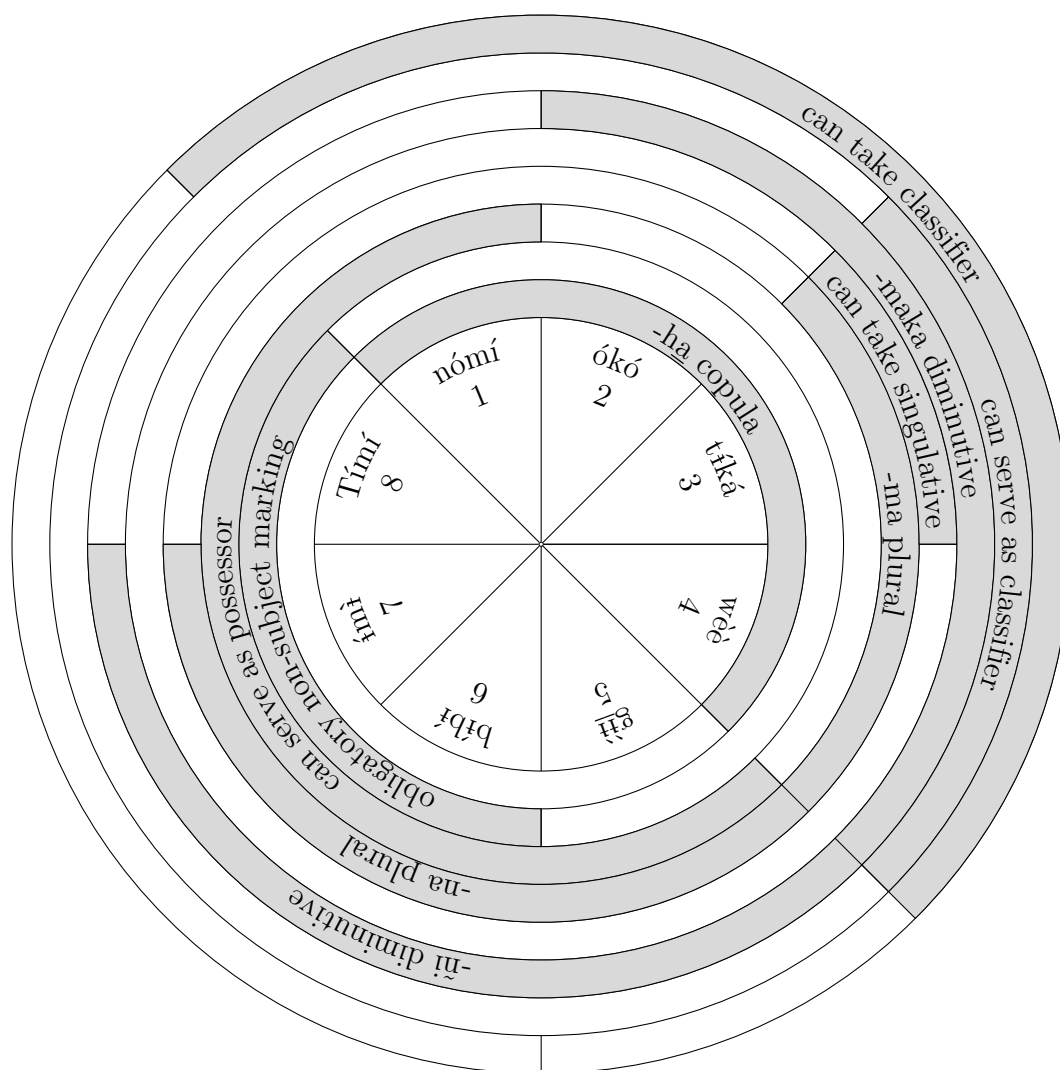


Figure 4.10: The Reference Wheel: a summary of the morphosyntactic behavior of nouns

What is noteworthy about the above figure is that all sections defined in the circle are contiguous; there is no morphosyntactic behavior (at least, none of those described above) that is characteristic of non-adjacent groups. In the following section, I will address the question of why the lexicon might be structured like this. I will propose that two interacting and related parameters that determine a noun's place on the 'Reference Wheel' shown above: the total number of properties attributable to individuals in the set denoted by that noun and the number of properties shared by all individuals in the set denoted by that noun.

4.4 Proposal: the reference ratio

We began this chapter with an exploration of the notion of semantic hierarchies within the nominal lexicon and a survey of the morphosyntactic behaviors that have been posited to be sensitive to such hierarchies. We saw that the phenomena of split ergativity, differential object marking, split possession, and split plurality have all been attributed to nominal hierarchies, and that these have been claimed variously to be hierarchies of animacy, definiteness, familiarity, empathy, and a number of other related concepts. These hierarchies seem at once strikingly similar across languages and frustratingly different—they all seem to privilege speech act participants over other humans, humans over other animates, and animates over inanimates, but they also seem to be sensitive to other semantic features (plurality, definiteness, topicality) in unpredictable ways. The organizing principles of the hierarchy are also notoriously difficult to characterize, as Smith-Stark expresses in his 1974 paper on split plurality:

“I am at a loss as to what the motivation is for the relationship I have just described between plurality and the hierarchy ... I am not even sure what the organizing principle of the hierarchy alone is. Although it looks very much like it is defined on the basis of animacy, I believe that it can be better described as encoding *the likelihood of participation in the speech event*.” (664, emphasis in the original)

Smith-Stark’s worry about the organizing principle behind the hierarchy he proposes for split plurality reflects a view of hierarchical lexicons often misattributed to Silverstein (1976): that there is one linear hierarchy that varies along a single semantic dimension. As Du Bois (1987) points out, “...the fact that a particular NP has feature values in several dimensions [in Silverstein’s feature array] is what allows it to be governed by the distinct organizing principles that pertain to those dimensions” (849). This is similar to the conclusion made in Comrie (1981), which states that

“...the animacy hierarchy cannot be reduced to any single parameter, including animacy itself in its literal sense, but rather reflects a natural human interaction among several parameters, which include animacy in the strict sense, but also definiteness (perhaps the easiest of the other parameters to extricate from animacy), and various means of making an entity more individuated—such as giving it a name of its own, and thereby making it also more likely as a topic of conversation. The individual parameters...are often closely related to one another, but there are also individual irreducible differences, and the over-all pattern is of a complex intertwining rather than of a single, linear hierarchy” (199).

Why should the nominal lexicon of any language be structured in the way shown in Figure 4.10? In the introduction to this dissertation I proposed two languages: Language A, in which each entity has a separate name, and Language B, in which all entities share a

name. I will propose here and defend in the following chapters the idea that the structure in Figure 4.10 above is a compromise between the two; it results from the struggle between the precision of Language A and the efficiency of Language B. In fact, the Reference Wheel has elements of both languages at its extremes: proper names like *Tímí* are *precise* terms in that they index a large, unique set of properties (those that the individual called *Tímí* bears), all of which are ‘shared’ by a single entity; mass nouns like *ókó* ‘water’ are precise in a different way: they index a large or even infinite number of entities, all of which share a single property or a small number of properties. We can think of common count nouns like *wèè* ‘house’ or *bíbí* ‘dolphin’ as somewhere between the two extremes: they are less precise in that they require their referents to share a particular set of properties (e.g. to have a particular shape, utility, or behavior), but imprecise in that they may refer to more than one individual, glossing over the non-shared properties that those individuals inevitably bear by virtue of being individuals. The structure in 4.10 arises as an efficient way, given the nature of human cognition and experience, to encode the categories that matter to us.

4.4.1 Thinking about reference

The standard semantic analysis of common nouns is that they denote characteristic functions of sets of individuals. They are $\langle e, t \rangle$ functions from individuals (type e ⁶) to truth values (type t). The denotation of the common noun ‘cat’, then, might look something like Figure 4.4.1, where the brackets indicate a characteristic function and Brubaker, Dilly, etc. constitute the set of all cats.

(124) $\llbracket \text{cat} \rrbracket = [\{\text{Brubaker, Dilly, Harvey, Nigel, Selina, Slopey...}\}]$

Some evidence that nouns do not denote individuals of type e is that in languages like English or Spanish, they must appear with determiners in order to serve as the arguments of verbs. For languages like Máìhǎkì or Mandarin Chinese in which there are no definite or indefinite articles and common nouns may surface *bare* as the arguments of verbs, this type of argument for the $\langle e, t \rangle$ status of nouns is less compelling. In fact, it has been proposed by Chierchia (1998b) that in languages that lack determiners, nouns come out of the lexicon argumental—that is, they denote individuals of type e . Chierchia’s proposal is that bare nouns in languages of this sort denote *kinds*—a type of individual proposed by Carlson (1977) that we will discuss shortly.

First, I would like to propose a way of thinking about reference in terms of the set membership of the individuals denoted by a noun. Let’s take for granted for a moment that the denotation of ‘cat’ is as in Figure 4.4.1 above; that is, it denotes the characteristic function of the set of cats. We can imagine that each of the individuals in this set of cats also belongs to a number of other sets—the set of fluffy things, of things that meow, of things

⁶In Montague’s type theory, there are two basic types: e , the type of entities, and t , the type of truth values. If a and b are types, then $\langle a, b \rangle$ is a type (the type of functions from things of type a to things of type b).

with tails, etc. Like ‘cat’, these are properties that an individual of type e may have, and their denotations might look something like in (125) and (126) below.

$$(125) \quad \llbracket \text{meow} \rrbracket_{\langle e, t \rangle} = [\{\text{Brubaker}_e, \text{Dilly}_e, \text{Harvey}_e, \text{Nigel}_e, \text{Selina}_e\}]$$

$$(126) \quad \llbracket \text{fluffy} \rrbracket_{\langle e, t \rangle} = [\{\text{Brubaker}_e, \text{Harvey}_e\}]$$

Now, based on our original set of cats, we can further define two higher order sets:

Set A: the **union** of the sets to which the individuals denoted by ‘cat’ belong

Set B: the **intersection** of the sets to which the individuals denoted by ‘cat’ belong

These two sets, A and B, are of type $\langle \langle e, t \rangle, t \rangle$ —the type of generalized quantifiers—and are equivalent to $\llbracket \text{some cat} \rrbracket$ and $\llbracket \text{every cat} \rrbracket$, respectively. Set A contains the set of all properties that *any* cat may have, while Set B contains the set of all properties that *all* cats share. I propose that reference is established when the ratio of the number of elements in Set A to the number of elements in Set B is 1 (in other words, when $A=B$). In more general terms, this means that an expression is referential when all of the individuals that it denotes share an identical set of properties.

When would this ever happen? The most obvious candidate for an inherently referential noun is the proper name, which denotes a *single* individual, like *Tímí*, who will of course ‘share’ all of the properties that he has. If we compare the intersection of the sets to which all entities denoted by *Tímí* belong to the union of the sets to which all entities denoted by *Tímí* belong, they will always be equivalent.

A perhaps less obvious case of a reference ratio that is equal to (or nearly equal to) 1 is the case of mass nouns. Unlike proper names, mass nouns denote sets of a large or even infinite number of entities. This is due to the fact that mass nouns have ‘cumulative reference’ (Quine 1960:91). The entities denoted by mass nouns are characterized by their indifferenciability: this sand looks very much like that sand, so that either is indistinguishable from the other and from the sum of the two, and from its own parts. We may therefore think of the entities denoted by mass nouns as having very few properties, all (or most) of which are shared by all of the entities that they denote. This gives mass nouns a reference ratio close to 1, but in a way that is rather different from proper names: whereas proper names express a relationship between *one* individual and *many* properties, mass nouns express a relationship between *many* individuals and *one* (or *few*) properties.

I should note here that the number of properties attributable to a given individual (i.e., the number of sets to which that individual belongs) has nothing to do with how many properties that individual *actually* has outside of the human experience (if such a figure could even be calculated). Rather, properties are attributed to individuals based on humans’ perception of their variation, and are therefore subject to fluctuation based on the amount of attention that is paid to this variation. We would expect the entities that we interact with the most to have the most properties, as these are the entities that we need to distinguish from everything else.

4.4.2 Variability in the reference ratio of common count nouns

The above account of the reference ratio is not meant to suggest that mass nouns or proper names will pattern morphosyntactically in the same way across the world's languages—for instance that they will always be able to surface bare as the argument of verbs. This claim could easily be falsified by the varieties of Spanish or Italian that require both mass nouns and proper names to take determiners, and it would allow for none of the crosslinguistic variation that Chierchia (1998b) describes in his discussion of the Nominal Mapping Parameter. Rather, I am suggesting that languages will differ with respect to how and how much their morphosyntax reflects a sensitivity to its nouns' reference ratios.

We have seen that, by the definition of reference established above, expressions that denote masses and singular individuals make the best candidates for referring expressions. This could help to explain some of the morphosyntactic similarities that proper names and mass nouns exhibit crosslinguistically, including their ability in languages like English or German to surface bare as the arguments of verbs when common nouns must take determiners. Other expressions, however, may denote sets of individuals that are less uniform. For instance, while cats share a large number of properties, individual cats are idiosyncratic to an extent that individual instances of water or sand are not. Furthermore, some expressions will denote sets of individuals that are more idiosyncratic than others. We can imagine, for instance, that the reference ratio for 'louse' is closer to 1 than for 'man', as the set of properties attributable to any given louse is likely largely attributable to any other louse, while this certainly not the case for men.

Thinking about reference in terms of the uniformity of the individuals in the set denoted by some noun has the advantage that it allows us to talk about common nouns as forming a continuum of the type shown in Figure 4.11 without reducing these nuances in lexical semantics to gradations in something like animacy or definiteness.

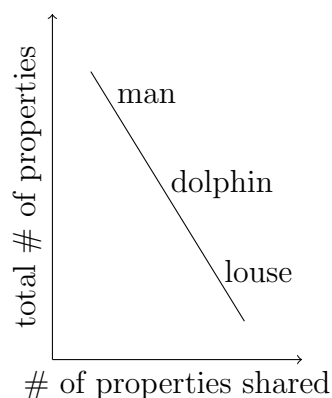


Figure 4.11: A continuum of reference

One question that emerges from the discussion above is: if count nouns have a lower reference ratio than either mass nouns or proper names, why may they appear bare (i.e.,

without a determiner) in so many of the world’s languages, including Máíhǎkì? I will address this question in my discussion of typeshifting below.

4.4.3 Typeshifting

The notion of typeshifters—operators that take elements of one semantic type as their input and return elements of another semantic type—was largely developed by Partee (1987) as a response to Montague (1973), who argues for a unified treatment of NPs as type $\langle\langle e, t \rangle, t\rangle$ (characteristic functions of sets of properties). Montague argues that the denotations of a proper name, an indefinite NP, and a generalized quantifier may be treated uniformly, as shown in Table 4.13.

Claudia	$\lambda P[P(c)]$
a woman	$\lambda P\exists x[woman(x) \& P(x)]$
every woman	$\lambda P\forall x[woman(x) \rightarrow P(x)]$

Table 4.13: NPs as type $\langle\langle e, t \rangle, t\rangle$

This type— $\langle\langle e, t \rangle, t\rangle$ —is the type of generalized quantifiers, e.g. ‘every woman’, which express a relation between two predicates (the predicates expressed by the NP and VP). Montague’s proposal is therefore particularly useful in the analysis of the coordination of proper names with generalized quantifiers, as in ‘John and every woman’, in which the elements must be of the same type in order to have something predicated of them both. It is also compatible with the observation that the three NPs listed above in Table 4.13 may appear in the same syntactic environments. The generality of Montague’s approach, however, is at odds with the intuition that, for example, certain NPs seem to have referential interpretations. In other words, in reducing every NP to a single semantic type, we may be glossing over some important nuances.

Partee & Rooth (1983) attempt to maintain the appealing uniformity of Montague’s analysis while capturing the intuitive notion that NPs may have multiple uses or interpretations. Their solution is to use the simplest (lowest) types possible, and to reserve the more complex (higher) types for constructions in which they are necessary for a coherent typing of the sentence. Partee (1987) elaborates on this idea, suggesting that there are three possible uses of NPs: a referential use, a predicative use, and a quantificational use. The denotations of these three uses of the proper name ‘Brubaker’ are shown below in 4.4.3.

$\llbracket Brubaker \rrbracket_e$	Brubaker	referential
$\llbracket Brubaker \rrbracket_{\langle e, t \rangle}$	$\lambda x.x = \text{Brubaker}$	predicative
$\llbracket Brubaker \rrbracket_{\langle\langle e, t \rangle, t\rangle}$	$\lambda P\lambda x.P(x) \& x = \text{Brubaker}$	quantificational

Table 4.14: Three types for a proper noun

The proper noun ‘Brubaker’ may denote an individual, or the characteristic function of the set of individuals that are Brubaker, or the characteristic function of the set of properties that Brubaker has. To deal with this multiplicity of types, Partee (1987) introduces a set of type-shifting operators, shown below in Figure 4.12.

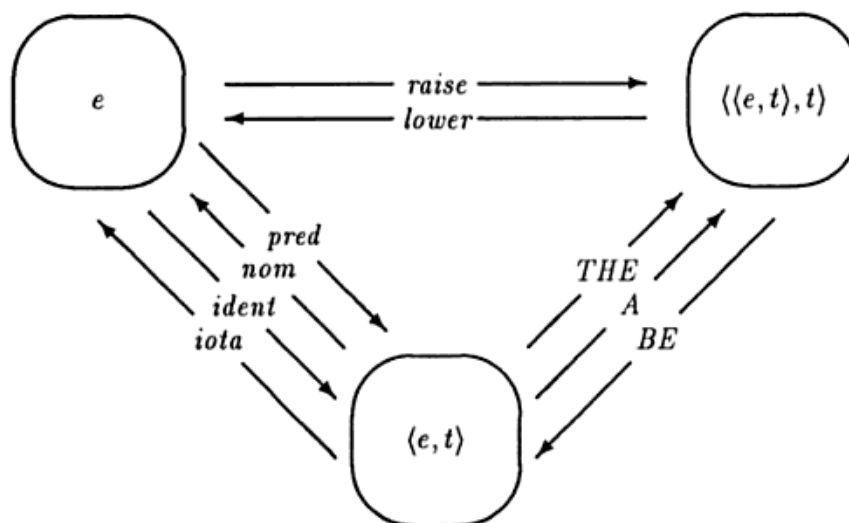


Figure 4.12: Partee’s type-shifting operators (1987)

The typeshifters above allow for the conversion from one type to another where necessary, and are defined in detail in Partee (1987) and Partee (1992). In what follows, I will focus on the operators that convert type $\langle e, t \rangle$ elements into type e elements—that is, *iota* and *nom*—as these are the operators that would allow nouns to be used referentially. I will ultimately propose that the availability of one or the other of these typeshifting elements is variable for common count nouns in Máíhǎkì, dependent on the noun’s reference ratio.

The *iota* operator, ι , is generally taken to have the meaning of the English definite article ‘the’. It takes a property and returns the *largest* individual with that property, which will either be the largest plurality or the unique singleton.

The *nom* operator, $^{\cap}$, was introduced by Chierchia (1984) to account for the nominalization of predicates like the English common noun ‘dog’ into its bare argumental form ‘dogs’, and the adjective ‘blue’ into its nominal form ‘blue’. This idea is further developed in Chierchia (1998b), wherein the author describes $^{\cap}$ as deriving **kinds** (of type e) from **properties** (of type $\langle e, t \rangle$). $^{\cap}$ does this by taking the largest member of some property’s extension *at any given world*. In this way, $^{\cap}$ can be seen as the intensional version of ι .

The notion of kinds was introduced by Carlson (1977) in his influential dissertation on the meaning of English bare plurals (discussed in greater detail in §6.4 of Chapter 6). Carlson analyzes kinds as individuals, like proper names, who happen to have spatiotemporally discontinuous reference. His observation about reference to kinds is adopted by Chierchia

(1998b), who defines kinds as “regularities that occur in nature,” and notes that not every property will have a corresponding kind, as “What counts as a kind is not set by grammar, but by the shared knowledge of a community of speakers” (348).

In a certain way, ι and $\cap$ can be seen as deriving the two types of referential noun that were explored in §4.4: proper names and mass nouns. If we believe that referential nouns have a reference ratio of 1 (that is, that all of the entities that they denote belong to the same set of sets), then the ‘goal’ of typeshifting from $\langle e, t \rangle$ to e is to arrive at a reference ratio of 1. This can be done in two ways: in the case of ι , the e -type argument is derived by focusing on a single entity denoted by the noun in question—one which itself belongs to a unique set of sets—and removing all other entities from consideration. In the case of $\cap$, the e -type argument is derived by focusing on the property or properties that are *common* to some set of individuals—the set of properties are requisite (or prototypical) of the individuals bearing the property in question. Because common count nouns have lower reference ratios than mass nouns or proper names, they must be type-shifted by one or the other of these operators in order to surface as the type e argument of a verb. For some languages, like English or Spanish, this typeshifting is overtly realized as a determiner. For other languages, like Máíhǎ̀kì, it is not.

Figure 4.4.3 below is my attempt to illustrate the two ways in which a predicate of type $\langle e, t \rangle$ may be typeshifted to an argument of type e . The set of three objects in the middle of the diagram represent the denotation of a count noun like ‘cat’, which includes individuals who have some but not all properties in common. ι picks out a particular one of these individuals, and reference is successfully achieved: both the speaker and her interlocutor will have in mind a unique set of properties that could only correspond to one individual. $\cap$ creates an abstraction and successfully achieves reference as well: the individual to which the speaker refers, although it does not correspond to any *actual* individual that either party has ever observed, is uniquely identifiable.

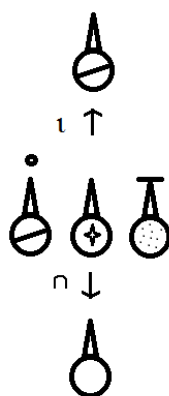


Figure 4.13: The two typeshifters

I should note that my account of $\cap$ —that it returns an individual with the properties that are *requisite* of or *common* to all individuals in some set—is not the same as Chierchia’s definition for this operator, which returns the largest individual at any world. For Chierchia, the kind in any given world is identified with “the totality of its instances” (1998b: 350).

I propose that when a Máíhǎkì noun surfaces bare as the argument of a verb, it has been typeshifted via either ι^7 or $\cap$. I further propose that the availability of these two typeshifters for a given noun varies according to its reference ratio: $\cap$ is available for mass-like count nouns (those whose individuals belong to a largely overlapping set of sets), while ι is available for proper name-like nouns (those that denote many highly differentiable individuals). Nouns that fall squarely between mass-like and proper name-like may be type-shifted to refer to object-like individuals or kind-like individuals with equal ease.

In Figure 4.14 below, we see the eight classes of nouns mapped according to two parameters: total number of properties and number of properties shared. The diagonal line, as it moves northwest, indicates an increase in the felicity of the application of ι as opposed to $\cap$.

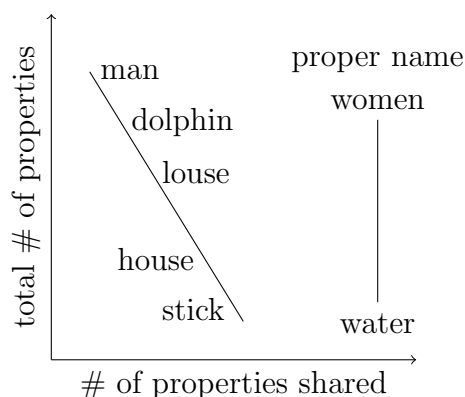


Figure 4.14: Number of properties versus number of properties shared

The reference ratio is the number of properties shared by or common to all individuals in some set divided by the sum total of properties exhibited by those individuals. For instance, individuals in the set ‘man’ have a very high number of properties and a very low number of properties shared; the reference ratio of ‘man’ therefore, is rather low. Individual instances of ‘water’, on the other hand, have comparatively very few properties, and nearly all of them are shared, so the reference ratio of ‘water’ is high (i.e., closer to 1). Another way of thinking of the reference ratio is as the relationship between *incidental* and *necessary* properties of some kind of thing. Figure (4.15) below shows a schematization of this concept for ‘dog’: the reference ratio is calculated by tallying the ‘necessary’ properties of dogs (i.e., the ones

⁷Since Máíhǎkì does not exhibit a morphological or syntactic difference between definite and indefinite noun phrases, ι is perhaps not quite the right typeshifter. In Chapter 6 I will explore the idea of a choice function, which returns an individual from a set in the manner shown in Figure 4.4.3.

that all dogs share) and dividing this number by the number of ‘incidental’ properties of dogs (i.e., the ones that each dog brings to the table).

$$\frac{\text{necessary}}{\text{incidental}} = \frac{|\{\{x : x \text{ barks}\}, \{x : x \text{ is a mammal}\}, \dots\}|}{|\{\{x : x \text{ is little}\}, \{x : x \text{ is brown}\}, \dots\}|}$$

Figure 4.15: Calculating the reference ratio for ‘dog’

The position of Group 3 and 4 nouns (*tíká* ‘stick’ and *wèè* ‘house’, respectively) in the illustration in 4.14 will be discussed in further detail in Chapter 5, which deals with noun classification. The basic idea is that inanimate count nouns, by virtue of being inanimate, have relatively few properties. By virtue of being discrete, the individuals denoted by count nouns also have fewer properties in common (i.e., they are more distinguishable from one another). The position of Group 1 nouns (like *nómí*) will be discussed in Chapter 6, which deals with plurality. The basic idea is that these nouns are highly animate (i.e., have many properties), but that plurality ‘smooths over’ the differences between atomic individuals. In other words, the union of the sets that at least two individuals belong to is likely much smaller than the union of the sets that each singular individual belongs to.

From the Figure 4.14 above, we can begin to see where the structure in the Reference Wheel (Figure 4.10) might come from: nouns that have similar reference ratios pattern together morphosyntactically.

At this point, a reasonable question might be “How could we possibly calculate the reference ratio of any noun?” Or “How could we possibly quantify the number of properties that one kind of thing versus another kind of thing has?” The reference ratio, as I have described it, is my attempt to formalize the notions of ‘familiarity’ and ‘distinguishability’. Its actual calculation is dependent on having some model of the world in which certain things belong to certain sets, in the same way that evaluating the truth of an utterance is dependent on a model of the world in which certain things belong to certain sets. I have suggested that in *our* world, some things, like lice, have fewer properties (i.e., can be said to belong to fewer sets) than other things, like dogs. I am aware that this claim is based on an intuition that I have about the world that we live in, and that this intuition could only be proven true via experimental methods of the sort performed by cognitive scientists.

4.5 Chapter 4 summary: deriving nominal hierarchies from the reference ratio

I began this chapter with the observation that the nuanced lexical semantics of Máíhǎkì nouns have implications for the morphosyntactic behavior of those nouns. These ‘splits’ in the morphosyntax appear to be sensitive to what others have called a ‘hierarchy’. A survey of hierarchies that have been proposed for various languages and various morphosyntactic behaviors revealed that there is some confusion about and no consensus on what these are

hierarchies *of*, although it seems clear that there must be several parameters that interact to determine how a given noun will pattern. A survey of the morphosyntactic behaviors that appear sensitive to a hierarchy in Máíhǎ̀kì revealed eight distinct groups of nouns which form the basis of the analysis presented in §4.4. This analysis holds that the nominal lexicon of a language varies with respect to a ‘reference ratio’, which may be calculated by comparing the number of elements in the *intersection* of the sets to which individuals denoted by a noun belong to the number of elements in the *union* of those sets. What would such a ratio have to do with differential object marking, noun classification, split possession, or any of the other behaviors that have been proposed to be sensitive to a hierarchy?

The answer, I believe, is that the degree of similarity between the entities in the extension of some property has implications for the coherence of that property, and therefore for the ways in which it may interact with other properties. For instance, relational nouns, like kin terms or part terms, might be expected to have extremely low reference ratios, as the set of entities that they denote is highly variable. They may thus be expected to combine with other nouns in order to become referential. Nouns with extremely high reference ratios, like proper names, masses, or inherent plurals might not be expected to have plural marking, as plural individuals would be indistinguishable from singular individuals. Nouns with few properties and a large proportion of properties in common might make good classificatory elements, as they may easily refer to *kinds* of things. The major advantage of this analysis is that it can account tidily for the differences in the morphosyntactic behavior of nouns that on the surface seem to denote very similar classes of things. In the following chapters, we will see how this account of nominal reference has bearing on the Máíhǎ̀kì systems of noun classification and nominal plurality.

Chapter 5

Noun classification

5.1 Introduction

In the previous chapter, we saw that the Máíhǎ̀kì nominal lexicon may be divided into eight groups based on unique patterns of morphosyntactic behaviors. I suggested that an element's position on the Reference Wheel (Figure 4.10) is determined, essentially, by how alike the entities are that that element could possibly denote. In this chapter, we will investigate the semantics and morphosyntax of classifiers—a set of at least 70 morphemes, the most common of which are listed and exemplified in Appendix E, that may be suffixed to verbal, adjectival, demonstrative, and certain nominal roots, deriving new lexemes. We will see that there is significant overlap between the domains of ‘true’ classifiers (i.e., morphemes that may *only* serve as classificatory elements) and of nominal roots, suggesting that these morphemes fall along a continuum of grammaticalization. This continuum will serve as the undercurrent of the three major sections of this chapter: one in which I situate the Máíhǎ̀kì system of classifiers within a broader typology of noun categorization devices; one in which I offer a description of the lexical semantics, morphosyntax, and discourse functions of Máíhǎ̀kì classifiers; and one in which I present a formal semantic analysis of classification.

I begin in §5.2 by embedding my discussion of Máíhǎ̀kì classifiers in the existing typology of noun categorization devices, which was developed primarily with Indo-European and Bantu noun class systems and East Asian numeral classifier systems in mind, and which in recent years has recognized comparable phenomena in Amazonia as ‘unusual’ (Aikhenvald 2000), ‘problematic’ (Grinevald 2003), or intermediately grammaticalized (Grinevald & Seifart 2004). As we will see, the Máíhǎ̀kì system of noun classification exhibits the definitional properties of both a gender or noun class system (i.e., agreement within the noun phrase), and a numeral classifier system (i.e., obligatory classification in the context of numerals).

§5.3 offers a detailed description of the Máíhǎ̀kì noun class system, building on the preliminary description provided in §3.4. I begin by defining ‘classifier’ in morphosyntactic terms and exploring the range of morphemes to which this label may apply. I then focus on the lexical semantics of classifiers, elaborating on the salient distinctions captured by these mor-

phemes in various domains. Next, I discuss the types of elements to which classifiers may be suffixed, including nouns, adjectives, verbs, demonstratives, and numerals. Finally, I explore the syntactic and discourse functions that classifiers exhibit: the derivation of nouns, adjectives, numerals, and demonstratives; the discretization of masses; the marking of agreement between subject and predicate and between nominal modifiers; and the tracking of referents across discourse.

In the formal semantic analysis of Máíhǎ̀kì classifiers presented in §5.4, I argue that the classifier construction contains two elements: a classifier head of type $\langle e, t \rangle$ and a modifier of type $\langle \langle e, t \rangle, t \rangle$, which combine via a process akin to Predicate Modification (Heim & Kratzer 1998) to form a new lexical item. The ability of a morpheme to occupy either the head or the modifier slot is dependent on its reference ratio.

Ultimately, the image of Máíhǎ̀kì and other Amazonian classifiers that emerges from this chapter is that they are primarily operators in the process of lexicogenesis and particularly in the derivation of (count) nouns. The combinatorial semantics that happen at the level of the phrase in a language like English seem to happen at the level of the lexeme in Máíhǎ̀kì.

5.2 Background: What is noun classification?

The term ‘classifier’ is notoriously vague—it has been used to describe morphemes with a wide variety of semantic and morphosyntactic properties, unified tenuously by their ability to categorize. In what follows, I will survey four authors’ attempts to draw boundaries between noun categorization devices of various types based on both semantic and morphosyntactic criteria. I will then narrow the focus to the classification systems of the Amazon basin, which are argued to challenge and inform the typologies that initially excluded them.

5.2.1 Typologies of noun classification

Allan (1977), in what was perhaps the first to attempt at a typology of noun classification, outlines four major categories of “classifier languages”: **numeral**, in which classifiers are required in quantifictional expressions but also appear frequently in anaphoric and deictic contexts; **concordial**, in which classifiers are affixed to nouns, modifiers, predicates, and pro-forms as markers of agreement or noun class; **predicate**, in which verb stems differ in form depending on the physical characteristics of the objects participating in the event; and **intra-locative**, in which “noun classifiers are embedded in some kind of locative expressions which obligatorily accompany nouns in most environments” (Allan 1977:287). In addition to his crosslinguistic morphosyntactic typology of classification, Allan offers a semantic typology of classifiers: they categorize items based on material, shape, consistency, size, location, arrangement, or quanta. This typology will form the basis of my discussion of Máíhǎ̀kì lexical semantics in §5.3.2.

Dixon (1986) diverges from Allan in positing a single major division in the typology of noun categorization devices. He argues for the separate treatment of **noun classes**, which

include Indo-European gender systems as well as Bantu noun class systems, and which he considers a *grammatical* phenomenon, and **noun classification**, which includes the numeral classifiers of East and Southeast Asian languages, and which he considers a *lexico-syntactic* phenomenon (105).

Dixon discusses how noun class and noun classification systems pattern with respect to the size of the inventory of classificatory elements, the morphological realization of the classifying morpheme, and the scope of classification. In terms of the size of the classificatory system, languages with noun class are characterized by the exhaustive categorization of all nouns, while in languages with noun classification, it is possible for a noun to take more than one classifier, or not to take any classifier. In terms of morphological realization, markers of noun class are generally affixal, while noun classifiers are “always free forms” (106). Finally, the scope of noun class is in general much broader: class is never marked solely on the nominal element; it participates in concord processes on other elements in the phrase. Noun classifiers are uniquely realized, never participating in broader concordial processes. Table 5.1 provides a summary of Dixon’s typology.

PROPERTY	NOUN CLASS SYSTEMS	NOUN CLASSIFIER SYSTEMS
CLASSIFYING MORPHEME IS FREE	✗	✓
EXHAUSTIVELY PARTITION LEXICON	✓	✗
CONCORDIAL PROCESSES	✓	✗

Table 5.1: Dixon’s typology of classification (1986)

Aikhenvald (2000) presents a finer-grained typology of noun categorization devices, outlining five broad types of systems along with numerous minor and sub-types. Her major divisions are between noun class or gender systems, noun classifier systems, numeral classifier systems, classifiers of possession, and verbal classifier systems. She evaluates these systems along several parameters, including their morphosyntactic locus of encoding, whether they participate in agreement processes, their grammaticalization trajectories and degree of grammaticalization, and their semantic organization. I will focus here on the first three of Aikhenvald’s categories (gender, noun classifiers, and numeral classifiers), as these are the three types of systems with which the Máìhǎkì system of classification may be argued to bear the most similarity.

Aikhenvald defines gender systems as “grammaticalized agreement systems” in which the gender of the noun is obligatorily realized separately from the noun itself and is sometimes not overtly marked on the noun at all (as is the case for most Máìhǎkì animate nouns—see §5.3.2). The locus of this realization is most typically nominal modifiers, but markers of gender may occasionally occur on some element outside of the noun phrase, such as a predicate or adverbial modifier (19). Noun classifiers, on the other hand, typically co-occur with the noun in the noun phrase and do not participate in agreement processes. The choice of noun classifier is often based in semantics, and classifiers may be ‘swapped out’ for one another resulting in different meanings. In other words, a given noun will be assigned neither

exhaustively nor exclusively to a particular category, as would be the case in a canonical gender system. Finally, Aikhenvald’s definitional property of numeral classifiers is that they occur contiguous with numerals or expressions of quantity. A summary of the criteria for these three categories is presented below in Table 5.2.

	GENDER	NOUN CLASSIFIERS	NUMERAL CLASSIFIERS
AGREEMENT	✓	✗	✗
UNIQUE AND EXHAUSTIVE CATEGORY ASSIGNMENT	✓	✗	✗
CONTIGUOUS TO NUMERAL	✗	✗	✓
CAN HAVE SEMANTIC ASSIGNMENT	✓	✓	✓
MORPHOLOGICAL OR PHONOLOGICAL ASSIGNMENT	✓	✗	✗
CAN BE OPEN LEXICAL CLASS	✗	✓	✓

Table 5.2: Properties of gender, noun classifier, and numeral classifier systems (Aikhenvald 2000)

In contrast to Dixon (1986:106), who states that “there is seldom any difficulty in distinguishing between [noun classes and noun classifiers],” Aikhenvald notes that the types of systems outlined above should not be taken “as discrete entities, but rather as focal points on continua of various properties” (13). Grinevald (2000) echoes this sentiment with her proposal of a single continuum of noun categorization devices that varies along the dimension of grammaticality. At the ‘grammatical’ end of the continuum are gender or noun class systems, while at the ‘lexical’ end are measure terms and class terms.

Grinevald agrees with Dixon and Aikhenvald in defining **gender** systems as those in which the class of the noun is realized outside the noun itself, appearing on other elements of the clause, such as adjectives, demonstratives, articles, numerals, possessives, pronouns, or, less commonly, adverbs, adpositions, and complementizers. Another feature of gender, according to Grinevald, is that it is exhaustive and obligatory: all nouns will belong to a gender class, and this class will be discernible, if not from the form of the noun itself, in some morphosyntactic environment. The motivation for gender assignment is not always semantic, and the number of noun classes is generally relatively small. This separates gender systems from **noun class** systems, which do not rely on distinctions in sex, are generally larger, and have more semantically transparent lexical origins. Grinevald argues, in agreement with Dixon (1986) and Corbett (1991), that gender systems and noun class systems fall under the same umbrella; the terminological difference is non-principled and arises from a long history of distinguishing systems based largely on sex from those that take into account other aspects of the phonology or semantics of nouns.

At the lexical end of the continuum, Grinevald mentions **measure terms** and **class terms**. Measure terms are expressions of quantity, like the English ‘glass of water’, or of

arrangement, like ‘pile of books.’ She notes that in languages with **classifiers**, measure terms and classifiers often belong to the same syntactic category. Grinevald defines ‘class terms’ as “classifying morphemes which participate in the lexico-genesis of a language” (59). She gives the English examples of ‘-berry’ and ‘-tree’. Constructions with class terms are often difficult to distinguish from compound nouns, as class terms are often highly semantically transparent and have very clear lexical origins. They differ from classifiers in that they generally do not appear in quantifying or other morphosyntactic constructions. Grinevald’s continuum of classification is reproduced below in Figure 5.1.

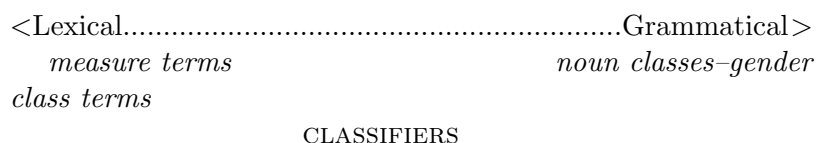


Figure 5.1: Systems of nominal classification (Grinevald 2000:61)

Grinevald's primary focus is on the categorization devices that fall along the 'intermediately grammatical' portion of her continuum. These are what she labels 'classifiers'. **Classifiers** are 'intermediate' because they have clear lexical origins but are part of "specific morphosyntactic constructions" (61). Grinevald establishes four major groups in her typology of classifiers: 1) numeral classifiers; 2) noun classifiers; 3) genitive classifiers; and 4) verb classifiers. **Numeral classifiers** are labeled as such because of their co-occurrence with numerals or other quantificational devices, although, as Allan (1977) noted, these morphemes often also occur in deictic constructions. **Noun classifiers** differ from numeral classifiers in that they do *not* appear in quantificational contexts; they are free morphemes that appear "next to the noun itself or within the boundaries of the noun phrase with other determiners of the noun" (64). **Genitive classifiers**, by definition, appear in possessive constructions bound to the possessor but classifying the possessee. Not all nouns of a given language will be classified in this way—there will be a certain set of culturally salient nouns that trigger genitive classification. Finally, **verbal classifiers** appear within the verb, classifying one of the verb's arguments. Grinevald draws a distinction between 'incorporated (verbal) classification', in which the classifier has the same form as a generic noun, and verbal classification in which the classifier is phonologically eroded.

The above survey of typologies of noun categorization devices reveals disagreement among scholars as to the breadth of the phenomenon, the discreteness of its subparts, and the appropriate set of labels for those subparts.¹ Nevertheless, there seems to be a general consensus that classificatory elements vary significantly along the dimension of *grammaticalization*, with highly grammatical systems of gender agreement at one end of the spectrum and elements with more transparently lexical origins, such as numeral classifiers, closer to the other. As we will see in the following section, the languages of the northwest Amazon basin lend credence

¹A glossary in Appendix B provides summary of the important concepts discussed above.

to the idea that systems of noun categorization are better described along a continuum of grammaticality.

5.2.2 Classifier systems of the northwest Amazon Basin

For several decades, scholars have noted the difficulty posed by Amazonian languages for a coherent typology of noun categorization devices. Early discussions of this type focused on the divergence of Amazonian systems of classification from the categories described by Allan (1977) (outlined in §5.2.1 above). Payne (1986:113), for instance, argues that Allan's typology is not suitable for Yagua (Peba-Yaguan), and that "[p]reliminary research on other languages of the western Amazon region indicates that this mixing of numeral and concordial systems, as well as lack of a clear distinction between the derivational versus inflectional status of classifiers, are areal characteristics." In a later survey of the classification systems of Amazonian languages, Derbyshire & Payne (1990:243) state that "[t]he chief characteristic of most of the Amazonian classification systems . . . is that they cannot be labelled discretely as any one type [in Allan's typology], but are a mixture of two or all three types." Later, the focus shifted to the 'strangeness' and 'complexity' of such systems—Aikhenvald & Green (1998:429), for instance, describe Amazonian languages as having "complicated and unusual systems of noun classification devices." Aikhenvald (2000:94) gives these languages a label—'multiple classifier systems'—and establishes them as a feature "typical of classifier languages of South America, especially those of Northwest Amazonia." Grinevald & Seifart (2004:260) argue that it is precisely the fact that Amazonian systems of classification are 'mixed'—that the same classifying morphemes can appear in a variety of morphosyntactic environments—that causes them to be viewed as typologically 'problematic'.

It is clear that the classificatory systems of the languages of the northwest Amazon Basin have many features in common, and that these features have the potential to better inform a broad typology of noun categorization devices. What is perhaps more enticing is the idea that these systems may provide a 'missing link' between highly grammaticalized systems of gender and more lexical systems of noun classification—systems which are likely related in interesting ways, but which on the surface have little more in common than the fact that they are involved in categorization. I mean 'missing link' both in a diachronic sense (that Amazonian classifier systems might be viewed as being at a stage of grammaticalization intermediate between gender and classifiers) and in a synchronic sense (that they blend the features of the two extremes in a way that allows us to reevaluate the structure of the continuum).

Below, I survey the classification systems of various languages of the western Amazon basin, drawing attention to the features that they have in common with each other and with the Máíhìkì classifier system outlined in §3.4. This survey will serve as a basis of comparison for the more detailed description of Máíhìkì classification that follows in §5.3.

Eastern Tukanoan

The classification systems of Eastern Tukanoan languages are characterized by several properties: 1) a salient distinction between the classification of animate and inanimate entities; 2) classifiers with a broad range of morphosyntactic loci and functions; and 3) classifiers that vary significantly in degree of lexicality. The first of these properties—a salient distinction between the classification of animate and inanimate entities—may manifest itself in an opposition between what several authors have called ‘general’ versus ‘specific’ class. This terminology, introduced by Seifart (2005) for Miraña (see §5.2.2 below), has been used somewhat inconsistently in grammatical descriptions of Eastern Tukanoan languages. For most authors, ‘general’ versus ‘specific’ class aligns primarily with a distinction in animacy (‘general’ classifiers divide animates into masculine, feminine, and plural, and ‘specific’ classifiers divide inanimate objects into shape-based classes). Departures from this usage are noted in the discussion below.

Seifart’s distinction was adopted by Gomez-Imbert (2007) in her description (revised from Gomez-Imbert (1982)) of classification in Tatuyo, an Eastern Tukanoan language spoken in southern Colombia. Gomez-Imbert describes four ‘general’ classifiers (which she calls ‘class markers’) for Tatuyo, which participate in sentence-level agreement and separate nouns into classes based on animacy, biological sex, and number. There are also around 100 ‘specific’ classifiers, which differentiate nouns based largely on the physical properties of their referents. Gomez-Imbert notes that “the two sets of classifiers are not separate devices; they constitute a single global system, where the short paradigm is included in the larger one” (406). This type of system is also attested in Tuyuca, an Eastern Tukanoan language spoken in Colombia and Brazil. Tuyuca, described by Barnes (1990) has three animate classifiers: masculine singular, feminine singular, and plural, while inanimate classifiers may be divided into ten semantic categories: “shape, collection, arrangement, anatomical, botanical, geographical, container, manufactured item, consistence, and time” (275). Kubeo, an Eastern Tukanoan language spoken in Colombia and Brazil, also exhibits a division between animate classifiers, which specify biological sex and number, and inanimate classifiers, which classify objects in terms of form or function. Morse & Maxwell (1999) use the terms ‘general’ and ‘specific’ in a different manner from Seifart (2005) and Gomez-Imbert (2007): ‘general’ classifiers are the most semantically bleached, referring to a single salient property of an object (e.g. its dimensionality), while ‘specific’ classifiers retain a high degree of lexical semantics. Desano, also spoken in Colombia and Brazil, has a set of animate classifiers that divide referents into three classes (masculine singular, feminine singular, and plural), and a set of over 100 inanimate classifiers that specify the physical properties of objects (Miller 1999). Miller makes note a ‘general’ classifier, *-yẽ*, which underspecifies shape. In later work on Desano, Silva (2012) draws a distinction between general classifiers (or ‘gender markers’), which are reserved for animate nouns, and specific classifiers (or ‘classifiers’), which are reserved for inanimate nouns. General and specific classifiers are further differentiated by the morphosyntactic environments in which they may appear (e.g., general classifiers may be suffixed directly to verb roots or numerals, while specific classifiers must follow one of two

nominalizing suffixes in deverbal nominalizations, and may not be suffixed to numerals at all).

The second salient property of Eastern Tukanoan classifier systems is the broad range of morphosyntactic loci and functions exhibited by classifiers. In Tatuyo, both general and specific classifiers participate in deriving new lexical items and in processes of agreement, the targets of which are “deictics, anaphorics, numerals, interrogatives, possessive and locative constructions” (Gomez-Imbert 2007:410). Similarly, Barnes (1990) describes classifiers in Tuyuca (both animate and inanimate) as appearing on numerals, demonstratives, genitives, nouns, and nominalized verbs. These morphemes have both derivational and inflectional properties, and may play a role in reference tracking across discourse. Barnes references Allan’s (1977) typology of classification, noting that Tuyuca bears some similarity to both his concordial classifier systems and numeral classifier systems.

Finally, many authors have noted that Eastern Tukanoan classifiers exhibit a high degree of variability in their status as lexical versus grammatical morphemes. For instance, Chacon (2012) analyzes classifiers in Kubeo as “morphemes that fall somewhere between a lexical and a functional category” (254). He divides nominal lexicon of Kubeo into ‘class 1’ and ‘class 2’ nouns, which differ with respect to whether they are repeaters (i.e., whether they can serve as classifiers), suggesting a large degree of overlap between the nominal and classifier inventories (as we will see is also the case in Máíhǎkì). Similarly, Stenzel (2004) outlines three types of classifiers in Wanano, an Eastern Tukanoan language spoken in Brazil and Colombia. These are classifiers which may also function as nominal roots, classifiers that are related to nominal roots but that have reduced forms, and classifiers that have highly opaque lexical origins.

Western Tukanoan

As in Eastern Tukanoan languages, the classification systems of Western Tukanoan languages are characterized by a distinction in ‘general’ versus ‘specific’ class. Bruil (2014) uses this terminology to describe the classifiers of Ecuadorian Siona: ‘general’ class distinguishes between animate feminine singular, animate masculine singular, and other (plural or inanimate), while ‘specific’ class makes finer-grained distinctions in shape or function. This is also the case for Colombian Siona as described by Wheeler (1987), for Koreguaje, spoken in Colombia (Cook & Criswell 1993), and for Ecuadorian Sekoya (Johnson & Levinsohn 1990). Although these authors do not make explicit reference to ‘general’ and ‘specific’ class, they all describe systems which distinguish between masculine singular, feminine singular, and inanimate/plural entities, and which make shape-based divisions among inanimates.

Another similarity with classifiers in Eastern Tukanoan languages is that Western Tukanoan classifiers may appear in a broad range of morphosyntactic environments. Wheeler (1987) shows that classifiers can be suffixed directly to verbal and adjectival roots in Colombian Siona, deriving nominal elements. Likewise, Bruil (2014) describes classifiers in Ecuadorian Siona as able to be suffixed to nominal, numeral, demonstrative, adjectival, and verbal roots.

Classifiers in Western Tukanoan languages also exhibit a broad range of morphosyntactic functions. These include participation in agreement with the predicate (in the cases of Siona and Sekoya, triggered only by general class) and within the noun phrase. In general, agreement appears to be ‘optional’ within the Siona and Sekoya noun phrase; Cook & Criswell (1993) describe classifiers as appearing on numerals and adjectives only in cases of “emphasis” (38), and Bruil (p.c.) confirms this optionality for Ecuadorian Siona. Western Tukanoan classifiers may also have a derivational (nominalizing) function—both Cook & Criswell (1993) and Bruil (p.c.) indicate that the feminine general classifier *-ko* is used in deverbal nominalizations, although shape-based specific classifiers are also permissible. Finally, in all of these languages, classifiers may also serve a reference-tracking function.

We will see in §5.3.4 that Máíhǎkì has many traits in common with other Western Tukanoan languages, but that it appears to diverge in the obligatoriness of NP-internal agreement.

Peba-Yaguan

Payne (1986) describes the classification system of Yagua, the sole extant member of the Peba-Yaguan language family, spoken in northeastern Peru. Payne frames her discussion around the notion that Yagua ‘classifiers’, in blurring the boundaries established in Allan’s (1977) typology, urge us to “re-examine whether there is a principled distinction between numeral and concordial classifier systems” (113).

As in the Tukanoan languages, inanimate and animate nouns in Yagua pattern differently with respect to class marking. Animate nouns are categorized based on number (singular, dual, or plural), while inanimate nouns are categorized largely based on shape or material. Yagua has a ‘general’ classifier, *-ra*, which may appear in the place of a more specific, shape-based classifier, and which generally classifies inanimate nouns (although it may also be used for animates of lower animacy or topicality).

Payne (2007) argues that the main criterion for classifierhood in Yagua is the ability to be suffixed to numerals and demonstratives. She notes that this may be analyzable as an NP-internal agreement process, although numerals and demonstratives suffixed with classifiers may also appear as the sole elements in a noun phrase (as is the case in some Tukanoan languages). Payne also notes that the extent to which the set of Yagua classifiers may be considered open is debatable, as there is a large set of ‘unique’ classifiers that only classify a single noun. In addition to the morphosyntactic function of agreement, Payne notes that Yagua classifiers have derivational properties: “within the noun phrase they are integral to the formation of numbers, demonstratives, and sometimes descriptive modifiers” (121).

Boran

Seifart (2005) provides the most in-depth description of an Amazonian system of noun classification to date. He gives an overview of noun classes in Miraña, a Boran language spoken in Colombia and Peru, and is the first to propose a distinction between ‘general classifiers’,

which distinguish between animacy, sex, and number, and ‘specific classifiers’, most of which make distinctions in the physical properties of their referents. Thiesen & Weber (2013), in their description of classifiers in Bora, a Boran language spoken primarily in Peru, note that animate classifiers distinguish between singular, dual and plural number and masculine and feminine sex, while inanimate classifiers, of which there are several hundred, primarily make distinctions in shapes and ‘positions’. As in other classifier systems of the region, there is a ‘general’ classifier in Bora, *-nɛ*, which classifies inanimate objects without reference to shape or any other properties.

Both Bora and Miraña classifiers may be suffixed to a variety of roots, including noun roots, pronominal roots, finite verbs, relative clauses, demonstratives, adjectives, numerals, interrogatives, and quantifiers. The morphosyntactic functions of classifiers in these languages include agreement with the predicate and within the noun phrase, nominal derivation and individuation, and reference tracking across discourse. Seifart does not consider repeaters (i.e., nouns with homophonous class-marking suffixes) to be classifiers in Miraña, but suggests that classificatory elements fall on a spectrum of lexicality, as is the case in the Tukanoan languages as well.

Witotoan

Petersen de Piñeros (2007) differentiates between ‘gender’ and ‘classifiers’ in Uitoto, a Witotoan language spoken in Colombia. She describes two singular gender markers (masculine and feminine), and differentiates them from a set of around 100 classifiers by their inability to be incorporated into verb stems and to nominalize finite verbal forms. Classifiers make distinctions in the physical properties of objects, and may be suffixed to nominal roots, demonstratives, quantifiers, interrogatives, attributives, and verbal roots. A general classifier, *-e~je*, is used for mass nouns, collective nouns, and in contexts where a speaker wishes to underspecify the physical properties of an object. The primary function of classifiers described by Petersen de Piñeros (2007) is as anaphoric elements. Unlike in other languages of the Northwest Amazon, the system of nominal classification in Uitoto is not highly grammaticalized, and there is little evidence for agreement processes within the NP. Furthermore, classifiers do not seem to serve an individuating function in Uitoto.

Wojtylak (2014) describes the system of noun classification in Murui, a Witotoan language spoken in Colombia and Peru. The author characterizes Murui as a ‘multiple classifier language’, following Aikhenvald (2003), due to the appearance of classifiers in a variety of morphosyntactic environments. Classifiers in Murui form a semi-open class, as all inanimate nouns may function as repeaters. Animate classifiers distinguish between masculine and feminine sex, while inanimate classifiers (of which there are at least 80) distinguish primarily between the physical properties of objects. There is also a general classifier *-e*, which does not specify a shape or consistency, and a set of ‘unique’ classifiers, which characterize abstract nouns. Classifiers may appear on nouns, adjectives, pronouns, demonstratives, low numerals, interrogatives, anaphoric forms, and verbal roots, and they have reference-tracking and derivational functions.

Arawakan

Aikhenvald (2000) and Aikhenvald (2003) describe the system of noun classification in Tariana, an Arawakan language spoken in Brazil, as a ‘multiple classifier system’: it has classificatory elements that appear in a variety of morphosyntactic environments and that have a variety of morphosyntactic and discourse functions. Aikhenvald distinguishes between ‘gender’, which she treats as the specifications that govern agreement with the predicate, and ‘noun class’, which she treats as the specifications that govern agreement with nominal modifiers. In this scheme, Tariana has two genders, feminine and non-feminine, and a possibly open set of noun classes, typically defined in terms of shape. The openness of the set of noun classifiers is due to the ability of any noun with an inanimate referent to serve as a repeater. Aikhenvald calls suffixes that mark noun class on adjectives and other modifiers ‘classifiers’ and notes that these suffixes may also have reference-tracking and derivational functions. This set of morphemes may be suffixed to numerals, demonstratives, and possessive pronouns.

5.2.3 Summary

This section has demonstrated that the languages of the northwest Amazon basin both challenge traditional typologies of nominal classification and form a coherent areal group. The cluster of features that allow these languages to defy characterization in terms of the criteria outlined by Allan (1977) or Dixon (1986) is shared by a diverse range of language families (Arawakan, Boran, Peba-Yaguan, Tukanoan, Witotoan).

The prominent features of the classification systems of the languages of the Northwest Amazon basin are:

1. A salient distinction between animate and inanimate nouns
2. A division between ‘general’ and ‘specific’ class that may manifest itself either in the division between animate and inanimate nouns, or in the division between agreement with the predicate and NP-internal agreement
3. A large set of ‘specific’ classifiers that make distinctions largely in the physical properties of inanimate objects
4. Classifiers that fall somewhere along a scale from lexical to grammatical, with ‘repeaters’ at one end and monomoraic/monosyllabic classifiers with opaque lexical origins at the other
5. Classifiers that exhibit agreement, derivational, individualizing, and reference-tracking functions

We will see in the following section that Máíhìkì exhibits all of these features, suggesting that its system of noun classification is typical among the languages of the northwest Amazon Basin.

5.3 Description of Máíhǎ̀kì classifiers

Now that we have surveyed the traditional typologies of systems of noun classification and established that languages of the northwest Amazon Basin exhibit a set of features that challenge these typologies, I will shift our focus to a description and analysis of classifiers in Máíhǎ̀kì. This description will build on the preliminary discussion of classification in §3.4.

First, a terminological note is in order: as we have seen, most of the vocabulary surrounding systems of noun classification was developed without Amazonian languages in mind. Because these languages challenge the coherence of established categories, applying existing labels to similar phenomena in Máíhǎ̀kì is problematic. Throughout this section and the rest of the chapter, I will continue to use the term ‘(system of) noun classification’ to refer broadly to the mechanism through which a language categorizes its nominal elements either semantically or grammatically; this encompasses systems of gender/noun class as well as all types of ‘classifier’ systems. I will call the relevant morphemes in Máíhǎ̀kì ‘classifiers’.

5.3.1 What counts as a classifier?

The survey of the noun classification systems of the languages of the northwest Amazon basin presented in §5.2.2 revealed that a certain degree of ‘fuzziness’ in the boundary between classifiers and nominal roots is likely an areal feature. As we will see in this section, this ‘fuzziness’, present in Máíhǎ̀kì as well, complicates the task of defining a clear-cut set of criteria for classifierhood. In his description of Miraña classifiers, Seifart (2005) deals with this issue by systematically excluding ‘repeaters’—classifier-like elements that have homophonous nominal counterparts—from his definition of ‘classifier’. While this stipulation is appealing in that it imposes a clear boundary between classifiers and nouns and between classification and compounding, I believe that it is more enlightening to discuss classification in Máíhǎ̀kì as a lexico-generative process to which some morphemes are better suited than others; that is, morphemes fall along a spectrum of suitability for classifierhood according to a set of criteria based on the ‘prototypical’ classifier. In my attempt to define these criteria below, I treat the most grammaticalized classifiers as closer to “prototypical” because these morphemes have no function other than as suffixal, classificatory elements, whereas morphemes at the lexical end of the spectrum lead double lives as suffixes and roots, classifiers and nouns. The proposed criteria for a “prototypical” (i.e., highly grammaticalized) classifier are shown below in (127).

- (127) A Máíhǎ̀kì classifier is a morpheme that categorizes the word it derives based on some salient property of its semantics; that may be suffixed to verbal, adjectival, demonstrative, numeral and non-discrete nominal roots as well as relative clauses; that derives count nouns; that participates in agreement both with the predicate and within the NP; and that marks discourse anaphors.

The first of these criteria—that a classifier specifies the semantic class of a derived word—is broad enough to encompass both the grammatical and lexical ends of the spectrum (i.e.,

both classification and compounding). I further propose that the necessary and sufficient conditions for classifierhood are 1) the ability to be suffixed to all of the types of roots listed above and 2) the ability to derive a count noun. These criteria will separate constructions with class markers from nominal compounds, but they will still allow three sub-types of class marker, differentiated by whether a homophonous root exists in the lexicon, and further by the nominality of this homophonous root. I call these sub-types **repeaters**, **intermediate classifiers**, and **full classifiers**. (‘Full’ and ‘intermediate’ may be thought of as shorthand for ‘fully grammaticalized’ and ‘intermediately grammaticalized’.)

In the following sections, we will explore the continuum from grammatical to lexical, beginning with the ‘full’, most prototypical classifiers.

Full classifiers

Full classifiers are exclusively suffixal. They have no homophonous forms that may be suffixed with verbal or nominal inflection. Full classifiers are often monomoraic and have idiosyncratic semantics outside the domain of shape. These are listed below in Table 5.3.

FULL CLASSIFIER	THINGS CLASSIFIED
-ba	groves, enclosures, female genitals
-bi	fallen trees, fruits, containers
-hu	lights
-huru	vicinities
-ko	feminine animals
-ki	masculine animals
-nu	times
-ñi	trees, stalks
-ra	non-riverine bodies of water
-ri ~ -ti	machetes, nets
-ro ~ -to	pots, inner ears, places, times
-ruru	directions
-seu	roots, machines
-so	quantities
-ti	sides
-ya	rivers, streams
-yo	fingers, sticks

Table 5.3: Full classifiers

I analyze full classifiers as occupying the bottom left corner of the Figure 4.14: they both have very little ‘lexical content’ (i.e., very few properties) and are very idiosyncratic (i.e., have very few properties in common).

Intermediate classifiers

Unlike full class markers, intermediate classifiers are characterized by the existence of a homophonous root in the lexicon. Unlike the homophonous root counterparts to repeaters (discussed below), the root counterparts to intermediate classifiers are in some sense ‘referentially deficient’, either because they cannot refer to object-level individuals, or because they are not nominal at all. These two sub-types of intermediate classifiers, which I call **intermediate classifiers with nominal counterparts** and **intermediate classifiers with non-nominal counterparts**, respectively, are discussed below.

Intermediate classifiers with nominal counterparts

A small set of classifiers have nominal counterparts in the lexicon that, while they may appear bare in certain contexts, never have specific reference. Example (128) shows the classifier *-turi*, used for enclosed spaces, suffixed to the noun *wèè* ‘house’, while the homophonous nominal counterpart stands free as the generic object of the verb *née* ‘make’.

(128) wètúrí, túrí tèà néehì ímìhùrùdèà néesì

wèè -turi túrí tèà née -hì ímì -huru -rea née
house -CL:enclosure room also make -PL.SS.SIM high -CL:vicinity -LIM make
-yì
-3.PL.PRES.DECL

‘House rooms, they made rooms, making them up high’ (ja1 19.1)
‘Hacían cuartos y pisos altos’

The nominal counterparts to these classifiers may be suffixed with either the singulative marker *-bi* or the inanimate plural marker *-ma* to achieve non-generic reference. This is exemplified below in (129), where the noun *túribì* refers to a singular, specific room.

(129) bíákìré húáhàkì ñí néesè **túribì** ñùkìré

bíákì -re húáhà -kì ñí née
father -NON.SUBJ come.across -3.sg.masc.past.decl.ni 3.POSS.PRON make
-se túrí -bi ñù -kire
-PAST.REL enclosure -SING sit -DS.MASC.SEQ

‘He found his father sitting in the room he had made’ (iy4 72.1)
‘Él ha encontrado a su papá sentado en el cuarto’

Note that the singulative and plural suffixes *-bi* and *-ma* seem to pick out ‘prototypical instances’ of the property in question. For some of these properties, there may be more than one salient possible referent. We saw above, for instance, that *túribì* can be interpreted as meaning ‘room’, but in the following example it is used to refer to a hunting trap.

(130) *ígìò tákò yì hàkì túbì?*

ígìò *tá* *-ko* *yì* *hàkì*
 FEM.INTERR.PRON fall.PAST -3.SG.FEM.PAST.DECL.NI 1.POSS.PRON father
túbì *-bí*
 enclosure -SING

‘What animal fell in my father’s trap?’ (tut 22.1)

‘¿Qué animal ha caído en la trampa de papá?’

Máíhìkì intermediate classifiers with generic nominal counterparts are listed below in Table (5.3.1) along with their generic and specific (singulative) interpretations. Note that the generic nouns are often part terms, or denote properties having to do with shapes.

CLASSIFIER	GENERIC MEANING	SINGULATIVE FORM	SPECIFIC MEANING
-baru	jumbles of rigid, long objects	bàrùbì	‘a driftwood accumulation’
-cho~chio	heads	chóbì	‘a head’
-chika	knot-like protrusions	chíkàbì	‘a blister; a knot’
-gani	skins, husks, bark	gánìbì	‘a skin’
-ka	branches	kábì	‘a branch’
-koti	raised, flat area	kótìbì	‘a chest’
-pere	parallel lines	pérébì	‘capillejo’
-pe	pairs	pébì	‘a pair’
-pi	stacks	píbì	‘stack of leaves’
-raga	bifurcated things	dàgàbì	‘letter X’
-sani	points	sánìbì	‘a point’
-sayi	bristles	sàyìbì	‘a broom’
-su	piles	súbì	‘pile of leaves’
-tara	long, rigid cylinders	tárábì	‘a bone’
-tika	sticks	tíkábì	‘a stick’
-toto	flat, rigid objects	tótóbì	‘a buttress root; a scale’
-to	clothing, bags	tóbì	‘a shirt’
-tu	thick cylinders	túbì	‘a house post’
-turi	enclosures	túbì	‘a room; a cage; a trap’

Table 5.4: Intermediate classifiers with nominal counterparts

I consider the roots listed in Table 5.3.1 to be nominal because of their ability to take plural and singulative marking. It should be noted, however, that some of these elements are clearly related (either historically or synchronically) to verb roots. For instance, *chíó*, the root meaning ‘head’, also exists in the lexicon as a verb root meaning ‘to cap; to place a lid on’.

Intermediate classifiers with non-nominal counterparts

Certain intermediate classifiers have non-nominal counterparts; that is, a homophonous root exists in the lexicon but may never appear bare and may not be suffixed with nominal inflection such as singulative and plural marking. In these cases, roots may appear with verbal inflection, or as part of what I have called the ‘attributive’ construction. For instance, the classifier *-toya* ‘patterns, designs’ has a verbal counterpart *tóyá*, shown below in (131) suffixed with the verbal inflectional suffix *-yi*.

(131) *hàná néátò tóyáyì*

hàná néátò tóyá -yi

today evening write -1.SG.FUT.DECL

‘This evening I am going to write’ (E.SJF.NMM.31jul2013) ‘Esta tarde voy a escribir’

This root may also appear in the attributive construction, which is of the form ROOT + *báá* ‘have’ + classifier, as shown below. In this construction, the verb root ‘have’ has the prosodic behavior of a suffix (i.e., undergoes vowel shortening and tonal erasure).

(132) *tóyábàkì*

tóyá báá -kì

write have -CL:masc

‘The (masculine) one with patterns’ (used for several species of fish with patterned bodies)

This construction is highly productive and is primarily employed in the physical description of objects and animals. In (133), we see two non-nominal, non-verbal elements *míñá* ‘dots’ and *téñá* ‘splotches’ forming a single prosodic word with the root *báá* ‘have’, which itself bears a classifier. Both ‘have’ and the classifier have undergone tonal erasure.

(133) a. *míñábàtò*

míñá

ba -to

one-dimensional.round.PL have -CL:clothing

‘polka-dot shirt’ (E.SJF.LTN.15aug2014)

b. *téñábàkì*

téñá

ba -kì

splotches have -CL:masc

‘piebald creature’ (E.SJF.LTN.15aug2014, said of a dog)

Both *mĩñá* and *téñá* have homophonous classifiers,² as is shown for *mĩñá* below in (134), suffixed to the mass nouns *áo* ‘food’ and *yàò* ‘dirt’.

(134) dáí kìrè áokó áo**mĩñà** yàò**mĩñà**

<i>dáí</i>	-kire	<i>áo</i>	-ko	<i>áo</i>
come	-3.MASC.DS.SIM	feed	-3.SG.FEM.PRES.DECL	food
<i>-mĩñà</i>		<i>yàò</i>	<i>-mĩñà</i>	
-CL.PL:one-dimensional.round		earth	-CL.PL:one-dimensional.round	

‘When [her husband] came, she fed him fried bits of dirt as food’ (dos 5.1)

In summary, there are certain Máíhǎkì classifiers that have homophonous roots which may not be analyzed as fully nominal. They never appear bare as the arguments of verbs and cannot receive singulative or plural marking. In certain cases, these roots may take verbal inflection and may thus be analyzed as verbal. In other cases, they seem to be restricted to a construction used specifically for the attribution of the property denoted by the root in question. I call intermediate classifiers ‘intermediate’ because they can be analyzed as representing an intermediate stage of grammaticalization: they have enough lexical content to function as roots, but not enough to refer to individuals.

Repeaters

The term ‘repeater’ has been used in the literature, for instance by Enfield (2004), Grinevald (2001), and Aikhenvald (2000), to describe a morpheme that serves as its own classifier. Another way of putting this is that the repeater is a classifier that has a homophonous (or nearly homophonous) nominal counterpart in the lexicon. I have identified a small class of inanimate nouns in Máíhǎkì that fit this description, listed below in Table 5.5. The root and suffixal counterparts are phonologically identical aside from the facts that roots are

²It is not the case, however, that all verb roots, or all roots that may appear in the ‘attributive’ construction, have classifier counterparts. In some cases, the attributive construction is the *only* morphosyntactic environment in which a root may surface, as appears to be the case with *kóró* ‘tiny dots’ and *títí* ‘ticking’, exemplified in (1).

- (1) a. **kóró**bàtò
kóró ba -to
 dot have -CL:clothing
 ‘dotted shirt’ (E.LTN.15aug2014)
- b. **títí**bàkò
títí ba -ko
 ticking have -CL:fem
 ‘mottled creature’ (E.LTN.15aug2014, said of a chicken)

Conversely, both repeaters and intermediate classifiers with nominal counterparts can also appear in the attributive construction.

lengthened in cases that would otherwise violate the bimoraic minimality constraint, and suffixes undergo tonal erasure (see §2.4.1 for a detailed description of this phenomenon).

ROOT	MEANING	REPEATER	THINGS CLASSIFIED
góhé	‘hole’	-gohe	holes
hàò	‘leaf’	-hao	leaves
hǎǎ	‘foliage’	-hǎǎ	leaves
hítì	‘hand’	-hítì	hands, groups of five
màà	‘path’	-ma	paths, roads
dórù	‘basket’	-roru	baskets
tóá	‘cooking fire’	-toa	cooking fires
wèè	‘house’	-we	buildings
yìò	‘swidden’	-yio	swiddens

Table 5.5: Repeaters

In example (135a), we see the root *dórù* ‘basket’ as a free noun, suffixed with the inanimate plural marker *-ma*. In (135b), we see the repeater *-roru* suffixed to the mass noun *bíà* ‘chili pepper’.

- (135) a. **dórù**mà bèèhì áhèyì
dórù -ma bèè -hì áhè -yi
 basket -INAN.PL carry -PL.SS.SIM go.down -3.PL.PRES.DECL
 ‘They were going down carrying baskets’ (iy4 78.1)
- b. **bíàròrù** bèòrè sáíko
bíà -roru bèò -re sái -ko
 chili.pepper -CL:basket put.on.back -SS.SEQ go -3.SG.FEM.PRES.DECL
 ‘She put her chili pepper basket on her back and went’ (iy4 71.1)

In example (136a), we see the noun *wèè* ‘house’ as the bare argument of the verb *néè* ‘make, build’. Its repeater counterpart *-we* appears suffixed to the adjectival root *yàrì* ‘small’ in (136b).

- (136) a. **wèè** néèyì
wèè néè -yi
 house make -1.SG.FUT.DECL
 ‘I’m going to make houses’ (bil 21.1)
- b. néèyì wèè tèà, yàrì**wèè**
néè -yi wèè tèà, yàrì -we
 make -1.PL.PRES.DECL house also small -CL:building

‘We also make houses, small houses’ (ir1 14.1)

As mentioned above, Seifart (2005) excludes repeaters from his definition of Miraña classifiers, stipulating that part of the definition of classifiers is that they may not function as free nouns. I diverge from this definition by proposing that there are two entries for repeaters in the Máíhǎkì lexicon: a root and a (nearly) homophonous suffix. My primary motivation for this is that as suffixes, repeaters have somewhat bleached semantics. For instance, *-we* may be used as a classifier for all types of buildings, including schools, community centers, and health posts—a generalization of the basic level meaning of ‘house’. We see this phenomenon exemplified in (137), where *-we* is repeated throughout the utterance to derive nouns denoting a building that serves as a school.

(137) *dóéwè escuela, íwè hànà, māmá néèsèwè ítìhùnà, māmáwè*

<i>dóé</i>	<i>-we</i>	<i>escuela,</i>	<i>í</i>	<i>-we</i>	<i>hànà,</i>	<i>māmá</i>	<i>néè</i>	<i>-se</i>
prior	-CL:building	school	PROX.DEM	-CL:building	now	new	make	-PAST.REL
<i>-we</i>	<i>ítì</i>	<i>-huna,</i>	<i>māmá</i>	<i>-we</i>				
-CL:building	DISC.PROX	-CL:group	new	-CL:building				

‘The old building, a school, is now this building, the one they newly built, a new building’ (fss 54.1)

By virtue of representing a superordinate category, any classificatory element must have somewhat bleached semantics. My decision to treat repeaters as classifiers makes differentiating root + classifier sequences from root + root sequences (i.e., compounds) less than straightforward, as the head of a compound will also represent a superordinate category. Repeater highlight a gray area between classification and compounding that will be explored in greater detail in §5.4, which provides a formal semantic account of classification.

Interim summary

In this section, I discussed the necessarily ‘fuzzy’ nature of an adequate definition for classifiers in Máíhǎkì. I propose that prototypical (i.e., highly grammaticalized) classifiers are morphemes that may be suffixed to verbal, adjectival, numeral, demonstrative, and certain nominal roots, deriving new lexemes (typically count nouns). I discussed three major categories of classifiers: full classifiers, intermediate classifiers, and repeaters. These three types of classifiers may be differentiated by the presence or absence of a homophonous root in the lexicon, as well as the nominal or non-nominal status of that root. Full classifiers are exclusively suffixal and are in general characterized by monomoraicity and classification outside of the domain of shape. Intermediate classifiers are characterized by the inability of their homophonous roots to refer to object-level individuals; when these roots are nominal, they are always generic, and must be made specific through the suffixation of a singulative or plural marker. When they are not nominal, they may appear with verbal inflection or in

attributive constructions. Finally, repeaters are classifiers with fully nominal counterparts that may have specific reference. These facts are summarized in Table 5.6 below.

	REPEATERS	INT. (NOMINAL)	INT. (NON-NOMINAL)	FULL
root	✓	✓	✓	✗
suffix	✓	✓	✓	✓
root can be bare	✓	✓	✗	N/A
root can be specific	✓	✗	✗	N/A
root can take <i>-bi</i>	✗	✓	✗	N/A
root can take <i>-ma</i>	✓	✓	✗	N/A

Table 5.6: Types of classifiers

5.3.2 The lexical semantics of Máíhǎ̀kì classifiers

In this section, I will survey the range of dimensions along which Máíhǎ̀kì classifiers divide up the world. As is common in descriptions of noun classification systems of languages of the northwest Amazon, I will propose that each Máíhǎ̀kì noun may be thought of as having two class specifications: one that controls agreement within the NP and one that controls agreement with the predicate. For 3rd person animates, these specifications will nearly always be identical: animate nouns will either be masculine singular, feminine singular, or plural. All inanimates, however, pattern with masculine singular animates with respect to agreement with the predicate, while they belong to a more specific, shape-based class for purposes of agreement within the noun phrase. Variations on this basic pattern are found throughout the Tukanoan language family, as noted by Gomez-Imbert (2007), as well as in languages of the northwest Amazon Basin more broadly (cf. Seifart (2005), Stenzel (2004)).

Prior characterizations of this type of split in classifier systems have focused on the range of semantic distinctions encoded by each type of class specification. Seifart (2005), for instance, defines a set of ‘general’ classifiers in Miraña, which encode distinctions in animacy, sex, and number, and a set of ‘specific’ classifiers, which encode distinctions primarily in shape. These two types of classifiers are under some circumstances interchangeable. For instance, (138) shows a pair of Miraña sentences that differ only in their use of general versus specific classifiers. In both cases, the referent is a turtle, but only in (138a) is the shape of the referent highlighted.

- (138) a. kátu:β **hi** e: **hi** ku:mu**hi**
 kátu:β -hi e: -hi k ’u:mu -hi
 fall -SCM.2D.round DIST -SCM.2D.round turtle -SCM.2D.round
 ‘It (disc-shaped) fell, that (disc-shaped) turtle’
 b. kátu:βe: **be** a: **di** ku:mu**hi**

kátu:βε -*ʔbε* *a:* -*dí* *ku:mu* -*hí*
 fall -GCM.MASC.SG DIST -GCM.MASC.SG turtle SCM.2D.round
 ‘It fell, that turtle’ (Seifart (2005:80))

While the Máíhǎ̀kì system of classification exhibits a similar split between the encoding of distinctions in animacy, sex and number and the encoding of nuanced distinctions in shape, the major distinction between ‘general’ and ‘specific’ classes is perhaps better characterized in morphosyntactic terms. The type of flexibility in specificity seen in (138) above, for instance, is not present in Máíhǎ̀kì: animate nouns may not be suffixed with shape-based classifiers or agree with modifiers that bear them, and, conversely, inanimate nouns may in general not be unspecified for shape. Instead, the split between general and specific class makes itself apparent in agreement processes, discussed in greater detail in §5.3.4. I will nevertheless follow Seifart (2005) and Gomez-Imbert (2007) in organizing my discussion of the lexical semantics of classification in terms of general and specific classifiers. The description of specific classifiers will necessarily be more elaborate, as these morphemes encode many distinctions in the domains of shape, consistency, configuration, or use.

General class

As mentioned above, I consider ‘general class’ in Máíhǎ̀kì to be the class specification assigned to a given noun for purposes of agreement with the predicate. Animate nouns may be specified as feminine singular, masculine singular, or plural. Inanimate nouns, both singular and plural, pattern with masculine singular nouns. These distinctions are apparent in the verbal inflectional suffixes triggered by each class, shown below in Table 5.7.

	PRESENT	PAST	-NI PAST
PL	-yí	-bí, -gu	-hí
FEM	-ko	-go, -ao	-ko
MASC	-hǐ	-gǐ, -aǐ	ki
INAN	-hǐ	-gǐ, -aǐ	-ki

Table 5.7: General class distinctions in verbal inflection

General class is not typically marked on the root, although nouns ending in *o* are likelier to belong to the feminine general class, while nouns ending in *i* or *í* are likelier to belong to the masculine general class. This correspondence, exemplified below in Table 5.8, is especially prominent in nouns denoting human beings (e.g. kin terms).

²The two forms listed in the ‘past’ column are dialectal variants. For a discussion of linguistic variation in Máíhǎ̀kì, see §1.2.3

FEMININE		MASCULINE	
nómíò	‘woman’	ímì	‘man’
níhò	‘wife’	íhí	‘husband’
mósìò	‘young woman’	mósì	‘young man’
ñáhèò	‘granddaughter’	ñáhì	‘grandson’
dòikò	‘sister’	dòikì	‘brother’
hàkò	‘mother’	hàkì	‘father’

Table 5.8: Phonological indicators of masculine and feminine general class

This is not entirely predictive, as animate nouns may also end in *a* (e.g. *áñà* ‘snake’), *e* (e.g. *bíbé* ‘raptor’), or *u* (e.g. *mùsù* ‘cricket’). Furthermore, there are a handful of masculine nouns that end in *o* and feminine nouns that end in *i* or *ì*. These are shown below in Table 5.9.

FEMININE		MASCULINE	
bíbí	river dolphin	násó	woolly monkey
mímì	butterfly	óyò	bat
títí	trumpeter	gíò	toucan sp.

Table 5.9: Counterexamples to phonological indicators of masculine and feminine general class

While there is a high degree of correspondence between biological sex and the general class assignment of human animates, masculine or feminine gender is generally unpredictable for non-human animates. There is a similar partial arbitrariness in the assignment of nominal roots to animacy classes: while actual, real-world animacy is highly predictive of whether a noun will behave as grammatically animate or inanimate, there are exceptions. These, which are listed below in Table 5.10, include certain weather phenomena, certain tools, and the edible parts of certain plants, among other things.

NOUN	MEANING
dfò	‘axe’
gínò	‘stone’
gósò	‘ungurahui trunk’
íchò	‘pineapple fruit’
káhò	‘taro tuber’
ñàñàbékù ~ ñàñàmékù	‘rainbow’
yìànèò ~ yìànò	‘mirror’
yíyò	‘termite nest’

Table 5.10: Grammatically animate inanimates

With the exception of $\tilde{n}\tilde{a}\tilde{n}\tilde{a}\tilde{b}\tilde{e}\tilde{k}\tilde{u} \sim \tilde{n}\tilde{a}\tilde{n}\tilde{a}\tilde{m}\tilde{e}\tilde{k}\tilde{u}$, which belongs to the masculine animate general class, all nouns in the table above are feminine.

Specific class

Specific classes are the classes to which nouns are assigned for the purpose of agreement within the NP (i.e., with adjectival, numeral, and demonstrative modifiers). The major semantic distinctions explored in this section include distinctions in animacy, number, biological sex, dimensionality, consistency, axial geometry, negative space, orientation, repetition, and spatial regularity.

Specific class for animates

For a given animate noun, specific class is nearly always identical with the noun's general class: it will be either masculine singular, feminine singular, or plural. These classes are made apparent through the suffixation of one of the animate specific classifiers, listed below in Table 5.11, to some element outside of the noun itself.

	MASC	FEM
Set 1	-ki~-i~-i	-ko~-o
Set 2	-aki	-ako

Table 5.11: Animate classifiers

The two sets of animate classifiers shown above appear in different morphosyntactic environments, discussed in more detail in §5.3.3.

In addition to the markers of animate specific class listed in 5.11 above, there are several ‘plural’ specific classifiers that may be suffixed to animate roots, specifying information about the “minor number” (Corbett 1996) or configuration of the pluralities in question. These are *-huna*, which indicates a large number of individuals or a group configuration; *-pɛ*, which indicates dual number or the spatial proximity of two individuals; and *-kwiri~-kori*, which indicates that the individuals are in a line. Animate nouns suffixed with any of these morphemes will belong to that morpheme's specific class, but will belong to the plural animate general class. They will therefore exhibit plural agreement with the predicate, but specific class agreement within the NP.

The classifiers *-kwiri~-kori* and *-pɛ* may be suffixed either to animate or inanimate nouns, as shown in (139) for *-pɛ*. *-huna*, on the other hand, is reserved for animates.

- (139) a. $\tilde{n}\tilde{i}\tilde{p}\tilde{e}\tilde{g}\tilde{a} \text{ } \tilde{c}\tilde{h}\tilde{a} \text{ } \tilde{s}\tilde{a}\tilde{i}\tilde{y}\tilde{i} \text{ } \tilde{i}\tilde{t}\tilde{i}\tilde{h}\tilde{u}\tilde{n}\tilde{a}$
 $\tilde{n}\tilde{i} \quad -p\tilde{e} \quad -ga \quad \tilde{c}\tilde{h}\tilde{a} \quad \tilde{s}\tilde{a}\tilde{i} \text{ } -y\tilde{i} \quad \tilde{i}\tilde{t}\tilde{i}\tilde{h}\tilde{u}\tilde{n}\tilde{a}$
 children -CL:pair -TOP already go -3.PL.PRES.DECL 3.PL.PRON
 ‘Her pair of children already went’ (clp 169.1)

- b. “*ńámà kópèàì*,” *óòkò*
ńámà kó *-pè* *-ai* *óò* *-ko*
 deer fingernail -CL:pair -AUG say.angrily -3.SG.FEM.PRES.DECL
 ‘“You big-cloven-hoofed deer!” she said angrily’ (bdm 39.1)

Specific class for inanimates

The important distinctions in the classification of inanimate nouns fall largely in the domain of shape—what Seifart (2005:183) defines as “the extension of concrete objects in space.” This is no surprise from a cognitive or crosslinguistic perspective, as shape is considered fundamental in human visual perception (e.g. Palmer (1999), Marr (1982)), and is frequently attested as a salient dimension of noun categorization among the languages of the world (e.g. the surveys of Greenberg (1977), Allan (1977), Croft (1994), and Aikhenvald (2000)).

Within the domain of shape, *Máìhàkì* classifiers encode distinctions in the dimensionality, axial geometry, incorporation of negative space, orientation, and spatial regularity of objects. Outside the domain of shape, classifiers group objects together based on other physical properties, such as consistency, or based on their function or utility. Still other classifiers—those, like repeaters, with a high degree of lexical content—form rather specific classes, such as the class of buildings, baskets, or hands, irreducible to a single salient perceptual property.

Dimensionality

Allan’s (1977) typology of noun classification notes that the category of shape has “traditionally been divided into the major dimensional categories of long, flat, and round” (300). He calls these categories ‘saliently one-dimensional’, ‘saliently two-dimensional’, and ‘saliently three-dimensional’, respectively. This tradition has become the standard for descriptions of the lexical semantics of systems of classification (cf. Seifart (2005), Sakuragi & Fuller (2013), Payne (1986), Aikhenvald (2000)). Some examples of classifiers that categorize objects as saliently one-dimensional, two-dimensional, or three-dimensional are shown below in Table 5.12.

BASICALLY LONG	
-bi	fallen trees, canoes
-ñaka	spines, needles, quills
-ñi	standing trees, stalks
-tara	bones, bottles
-tika	sticks
-tu	house posts, walking sticks
-me	ropes, strings, vines
BASICALLY FLAT	
-biti	chips, coins
-hao	leaves, papers, photographs
-gani	skins
-ka	wings, rags
-toto	sheets of metal, scales, tabletops
BASICALLY ROUND	
-cho	heads
-ga	seeds
-gara	clumps
-kanu	chunks (of meat)
-su	piles

Table 5.12: The salient dimensionality of classifiers

There is a single classifier, *-sani*, that indicates salient zero-dimensionality. That is, it is used to classify point-like objects (e.g. *yóùsàni* ‘tip of canoe’, from *yóù* ‘canoe’). There are also a number of classifiers for amorphous objects that cannot be analyzed in terms of dimensionality; these are discussed in greater detail in §5.3.2.

Consistency

Because dimensionality is perhaps the most basic component of shape, this property is often encoded alongside other physical properties of objects, such as consistency or axial geometry, to form finer-grained class distinctions. Allan (1977) notes that saliently one-dimensional and saliently two-dimensional objects are often further specified as rigid or flexible. One-dimensional rigid objects are often associated with or derived from terms for trees or tree parts, while their flexible counterparts are associated with ropes or vines. In the domain of two-dimensional objects, classifiers may differentiate between plank-like (rigid) or fabric-like (flexible) objects. Allan notes that in general, distinctions in consistency are less salient for three-dimensional objects. This indeed seems to be the case for Máíhìkì classifiers; for example, whereas *-toto* and *-ka* robustly and generally indicate rigid and flexible bidimensionality, respectively, the encoding of the consistency three-dimensional objects seems incidental. I

have nevertheless included examples of what might be considered ‘rigid’ and ‘flexible’ three-dimensional objects in Table 5.13 below.

	RIGID		FLEXIBLE	
ONE-DIMENSIONAL	-tara	bones, logs, bottles	-me	ropes, vines, strands
TWO-DIMENSIONAL	-toto	boards, scales, rigid sheets	-ka	sheets, wings
THREE-DIMENSIONAL	-bi	round fruits	-gara	clumps, blobs

Table 5.13: Rigid versus pliable classifiers

It should be noted that the degree to which the classifiers listed in the table above may be characterized solely by the features of dimensionality and consistency is variable. For instance, objects belonging to the *-me* class may be thick or thin (ropes, threads), solid or tubular (strands of hair, veins), as long as they are saliently one-dimensional and flexible. Likewise, objects belonging to the *-toto* class may be large or small (tables, fish scales), vertically or horizontally oriented (buttress roots, floorboards), as long as they are saliently two-dimensional and rigid. As mentioned above, this is not the case for the saliently three-dimensional classifiers shown in Table 5.13: *-bi* is restricted to certain round fruits (e.g. *ánùbì* ‘papaya fruit’) and may not apply generally to three-dimensional rigid objects, and *-gara* indicates the additional property that the referent was formed via the accumulation of a substance (e.g. *bíkógàrà* or *ókógàrà* ‘cloud’ from *bíkó* ‘smoke’ or *ókó* ‘water’; *yàògàrà* ‘clump of dirt’ from *yàò* ‘dirt, earth’). This is also not the case for *-tara*, the classifier given as an example of the rigid, saliently one-dimensional category, as this category may be further differentiated along the dimensions of axial geometry (thickness) and horizontal versus vertical orientation.

Consistency is also be relevant for amorphous substances that may not be felicitously categorized in terms of dimensionality. Examples include a set of classifiers for viscous substances: *-kana*, for the slime of a river, *-gahi*, for the slime of fish, and *-suru*, for viscous bodily excretions. For all liquids, the fluid classifier *-raka* is used (e.g. *ókóraka* ‘portion of water’, from *ókó* ‘water’). For powders, dusts, and pulps, the classifier *-saì* is used (e.g. *hàsòsàì* ‘manioc pulp’ from *hàsò* ‘manioc’).

Axial geometry

The axial geometry of an object—i.e., whether it is thick or thin—is relevant primarily for one-dimensional rigid objects. The classifiers in question encode (relative) radial symmetry, but differ in the magnitude of the radius. For instance *-tu* is used for thick, one-dimensional, rigid objects such as house posts, while *-yo* is used for slender, one-dimensional rigid objects such as fingers and small sticks. Examples of these include *pìkàtù* ‘rotten lumber’ (from *pìkà* ‘rot (v)’) and *súkíyò* ‘twig’ (from *súkí* ‘tree (general)’).

Orientation

The differentiation of horizontally and vertically oriented objects is not particularly salient in the Máfhìkì system of noun classification. There is, however, a single pair of classifiers that differ solely in this dimension. These are *-ñi*, the classifier for standing stalks and trees (e.g. *súkíñi* ‘standing tree’) and *-bi*, the classifier for fallen or felled trees (e.g. *súkíbi* ‘lying tree’).

Máfhìkì classifiers may also indicate the orientation of discrete, repeating parts with respect to one another. Jumbles of fibers (i.e., flexible one-dimensional objects) are classified by *-sepa*, as in *náñàsèpà* ‘messy hair’ (from *náñà* ‘hair’), while jumbles of rigid one-dimensional objects are classified by *-baru*, as in *súkíbarù* ‘pile of driftwood’ (from *súkí* ‘tree’). These are in contrast to *-sayi*, which indicates that an object is composed of many saliently one-dimensional subparts oriented in the same direction (e.g. *náñàsàyi* ‘spiky hair’, from *náñà* ‘hair’) and *-saka*, which is used for multiple pointed objects oriented in the same direction (e.g. *gáhòsàkà* ‘pointed ears (e.g. of a dog)’, from *gáhò* ‘auricular’). The classifiers *-pi* and *-su* both indicate that multiple objects are oriented vertically, but differ with respect to the level of organization of those objects. *-pi* is used for stacks (arranged neatly), while *-su* is used for piles (arranged haphazardly). The minimal pair *hàòpì* ‘stack of leaves’ versus *hàòsù* ‘pile of leaves’ illustrates this contrast. A summary of ‘organizational’ classifiers is shown below in Table 5.14.

ORGANIZED	
-pì	stacks
-saka	groups of pointed objects
-sayi	bristles, spikes
DISORGANIZED	
-baru	accumulations of driftwood, disorganized sticks
-sepa	disorganized fibers
-sù	heaps

Table 5.14: classifiers indicating relative orientation of objects

If an object is characterized by having two salient subparts, these subparts may be classified with respect to whether they are parallel to one another. The classifier *-pere* indicates parallel lines, as in *hítípèrè* ‘forearm’ (from *hítí* ‘hand’, presumably with reference to the parallel configuration of the radius and ulna). The classifier *-raga* indicates non-parallel lines, as in crosses or bifurcations (e.g. *tóràgà* ‘pants’, from *tóó* ‘clothing’).

Negative and positive space

Allan (1977) describes three subcategories of non-dimensional shape: one for hollow objects, one for objects with a “prominent, curved exterior,” and one for objects with annular form.

I will illustrate these subcategories here under the umbrella of “positive and negative space,” by which I mean the lack of material where it is expected or the presence of material where it is not (shown in Table 5.15).

POSITIVE SPACE	
-chika	knots
-su	heaps
-titi	foreheads, hills
-yiu	warts, blisters, bubbles
-pepe	adjacent objects of uneven height
NEGATIVE SPACE	
-gaba	rings, arcs
-gagu	flexible rings, arcs
-go	loops, chain links
-gohe	holes
-ogu	containers, pits
-ho	sheaths, covers
-ro	pots, inner ears
-sanu	interior spaces
-saro	doors, gates, windows
-turi	traps, cages, rooms

Table 5.15: classifiers indicating positive and negative space

Repetition

Máíhǎ̀kì has a modest set of classifiers used to indicate that the referent has discrete, repeating parts. The domain of spatial repetition overlaps significantly with the notion of plurality; accordingly, many of the classifiers that indicate repetitive shape in Máíhǎ̀kì may be analyzed as pluralizations. For instance, *-haña*, used for foliage, is derivable from the singular classifier *-hao* (for leaves).³ Table 6.3 shows all Máíhǎ̀kì classifiers with plural forms.

³The singular/plural alternation for classifiers is regular. If the singular form of the classifier is monomoraic and the initial consonant is a viable target for nasalization, the initial consonant will be nasalized in the plural form and the suffix *-a* will be added. If the singular form of the classifier is bimoraic, the initial consonant will be nasalized (if possible) in the plural form and *-ña* will be suffixed. If the singular form is monomoraic but the initial consonant is not a viable nasalization target, *-ña* will be suffixed in the plural form. This process is not productive.

SINGULAR FORM	PLURAL FORM	THINGS CLASSIFIED
-bi	-mìa	round fruits
-bi	-mìa	buckets, canoes, plantains
-ga	-gaña	small round objects
-go	-goña	loops, pulleys, chain links
-gohe	-goña	holes
-hao	-haña	leaves, sheets of paper
-ka	-kaña	branches
-ka	-kaña	cloth-like objects
-kwa~-ko	-kwaña~-koña	sheets, blankets
-ñaka	-ñaña	spines, needles, quills
-ñi	-ña	trees, stalks
-raka	-ñaña	portions of water
-reo	-neña	disc-shaped objects
-ro	-noa	pots, inner ears
-ri	-nia	hammocks, machetes, paddles
-tete	-teña	temporary shelters, gourd vessels
-toto	-toña	scales, buttress roots, tables, planks
-yo	-ñoa	slender sticks, digits

Table 5.17: Singular and plural classifiers

A small number of plural classifiers (*-gaña*, *-haña*, and *-toña*) are repeaters; that is, they have fully nominal counterparts in the lexicon. These counterparts often have specialized meanings. For instance, *gáñá* refers exclusively to gravel and not to small round objects in general, and *tóñá* refers only to the scales of fish, rather than rigid two-dimensional objects in general.

There are several classifiers that indicate repetitive form but that do not participate in a singular/plural alternation. These are *-hu*, for hanging clusters (e.g. *óhù* ‘cluster of plantains’, or *bàihù* ‘string of fish’); *-kwiri~-kuri*, for objects in a line (e.g. *ñííkùrì* ‘children in a line’); *-huna*, for groups or herds (e.g. *nómihùnà* ‘group of women’ or *bíríhùnà* ‘herd of peccaries’); *-pe* for pairs of things (e.g. *kópè* ‘cloven hoof’ or *ñíípè* ‘pair of children’); *-pi* for stacks (e.g. *hàòpì* ‘stack of leaves’); and *-su* for piles (e.g. *hékàsù* ‘pile of firewood’). This is summarized in Table 5.18 below.

REPETITIVE FORM	
-hu	multiple hanging objects
-kwiri~-kuri	objects in a line
-huna	groups and herds
-pe	pairs
-pì	stacks
-su	piles

Table 5.18: Classifiers indicating repetitive form

When noun suffixed by ‘repetitive’ classifiers that do not participate in the singular/plural alternation are counted, they are counted in clusters or groups (e.g., two pairs equal four individuals); this is not the case for truly plural classifiers like those in 6.3.

Spatiotemporal classifiers

Certain Máìhǎkì classifiers indicate spatiotemporal concepts rather than the shape of individual objects. Two highly frequent spatial classifiers are *-ro* and *-rari*, which derive locative nouns such as those shown in (140).

- (140) *hékà túnébíyóhúgó ìò ìò níkáàdàdì*
hékà túné bíyó -hú -go
 firewood set.down.PLACT raise.levelPLACT -PERF -3.SG.FEM.PAST.DECL
ìò ìò níká -rari
 3.SG.FEM.PRON 3.FEM.POSS.PRON stand -CL:location
 ‘Where she was standing, she piled up firewood’ (dos 59.1)
 ‘Donde que ella para, ella le ha amontonado leña’
ásákò bíákì bàirò sáíko
 a. *ásá -ko bíákì bàì -ro sáí -ko*
 perceive -FEM.SS.SIM father live -CL:place go -3.SG.FEM.PRES.DECL
 ‘Hearing this, she went to her father’s place’ (bdm 17.1)

Neveu (2012) analyzes the difference between *-rari* and *-ro* as a difference in the visual evidence of the speaker, stating that “the locative nominalizer *-ro* is a counterpart to *-rari* with the visual restriction that the goal must be out of sight at the time of utterance” (5). I suggest that *-ro* indicates a place *characterized by* or *associated with* the property denoted by the root to which it is suffixed, while *-rari* indicates the place where some object or event was, is, or will be located.

Other spatial classifiers include *-ruru*, which classifies directions, and *-ti*, which classifies opposing sides (e.g. ‘this side of the river’ versus ‘that side of the river’ or ‘left’ versus ‘right’). Examples of these classifiers are shown in 141.

- (141) a. *ñîò gánìhò náìútàré māmákò dáírùrù tíòhàkì*
ñîò gání -ho náì útá -re māmákò dáí
 3.SG.FEM.PRON skin -CL:sheath pull take.off -SS.SEQ child.FEM come
-ruru tíò -ha
 -CL:direction set.down.SGACT -ASS.MOT.AWAY.FROM.SPEAKER.PAST.NI
-kì
 -3.SG.MASC.PAST.DECL.NI
 ‘He pulled off her skin and went in the direction her daughter was coming to put it down’ (vie 13.1)
- b. *nà yékétì màà sáíko*
nà yéke -ti màà sái -ko
 again other.DEM -CL:side path go -3.SG.FEM.PRES.DECL
 ‘She went on another path on the other side’ (bek 10.1)

The temporal classifier, *-nu*, classifies temporal extensions (e.g. *míánù* ‘daytime’, from *míá* ‘shine’), epochs (e.g. *ñítùbàìnu* ‘childhood’, from *ñítù* ‘child’ and *bai* ‘be, exist’), or seasons (e.g. *ínènu* ‘peach palm season’, from *ínè* ‘peach palm’).

There are two classifiers that may yield either spatial or temporal interpretations. These are *-huru*, which classifies vicinities or inexact locations (exemplified for both time and space in (142)), and *-yigo*, which classifies spans (exemplified in (143)).

- (142) a. *dòè sóòhùrù sání bàìyì*
dòè sóò -huru sání bàì -yì
 before far -CL:vicinity go.NI live -3.PL.PRES.DECL
 ‘Before, they would go far away and live’ (eo1 73.1)
 ‘Antes yendo lejos vivían ellos’
- b. *yáhé nēèhì ñámìhùrù úkúyí, úkúsèhùnà*
yáhé nēè -hì ñámì -huru úkú -yì, úkú
 ayahuasca make -PL.SS.SIM night -CL:vicinity drink -3.PL.PRES.DECL drink
-se -huna
 PAST.REL -CL:group
 ‘They would make *ayahuasca* and drink it at night, those who drank’ (pyj 11.1)
 ‘Ellos, los que tomaban, preparando la ayahuasca, le tomaban en la medianoche’⁴
- (143) a. *hítípèrèyìgò*
hítí -pere -yigo
 hand -CL:parallel -CL:span

⁴In the regional Spanish spoken by speakers of Máìhìkì, *medianoche* may mean ‘the middle of the night’ rather than ‘midnight’.

‘The length of my forearm’ (E.SJF.LMM.20aug2014)

‘Algo que mide igual como mi brazo’

b. **tóyáyétéyìgò**

tóyá yété -yigo

write learn -CL:span

‘The span of time during which one studies’ (E.SJF.LMM.20aug2014)

‘La hora de estudiar’

A summary of the spatiotemporal classifiers discussed in this section is presented below in Table 5.19.

CLASSIFIER	CLASSIFIED THINGS
-huru	vicinities, inexact locations
-nu	times, epochs, seasons
-rari	locations
-ro	places
-ruru	directions
-ti	sides
-yigo	spans of time or space

Table 5.19: Spatiotemporal classifiers

Natural phenomena

There is a small set of classifiers that distinguish between various geological formations. These classifiers include *-kwaru~ -koru*, which classifies swampy groves, typically of palms (e.g. *nèèkwàrù* ‘morange palm swamp’, from *nèè* ‘morange palm’); *-ra*, which classifies non-riverine bodies of water, such as puddles and lakes; and *-ya*, which classifies rivers and streams. These classifiers are shown in Table 5.20 below.

CLASSIFIER	CLASSIFIED THINGS
-kwaru ~ -koru	swampy groves
-ra	non-riverine bodies of water
-ya	rivers, streams

Table 5.20: classifiers for natural phenomena

Manufactured objects

A culturally salient manufactured object will typically be associated with its own classifier, rather than being classified in terms of shape or consistency. These include *-rì*, which

classifies hammocks, machetes, nets, and paddles; *-roru*, which classifies woven baskets; *-seu*, which classifies machines (e.g. *ágásèù* ‘telephone’ from *ágá* ‘call’); *-tete*, which classifies drinking vessels made of gourds and temporary shelters; *-to*, which classifies bags, sacks, and articles of clothing; *-we*, which classifies buildings; *-yio*, which classifies swiddens and gardens; and *-yu*, which classifies vehicles (e.g. *tóà̀yù* ‘boat’, from *tóà* ‘fire’). These classifiers are shown below in Table 5.3.2.

CLASSIFIER	CLASSIFIED THINGS
-rì	nets, hammocks, machetes, paddles
-roru	baskets
-seu	machines, roots
-tete	small houses, dishes
-to	bags, articles of clothing
-we	buildings
-yario	rafts
-yio	swiddens
-yu	vehicles

Table 5.21: Classifiers for manufactured objects

Summary of the lexical semantics of classifiers

In §5.3.2, we have seen that semantic classes in Málhǎ̀kì may be divided into two broad categories: general class and specific class. General class determines agreement with the predicate, and exhaustively divides the nominal lexicon into categories based on animacy, sex, and number: common nouns may be specified as masculine singular, feminine singular, or plural. All inanimate nouns pattern with masculine singular animates with respect to general class.

Specific class governs agreement between a noun and its modifiers. For animate nouns, specific class is typically identical with general class: masculine singular, feminine singular, or plural. Exceptions are cases in which inherently plural animates (such as *nómí* ‘women’ or *ñíí* ‘children’) are suffixed with specific classifiers that indicate something about their spatial configuration, such as *-kwiri~-kuri*, which denotes individuals in a line. In these cases, the general class of the referent is still animate and plural, but the specific class is not.

Shape is the most salient parameter of classification for inanimate objects. Within the domain of shape, Málhǎ̀kì distinguishes between saliently one-dimensional, saliently two-dimensional, and saliently three-dimensional objects. These categories exhibit further distinctions in the rigidity (rigid vs. flexible), axial geometry (thick vs. thin, oblong vs. straight), and orientation (upright vs. prone, organized vs. disorganized, parallel vs. intersecting) of the referent. Objects may also be characterized in terms of the salient presence or absence of material (e.g., whether the object bulges or is a bulge, has holes or is a hole).

Non-shape-based classifiers divide the world into salient geographical, sociocultural, and ecological categories.

The classifiers exemplified in this section do not form an exhaustive list. The broad definition established for classifiers in §5.2 of this chapter makes it difficult to exhaustively identify them. Nevertheless, an comprehensive list of the morphemes that have been attested in classifier constructions can be found in Appendix C.

5.3.3 The morphosyntactic loci of Máíhǎkì classifiers

§5.2.2 showed that one of the prominent characteristics of classifier systems of the northwest Amazon basin is the variety of morphosyntactic environments in which classifiers may appear. The Máíhǎkì system of noun classification is no exception. This section will outline the elements to which Máíhǎkì classifiers may be suffixed, including mass nouns and the nominal counterparts to repeaters and intermediate classifiers; adjectival roots; numeral roots; demonstrative roots; bare verb roots; and verb roots that have been suffixed with a marker of nominal tense.

Suffixation to nominal roots

Classifiers may be suffixed to mass noun roots, as in (144) below. In this example, the mass noun *kíù* ‘metal’ is suffixed with various classifiers.

- (144) a. *kíùgò*
 kíù *-go*
 metal -CL:loop
 ‘chain’
- b. *kíùgàni*
 kíù *-gani*
 metal -CL:skin
 ‘corrugated metal’
- c. *kíùmè*
 kíù *-me*
 metal -CL:rope
 ‘wire’
- d. *kíùñàkà*
 kíù *-ñàkà*
 metal -CL:spine
 ‘nail’
- e. *kíùtòtò*

kíù -*toto*
 metal -CL:flat.rigid
 ‘sheet of metal’

Classifiers may also be suffixed to nominal roots that have repeater and intermediate classifier counterparts. When suffixed to a nominal root that may also serve as a repeater, a classifier usually specifies a *part* of the noun in question, as in (145a). In the case of intermediate nominal roots, a classifier indicates a particular *shape*, as in (145b) and (145c).

- (145) a. *wètù*
 wèè -*tu*
 house -CL:thick.cylinder
 ‘house post’
 b. *chótàrà*
 chóó -*tara*
 head -CL:rigid.cylinder
 ‘pointy head’
 c. *tóràgà*
 tóó -*raga*
 clothing -CL:intersecting
 ‘pants’

In general, classifiers are not suffixed to pronouns or animate common nouns, although there are exceptions. For instance, the plural classifiers *-huna*, *-pé* and *-kwiri*, described above in §5.3.2, may be suffixed to the plural pronouns *yíkí* ‘first person plural inclusive’, *máí* ‘first person plural exclusive’, and *mìsà* ‘second person plural’, as well as to animate nouns of Groups 1 and 5 (i.e., inherently plural and lower animates). The general restriction on the suffixation of classifiers to elements of a higher reference ratio will be further explored in the semantic analysis of classifiers presented in §5.4.

Suffixation to adjectival roots

Adjectival roots are those that can take neither nominal inflection (i.e., plural and singulative marking, object marking, etc.) nor verbal inflection, but that can be suffixed directly with a classifier. These include *háí* ‘big’; *yàrì* ‘small’; *íá* ‘small’; *mámá* ‘new’; *ái* ‘old’; *dèò* ‘good’; *gòà~dà* ‘bad’; *dóà* ‘long, tall’; *bìhè* ‘short’; *máá* ‘red’; *bóó* ‘white’; *néá* ‘black’; *sìñò* ‘yellow’; and *míñá* ‘green’. Some examples of classifiers suffixed to adjectival roots are shown below in (146).

- (146) a. *yàrikà* *bàisè* *yàriyà* *nèehó*
 yàrì -*ka* *bàì* -*se* *yàrì* -*ya* *nèè* -*hó*
 small -CL:branch exist -PAST.REL small -CL:river make -PERF

‘What were its little branches turned into a stream’ (mbd 343.1)

‘Lo que era sus ramas se formó en quebrada’

- b. māmáyìò bááyí ìtìdàrì, yíò

māmá -yio báá -yi ìtì -rari
new -CL:swidden have -1.SG.PRES.DECL PROX.ANAPH.DEM -CL:location
yíò
swidden

‘I have a new swidden there’ (ohe 20.1)

‘Yo tengo mi nueva chacra por allá’

For animate referents, the Set 1 animate classifiers (-*ki*~i~-i and -*ko*~o shown in Table 5.11 above) are suffixed to adjectival roots, as shown below in (147).

- (147) a. yáíhòyì dóàkì àìagì

yáíhòyì dóà -kì -ai -agi
dog long -CL:masc -AUG -ANIM.MASC.COP

‘It’s a long dog’ (E.LTN.SJF.6feb2013)

‘Es perro largo’

- b. ásé kákò dèòkò ñìò

ásé ká -ko dèò -ko ñìò
INTERJ SPACT.DIST.DEM -CL:fem good CL:fem 3.FEM.SG.PRON

‘Wow, she’s pretty, that one!’ (jv2 4.1) ‘Esa mujer está bonita!’

There is syntactic evidence that the words formed by the suffixation of a classifier to an adjectival root are *non-nominal*. First, these elements have a predicative function, as shown in (148), where the forms derived via the suffixation of the classifier -*ki* ‘CL: masc’ to the adjectival roots *dóà* and *háí* is predicated of *ímì* ‘man’.

- (148) a. ímì dóàkì

ímì dóà -kì
man tall -CL:masc

‘The man is tall’ (E.EMR.SJF.22jun2013)

‘El hombre es alto’

- b. ímì háíkì

ímì háí -kì
man big -CL:masc

‘The man is fat’ (E.EMR.SJF.22jun2013)

‘El hombre es gordo’

This is in contrast to the predicate nominal construction, which requires the presence of the copula, as shown in (149).

(149) ákò tóyá kǐá -ko -ago

ákò tóyá kǐá -ko -ago
foreign.woman write tell -CL:fem -3.ANIM.FEM.COP

‘She (the *mestiza*) is a teacher’ (E.RTN.30jan2013)
‘Ella (la mestiza) es profesora’

Suffixation to demonstratives

Classifiers in Máìhǐkì may also be suffixed to demonstrative roots, which are described in detail in §3.8. The resultant form is pronominal. Some examples of demonstrative + classifier constructions are shown below in (150).

(150) a. íyà óyí

í -yia óí -yi
DEM.PROX -CL:tapered want -1.SG.PRES.DECL

‘I want this (manioc) tuber’ (E.SJF.EMR.21jan2013)

b. káyà sáà

ká -yia sáà
DEM.DIST.FROM.SPEAKER -CL:tapered take

‘Take that (manioc) tuber’ (E.SJF.EMR.21jan2013)

c. kèwè kátò béèkò dáókò

kè -we ká
DEM.DIST.FROM.SPEECH.ACT -CL:building DEM.DIST.FROM.SPEECH.ACT
-to béè -ko dáó -ko
-CL:place IMPF -FEM.SS.SIM walk -3.SG.FEM.PRES.DECL

‘She would walk to the far house, over there’ (sk5 15.1)

Suffixation to numerals

All count inanimate classifiers may be suffixed to the numeral roots *tè* ‘one’, *tèpè* ‘two’, and *bábá* ‘three’.

(151) a. tètítì máíkò

tè -títì máí -ko
one -CL:hill go.up -3.SG.FEM.PRES.DECL

‘She went up one hill’ (kb5 43.1)

b. tèpètàrà chíábì

tèpè -tara chíá -bì
two -CL:rigid.cylinder buy -1.PL.PAST.DECL

‘We bought two bottles’ (ovi 103.1)

- c. áhèhùnàmà tèà **bábá**hùnàmà bàikínà dáhì
 áhè -huna -ma tèà bábá -huna -ma bàì -kì
 go.down -CL:group -INAN.PL also three -CL:group -INAN.PL live -CL:masc
 -na dá -hì
 -ANIM.PL come.PAST.NI -3.PL.PAST.DECL.NI

‘Three groups of downriver people also came’ (bau 9.1)

‘Tres grupos de gente de abajo también han venido’

For animate nouns, Set 2 animate classifiers (*-akì* and *-ako*—see Table 5.11 above) are suffixed to numerals two and higher (shown in (5.3.3)), while the lenis allomorphs of Set 1 classifiers are suffixed to the numeral one, *tè*, as shown in (153).

- (152) ímìnà tèpè**ákì**nà bàì nògìyòhì sáhì yàriyà

ímì -na tèpè -akì -na bàì nògì -yohì
 man -ANIM.PL two -CL:masc.being -ANIM.PL meat fish.with.hook -PL.PURP
 sá -hì yàri -ya
 go.PAST.NI -3.PL.PAST.DECL.NI small -CL:river

‘Two men went fishing in a stream’ (s+s 1.1)

- (153) tèì ímìgì tèò nómíògò

tè -i ímì -gì tè -o nómíò -go
 one -CL:masc man -ANIM.MASC.COP one -CL:fem woman -ANIM.FEM.COP

‘One man and one woman’ (E.HMR.25ju2013)

Suffixation to verb roots

Classifiers may be directly suffixed to verb roots, resulting in a wide variety of the types of deverbal nominalizations described, for instance, by Comrie & Thompson (1985). The type of deverbal nominalization (i.e., the nature of the event participant derived via classifier suffixation) does not depend on the classifier; that is, whether a given classifier derives an agentive or patientive or instrumental noun cannot be predicted.

An example of an agentive deverbal nominalization is shown in (154), where the animate noun *kwàkòkò* ‘cook (feminine)’ is derived from the verb root *kwàkò* ‘cook’ suffixed with the animate feminine classifier *-ko*, and *kùìkì* ‘biter’ is derived from the root *kùì* ‘bite’ plus the animate masculine classifier *-kì*.

- (154) a. kwàkò**kò**
 kwàkò -ko
 cook -CL:fem

‘cook (female)’

b. kù**kì**

kù -*kì*

bite -CL:masc

‘biter (male)’

In other cases, such as (155), the derived noun is patientive. *hèòñákà* ‘hammer (n)’, indicates the prototypical patient of the verb from which it is derived.

(155) *hèòñákà*

hèhò -*ñaka*

hammer.PLACT -CL:pointy

‘nail’

An example of an instrumental instrumental nominalization is shown below in (156). Here, the classifier *-seu* ‘CL: device’ is suffixed to the verb *hèhò* ‘hammer’ to derive an instrument associated with the action of hammering.

(156) a. *hèhòséù*

hèhò -*seu*

hammer -CL:contraption

‘hammer’

b. *tòtètíkà*

tòtè -*tika*

mash -CL:stick

‘mashing stick’

Deverbal nominalizations may also be locative or temporal in nature, as shown in (157) below.

(157) a. *yìò sáníñlàbì tútúnù*

yìò *sání* -*ñia* -*bì* *tútú* -*nu*

swidden go.NI -ASP -1.SG.PAST.DECL wind -CL:time

‘I was going to my swidden at the time of the hurricane’ (hur 2.1)

b. *hékà túnébíyóhúgo ìò ìò níkádadì*

hékà *túné* *bíyó* -*hú* -*go*

firewood set.down.PLACT raise.level.PLACT -PERF -3.SG.FEM.PAST.DECL

ìò *ìò* *níkà* -*rari*

3.SG.FEM.PRON 3.SG.FEM.POSS.PRON stand -CL:location

‘Where she was standing, she piled up firewood’ (dos 59.1)
 ‘Donde que ella para, ella le ha amontonado leña’

It seems, from the above examples, that the classifier in deverbal nominalizations indicates a salient participant in the event, and that there are no restrictions on the semantic role of this participant.⁵

So far, we have only seen examples of classifiers suffixed to tenseless verbs. Nominalized verbs in Máìh̀k̀ì may also be tensed by the nominal tense suffixes *-se* and its fortis-context counterpart *-chi* (past) or *-hai* and its fortis-context counterpart *-ha* (future).⁶ In these cases, the classifier directly follows the nominal tense marker, as is shown below in (158).

- (158) a. *táíchìñì*
 táí -chi -ñì
 fall -PAST.REL -CL:tree
 ‘fallen tree’ (E.LTN.SJF.9feb2013)
- b. *balde bátásèb̀ì ókó méáh̀ì*
 balde bátá -se -b̀ì ókó méá -h̀ì
 bucket split -PAST.REL -CL:vessel water leak -3.SG.MASC.PRES.DECL
 ‘The bucket that broke is leaking’ (E.AMM.LDM.16jun2012)
- c. *ábíhà̀yà*
 ábí -ha -ya
 bathe -REL.FUT -CL:river
 ‘the river they will bathe in’ (E.LTN.SJF.15aug2014)
- d. *balde bátáh̀à̀b̀ì ókó méáh̀ì*
 balde bátá -hai -b̀ì ókó méá -h̀ì
 bucket split -REL.FUT -CL:thing water leak -3.SG.MASC.PRES.DECL
 ‘The bucket that will break is leaking’ (E.LDM.AMM.16jun2012)

As in tenseless deverbal nominalizations, the semantic role of the entity denoted by the tensed deverbal nominalization is variable. For instance, *kúkúchik̀ì*, the nominal past tense form of the pluractional verb *kúkú* ‘bite’, which has been nominalized via the suffixation of *-k̀ì* ‘CL: masc’, may be interpreted as either agentive or patientive. It may mean ‘the (masculine) one who bit’ or ‘the (masculine) one who was bitten’. These forms are indistinguishable from the headless relative clauses described in §3.14.

⁵Of course, generalizations may be made about the types of classifiers that tend to take on one role or another; for instance, animate classifiers are likelier to be agents, etc.

⁶The classifiers that trigger the fortis-context counterpart of these nominal tense markers are *-b̀ì* (of fallen trees), *-ro*, *-ya*, *-ko*, *-k̀ì*, *-r̀ì*, *-ñì*. Following the fortis-context allomorphs of the nominal tense markers, *-ro* and *-r̀ì* will surface as their fortis allomorphs *-to* and *-t̀ì*, respectively.

Summary of morphosyntactic loci

This section has shown that Máíhǎ̀kì class markers may be suffixed to a variety of roots, including certain nominal roots, adjectival roots, demonstrative roots, numeral roots, and verb roots. The classifier serves to derive a new lexeme, which, in cases in which classifiers are suffixed to nominal or verbal roots, is typically a count noun. In cases in which classifiers are suffixed to adjectival, demonstrative, or numeral roots, classifiers derive words of those syntactic classes, which may then modify nouns at the level of the phrase.

5.3.4 The morphosyntactic and discourse functions of classifiers

In the previous section, we explored the range of possible morphosyntactic loci for Máíhǎ̀kì classifiers. In this section, we will turn to their syntactic and discourse functions. In particular, I will address classifiers' role in derivation (and in particular nominalization), discretization, agreement, and reference tracking. It is this variety of functions that places Máíhǎ̀kì classifiers somewhere between the boundary between inflection and derivation—a feature prevalent in languages of the northwest Amazon Basin.

Derivation and discretization

I have alluded throughout this chapter to the idea that the primary function of classifiers in Máíhǎ̀kì is their derivation of new lexical items. In the previous section, we saw that classifiers may be suffixed to a variety of (mostly bound) roots, resulting in free forms that may then serve as either the heads or modifiers in a noun phrase.

In the derivation of nouns, it is most often the case that a classifier will also have a *discretizing* function; that is, it will take a non-nominal or mass nominal root and derive a count noun. As Seifart (2005) points out, the morphosyntactic function of discretization is closely associated with classifier systems, and numeral classifier systems in particular, but is typologically rare in systems of noun class.

Agreement

Steele (1978:610) defines 'agreement' as "some syntactic covariance between a semantic or formal property of one element and a formal property of another." This definition is adopted by Aikhenvald (2000:29) and by Corbett (2003), who additionally defines five 'elements' involved in the agreement process. These are the **controller**, which triggers and determines the agreement; the **target**, whose form is determined by the controller; the **domain**, which is the syntactic environment in which agreement occurs; the **features**, which indicate the features with respect to which there is agreement; and the **conditions**, which determine whether there will be agreement.

As was established in §5.3.2, there are two salient domains of agreement in Máíhǎ̀kì: agreement between subject and predicate, and agreement between a head noun and nominal modifiers within the noun phrase. In agreement with the predicate, the subject acts as the

controller, triggering general class agreement on the predicate (the target) in the form of verbal inflection. This agreement exhibits the features of person, number, animacy, and sex. In (159a), we see the controller—the inanimate plural subject *ókógàrààmà* triggering agreement with the predicate in the form of the suffix *-gi*. In (159b), we see agreement between the plural animate third person controller *yáíhòyìnà* and the verb, suffixed with *-yi*.

- (159) a. **ókógàrààmà sánìhèàgì**
 ókó -gara -ma sání -hea -gi
 water -CL:clump -INAN.PL go.NI -PERF.PLACTION -3.SG.MASC.PAST.DECL
 ‘The clouds have gone’ (E.SJF.JMM.31jan2013)
- b. **yáíhòyìnà kùùyì**
 yáíhòyì -na kùù -yi
 dog -ANIM.PL bite.SGACT -3.PL.PRES.DECL
 ‘The dogs are biting’ (E. SJF.EMR.2jul2013)

Within the noun phrase, a head noun acts as the controller, triggering specific class agreement on adjectival, numeral, demonstrative, or relative clause modifiers. In example (160), we see the plural classifier *-noa* suffixed to a mass noun (*kíò* ‘metal’), a demonstrative root (*í* ‘proximal’), an adjectival root (*néá* ‘black’), a numeral (*tèpè* ‘two’), and a relativized verb (*gwénéhéásè* ‘that which has been dented’). In this case, the head noun *kíònòà* is controlling agreement on its modifiers.

- (160) **ínòà tèpènòà kíònòà néánòà gwénéhéásènòà**
 í -noa tèpè -noa kíò -noa néá
 PROX.DEM -CL.PL:concave two -CL.PL:concave metal -CL.PL:concave black
 -noa gwéné -héá -se -noa
 -CL.PL:concave dent -PERF.PLACTION -PAST.REL -CL.PL:concave
 ‘These two black dented metal pots’ (E.LMM.KCN.07aug2012)

Phrases like that the one in (160) are exceedingly rare⁷ in natural discourse. Two elements bearing the same classifier typically do not occur in the same clause. Barnes (1990:298) makes a similar observation for Tuyuca: “I have observed that in general the referent of the entity referred to by a classifier is not mentioned in each sentence that contains the classifier unless the statement might be unclear without it. Thus, noun phrases as such are not common in Tuyuca.”

⁷For instance, of the 328 occurrences of the adjective *háí* + classifier in our corpus, only ten of them are adjacent to a noun with an agreeing classifier. The vast majority occur as the sole nominal element in the phrase.

Reference tracking

In addition to their functions as nominalizers, discretizers, and agreement markers, Máíhĩ̀kì classifiers may be used as discourse anaphors. Levinson (2000:267) defines anaphora as “the phenomenon whereby one linguistic expression (the anaphor), lacking clear independent reference, can pick up reference or interpretation through connection to another linguistic expression (usually an antecedent).” Classifiers make very good candidates for anaphors as they encode only vital information about the referent, promoting economy in reference tracking.

Classifiers in Máíhĩ̀kì may be interpreted as anaphoric when they are suffixed to demonstrative roots or the numeral *te* ‘one’. Example (161) below shows the classifier *-bì* (for containers) and its lenis allomorph *-u* tracking reference to a strainer, *hìhèbì*, over the course of several utterances. After the initial reference, using the full noun, the classifier is suffixed to the nominalized verb *súù* ‘strain’ and to the distal demonstrative root *ká-*.

- (161) a. *mámákìnàrè hìhèbìmàkà íchíkò ìò súùchìbì*
mámákì -na -re hìhè -bì -maka íchí
 child.MASC -ANIM.PL -NON.SUBJ strainer -CL:vessel -INAN.DIM give
-ko ìò súù -chi -bì
 -3.SG.FEM.PRES.DECL 3.SG.FEM.PRON strain -PAST.REL -CL:vessel
 ‘She gave the children the strainer with which she had been straining’ (hab 46.1)
- b. “*káù dóáúkùmà,*” *ìkò íchíkò*
ká -u dóá úkú -ma í -ko íchí
 DEM.DIST -CL:vessel wash drink -IMPER say -3.FEM.SG.PRES.DECL give
-ko
 -FEM.SS.SIM
 “‘Wash it (the strainer) and drink,’ she said, handing it over’ (hab 46.2)
- c. *káùmàkà ìnì sáyí ítìhùnà “dóáúkùyò” ìhì*
ká -u -maka ìnì sáyí -yi ítìhùnà
 DEM.DIST -CL:vessel -INAN.DIM receive.NI go -3.PL.PRES.DECL 3.PL.PRON
dóá úkù -yo í -hì
 wash drink -3.PL.FUT.DECL say -3.sg.masc.pres.decl
 ‘They took it (the strainer) and left, saying, “Let’s wash and drink”’ (hab 46.2)

In (162), we see another example of the reference-tracking function of classifiers. In this case, the feminine classifier *-o* is suffixed to the numeral *tè* ‘one’, referring to the peccary that was mentioned in the previous utterance.

- (162) a. *kwáíkì yòòkì hòyò bàirè tíààò*

kwáí *-kí* *yòò -kí* *hòyò*
 put.on.shoulders -MASC.SS.SIM try -MASC.SS.SIM domestic.animal.FEM
bàì *-re* *tíà* *-ao*
 peccary -NON.SUBJ take.away -3.SG.FEM.PAST.DECL

‘While he was shouldering it (the spear), the female dog took a peccary away (from the herd)’ (soo 35.1)

b. *tèòrè tiàníòàò*

tè -o *-re* *tíà* *níò* *-ao*
 one -CL:fem -NON.SUBJ take.away stand.on.all.fours.TR -3.SG.FEM.PAST.DECL

‘She took one (a peccary) away and stood it up’ (soo 36.1)

5.3.5 Summary

§5.3 has provided a detailed description of the Máíhǎkì system of noun classification. First, I addressed the question of what counts as a classifier, and established a ‘fuzzy’ definition based on the morphosyntactic properties of prototypical classifiers. Within the set of morphemes encompassed by this definition, I outlined three subtypes: repeaters, intermediate classifiers, and full classifiers. These subtypes differ with respect to whether there is a homophonous root in the lexicon, and with respect to whether that root may denote an object-level individual. Next, I provided an overview of the lexical semantics of Máíhǎkì classifiers. I established a distinction between ‘general’ class, which exhaustively divides the lexicon on the basis of animacy, sex, and number, and which governs agreement with the predicate; and ‘specific’ class, which provides information largely about the shape of inanimate referents, and which governs agreement between nouns and nominal modifiers. Finally, I outlined the morphosyntactic loci for classifiers, and described their involvement in the derivation and discretization of nouns, as well as agreement processes and reference tracking.

5.4 A semantic analysis of Máíhǎkì classification

We have seen in this chapter—in particular in the discussion of ‘full’, ‘intermediate’, and ‘repeater’ classifiers—that the boundary between classifiers and common nouns in Máíhǎkì is rather blurry. While there are roots that may not serve as classifiers and classifiers that may not serve as roots, there is a large intermediate category of morphemes that lead double lives. Repeaters and certain intermediate classifiers have homophonous nominal roots that may appear bare and that may be inflected with nominal morphology. Other intermediate classifiers have non-nominal counterparts—roots that may *not* appear bare or be inflected with nominal morphology. Finally, full classifiers are exclusively suffixal; they have no counterpart roots in the lexicon. In addition to classifiers that do not have root counterparts, the Máíhǎkì lexicon also exhibits the inverse: there are nominal roots, capable of serving as

the arguments of verbs, that do not have homophonous classifiers.⁸ In this section, I will attempt to account for this blurriness, and for the range of morphosyntactic functions exhibited by Máìhìkì classifiers, through a type-theoretic semantic analysis. I will suggest that the classifier construction has two slots: a modifier slot followed by a head slot, and that the predicates in these slots combine via a process akin to Predicate Modification (Heim & Kratzer 1998:65) to form a new property, which, if it meets the semantic criteria for nounhood established in Chapter 4, may be type-shifted via either $\cap$ or ι to become a kind-level or object-level individual of type e .

In Chapter 4, we saw that the ability of a root to serve as a classifier or to be suffixed with a classifier (or, perhaps, the facility with which it may do these things) is predictable from its position on the Reference Wheel (Figure 4.10, Figure 4.14). I suggested there that this position is determined by the degree of similarity between the individuals that some noun denotes. From the analysis of classification presented here, it follows that the ‘ideal’ classifier denotes a set of individuals that share one or two salient properties (e.g., a shape or consistency), but that are otherwise relatively diverse.

Ultimately, I would like to suggest that classification is the pairing of an element with a low reference ratio and an element with a high reference ratio to create something in the middle. In this way, a classifier construction can be viewed as a means of *increasing* the reference ratio of the set denoted by the classifier by restricting that set to the entities that bear some other property (the property of the modifier). Or it can be seen as *decreasing* the reference ratio of the set denoted by the modifier by individuating it (making it count).

5.4.1 The semantics of the derivation of nouns via classification

This section looks at the semantics of the derivation of nouns via classification—a process that shares elements of nominal compounding, but which differs in that its components need not be free roots. I am referring here primarily to constructions of the type in Table 5.22 below, which have as their components verbal or nominal roots plus classifiers.

CLASSIFIER CONSTRUCTION	MEANING	COMPOSITION
áórò	‘food pot’	<i>áo</i> ‘food’ + <i>-ro</i> ‘CL: concave’
bàirò	‘meat pot’	<i>bàì</i> ‘meat’ + <i>-ro</i> ‘CL: concave’
gáhòrò	‘outer ear’	<i>gáhò</i> ‘ear’ + <i>-ro</i> ‘CL: concave’
kwàkòrò	‘cooking pot’	<i>kwàkò</i> ‘cook’ + <i>-ro</i> ‘CL: concave’

Table 5.22: Modificational classification constructions

As mentioned above, I propose that classifier constructions in Máìhìkì consist of two slots: a leftmost ‘referential base’ slot and a rightmost head slot. We might think of the elements

⁸There are of course non-nominal roots without classifier counterparts, such as the majority of verb roots. These are not considered here because they are outside the domain of nominal and nominalizing elements.

that occupy each of these slots as being of type $\langle e, t \rangle$ —that is, as denoting sets of entities that have some property in common. In the case of *bàì* ‘meat’, for instance, the predicate $\llbracket \text{bai} \rrbracket$ denotes the set of individuals that are meat. Our classifier $\llbracket \text{-ro} \rrbracket$ would denote the set of individuals that are concave. This seems simple enough. When we wish to combine these properties, however, we are faced with a type mismatch. Neither predicate may saturate the other as they are both of the same semantic type $(\langle e, t \rangle)$.

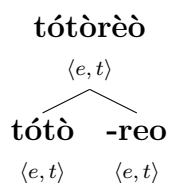
This predicament recalls the case of English adjectival modification, whose analysis requires either a multiplicity of adjectival types ($\langle e, t \rangle$ for predicative and $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ for attributive) or a stipulation that elements of type $\langle e, t \rangle$ may combine through means other than saturation. The latter hypothesis is explored by Heim & Kratzer (1998), who establish the rule of Predicate Modification presented below in (5.4.1).

- (163) If X is a branching node that has two daughters, Y and Z, and if both Y and Z are of type $\langle e, t \rangle$, then:

$$\llbracket X \rrbracket = [\lambda x : x \in D_e \wedge \llbracket Y \rrbracket(x) = \text{True} \wedge \llbracket Z \rrbracket(x) = \text{True}]$$

In other words, $\llbracket X \rrbracket$ is the characteristic function of the set of individuals that are in the sets defined by both $\llbracket Y \rrbracket$ and $\llbracket Z \rrbracket$.

As an example of how the rule of Predicate Modification might apply to a classifier construction in Máìhǎkì, let’s take a look at the inanimate noun *tótòrèò* ‘clay plate’, which may be analyzed as having a root *tótò* ‘clay’ and a classifier *-reo* ‘CL: disc-shaped’. The tree in Figure (5.4.1) shows that our X, *tótòrèò*, has two branching daughters, *tótò* and *-reo*, both of which are of type $\langle e, t \rangle$.



We can therefore say that, via Predicate Modification, $\llbracket \text{tótòrèò} \rrbracket$ is the set of entities that are both in the set of *tótò* and the set of *-reo*. This seems intuitively true: a clay plate is both a disc-shaped thing and an instance of clay. We will see, however, that this account is problematic in several ways. First, the classifier construction may express a range of relationships between root and classifier, including a ‘made of’ relationship as in *tótòrèò*, but also including ‘used for’ or ‘contains’ or ‘looks like’ or any other number of vague associations between two elements. *bàìrò*, for instance, does not typically mean ‘pot made of meat’ (although consultants admit this as one possible interpretation) but ‘pot of meat’ or ‘pot for meat’. When presented with the nonce classifier construction *óyòrò* (*óyò* ‘bat’ + *-ro* ‘concave’), consultants accepted the form as grammatical but playful, suggesting that it meant either ‘pot of bats’ or ‘pot made of bat skin’ or ‘pot that looks like a bat’. One consultant added, “You gave your pot a name—the ‘bat pot’.” Certainly we do not want to

say that a *bàìrò* is both meat and a pot, or that a *óyòrò* is both a bat and a pot, and so Heim and Kratzer's Predicate Modification becomes less appealing.

A second problem with Predicate Modification is that it does not capture the intuition that classifier constructions are asymmetrical—that the referent of *tótòrèò* is *primarily* a dish rather than primarily clay, and that the elements that occupy the head and 'referential base' slots are not interchangeable, as we might expect if the sole criterion for the creation of the new property in question were the membership of its extension in two sets. As a potential solution to this problem and the one described above, I propose that the relationship between a classifier and its referential base is not a direct relationship between sets of entities (i.e., between two predicates of type $\langle e, t \rangle$), but a relationship between the set of entities denoted by the classifier and a higher order set of sets (type $\langle \langle e, t \rangle, t \rangle$). This higher order set denotes the intersection of sets to which all entities denoted by the referential base belong; for instance, in the case of *kíù* 'metal', it would denote the set of properties that all instances of metal have in common (equivalent to the generalized quantifier $\llbracket \text{all metal} \rrbracket$). The lexical entry for the higher order set corresponding to 'bat' is shown below in (164).

$$(164) \quad \lambda P. \forall x [bat'(x) \rightarrow P(x)]$$

In other words, the classifier construction expresses a relationship between a set of entities and the set of properties *shared by* or *characteristic of* some other set of entities. Rather than combining through saturation (i.e., the application of the $\langle e, t \rangle$ function to the $\langle \langle e, t \rangle, t \rangle$ function), these functions combine through an altered version of Predicate Modification defined below in (165).

- (165) If there is a branching node X with two daughters Y and Z, and Y and Z are of types $\langle \langle e, t \rangle, t \rangle$ and $\langle e, t \rangle$, respectively, then the following is a possible denotation of X:⁹

$$\llbracket X \rrbracket = [\lambda x : x \in D_e \wedge \llbracket Z \rrbracket(x) = True \wedge \exists P [\llbracket Y \rrbracket(P) = True \wedge P(x) = True]]$$

In other words, two predicates of type $\langle \langle e, t \rangle, t \rangle$ and $\langle e, t \rangle$ may combine to form a new property of type $\langle e, t \rangle$ whose denotation is the set of individuals that are in Y and that are in one of the sets denoted by Z. For instance, in the case of *óyòrò*, the entities in the set denoted by this new property will *be* concave things (probably pots), and will *be characterized by* (i.e., share at least one property that is characteristic of) bats.

A reasonable objection to an analysis of this type is that the property that allows one to label something 'bat pot' may not be a salient property of bats at all. For instance, the pot that I keep my bats in may not share properties with those bats (other than that they occupy basically the same physical space). I admit that determining which kind of property "counts" as good enough to merit the formation of a compound is far from straightforward, but I also see value in my attempt to formalize the relationship between the components of a compound (or classifier construction) beyond saying that it is vague or idiosyncratic.

⁹I say 'possible' denotation because I do not wish to exclude the possibility that Y and Z combine via saturation as when a generalized quantifier combines, e.g., with a VP.

This analysis accounts well for the variety of possible relationships between ‘referential bases’ and classifiers in classification constructions. It seems, based on consultants’ comments, that a pot may be called *óyòrò* simply if it *reminds* one in some way of a bat—if it smells like a bat, or screeches like a bat, or once had a bat in it. The stipulation that the individuals denoted by the new $\langle e, t \rangle$ function have at least one property in common with at least one thing that is a bat allows for this level of generality in modification. The pot may have in common with a bat that they were both in location X at time Y, or that they both hang from the roof at night—whatever seems to the speaker to be a salient property of bats.

If we accept that a classifier construction is created by attributing some property that is salient among one set of individuals to another set of individuals, we might expect some morphemes to be better candidates for the referential base slot than others, and some morphemes to be better candidates for the classifier slot than others. We can imagine that the most easily interpretable classifier construction would be one in which there is little ambiguity as to *which* of the properties indexed by the referential base is the one being attributed to the set of entities in question. A good referential base, therefore, would denote a rather small and uniform set of properties. Similarly, a good classifier would denote a set of entities that have very few properties in common—a shape or a function, perhaps—and that are otherwise relatively diverse. We would therefore be less likely to see highly animate elements as either referential bases or classifiers, as is indeed the case.

5.4.2 Summary

In this section, I proposed that classifier constructions in Máíhǎ̀kì consist of two elements, a head (of type $\langle e, t \rangle$) and a referential base (of type $\langle \langle e, t \rangle, t \rangle$), which combine via a modified version of Predicate Modification to form a new lexical item of type $\langle e, t \rangle$. These new lexical items have reference ratios that typically place them in the range occupied by count nouns, and they therefore be typeshifted via either ι or $\cap$ to become referential nouns of type e —either object-like individuals or kinds.

5.5 Chapter 5 summary and conclusions

In this chapter, I provided an overview of the phenomenon of noun classification in Máíhǎ̀kì. I began with a discussion of the typology of noun categorization devices and the problems that languages of the northwest Amazon basin pose for this typology. We saw that the systems of noun classification across these languages bear a number of striking similarities, such as classifiers that fall along a continuum of lexicality, the presence of ‘general’ and ‘specific’ subsystems of classification, and the existence of a broad range of morphosyntactic loci and functions for classifiers. I then explored the lexical semantics, morphosyntax, and discourse properities of Máíhǎ̀kì classifiers in detail, attempting to exemplify a set of criteria established for the ‘prototypical’ member of a fairly fuzzy category. Finally, I proposed a formal semantic analysis of classification in which two elements—a referential base and

a head (classifier)—combine via a sort of Predicate Modification to form a compound-like element whose reference ratio is higher than that of the classifier itself. This process is the means by which non-nominal roots may be nominalized. The mechanism of modification proposed in my semantic analysis diverges from simple function application (the saturation of predicates with arguments) in that it relies not simply on whether some element is a member of the set denoted by some other element, but on the *relationship* between two sets; that is, whether they share members.

Ultimately, it seems that classifiers in Máìhǎ̀kì, and perhaps in other Amazonian languages, may be characterized by their involvement in lexicogenerative processes. The participation of these morphemes in agreement processes seems epiphenomenal: when every word in a noun phrase is derived via classification, and all elements are coreferential, they might be expected to agree in form. The ability of classifiers to serve as reference trackers also seems to be a natural consequence of their derivational function. The derivation of a number of coreferential elements that differ only in the quantity and quality of information encoded by the morpheme occupying the ‘referential base’ slot might be expected to give rise to a system in which some information is left out for the sake of efficiency after the first mention of the referent.

What is perhaps unusual about the Máìhǎ̀kì system of classification is that the derivation of new lexemes by classifiers mirrors nominal modification at the level of the phrase. Rather than an inventory of free lexical items that may combine with one another to form phrases, Máìhǎ̀kì has a lexicon of bound morphemes that must first combine with one another to form *words* before proceeding to the next level.

Chapter 6

Nominal plurality

In the previous chapter we explored the role of noun classification in establishing reference. I analyzed classifiers as predicates of type $\langle e, t \rangle$, the most grammaticalized of which denote sets whose members have both few properties in total and few properties in common, making them poor candidates for becoming referential nouns of type e without further help. The classifier construction—a particular instance of a more general process of compounding—is a means of restricting the number of entities in the set that the classifier denotes by specifying that those entities must also share some salient properties with the entities denoted by the root to which the classifier is suffixed. This process of classification results in a new element with a reference ratio closer to 1, as the set of entities denoted by the head (the classifier) have a higher proportion of properties in common.

In this chapter, we will turn to the role of plurality in establishing reference. I will argue that, like classification, pluralization is a means of increasing an element's reference ratio by increasing the proportion of properties that elements denoted by some noun have in common. Pluralization does this by 'smoothing over' the differences between individuals: the union of the sets to which each individual woman belongs, for instance, is much larger than the union of the sets to which at least two women belong, so the reference ratio for 'women' will be much closer to 1 than the reference ratio for 'woman'. We can imagine that such a process would be most relevant for the most heterogeneous sets (that is, those with the lowest reference ratio), as these are the sets that have the most to 'smooth over'. In Máìhǎkì, we find that this is exactly the case. Group 7 nouns (the 'higher animates') and the most grammaticalized ('full') classifiers are the two types of elements with plural counterparts, and are arguably the nominal (or nominalizing) elements with the lowest reference ratios.

In addition to its generalizing function, pluralization in Máìhǎkì also has a role in specification. Whereas I will argue that inherently plural animates (Group 1 nouns) like *nómí* 'women' and *hòyà* 'domestic animals' may refer to *kinds*, I will analyze the plural suffixes *-ma* (inanimate) and *-na* (animate) as determiner-like operators that return a *particular* plurality from a set. These two functions of plurality (generalization and specification) and their role in deriving referential arguments will be the primary focus of this chapter.

I will begin in §6.1 by outlining the difficulties of providing a coherent account of plurality

in Máìhǎkì, which include the apparent optionality of morphological plural marking, the existence of multiple morphological plurals, and the non-uniformity of the encoding of plurality across the eight nominal groups established in Chapter 4. Next, in §6.2, I will propose that the denotations of both ‘bare singular’ and ‘bare plural’ nouns are number neutral, which will serve as the starting point for my semantic analysis of Máìhǎkì plurality. I will argue that mass nouns like *ókó* ‘water’ and bare plural nouns, which include Group 1 inherently plural animates like *nómí*, as well as nouns suffixed by one of the plural classifiers in Table 6.3, always refer to kinds. Bare singular nouns, on the other hand, are ambiguous between kind reference and object¹ reference. Recall from Chapter 4 that the ability of these nouns to be typeshifted via $\cap$ or ι is variable, dependent on that noun’s reference ratio. Nouns like *ímà* ‘man’, for instance, will nearly always refer to individual men, while nouns like *gìì* ‘louse’ will nearly always refer to kinds. I will argue that object reference is achieved via a Choice Function (rather than via ι , as previously stated)—a function that returns a particular individual from a set. I will further argue that the plural suffixes *-ma* and *-na* mark *plural* objects—the result of the application of multiple choice functions to a single set.

A choice functional analysis of non-kind reference allows us to account for the possible indefinite interpretations of bare singulars and nouns suffixed with *-ma* or *-na*. It will also allow us to account for their unique scopal properties, which I will investigate in §6.4 using the tests developed by Carlson (1977) for his analysis of English bare plurals.

6.1 An overview of Máìhǎkì pluralization strategies

In this section, we will see that in Máìhǎkì there is not a one-to-one correspondence between the semantic notion of plurality and the morphosyntactic means of encoding this plurality. That is, a plural form is not used every time the referent may be conceived of as multiple entities, which means that some nouns in some contexts are ambiguous between singular and plural interpretations. Furthermore, for a given noun in Máìhǎkì there may be more than one morphological pluralization strategy. In this way, Máìhǎkì has both an ‘optional’ plural system (in that non-morphologically plural roots may refer to pluralities) and a ‘multiple’ plural system (in that there are several morphological pluralization strategies for a single root). This section will address each of these complexities—the optionality and multiplicity of plural marking—in turn.

6.1.1 Number neutral nouns and their interpretation

‘Optional’ or ‘non-obligatory’ plurality, in which the morphologically singular form of a noun may have either a singular or plural interpretation, has been described in many of the world’s languages (e.g. Mam and K’ich’ee (England 2011), Indonesian (Dalrymple & Mofu 2011), Cuzco Quechua (Faller 2007), and Mandarin Chinese (Rullmann & You 2003)). Corbett (2000) calls this phenomenon ‘general number’. Bare singular nouns that may refer

¹I mean ‘object’ as opposed to ‘kind’ rather than as opposed to ‘subject’.

to pluralities have also been called ‘number neutral’ (e.g. by Kwon & Zribi-Hertz (2004), Zweig (2009), Wilhelm (2008)), particularly in the formal semantics literature. Throughout this chapter, I will use the term ‘general number’ to describe the phenomenon in question and ‘number neutral noun’ to describe a noun that exhibits general number. The term ‘bare singular’ will be used to refer to a bare noun that may refer to singular individuals, while the term ‘bare plural’ will be used to refer to a bare noun that may only refer to pluralities.

General number in Máìh̀k̀ì is exemplified below in (166), which shows that the morphologically singular noun *hásótòtò* ‘shotgun shell packet’ may have either a singular or a plural interpretation. These interpretations become apparent due to the ability of the phrase *háyé íchí* to mean either ‘sell at a high price’ (which logically may take either a singular or plural object) or ‘sell many things’ (which logically may only take a plural object). This pattern is shown by nouns of classes 4, 5, and 6.

(166) **hásótòtò** háyé íchígítà

hásó -toto háyé íchí -gí -ta
shoot -CL:flat.rigid many.times give -3.SG.MASC.OAST.DECL -INFO

‘He would also give us many packets of shotgun shells’ (sl1 14.1)

‘Él también nos entregaba hartos paquetes de cartuchos’ OR

‘He sold us a packet of shotgun shells at an expensive price’ (E.LTN.SJF.12aug2014)

‘Nos ha vendido caro [un paquete de cartuchos]’

In many languages, a separate morphological pluralization strategy exists alongside general number (Corbett 2000). This is the case in Máìh̀k̀ì, where in most cases a number neutral noun has one or more morphologically plural counterparts. We see in (167) that *hásótòñà*, the pluralized form of *hásótòtò* ‘packet of shotgun shells’, may be felicitously used to disambiguate the two possible meanings of (166) above.

(167) **hásótòñà** háyé íchígí

hásó -toña háyé íchí -gí
shoot -CL.PL:flat.rigid many.times give -3.SG.MASC.PAST.DECL

‘He gave us many packets of shotgun shells’ (E.SJF.LTN.12aug2014)

‘Bastante paquete de cartuchos ha dado’

The use of a number neutral noun to refer to a plural individual is restricted to certain syntactic conditions. In (168), we see that bare, number neutral nouns may be interpreted as either plural or singular when they act as the syntactic subjects of stative predicates like *bàì* ‘exist’ (168a), or as syntactic objects (168b).

(168) a. **mítè** bàìh̀ì

mítè bàì -hì
mosquito exist -3.SG.MASC.PRES.DECL

‘There are mosquitos/there is a mosquito’ (E.LTN.15aug2014)

békírè ñiàbì Quistocochakìrò

- b. *békí -re ñià -bì Quistococha -kìro*
 tapir -NON.SUBJ see -1.SG.PAST.DECL Quistococha -CL:area

‘I saw a tapir/tapirs at Quistococha (a zoological park in Iquitos)’ (E.AMM.17jun2013)
 Consultant’s comment: ‘It could be several or one’ (‘Puede ser varios o uno’)

On the other hand, number neutral nouns like *bíbí* ‘dolphin’ below may only have singular interpretations when they act as the subjects of episodic verbs, like *bíà* ‘breach the surface’, shown in (169)².

(169) **bíbí** háyé bíàkò

bíbí háyé bíà -ko
 dolphin multiple.instances breach.surface -3.SG.FEM.PRES.DECL

‘The dolphin is breaching a lot’

*‘Many dolphins are breaching’ (E.SJF.JMM.22aug2014)

Consultant’s comment: ‘She goes in and out, in and out’ (‘Ella otra vez sale, otra vez entra, otra vez sale, otra vez entra’)

Number neutral nouns are ungrammatical as the subject of telic, pluractional episodic predicates. In (170), the telic verb *tómé* ‘fall’, made pluractional via the adverb *háyé*, cannot take a number neutral subject. Example (170b) shows that this sentence is felicitous with a plural subject. This is further evidence that a bare singular noun must have a singular interpretation as the subject of an episodic construction.

(170) a. ***kíòrò** háyé tómégí

kíò -ro háyé tómé -gí
 metal -CL:concave multiple.instances fall -3.SG.MASC.PAST.DECL

Attempted: ‘Many pots fell’ (E.AMM.SJF.21aug2014)

‘Muchas ollas han caído’

b. **kíònàà** háyé tómégí

kíò -noa háyé tómé -gí
 metal -CL.PL:concave multiple.instances fall -3.SG.MASC.PAST.DECL

‘Many pots fell’ (E.AMM.SJF.21aug2014)

‘Muchas ollas han caído’

While it was mentioned above and shown in (166) and (168b) that the number neutral objects of episodic verbs may have either a plural or singular interpretation, there are some circumstances under which the number neutral object may *only* yield a singular interpretation. When the adverb *háyé*, which pluralizes events, appears just before the object of a telic

²Note that there is a generic, non-episodic reading of this sentence as well: ‘dolphins breach a lot’.

episodic verb as in (171a), the interpretation of that object is obligatorily singular, resulting in infelicity (a single tree cannot be climbed multiple times as part of the same telic event). This is repaired when the plural form, *súkíñà*, is used, as in (171b). On the other hand, when *háyé* directly precedes the verb, as in (171c), the number neutral noun may have either a singular or plural interpretation.

(171) a. **háyé súkíñi mfhì*

háyé *súkí -ñi* *mí* *-hì*
multiple.instances tree -CL:tree climb.PAST.NI -1.SG.PAST.DECL.NI

Attempted: ‘I climbed many trees’ or
‘I climbed a tree many times’ (E.AMM.SJF.21aug2014)

b. *háyé súkíñà mfhì*

háyé *súkí -ñia* *mí* *-hì*
multiple.instances tree -CL.PL:tree climb.PAST.NI -1.SG.PAST.DECL.NI

‘I climbed many trees’ (E.AMM.SJF.21aug2014)

c. *súkíñi háyé mfhì*

súkí -ñi *háyé* *mí* *-hì*
tree -CL:tree multiple.instances climb.PAST.NI -1.SG.PAST.DECL.NI

‘I climbed a tree/trees a lot’

d. *súkíñà háyé mfhì*

súkí -ñia *háyé* *mí* *-hì*
tree -CL.PL:tree multiple.instances climb.PAST.NI -1.SG.PAST.DECL.NI

‘I climbed trees a lot’

A syntactic restriction on the ability of ‘bare singulars’ (i.e., morphologically singular number neutral nouns) to serve as the subjects and objects of episodic predicates has been part of a lively conversation about the syntax and semantics of nouns in Brazilian Portuguese (cf. Pires de Oliveira (2012), Müller (2002a), Müller (2002b), Pires de Oliveira & Rothstein (2011), de Moura Menuzzi et al. (2015), Schmitt & Munn (1999), Schmitt & Munn (2002)). Some of the analyses put forth by these authors will be discussed in §6.4, where we will return to the question of why bare singulars have variable interpretations in Máhèkì. For now, I will summarize the facts about ‘optional’ plural marking:

1. Number neutral nouns, as the subjects of episodic predicates, are always interpreted as singular. When the verb is telic and pluractional (i.e., when its subject cannot logically have performed the action multiple times as part of the same event), the number neutral subject is infelicitous.

2. Number neutral nouns, as the objects of episodic predicates, may be interpreted as either singular or plural. In certain constructions, such as the one in which *háyé* directly precedes the object of a telic verb, that object must be interpreted as singular, and the utterance is infelicitous.
3. Number neutral nouns, as the subjects of stative predicates, are interpreted as either singular or plural.

6.1.2 The multiplicity of plural marking

In addition to the optionality of plural marking, Máìhîkì also exhibits multiple morphological pluralization strategies. For some nouns, more than one of these strategies may be available. In this section, I will discuss the distribution of the following four morphological realizations of plurality:

1. inherently plural roots
2. classifier plurals
3. the inanimate plural suffix *-ma*
4. the animate plural suffix *-na*

The first category consists of those roots—the **inherently plural roots** of Group 1—that have a plural interpretation by default. These exclusively plural roots have derived singular counterparts which, in many cases, also encode masculine or feminine gender. An exhaustive list is shown below in Table 6.1.

PLURAL		MASC SG		FEM SG	
dòì	‘siblings’	dòìkì	‘brother’	dòìkò	‘sister’
hòyà	‘domestic animals’	hòyì	‘domestic animal’	hòyò	‘domestic animal’
mái	‘people’	mái	‘ <i>máìhùnà</i> man’	méò	‘ <i>máìhùnà</i> woman’
náhé	‘grandchildren’	náhì	‘grandson’	náhèò	‘granddaughter’
nómí	‘women’	-		nómíò	‘woman’
ññ	‘children’	ñítù	‘child’	ñítù	‘child’

Table 6.1: Group 1 nouns: plural and singularized forms

In example (172), we see that the inherently plural roots *nómí* and *dòì* may have plural interpretations, as evidenced by their Spanish translations and the fact that these nouns trigger plural predicate agreement. In (6.1.2), we see that nouns of this type may not have singular interpretations, as evidenced by their incompatibility with the numeral *tè* ‘one’.

- (172) a. **nómí** yòòmáyí
 nómí yòò -má -yi
 women work -NEG -3.PL.PRES.DECL
 ‘Women don’t work’ (jv1 12.1)
 ‘Las mujeres no quieren trabajar’
 dòì báámáyí
 b. *dòì báá -má -yi*
 siblings have -NEG -1.SG.PRES.DECL
 ‘I don’t have siblings’ (mb1 67.1)
 ‘No tengo hermanos’

- (173) *tèò **nómí**
 tè -o nó mí
 one -CL:fem women

Attempted: ‘one woman’ (E.SJF.NMM.8feb2013)

The second morphological realization of plurality is the **classifier plural**, described above in §3.4. A certain subset of ‘full’ classifiers undergo a regular singular-plural alternation, show in Table 6.3 (reproduced below).

SINGULAR FORM	PLURAL FORM	THINGS CLASSIFIED
-bì	-mìa	round fruits
-bì	-mìa	buckets, canoes, plantains
-ga	-gaña	small round objects
-go	-goña	loops, pulleys, chain links
-gohe	-goña	holes
-hao	-haña	leaves, sheets of paper
-ka	-kaña	branches
-ka	-kaña	cloth-like objects
-kwa~-ko	-kwaña~-koña	sheets, blankets
-ñaka	-ñaña	spines, needles, quills
-ñi	-ña	trees, stalks
-raka	-ñaña	portions of water
-reo	-neña	disc-shaped objects
-ro	-noa	pots, inner ears
-rì	-nia	hammocks, machetes, paddles
-tete	-teña	temporary shelters, gourd vessels
-toto	-toña	scales, buttress roots, tables, planks
-yo	-ñoa	slender sticks, digits

Table 6.3: Singular and plural classifiers

Plural classifiers differ from inherently plural roots in that their morphologically singular counterparts are inherently number neutral. That is, while the morphologically singular *hásótòtò* ‘shotgun shell packet’ may have a plural interpretation as in (166) above, the morphologically singular *nómíò* may only have a singular interpretation.

The third morphological realization of plurality in Máìhìkì is the **inanimate plural marker -ma**, which may be suffixed to nouns of groups 3 and 4. This suffix is shown for the Group 3 noun *túrí* ‘enclosure, trap’ and the Group 4 noun *wèè* ‘house’ in (174).

- (174) a. ...túrí**mà** bàì táńótùrìmà, ìtìhùnà káá táńóhì áítùrìmà, dékòrè áíyí
túrí -ma *bàì* *táńó* -*turi* -ma *ìtìhùnà* *káá*
trap -INAN.PL meat fall.in.trap.PLECT -CL:enclosure -INAN.PL 3.PL.PRON DEM
táńó -*hì* *áí* -*turi* -ma *dékò*
fall.in.trap.PLECT -PL.SS.SIM eat -CL:enclosure -INAN.PL unknown.FEM
-re *áí* -*yi*
-NON.SUBJ eat -3.PL.PRES.DECL

‘Their traps, their game traps, some animal fell into their food traps and they were eating that’ (iy6 397.1)

wèè**mà** tátáhèàgì

- b. wèè -*ma* tátá -*hea* -*gi*
 house -INAN.PL fall.PLACT -PERF.PLACT -3.SG.MASC.PAST.DECL
 ‘The houses fell down’ (hur 33.1)
 ‘Ha caído las casas’

The inanimate plural suffix *-ma* may co-occur with the classifier plural suffix, as is shown in (175), where *-ma* follows the plural classifier *-toña*.

(175) kíù**tòñà**mà íchígí ...

kíù -*toña* -*ma* íchí -*gi*
 metal -CL.PL:flat.rigid -INAN.PL give -INAN.PL

‘He gave metal panels...’ (cam 4.1)
 ‘Nos ha entregado las planchas...’

When a classifier exhibits a singular-plural alternation, its plural form is nearly always used in conjunction with *-ma* as above. There are, however, some exceptions. In (176) we see that the singular *-toto*, rather than its plural counterpart *-toña*, appears with *-ma*.

(176) yíkí mífí**tòtò**mà bèèyì

yíkí mífí -*toto* -*ma* bèè -*yi*
 1.PL.PRON palm.pl -CL:flat.rigid -INAN.PL carry.on.back -1.PL.PRES.DECL

‘We are carrying the *cumbas*³ (E.SJF.JMM.19jun2013)
 ‘Nosotros estamos cargando las cumba’

It is as yet unclear to me the precise circumstances under which the singular form of a pluralizable classifier may be suffixed with *-ma*, although there is some evidence to suggest that it may have something to do with the degree to which the root + classifier construction has become lexicalized.

The last morphological pluralization strategy is the animate plural suffix *-na*, which may be suffixed to bare roots of groups 5, 6, and 7, as shown below in (177).

(177) a. kòrè**nà**rè títéyí

kòrè -*na* -*re* títé -*yi*
 spider.mite -ANIM.PL -NON.SUBJ extract.PLACT -1.SG.PRES.DECL

‘I’m extracting spider mites’ (E.AMM.SJF.14jan2013)
 ‘Estoy sacando isangos’

b. áñà**nà** tínyòyità “po”

³A *cumba* is a cap of woven leaves placed on the peak of a roof.

áñà -na tíñó -yi -ta po
 snake -ANIM.PL answer -3.PL.PRES.DECL -INFO SOUND.SYMB

‘And the snakes answered, “po”’ (vi2 62.1)

‘Las víboras también contestaban “po”’

c. *ímìnà ótéyì*

ímì -na óté -yi
 man -ANIM.PL dance -3.PL.PRES.DECL

‘The men danced’ (fi1 145.1)

‘Los hombres bailaban’

Unlike *-ma*, *-na* may not be suffixed to an already plural or pluralized stem. Its incompatibility with pluralized classifiers is perhaps a coincidence (there are no animate classifiers that exhibit a singular-plural alternation), but *-na* also cannot be suffixed directly to inherently plural animates of Group 1, as shown in (178) for the Group 1 noun *hòyà* ‘domestic animals’.

(178) **hòyànà*

hòyà -na
 domestic.animals -ANIM.PL

Attempted: ‘domestic animals’

In summary, there are four morphosyntactic means of encoding plurality in Máìh̀k̀. Some roots, like the Group 1 nouns *nómí* and *hòyà* are *inherently* plural; some plural nouns may be derived via the suffixation of a plural classifier; other nouns may be pluralized by the inanimate or animate plural suffixes *-ma* and *-na*.

6.1.3 Summary

We have seen in this section that Máìh̀k̀ does not exhibit a one-to-one mapping from semantic plurality to morphological plurality. Plurality seems ‘optional’ in some cases because a morphologically singular noun with ‘general number’ may refer to more than one individual, even when a morphologically plural form is available. The system is further complicated by four distinct means of encoding plurality morphologically, multiple of which may be viable options for a single nominal root (e.g., the classifier plural and the inanimate plural *-ma*).

In what follows, I hope to make sense of the various morphological and syntactic ways that plurality may be encoded in Máìh̀k̀ by taking a close look at the semantics of these morphemes and constructions. I will argue that the apparent complexity of this system has two origins: 1) the conflation of the generalizing and specifying functions of plurality described above and 2) the role of a noun’s reference ratio in determining which pluralization strategies, if any, are available to it. Once these two things are taken into account, the morphosyntax of Máìh̀k̀ plurality is much tidier.

6.2 On the denotation of singular and plural nouns

Before we get into the details of an analysis of plurality in Máíhǎ̀kì, it will be useful to say a few words about the denotation of bare nouns, both singular (like *bíbí* ‘dolphin’) and plural (like *nómí* ‘women’). In Chapters 4 and 5, I treated nouns like *bíbí* as denoting characteristic functions of sets of singular individuals. The denotation of *bíbí*, if *a*, *b*, and *c* are the only dolphins in the world, is shown below in (179).

$$(179) \quad \llbracket bíbí \rrbracket = [a, b, c]$$

An intuitive view of the denotation of a plural noun is that it contains all of the possible sums of the atomic individuals denoted by the singular noun. If *d*, *e*, and *f* are all of the individual women in the world, the denotation of the inherently plural noun *nómí* would on this view be as in (180).

$$(180) \quad \left[\begin{array}{ccc} & \{d, e, f\} & \\ \{d, e\} & \{d, f\} & \{e, f\} \end{array} \right]$$

This is the analysis put forth by Chierchia (1998a,b) for count nouns. Chierchia proposes a plural operator, PL (defined below in (181), which operates on a set of elements *A* (the elements in the extension of a singular noun)) and forms all sums of the elements of *A*. PL then removes *A* (the denotation of the singular noun), leaving only the plural individuals. An illustration of this process is provided in Figure 6.1 below.

$$(181) \quad \text{PL}(A) = *A - A$$

where $*A$ is the closure of *A* under $\cap$ (the set of all sums of elements of *A*)
Chierchia (1998a:59–60)

$$\left[\begin{array}{ccc} & \{a, b, c\} & \\ \{a, b\} & \{a, c\} & \{b, c\} \end{array} \right]$$

$$\left[\begin{array}{ccc} a & b & c \end{array} \right]$$

Figure 6.1: The PL operator: Chierchia (1998b)

While the above denotations of singular and plural nouns seem intuitive, they are problematic for several reasons. First, we saw in §6.1 that certain ‘bare singular’ nouns in Máíhǎ̀kì

are *number neutral*; that is, they seem to be able to refer to both atomic individuals *and* pluralities. Second, plural class 1 nouns like *nó mí* seem to have what Farkas & de Swart (2010) call ‘inclusive’ plurality: sentences like the one in (182) cannot be uttered truthfully when the speaker owns just one domestic animal. If the denotation of *hò yà* were as in 180 above, we would expect that the speaker could utter (182) truthfully if he owned just one domestic animal.

- (182) hò yà báámáyí
 hò yà báá -má -yí
 domestic.animals have -NEG -1.SG.PRES.DECL
 ‘I don’t have domestic animals’

In fact, in the literature on nominal plurality, there has been much disagreement both over whether the denotation of a singular noun contains pluralities, and over whether the denotation of a plural noun contains atomic individuals. Sauerland et al. (2005) summarize the latter debate—whether plural nouns also denote atomic individuals—as a debate between the ‘Strong Theory’, on which plurals are exclusively plural, and the ‘Weak Theory’, on which plurals are ‘semantically unmarked’, containing both atomic individuals and pluralities in their extension. The authors themselves argue for the Weak Theory with experimental evidence based on people’s interpretations of sentences like (182) above, concluding that “the plural is not subject to an inherent lexical restriction as the singular is. Rather, the plural is subject to pragmatic comparison with the singular, and therefore cannot be used in most examples when the singular is possible” (Sauerland et al. 2005:425). (See also (Spector 2007). This analysis of plurality has been standard since Link (1983), who proposes a plural operator, ‘*’, which “generates all the individual sums of members of the extensions of [some one-place predicate] *P*” (130). (In other words, $\llbracket *P \rrbracket$ is the complete join-semilattice generated by $\llbracket P \rrbracket$.) Other proponents of a version of the Weak Theory include Hoeksema (1983), van Eijck (1983), Schwarzschild (1996), Beck & Sauerland (2000), and Chierchia (2010).

Sauerland et al. (2005) acknowledge that the opposite phenomenon (in which morphologically singular nouns may refer to pluralities in addition to atomic individuals) is also attested, but they do not address this in their paper. The problem of ‘number neutral’ bare singulars is taken up by Rullmann & You (2003) for Mandarin Chinese, Wilhelm (2008) for Dëne Sýline, and Dalrymple & Mofu (2011) for Indonesian, who argue that the denotation of a singular noun must include both singularities and pluralities. (This is in many ways similar to the analysis of bare nouns put forth in Chierchia (1998b), although Chierchia considers these nouns to be mass and therefore neither singular nor plural.) Rullmann & You (2003) propose the plural operator in (183) in order to differentiate the denotation of plural nouns from bare (number neutral) nouns.

- (183) $PL(N) = *N - At$
 where $*N$ is the closure under union of N and At is the set of atoms
 (Rullmann & You 2003:5)

Under this analysis of plurality, bare singular nouns have both atoms and pluralities in their extension (i.e., are number neutral), and the atoms are removed by PL. An illustration is provided below in Figure 6.2.

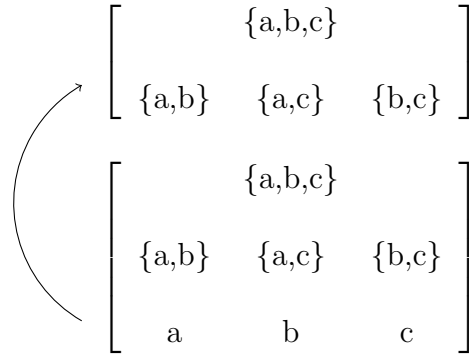


Figure 6.2: The PL operator: Rullmann & You (2003)

Such an analysis of plurality does not account for sentences like (182) in Máíhĩkì, and so we still have a problem.

In sum, when it comes to the denotation of bare singular and bare plural nouns in Máíhĩkì, there seems to be a paradox. We want to capture the intuition that singularity is different from plurality—an intuition that is reflected, for example, in the morphological difference between *kíòrò* ‘pot’ and *kìònòà* ‘pots’, as well as in the different verbal inflection triggered by the singular *bíbí* ‘dolphin’ versus the plural *nómí* ‘women’. But we cannot ignore the fact that *kíòrò* and *bíbí*, under certain circumstances, may refer to more than one entity, or that *kìònòà* and *nómí* seem to encompass singular individuals.

If we allow the singular *kíòrò* ‘pot’ to refer to pluralities (as (166) suggests we may do) and the plural *kìònòà* ‘pots’ to refer to singularities (as (182) suggests we may do), then both the singular and the plural versions of this noun would have the denotation in Figure 6.3 (where *g*, *h*, and *i* are all of the pots in the world) and we lose the ability to distinguish between them.

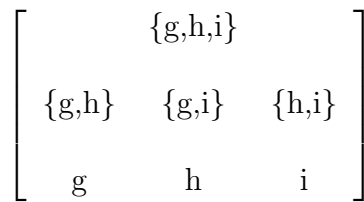


Figure 6.3: A number neutral denotation

Here I will propose that both the ‘strong’ and ‘weak’ theories of both plurality and singularity are correct. The reasoning goes like this: someone tells us that something is a

cat, and so we file it away in our ‘cat’ set. As we are told that more and more things are cats, we build up the extension of ‘cat’ which includes those individuals. As we add individuals to the ‘cat’ set, we also add them to other sets, like ‘fluffy’ or ‘white’ or ‘meows’. It is in this way that we develop an abstraction of ‘cat’: we have a good idea of the properties that are *requisite* of cats and a good idea of the properties that are *incidental* of them. For instance, we can suppose that Brubaker and Harvey and Nigel are the only things called ‘cat’ that we have ever encountered. We know that Brubaker is black and fluffy and that he meows and has whiskers, and that Harvey is white and fluffy and that he also meows and whiskers, and that Nigel is spotted and is not fluffy but does meow and have whiskers. Our model of (this part of) the world would look as below:

$$\begin{aligned} \llbracket \text{cat} \rrbracket &= \{\{\text{Brubaker}, \text{Harvey}, \text{Nigel}\}\} \\ \llbracket \text{fluffy} \rrbracket &= \{\{\text{Brubaker}, \text{Harvey}\}\} \\ \llbracket \text{meows} \rrbracket &= \{\{\text{Brubaker}, \text{Harvey}, \text{Nigel}\}\} \\ \llbracket \text{white} \rrbracket &= \{\{\text{Brubaker}\}\} \\ \llbracket \text{black} \rrbracket &= \{\{\text{Harvey}\}\} \\ \llbracket \text{spotted} \rrbracket &= \{\{\text{Nigel}\}\} \\ \llbracket \text{has whiskers} \rrbracket &= \{\{\text{Brubaker}, \text{Harvey}, \text{Nigel}\}\} \end{aligned}$$

I argued in Chapter 4 that a kind may be thought of as the individual that is defined by the properties that are common to the individuals in some set (i.e., the individuals denoted by some noun). In other words, the ‘cat’ kind is the abstract individual that has all of the properties that are *requisite* of cats. In the case of (??) above, the cat kind would be the abstract individual that meows and has whiskers. It can be thought of as a prototype. Such an analysis differs from but is compatible with the ‘possible worlds’ analysis of kinds proposed by Chierchia (1998b), which states that the kind is the largest individual with some property at any world.

Based on this prototype (the kind), I propose that we can define yet another set: the set of individuals which minimally belong to the sets that the kind-individual belongs to. This set will include all of the individuals in our original set (the extension of ‘cat’) plus anything else that would qualify as being of the ‘cat’ kind given the requisite properties. It is the set of anything that could possibly count as ‘cat’ given these requisite properties—the set of cats, for instance, that I could imagine. These cats would all meow and have whiskers, but might have unattested combinations of incidental properties (e.g., might be both fluffy and spotted).

Now let’s imagine that we see multiple cats, and someone tells us that they are ‘cats’. We file them away in our ‘cats’ set, and as we are told that more and more things are ‘cats’, we build up the extension of ‘cats’, which includes those plural individuals. Our abstraction or prototype of ‘cats’ will denote an individual defined by the set of properties to which all pluralities of cats belong. This individual—the ‘cats’ kind—will be identical or nearly identical to our ‘cat’ kind, as the set of properties that every plurality of cats has in common is identical or nearly identical to the set of properties that every individual cat

has in common.⁴ As we did before for the singular ‘cat’, we can now define a new set based on the ‘cats’ kind which will include all individuals that minimally have the definitional properties of ‘cats’. Again, this set will contain both pluralities and singularities, as both types of entities bear the properties that are requisite of cats.

The account proposed here, in which kinds are derived from properties, and properties may in turn be derived from kinds, is in keeping with the spirit of Chierchia (1998b), in which the $\cap$ (down) and $\cup$ (up) operators, respectively, do just this. The proposed difference here is that these operations are not symmetrical: a kind may be derived from a set of individuals via $\cap$, but there is no way to get from this abstraction (the kind) back to the set of individuals from which it was derived, as the details (i.e., the incidental properties) are lost in the abstraction itself. Instead, the $\cup$ (up) operator defines a new set: the set of all individuals that meet the minimal criteria. This new set is the number neutral property denoted by the noun.

If it is truly the case, as I suggested above, that a kind derived from a singular noun and a kind derived from a plural noun are in one sense semantically equivalent, what governs whether one or the other will be used to refer to a kind? Why, for instance, is the plural *nómí* the designated kind for ‘women’, but the singular *bíbí* the designated kind for ‘dolphins’? The fact that languages differ drastically with respect to whether singular or plural nouns are recruited for kind reference (kinds in English are referred to almost exclusively with bare plurals, while Chinese uses bare singulars) suggests that this designation is, as we might expect, somewhat random. The Máìhǎkì-internal facts suggest, however, that whether the singular or plural version of a noun may refer to a kind has something to do with a that noun’s reference ratio. As mentioned in §4.4, low reference ratios make for bad kinds, as it is more difficult to form an abstraction based on a set of highly idiosyncratic individuals. In general, plural nouns have higher reference ratios than singular nouns, as the set of properties shared by at least two individuals is smaller than the set of incidental properties (i.e., the properties that any individual may have). Therefore, in cases where the atomic individuals bear a diverse set of properties, the $\cap$ (kind-forming) operator may more easily be applied to a plural noun than a singular noun.

The account outlined in this section makes several predictions for Máìhǎkì singular and plural nouns which will be explored in §6.3 and §6.4 below. First, it predicts that wherever a noun has an intensional (kind) reading, it will always be number neutral. Second, it predicts that wherever a noun has an extensional reading, there will be *no* ambiguity between singular and plural.

⁴For instance, the properties that are common to Brubaker, Nigel, and Harvey in our model are also common to Brubaker + Harvey, Harvey + Nigel, etc. A possible exception would be properties that are true only of singletons, or only of pluralities, like ‘meows when alone’ or ‘has multiple tails’, respectively.

6.3 Evidence for the proposed analysis

In §6.2 above, I argued that although singular and plural nouns may be conceived of as having count (i.e., singular or plural) extensions, the property that is derived from the corresponding kind via $\cup$ is always number neutral.

As mentioned in Chapter 4, there are two options for the nominalization of a property, corresponding roughly to the two type-shifting operators proposed by Partee (1987) that take predicates of type $\langle e, t \rangle$ and return arguments of type e . These are ι , which returns an *object*, and $\cap$, which returns a *kind*. Because ι is taken to be the denotation of the definite article, and Máìhìkì does not exhibit a morphosyntactic contrast between definite and indefinite noun phrases, I will propose instead that the relevant operator is not ι but a *choice function* (a function that returns some individual from a set). The definition of a choice function, which was proposed by Reinhart (1992, 1997) (see also Winter (1997) and Kratzer (1998)) as a means of accounting for the ability of English indefinites to take wide scope, is shown below in (184).

- (184) A function f is a choice function ($CH(f)$) if it applies to any non-empty set and yields a member of that set (Reinhart 1997:372)

In sum, the property denoted by a singular or plural noun (of type $\langle e, t \rangle$) may be nominalized into a *kind* (of type e) via $\cap$, or it may be nominalized via a choice function, which will yield an *object* with an indefinite or definite interpretation. In other words, we would expect bare nouns in Máìhìkì to be ambiguous between kind reference and object reference. This type of ambiguity is discussed by Carlson's influential paper on English bare plurals (1977), in which he notes that bare plurals have two possible interpretations: generic and existential. The generic reading of bare plurals can be thought of in some cases as having the force of universal quantification, as in (185a), which might be paraphrased as "All horses are mammals/creatures/material objects." In other cases, like (185b), the bare plural seems to have the force of 'most' rather than 'all', and in yet others (e.g. 185c), neither 'most' nor 'all' seems an appropriate paraphrase.

- (185) a. **Horses** are mammals/creatures/material objects.
 b. **Horses** are smart/larger than mules/good pets.
 c. **Horses** are widespread.

The other use of the bare plural, Carlson notes, had long been described as an 'indefinite plural'—the plural counterpart to the indefinite singular article 'a(n)'. Examples of this use of the English bare plural are shown in (186).

- (186) a. **Doctors** tried to save the dying boy.
 b. Knute threw **rotten peaches** at the library.
 c. **Mice** will come out of that wall if you pound it.

Carlson's primary claim is that bare plurals in English refer unambiguously to kinds. His analysis is supported by a number of tests showing that these forms are *not* the plural counterparts to singular indefinites. In particular, these tests show that bare plurals exhibit obligatory narrow scope, while true indefinites have either wide or narrow scope readings. Since Carlson's influential dissertation, it has been widely accepted that English bare plurals may refer to kinds, although there has been much debate over whether they may also have indefinite interpretations, for instance in sentences like the ones in (186). Proponents of what Krifka (2003) calls the 'ambiguity hypothesis'—that bare plurals are ambiguous between kinds and indefinites—include Wilkinson (1991) and Gerstner-Link & Krifka (1993), among others.

In §6.4 below, I will apply the tests put forth in Carlson (1977) to the Máìhǎkì data in an effort to show that bare singular nouns are ambiguous between object (indefinite/definite) and kind interpretations. As kinds, bare singulars will appear to have obligatorily narrow scope, and will be number neutral. As objects, they will have the ability to take wide scope, and will be obligatorily singular. Plural (indefinite or definite) objects may be derived via suffixation of *-ma* (inanimate) or *-na* (animate), which I also give a choice-functional analysis. By contrast with bare singulars, bare plural nouns seem to have exclusively kind reference, and thus only exhibit narrow scope.

6.4 Applying Carlson's tests to Máìhǎkì

In this section, we will survey the tests used by Carlson (1977) to argue that bare plurals in English refer to kinds. These tests show that while indefinite noun phrases in English exhibit ambiguous scope in various environments, bare plurals have exclusively narrow scope. We will see that Máìhǎkì bare singulars appear to have ambiguous scope in these contexts, while bare plurals pattern like English bare plurals in their ability to take only narrow scope. I argue that bare singulars (in Máìhǎkì) are ambiguous between kinds and indefinite/definite singulars, while bare plurals refer exclusively to kinds. Indefinite/definite plurals are formed via the object plurals *-ma* and *-na*.

6.4.1 Scope with respect to intensional verbs

As the object of a certain kind of verb, the English bare plural, which Carlson calls ϕ NP, patterns differently from the indefinite singular. These verbs are 'intensional' verbs, which include verbs of searching, desiring, creating, and imagining. Bare plurals have exclusively narrow scope with respect to intensional verbs, while indefinites have ambiguous scope.

The example in (187), taken from Carlson's paper, shows that the indefinite NP 'a young psychiatrist' yields an ambiguous interpretation as the object of the intensional predicate 'wishes to talk to'.

(187) Minnie wishes to talk to **a young psychiatrist**.

We could imagine a scenario in which Minnie has a particular young psychiatrist, Dr. Smith, in mind, and Minnie wishes to talk to Dr. Smith. We could also imagine a scenario in which Minnie doesn't have a particular person in mind and would happily talk to *any* young psychiatrist. Following Quine (1960), Carlson calls these the 'transparent' and 'opaque' readings, respectively. Example (188) shows the indefinite plural 'sm young psychiatrists', which also has both transparent and opaque interpretations. Either there is a particular group of young psychiatrists that Minnie wishes to talk to, or she will be satisfied by talking to any plurality of young psychiatrists.

(188) Minnie wishes to talk to **sm young psychiatrists**.

In contrast with the indefinite singular and indefinite plural NPs, bare plurals only yield an opaque reading (i.e., a narrow scope reading) as the objects of intensional verbs. An example of this is shown in (189); the sentence does not entail that there is a particular set of young psychiatrists that Minnie wishes to talk to.

(189) Minnie wishes to talk to **young psychiatrists**.

Other intensional verbs, like 'be afraid of', seem to distinguish even further between ϕ NP and indefinites. In (190a & 190b), we see that the indefinite NPs take obligatory wide scope with respect to the intensional verb: the only available interpretation is that Georgia is afraid of a particular snake or some particular snakes. In (190c), however ϕ NP takes narrow scope as always.

- (190) a. Georgia is afraid of **a snake**.
 b. Georgia is afraid of **sm snakes**.
 c. Georgia is afraid of **snakes**.

Carlson takes the fact that 'sm' plural pattern with indefinite singulars to mean that they are the true indefinite plurals, while bare plurals refer to kinds. If we were to apply this test to Máíhǎkì, we would expect that bare singulars, as they are proposed to be ambiguous between kinds and indefinites, will have both narrow scope and wide scope readings. Furthermore, the wide scope readings should be exclusively singular. This is indeed the case. In (191a), we see that the singular noun *bíbé*, which in the context refers to a particular hawk, appears as the object of the intensional verb *gwî* 'be afraid of'. Examples (191b) and (191c) show bare singular nouns with number neutral (kind) interpretations.

- (191) a. *bíbé* *-re* *gwî* *-kí* *í* *chó* *-bí* *háà*
 hawk -NON.SUBJ be.afraid -MASC.SS.SIM PRON.SG.MASC head -SING cover
-hí
 -3.SG.MASC.PRES.DECL
 'Afraid of the hawk, he covers his head' (fr2 19.1)
 'Él, de miedo del gavilán, está tapando su cabeza'

- b. Mámàsò **áñà**rè gwîkò
Mámàsò áñà -re gwî -ko
 proper.name snake -NON.SUBJ be.afraid -3.SG.FEM.PRES.DECL
 ‘Mámàsò is afraid of snakes’ (E.SJF.AMM.14jan2013)
 ‘[Mámàsò] tiene miedo de las víboras’⁵
- c. Békó **bíbí**rè ñámékó
Békó bíbí -re ñámé -ko
 proper.name dolphin -NON.SUBJ not.like -3.SG.FEM.PRES.DECL
 ‘Békó doesn’t like dolphins’ (E.SJF.JMM.22aug2014)
 ‘A Békó no le gustan los bufeos’

Bare plural nouns (e.g. Group 1 nouns like *nómí* ‘women’) exhibit exclusively narrow scope with respect to intensional verbs. Examples with the Group 1 nouns *máí* ‘people’, *dòì* ‘siblings’, and *yáíhòyà* ‘dogs’ are shown in (192) below. In the case of (192a), the speaker is talking about his desire for solitude rather than his desire to avoid certain people. In (192b), the only possible interpretation is that the speaker does not have any siblings—not that there are particular siblings that she doesn’t have. And in (192c), there are not particular dogs that the speaker’s wife does not like; she does not like dogs in general. In all cases, the object of the intensional verb has narrow scope and a number neutral interpretation. I argue that this is because it has kind reference.

- (192) a. **máí** óímáyí hànà
máí óí -má -yí hànà
 people want -NEG -1.SG.PRES.DECL now
 ‘I don’t want anyone’ (cmb 158.1)
 ‘No quiero a nadie’
- b. **dòì** báámáyí
dòì báá -má -yí
 siblings have -NEG -1.SG.PRES.DECL
 ‘I don’t have siblings’ (mb1 67.1)
 ‘No tengo hermanos’
- c. yì nìhò **yáíhòyà** ñámékó
yì nìhò yáíhòyà ñámé -ko
 1.SG.PRON wife dogs not.like -3.SG.FEM.PRES.DECL
 ‘My wife doesn’t like dogs’ (E.SJF.JMM.22aug2014)
 ‘A mi mujer no le gusta perro’

⁵In eliciting this example, I clarified that Mámàsò was afraid of snakes *in general*, rather than of some particular snakes.

If a bare singular indefinite is exclusively singular and a bare plural has exclusive kind reference, how does one speak of plural indefinites in Mááhàkì? I proposed above that nouns suffixed with *-ma* and *-na* serve as the indefinite counterparts to bare plurals, and that these suffixes denote variables over choice functions that return pluralities. Example (193) below shows wide and narrow scope interpretations of the object plurals. In (193a), the context is that Mákòbè has some pet cats that he wants to feed. In (193b), Mákòbè wants to buy multiple cats but does not have any particular cats in mind.

- (193) a. Mákòbè míchínàrè kwèèhì áo áoyìkì
 Mákòbè míchí -na -re kwèè -hì áo
 proper.name cat -ANIM.PL -NON.SUBJ look.for -3.SG.FEM.PRES.DECL food
 áo -yìkì
 feed -MASC.PURP
 ‘Mákòbè is looking for the cats in order to feed (them)’ (E.HMR.SJF.14aug2014)
- b. Mákòbè míchínàrè kwèèhì chíáyìkì
 Mákòbè míchí -na -re kwèè -hì chíá
 proper.name cat -ANIM.PL -NON.SUBJ look.for -3.SG.MASC.PRES.DECL buy
 -yìkì
 -MASC.PURP
 ‘Mákòbè is looking for some cats to buy’ (E.HMR.SJF.14aug2014)

The choice functional interpretation of the contrast above is that in (193a), there is choice function *f* that picks out a plurality of cats, and Mákòbè is looking for that plurality, while in (193b), Mákòbè is looking for anything that is output by a choice function that returns pluralities of cats.

6.4.2 Scope with respect to negation

Carlson also points out that the indefinite article ‘a(n)’ has ambiguous scope with respect to negation, as shown in (194). The sentence in (194a) has two possible readings: the contradictory one in (194b), in which negation scopes over existence, and the non-contradictory one in (194c), in which existence scopes over negation.

- (194) a. **A cat** is in this room and **a cat** isn’t in this room.
 b. There’s a cat in this room and there isn’t a cat in this room. ($\neg > \exists$)
 c. There’s a cat in this room and there’s a cat not in this room. ($\exists > \neg$)

While Carlson does not discuss the scopal properties of indefinite ‘sm’ plurals, we can see in example (195) that they pattern like indefinite singulars. The sentence in (195a) is ambiguous between the contradictory interpretation in (195b), in which negation scopes over existence, and (195c), in which existence scopes over negation.

- (195) a. **Sm cats** are in this room and **sm cats** aren't in this room.
 b. There are sm cats in this room and there aren't any cats in this room. ($\neg > \exists$)
 c. There are sm cats in this room and there are sm cats not in this room. ($\exists > \neg$)

ϕ NP, on the other hand, has only the narrow-scope (contradictory) interpretation with respect to negation, as (196) shows.

- (196) a. **Cats** are in this room and **cats** aren't in this room.
 b. *There are cats in this room and there aren't cats in this room. ($\neg > \exists$)
 c. There are cats in this room and there are cats not in this room. ($\exists > \neg$)

Performing this test with Máíhìkì consultants was especially challenging, as alternations of the sort shown in (195) and (196) are generally expressed in Máíhìkì with the demonstrative *yéke* 'another' or 'a different' (see §3.8) in cases where there is no contradiction. However, we can obtain the relevant scope data in other ways. Example (197), for instance, shows that the bare singular nouns *yíò* 'swidden', *tírò* 'biting fly', and *túkù* 'star' may take narrow scope with respect to negated verbs, and that in these cases they always have number neutral interpretations.

- (197) a. **yíò** béóhí káàrò
yíò *béó* *-hí* *káà* *-ro*
 swidden not.exist -3.SG.MASC.PRES.DECL DIST.ANAPH.DEM -CL:place
 'There are no more swiddens there' (hsj 76.1)
 'No hay más chacra en ese lugar' ($\neg > \exists$)
- b. ídàdì dèi nùí béókó, **tírò**
í *-rari* *dèi* *nùí* *béó* *-ko,* *tírò*
 PROX.DEM -CL:location really a.lot not.exist -3.SG.FEM.PRES.DECL biting.fly
 'Here there aren't really a lot of biting flies' (m+t 111.1)
 'En este lugar no hay mucho del tábano chico' ($\neg > \exists$)
- c. **túkù**tà béogí
túkù *-ta* *béó* *-gi*
 star -ALSO not.exist -3.SG.MASC.PAST.DECL
 'There weren't any stars either' (sol 5.1)
 'No había estrellas' ($\neg > \exists$)

Example (198) shows that bare singulars may also take wide scope with respect to negated verbs. (The context is that I know that there is a hammock in Mákòbè's house, but when I went there, I didn't see it.)

- (198) Mákòbè wèè **háí**rì ñiàmágú
Mákòbè *wèè* *háí* *-rì* *ñià* *-má* *-gu*
 proper.name house swing -CL:manufactured see -NEG -1.SG.PAST.DECL

- ‘I didn’t see the hammock in Mákòbè’s house’ (E.HMR.SJF.5feb2013)
 ‘En su casa de Mákòbè, no he visto la hamaca’ ($\exists > \neg$)

Unlike bare singulars, bare plurals in Máìhìkì exhibit exclusively narrow scope with respect to negation. We see that this is the case in (199), which shows the Group 1 inherent plurals *máí* ‘people’ and *nómí* ‘women’. In (199a), it is not the case that there are particular people that the man didn’t kill, and in (199b), it is not the case that there are particular women who don’t work.

- (199) a. *ígà máí báímáí*
 í -ga máí báí -má -hí
 he -TOP people kill -NEG -3.SG.MASC.PRES.DECL
 ‘He didn’t kill *máí* people’ (cho 87.1)
 ‘Él no mataba a la gente (*máí*)’ ($\neg > \exists$)
- b. *nómí yòòmáí*
 nómí yòò -má -yí
 women do -NEG -3.PL.PRES.DECL
 ‘Women don’t work’ (jv1 12.1)
 ‘Las mujeres no quieren trabajar’ ($\neg > \exists$)

6.4.3 Scope with respect to the universal quantifier

Carlson’s tests also show that ϕ NP has narrow scope with respect to universal quantification. The sentence in (200a) has both the interpretation in (200b), in which universal scopes over existential quantification, and the interpretation in (200c), in which existential quantification scopes over universal quantification.

- (200) a. Everyone read **a book** on caterpillars.
 b. All people read a (possibly different) book on caterpillars. ($\forall > \exists$)
 c. There is a book on caterpillars that everyone read. ($\exists > \forall$)

The same ambiguity is present for indefinite ‘sm’ plurals, shown in (201), but not for ϕ NP, which only yields the narrow-scope interpretation (shown in (202)).

- (201) a. Everyone read **sm books** on caterpillars.
 b. All people read **sm** (possibly different) **books** on caterpillars. ($\forall > \exists$)
 c. There are **sm books** on caterpillars such that everyone read them. ($\exists > \forall$)
- (202) a. Everyone read **books** on caterpillars.
 b. All people read (possibly different) **books** on caterpillars. ($\forall > \exists$)
 c. *There are **books** on caterpillars that everyone read. ($\exists > \forall$)

The Máfhǎ̀kì data show that the bare singular noun has either wide or narrow scope with respect to universal quantification. The consultant accepted (203a) both in a context in which the children are gathered around and reading a single book and a context in which each child brings a separate book to his or her house and reads it. My analysis predicts that the narrow scope interpretation of the singular noun will also be number neutral—it makes no other claims about how many books each of the children reads than that they each read at least one. This is confirmed in (203b), where consultant accepts that the people in question could be looking at one or more buffalo.

- (203) a. *ññhùnà tóyápì hìkàsàògù*
ññ -huna tóyá -pì hìkà -sao -gu
 children -CL:group write -CL:stack speak -UNIV.QUANT -3.PL.PAST.DECL
 ‘All of the children all read a book’ (E.NMM.SJF.21jun2013)
 ‘Todos los niños han leído un libro’ ($\forall > \exists$ or $\exists > \forall$)
- b. *béóbèsè búfàlò ñiàsàòyì*
béóbèsè búfàlò -re ñià -sao -yi
 all water.buffalo -NON.SUBJ see -UNIV.QUANT -1.PL.PRES.DECL
 ‘All of us are looking at buffalo’ (E.JMM.SJF.18jun2013)
 ‘Todos estamos mirando bufalo’ (Consultant’s comment: ‘puede ser varios’ (‘it could be multiple (buffalo)’))

Unlike bare singular nouns, bare plural nouns only have narrow scope with respect to universal quantification. We see this narrow scope in (204) below, where the infelicitous interpretation that the same set of hammocks are in every house is unavailable.

- (204) *tèwémàdèà háìnnià bàìhì*
tè -we -ma -rea háì -nià bàì
 one -CL:building -INAN.PL -LIM swing -CL.PL:manufactured be
-hì
 -3.SG.MASC.PRES.DECL
 ‘In each house there are hammocks’ (E.AMM.SJF.9aug2013)
 ‘En cada casa hay hamacas’

There is also evidence from the above example also that the plural noun *háìnnià* has a number neutral interpretation. In this case, the consultant was drawn a picture of three houses, two of which had multiple hammocks inside of them, and one of which had a single hammock. The consultant said that the utterance was felicitous even though one of the houses had a single hammock.

The object plurals *-ma* and *-na*, like the bare singular, exhibit either wide or narrow scope with respect to universal quantification. The sentence in example (205) was deemed felicitous by NMM both in the situation where a group of children all read the same books, and in a situation where different children read different sets of books.

(205) ñîhùnà tóyápìmà hìkàsàògù

ñîhùnà -huna tóyá -pì -ma hìkà -sao -gu
 children -CL:group write -CL:stack -INAN.PL speak -UNIV.QUANT -3.PL.PAST.DECL

‘The children all read some books’ ($\forall > \exists$ or $\exists > \forall$) (E.NMM.SJF.21jun2013)

In sum, bare singular nouns have ambiguous scope with respect to universal quantification. When they have narrow scope, they are number neutral. Bare plurals always have narrow scope with respect to universal quantification and are always number neutral. Object plurals (those suffixed with *-ma* or *-na*) have ambiguous scope, but always have a plural interpretation.

6.4.4 Scope with respect to ‘distributed’ predicates

The next of Carlson’s tests concerns so-called ‘distributed’ predicates. He outlines a number of situations in which English indefinite singular NPs have narrower scope than expected due to some pluractional event. We see this in (206), where the primary, or perhaps the *only* interpretations are that a single dog was in multiple places, that the same accident happened three times, and that Max stretched out what would be a punctual event for anyone else into a two-hour ordeal.

- (206) a. **A dog** was everywhere.
 b. **An accident** happened today at 3, 4:30, and 6.
 c. Max discovered **a rabbit** in his yard for two hours.

While Carlson does not address the indefinite ‘sm’ plural, we see in (207) that it has similarly odd scope interactions with predicates that indicate a spatiotemporal non-uniformity of events. The sentence in example (207a) yields the interpretation, perhaps, that a single pack of dogs was dispersed; (207b) suggests a recurring set of accidents; and (207c) still insinuates that Max is a slow discoverer.

- (207) a. **Sm dogs** were everywhere.
 b. **Sm accidents** happened today at 3, 4:30, and 6.
 c. Max discovered **sm rabbits** in his yard for two hours.

Bare plurals, however, do not yield infelicitous readings with plural predicates, as (208) shows.

- (208) a. **Dogs** were everywhere.
 b. **Accidents** happened today at 3, 4:30, and 6.
 c. Max discovered **rabbits** in his yard for two hours.

We can get at the spatiotemporal non-uniformity of events exhibited by (206) and (208) above with pluractional verbs in Máìhìkì. As mentioned above in §3.11, many verbs in Máìhìkì exhibit a single-action/pluractional alternation. When verbs have no pluractional counterparts, the adverb *háyé* may be used to indicate pluractionality.

Bare singulars, as the objects of pluractional verbs, have ambiguous scope when it is logically possible for the patient to undergo the action of the verb multiple times. This is the case for the pluractional verb *hùhè* ‘bite or sting (of insects, PLACT)’, (shown below in (209)), which does not preclude the repeated suffering of a single patient.

(209) mítè **bírí**rè *hùhè*gì

mítè *bírí* *-re* *hùhè* *-gì*
mosquito white.lipped.peccary -NON.SUBJ bite.PLACT -3.SG.MASC.PAST.DECL

‘A mosquito bit a peccary multiple times’ OR ‘A mosquito bit multiple peccaries’
(E.AMM.SJF.12aug2013)

‘Un zancudo a una huangana varias veces’ OR ‘Un zancudo ha picado a varias huangana’

When it is not logically possible for a single object of a pluractional verb to undergo the action multiple times as part of a single event, only the narrow scope reading is possible for bare singular nouns. This is shown in (210), where the interpretation that the speaker is throwing the same stone into the river repeatedly is unavailable.

(210) **gátá**gà *yíà*yà *héá*dìsòyì

gátá *-ga* *yíà*yà *héá* *dìsò* *-yì*
gravel -CL:seed river throw.PLACT make.sink.PLACT -1.SG.PRES.DECL

‘I’m throwing stones into the river’ (E.SJF.AMM.15jan2013)

Like the bare singular, the object plural may have either a wide scope or narrow scope interpretation, as long as the action of the verb may logically be performed multiple times on the same set of individuals. In (211), only the narrow scope interpretation (i.e., that I shot and killed multiple peccaries as opposed to shooting and killing the same peccaries multiple times) is available.

(211) yì **bírí**nàrè *hásó*hèàbì

yì *bírí* *-na* *-re* *hásó* *-hèa*
1.SG.PRON white.lipped.peccary -ANIM.PL -NON.SUBJ shoot -PERF.PLACT
-bì
-1.SG.PAST.DECL

‘I shot and killed multiple peccaries’

Example (212) below shows the narrow and wide scope possibilities for the plural *-ma* in the context of a pluractional verb whose patient could theoretically undergo the action in question multiple times. The sentence in (212a) was offered as a translation for the local Spanish *he leído muchos libros* ‘I read many books’. To disambiguate between its narrow and wide scope interpretations, the consultant offered the sentence in (212b) as a translation of the Spanish *he leído los libros muchas veces* ‘I read the books many times’.

- (212) a. tóyápì**mà** háyé yétébí
 tóyá -pì -ma háyé yété -bí
 write -CL:stack -INAN.PL multiple.instances study -1.SG.PAST.DECL
 ‘I read (studied) many books’ (E.LTN.SJF.12aug2014) ‘He leído muchos libros’
- b. tóyápì**mà** dòè yétéyí
 tóyá -pì -ma dòè yété -yí
 write -CL:stack -INAN.PL before study -1.SG.PRES.DECL
 ‘I’ve been reading (studying) the books for a long time’ (E.LTN.SJF.12aug2014)
 ‘Mucho tiempo que estoy leyendo los libros’

6.4.5 Conjunction and anaphora

In addition to the inability of ϕ NP to take wide scope in the contexts of intensional predicates, negation, universal quantification, and distributed predicates, Carlson shows that it also has unique anaphoric properties when compared to indefinite singular and plural NPs.

An English singular indefinite NP has two possible anaphoric pronouns: ‘it’, used in transparent contexts, and ‘one’, used in opaque contexts. This contrast is shown in (6.4.5). In (213a), Kelly and Millie are understood to be seeking the same unicorn, while in (213b), they may be seeking different unicorns.

- (213) a. Kelly is seeking **a unicorn**, and Millie is seeking **it**, too. (transparent)
 b. Kelly is seeking **a unicorn**, and Millie is seeking **one**, too. (opaque)

This ambiguity is also possible with a ‘sm’ plural antecedent. The anaphoric pronoun ‘them’ is used in transparent contexts (as in (214a), in which Kelly and Millie are understood to be seeking the same set of multiple unicorns), while ‘sm’ is used in opaque contexts (like (214b), in which the identity of Kelly and Millie’s unicorns is not at issue).

- (214) a. Kelly is seeking **sm unicorns**, and Millie is seeking **them**, too. (transparent)
 b. Kelly is seeking **sm unicorns**, and Millie is seeking **sm**, too. (opaque)

The transparent interpretation in (214a) is in contrast with the *opaque* reading that the same anaphoric pronoun ‘they’ yields with the bare plural antecedent in (215).

- (215) Kelly is seeking **unicorns**, and Millie is seeking **them**, too. (opaque)

In the above example, Kelly and Millie could be seeking different unicorns, and the existence of unicorns is not presupposed at all, as it seems to be in (214a).

Máíhìkì allows for a null anaphoric object in the second of two coordinated clauses as long as the antecedent is interpreted as indefinite or definite (i.e., the output of a choice function) rather than as a kind. Given the proposed analysis, we would expect omitted bare singulars to yield ambiguous interpretations: in the case of an indefinite or definite bare singular, the omitted argument should be coreferential with its antecedent; in the case of a kind-referring bare singular, an omitted argument in the second clause need not bear any relationship to the kind-referring argument in the first clause.

Example (216a) shows a case where the omitted argument has been interpreted as an anaphor, and is therefore deemed infelicitous, as the same dish cannot be broken twice. Example (216b) shows a case where the omitted argument has *not* been interpreted as an anaphor. In other words, the consultant interprets the sentence as meaning that Mákòbè and I ate the different pieces of manioc. In this case, the alternate interpretation (that both Mákòbè and the speaker ate the same piece of manioc) is infelicitous. In example (216c), the consultant notes the ambiguity between the anaphoric and non-anaphoric interpretations. These examples show that bare singulars in Máíhìkì are ambiguous between the two interpretations.

- (216) a. # yì **tótòdèò** tíyóhóbí; Mákòbè tèà tíyóhógí
 yì tótò -reo tíyó -hò -bí; Mákòbè tèà tíyó
 1.SG.PRON clay -CL:disc break -PERF -1.SG.PAST.DECL proper.name also break
 -hò -gí
 -PERF -3.SG.MASC.PAST.DECL
 ‘I broke a pot and Mákòbè broke it too’ (E.AMM.SJF.17jul2013)
 Consultant’s comment: ‘No se puede romper dos veces un sólo tazón’ (‘You can’t break one cup two times’)
- b. yì **hàsòyà** áhì; Mákòbè tèà áhì
 yì hàsò -yia á -hì; Mákòbè
 1.SG.PRON manioc -CL:tapered eat.PAST.NI -1.SG.PAST.DECL.NI proper.name
 tèà á -hì
 also eat.PAST.NI -1.SG.PAST.DECL.NI
 ‘I ate a manioc tuber; Mákòbè also ate (something)’ (E.EMR.SJF.23jul2013)
- c. yì **háìrì** ñíàyì; Mákòbè tèà ñíàhì
 yì háì -rì ñíà -yì; Mákòbè tèà
 1.SG.PRON swing -CL:manufactured see -1.SG.PRES.DECL proper.name also
 ñíà -hì
 look -3.SG.MASC.PRES.DECL
 ‘I’m looking at a hammock; Mákòbè is looking at it too’ or ‘I’m looking at a hammock; Mákòbè is also looking (at something)’ (E.LTN.SJF.27jul2013)

Bare plural nouns, by contrast, are never anaphoric when omitted from the second of two coordinated clauses. This is shown below in example (217).

(217) **hàñà** dáàyi; Mákòbè tèà dáàhì

hàñà dáà -yi; Mákòbè tèà dáà -hì
leaves bring -1.SG.PRES.DECL proper.name also bring -3.SG.MASC.PRES.DECL

‘I’m bringing leaves; Mákòbè is also bringing (something)’ (E.LTN.SJF.21jul2013)
Consultant’s comment: ‘Él trae pero no se sabe qué’ (‘He’s bringing (something) but we don’t know what’)

Finally, nouns suffixed with the object plurals *-ma* and *-na* may be omitted from the second of two coordinated clauses, creating a null anaphor. Example (218) shows that when *tíyónàrè* is omitted from the second clause, the gap created can be anaphoric.

(218) Mámàsò **tíyónàrè** kwèèkò; Mákòbè tèà kwèèhì

Mámàsò tíyó -na -re kwèè -ko;
proper.name parrot.sp -ANIM.PL -NON.SUBJ look.for -3.SG.FEM.PRES.DECL
Mákòbè tèà kwèè -hì
proper.name also look.for -3.SG.MASC.PRES.DECL

‘Mámàsò is looking for some parrots;
Mákòbè is also looking for them’ (E.AMM.SJF.17jul2013)

The results of elicitation on whether sentences like the one in (218) can also yield an interpretation in which Mámàsò and Mákòbè are looking for possibly different sets of multiple parrots were inconclusive.

6.4.6 A summary of the facts

We saw in this section that Carlson’s tests, originally designed to reveal scope differences between English bare plurals and indefinite NPs, reveal similar differences between Máíhàkì bare nouns (both singular and plural) and nouns pluralized with *-ma* and *-na*. Bare singular nouns and nouns suffixed with *-ma* and *-na* consistently exhibit scope ambiguity, while bare plurals consistently exhibit narrow scope. These facts are summarized below in Table 6.4.6.

	Wide scope	Narrow scope
Bare SG	✓	✓
Bare PL		✓
-ma/-na	✓	✓

Table 6.4: A summary of the scopal properties of singular and plural nouns

I argued in §6.3 that these scope behaviors can be accounted for by positing that bare singulars are ambiguous between having kind and indefinite interpretations, that bare plurals have uniformly kind interpretations, and that nouns suffixed with *-ma* and *-na* have uniformly indefinite interpretations. The reasoning behind this is summarized below.

Bare singulars

Bare singulars are ambiguous between kinds and indefinites, which are analyzed as individuals of type *e* that have been derived from properties via either $\cap$ or a choice function, respectively. Example (219) shows a situation in which *bíbí* ‘dolphin’ is the object of the verb *níà* ‘see’.

- (219) *bíbíre níàbì*
bíbí *-re* *níà* *-bí*
 dolphin -NON.SUBJ see -1.SG.PAST.DECL
 ‘I saw a dolphin/dolphins’

The kind and indefinite interpretations of (219) are shown below.

- (220) 1. $\text{see}(\cap \text{dolphin})$
 2. $\exists f[\text{CH}(f) \wedge \text{see}(f(\text{dolphin}))]$

Because the denotation of *dolphin* is number neutral, these two interpretations are basically equivalent. In one case, the speaker is saying that she saw what was output by a particular choice function applied to the set of dolphins; in the other case, she is saying that what she saw had the properties that are characteristic of dolphins. In either case, what the speaker saw could have been one or multiple dolphins.

As soon as we introduce another operator, like $\forall$ or $\neg$, we allow for the possibility of variable scope interpretations. Example (221) below shows an example of universal quantification with *-sao*.

- (221) *níhùnà tóyápì hìkàsàòbì*
ní *-huna* *tóyá* *-pì* *hìkà* *-sao* *-bí*
 children -CL:group write -CL:stack write -UNIV.QUANT -3.PL.PAST.DECL
 ‘All the children read a book/books’

In this case, there are three possible interpretations, shown below. The first is the ‘kind’ interpretation, in which all children read the same kind of thing: the book kind. Because this reading has a single quantifier, it is scopeless. The second interpretation is the wide-scope indefinite interpretation. In this case, the existence of a choice function *f* scopes over the universal quantifier $\forall$, and we get the interpretation that there is some book (or books) such that all children read it (or them). Finally, the narrow-scope indefinite interpretation says

that for all children, there exists a choice function that returns a book (or books), yielding the interpretation that the children each read possibly different books. Note that the kind interpretation and the narrow-scope indefinite interpretation are again basically equivalent: both ignore the question of whether the children are reading the same objects as one another.

- (222)
1. $\forall x[\text{child}(x) \rightarrow \text{read}(\cap \text{book})(x)]$
 2. $\exists f[\text{CH}(f) \wedge \forall x[\text{child}(x) \rightarrow \text{read}(f(\text{book}))(x)]]$
 3. $\forall x[\text{child}(x) \rightarrow \exists f[\text{CH}(f) \wedge \text{read}(f(\text{book}))(x)]]$

(223) below shows an example of the scope interactions of bare singulars with negation.

- (223) Mámàsò tóyàtikà báámákó

Mámàsò tóyá -tíka báá -má -ko

Mámàsò write -CL:stick have -NEG -3.SG.FEM.PRES.DECL

‘Mámàsò doesn’t have a pencil’

In this example, there are again three possible interpretations (listed below). First, the kind interpretation states that Mámàsò does not have a certain *kind* of thing. Second, the wide-scope indefinite reading states that there is some choice function that returns a particular pencil or pencils that Mámàsò does not have. A paraphrase might be “There’s a pencil that Mámàsò doesn’t have.” Finally, the narrow-scope indefinite reading states that there is no choice function that returns a pencil that Mámàsò has. In other words, she doesn’t have any pencils. Once again, the kind interpretation and the narrow-scope indefinite interpretation are functionally indistinguishable.

- (224)
1. $\neg[\text{have}(\cap \text{pencil})(\text{Mámàsò})]$
 2. $\exists f[\text{CH}(f) \wedge \neg [\text{have}(f(\text{pencil}))(\text{Mámàsò})]]$
 3. $\neg[\exists f[\text{CH}(f) \wedge \text{have}(f(\text{pencil}))(\text{Mámàsò})]]$

Plurals

I argued above that bare plurals refer unambiguously to kinds. The apparently ‘narrow’ scope reading in sentences with bare plurals is due to the fact that these sentences are in fact scopeless. Example (225) below shows the interaction of the bare plural *hòyà* with the negative suffix *-ma*.

- (225) hòyà báámáyí

hòyà báá -má -yi

domestic.animals have -NEG -1.SG.PRES.DECL

‘I don’t have domestic animals’

(225) has a single possible interpretation: that there are no domestic animals that the speaker has. This reading is given in (226). Note that because the property that corresponds to the kind is ambiguous between singular and plural interpretations, the sentence in (225) will *not* be true even if the speaker has just one domestic animal.

(226) $\neg[\text{have}(\cap \text{domestic.animals})(I)]$

Plurals formed via suffixation with *-ma* and *-na*, on the other hand, do *not* exhibit a kind interpretation. I have analyzed these suffixes as plural choice functions, where a plural choice function is defined as a choice function that returns only pluralities. In the examples below, the plural choice function will be written as ‘plCH’.

In (227), we see the plural counterpart to (221) above. The number neutral noun *tóyápì* ‘book’ has been suffixed with the inanimate plural suffix *-ma*.

(227) *ńíhùnà tóyápì mà hìkàsáòbì*

ńí *hùnà* *tóyá* *-pì* *-ma* *hìkà* *-sao* *-bì*
 children -CL:group write -CL:stack -INAN.PL speak -UNIV.QUANT -3.PL.PAST.DECL

‘All the children read some books’

I analyze (227) as being unambiguously indefinite, and having two scopal interpretations, listed below in (228). The wide-scope interpretation is that there is some plural choice function *f* which returns a plurality of books that all children read. The narrow-scope interpretation is that for each child there is a plural choice function which returns a plurality of books that that child reads.

- (228) 1. $\exists f[\text{CH}(f) \wedge \forall x[\text{child}(x) \rightarrow \text{read}(f(\text{book}))(x)]]$
 2. $\forall x[\text{child}(x) \rightarrow \exists f[\text{CH}(f) \wedge \text{read}(f(\text{book}))(x)]]$

Note that in this case, the narrow-scope interpretation is *not* functionally equivalent to a kind interpretation, as it is plural rather than number neutral.

In sum, the analysis proposed here has presented evidence that bare singulars in Máìhǎkì are ambiguous between kinds and indefinites, that bare plurals refer exclusively to kinds, and that *-ma* and *-na* are variables over plural choice functions, yielding indefinites.

6.5 Chapter 6 summary and conclusions

I began this chapter by illustrating the problems of ‘optional’ and ‘multiple’ plural marking in Máìhǎkì. In §6.1, I showed that bare singular Máìhǎkì nouns may be used in singular or plural contexts, and that there are multiple morphological plural strategies: ‘inherent’ plurality like that of Group 1 nouns, ‘classifier’ plurality, and the plural suffixes *-ma* and *-na*. Next, in §6.2, I addressed the issue of the denotation of singular and plural nouns, which is complicated by the fact that both of these seem to have number neutral interpretations.

Based on an understanding of kinds as entities bearing the set of properties (i.e., belonging to the sets that are common to some individual), I proposed that the kind-deriving and property-deriving operators $\cap$ and $\cup$ are not symmetrical. $\cap$ may apply to a set of atoms, deriving a kind; $\cup$ may then apply to that kind, deriving a number neutral set. Likewise, $\cap$ may apply to a set of pluralities, deriving a kind, and $\cup$ will still derive a number neutral property from that kind. In this way, both plurals and singulars are eligible for kindhood (contra Chierchia (1998b)). §6.4 outlined the scopal properties of bare singular and bare plural nouns, plus nouns suffixed with *-ma* and *-na*. I applied several of the tests discussed in Carlson (1977) to the Máihǎ̀kì data in an effort to show that Máihǎ̀kì bare singulars are ambiguous between kind and indefinite interpretations, and therefore may have either wide or narrow scope; that bare plurals have an exclusively kind interpretation, and therefore appear only to have narrow scope (but are actually scopeless); and that *-ma* and *-na* plurals have an exclusively indefinite interpretation and may therefore have either wide or narrow scope. These scopal properties were given a choice function analysis in §6.4.6, where I showed that the ‘singular’ choice function in episodic contexts was basically equivalent to the kind, while the plural choice function proposed for *-ma* and *-na* is not.

Chapter 7

Conclusions

7.1 Summary of findings

This dissertation has provided the most thorough grammatical description of Máíhǎ̀kì to date as well as an in-depth exploration of the mechanisms through which reference is establishing in this language. The sketch grammar of Chapters 2 and 3 expands upon the preliminary work of Velie (1975) in three major ways. First, it provides a detailed description of tone in the language, which is crucial to understanding certain facts about wordhood and suffixation, and which will play an important role in the study of the origins of tone in Western Tukanoan, as only Máíhǎ̀kì and Koreguaje appear to exhibit contrastive tone. Second, this grammatical sketch pays close attention to dialectal and idiolectal variation in Máíhǎ̀kì. Discussions of linguistic variation are largely absent from the Velies' sketch, but are important to document both for the purpose of future historical work on Tukanoan languages or on the Western Tukanoan subgroup, and because the data themselves provide insight into a sociolinguistic situation that is not well understood. Specifically, the fact that the Máíhùnà speak a highly endangered language, have very small speech communities, live in three relatively isolated zones, and exhibit a high degree of linguistic diversity, would make for an interesting study on the factors that drive linguistic change and maintenance. Finally, the sketch grammar provides a more thorough description of both nominal and clausal phenomena in Máíhǎ̀kì. For instance, it describes a diverse set of subordinating constructions, including temporal clause linking devices, purposive constructions, and relative clauses, which is absent from Velie (1975). It also provides a novel synthesis of verb stem alternations that indicate differences in the structure of events. The paradigm, shown in Table 3.11, has cognate paradigms in other Western Tukanoan languages, so their collection here should prove useful for a reconstruction of Proto-Western Tukanoan event structure. Discussions of even structure in Western Tukanoan languages has largely centered on the so-called *-i* or *-ni* verbs, which I have shown to be part of a much larger system which includes several types of pluractionals. The systematicity of this paradigm, as well as its gaps, may also contribute to our understanding the interactions of transitivity and event plurality in general.

The theoretical part of this dissertation begins in Chapter 4 with a discussion of the notion of a ‘hierarchical lexicon’—a lexicon whose elements exhibit different morphosyntactic behaviors based on some properties of their lexical semantics. That the Máíhǎ̀kì lexicon is sensitive to some sort of hierarchy is extremely apparent; I showed in Chapter 4 that one can define at least eight separate ‘groups’ of nouns based on unique patterns of morphosyntactic behavior. While these eight groups can be defined in terms like ‘more animate’ or ‘less animate’, I found these characterizations unsatisfyingly vague. My search for a more principled means of distinguishing the groups led me to posit that nouns vary with respect to the uniformity of the entities that they denote, and that the distinctions we see between animates and inanimate, kind and non-kin humans, parts of things and autonomous things, masses and objects, etc. emerge from this basic fact. That nouns denote things of varying degrees of uniformity, and that these varying degrees have implications for grammar, is not a novel idea. As I see it, my contribution to the discussion of nominal hierarchies is my attempt to account for variations in lexical semantics in formal semantic terms, which is possible if we take the basic locus of variation between nouns to be the ease with which they may be made referential, and we defined reference as holding when a term identifies an individual that is associated with some unique set of properties. I have labeled this locus of variation the ‘reference ratio’, and have attempted, in Chapters 5 and 6, to show some of its implications for the grammar of Máíhǎ̀kì.

In Chapter 5, I discussed the phenomenon of noun classification, whose characterization has proven problematic for languages of the Amazon basin due to the diverse set of morphosyntactic functions that classifiers in these languages may exhibit. I surveyed the typological literature on classifier systems and Amazonian classifier systems in particular before getting into the details of the lexical semantics and morphosyntax of Máíhǎ̀kì classifiers. This description revealed that Máíhǎ̀kì classifiers occupy a continuum from ‘full’ (i.e., highly grammaticalized) classifiers to ‘repeaters’, which have fully nominal counterparts in the lexicon. My semantic analysis of classification attempted to account for this continuum by positing that classification is, ideally, a relationship between a set of elements denoted by the classifier and the set of sets of elements that characterizes the referential base. Understood in this way, the ‘slots’ of the classifier construction are best suited for elements with a certain reference ratio, which helps to explain why different morphemes pattern differently with respect to whether they may serve as or take classifier suffixes.

Finally, in Chapter 6, I turned toward the mechanisms through which Máíhǎ̀kì encodes nominal plurality. I showed that the ‘number neutrality’ of bare nouns makes plural marking appear optional, and that the language’s number marking system is complicated by the presence of various morphological pluralization strategies, multiple of which may be available for a single noun. I argued that these complications can be reconciled by considering that there are two basic kinds of plurality in Máíhǎ̀kì. First, there is *kind* plurality, which is when the plural form of a noun is used to refer to a kind. Second, there is a plural choice function, which is an operator that returns a plural individual from a set. The choice functional plural is the only means of unambiguously yielding a wide scope plural interpretation. The discussion of plurality in Máíhǎ̀kì contributed to the greater discussion of the nature of

plurality in several important ways. First, it provided an explanation for why plurals might be good candidates for kind reference (namely that they denote relatively uniform sets of individuals). Second, it provided some insight into why singulars and plurals both seem in some contexts to have number neutral denotations—a longstanding question in the literature on plurality. Finally, it showed that ‘plurality’ is not a uniform phenomenon: that kind plurals are different from choice function plurals, and that the latter are likely associated with ‘optional’ plurality, as they are only necessary in wide scope plural contexts.

7.2 Revisiting the Nominal Mapping Parameter

In the beginning of this dissertation I outlined the Nominal Mapping Parameter proposed by Chierchia (1998b) as an introduction to the discussion of the crosslinguistic relationship between plurality, classifiers, and determiners. Now that we have explored the two of these phenomena that Málhǎ̀kì exhibits, I will revisit the claims made by Chierchia (1998b) and the ways in which the Málhǎ̀kì data challenge them.

As mentioned above, a major difference between Chierchia’s approach and my own is in the formalization of the derivation of kinds Chierchia describes kinds as the largest individual at a world, which necessitates their plurality. By contrast, I have argued for a view of kinds as the entity that belongs to all of the sets in the intersection of sets to which entities bearing some property belong. That is, it is not the *largest* entity with some property, but the entity defined by what other entities bearing that property have in common.

Chierchia’s view of kinds explains the apparent correlation between a lack of definite and indefinite articles and a lack of a plural/singular contrast nicely: in a [+arg -pred] language, where nouns come out of the lexicon number neutral (i.e., may be bare), the singular/plural distinction will be inactive because nouns are in some sense already plural (i.e., by virtue of being kinds with number neutral “mass” property counterparts). In a [+pred] language, however, predicates must be typeshifted via $\cap$ to become kinds and $\cap$ is only defined for properties that have pluralities in their denotation. Furthermore, there is no reason that properties should not contrast between singular and plural, as they are not derived via $\cup$ as in [+arg -pred] languages. Therefore, languages with determiners will have a singular/plural contrast, and kinds will be plural.

My understanding of kinds does not require that they be plural, nor that a language without determiners should also be devoid of a singular/plural contrast. Both of these things are good news for Málhǎ̀kì, which does not have definite and indefinite determiners, does have a singular/plural contrast, and exhibits both singular and plural kinds.

In my attempt to count for the Málhǎ̀kì data, I confronted the puzzling issue that the denotation of plural nouns has at times been proposed to consist only of pluralities, and at other times to consist of both pluralities and atoms; conversely, the denotation of singular nouns has at times been proposed to consist only of atoms, and at other times to consist of both atoms and pluralities. I proposed that, in a strange way, all four of these theories are correct. The set of individuals that we use to derive a kind—i.e., the set of individuals the

intersection of whose properties we attribute to some abstract entity—may consist entirely of atoms (i.e., be singular) or of pluralities (i.e., be plural). But the set of entities that we may then ‘back-derive’ from that kind via $\cup$ will always be number neutral, as this set will consist of the entities which minimally have all of the requisite properties of that kind, and this does not distinguish between singular and plural individuals.

If this understanding of kinds is correct, we would expect two things:

1. that singular and plural nouns alike have the potential to refer to kinds
2. that even in the presence of a singular/plural distinction, both bare singulars and bare plurals will be number neutral

Both of these predictions are borne out in Máíhǎkì. What, then, explains the apparent fact that in languages with an obligatory singular/plural contrast, the plural form is used to refer to kinds? Here I offer the non-linguistic explanation that plurals are recruited (when available) for kind reference because they denote sets of relatively uniform individuals. I have attempted to formalize this idea by arguing that plurals denote individuals who belong to a higher proportion of overlapping sets than their singular counterparts. This is because the set of properties that at least two of something have is likely much smaller than the set of properties that all atoms have.

Another observation about plurality that was not predicted by the Nominal Mapping Parameter is the existence of ‘optional’ plurality—in the case of Máíhǎkì, plurality encoded by *-ma* and *-na*. My analysis of these morphemes is that they are variables over (plural) choice functions, which gives them a function basically to that proposed for the English indefinite determiner ‘some’. While the narrow scope interpretation of these plurals overlaps with that of the bare plural and the narrow scope bare singular, the wide scope plural interpretation is unique to *-ma* and *-na*. I would predict, therefore, that in a language where plurality is otherwise absent, there might exist some mechanism through which a wide scope plural interpretation would be obtained.

Another of Chierchia’s claims is that a [+arg -pred] language will have a classifier system for enumeration and quantification. The reasoning behind this claim is that all nouns in these languages have mass denotations (per Chierchia’s somewhat non-standard definition of ‘mass’). The stance taken in this dissertation is that nouns can be bare without being mass, as evidenced by their ability in many cases to be pluralized. In some sense, Chierchia’s claims about classifiers are invaluable for Máíhǎkì, as the Máíhǎkì system of noun classification is fundamentally different from the numeral classifiers that Chierchia discusses.

In summary, I believe that Chierchia’s observation that there is a correlation between mass nouns and classifiers must be qualified in two ways. First, while classifiers do seem to be correlated with massness, bare nouns should not be assumed to be mass. Second, a finer-grained understanding of the variation between types of classifier systems is needed before we can make generalizations based on them. While it is clear that Chierchia’s paper is only making a claim about numeral classifiers of the sort found in many East Asian languages, I

believe that a closer look at what these systems do and do not have in common with other types of classifier systems, like that of Máihǎ̀kì, would enlighten the discussion about the relationship between classifiers and number.

We saw in this dissertation that Máihǎ̀kì challenges the Nominal Mapping Parameter because it lacks definite and indefinite articles, but has a robust singular/plural distinction as well as a system of noun classification. In this way, none of Chierchia's predictions holds. But I can't help but feel that the spirit of the proposal is basically right. Plurality, classification/modification, and determiners are all mechanisms that a language may employ to alter the reference ratio of a noun, and we might therefore expect their presence or absence to be correlated in any given language. In other words, these phenomena are probably dependent on one another, and understanding the precise nature of this dependence will mean understanding the phenomena.

7.3 Further questions and future work

I can imagine two broad directions for future research on the topic of this dissertation. The first is further research on reference in Máihǎ̀kì. In Chapter 4 I outlined seven ways in which the Máihǎ̀kì nominal lexicon seems sensitive to a hierarchy, but only explored two of these in any detail. An investigation of differential object marking, for instance, might be an obvious next step. Another potentially fruitful area of research might be the interactions between event structure (and in particular verbal plurality) and the scopal properties of singular and plural nouns. Chapter 3 described a complex paradigm of verb stem alternations that revealed an elaborate system of encoding the structure of events, and we saw briefly in Chapter 6 that the nature of the event has implications for the number and scope of the noun. The second broad direction of research is crosslinguistic in nature. The semantic literature on plurality, determiners, and classifiers is sorely lacking in terms of the diversity of languages it addresses. A line of research that pursues a semantic typology of these phenomena and their interactions would no doubt contribute significantly to our ability to model them.

Bibliography

- AIKHENVALD, A. Y., and DIANA GREEN. 1998. Palikur and the Typology of Classifiers. *Anthropological Linguistics*.
- AIKHENVALD, ALEXANDRA Y. 2000. *Classifiers: a typology of noun categorization*. Oxford University Press.
- AIKHENVALD, ALEXANDRA Y. 2003. *Classifiers: A Typology of Noun Categorization Devices*. Oxford: Oxford University Press.
- AISEN, JUDITH. 1999. Agent focus and inverse in tzotzil. *Language* 75.451–485.
- AISEN, JUDITH. 2003. Differential object marking: Iconicity vs. economy. *Natural Language and Linguistic Theory* 21.435–483.
- ALLAN, KEITH. 1977. Classifiers. *Language* 53.283–310.
- BARNES, JANET. 1990. Classifiers in Tuyuca. *Amazonian linguistics: Studies in lowland South American languages*, ed. by Doris L. Payne, 273–92. University of Texas Press.
- BECK, SIGRID, and ULI SAUERLAND. 2000. Cumulativity is needed: A reply to Winter (2000). *Natural Language Semantics* 8.349–371.
- BOSSONG, GEORG. 1983-1984. Animacy and markedness in universal grammar. *Glossologia* 39.7–20.
- BRUIL, MARTINE. 2014. *Clause-typing and Evidentiality in Ecuadorian Siona*. Universiteit Leiden PhD dissertation.
- CARLSON, GREG. 1977. *Reference to kinds in english*. University of Massachusetts - Amherst dissertation.
- CHACON, THIAGO. 2012. *The Phonology and Morphology of Kubeo: The Documentation, Theory and Description of an Amazonian Language*. University of Hawai'i at Mānoa PhD dissertation.
- CHACON, THIAGO. 2014. A revised proposal of Proto-Tukanoan consonants and Tukaoan family classification. *International Journal of American Linguistics* 80.275–322.

- CHENG, LISA LAI-SHEN, and RINT SYBESMA. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry*.
- CHIERCHIA, GENNARO. 1984. *Topics in the Syntax and Semantics of Infinitives and Gerunds*. University of Massachusetts at Amherst dissertation.
- CHIERCHIA, GENNARO. 1996. Plurality of Mass Nouns and the Notion of a “Semantic Parameter”. *DIPSCO Working Papers, Milan*.
- CHIERCHIA, GENNARO. 1998a. Plurality of mass nouns and the notion of “semantic parameter”. *Events and Grammar*, 53–103. Dordrecht: Kluwer Academic Publishers.
- CHIERCHIA, GENNARO. 1998b. Reference to Kinds Across Languages. *Natural Language Semantics* 6.339–405.
- CHIERCHIA, GENNARO. 2010. Mass nouns, vagueness, and semantic variation. *Synthese* 174.99–149.
- CHUNG, SANDRA. 2000. Reference to kinds in Indonesian. *Natural Language Semantics* 8.157–171.
- COLE, PETER. 1985. *Imbabura quechua*. Croom Helm.
- COMRIE, BERNARD. 1981. *Language universals and linguistic typology: Syntax and morphology*. University of Chicago Press.
- COMRIE, BERNARD, and SANDRA THOMPSON. 1985. Lexical nominalization. *Language typology and syntactic description: Grammatical categories and the lexicon*, 349–398. Cambridge, England: Cambridge University Press.
- COOK, DOROTHY M., and LINDA L. CRISWELL. 1993. *El Idioma Koreguaje: Tucano Occidental*. Instituto Lingüístico de Verano.
- CORBETT, GREVILLE G. 1991. *Gender*. Cambridge University Press.
- CORBETT, GREVILLE G. 1996. Minor Number and the Plurality Split. *Rivista di Linguistica* 8.101–122.
- CORBETT, GREVILLE G. 2000. *Number*. Cambridge University Press.
- CORBETT, GREVILLE G. 2003. Agreement: Terms and Boundaries. *TLS 5 Proceedings*, 109–122.
- CROFT, WILLIAM. 1990. *Typology and universals*. Cambridge University Press.
- CROFT, WILLIAM. 1994. Semantic universalis in classifier systems. *Word* 45.145–171.

- DALRYMPLE, MARY, and SUIEL MOFU. 2011. Plural Semantics, Reduplication, and Numeral Modification in Indonesian. *Journal of Semantics*, 1–32.
- DEANE, PAUL. 1987. English possessives, topicality, and the silverstein hierarchy. *Proceedings of the thirteenth annual meeting of the berkeley linguistics society*, 65–76.
- DELANCEY, SCOTT. 1981. An interpretation of split ergativity and related patterns. *Language* 57.626–657.
- DERBYSHIRE, DESMOND C., and DORIS L. PAYNE. 1990. Noun Classification Systems of Amazonian Languages. *Amazonian Linguistics: Studies in Lowland South American Languages*, ed. by Doris L. Payne, 243–271. Austin: University of Texas Press.
- DIXON, R. M. W. 1979. Ergativity. *Language*, 59–138.
- DIXON, R. M. W. 1986. Noun Classes and Noun Classification in Typological Perspective. *Noun Classes and Categorization*, ed. by Colette Craig, 105–112. Amsterdam: John Benjamins.
- DU BOIS, JOHN W. 1987. The Discourse Basis of Ergativity. *Language* 63.805–855.
- VAN EIJCK, JAN. 1983. Discourse representation theory and plurality. *Studies in Modeltheoretic Semantics*, ed. by Alice ter Meulen, 85–106. Foris, Dordrecht.
- ENFIELD, N. J. 2004. Nominal classification in Lao. A sketch. *Sprachtypologie und Universalienforschung* 57.117–143.
- ENGLAND, NORA. 2011. Agreement in Some Eastern Mayan Languages. *International Journal of American Linguistics* 77.397–412.
- FALLER, MARTINA. 2007. The ingredients of reciprocity in Cuzco Quecha. *Journal of Semantics*, 255–288.
- FARKAS, DONKA, and HENRIËTTE DE SWART. 2010. The semantics and pragmatics of plurals. *Semantics and Pragmatics* 3.1–54.
- FARMER, STEPHANIE. 2010. Comparatives and Similatives. Máìhìkì Documentation Project internal document.
- FARMER, STEPHANIE, and LEV MICHAEL. Forthcoming. Máìhìkì tone in comparative Tukanoan perspective. Forthcoming.
- FRANTZ, DONALD. 1991. *Blackfoot grammar*. University of Toronto Press.
- GARRETT, ANDREW. 1990. The Origin of NP Split Ergativity. *Language* 66.261–296.

- GERSTNER-LINK, CLAUDIA, and MANFRED KRIFKA. 1993. Genericity. *Syntax: and International Handbook of Contemporary Research*, ed. by Wolfgang Sternefeld Stechow and Theo Vennemann, 966–978. Berlin: Mouton de Gruyter.
- GOMEZ-IMBERT, ELSA. 1982. De la forme et du sens dans la classification nominale en tatuyo (langue tukano orientale d'amazone colombienne). *Universit de Paris-Sorbonne IV*.
- GOMEZ-IMBERT, ELSA. 2007. Tukanoan nominal classification: The Tatuyo System. *Language Endangerment and Endangered Languages: Linguistic and Anthropological Studies with Special Emphasis on the Languages and Cultures of the Andean-Amazonian Border Area*, ed. by Leo Wetzels, 401–28.
- GOODRICH, ELIZABETH. 2014. Máíjìkì in the Community of Vuelto a Nacer: Its Changing Use, Language Shift, and Revitalization in a Context of Internalized Racism. Unpublished undergraduate honors thesis.
- GRALOW, FRANCES L. 1985. Coreguaje: Tone, Stress, and Intonation. *From Phonology to Discourse: Studies in Six Colombian Languages*, ed. by Ruth M. Brend, no. 9 in Language Data: Amerindian Series. Summer Institute of Linguistics.
- GREENBERG, JOSEPH H. 1974. Numeral Classifiers and Substantival Number: Problems in the Genesis of a Linguistic Type. *Proceedings of the 11th International Congress of Linguistics, Bologna - Florence, Aug-Sept 1972*, 17–37.
- GREENBERG, JOSEPH H. 1977. Numeral Classifiers and Substantival Number. *Linguistics at the Crossroads*, ed. by A. Makkai, V. Becker Makkai, and L. Heilmann, 276–300. Padova: Liviana Editrice.
- GRINEVALD, COLETTE. 2000. A morphosyntactic typology of classifiers. *Systems of nominal classification*, 50–92. Cambridge University Press.
- GRINEVALD, COLETTE. 2001. Linguistic of Classifiers. *International encyclopedia of the social and behavioral sciences*, ed. by N. J. Smelser and P. B. Baltes, 1973–1978. Oxford: Elsevier.
- GRINEVALD, COLETTE. 2003. Typologie des systèmes de classification nominale: le défi amazonian. *Faits des Langues* 20.133–54.
- GRINEVALD, COLETTE, and FRANK SEIFART. 2004. Noun Classes in African and Amazonian Languages: Towards a Comparison. *Linguistic Typology* 8.243–285.
- HEIM, IRENE, and ANGELIKA KRATZER. 1998. *Semantics in Generative Grammar*. Blackwell Textbooks in Linguistics. Blackwell.

- HOEKSEMA, JACK. 1983. Plurality and conjunction. *Studies in Modeltheoretic Semantics*, ed. by Alice ter Meulen, 63–83. Foris, Dordrecht.
- JOHNSON, ORVILLE E., and STEPHEN H. LEVINSOHN. 1990. Gramática Secoya. *Cuadernos Etnolingüísticos*.
- KRATZER, A. 1998. Scope or Pseudoscope? Are There Wide Scope Indefinites? *Events and Grammar*, ed. by S. Rothstein. Kluwer, Dordrecht.
- KRIFKA, MANFRED. 2003. Bare NPs: Kind-referring, Indefinites, Both, or Neither? *Proceedings of the 13th Conference on Semantics and Linguistic Theory*, ed. by R. B. Young and Y. Zhou.
- KUNO, SUSUMU, and ETSUKO KABURAKI. 1977. Empathy and syntax. *Linguistic Inquiry* 8.627–672.
- KWON, SONGNIM, and ANNE ZRIBI-HERTZ. 2004. Number from a Syntactic Perspective: Why plural marking looks ‘truer’ in French than in Korean. *Empirical issues in formal syntax and semantics*, ed. by O. Bonami and P. Cabredo Hofherr, vol. 5, 133–158.
- LEHMANN, CHRISTOPHER. 2002. Possession in yucatec maya. *Arbeitspapiere des Seminars für Sprachwissenschaft der Universität Erfurt*, Second, revised edition.
- LEVINSON, STEPHEN C. 2000. *Presumptive meanings. The theory of generalized conversational implicature*. Cambridge, MA: MIT Press.
- LI, YEN-HUI AUDREY. 1999. Plurality in a classifier language. *Journal of East Asian Linguistics* 8.75–99.
- LINK, GODEHARD. 1983. The logical analysis of plurals and mass terms: A lattice-theoretic approach. *Formal semantics - the essential readings*, ed. by P. Portner and B. H. Partee, 127–147. Blackwell.
- MARR, D. 1982. *Vision: A computational investigation into the human representation and processing of visual information*. New York: Freeman and Co.
- MASON, J. ALDEN. 1950. The Languages of South American Indians. *Handbook of South American Indians*, ed. by J. Steward, Smithsonian Institution Bureau of American Ethnology bulletin, 157–317. Government Printing Office.
- MCLENDON, SALLY. 1975. A grammar of eastern pomo. *University of California Publications in Linguistics* 74.
- MICHAEL, LEV. 2001. *Ari ixanti: Speech Reporting Practices Among the Nanti of the Peruvian Amazon*. MA thesis, University of Texas, Austin.

- MICHAEL, LEV. 2011a. *La reconstrucción y la clasificación interna de la rama Kampa de la familia Arawak*. Talk given at CILLA V, October 6-8, Austin.
- MICHAEL, LEV. 2011b. Temporal Clause-Linking in Máíhìkì. Máíhìkì Project Internal Report.
- MICHAEL, LEV. 2012. Nanti Self-Quotation: Implications for the Pragmatics of Reported Speech and Evidentiality. *Pragmatics and Society* 3.321–357.
- MILLER, MARION. 1999. *Desano Grammar*. Summer Institute of Linguistics.
- MONTAGUE, RICHARD. 1973. The proper treatment of quantification in ordinary English. *Approaches to Natural Language: Proceedings of the 1970 Stanford Workshop on Grammar and Semantics*, ed. by K. J. J. Hintikka, M. E. Moravcsik, and P. Suppes. Dordrecht.
- MORSE, NANCY L., and MICHAEL B. MAXWELL. 1999. *Cubeo grammar*. Summer Institute of Linguistics.
- DE MOURA MENUZZI, SÉRGIO; MARIA CRISTINA FIGUEIREDO SILVA; and JENNY DOETJES. 2015. Subject Bare Singulars in Brazilian Portuguese and Information Structure. *Journal of Portuguese Linguistics*.
- MÜLLER, A.L. 2002a. Genericity and the denotation of common nouns in BP. *DELTA* 18.287–308.
- MÜLLER, A.L. 2002b. The Semantics of Generic Quantification in Brazilian Portuguese. *Probus* 1.279–298.
- NEVEU, GRACE. 2012. Radial Directionals. Máíhìkì Documentatio Project internal manuscript.
- NICHOLS, JOHANNA. 1988. On alienable and inalienable possession. *In honor of mary haas: from the haas festival conference on native american linguistics*. Walter de Gruyter & Co.
- PIRES DE OLIVEIRA, R. 2012. Brazilian bare nouns in subject position of episodic predicates. *Proceedings of the Sinn und Bedeutung 16*, MIT Working Papers in Linguistics.
- PIRES DE OLIVEIRA, R., and S. ROTHSTEIN. 2011. Bare singular noun phrases are mass in Brazilian Portuguese. *Lingua* 121.2153–2175.
- PALMER, STEPHEN E. 1999. *Vision Science: Photons to Phenomenology*. Cambridge, MA: MIT Press.
- PARTEE, BARBARA. 1987. Noun Phrase Interpretation and Type-Shifting Principles. *Studies in Discourse Representation and the Theory of Generalized Quantifiers*, ed. by J. Groenendijk et al. Foris, Dordrecht.

- PARTEE, BARBARA. 1992. Syntactic categories and semantic type. *Computational Linguistics and Formal Semantics*, ed. by Michael Rosner and Roderick Johnson, 97–126. Cambridge University Press.
- PARTEE, BARBARA, and MATS Rooth. 1983. Generalized conjunction and type ambiguity. *Meaning, Use, and Interpretation of Language*, ed. by Rainer Bäuerle, Christoph Schwarze, and Arnim von Stechow. Walter de Gruyter.
- PAYNE, DORIS L. 1986. Noun Classification in Yagua. *Noun Classes and Categorization*, ed. by Colette Craig, 113–131. Amsterdam; Philadelphia: John Benjamins.
- PAYNE, DORIS L. 2007. Source of the Yagua Nominal Classification System. *International Journal of American Linguistics* 73.447–474.
- PAYNE, J. R. 1980. The decay of ergativity in pamir languages. *Lingua* 51.147–186.
- PETERSEN DE PIÑEROS, GABRIELE. 2007. Nominal Classification in Uitoto. *International Journal of American Linguistics* 73.389–409.
- QUINE, W. P. 1960. *Word and Object*. MIT Press.
- REINHART, T. 1992. Wh-in-situ: An Apparent Paradox. *Proceedings of the Eighth Amsterdam Colloquium*, ed. by P. et al Dekker.
- REINHART, TANYA. 1997. Quantifier scope: How labor is divided between qr and choice functions. *Linguistics and Philosophy* 20.335–397.
- RICE, KEREN. 1989. *A grammar of slave*. Mouton de Gruyter.
- RULLMANN, HOTZE, and AILI YOU. 2003. General number and the semantics and pragmatics of indefinite bare nouns in Mandarin Chinese. ms.
- SAKURAGI, T., and J.W. FULLER. 2013. Shape and Function in Hmong Classifier Choices. *Journal of Psycholinguistic Research* 42.349–61.
- SAUERLAND, ULI; JAN ANDERSSSEN; and KAZUKO YATSUSHIRO. 2005. The plural is semantically unmarked. *Linguistic Evidence*, ed. by Stephan Kepser and Marga Reis. Berlin: de Gruyter.
- SCHMITT, C., and A. MUNN. 1999. Against the Nominal Mapping Parameter: bare nouns in BP. *Proceedings of NELS 29*, ed. by P. Tamanji, M. Hirotani, and N. Hall, 339–353.
- SCHMITT, C., and A. MUNN. 2002. The syntax and semantics of bare arguments in Brazilian Portuguese. *Linguistic Variation Yearbook* 2.253–281.
- SCHWARZSCHILD, ROGER. 1996. *Pluralities*. Kluwer, Dordrecht, Netherlands.

- SCHWARZSCHILD, ROGER. 2011. Stubborn distributivity, multiparticipant nouns and the count/mass distinction. *Proceedings of NELS39*, ed. by Brian Smith, Suzi Lima, and Kevin Mullin, 661–678.
- SEIFART, FRANK. 2005. *The Structure and Use of Shape-based Noun Classes in Miraña (North West Amazon)*. Radboud Universiteit PhD dissertation.
- SILVA, WILSON. 2012. *A Reference Grammar of Desano*. University of Utah dissertation.
- SILVERSTEIN, MICHAEL. 1976. Hierarchy of features and ergativity. *Grammatical categories in australian languages*, ed. by R. M. W. Dixon. Australian Institute of Aboriginal Studies.
- SKILTON, AMALIA. 2013. A new proposal of Western Tukanoan consonants and internal classification. unpublished undergraduate thesis.
- SKILTON, AMALIA. 2014. The Northern/Putumayo Basin dialect of Máíhiki: a field report. Unpublished manuscript.
- SKILTON, AMALIA. 2015. Three speakers, four dialects: Documenting variation in an endangered Amazonian language. *4th International Conference on Language Documentation and Conservation (ICLDC)*.
- SMITH-STARK, THOMAS CEDRIC. 1974. The plurality split. *Chicago Linguistic Society*, 657–671.
- SPECTOR, BENJAMIN. 2007. Aspects of the pragmatics of plural morphology: On higher-order implicatures. *Presuppositions and implicatures in compositional semantics*, ed. by Uli Sauerland and Penka Stateva, 243–281. Palgrave/MacMillan.
- STEELE, SUSAN. 1978. Word order variation. A typological study. *Universals of human language*, ed. by J.H. Greenberg, C. A. Furgeson, and E. A. Moravcsik, vol. 4: Syntax. Stanford University Press.
- STENZEL, KRISTINE. 2004. *A Reference Grammar of Wanano*. University of Colorado dissertation.
- STOLZ, THOMAS; SONJA KETTLER; CORNELIA STROH; and AINA URDZE. 2008. *Split possession*. John Benjamins Publishing Company.
- STRAWSON, P. F. 1950. On Referring. *Mind* 59.320–344.
- SYLAK-GLASSMAN, JOHN; STEPHANIE FARMER; and LEV MICHAEL. In prep. Nasalization Harmony in Máíhiki. Unpublished ms.
- THIESEN, WESLEY, and DAVID WEBER. 2013. *A Grammar of Bora with Special Attention to Tone*. SIL International Publications in Linguistics.

- VELIE, DANIEL. 1975. Orejón: Bosquejo de la fonología y gramática. *Datos Etnolingüísticos*.
- VELIE, DANIEL; RUTH BREND; and ESTHER GORDON DE POWLISON. 1976. Fonología el Orejón. *Datos Etnolingüísticos*, 1–16.
- VELIE, DANIEL, and VIRGINIA VELIE. 1981. Vocabulario Orejón. *Serie Lingüística Peruana*.
- WALTZ, NATHAN, and ALVA WHEELER. 1972. Proto-Tucanoan. *Comparative studies in amerindian languages*, ed. by Esther Matteson, 19–49. The Hague: Mouton.
- WHEELER, A. 1987. *Gantëya Bain, el Pueblo Siona de río Putumayo Colombia*, vol. 2. Lomalinda: Editorial Townsend.
- WILHELM, ANDREA. 2008. Bare nouns and number in Dëne Sülé. *Natural Language Semantics* 16.39–68.
- WILKINSON, K. 1991. *Studies in the semantics of generic noun phrases*. University of Massachusetts, Amherst dissertation.
- WINTER, Y. 1997. Choice Functions and the Scopal Semantics of Indefinites. *Linguistics and Philosophy* 20.339–467.
- WOJTYLAK, KASIA. 2014. Multiple classifier system in Murui. Language and Culture Research Centre.
- ZWEIG, EYTAN. 2009. Number-neutral bare plurals and the multiplicity implicature. *Linguistics and Philosophy* 32.353–407.
- ZWICKY, ARNOLD M. 1977. Hierarchies of person. *Papers from the Thirteenth Meeting, Chicago Linguistics Society*, ed. by S. E. Fox Beach, W. A. and S. Philosoph, 714–733. Chicago: University of Chicago.

Appendix A

Morpheme gloss abbreviations

MORPHEME	TAG	GLOSS
- <u>a</u> ka	-INAN.DIM	inanimate diminutive
-ago	-ANIM.FEM.INTERR.COP	animate femi- nine interroga- tive copula
-ago	-ANIM.FEM.COP	animate femi- nine copula
-agi	-ANIM.MASC.INTERR.COP	animate mascu- line interroga- tive copula
-agi	-ANIM.MASC.COP	animate mascu- line copula
-ai	-AUG	augmentative
-ai	-3.SG.PAST.DECL	3rd person singular past declarative
-ani	-ITER	iterative
-ao	-ANIM.FEM.COP	animate femi- nine copula
-ao	-3.SG.FEM.PAST.DECL	3rd person sin- gular feminine past declarative
-aye	-INAN.INTERR.COP	inanimate inter- rogative copula

MORPHEME	TAG	GLOSS
-ayi	-2.SG.INTERR.COP	2nd person singular interrogative copula
-ayi	-1.SG.INTERR.COP	1st person singular interrogative copula
-ayi	-1.PL.INTERR.COP	1st person plural interrogative copula
-ai	-ANIM.MASC.COP	animate masculine copula
-bai	-PROHIB	prohibitive
-bi	-1.SG.PAST.DECL	1st person singular past declarative
-bi	-1.PL.PAST.DECL	1st person plural past declarative
-bi	-3.PL.PAST.DECL	3rd person plural past declarative
-bi	-2.SG.PAST.DECL	2nd person singular past declarative
-bi	-SING	singulative
-chi	-PAST.REL	past relativizer
-chi	-3.SG.MASC.FUT.DECL.NI	3rd person singular masculine future declarative - <i>ni</i>
-chi	-1.SG.FUT.DECL.NI	1st person singular future declarative - <i>ni</i>
-chiko	-FEM.PURP.NI	feminine purposive - <i>ni</i>
-chiki	-MASC.PURP.NI	masculine purposive - <i>ni</i>
-cho	-2.SG.FEM.PRES.INTERR.NI	2nd person singular feminine present interrogative - <i>ni</i>

MORPHEME	TAG	GLOSS
-gi	-3.SG.MASC.PAST.DECL	3rd person singular masculine past declarative
-gi	-ANIM.MASC.COP	animate masculine copula
-gire	-MASC.DS.SEQ	masculine different-subject sequential
-go	ANIM.FEM.COP	animate feminine copula
-ga	-TOP	topic (?)
-gani	-ITER	iterative
-go	-3.SG.FEM.PAST.DECL	3rd person singular feminine past declarative
-gore	-FEM.DS.SEQ	feminine different-subject sequential
-gu	-1.SG.PAST.DECL	1st person singular past declarative
-gu	-3.PL.PAST.DECL	3rd person plural past declarative
-hi	-1.PL.PAST.DECL.NI	1st person plural past declarative <i>-ni</i>
-hi	-3.PL.PAST.DECL.NI	3rd person plural past declarative <i>-ni</i>
-hea	-PERF.PLACT	perfect pluractional
-h _i	-IMPER	imperative
-h _i	-PL.SS.SIM	plural same-subject simultaneous
-h _i	-3.SG.MASC.PRES.DECL	3rd person singular masculine present declarative

MORPHEME	TAG	GLOSS
-h _i re	-PL.DS	plural different-subject
-h _ó	-PERF	perfect
-h _ú	-PERF	perfect
-h _a	-INAN.COP	inanimate copula
-h _a	-PL.COP	plural copula
-ha	-REL.FUT	future relativizer
-hago	-REL.FUT.FEM	feminine future relativizer
-hagi	-REL.FUT.MASC	masculine future relativizer
-hai	-REL.FUT	future relativizer
-hanu	-COM	comitative
-haye	-DS.PURP	different-subject purposive
-haye	-REL.FUT	future relativizer
-i	-ANIM.DIM	animate diminutive
-kara _h i	-NEG.PURP.PL	plural negative purposive
-karako	-NEG.PURP.FEM	feminine negative purposive
-karaki	-NEG.PURP.MASC	masculine negative purposive
-ko	-3.SG.FEM.PRES.DECL	3rd person singular feminine present declarative
-ko	-3.SG.FEM.PRES.INTERR	3rd person singular feminine present interrogative
-ko	-FEM.SS.SIM	feminine same-subject simultaneous
-ko	-3.SG.FEM.DECL.PAST.NI	3rd person singular feminine declarative past -ni

MORPHEME	TAG	GLOSS
-ko	-2.SG.FEM.PRES.INTERR	2nd person singular fem- inine present interrogative
-kore	-FEM.DS.SIM	feminine different-subject simultaneous
-kore	-FEM.DS.SEQ.NI	feminine different-subject sequential <i>-ni</i>
-ki	-3.SG.MASC.PAST.DECL.NI	3rd singular masculine past declarative <i>-ni</i>
-ki	-MASC.SS.SIM	masculine same- subject simulta- neous
-ki	-3.SG.MASC.PRES.INTERR	3rd person sin- gular masculine present interro- gative
-kire	-MASC.DS.SEQ.NI	masculine different-subject sequential <i>-ni</i>
-kire	-MASC.DS.SIM	masculine different-subject simultaneous
-má	-NEG	negative
-ma	-INAN.PL	inanimate plural
-ma	-IMPER	imperative
-maka	-INAN.DIM	inanimate diminutive
-maña	-INAN.DIM.PL	inanimate diminutive plural
-na	-ANIM.PL	animate plural
-ñi	-ANIM.DIM	animate dimin- utive
-ñaia	-ATEL	atelic
-ra	-LIM	limitive
-ra	-FRUST	frustrative

MORPHEME	TAG	GLOSS
-re	-NON.SUBJ	non-subject
-re	-SS.SEQ	same-subject sequential
-sao	-UNIV.QUANT	universal quantifier
-se	PAST.REL	past relativizer
-sua	-FIRST	anterior participant
-suba	-FIRST	anterior participant
-siba	-FIRST	anterior participant
-tu	-POLITE.IMPER	polite imperative
-tu	-COND	conditional
-yi	-1.SG.PRES.DECL	1st person singular present declarative
-yi	-3.PL.PRES.DECL	3rd person plural present declarative
-yi	-1.SG.FUT.DECL	1st person singular future declarative
-yi	-3.SG.FUT.MASC.DECL	3rd person singular future masculine declarative
-yi	-1.PL.PRES.DECL	1st person plural present declarative
-yiko	-FEM.PURP	feminine purposive
-yiki	-MASC.PURP	masculine purposive
-yo	-1.PL.FUT.DECL	1st person plural future declarative

MORPHEME	TAG	GLOSS
-yo	-3.SG.FEM.FUT.DECL	3rd person singular fem- inine future declarative
-yo	-3.PL.FUT.DECL	3rd person plu- ral future declar- ative
-yoḥi	-PL.PURP	plural purposive

Appendix B

-ni verb forms

GLOSS	PRESENT STEM	PAST STEM	FUTURE STEM	- <i>ni</i> FORM
eat	<u>ái</u>	<u>á</u>	<u>áà</u>	ánì
hit	bái	bá	báà	mánì
live	bài	bá	báá	mání
lie in hammock	bée	bé	bée	ménì
burst (intr)	bée	bé	bée	méní
rise (water level)	bì	bí	bíí	míní
wear hat; be covered	chî	chí	chíí	chíní
be intoxicated	bíí	bí	bíí	míní
come	dái	dá	dáà	nánì
sing	dài	dá	dáá	nání
hang (intr)	dée	dé	dée	néní
lean on	dói	dó	dóó	nóní
sink (intr)	dùi	dú	dúú	núní
fish with barbasco	ée	é	ée	énì
fall in a trap	gèè	gé	gée	géní
dig	(g)úí	(g)ú	(g)úú	(g)úní
gû pick up (a person)	gwî	gwí	gwíí	gwíní
cross	hèè	hé	hée	héní
drop	híí	hí	híí	híní
break open (intr)	hôi	hó	hóò	hónì
shoot with blowgun	húi	hú	húù	húnì
be ill	hùi	hú	húú	húní
collect; receive; buy	íí	í	íí	íní
sleep	kái	ká	káá	kání
close up (intr)	kái	ká	káà	kánì
bite	kùi	kú	kúù	kúní
roast	kwái	kwá	kwáá	kwání/kóní

GLOSS	PRESENT STEM	PAST STEM	FUTURE STEM	-ni FORM
cradle	kwáí	kwá	kwáá	kwání
cut wood	kwéé	kwé	kwéè	kwénì
go upriver	máí	má	máá	mání
lift from a pot	míí	mí	míí	míní
stand on four legs	níí	ní	nî	nínì
harvest green manioc	nî	ní	nîí	níní
burn	nî	ní	nîí	níní
be seated	ñù	ñú	ñúú	ñúní
want; cry	óí	ó	óò	ónì
go	sáí	sá	sáà	sánì
fall	táí	tá	táà	tánì
separate	tíí	tí	tî	tínì
pursue	túí	tú	túù	túnì
sit atop	túí	tú	túú	túní
lie	úí	ú	úù	únì
have sex	yáí	yá	yáá	ñání
get shot	yéé	yé	yéè	ñénì

Appendix C

List of texts

TEXT CODE	TEXT TITLE	AUTHOR	GENRE	SPEECH COMMUNITY
aag	Áíkò Ágáyà	SLA	vernacular definition	NM
ada	The meeting of the animals	SRF	oral literature	EM
aho	How Seberino almost drowned to death	ERO	personal history	EM
am3	Associated motion stimulus story 3	LTN	elicitation	WM
amn	The festival of <i>pijuayo verde</i>	ARS	autoethnography	NM
apa	When Romero lived in the Apayacu	RRO	personal history	EM
atj	Tóadareyai	ARS	oral literature	NM
ba2	The baptisms, part II	RRO	personal history	EM
bag	Biographies of Roberto López (Kínò) and Amelia Gordillo de Jesus (Neeho)	OLG	cultural history	NM
bau	The baptisms, parte II	RRO	personal history	EM
bdb	Babi's witchcraft	LPR	personal history	EM
bdm	The shaman and his two wives	MRP	oral literature	EM
bek	The tapir	ERO	vernacular description	EM
bhg	Béáhògàyà and Gáòtòtògàyà	SLA	vernacular definition	NM
bil	Billy's future studies	LPR	future	EM
by1	The oily sloth	MMP	oral literature	WM

TEXT CODE	TEXT TITLE	AUTHOR	GENRE	SPEECH COMMUNITY
by4	The oily sloth	RRR	oral literature	EM
ca3	How the community of Sucusari has changed	SRF	cultural history	EM
ca5	How the community of Sucusari has changed	NRO	cultural history	EM
cam	How Nueva Vida will change	JMM	future	WM
ccp	How the shamans used to fight	SRF	cultural history	EM
cf1	How the earth formed, part I	ARS	oral literature	NM
cf2	How the earth formed, part II	ARS	oral literature	NM
chi	Máínè̀nò and the lizard	EMR	oral literature	WM
cho	Chósà̀yì, the ancient warrior	SRF	oral literature	EM
cim	What we will do in the Máíhùnà Visitor Center	RRO	future	EM
clp	Máínè̀nò and the first watering hole	EMR	oral literature	WM
cm2	Ancient warfare	TRR	cultural history	NM
cmb	How Babi died	LPR	personal history	EM
con	Seberino's conditional texts	ERO	conditional	EM
dbt	The man who went to the underworld	ARS	oral literature	NM
dos	The man who withheld food from his two wives	EMR	oral literature	WM
eds	Seberino's two wives	ERO	personal history	EM
eo1	How they used to fish with <i>barbasco</i>	ERO	autoethnography	EM
epi	Historical epidemics	RRO	cultural history	EM
fi1	How the Máíhùnà dance	TRR	autoethnography	NM
fie	The festivals of our ancestors	ERO	autoethnography	EM

TEXT CODE	TEXT TITLE	AUTHOR	GENRE	SPEECH COMMUNITY
fr2	Frog story	EMR	elicitation	WM
fsl	Soraida's relatives	SLA	personal history	NM
fss	The foundation of Suscusari	RRO	cultural history	EM
gus	How to cure domestic animals of worms	ERO	procedural	EM
hab	The abandoned son	LTN	oral literature	WM
hb2	Hybrid object 2	LPR	elicitation	EM
hgt	Húáyò gónóbì and Táyágònòbì	SLA	vernacular definition	NM
hja	The jaguar	HMR	oral literature	WM
hjb	Blanca's children	BMT	personal history	WM
hmr	How Hermelinda met Abel	HMR	personal history	WM
hol	Otilia's children	OLG	personal history	NM
hsj	Háíkì Sééyà	ERO	vernacular definition	EM
hur	The hurricane	LTN	personal history	WM
ilv	How Romero met the SIL linguists	RRO	personal history	EM
ir1	How we roof	ERO	procedural	EM
iy1	The sky jaguar's son	LTN	oral literature	WM
iy4	The sky jaguar's son	RRO	oral literature	EM
iy6	The sky jaguar's son, part II	RRO	oral literature	EM
ja1	The jaguar	ERO	oral literature	EM
jal	Josefina, Lindaura's grandmother	LPR	personal history	EM
jv1	How young people behave and should behave	NRO	hortative	EM
jv2	How young people should behave	LPR	hortative	EM
jv3	How young people behave and should behave	ERO	hortative	EM
kb5	Kobiro	SLA	oral literature	NM
lim	Hermelinda's trip to Lima	HMR	personal history	WM

TEXT CODE	TEXT TITLE	AUTHOR	GENRE	SPEECH COMMUNITY
m+t	Mítèyà	ERO	vernacular definition	EM
mak	Mító Ákwéyà	ERO	vernacular definition	EM
mb1	Babi's death	NRO	personal history	EM
mbd	Máínèò creates the animals	LGF	oral literature	NM
mon	Monkeys	JMM	vernacular definition	WM
muj	The woman who seized the soul of her husband	LGF/JGS	oral literature	NM
myg	How Manuel and Gisela will live	RRO	future	EM
nao	Náóyà	SLA	vernacular definition	NM
nhm	How we weave ham-mocks	NMM	procedural	WM
nin	How women should take care of their children	LTN	hortative	WM
nm3	Llulisa, Neyda's daughter	NMM	personal history	WM
nm4	The first time Llulisa gave birth	NMM	personal history	WM
nm6	The bad grandfather	NMM	personal history	WM
ohe	Óhésùrìyà	ERO	vernacular definition	EM
ora	Órápèrè Yíòsàrò	ERO	vernacular definition	EM
ov1	Otilia's trip to Iquitos II	OLG	personal history	NM
ov2	Otilia's trip to Sususari	OLG	personal history	NM
ovi	Otilia's trip to Iquito I	OLG	personal history	NM
pfv	How to make <i>chicha</i> from <i>pijuayo verde</i>	NMM	procedural	WM
pmm	Francisco, father of the Mosoline Mogicas	NMM	personal history	WM
pvc	The hunting trip	PLA	personal history	NM
pvd	The fesitval of <i>pijuayo verde</i>	JMM	autoethnography	WM

TEXT CODE	TEXT TITLE	AUTHOR	GENRE	SPEECH COMMUNITY
pyj	Ancient methods of preparing ayahuasca and toé	SRF	autoethnography	EM
rtm	Rusber's grandmother	RTR	personal history	WM
sis	Sisiri	EMR	oral literature	WM
say	How Soraida learned Spanish	SLA	personal history	NM
scm	The dream of five thousand <i>soles</i>	LPR	irrealis	EM
sj1	Máíyàinà, part II	SRF	vernacular definition	EM
sk5	Sókitìrò	SLA	oral literature	NM
sl1	How the Máíhùnà came to live in Santa Lucia	ERO	cultural history	EM
soc	Sókitìrò	JMM	oral literature	WM
sol	The sun and the moon	ARS	oral literature	NM
soo	Sòògáyà	SLA	vernacular definition	NM
src	If the river rises	NRO	conditional	EM
srf	What Samuel is going to do tomorrow	SRF	future	EM
svc	Soraida's trip to the 2012 congress	SLA	personal history	NM
syk	Sáñ'abàirà and Yákàrà	ERO	vernacular definition	EM
tc2	How Tótòyà and Estrecho have changed	OLG	personal history	NM
thl	Biography of Térò (Hilario López), father of the López Algobas	FLA	personal history	NM
ttc	How Tótòyà has changed	FLA	personal history	NM
ttj	Tóàdàrèyàì	TRR	oral literature	NM
tui	The man who followed the peccaries	ARS	oral literature	NM
tut	Tútíbhùchì	LGF/JGS	oral literature	NM
vi2	The old woman	ARS	oral literature	NM
vie	The old woman	EMR	oral literature	WM
vil	The old woman	PLA	oral literature	NM

TEXT CODE	TEXT TITLE	AUTHOR	GENRE	SPEECH COMMUNITY
yao	How they made <i>pi-juayo verde</i> for the first time	ARS	oral literature	NM
yar	How Romero lived in Yarinacocha	RRO	personal history	EM
yo3	How to make a canoe	MRP	procedural	EM

Appendix D

Glossary of terms relating to noun categorization

Class term A classifying morpheme that derives new nouns. These morphemes have transparent lexical origins.

Classifier An intermediately grammaticalized classifying morpheme, usually with transparent lexical origin, that may appear outside of the noun in specific morphosyntactic constructions. In systems of noun classification, not all nouns must be associated uniquely with a classifier, nor with any classifier at all.

Concordial classifier language A language with gender. (Allan 1977)

Gender A feature of a noun that is realized outside the noun itself by some via a process of agreement or concord. Systems of gender are typically highly grammaticalized and may range in size from two (typically based on sex) to many. Every noun has one and only one gender, and genders may have their basis in semantics, phonology, or both. Some authors use the term ‘gender’ to refer exclusively to sex-based distinctions, but most advocate for the equivalence of the terms **gender** and **noun class**.

Genitive classifier A classifier that is suffixed to the possessive element of a possessive construction, indicating in the classification of the possessee. Genitive classifiers have also been called “attributive” (Benton 1969), “possessive” (Carlson and Payne 1989), or “relational” (Lichtenberk 1983). The set of nouns classified in systems of genitive classification is generally small.

Intra-locative classifier language A language in which a classifying morpheme may appear in a locative construction. (Allan 1977)

Measure term A lexical item used to specify quantities or arrangements of nouns in languages without true classifiers.

Noun class See **gender**.

Mensural classifier A type of numeral classifier that specifies a quantity or packaging of the noun in question.

Noun classifier A classifier that does *not* appear in quantificational contexts. A noun classifier is non-agreeing. They may be “swapped out” for one another based on semantics, so that a given noun is possibly compatible with more than one. ‘Noun classifier’ is often used as a general term for morphemes that categorize nouns, including numeral classifiers.

Numeral classifier A classifier that appears, minimally, in quantificational contexts, either free or bound.

Predicate classifier language A language in which verb stems may exhibit alternations based on the classification of the objects associated with the event. (Allan 1977)

Sortal classifier A type of numeral classifier that specifies a salient characteristic of the noun in question.

Verbal classifier A classifier that appears inside the verb form, classifying one of the arguments of the verb. The classifier may either have the form of a generic noun, or a phonologically eroded form.

Appendix E

List of classifiers

Below is a table of attested classifiers in Máíhìkì. Recall from §5.3.2 that not all classifiers exhibit a singular/plural alternation.

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-ako		feminine beings	góhéàkò ‘paca’ from <i>góhé</i> ‘hole’ + <i>-ako</i>
-akì		masculine beings	dóéàkì ‘male an- cestor’ from <i>dóé</i> ‘before’ + <i>-akì</i>
-akwe		fruits	éréàkwè ‘shapaja fruit’ from <i>éré</i> ‘shapaja’ + <i>-akwe</i>
-baru		jumbles of rigid, long objects	ñétùbàrù ‘beard’ from <i>ñétù</i> ‘jaw’ + <i>-baru</i>
-bese		worlds, environments, atmospheres	ókóbèsè ‘rainy weather’ from <i>ókó</i> ‘water’ + <i>-bese</i>
-bì	-mia	vessels	ókóbì ‘bucket’ from <i>ókó</i> ‘water’ + <i>-bì</i>
-biti	-miña	flat, round things	kúchkibiti ‘coin’ from <i>kúchki</i> ‘money’ + <i>-biti</i>
-cho~-chio		heads	máíchò ‘human head’ from <i>mái</i> ‘people’ + <i>chò</i>

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-ga	-gaña	small, round spheres; seeds	érígà ‘shapaja seed’ from érí ‘shapaja’ + -ga
-gani		skins	yáígàni ‘jaguar pelt’ from yái ‘jaguar’ + -gani
-gara		accumulations, clumps	ókógàrà from ókó ‘water’ + -gara
-go	-goña	loops	ñúkàgò ‘rings of chambira fiber’ from ñúkà ‘chambira’ + -go
-hao	-haña	flexible sheets; leaves	kúchkíhàò ‘paper bills’ from kúchkí ‘money’ + -hao
-hene		marks, scratches, letters	díàhènè ‘wound; scratch’ from díà ‘sting; burn (of skin)’ + -hene
-ho		sheaths	gíòhò ‘boot’ from gíó ‘foot’ + -ho
-hu		clusters of slender, pointed objects	bàìhù ‘string of fish’ from bàì ‘meat’ + -hu
-hu		lights	tóàhù ‘glow of cooking fire’ from tóà + -hu
-huna		groups, herds	hòyàhúnà from hòyà ‘domestic animals’ + -huna
-ka	-kaña	cloth-like things	óyókà ‘bat wing’ from óyó ‘bat’ + -ka
-ka	-kaña	branches	ménèkà ‘shimbillo branch’ from ménè ‘shimbillo’ + -ka
-kanu		chunks	gáákànù ‘chunk of flesh’ from gáá ‘flesh’ + -kanu

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-kwa~-ko	- kwaña~- koña	sheets	mîò kò ‘sheet of thorns’ from <i>mîò</i> ‘spine’ + <i>-ko</i>
-kwaru~-koru		swampy groves	nè kwárù ‘morange palm grove’ from <i>nèè</i> + <i>-kwaru</i>
-kwiri~-kuri		lines, rows	ññ kwìrì ‘line of children’ from <i>ññ</i> + <i>-kwiri</i>
-kì		masculine beings	dò ìkì ‘brother’ from <i>dòì</i> ‘sibligs’ + <i>-kì</i>
-ma	-maña	paths, stripes	áí ròmà ‘path to high ground’ from <i>áíró</i> + <i>-ma</i>
-me		long, thin, flexible things	yà hìmè ‘ <i>tamshi</i> rope’ from <i>yàhì</i> ‘ <i>tamshi</i> ’ + <i>-me</i>
-ñaka	-ñaña	pointy things, spines, thorns	mîò ñàkà ‘thorn’ from <i>mîò</i> ‘spine’ + <i>-ñaka</i>
-ñi	-ña	plants	sú kínì ‘tree’ from <i>súkí</i> + <i>-ñi</i>
-ño		curves	yíà yàñò ‘river bend’ from <i>yíà</i> ‘river’ + <i>-ño</i>
-ogu		stout, hollow cylinders	ókó ùkùògù ‘water cup’ from <i>ókó</i> + <i>úkú</i> ‘drink’ + <i>-ogu</i>
-nu		times, seasons, epochs	ín ènú ‘peach palm season’ from <i>ínè</i> ‘peach palm’ + <i>-nu</i>
-pè		pairs	ní hòpè ‘pair of wives’ from <i>níhò</i> ‘wife’ + <i>-pè</i>
-pere		parallel lines	hí tìpèrè ‘forearm’ from <i>hítì</i> ‘hand’ + <i>-pere</i>

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-pene		smashed or sunken things	chópèné ‘mis-shapen head’ from <i>chóó</i> ‘head’ + <i>-pene</i>
-pepe		uneven surfaces	gúhípèpè ‘snag-gletooth’ from <i>gúhí</i> + <i>-pepe</i>
-pì		stacks	hàòpì ‘stack of leaves’ from <i>hàò</i> ‘leaf’ + <i>-pì</i>
-ra		bodies of water	yàòrà ‘mud puddle’ from <i>yàò</i> ‘earth’ + <i>-ra</i>
-rari		locations	Nueva Vidaràrì ‘Nueva Vida’ from <i>Nueva Vida</i> + <i>-rari</i>
-raka	-naña	liquids	ókóràkà ‘water’ from <i>ókó</i> ‘water’ + <i>-raka</i>
-rare		things with bulging tops (?)	gúhídàrè ‘molar’ from <i>gúhí</i> + <i>-dare</i>
-raro		cut one-dimensional objects	súkídàrò ‘cut tree’ from <i>súkí</i> + <i>-raro</i>
-reo	-neña	disc-shaped things	tótòrèò ‘plate’ from <i>tótò</i> ‘clay’ + <i>-reo</i>
-ro	-noa	concave things	gónórò ‘masato pot’ from <i>gónó</i> ‘‘masato’ + <i>-ro</i>
-ro		places	bàìrò ‘homeland’ from <i>bàì</i> ‘live’ + <i>-ro</i>
-ruru		directions	gáhèrùrù ‘down-river’ from <i>gáhè</i> ‘go down’ + <i>-ruru</i>
-rì	-nia	manufactured things	háìrì ‘hammock’ from <i>háì</i> ‘swing’ + <i>-rì</i>

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-sa		shoots and sprouts	óósà ‘plantain shoot’ from óó ‘plantain’ + -sa
-sari		twins; things stuck together in a pair	óósàrì ‘two plantains stuck together’ from óó + -sari
-sagu		slender forked things	súkísàgù ‘forked tree branch’ from súkí + -sagu
-saka		slender, pointed, and bundled things	dábìsàkà ‘shacapa’ from dábì ‘shaman’ + -saka
-sayi		spikes, bristles	chósàyì ‘spiky hair’ from chóó ‘head’ + -sayi
-sako		slender, clustered, splayed things	súkísàkò ‘tree splinters’ from súkí ‘tree’ + -sako
-sani		points, tips	súkísànì ‘tip of tree’ from súkí ‘tree’ + -sani
-saro		openings	wèsárò ‘door to house’ from wèè ‘house’ + -saro
-sai		powders, dregs	gónósàì ‘masato dregs’ from gónó ‘masato’ + -sai
-sepa		disorganized fibers	náñàsèpà ‘messy hair’ from náñà ‘hair’ + -sepa
-seu		roots; devices	ágàsèù ‘telephone’ from ágá ‘call’ + -seu
-so		quantities	késò ‘how much’ from kée ‘which’ + -so
-su		heaps	hékàsù ‘pile of firewood’ from hékà + -su

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-suru		viscous bodily excretions	<u>úkwésùrù</u> ‘booger’ from <u>úkwé</u> ‘nose’ + <i>-suru</i>
-tara		cylindrical hollow things	<u>máítàrà</u> ‘human bone’ from <i>mái</i> ‘people’ + <i>-tara</i>
-tìo		intestines	<u>bàitfò</u> from <i>bài</i> ‘animal’ + <i>tio</i>
-tete	-teña	shelters; gourd dishes	<u>wètétè</u> ‘temporary shelter’ from <i>wèè</i> ‘house’ + <i>-tete</i>
-ti		bundles of one-dimensional objects	<u>hékàtì</u> ‘bundle of firewood’ from <i>hékà</i> ‘firewood’ + <i>-ti</i>
-ti		opposing sides	<u>kwàkòtì</u> ‘left side’ from <i>kwàkò</i> ‘cook (?)’ + <i>-ti</i>
-to		sacks and bags	<u>néétò</u> ‘sack’ from <i>néé</i> ‘thing’ + <i>-to</i>
-to		clothing	<u>nómító</u> ‘women’s clothing’ from <i>nómí</i> ‘women’ + <i>-to</i>
-togu		spent or depleted things	<u>béàtògù</u> ‘empty corncob’ from <i>béà</i> + <i>-togu</i>
-toto	-toña	rigid flat sheets	<u>míftòtò</u> ‘roofing panel’ from <i>míí</i> ‘irapay’ + <i>-toto</i>
-toya		paints, designs	<u>mátòyà</u> ‘red paint’ from <i>máá</i> ‘red’ + <i>-toya</i> ‘paint’
-tu		thick cylinders	<u>wètù</u> ‘housepost’ from <i>wèè</i> ‘house’ + <i>-tu</i>
-turi		enclosed spaces	<u>wètúrí</u> ‘room’ from <i>wèè</i> ‘house’ + <i>-turi</i>

SINGULAR FORM	PLURAL FORM	OBJECTS CLASSIFIED	EXAMPLE
-titi		raised flat surfaces	háíyà titi ‘elevated bank of the big river’ from <i>háíyà</i> ‘big river’ + <i>-titi</i>
-tika		sticks	súkí tika ‘stick from tree’ from <i>súkí</i> ‘tree’ + <i>-tika</i>
-we		buildings	tóyáyété wè ‘schoolhouse’ from <i>tóyá</i> ‘write’ + <i>yété</i> ‘learn’ + <i>-we</i>
-ya		rivers	Mítò yà ‘Tobacco River’ from <i>mító</i> + <i>-ya</i>
-yia		oblong, tapered things	kúrá yia ‘chicken egg’ from <i>kúra</i> + <i>-yia</i>
-yigo		spans of space or time	tóyápì yigò ‘length of notebook’ from <i>tóyá</i> ‘write’ + <i>-yigo</i>
-yo	-ñoa	slender, one-dimensional objects	míò yò ‘finger’ from <i>míò</i> ‘lift (?)’ + <i>-yo</i>

Table E.1: Classifiers in Máíhǎkì