The structure and use of shape-based noun classes in Miraña (North West Amazon)

The structure and use of shape-based noun classes in Miraña (North West Amazon)

een wetenschappelijke proeve
op het gebied van Letteren

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ABBREVIATIONS

The following abbreviations are used in glosses:

1/2PL	first and/or second person plural
1D	one-dimensional shape
1S	first person singular
2D	two-dimensional shape
2S	second person singular
3	third person
3D	three-dimensional shape
ABL	ablative case
ACC	accusative case
ALL	allative case
AUG	augmentative
BEN	benefactive case
CAUS	causative
CL	classifier
COMP	comparative case
CON	sentence connector pronoun
cont	container
COP	copula
CPL	complete
cylindr	cylindrical
DEC	deceased
DIM	diminutive
DIR1	directional 1: away from speech situation
DIR2	directional 2: towards speech situation
DIR3	directional 3: away and back from given point
DIR4	directional 4: away from given point after completion
DIST	distal demonstrative
DL	dual
EXCL	exclusive
FEM, fem	feminine
FRUS	frustrative
FUT	future tense

Abbreviations used in glosses (cont.)

GCM	general class marker
HAB	habitual
HES	hesitation marker
IMP	imperative
INAN, inan	inanimate
INCL	inclusive
INST	instrumental
INTER	interrogation
ITJ	interjection
LOC	locative case
MASC, masc	masculine
NEG	negation
NMZ	nominalization
OMT	onomatopoeic
PAS	remote past
PERT	pertain to
PF	perfective
PL	plural
PN	third person pronoun
POS	possessor
POST	posterior time
PRD	predicative marker
PRPT	prospective
PRX	proximal demonstrative
PURP	purposive
RCPR	reciprocal
REC	recent past
REST	restrictive
RFLX	reflexive
RP	repeater
RPT	reportative mode
S, SG, sg	singular
SCM	specific class marker
SIM	similar to
SIMU	simultaneous time
SOC	sociative case
SP	loanword from Spanish
SUB	subordinate clause
TAM	tense-aspect-mood
VBZ1	verbalizer 1: subject acquires property denoted by noun
VBZ2	verbalizer 2: subject possesses entity denoted by noun
VBZ3	verbalizer 3: subject acts upon entity denoted by noun

The following symbols are used in the transcription:

-	morpheme boundary
=	clitic boundary
{n.n}	pauses measured in seconds and milliseconds
@	laughter
< >	anacoluthon
[ ]	overlap
*	ungrammatical or unacceptable form

Further abbreviations used in the text and in tables are:

A	subject of transitive clauses
CM	class marker
cont.	continuation
gen.	biological genus
n/a	non applicable
n'lized	nominalized
pron.	pronominal
S	subject of intransitive clauses
sp.	biological species
subord.	subordinate
v'd	voiced
v'less	voiceless
#	number

In running text, English glosses of Miraña roots and words are enclosed in single quotation marks, e.g. *amána* 'dolphin', *tsi-* 'other', while abbreviated glosses of grammatical morphemes are enclosed in brackets, e.g. *-ʔahkʉ* (SCM.upright). Morphemic analyses of polymorphemic forms are also enclosed in brackets, e.g. *taj-ʔha* (POS.1S-house) 'my house'.

For abbreviations used for the identification of sources of examples see section 1.4.3.

Part I: Introduction

INTRODUCTION

Miraña, an endangered Witotoan language spoken in the Colombian Amazon region, has an inventory of over 60 noun class markers, most of which denote the shape of nominal referents. Class markers in this language are ubiquitous in their uses for derivational purposes in nouns and for agreement marking in virtually all other nominal expressions, such as pronouns, numerals, demonstratives, and relative clauses, as well as in verbs. Some of these uses can be observed in the following example (1), where forms referring to two differently shaped objects are set in boldface vs. underlined:

(1)   1.   *píko **úmɛ́-ʔɛ-gwá-**gwɯɯú-kɯ́-dɯ́*   *né:-nɛ*
            put   **wood-SCM.tree-SCM.2D.straight**-DIM-DL-COMP seem.SUB-GCM.inan
            'put what looks like two little **wooden planks** ...'

            […]

    2.   <u>*úmɛ-í-gwɯɯú-kɯ́-dɯ́*</u>   *né:-nɛ*   <u>*ma:kíní-i-ßa*</u>
            <u>wood-SCM.1D.medium</u>-DIM-DL-COMP seem.SUB-GCM.inan <u>three-SCM.1D.medium</u>-PL
            '... like two little <u>wooden sticks</u> it looks, <u>three (stick-shaped)</u> ...'

            […]

    3.   <u>*é:-i-ʔhɨ*</u>   *ɯɯ*   *gwáhɨnɯ́-dɯɯ* **tsi:-gwa**
            <u>DIST-SCM.1D.medium</u>-PL 2S.SUB line.up-COMP **other-SCM.2D.straight**
            '... like <u>those ones (stick-shaped)</u> you lined up, (put) **another one (plank-shaped)**'

Nouns denoting differently shaped objects of the same substance are derived with "specific class markers" (SCMs), such as **úmɛ́-ʔɛ-gwa** (wood-SCM.tree-SCM.two-dimensional.straight) 'wooden plank' (line 1) vs. *úmɛ-i* (wood-SCM.one-dimensional.medium_length) 'wooden stick' (line 2). Once a referent is introduced in discourse with such a class-marked noun, it is usually tracked with pro-forms that show obligatory agreement in noun class, e.g. demonstratives (line 3). With the use of these expressions, referents are tracked by specifying their shape.

The nominal classification system in Miraña is complex in two respects: on the one hand, the large set of class markers is formally and semantically heterogeneous. On the other hand, this set of forms can be used in a variety of different functions, most importantly in productive derivation of nouns (where class markers usually contribute a meaning), and in morphosyntactically constrained agreement marking (where class markers are semantically redundant with respect to the noun that controls the agreement). This twofold complexity (in class marker forms and uses) gives the system an unusual multifunctionality. At the same time, it is the main descriptive challenge that this study faces.

The major aim of this study is to provide a comprehensive analysis of this system by giving equal attention to its morphosyntactic, semantic, and discourse-pragmatic properties. The particular properties of this system raise issues in a number of ongoing theoretical discussions, in particular the typology of systems of nominal classification and the typology of reference tracking. The analysis is based on a diverse corpus of data, including naturally occurring texts as well as data from specifically designed experiments and elicitation, all of which was collected by the author in over 10 months of fieldwork in the Colombian Amazon region.

The following section (1.1) gives an overview of the phenomena covered in this study. Section 1.2 introduces the main theoretical issues that are addressed here. Section 1.3 offers an introduction to the Miraña speakers and their language. Section 1.4 deals with the database used here and section 1.5 provides a general overview of the structure of this study.

1.1. OVERVIEW OF THE PHENOMENA

The system of nominal classification in Miraña consists of over 60 class markers. This set includes 6 "general class markers" (GCMs), which encode distinctions of animacy, sex and number, e.g. *-dʒɛ* (GCM.feminine.singular), *-mutsi* (GCM.masculine.dual), and *-nɛ* (GCM.inanimate). The remaining class markers are shape denoting "specific class markers" (SCMs). These are a diverse set ranging from a core subset of frequently used monosyllabic forms, e.g. *-ko* (SCM.one-dimensional.pointed)*, -hɨ* (SCM.two-dimensional.round), and *-ʔo* (SCM.three-dimensional.oblong), to polysyllabic forms with relatively specific semantics, e.g. *-tsa:ragwa* (SCM.fibers.sticking.out). In addition, a set of about 50 nouns can be used as "repeaters" (RPs) in contexts that are otherwise filled by class markers, for instance in a numeral, as in *tsá-bahkɯ báhkɯ* (one-RP.bone bone) 'one bone'. In chapter 3, the two sets of class

markers and the set of repeaters are characterized in terms of different degrees of grammaticalization. From there on, the focus is on the core set of specific class markers, which—together with general class markers—are the most grammatically important ones for the language.

The morphosyntactic contexts of class markers (as described in chapter 4) include nouns, where class markers are used as a productive derivational device, as well as a wide variety of pronominal expressions (including third person pronouns, demonstratives, and possessive pronouns) and numerals. Class markers are also obligatorily used in relative clauses to mark agreement with their heads, and they are used as cross-reference markers on main clause predicates.

All nominal expressions, including pronouns and relative clauses, can be used as noun phrases on their own. Chapter 5 shows that two coreferential nominal expressions in a clause are typically in a relation of loose apposition, rather than forming a tightly integrated constituent, as the literal translation of example 2 indicates.

(2)　*ó-ʔdi　íhka-**ko**　　　　tsa-**ko**　　　　pihhú-**ko***
　　　1S-POS　COP-**SCM.1D.pointed**　one-**SCM.1D.pointed**　fish.NMZ-**SCM.1D.pointed**
　　　'I have one fishing rod'
　　　(lit. What (pointed) is to me, one (pointed), a fishing rod)

This syntactic independence is possible because coreferentiality relations are marked through obligatory agreement in noun class. Agreement can be marked either with a specific class marker or with a general class marker (compare example 3 with example 2).

(3)　*ó-ʔdi　íhka-**nɛ**　　　　tsa-**nɛ**　　　　pihhú-**ko***
　　　1S-POS　COP-**GCM.inan**　one-**GCM.inan**　fish.NMZ-**SCM.1D.pointed**
　　　'I have one fishing rod'
　　　(lit. What (inanimate) is to me, one (inanimate), a fishing rod)

Chapter 6 argues that specific class markers have semantic content in the domain of shape. The semantic content of class markers can be elicited by putting a pronominal expression that includes a class marker, e.g. *pá-ko* (COMPLETE-SCM.1D.pointed) 'a pointed one', in a sentence frame where this pronominal expression is used as a predicate nominal, e.g. *pá-ko í-nɛ ihká-ʔi* (COMPLETE-SCM.1D.pointed PRX-GCM.inan COPULA-PREDICATE) 'this is a pointed one'. The core set of monosyllabic specific class markers encodes abstract shape distinctions such as dimensionality (one- vs. two- vs. three-dimensional) and relative axial geometry (e.g. long vs. thick). Polysyllabic

class markers typically encode specific spatial properties, often pertaining to parts of objects, e.g. *-ßɨ:ʔa* (SCM.punctuated) or to temporary configurations, e.g. *-htsɯ:ʔo* (SCM.bundle).

As shown in chapter 7, class markers usually contribute a definable meaning component to the classified noun that they derive, e.g. *úɨhɨ-ʔo* (banana-SCM.3D.oblong) 'banana fruit'. Class marker assignment is thus mostly semantically motivated. There are, however, also combinations of noun roots with class markers that have to be considered conventional or non-compositional, e.g. *kaʔgúɨnɯ-ko* (cahuana-SCM.1D.pointed) 'cahuana (manioc drink)'. In these cases, class marker assignment is semantically opaque. In either case, the overt noun class marking in nouns determines a noun's syntactic properties, in particular the agreement pattern it takes.

Another function of class markers is unitization. As shown in chapter 8, non-classified nouns are grammatically non-countable. Therefore they cannot combine with number morphology, e.g. **úɨhɨ-:nɛ* (banana-PL). Count nouns are derived from these with the addition of a class marker. These forms then take obligatory plural markers when plural in reference, e.g. *úɨhɨ-ʔó-:nɛ* (banana-SCM.3D.oblong-PL) 'bananas'. Thus unitization by class markers takes place on the noun itself, not in numeral expressions, where class markers are used for agreement marking.

The wide variety of contexts that class markers occur in can be grouped into two "major uses", namely the "derivational use" and the "agreement use", and two "minor uses", namely the "absolute use" and the "predicative use". The most frequent uses of class markers are their derivational use on noun roots (where one of their functions is unitization) and their agreement use in other kinds of expressions. When an agreeing expression that includes a class marker, e.g. a pronoun, is used to introduce a new referent independently of an agreement controller, class markers have an absolute use. In addition, class markers can have a predicative use, when a pronominal expression that includes a class marker is used as a predicate nominal. Chapters 3 - 8 are mainly concerned with describing the morphosyntactic and semantic characteristics of these four types of class marker uses. Chapters 9 -10 deal with the anaphoric functions of class markers at the discourse level.

The combinatorial possibilities of class markers with noun roots and pronominal roots provide Miraña speakers with three basic types of referential expressions that can be used for tracking inanimate referents: (i) classified nouns consisting of a noun root and a specific class marker, (ii) pronominal expressions that include a specific class marker, and (iii) pronominal

expressions that include a general class marker. In chapter 9, these three types are ordered according to levels of semantic specificity: Nouns that include specific class markers typically encode the substance and shape of the referent, e.g. *úhi-ʔo* (banana-SCM.3D.oblong) 'banana fruit'. Pronominal expressions that include specific class markers encode the referent's shape, e.g. *tɛ:-ʔo* (PN-SCM.3D.oblong) 'it (oblong)'. The general inanimate class marker encodes only the inanimacy of the referent, e.g. *tɛ:-nɛ* (PN-GCM.inan) 'it (inanimate)'.

How the information encoded in these types of expressions is allocated in connected discourse in a coherent way is the focus of chapter 10. Within a relevant discourse unit, i.e. a sequence, new referents are introduced by semantically specific expressions (typically nouns), and then tracked by less specific ones (typically pronominal expressions). The use of a more specific expression than in the previous mention, for instance a pronominal expression that includes a specific class marker instead of a general one, can signal the end of a sequence. Since pronominal expressions that include specific class markers make relatively fine-grained semantic distinctions, they can be used for disambiguation in contexts with competing antecedents, as long as the two candidates belong to different noun classes. They can also be used to pick up anaphoric reference over long stretches of discourse without having to revert to full nouns.

1.2. THEORETICAL ISSUES

Large, shape-based systems of nominal classification with a unitizing function are not uncommon in the languages of the world. What is unusual about Miraña is that such a system is also involved in a widespread agreement pattern and is systematically used for reference tracking. This raises issues in two areas of linguistic inquiry: the typology of systems of nominal classification and the typology of reference tracking. Sections 1.2.1 and 1.2.2 provide an overview of the important issues in these two areas in order to orient the reader on how Miraña is relevant to these. Section 1.2.3 explicates some general theoretical assumptions underlying this study.

1.2.1. The typology of systems of nominal classification

The specific characteristics of the system of nominal classification described in this study raise issues in some of the core areas of the typology of nominal classification, including the distinction between noun class systems and classifier systems as two distinct types and the identification of multiple systems within one language. In this section, current approaches to the

typology of systems of nominal classification and the major types of systems recognized in these approaches are briefly reviewed in order to show how the Miraña system fits expectations associated with different types of systems.

Nominal classification can be defined as the phenomenon whereby a definable set of morphemes occurs obligatorily in one or more clearly identifiable constructions in surface structure, where these morphemes are involved in modifying the reference of an accompanying noun and/or agreement marking with an antecedent or head noun, and where these morphemes impose a classification on most nouns of the language or on the nominal referents that correspond to these nouns. What is meant by classification is that nouns or nominal referents are assigned to a finite set of classifying morphemes. See Allan (1977: 285) and Aikhenvald (2000: 13) for similar definitions that focus on classifiers rather than noun classes.

The phenomenon of nominal classification takes a variety of forms across languages, which is amply illustrated in Aikhenvald (2000) and the contributions in Senft (2000b). In recent years, different types of systems of nominal classification have been systematically distinguished through the construction of a typology based on morphosyntactic criteria such as the morphosyntactic locus of classifying morphemes and agreement marking. This approach goes back to Craig (1992) and was elaborated in Grinevald (2000) and expanded in Aikhenvald (2000), which now stands as the most comprehensive approach to the typology of systems of nominal classification. This typological approach conceives of types of systems of nominal classification as prototypes along a continuum of grammaticalization, allowing for overlap and fuzzy limits between types. The position of these types of systems on such a continuum is illustrated in Figure 1 (adapted from Grinevald 2000a: 61; 2002: 260).

lexical	lexico-grammatical	grammatical
←		→
measure terms	*numeral classifiers*	*noun classes, gender*
class terms	*noun classifiers*	
	verbal classifiers	
	(etc.)	
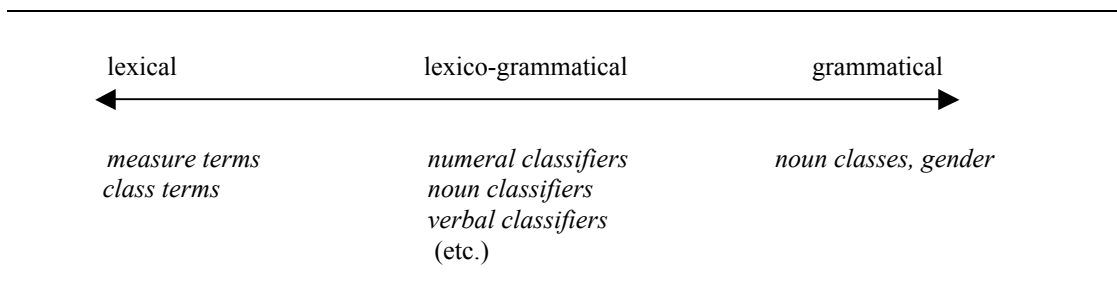
Figure 1: Systems of nominal classification on a grammaticalization continuum

At the "lexical end" of the continuum in Figure 1 are class terms and measure terms, such as *tree* in English *apple tree, pear tree*, etc. (class terms) and *pound* in a *pound of butter, a pound of sugar*, etc. (measure terms). These are lexical

elements that have a classificatory effect, but they do not constitute separate morphosyntactic systems. They are therefore outside the scope of grammatical nominal classification systems.

At the "grammatical end" of the continuum are gender and noun class systems, which are now considered by most authors to belong to the same basic type (Dixon 1982, 1986; Seiler 1986: 111; Corbett 1991: 5, 105, 136f.; Creissels 1999; Aikhenvald 2000: 19; Grinevald 2000: 55). These authors consider the major definitional characteristic of this type—setting it apart from classifier systems—to be the presence of agreement.[1] Thus, for instance, for Corbett (1991: 105) "gender agreement provides the basis for defining gender and for establishing the number of genders in a given language". Corbett explicitly includes those systems that have traditionally been called "noun class" in the type he calls "gender", which is defined by the presence of agreement: "since agreement is taken as the criterion for gender [...] many languages described as having 'noun class' fall within our study" (Corbett 1991: 5, see also 146). Following a terminology used in the more recent literature (e.g. Aikhenvald 2000: 19), systems of the type that have traditionally been called "gender" and "noun class" are referred to in this study as "noun class systems". Besides agreement, another important characteristic of noun classes is that usually every noun belongs to only one class in this type of system (Silverstein 1986: 501; Aikhenvald 2000: 21).

Gender systems (as a subtype of noun class systems) are well known from European languages and need not be exemplified here. These systems are characterized by a small number of genders (usually two or three), which are based on distinctions of natural gender, but usually extend beyond that basis by applying gender categories to inanimate nouns in an (almost) arbitrary way. Those systems for which traditionally the term "noun class" was reserved are typically found in African languages, in particular in the Bantu branch of the Niger-Congo family (see Heine 1982; Katamba 2003). These systems are characterized by having up to about 20 noun classes that are realized in obligatory agreement on a variety of targets in the clause, as can be observed in the following examples from Swahili (Bantu), which is taken from Katamba (2003: 111).

(4)   a.   *M-toto   m-dogo   a-mefika*
           class.1-child class.1-little class.1-arrived
           'The little child arrived'

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[1] Note that the notion of agreement systems is more inclusive than that of noun classes, i.e. there are agreement systems that should not be considered noun classes, e.g. agreement in number or honorifics (see Levinson 1979).

b. *Ki-toto   ki-dogo   ki-mefika*
    class.7-basket class.7-little class.7-arrived
    'The little basket arrived'

The most important characteristics of Bantu noun class systems—which are considered to be prototypical instances of this type of system—are that (i) the noun class is overtly marked on the noun; (ii) there is "alliterative concord" (Corbett 1991: 117), i.e. the same marker that is used on the noun is also used to mark agreement on other elements in the clause; (iii) the noun classes can be arranged (at least in part) as pairs encoding singular vs. plural (see Katamba 2003: 109); and (iv) there are usually not more than about 20 classes (Dixon 1982, 1986; Corbett 1991: 5).

Set apart from noun class systems, classifier systems are located at an intermediate position of the continuum. They are characterized by "incomplete grammaticalization" (Grinevald 2000: 61), as evidenced by properties such as the large number of classes, their specific semantic content, discourse-sensitive use, the fact that usually some nouns can occur without a classifier, while other nouns can be used with more than one classifier, and there can be an overlap between nouns and classifiers. By definition, classifiers are not involved in agreement.

Within the broad type called classifier systems, different subtypes are recognized according to the morphosyntactic context in which classifiers occur. By this criterion, numeral classifiers, noun classifiers, genitive classifiers, and verbal classifiers are identified as the major types of classifiers (Grinevald 2000: 62). Minor classifier types, i.e. classifiers that appear to be rare in the so-far described languages, include deictic classifiers (see Hellwig 2003: 192ff.), locative classifiers, and various subtypes of classifiers in possessive constructions (see Aikhenvald 2000: 125ff., 172ff.).

Numeral classifiers occur in the Mayan languages spoken in Mesoamerica (e.g. in Tzeltal, see Berlin 1968; and Yucatec, see Lucy 1992), but they are best known from East and South East Asian languages (see Bisang 1999 for a survey).[2] Numeral classifiers are typically large systems of forms that categorize inanimate referents with respect to their shape (Aikhenvald 2000: 288ff.; Grinevald 2000: 71ff.). An important characteristic of numeral classifier languages is that most or all nouns are non-count nouns, including those that have a count noun as a translation equivalent in languages such as English. The

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[2] Nichols (2003: 299) claims that numeral classifiers are an areal feature of the Pacific Rim.

main function of numeral classifiers is to unitize non-count nouns in numeral constructions, as in the following examples from Mandarin Chinese (taken from Li and Thompson 1981: 104).

(5)   a.   *sān ge rén*
              three CL person
              'three people'

        b.   *wǔ jià fēijī*
              five CL airplane
              'five airplanes'

Unlike numeral classifiers, the morphosyntactic locus of noun classifiers is next to the classified noun, independent of other constituents such as numerals. Instances of this type are found mainly in Australian languages (see Sands 1995 for examples) and in Mesoamerican languages (e.g. in the Mayan language Jacaltec, see Craig 1986). The semantic profile of noun classifiers typically involves categorization according to "material/essence" (Grinevald 2000: 72) or the "inherent nature of the object and its function" (Aikhenvald 2000: 283). Another characteristic of noun classifiers is that they are often used anaphorically (Aikhenvald 2000: 81; see also Lucy 2000: 338), as illustrated in the following example from Jacaltec (Mayan), which is taken from Craig (1986: 264).[3]

(6)   a.   *xil naj xuwan no7 lab'a*
              saw CL   John   CL   snake
              'John saw the snake'

        b.   *xil naj   no7*
              saw CL/he CL/it
              'He saw it'

Verbal classifiers are affixed to or incorporated in the verb, where they cross-reference one of the verb's arguments, usually the subject noun phrase in an intransitive clause or the object noun phrase in a transitive clause (Aikhenvald 2000: 149). This type is found in many North American languages (see Mithun 1986; 1999: 104ff. for examples). Genitive classifiers (called "possessed classifiers" by Aikhenvald 2000: 126ff.) occur in possessive constructions, where they characterize the possessed term. Genitive classifiers are found in some languages in North and South America (see Carlson and Payne 1989 for

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[3] In the transcription *7* stands for a glottal stop and *b'* for a glottalized bilabial voiced stop in the practical orthography used.

examples). For discussion and examples of minor classifier types, see Aikhenvald (2000: 125ff.; 172ff.).

The typological interest of Miraña lies in the fact that it shares characteristics of almost every type of nominal classification system reviewed above. It shares with noun classes the overt marking in nouns and the alliterative concord. With classifiers in general it shares the large number of classifying morphemes, their specific semantic content, and their potential to add semantic content to the noun phrase in which they occur (see Lucy 2000: 330). With individual classifier types, it shares above all the morphosyntactic contexts where classifying morphemes occur, among them nouns, numerals, verbs, possessive constructions, and demonstrative pronouns. With numeral classifiers as one type of classifier it shares the semantic profile (shape distinctions) and the unitizing function. With noun classifiers (as another type of classifier) Miraña class markers share the anaphoric function. In addition, there is a subset of class markers in Miraña—the general class markers—that resemble typical gender systems with respect to the semantic distinctions and the marking of number in addition to noun class.

The major difficulty for the typological characterization of the Miraña system thus lies in the fact that an internally heterogeneous set of classifying morphemes occurs in a variety of different morphosyntactic contexts where these forms fulfill a variety of different functions, e.g. derivation and unitization in nouns, formation of demonstratives and numerals, and cross-reference on verbs. The Miraña system shares these general characteristics with systems of other Amazonian languages, in particular languages from the North West Amazon.[4]

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[4] The main characteristics that Miraña shares with other Amazonian languages are the use of one large set of classifying morphemes as derivational devices on nouns and in the formation of modifiers of the noun and pro-forms. Systems that are comparable to Miraña in these respects exist in Eastern Tucanoan languages, e.g. Tatuyo (Gomez 1982), Tuyuca (Barnes 1990), and Cubeo (Gomez-Imbert 1996, Morse and Maxwell 1999), in North Arawak languages, e.g. Tariana (Aikhenvald 1994) and Baniwa (Aikhenvald 1996), and in Yagua (Peba-Yaguan; Payne 1986; 1990b: 129ff.), as well as in the Witotoan languages related to Miraña, e.g. Witoto Mɨka (Petersen de Piñeros 2003) and Muinane (Vengoechea 2000; 2001). All of these languages are spoken in the North West Amazon, i.e. the same general area as Miraña, and some of them are in direct contact with it (see section 1.3.1 and Map 1 therein). Similar systems of nominal classification also exist in Amazonian languages spoken further south, i.e. in Rondônia in Brazil, e.g. Kwaza (Voort 2004: 128ff.) and Nambikuara (Kroeker 2001: 43ff.), and in neighboring areas in Bolivia, e.g. in Movima (Grinevald 2002; Haude 2003). See D. L. Payne (1987) and Derbyshire and D. L. Payne (1990) for surveys of Amazonian nominal classification systems.

Derbyshire and D. L. Payne (1990) characterize these systems as "mixtures" of two or three different types. Aikhenvald (2000: 204) proposes that these systems should be thought of as "multiple classifier systems", i.e. systems that are composed of a number of different classifier types, e.g. numeral classifier, deictic classifier, noun classifiers, etc.[5] The description presented in this study suggests that such an analysis is inappropriate for Miraña since the use of class markers in expressions such as numerals, demonstratives, and verbs follows a uniform pattern that shares many characteristics with "canonical agreement" (Corbett 2003a; 2003b, forthcoming). Thus the use of class markers in these expressions has little in common with numeral classifiers, deictic classifiers, or verbal classifiers, once one looks at characteristics other than the morphosyntactic locus and the size and semantics of the inventory of classifying morphemes.

An alternative analysis of the Miraña system, based on the agreement functions of class markers, would thus be that of a noun class language. Such an analysis can be supported by the fact that many of the characteristics of the Miraña system that appear to be unusual for noun class systems can be analyzed as differences in degree rather than in principle to the better-known noun class systems of Bantu languages, as shown in Grinevald and Seifart (2004). Nevertheless, the similarities between important aspects of the Miraña system and prototypical classifier systems remain striking, and the major aim of the present study is thus to further explore the understudied border area between agreement systems (such as noun classes), which usually lie at the heart of the grammar of a language, and classifiers, which are "secondary grammatical systems" (Grinevald 2000: 83) that typically involve a large number of semantically loaded forms that are used—sometimes optionally—in only one construction of a language (e.g. numeral phrases) or a small number of them.

It is hoped that the description presented here will contribute to the further development of a universal typology of systems of nominal classification. It

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[5] The picture may be further complicated when the sets of classifying morphemes are partially distinct for the different morphosyntactic contexts, as appears to be the case in the Arawak language Palikur, spoken in eastern Brazil (Aikhenvald and Green 1998). In this case, Aikhenvald (2000: 184ff.) speaks of "different classifier types in one language". I follow Aikhenvald in using the term "multiple classifier systems" for systems in which a single set of non-agreeing classifying morphemes are used in multiple contexts. Note that Zavala (2000) and Grinevald (2000: 69) use this term for languages where different sets of forms are used in different environments, i.e. a situation that corresponds to what Aikhenvald (2000) calls "different classifier types in one language".

has been repeatedly pointed out that Amazonian systems may be of particular relevance for this enterprise (Derbyshire and D. L. Payne 1990: 267; Aikhenvald 2000: 434; Grinevald 2000: 69, 82, 87). Rather than trying to fit Miraña to any of the pre-defined types, the current study thus aims at a comprehensive description of the morphological, syntactic, and semantic characteristics of the whole spectrum of class markers and the constructions they occur in. In addition, special attention is given to the discourse-pragmatic functions of class markers in their actual use in spontaneous speech, providing data for typological comparison in an area that will hopefully receive more consideration in the typology of systems of nominal classification in the future.

As mentioned at above, many Amazonian languages appear to have systems comparable to Miraña. Widespread areal characteristics include the existence of large and heterogeneous inventories of classifying morphemes, which often display a certain overlap with nouns (through the existence of repeaters), the derivational use of these forms on nouns, and their use in the formation of modifiers of nouns and pro-forms (Derbyshire and D. L. Payne 1990: 243, 266f.). However, the existing descriptions of these systems are generally lacking detailed morphosyntactic analyses of the grammatical functions of classifying morphemes in different contexts and they are usually based almost exclusively on elicited data. Therefore, it is impossible at this point to attempt a systematic comparison between Miraña and other Amazonian languages with respect to the specific questions that are addressed in this study, such as the precise morphosyntactic characteristics of noun class agreement and the unitizing function of classifying morphemes.

Finally, a terminological clarification is needed here. The term "(noun) class markers" is used in this study to refer to the classifying morphemes under consideration in Miraña, in order to highlight the fact that in their agreement use they actually set up disjunctive classes of nouns. This use of terminology is thus well supported by the data, but it should not be understood as pre-judging the issue of the typological characterization of the system. Aikhenvald (2000: 1) suggests "classifiers" as a cover term for all systems of nominal classification, including noun classes and gender. I reserve the term "classifiers" for the morphemes that constitute classifier systems in the above-defined sense and use "classifying morphemes" as a cover term.

1.2.2. The typology of reference tracking

Class markers are an important component of the reference-tracking system of Miraña. With the use of specific class markers in pronominal expressions,

verbs, and relative clauses, inanimate referents can be tracked through discourse. What is special about the Miraña system is that these expressions specify the shape of their referent, for instance *tɛː-ʔi* (PN-SCM.bunch) 'it (bunch-shaped)', *tɛː-ʔo* (P N-SCM.3 D.oblong) 'it (oblong)', or *tɛː-hɨ* (PN-SCM.2D.round) 'it (disc-shaped)'. Intuitively, reference tracking with such "shape-pronouns" is very different from reference tracking in languages with a standard three-way gender distinction, such as English. The difference is apparent in the difficulty of translating Miraña examples that include shape pronouns in an idiomatic way.

To account for the differences between Miraña and languages such as German, English, or Swahili (Bantu), it is proposed here to expand existing typologies of reference tracking (Comrie 1989b; see also Huang 2000: 8; Terrill 2001) by the addition of a "semantic typology of reference tracking", which systematically differentiates within the reference-tracking device "noun class". This involves two new major parameters: semantic domains and semantic motivation. In the parameter of semantic domains, the semantic content encoded in noun class markers is distinguished. This parameter thus describes which property of a nominal referent is systematically singled out with the use of a noun class marker in reference tracking. This parameter sets Miraña apart from languages such as English, which do not make use of shape as a semantic domain in reference tracking. The second parameter, the parameter of semantic motivation, describes the extent to which noun class markers encode properties of a referent at all, rather than being a reflex of arbitrarily assigned noun classes. This parameter sets Miraña apart from languages such as Swahili (Bantu), where the semantics of noun classes have also been argued to involve shape distinctions (e.g. Contini-Morava 1997). But this can only be shown through rather complicated assignment rules in Swahili, while the assignment of inanimate nouns to shape denoting class markers in Miraña is predominantly semantically motivated.

1.2.3. Background assumptions and terminological clarification

This study follows a descriptive tradition that is geared towards addressing typological questions. Therefore, an attempt is made to describe phenomena in a way that allows comparability and to use terminology that is widely accepted. However, linguistic description can never be theory-neutral and some of the notions used in the analyses in the course of this study are in fact highly contested in linguistics. Therefore, this section makes explicit some fundamental theoretical assumptions and clarifies the use of central terms, complementing the introduction to the terminology in the area of nominal

classification provided in section 1.2.1. Terms and notions that are applied only in individual chapters are discussed where they arise. This concerns in particular the theoretical background to countability and unitization (see section 8.2) and to anaphora and reference tracking (see section 9.2).

This study has a functional basis in that it attempts to account for linguistic structures primarily in relation to the communicative needs they serve, and not as instantiations of a (possibly innate) universal grammar. This concerns in particular the perspective that this study takes on the derivational use of class markers and their agreement use, which is described in the context of the reference-tracking system of the language. In accordance with a functional perspective, typological regularities are viewed as recurrent mappings of function and morphosyntactic structure. I thus generally follow a functional-typological tradition, as defended in, e.g. Hopper and Thompson (1980), Foley and van Valin (1984), Comrie (1989a), T. Payne (1997), Givón (2001), and Croft (2003).

In accordance with a general functional approach, it is assumed that complex constructions are form-meaning pairs that may be stored in the lexicon, even though there are regularities in their formation (cf. Grace 1987: 88; Langacker 1987a: 40ff.; Pawley 1993). For instance, a combination of a noun root with a class marker like *ɯ́hɨ-hɨ* (banana-SCM.2D.round) 'seed of a species of wild banana' can be analyzed according to the meaning of its elements as 'a disc-shaped object of banana substance', but the restriction of its meaning to 'a seed of a species of wild banana' (excluding any other disc-shaped object made of any other species of banana, e.g. a slice of a banana fruit), is not predictable. Therefore the combination as a whole must be considered to be conventionalized to some degree and thus an element of the lexicon, even though the meaning contributions of the individual parts are clearly distinguishable.

As already indicated in section 1.2.1, above, the notion of agreement is essential in the analysis of Miraña class markers. I use the term agreement to include what has been traditionally called cross-reference, i.e. agreement on the verb. With respect to the function of agreement, I follow the approach taken by Barlow (1992, 1999; see also Contini-Morava 1996; Lehmann 1988) in assuming that, like anaphora, agreement is essentially a referential phenomenon. In this view an agreement relation is primarily a link between discourse referents rather than an exclusively syntactic relation: "Discourse entities are introduced (typically by nouns) and, in addition, uttering a word containing agreement morphemes causes secondary discourse referents to be added to the discourse and these secondary discourse referents are linked to the

primary discourse referents" (Barlow 1999: 196). This view is consistent with the general functional approach taken here in that it aims at explaining the phenomenon of agreement not as a (possibly meaningless) syntactic phenomenon, but in relation to the meaning that is being conveyed. For a description of the morphosyntactic properties of agreement in Miraña, I follow the approach taken by Corbett (2003a; 2003b, forthcoming), which acknowledges that agreement phenomena in individual languages may be more or less canonical instances of agreement according to a number of criteria.

Agreement is closely related to anaphora in that anaphorically used pronominal expressions often agree with their antecedents in categories such as noun class. I understand 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)" (Levinson 2000: 267; for similar definitions see Huang 2000: 1; Austin and Stirling 2001: 5). Anaphora in this sense typically occurs across sentence boundaries.[6] Following Levinson (2000), it is assumed that pragmatic implicature plays a crucial role in the interpretation of anaphoric expressions. Furthermore, I assume that the distribution and interpretation of anaphoric expressions is intrinsically linked to local discourse surroundings (see Fox 1987). Therefore, the study of the anaphoric use of class markers in chapter 10 systematically takes into account units of the hierarchical structure of discourse, most importantly sequences.

1.3. THE MIRAÑA PEOPLE AND THEIR LANGUAGE

1.3.1. Ethnography and history

Miraña is the language spoken by the Miraña people of the North West Amazon. The approximately 400 Mirañas live in four dispersed communities along the Caquetá river amidst the vast and largely uninhabited rainforest of the Colombian Amazon region (see Map 1). Like their neighbors, the Mirañas are horticulturalists, planting mainly manioc and some banana. The men hunt and fish. Although their economy is still mainly self-sufficient, Mirañas take part to some degree in market economy, selling products of the rainforest and buying

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[6] The term anaphora as it is used here is thus different to the term "Anaphora" (with a capital "A") as it is used in the tradition of Generative Grammar (e.g. Chomsky 1981), where it is used to refer to syntactically controlled coreferential expressions within one sentence.
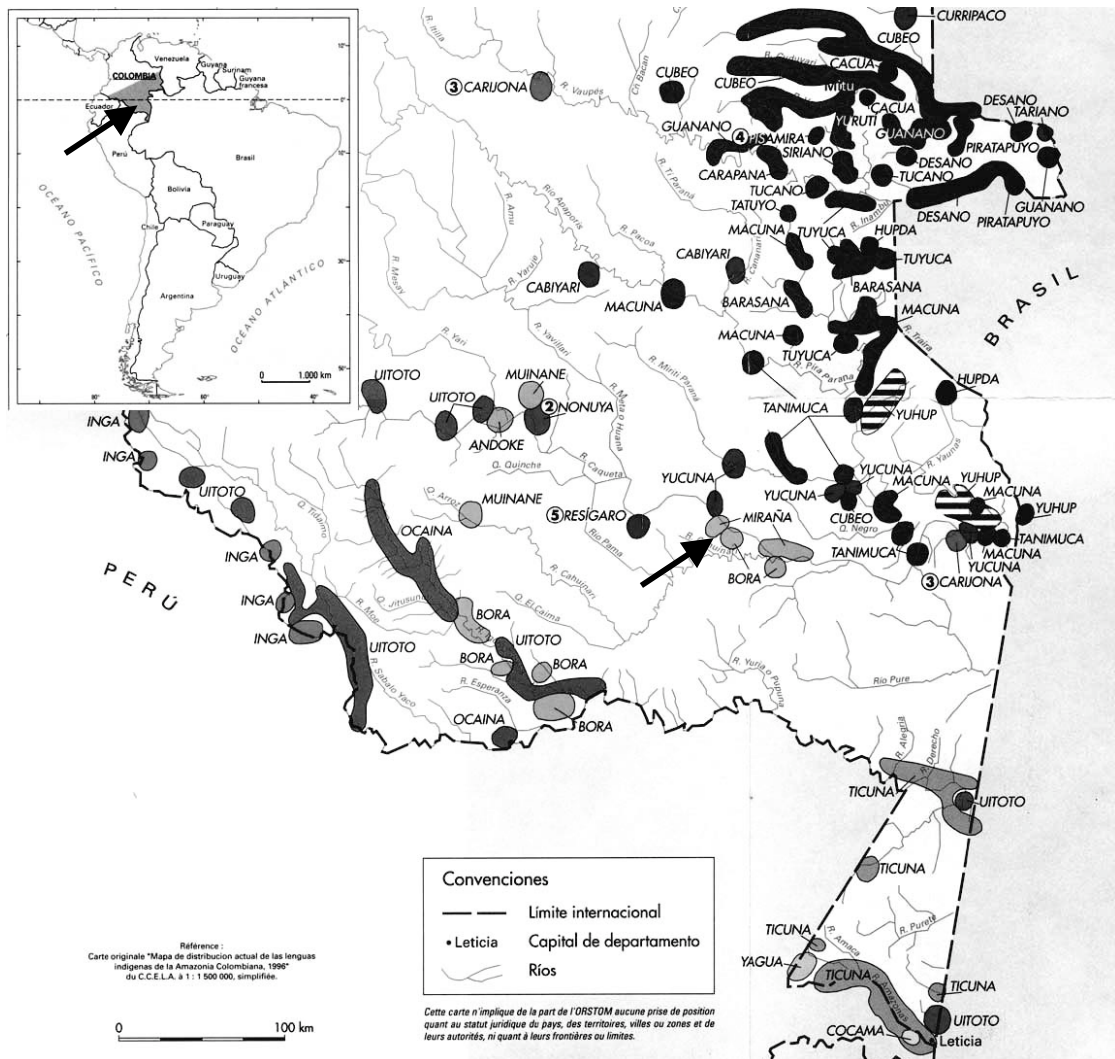
Map 1: The location of Miraña settlements in the Colombian Amazon region [a]

[a] Source: Queixalos and Renault-Lescure (2000), based on a map produced by the Centro Colombiano de Estudios de Lenguas Aborígenes - CCELA. The small map in the top left corner indicates the location of the Colombian Amazon region in South America, parts of which are shown in the large map. The dashed lines indicate international borders. The light grey lines stand for rivers. The differently shaded areas indicate the location of indigenous settlements—some of them consisting only of a few houses—speaking languages of different genetic affiliation.

sugar, clothes, fishhooks, etc., in the nearby towns of Araracuara and La Pedrera, each about a one-day ride in a motorboat away. The Mirañas form part of a larger group that calls themselves People of the Center (Spanish *gente del centro*, Miraña *pí:nɛ múna*; cf. Echeverri 1997). The ethnographic features of this cultural complex include the ritual ingestion of pounded coca leaves and tobacco in a liquid form. Despite speaking mutually unintelligible languages, the People of the Center share to a large extent their ceremonial systems. Their

patrilineal clans also cut across the linguistic boundaries of the seven ethnolinguistic groups that comprise the People of the Center. Two of these groups speak languages of the Boran branch of the Witotoan linguistic family (Muinane and Miraña, along with its dialectal variant Bora), three further languages belong to a different branch of Witotoan (Witoto proper, Ocaina, and the almost extinct Nonuya). The remaining two languages are the linguistic isolate Andoke and the Arawak language Resígaro. The main contact languages of Miraña are the languages spoken by groups that make up the People of the Center. Other languages in contact with Miraña are the Arawak language Yucuna, the Carib language Karijona, and a number of Eastern Tucanoan languages, such as Tanimuca and Makuna.

The first historical documents of the Mirañas date to the mid 18th century when they entered into contact with Portuguese merchants (see Llanos Vargas and Pineda Camacho 1982). In 1820, the German botanist von Martius collected a word list (Martius 1969 [1867]: 277), which is the oldest available document of the Miraña language, from a group of "Miranhas" who exchanged slaves for western merchandise with Portuguese traders (Spix und von Martius, 1966 [1823-1831]: 1241ff.). The term "Miraña" comes from Tupí, the *lingua franca* used between Portuguese merchants and indigenous people. It probably derives from Tupí *mira* 'people' and *nhané* 'to run' and would mean 'people that run, vagabonds' (Martius 1969 [1867]).

The more recent history of the Mirañas and the rest of the People of the Center is overshadowed by the genocidal events during the period that was euphemistically termed the "Rubber Boom". Starting in the late 19th century, rubber gatherers began to intrude into the traditional territory of the Mirañas between the Caquetá and the Putumayo rivers. The most powerful and notorious rubber company, the Peru-based *Casa Arana*, in effect enslaved the indigenous population in a system that was disguised as an exchange of rubber for machetes, axes, pots, etc. (see Casement 1998 [1909]). The People of the Center suffered a tragic demographic decline as a result of the atrocities committed by the *Casa Arana*, which included torture and deliberate murder. Casement (1998 [1909]) estimates that at least 30,000 lives had been lost by 1909. Around the same time, the population of the People of the Center was estimated by Whiffen (1915: 59) at about 15,000 Witotos, 15,000 Boras (Whiffen does not distinguish between Mirañas and Boras), 2,000 Ocainas, 2,000 Muinanes, 1,000 Nonuyas, 1,000 Resígaros, and 10,000 Andokes. By the 1930s, the number of surviving members of these groups was diminished to a total of a few thousand (Paredes Pando et al. 1979).

A major part of the population of the People of the Center—including many Boras, but no Mirañas—were relocated by the rubber gatherers to Peruvian territory when in the early 1930s the Colombian government reclaimed the territories that the Peruvian *Casa Arana* had been operating in. Contemporary Mirañas are descendants of a group of people that fled from the atrocities of the *Casa Arana* towards the North, where they lived among the Arawak group Yucuna on the river Mirití Paraná for a number of years. In the 1950s, the Mirañas began to reorganize themselves as an ethnic group on the Caquetá river. Nowadays they live in officially recognized reserves, where they have community schools and basic medical facilities. They take part in projects with governmental and non-governmental organizations, to the extent that this is possible in a situation that is characterized by the occasional military activities of guerrillas and the army as well as the periodic presence of the cocaine mafia and illegal gold miners.

1.3.2. Language endangerment

The current sociolinguistic situation of the Miraña communities of the Caquetá river is characterized by an advanced stage of language shift towards Spanish, in combination with a process of transculturalization towards mainstream Colombian national society. There are no monolingual speakers left, or speakers that would be multilingual in various indigenous languages, but not Spanish. No children learn Miraña as their first language and many of them are learning only Spanish. Some members of the younger generation may still be able to understand the indigenous language to some degree, but they are unable to speak it. Intermarriage forced by the reduced population is a major factor in this language shift. There is an increasing number of couples with mixed linguistic backgrounds. They choose Spanish as a language for everyday conversation, which then becomes the only language that is passed on to their children. In none of the newly introduced domains, such as school, health care, and administration, does Miraña play an important role. Not a single domain remains that would be exclusively occupied by indigenous languages, with the possible exception of the occasional performance of songs at traditional festivals. Even during culturally important events such as the retelling of myths at nightly meetings among men, nowadays it is often only Spanish that is spoken. Also in the domains that are of high quality for language maintenance (cf. Himmelmann 1995: 5; to appear), i.e. frequent and thematically non-restricted domains such as informal conversation, Miraña is increasingly being replaced by Spanish. Of the approximately 400 Mirañas, well below 25% regularly and spontaneously use their ancestral language. Some efforts have been undertaken recently to revitalize the Miraña language. One of them is the

standardization of the writing system, mainly for the purpose of elaborating teaching materials to be used in the community schools (Seifart and Miraña 2002).

The language shift process among the Bora seems to be somewhat less advanced. In the Colombian Bora communities (see Map 1) the language can be heard more often than among the Mirañas, even though here, too, there is a clear tendency towards shifting to Spanish as the main language in more and more domains. There are about 1,000 Boras living in Peru, mainly along the Ampiyacu river and its tributary, the Yaguasyacu (see 1.3.1). In some of the Peruvian communities (towards the headwaters of the Yaguasyacu) the language is still used in many everyday situations and acquired by children. However, encouraged by missionary activities of a number of protestant churches, these communities are now in a rapid process of transculturalization towards Peruvian national society, in which the use of Bora is declining.

1.3.3. The genetic affiliation of Miraña

Miraña and Bora are so closely related that from a linguistic point of view they can be considered dialectal variants. They probably represent two points on a dialectal continuum along the Cahuinarí river (see Map 1)—Miraña at the North East and Bora at the South West—which was torn apart during the Rubber Boom. Nevertheless Miraña speakers firmly consider themselves a separate ethnic group with their own language. The main linguistic differences between Miraña and Bora lie in the phonology. The phonological differences pertain mostly to the process of palatalization (see section 2.2.2), which is not as wide-ranging in Miraña as it is in Bora (see also Aschmann 1993: 20). As might be expected in linguistically closely related but geographically distant dialects, there are also a few—I have noted about 20—lexical differences, e.g. in designations for newly introduced objects, for instance Miraña *gwatsíʔhuɨgwa* 'machete' vs. Bora *nɨːtsúɨgwa* 'machete'. Miraña and Bora additionally differ in two very frequent grammatical morphemes. First, the perfective marker in Miraña *-ko* takes the form *-huɨko* in Bora. Second, the question marker *-hɯ* of Miraña does not exist in Bora. Further minor differences are noted in the chapters below.

Miraña and Bora are relatively closely related to Muinane. On the basis of a comparative list of about 350 words, Aschmann (1993) calculates 73% to 76% cognates between Bora and Muinane. The similarities in morphosyntactic structures between Muinane and Miraña are also plain to see, for instance in

their systems of nominal classification (see Vengoechea 2000, 2001a; Seifart 2003b).

Aschmann (1993) further argues for a linguistic family "Witotoan" which would unite the Boran and Witotoan languages (but see Landaburu 2000: 41). Aschmann found 25% to 35% cognates between Proto Bora (established from comparison of Bora and Muinane) and Proto Witoto (established from comparison of Witoto and Ocaina, but not taking into account data from Nonuya). The hypothesis of a common genetic origin is less convincing when one takes into account that extreme re-lexification is not uncommon in the North West Amazon (see Suelly de Arruda Câmara Cabral 1995; Aikhenvald 2001). Morphosyntactically, the Witotoan languages are quite distinct from the Boran languages, and no cognates are found in core grammatical morphology, such as person or number marking. However, awaiting further comparative studies, Aschmann's (1993) hypothesis of a Witotoan linguistic family is adopted as a working hypothesis in this study.

1.4. FIELDWORK AND DATA

The data used in this study were collected on seven fieldtrips to the Miraña communities in Colombia between 1999 and 2002. On each of these trips, between one and two months were spent in the field. An additional fieldtrip was undertaken to the Bora communities in Northern Peru in 2003. Data collected on this trip were included in this study after carefully checking for consistency with data from the Miraña dialect in the relevant aspects (e.g. class marker forms). The database used in this study includes spontaneous speech data of different genres as well as data from controlled experiments, such as picture-object matching tasks and retellings of stimulus films. These data were recorded and later transcribed and translated by the author in collaboration with native speakers. Additional data come from (direct) elicitation, e.g. regarding the distributional properties of class markers.

1.4.1. Contributors

All speakers that contributed data speak Miraña as their first language. This means that data could only be collected from a part of the members of the Miraña communities. All contributors are bilingual in the local variety of Spanish, albeit to different degrees. While some of the elder speakers are not entirely proficient in Spanish, speakers younger than 50 are usually as proficient in Spanish as in Miraña. The main contributors are adults of all age groups (Table 1). They are mostly men, since these are generally more

accessible for linguistic work by a male fieldworker. The data from the speakers of Miraña itself (indicated in the last column in Table 1) was collected in the communities in Southern Colombia (see Map 1), while the speakers of the dialectal variant Bora reside in Northern Peru, except for Miguel *Ajnúhkuba*. The Spanish names of the contributors are given here, but some of them use a Miraña name (or nickname) as their middle name. Note that Mirañas usually use "Miraña" as their last name.

Table 1: Main contributors

code	name	sex	approximate age in 2002	dialect
ELI	Elio Miraña	male	18	Miraña
LIG	Ligia Miraña	female	30	Miraña
RAF	Rafael Miraña	male	32	Miraña
VIC	Victor Miraña	male	40	Miraña
AND	Andrea Miraña	female	50	Miraña
GREG	Gregorio Miraña	male	50	Miraña
IMI	Jose *Imi* Miraña	male	50	Miraña
ROB	Roberto *Piʔmúi* Miraña	male	50	Miraña
GWA	Luis *Gwajko* Miraña	male	52	Miraña
SAL	Salvador Miraña	male	52	Miraña
PET	Felix *Pɛtɛ́i* Miraña	male	70	Miraña
BER	Bernardo Miraña	male	70	Miraña
CLE	Clever Panduro	male	22	Bora
MIG	Miguel *Ajnúhkuba* Bora	male	25	Bora
RAQ	Raquel Churay	female	25	Bora
YOL	Yolanda Miveco	female	40	Bora
MM	Manuel Miveco	male	45	Bora
GZ	Gonzalo Churay	male	58	Bora
NUP	Florentina Ruiz	female	80	Bora

In addition to the main contributors, about 22 speakers contributed data to one or both of the experiments conducted in the course of this study (see section 1.4.2). These contributors are listed in Table 2. About half of these come from the Bora communities in Northern Peru.

Table 2: Minor contributors

code	name	sex	approximate age in 2002	dialect
ACE	Acevedo Miraña	male	20	Miraña
EST	Esteban Miraña	male	20	Miraña
JUV	Juvenal Miraña	male	22	Miraña
EVA	Eva Miraña	female	25	Miraña
FAV	Favio Miraña	male	28	Miraña
AZU	Hector Miraña	male	30	Miraña
SEV	Severiano Miraña	male	30	Miraña
GLO	Gloria Miraña	female	45	Miraña
ERN	Ernesto *Dʒoʔmái* Miraña	male	55	Miraña
CHE	Ceiva Miraña	male	70	Miraña
ADRI	Adriana Churay	female	22	Bora
IGI	Iginio Capino	male	22	Bora
JAO	Joaquín Meléndez	male	23	Bora
SON	Sonja Chavez	female	24	Bora
ANG	Ángel Meléndez	male	32	Bora
AME	Américo Meléndez	male	35	Bora
RID	Ríder Vasquez	male	35	Bora
CAR	Carmen Tello	female	35	Bora
FEL	Felipe Cupáy	male	40	Bora
ZAC	Zacarias Miveco	male	55	Bora
GUIL	Guillermo Paredes	male	65	Bora
RAFF	Rafaél Flores	male	65	Bora

1.4.2. Data types

The data used in this study fall into three broad types, that can be labeled natural, experimental, and 'elicited data. All recorded data used here are stored at the Max Planck Institute in Nijmegen. The structure of the corpus—but not the data—can be viewed in the World Wide Web under URL http://www.mpi.nl/world/corpus/index.html.

(a) natural data
Natural data consist of monological and dialogical texts of different genres. Most of these were produced on my request, i.e. I asked a speaker to tell a story or to explain a procedure to me or to another speaker. This kind of the data is called "staged communicative events" in the terminology of Himmelmann (1998: 185). Many of the recordings—in particular those from later stages of the fieldwork—also contain long stretches of informal conversation between Miraña speakers, not necessarily related to the main topic of the recording

session, for instance gossiping during the hour-long process of preparing soup or coca powder. This kind of data is called "observed communicative events" (Himmelmann 1998: 185), since it was not produced on request. Taken together, the database contains about 14 hours of digital (video and audio or only audio) recordings of natural texts that have been fully transcribed and translated. The approximate hours of text per major genre is given in Table 3. In addition to these, at least as many hours of recordings were made that are not (or only partially) transcribed and/or translated. Some of these document cultural events such as traditional festivals.

Table 3: Duration of recordings of natural text

main genre	approximate total hours
mythical texts	3 hours
narratives	1.5 hours
procedural texts	4 hours
descriptive texts	1.5 hours
informal conversation	2 hours
songs	1 hour

In Table 4 the natural texts contained in the database are listed, along with a code that is used for identification in the examples, the codes for the names of the main speakers and main interlocutors (see Tables 1 and 2, FS = the author), as well as the kind of recording (video or audio).

Table 4: Natural texts

session name	code	genre	main speaker	inter-locutor	video audio
banana planting	UHE	descriptive text	LIG	ACE	V
festival preparation	FTV	descriptive text	GREG	FS	A
juanzoco (rubber gathering)	JUA	descriptive text	BER	FS	A
What do your children do?	CHL	descriptive text	IMI	FS	A
origin signal drum	ORIM	mythical text	MM	various	V
arú:mɛba (turtle story)	ARU	mythical text	GWA	FS	A
carrizo1 (origin panepipe)	CAR1	mythical text	GWA	FS	V
cuento del venado (deer myth)	CDV	mythical text	GREG	FS	A
snail story	DC	mythical text	GWA	FS	A
origin *cerbatana* (blowgun)	OCER	mythical text	GWA	FS	A
hunting in the *Cahuinarí* river	PU	narrative	MIG	ROB	V
hunting story	CDC	narrative	IMI	FS	A
healing of *Gwahko*'s father	HPG	narrative	GWA	FS	A
How do you build a roundhouse?	MLK	procedural text	GREG	FS	A

Table 4: Natural texts (cont.)

session name	code	genre	main speaker	inter-locutor	video audio
blowgun making	CERB	procedural text	IMI	FS	A
traps *Gwahko*	TGW	procedural text	GWA	ELI	V
mouse trap making	DPK	procedural text	ROB	MIG	V
carrizo2 (panpipe making)	CAR2	procedural text	GWA	ACE	V
traps Gregorio	TGR	procedural text	GREG	FS	V
mojojoy (palmworm)	MOJ	procedural text	IMI	FS	A
coca powder making	COC	procedural text	VIC	FS	A
matafrio (manioc squeezer)	MAT	procedural text	VIC	FS	A
traps Manuel	TRMM	procedural text	MM	FS	V
traps *Nu:páhɨ*	TRNU	procedural text	NUP	FS	V
tucupí (soup) making	TUC	procedural text (incl. informal conversation)	AND	LIG	V
basket weaving	UVI	procedural text (incl. informal conversation)	AND	LIG	V
gourd utilility	GOU	procedural text (incl. informal conversation)	GWA	IMI	A
pot making	DZI	procedural text (incl. informal conversation)	MM	YOL	V
traps Gonzalo	TRGZ	procedural text (incl. informal conversation)	GZ	RAQ	V

(b) experimental data

The experimental data used in this study come from two kinds of experiments, the retelling of video stimuli, on the one hand, and a picture-object matching task, on the other hand.

Two video films were produced to investigate the tracking of inanimate referents by means of class markers. They are called "trunk clip" and "banana clip", after one of the main reference objects they feature, the trunk used by the fieldworker to carry equipment, and a banana, respectively. I produced these films in the field with Miraña speakers as actors handling objects familiar in the local context, such as calabashes, hats, and flashlights (see Photos 1 and 2). These objects are tracked as referents in the retellings (further information on the makeup of the films with respect to the research question is given in sections 10.3.2 and 10.3.3, below). The films run for about two minutes and three minutes, respectively. The procedure for obtaining data from the retellings of video stimulus films was as follows: A speaker was shown the film on the screen of a laptop computer two or three times. Then the speaker

was asked what he or she had just seen.[7] The experimental procedure is thus comparable to the pear story experiments (Chafe 1980). Retellings of the banana and trunk clips were collected from 24 speakers. The retellings of each clip are about 2 to 4 minutes long.

Photo 1: Scene from the trunk clip

Photo 2: Scene from the banana clip

The second experiment that contributed important data to this study is the "Shape Classifier Task" ("ShaClaTa" for short). This is a picture-object matching task comparable to other tasks developed at the Max Planck Institute in Nijmegen (such as those described in Pederson et al. 1998). The Shape Classifier Task was specifically designed by me to study the role of shape semantics in systems of nominal classification. The basic procedure of this task is as follows (for more information on the selection of the task objects with respect to the research question, see section 6.3.2, below; see Appendix A for a full description of the task and the material used). One speaker (the director; to the right in Photo 3) describes an arrangement of small wooden objects in a photograph to another speaker (the matcher; to the left in Photo 3). The matcher cannot see the photograph, but has to choose the right objects from a given set and then arrange them only according to the director's description. The director, on the other hand, has full view of the arrangement that the matcher is building. Data from four entire sessions were fully transcribed, translated, and are used in this study. Each of these sessions lasted about one hour, during which the arrangements from 20 pictures are rebuilt.

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[7] I was the addressee for the retellings in most trials. In a number of trials, however, the addressee of the retelling was a Miraña speaker who had not seen the film. The retellings in these trails did not display any important differences to the retellings that were given by the other speakers (where I was the addressee).

Photo 3: Running the Shape Classifier Task

(c) elicited data
In addition to data from natural texts and the experiments just mentioned, elicited data are used in this study, mainly for the description of the distributional possibilities of morphemes that are used to build nominal expressions. Given the variability in grammaticality judgments for some elements, e.g. polysyllabic class markers, such elicitations were cross-checked with at least two speakers. For the description of the semantics of class markers, visual stimuli, such as the objects from the Shape Classifier Task, were used as elicitation tools. The names of biological species were elicited with the illustrations contained in Emmons and Feer (1999) and Hilty et al. (1986). Additionally, Bedoya and Wild (1999) and La Rotta (1989) were consulted for the identification of biological species. The scientific name of a species is given where possible together with the local Spanish name, in order to allow cross-linguistic comparison, e.g. with the animal names[8] in Kubeo discussed in Gomez-Imbert (1996).

1.4.3. Conventions for data sources and data representation

Data sources are indicated in the examples by the abbreviations given in the tables above. The abbreviation for examples coming from overheard, naturally occurring discourse is "OV". As a rule, sources are given only for examples longer than one word. Other examples that are not further specified come from (direct) elicitation. Data from the video retelling experiments are indicated as

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[8] I use the term "animal names" throughout this study to refer to nouns denoting ethno-zoological species or genera, not individual animals.

BACLI-, for banana clip, or MACLI-, for the trunk clip (*mámamɨ* = trunk in Miraña), followed by the code of the speaker. Data from the Shape Classifier Task are identified by the codes of the speakers followed by the number of the picture, e.g. ROBERN01.

Line numbers are provided for continuous examples longer than two lines. Discontinuous examples from the same source and examples from different sources appear under separate numbers or letters (e.g. (1), (2), (3), a., b., c.). Translations of examples longer than one line are distributed (i.e. appear under each line of transcription) only when these lines coincide with prosodic and/or syntactic units.

The data are represented throughout this study in phonological transcription using the symbols of the International Phonetic Association (IPA, revised to 1993, updated 1996), except that IPA symbols that usually appear in superscript are represented in normal case, e.g. g^w is represented as *gw*, and affricates are written as digraphs, e.g. *tʃ*. Phonological transcription is used here because the practical orthographies used by some of the speakers do not represent all the phonological distinctions. These orthographies serve their needs, but they lead to unnecessary complications with respect to the identification of many forms that are affected by ubiquitous phonological processes, in particular progressive palatalization (see section 2.2.2).

1.5. THE STRUCTURE OF THIS STUDY

The chapters of this study are grouped into five main parts. The sketch grammar in the following chapter concludes the first, introductory part. Chapters 3 - 5 comprise part II. They are concerned with the morphosyntactic properties of the nominal classification system. This involves a description of the inventory class markers (chapter 3), the morphosyntactic contexts they occur in (chapter 4), and their functions in the context of noun phrases and as agreement markers (chapter 5). Chapters 6 - 8 form part III of this study, which deals with semantics. Chapter 6 analyses the semantic content of class markers. Chapter 7 is about semantic processes in classified nouns and the principles of noun class assignment. Chapter 8 is concerned with the unitizing function of class markers. Part IV of this study (chapters 9 and 10) focuses on the use of class markers as reference-tracking devices in discourse. Chapter 9 discusses theoretical issues in the area of reference tracking and anaphora and presents the structural resources for reference tracking in Miraña. Chapter 10 offers an analysis of the discourse pragmatic functions of class markers used as anaphoric devices. Finally, Part V contains chapter 11, which concludes this study.

2.1. INTRODUCTION

This chapter offers a description of the essentials of Miraña grammar. This information is provided here for two reasons: First, to give necessary information on the categories that interact with the system of nominal classification, for instance tonal marking of class marker constructions and the structure of relative clauses. Second, this chapter aims at providing an impression of the Miraña language as a whole, to help the reader fully appreciate the examples in later chapters. For a more detailed account, in particular with respect to phonology and tone, see Seifart (2002). In an initial phase, the grammatical description presented in this chapter has benefited from Thiesen's (1996) grammar of the closely related Bora and Weber and Thiesen's (2001) description of Bora tones. However, the analyses presented here are exclusively my own work, based on the Miraña data I collected.

Let me briefly summarize here the basic typological characteristics of Miraña grammar. These are as follows:
- relatively free word order, most common SOV
- nominative-accusative pattern
- case marking on arguments
- subject cross-referencing by class markers on verbs
- non-configurational noun phrases
- tense, aspect, and mood distinctions mainly expressed by clausal enclitics
- polysynthetic morphology
- almost exclusively suffixing
- complex tone system used for marking grammatical structures

The following sections describe the phonemic system (2.2) and the tonal system (2.3). Section 2.4 describes the important morphosyntactic categories. Section 2.5 summarizes this chapter.

2.2. PHONOLOGY

The following sections cover the phoneme inventory (2.2.1), progressive palatalization (2.2.2), and other phonological processes (2.2.3). Section 2.2.4 briefly discusses the syllable structure. In these sections, examples are given in phonemic transcription (between slashes, "/ /") and phonetic transcription (in square brackets, "[ ]") to illustrate the regular sound changes described here. Phonetic realizations are further affected by phenomena such as creaky voice in syllables with a low tone and a glottal stop in coda position, optional aspiration of voiceless stops, and "downdrift" of tones (see Anderson 1978: 138ff.), as can be observed in the examples below.

2.2.1. Phoneme inventory

Miraña has seven phonemic vowel positions in addition to a phonemic distinction of length (Table 5).

Table 5: Vowels

		front	central	back
simple	**closed**	i / i:	ɨ / ɨ:	ɯ / ɯ:
	open	ɛ / ɛ:	a / a:	o / o:
complex	**postpalatalized**		aj / aj:	

The following minimal pairs (examples 7, 8) illustrate that vowel length is distinctive.

(7)   a.   /a/   /nàmɛ̀/   [nàmɛ̰̀ʔ]   'feces'

      b.   /a:/   /nà:mɛ̀/   [nǎ:mɛ̰̀ʔ]   'sweet'

(8)   a.   /ɛ/   /mɛ̀mɛ̀/   [mɛ̀mɛ̰̀ʔ]   'name'

      b.   /ɛ:/   /mɛ̀:mɛ̀/   [mɛ̌:mɛ̰̀ʔ]   'palm, sp.'

A noteworthy fact about Miraña vowels is the existence of three unrounded closed vowels in the phonemic system. This is typologically highly unusual and provides evidence for a three-way distinction of backness in phonological

theory.[9] The following near minimal pairs (examples 9a vs. 9b, 9b vs. 9c) illustrate that these are phonemic distinctions.

(9)   a.   /iː/   /ĩːbà/   [ĩːbà̰ʔ]   'deer, sp.'

        b.   /ɨː/   /ɨ̃ːbàj/   [ɨ̃ːbà̰ʔ]   'fish, sp.'

        c.   /ɯː/   /ɯ̃ːbà/   [ɯ̃ːbà̰ʔ]   'worm, sp.'

Another unusual characteristic of the vowel inventory is the complex, postpalatalized counterpart to the central, open vowel /a/, which is /aj/. This vowel may cause palatalization of a following consonant. Its phonemic status is discussed in section 2.2.2, below. It is probably the result of a once highly frequent combination of /a/ and /i/ which was reduced to a single vowel (Aschmann 1993: 18ff.).

Table (6) gives the inventory of phonemic consonants.[10] Palatal stops and flaps (which appear in brackets in the table) are marginal in the system in that many—but not all—instances of these can be analyzed as allophones of the corresponding alveolar consonants (see discussion in section 2.2.2).

Table 6: Consonant phonemes

		bilabial		alveolar		palatal		velar		velar labialized (v'd)	glottal (v'less)
		v'less	v'd	v'less	v'd	v'less	v'd	v'less	v'd		
stops	nasal		m		n		(ɲ)				
	oral	p	b	t	d	(tj)	(dj)	k	g	gw	ʔ
affricates				ts	dz	tʃ	dʒ				
flap					ɾ		(ɾj)				
fricatives			β								h

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[9] See Parker (2001) for a phonetic study of the Bora vowel system, which seems to be identical to that of Miraña, and Parker (2000) for a discussion of the implications for phonological theory. Aschmann (1993: 124) notes that there is an unusual tendency to develop—and retain—high central vowels throughout Witotoan languages.

[10] In Thiesen and Weber's analysis (as reflected in Weber and Thiesen 2001; Weber 2002), the voiced-voiceless distinction in the corresponding Bora consonants is interpreted as a distinction of aspiration between voiceless consonants. I found that after Miraña voiceless consonants, the voice onset time (VOT) was consistently less than 25 milliseconds, supporting a characterization as non-aspirated, voiceless consonants (see e.g. Ladefoged and Cho 2001).

2.2.2. Progressive palatalization

Palatalization is a pervasive phonological process in Miraña. It affects all alveolar and glottal consonants, and it explains the existence of the complex vowel /aj/. It is also an important criterion for establishing word boundaries. In principle, alveolar consonants are palatalized by a preceding /aj/ or /i/ and their long counterparts, i.e. /t/, /d/, /n/, and /ɾ/ are then realized as [tj], [dj], [ɲ] and [ɾj], respectively. This is illustrated in examples 10a-g. The postpalatalized vowel /aj/ spreads its palatalization and is realized as an open, central vowel [a] in palatalization contexts (examples 10e-g).

(10) a. /mítànè/   [m̃ítjànɛ̀ʔ]   'big'

      b. /ídɛ́hɯ̀ɯ̀kò/   [ídjɛ́hɯ̀ɯ̀kò̰ʔ]   'behind'

      c. /ínè̀ʔɛ̀/   [íɲè̀ʔɛ̀ʔ]   'palm tree, sp.'

      d. /pí:ɾáβà:nè/   [pí:ɾjáβã̀:nɛ̀ʔ]   'black'

      e. /ájtáhɨ̀:/   [átjáhɨ̀:ʔ]   'my husband'

      f. /bájnèhɯ̀ɯ̀/   [báɲèhɯ̀ɯ̰̀ʔ]   'cigarette'

      g. /ájɾánɛ́gwɯ̀ɯ̀:/   [áɾjánɛ́gwɯ̀ɯ̀:ʔ]   'a little bit'

Palatalization also takes place if a glottal stop (example 11) or glottal fricative (example 12) intervenes between the vowel that causes palatalization and the alveolar consonant.

(11) a. /íʔnɯ́ɯ́gwà:/   [íʔɲɯ́ɯ́gwã̀:ʔ]   'wing'

      b. /dájʔnɯ̀ɯ̀:/   [dáʔɲɯ̀ɯ̀:ʔ]   'Burn!'

(12) a. /íhtò:/   [íçtjò̰:ʔ]   'horn'

      b. /tsájhtɛ̀:/   [tsáhtjɛ̀:ʔ]   'Take away!'

If /t/, /d/, /n/ and /ɾ/ are followed by /i/, they are not palatalized (examples 13a-d). This also holds if a glottal stop intervenes (example 13c-d). Since the postpalatalized vowel is nevertheless realized as non-postpalatalized, the opposition between postpalatalized vowels and non-postpalatalized vowels is neutralized in this context (example 13d).

(13) a. /dʒíɾ̀ì̀ʔdʒò/   [dʒíɾ̀ì̀ʔdʒò̰ʔ]   'pot'

      b. /mà:kínì/   [mà:kínì̀ʔ]   'three'

	c.	/tʃì?rí?ò/	[tʃḭ̀?rí?ò̰?]	'fish, sp.'
	d.	/táj?nígwàʉ̀/	[tá?nígwàʉ̰̀?]	'my head'

The glottal fricative /h/ in syllable onset position is realized as [ç] after /aj/ and /i/ (examples 14a-d). This also holds if it is followed by /i/ (examples 14c) and if a glottal stop intervenes (example 14d).

(14)	a.	/bádʒì:hʉ̀/	[bádʒì:çʉ̰̀?]	'dust'
	b.	/gwàj:hʉ̀/	[gwä:çʉ̰̀?]	'mosquito, sp.'
	c.	/mí:hídʒèhɨ̀/	[mí:çídʒèhɨ̰̀?]	'mole'
	d.	/táj?hʉ̀:/	[tá?çʉ̰̀:?]	'my mouth'

If a postpalatalized vowel /aj/ is followed by a glottal stop in syllable onset position, the palatalization is realized as [j] after the glottal stop (example 15).

(15)		/tʉ́ʉ̀hpàj?ɛ̀/	[tʉ́ɯ̀χpà?jɛ̰̀?]	'tree, sp.'

Most occurrences of the palatal stops [ɲ], [dj], [tj], as well as [ɾj] and [ç] can be accounted for by progressive palatalization in the context of /i/ and /aj/. However, these segments also appear in a few exceptional words such as onomatopoeic words (examples 16a-j), among them onomatopoeic animal names (examples 16e-j), diminutive forms of addressing and proper names (examples 16k-l), and loanwords (example 16m).

(16)	a.	[tjò̰?kà̰?]	'wave'
	b.	[ɾjàhɾjábà̰?]	'flint stone'
	c.	[ɲò̰?ɲáɪ̰̀?]	'yuruparí-trumpet'
	d.	[ɲó?ɲò̀:bɛ̰̀?]	'He is sucking'
	e.	[tjò̰?hɨ̰̀?]	'ant eater, sp.'
	f.	[ɲà?ɲáɾò̰?]	'duck, sp.'
	g.	[ɾjʉ̀:ɾjʉ́ɾ?ò̰?]	'bird, sp.'
	h.	[ɾjò̀:?ì:?]	'bird, sp.'
	i.	[tjʉ̀:ɾjá?ò̰?]	'woodpecker, sp.'
	j.	[ɲà:mɨ́?ɛ̰̀?]	'small fish, sp.'
	k.	[ɲáhmèh]	'little brother/sister'

l.   [tjʉ̀ːpáʔjɛ̀ʔ]   'proper name (diminutive form)'

m.   [ɾjòːmáʉ̀ʔ]   'rheumatic deformation'
                              (from Spanish *reuma* 'rheumatism')

The words in example 16 are a complete list of instances of palatal stops outside of palatalization contexts in a representative lexical database consisting of over 1000 words. Palatal consonants are otherwise treated as allophones of corresponding alveolar consonants, mostly for reasons of parsimony. If they were analyzed as independent phonemes, allomorphs would have to be specified for all lexical roots that begin with alveolar consonants or a glottal fricative which is not followed by /i/. These consonants are always palatalized when such a root is preceded by forms such as /i-/ (third person possessor, same subject), /taj-/ (first person possessor) or /di-/ (second person singular possessor or imperative singular).[11]

The palatal affricates, on the other hand, clearly have a phonemic status, since they occur frequently outside of palatalization contexts, e.g. at the beginning of words (examples 17a, b) and after vowels other than closed front or postpalatalized vowels (examples 17c-d).[12]

(17)   a.   /dʒɛ́ːbòːbɛ̀/   'he listened'

       b.   /tʃɛ́mɛ̀ːbɛ̀/   'he is ill'

       d.   /táʉ́ɪhtʃàgwà/   'my jawbone'

       c.   /dòdʒíɾíhkòːbɛ̀/   'he turned around'

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[11] In Bora, the frequency of palatal alveolar consonants outside palatalization contexts appears to be somewhat higher, and palatalization is realized also on other consonants. Thiesen and Weber thus analyze all Bora palatalized consonants as fully phonemecized units (see Thiesen 1996; Weber and Thiesen 2001; Weber 2002). This analysis avoids positing a postpalatalized vowel, but it increases the complexity of the consonant inventory considerably. This is a case of only a slight interdialectal phonetic difference that leads to drastically different phonemic systems.

[12] According to Aschmann's (1993) reconstruction the Bora phonemes /tʃ/ and /dʒ/ are reflexes of two distinct consonants of Proto Bora, only one of which is the result of palatalization.

2.2.3. Other phonological processes

Besides progressive palatalization, regular phonological processes in Miraña include vowel harmony and two types of regressive consonant dissimilation. These processes occur only within words, not across word boundaries.

A closed, palatal vowel /i/ is realized as [ɨ] if it is followed by another /ɨ/ in the same word (example 18a), but not across word boundaries (example 18b). This shows that the second person singular possessor marker /di-/ is a prefix (example 18a), while the genitive construction in example 18b consists of two separate words.

(18) a.   [dɨ́mɨ̀:nɛ̀ʔ]
              / dí-mɨ̀:nɛ̀ /
                POS.2S-canoe
              'your canoe'

      b.   [pìʔmɯ́ɨ́   mɨ̀:nɛ̀ʔ]
              / pìʔmɯ́ɨ́   mɨ̀:nɛ̀ /
                proper_name canoe
              '*Piʔmúɨi*'s canoe'

A voiceless velar stop /k/ is realized as a voiceless glottal fricative [h] if the immediately following syllable also includes /k/ (example 19a), but only if this syllable belongs to the same word (example 19b).

(19) a.   [pìçhɯ́ɨ́kò̰ʔ]
              / pìhkɨ́ɨ́-kò /
                fish.NMZ-SCM.1D.pointed
              "fishing rod"

      b.   [mɨ́mɨ̀:ʔókò   kómɨ̀:ʔókɯ̰̀ʔ]
              / mɨ́-mɨ̀:ʔó-kɯ̀ɨ   kó-mɨ̀:ʔó-kɯ̀ɨ /
                two-SCM.hard.shell-DL wood-SCM.hard.shell-DL
              "two (pieces of) bark"

There is a tendency for only one heavy syllable (with a long vowel or with a glottal fricative or stop in coda position) to occur per word. Heavy syllables can be reduced to light syllables for this reason. Example 20 illustrates how the glottal fricative in coda position of the first syllable of a verb stem is reduced to a light syllable with a short vowel after adding a suffix with a heavy syllable.

(20) a.   [ó **tsàh**tjɛ́ʔį̀ʔ]
            / ó **tsàjh**tɛ́-ʔì /
              1S bring-PRD
            'I brought'

      b.   [ó **tsá**tjɛ̀ʔíhkáʔį̀ʔ]
            / ó **tsájh**tɛ̀-ʔíhká-ʔì /
              1S bring-HAB-PRD
            'I always brought / used to bring'

A final phonological process that needs to be mentioned is that many suffixes (including class markers) lead to lengthening of a preceding vowel (example 21a), or the addition of a glottal stop (example 21b), or a glottal fricative (example 21c) to the preceding syllable.

(21) a.   [tsà:bà̰ʔ]
            / tsà-:bàj /
              one-SCM.cont
            'one (container)'

      b.   [tsàʔbɛ́gwà̰ʔ]
            / tsà-ʔbɛ́gwà /
              one-SCM.stack
            'one (stack)'

      c.   [tsàhtò̰ʔ]
            / tsà-htò /
              one-SCM.spine
            'one (spine-shaped)'

2.2.4. A note on syllable structure

Since phonetic realizations are quite distinct from underlying phonological representations according to the phonological analysis presented above, it is useful to speak of phonetic and phonological syllables in Miraña. At the phonetic level, one may posit the following syllable structure: $(C_1)V_1(V_2/C_2)(C_3)$ with the restrictions that V_2 must be identical to V_1, C_2 can only be filled by [h] or [ʔ], and C_3 can only occur if V_1 (and optionally V_2) are filled by [a], and can only be filled by [j]. Syllable structure at the phonological level is considerably simpler because under the current analysis there are a number of complex phonemes, namely long vowels and the unit /aj/. Thus the phonological syllable has the structure $(C_1)V(C_2)$ with the restrictions that C_2

can only be filled by [h] or [ʔ]. Which of these structures is more appropriate for the language is a question that deserves further study. It appears to be in part an empirical question and in part one of theoretical inclination, e.g., towards a segmental vs. autosegmental conception of phonology. For the current purpose, it is important to clearly distinguish heavy and light syllables. In the phonological syllable structure, heavy syllables are those in which V is filled by a long vowel and those where [h] or [ʔ] occurs in coda position. Note that at the phonological level, a long vowel can only bear a single tone (see section 2.3), which is an argument for considering it as a single unit. In the phonetic syllable structure, heavy syllables are represented as syllables with complex nuclei, which consist of sequences of identical vowels or sequences of vowels and [h] or [ʔ]. In any case, the complex unit /aj/ has no effect on syllable weight, irrespective of whether or where [j] is syllabified in the phonetic syllable, i.e. in coda or onset position.

2.3. TONE

Tones play an important role in derivational and inflectional processes as well as in the marking of syntactic structures in Miraña.[13] This includes nominalization of verbs and relative clauses, both of which involve class markers, as well as the class marker construction itself. The description in the following focuses on the tone assignment in these constructions. In addition, this section aims at giving a brief introduction to the complex tone sandhi rules that account for the ubiquitous tone alternations of forms when they appear in different contexts.

There are two phonological tones in Miraña, low (L) and high (H). The low tone is the marked value, while the high tone is generally assigned by default to syllables with no marked tone. The tone system does not count moras. All syllables, regardless of whether their nucleus is a long or short vowel, or whether a glottal stop or fricative occurs in coda position, are treated in the same way in the assignment of tones.

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[13] Miraña's sister language Muinane has a comparable tone system (Vengoechea 2001b; Walton et al. 2000) in addition to a complex stress system involving intensity (Vengoechea 1997). Ocaina also has two tone, but their functions seem to be more restricted than in Miraña (Doris Fagua, personal communication). Witoto Mɨka has word-initial stress (Petersen de Piñeros and Patiño Roselli 2000: 222). There is no information on tone or accent in and Nonuya. The Miraña tone system is comparable with equally complex tone systems in the neighboring Eastern Tucanoan languages (see Gomez-Imbert and Kenstowicz 2000).

Despite relatively strong distributional restrictions on tone patterns, the tone system in Miraña is too complex to be considered a pitch accent system (see Yip 2002: 257). In terms of the typology of tone languages proposed by Ratcliff (1992), Miraña is a "type B" tone language, characterized by a small number of distinctive tones that are mainly involved in marking grammatical structures, while lexical entries are discriminated by segmental morphology. By contrast, "type A" tone languages (common in South East Asia) have a larger number of distinctive tones used primarily to distinguish lexical entries and generally not used to mark grammatical structures.

Properties of the tonal phrase and tone sandhi rules that occur inside it are presented in section 2.3.1, followed by a discussion of lexical tones of segmental morphemes (2.3.2), tonal morphemes (2.3.3), and tones of class markers and the genitive construction (2.3.4). In these sections, underlying tones are represented within the morphological transcription (between straight lines, "| |"), while the tone patterns that result from tone sandhi and filling in default tones are represented in the phonological transcription (between slashes, "/ /"). Section 2.3.5 explains how tones are represented in later chapters.

2.3.1. The tonal phrase

One or more words can form a tonal phrase. Within a tonal phrase, there cannot be sequences of two low tones, except at its end. This constraint may cause blocking of tones. The end of a tonal phrase is marked with a low tone. The two words in the following example (22) form each a tonal phrase, each marked with a low tone at its end. The noun |mɨ̀:nɛ| 'canoe' has a lexical low tone on its first syllable. The high tone on the first syllable of /ímɨ-/ 'be good' is assigned by default, while the low tone on its second syllable is a realization of the floating tone of the class marker | L-mɨ- | (SCM.transport).[14] As a result, sequences of two low tones appear at the end of both words in example 22, marking them clearly as two separate tonal phrases.

---

[14] Floating tones are realized on the ultimate or penultimate syllable of the form which precedes the one to which the floating tone belongs. Floating tones that are realized on the ultimate syllable are represented in the morphological transcription by "L-". Those that are realized on the penultimate syllable are represented as "L-0-". The tones of class markers are in fact not floating tones of individual morphemes, but assigned by a rule, as discussed in section 2.3.4, below.

(22) / mɨ̀:nɛ̀   ímɨ̀-mɨ̀ /
      | mɨ̀:nɛ   imi-(L-mɨ) |
        canoe   good-SCM.transport
      'A canoe, a good one'

Derivational and inflectional morphemes, as well as clitics, are always part of the same tonal phrase as their host, and so are subject noun phrases that immediately precede a predicate (example 23). The low tone on the first syllable of /ìmí-/ 'be good' in example 23 is the realization of the floating tone of |L-0-ʔi| (PRD). The last syllable of |mɨ̀:nɛ| 'canoe' is assigned a default high tone inside the tonal phrase.

(23) / mɨ̀:nɛ́   ìmí-ʔì /
      | mɨ̀:nɛ   imi-(L-0-ʔi) |
        canoe   good-PRD
      'The canoe is good'

If two low tones are assigned to syllables that are adjacent inside a tonal phrase, one of them is blocked. When various tones are present in a given structure, this can lead to multiple layers of derivation of tone patterns, as illustrated in Figures 2 and 3. Figure 2 contains a finite verb form in which the floating tone of the class marker |L-:bɛ| (GCM.masc.sg) is blocked because of a lexical low tone on the syllable that precedes the one where it should be realized. Figure 3 illustrates tone derivation of a relative clause in which the lexical tone of |nàʔhɯ́ʔɛ| 'business' is blocked because of the presence of a subordination tone, on the second person subject pronoun which precedes |nàʔhɯ́ʔɛ| 'business' (see section 2.3.3). Note that unlike in Figure 2, the tone of |L-:bɛ| (GCM.masc.sg) is realized here.

```
ɨhtsa-mɛi-:bɛ (think-RFLX-GCM.masc.sg) 'He thinks'
 |  |   |  |  |
 |  |   L  |  |          lexical tone of |-mèi | 'RFLX'
 |  |   |  |  |
 |  |   | (L) |          tone of |L-:bɛ | (GCM.masc.sg) blocked by |-mèi| 'RFLX'
 |  |   |  |  |
 |  |   |  |  L          tonal phrase final low tone
 |  |   |  |  |
 H  H   |  H  |          default high tones within tonal phrase
 |  |   |  |  |
ɨhtsá-mèí-:bɛ̀
```
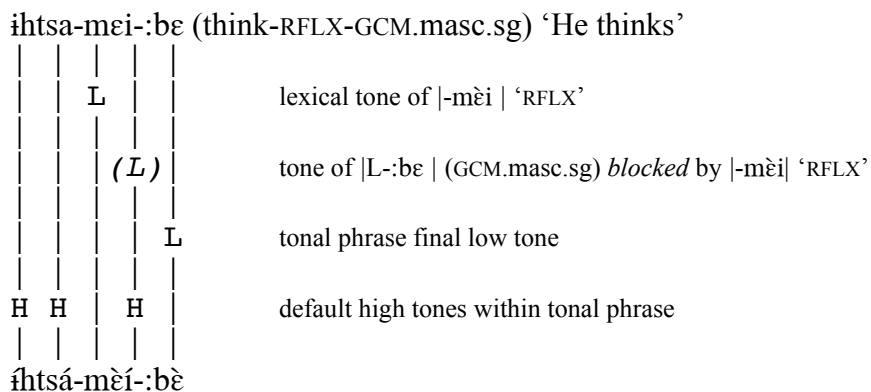
Figure 2: Blocking of a class marker tone

ɯ naʔhɯʔɛ-nɯ-:bɛ (2s.sub business-vbz3-gcm.masc.sg) 'whom you sold'

```
|   |   |   |   |   |
L   |   |   |   |   |       subordination tone
|   |   |   |   |   |
|  (L)  |   |   |   |       tone of |nàʔhɯʔɛ| blocked by subordination tone
|   |   |   |   |   |
|   |   L   |   |   |       lexical tone of |L-0-nɯ| 'vbz3' (verbalizer 'to do')
|   |   |   |   |   |
|   |   |   L   |   |       class marker tone of |L-:bɛ| (gcm.masc.sg)
|   |   |   |   |   |
|   |   |   |   L   |       tonal phrase final low tone
|   |   |   |   |   |
|   H   |   H   |   |       default high tones inside tonal phrase
|   |   |   |   |   |
```
ɯ̀ náʔhɯ̀ʔɛ́-nɯ̀-:bɛ̀

Figure 3: Blocking of a lexical tone

2.3.2. Lexical tones

All types of morphemes—grammatical morphemes or lexemes, bound or free—can have maximally one lexical tone. The following examples contain monomorphemic nouns that have lexical tone on the first syllable (24a), on the second syllable (24b), and no lexical tone (24c). Syllables that are not assigned lexical tone receive high tone by default. The last syllable of words pronounced in isolation receives low tone, marking the end of a tonal phrase.

(24)   a.   / **à**mánà /
               | àmana |
               'dolphin'

       b.   / kí**kì:**hɛ̀ /
               | kikì:hɛ |
               'bat, gen.'

       c.   / tsóhkómɯ̀ /
               | tsohkomɯ |
               'herb'

Bound, grammatical morphemes (i.e. derivational and inflectional morphemes and clitics) often have floating tones. For instance, the inflectional interrogation

marker |L-0-hɯɯ| has a floating tone that is realized on the penultimate syllable of the stem to which it is suffixed (examples 25a, b). Example 25b additionally illustrates that floating tones can cross more than one morpheme boundary. In this example, there is a derivational morpheme (the directional | -tɛ |; see section 2.4.3.5) between the syllable on which the floating tone is realized and the morpheme to which the floating tone belongs, |L-0-hɯɯ| 'INTER'.

(25)   a.   / ɯ́ɯ́   á**βɯ̀ɯ̀ʔ**kɯ́ɯ́-hɯ̀ɯ̀ /
                 | ɯɯ   aβɯɯʔkɯɯ-(L-0-hɯɯ) |
                  2S   wash-INTER
                'Did you wash (yourself)?'

       b.   / ɯ́ɯ́   áβɯ́ɯ́ʔ**kɯ̀ɯ̀**-tɛ́-hɯ̀ɯ̀ /
                 | ɯɯ   aβɯɯʔkɯɯ-tɛ-(L-0-hɯɯ) |
                  2S   wash-DIR1-INTER
                'Did you go wash (yourself)?'

2.3.3. Tonal morphemes

Tonal morphemes (with no segmental material) mark the imperative (discussed in section 2.4.3.4, below), nominalization of verbs, and subordinate clauses.

Nominalization of verbs is marked by a low tone on the first syllable of the verb stem. Example 26a is a finite verb form that includes a class marker as cross-reference marker. This verb is nominalized by a low tone on its first syllable in example 26b. After nominalizing a verb, a class marker can be added (example 26c). Note that the low tone of | L-:bɛ | (GCM.masc.sg)—which is realized in example 26a—is blocked in example 26c by the nominalization tone.

(26)   a.   / námɛ̀-:bɛ̀ /
                 | namɛ-(L-:bɛ) |
                  defecate-GCM.masc.sg
                'He defecates'

       b.   / **nà**mɛ̀ /
                 | nàmɛ |
                  defecate.NMZ
                'feces'

c.   / **nà**mɛ́-:bɛ̀ /
         | nàmɛ-(L-:bɛ) |
          defecate.NMZ-GCM.masc.sg
         'defecator'

Subordinate clauses are marked with a low tone on the syllable that precedes the predicate of the subordinate clause if it is part of the same tonal phrase. If the subject of this predicate precedes it immediately, it forms a tonal phrase with it and the subordination tone is realized on the last syllable of the subject noun phrase. The following example (27) is a relative clause that includes a class marker to indicate its head. Subordination is marked by a low tone on | o | 'first person singular', which is the subject in the relative clause (see Figure 3 for another example of a relative clause).

(27)   / hà: **ò**   ɨ́:tɛ̀-hà   âì:βɛ́-ʔì /
       | ha   ò   ɨ:tɛ-(L-ha)   ai:βɛ-(L-0-ʔi) |
        house 1S.SUB see-SCM.cover burn-PRD
       'The house that I saw burned down'

The subordination low tone necessarily leads to a high tone on the first syllable of the predicate of the subordinate clause since two adjacent low tones cannot occur in this position.[15] This "concomitant" high tone is conserved even when the low tone of subordination cannot be realized because there is no overt subject noun phrase in the subordinate clause, as in example 28. Therefore a concomitant high tone—such as the one on the first syllable of the verb / áí:βɛ̀-/ 'burn' in example 28—can be the only overt indication of subordination.

(28)   / táj-pàhkó-ɯ́ɯ = pɛ̀   ìhká-ʔí   **áí**:βɛ̀-há-ɾì /
       | taj-pahko-ɯ = pɛ   ihka-(L-0-ʔi) ái:βɛ-(L-ha)-(L-ɾi) |
        POS.1S-bag-SCM.3D.round=PAS COP-PRD   burn.SUB-SCM.cover-LOC
       'My bag was in what (i.e. house) burned down'

2.3.4. The tones of class markers and genitive constructions

Class markers do not have lexical tones, except for the general inanimate class marker |L-0-nɛ| and the general animate plural class marker |L-0-mɛ|. Class markers are assigned tones according to the number of syllables of the class

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[15] Weber and Thiesen (2001) analyze the corresponding structure in Bora as being marked with a high tone. At least for Miraña, such an analysis introduces an unnecessary complexity, since floating low tones and concomitant high tones are perfectly regular in the system.

marker as well as the number of syllables of the stem to which they are suffixed. If the class marker is mono- or disyllabic, a low tone is realized on the last syllable of the stem to which the class marker attaches (example 29a, b), except when that stem is monosyllabic and the class marker is disyllabic (example 29c-d).[16]

(29)　a.　　/ mó:**ʔò**-páhtsɨ̀ /
　　　　　| mo:ʔo-pahtsɨ |
　　　　　　liana, sp.-SCM.ring
　　　　　'a ring of liana'

　　　b.　　/ kátɯ̀:**βɛ̀**-gwà /
　　　　　| katɯ:βɛ-gwa |
　　　　　　fall-SCM.2D.straight
　　　　　'It (plank, bench, etc.) fell down'

　　　c.　　/ nɯ́:-ʔɛ̀hɯ̀ /
　　　　　| nɯ:-ʔɛhɯ|
　　　　　　smell-SCM.hole
　　　　　'nose'

　　　d.　　/ kɛ́-**ʔà:**mɨ̀ /
　　　　　| kɛ-ʔa:mɨ |
　　　　　　PN.INTER-SCM.leaf
　　　　　'Which (leaf, etc.)?'

These tone assignment rules apply irrespective of what kind of expression the class marker is suffixed to. The examples above include combinations of class markers with noun roots (29a, c), finite verbs (29b, 26a), the root of an interrogative pronoun (29d), and relative clauses (27, 28).

In the genitive construction two noun phrases are combined, where the first (the possessor noun phrase) modifies the second (the possessed noun phrase). The use of class markers on noun roots resembles the genitive construction formally and semantically, as discussed in section 5.2, below. Tone assignment in genitive constructions also resembles that in class marker constructions, for instance in case of polysyllabic first elements (i.e. possessor noun phrase or nominal stem a classified noun) and monosyllabic second elements (i.e. possessed noun phrase or class marker). In example 30a, the second element is a class marker, and in example 30b it is the possessed noun phrase of a genitive construction.

---

[16] The few class markers with more than two syllables (see section 3.3.2) appear to have irregular tone assignment.

(30)   a.   / dɛ̀íhh**ʉ̀**-gwà /
              | dɛ̀ihhʉ-gwa |
                spoon.NMZ-SCM.2D.straight
              'spoon'

        b.   / pì?mʉ́**ì**   hà /
              | pì?mʉi   ha |
              // proper_name house //
              '*Pi?mʉ́i*'s house'

However, if the possessor noun phrase (i.e. the first element) of a genitive construction is monosyllabic and the possessed noun phrase (the second element) is disyllabic, a low tone is realized on the last syllable of the possessed noun phrase. This contrasts with the tone assignment in the class marker construction. In examples 31a-b (see also examples 29c-d, above) a low tone appears on the first syllable of the class marker. In the genitive constructions in examples 32a-b, a low tone appears on the first element, the monosyllabic possessor noun phrase. Note, however, that the only examples to be found of monosyllabic possessor noun phrases of genitive constructions are possessor pronouns, which makes the contrast between the two constructions somewhat less clear.

(31)   a.   / bɛ́-**?ì**:bà /
              | bɛ-?i:ba |
                palm, sp-SCM.small.palm.tree
              'small palm tree, sp.'

        b.   / bá-**dʒì**:hʉ̀ /
              | ba-dʒi:hʉ |
                ash-SCM.powder//
              'ash'

(32)   a.   / **tàj**-ɨ́:bà /
              | taj-ɨ:ba |
                POS.1S-fish, sp.
              'my fish, sp.'

        b.   / **tàj**-pɨ́:kà /
              | taj-pɨ:ka |
                POS.1S-manioc
              'my manioc'

In summary, tone patterns help to establish class markers as a form class with respect to nouns. Class markers differ from nouns in that unlike nouns (see example 24a, b), class markers do not have lexical tone (except the two mentioned at the beginning of this section). Additionally, there is a minor, but observable difference in the tone patterns of class markers vs. those of genitive constructions.

2.3.5. Notes on the representation of tones

In the remainder of this study, tone patterns resulting from lexical tones and the application of tone sandhi rules are represented in the transcription. Only high tones are written, while the absence of a tone mark means low tone (not absence of a tone). I chose to write high tones for reasons of readability, even though this means that generally the default tones, not the phonologically marked tones are written. Tonal morphemes are identified in the interlinear glossing, e.g. the nominalized verb *mɛːnú-* (which has a nominalizing low tone on its first syllable) is glossed 'make.NMZ'. The lexical tones of individual morphemes and the underlying derivation of the tone pattern according tone sandhi rules are thus not usually specified, unless they bear on the argumentation.

2.4. MORPHOSYNTAX

This section provides an overview of the morphosyntactic structure of Miraña. It focuses on establishing parts of speech, on the one hand, and giving an overview of the expression of the major grammatical categories such as person, number, and tense, on the other hand. Nominal categories are only briefly discussed here, since these are dealt with in detail in the following chapters (3 - 5). This includes more detailed information on the formation of nominal expressions and cross-referencing by class markers on verbs (chapter 4), as well as on the genitive construction, the non-configurational nature of noun phrases, and agreement in noun class. The following sections discuss parts of speech (2.4.1) and categories associated with nominals (2.4.2) and verbs (2.4.3). Then, main clauses (2.4.4) and subordinate clauses (2.4.5) are dealt with, and finally clitics (2.4.6).

2.4.1. Parts of speech

Phonological criteria such as palatalization (see sections 2.2.3 - 2.2.4) and tonal criteria such as tonal phrase marking (see section 2.3.1) can be used for the

identification of word boundaries. In addition, words can be identified on the basis of morphosyntactic criteria. Words can move around in the clause relatively freely, while affixes occur in a strictly fixed order and are specific to word classes. Words are built from a number of different morpheme types. This section gives a brief overview of the major morpheme types and the major syntactic categories in Miraña. Morpheme types can be established formally by their distribution, on the one hand, and functionally by the function that the expressions formed with them plays in a clause. Only the most important criteria for distinguishing morpheme types are mentioned in this section, further justification for establishing these types is given in the sections below.

Miraña morphology is fairly polysynthetic and agglutinative in the sense that many meaning components are expressed in affixes and that each affix general carries only one, clearly identifiable meaning component. The forms of affixes undergo morphophonological changes such as palatalization and tonal changes. There is only one set of prefixes in Miraña (the possessor prefixes), all other affixes are suffixes. In addition to affixation, there are tonal morphemes (see section 2.3.3).

As a first step, morphemes from open classes, i.e. lexical roots, can be distinguished from morphemes from closed classes, i.e. grammatical morphemes. Within the set of lexical roots, noun roots can be distinguished from verb roots on the basis of the affixes that they combine with and the function that the words formed with these roots play in a clause. Verb roots combine with verbal affixes and can be used to form words that can function as predicates in a clause. Noun roots can combine with affixes that are specific to nominal expressions and can be used to form words that function as noun phrases in a clause. There are two main types of noun roots: repeater roots (that directly combine with number morphology and that can be used as class markers), and classifiable roots (that cannot directly combine with number morphology and that combine with class markers to form classified noun stems). Within classifiable noun roots, optionally classified noun roots (which may occur without class markers) are distinguished from obligatorily classified noun roots (which never occur without a class marker).

Noun roots are part of the larger category of nominal roots. This category also includes roots from closed classes, which are used to form third person pronominal expressions and numerals. Most of these roots are bound roots that cannot occur without a class marker. Another type of nominal expression are free non-third person personal pronouns. Nominal roots other than noun roots can also combine with nominal affixes and can be used to form words that function as noun phrases in a clause. The major types of nominal roots of

Miraña are summarized in Figure 4. Whether there are clearly distinguishable subtypes of verb roots (e.g. according to transitivity) is an issue that requires further investigation. This is an issue, however, that is not of primary interest for the main concerns of this study.

```
                                          repeater roots
                                          (free)
                        noun roots
                                                              optionally classified
                                                              roots (free)
                                          classifiable roots
                                                              obligatorily classified
                                                              roots (bound)
    nominal roots
                                          numeral roots
                                          (bound)

                                          third person
                        other nominal roots   pronominal roots
                                          (most are bound)

                                          non-third person
                                          pronoun roots (free)
```
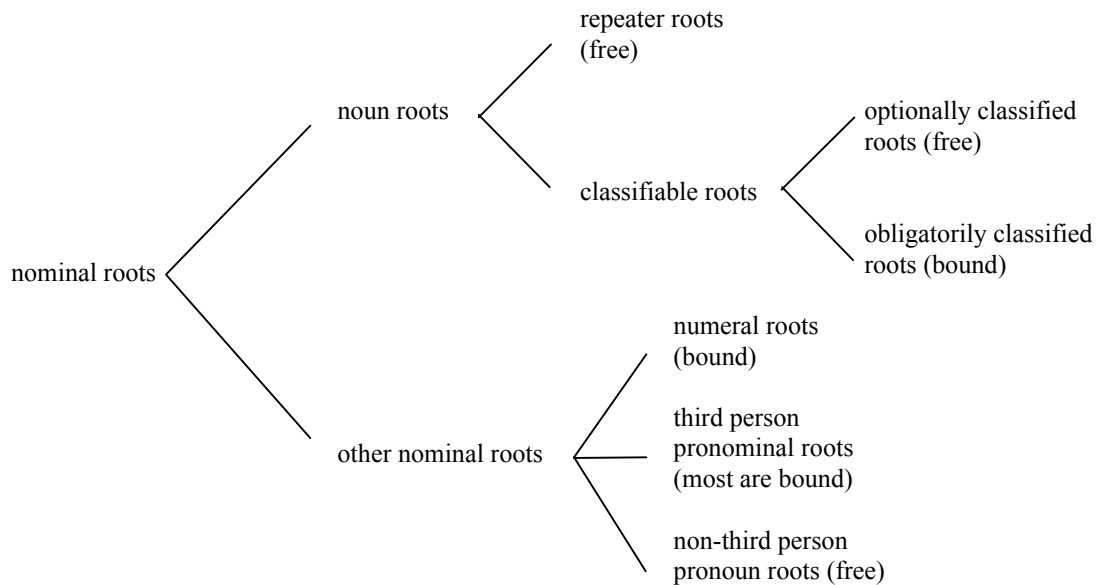
Figure 4: Nominal root classes

Roots can combine with derivational suffixes, forming stems. Stems are understood here as those forms that can combine with inflectional morphology. Stems may be either roots in combination with derivational morphology or bare roots that can be used as stems. Verb roots in combination with verbal derivational morphology form verb stems. Verb stems can be nominalized and then function like noun stems. Noun roots combine with nominal derivational suffixes, most importantly class markers, forming noun stems. Some noun roots can function as stems without further derivation (free noun roots, see Figure 4). The main types of nominal stems are summarized in Figure 5. The characteristics of each of these types are dealt with in much more detail below, in particular in chapter 4. Let me point out here, however, that bare optionally classified noun roots function as non-count nouns while other noun stems function as count nouns.
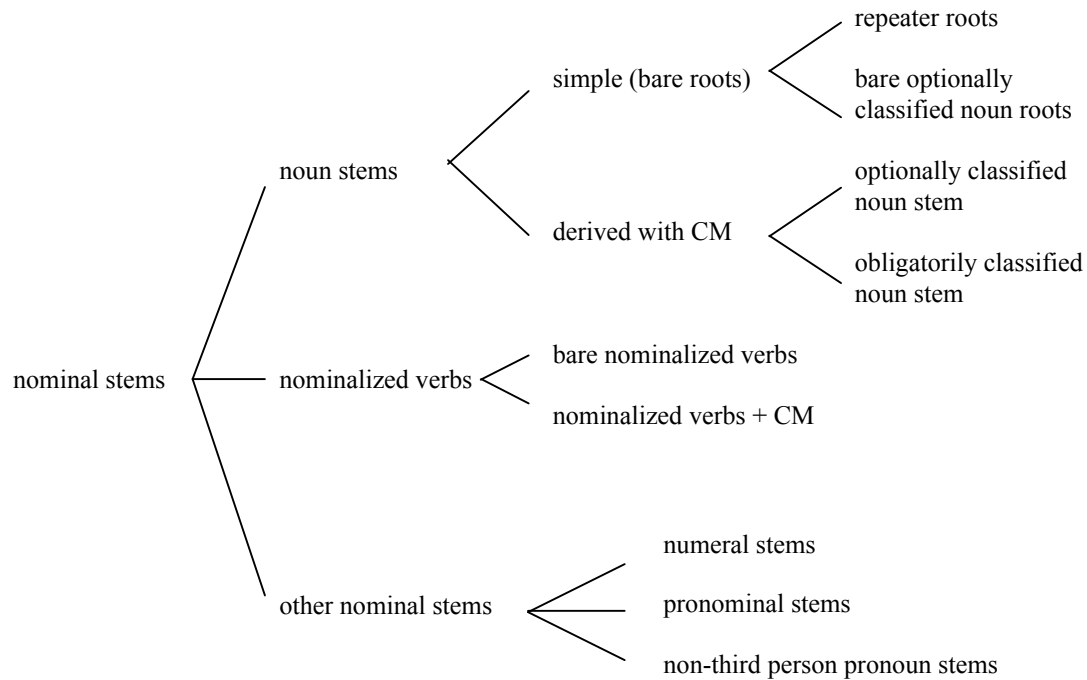
Figure 5: Nominal stem classes

Verb stems and nominal stems (Figure 5) combine with inflectional morphology to form words that can fulfill a function in a clause. Verb stems are bound and always combine with at least some verb-specific inflectional morphology, forming verbs. Nominal stems combine with inflectional morphology that is specific to nominals, forming nominal expressions. Pronominal stems and the stems of numerals are mostly bound and must combine at least with a class marker (which has an inflectional status in these expressions). The stems of on-third person pronouns and noun stems are free and can be used as noun phrases without inflection. Inflectional morphology helps to differentiate between the different kinds of nominal stems and roots: Noun stems take a different kind of plural marker than pronominal stems and the stems of numerals.

Class markers play a particularly important role in the formation of stems and words in Miraña. They are suffixes that can be used in nominal as well as in verbal expressions. They have two basic functions: On the one hand, they are used as derivational suffixes on noun roots, deriving noun stems. On the other hand, they are used as inflectional agreement markers on pronominal stems, stems of numerals, and verb stems (although some qualifications are made to this general statement in section 5.4, below). The exact function and status of the use of class markers is discussed in detail throughout chapters 3 to 8.

In addition to nominal and verbal roots, nominal and verbal derivational and inflectional affixes, and class markers, there is another important type of morpheme in Miraña: clitics expressing tense-aspect-mood distinctions. They are a closed class of morphemes that usually appear at the end of the first constituent of a clause. Like suffixes, they form a tonal phrase with their host and may undergo some of the phonological changes mentioned above (section 2.2.3). They can be distinguished from suffixes by the fact that their host may be any part of speech (while most affixes are specific to word class) and by the free order in which various clitics can be combined (while affixes occur in a strictly determined order). Furthermore, clitics have scope over an entire clause, not just the word on which they occur.

The morphemes discussed so far are used to build the following types of words: nouns, nominal expressions other than nouns, numerals, and verbs. To any of these, clitics can be attached. The issue of whether adjectives exist as a separate word class in Miraña deserves further investigation. To date, I have not found conclusive evidence for a separate part of speech that could be called adjective (be it at the root, stem, or word level). Rather, adjectival meanings are typically expressed by relative clauses (see section 2.4.5.1, below) or nominal expressions that include class markers (see section 4.8, below). Adverbs do not appear to exist as a separate word class either. Adverbial meanings are often expressed by subordinate clauses (see section 2.4.5.2). As minor word classes we can recognize particles such as the negation particle (see section 2.4.5.3, below) and interjections.

2.4.2. Nominal categories

2.4.2.1. Nouns, pronominal expressions, and personal pronouns

Nouns can represent arguments in a clause and receive case marking. They share these characteristics with nominal expressions from closed classes, such as personal pronouns, demonstratives, interrogative pronouns, and possessive pronouns. Inanimate nouns can be distinguished formally from pronominal expressions by the plural marker -:nɛ, which is exclusively used on nouns (see section 2.4.2.3, below). Animate nouns can be identified by their ability to combine with the general class marker form -mɯ, while pronominal expressions with animate referents combine with other forms of this class marker (see section 3.2, below). Pronominal expressions are built from bound, monosyllabic roots and class markers (as discussed in detail in section 4.3, below). They are distinguished from non-third person "personal pronouns", which do not combine with class markers (see section 2.4.2.2).

Nominal expressions are characterized by combining with the derivational and inflectional morphemes summarized in Figure 6. Note that some nominal expressions can include more than one class marker (see section 4.2.6, below).

(POSSESSOR)-ROOT-(CLASS MARKER(S))-(AUG/DIM)-(NUMBER)-(CASE)-(DECEASED)-(RESTRICTIVE)

Figure 6: Derivational and inflectional morphology used on nominals

The kinds of derivational and inflectional morphology given in Figure 6 can be used on nouns, pronominal expressions, numerals, and relative clauses (see section 2.4.5.1). Personal pronouns can only include case markers and the restrictive marker. The following sections discuss the expression of person (2.4.2.2) and number (2.4.2.3). Section 2.4.2.4 deals with other nominal categories. The case marking system is discussed in section 2.4.4.3, below.

2.4.2.2. Person

Person is expressed by free personal pronouns in Miraña. There are two types of personal pronouns: a small set of monosyllabic forms that make basic distinctions of person and number and a set of polysyllabic forms that make distinctions of dual vs. plural, inclusive vs. exclusive, and masculine vs. feminine.

The forms of monosyllabic personal pronouns are given in Table 7, which also shows the overlap of forms used in different contexts. Included in this table are imperative and possessor prefixes, and the third person same subject marker. Categories corresponding to cells marked with "X" are expressed with polysyllabic personal pronouns (see Table 8, below). Note that the form *mɛ* is used for first and second person in some contexts. It is therefore glossed 1/2PL.

Table 7: Monosyllabic personal pronouns

		non-subject function	subject in main clause	subject in subord. clause	possessor prefix	impera-tive prefix
singular	**1st person**	*o*			*taj*	n/a
	2nd person	*ɯ*			*di*	
non-singular	**1st person**	*mɛ*	*mɛ*		*mɛ*	*mɛ*
	2nd person	X			X	
any number	**3rd person**	X	Ø	*i*		n/a

Monosyllabic personal pronouns are obligatorily used for non-third person subjects (example 33). In this use, they have to directly precede the predicate (arguments for not considering these forms as prefixes are given below). In the absence of a polysyllabic personal pronoun in the same clause (see example 37, below), *mɛ* (1/2PL) is interpreted as first person plural inclusive or as 'impersonal' (example 33c).

(33)   a.   *o tsá:-ʔi*
                1S come-PRD
                'I came'

        b.   *ɯ tsá:-ʔi*
                1S come-PRD
                'You (sg.) came'

        c.   *mɛ   tsá:-ʔi*
                1/2PL come-PRD
                'We came / one comes'

In subordinate clauses, the third person pronoun *i* is used if the subject of the subordinate clause is the same as the subject of the main clause. This form does not distinguish number (examples 34a, b).

(34)   a.   *i   tsá:-bɛ   pé-ko:-:bɛ*
                3.SUB come-GCM.masc.sg go-PF-GCM.masc.sg
                'He, who came, has already left'

        b.   *i   tsá:-mɛ   pɛ-kó:-mɛ*
                3.SUB come-GCM.anim.pl go-PF-GCM.anim.pl
                'They, who came, have already left'

Example 35 illustrates the use of personal pronouns as direct objects with case marking. Given that these forms have the same morphological material and meaning as the personal pronouns that directly precede predicates, they are considered to be the same morphemes, which thus have the status of words, not as prefixes to predicates. In object function, *mɛ* (1/2PL) can only refer to 1st person non-singular (example 35c).

(35)   a.   *o:-kɛ   kábóʔko-:bɛ*
                1S-ACC beat-GCM.masc.sg
                'He beat me'

b.   *ɯː-kɛ   kábóʔko-ːbɛ*
        2SG-ACC beat-GCM.masc.sg
        'He beat you'

c.   *mɛː-kɛ   kábóʔko-ːbɛ*
        1/2PL-ACC beat-GCM.masc.sg
        'He beat us' (*He beat you)

Class markers that cross-reference the subject can be used with first, second, and third person referents. The following examples illustrate constructions in which the class marker *-dʒɛ* (GCM.fem.sg) is used for reference to first (example 36a), second (example 36b) and third person (example 36c). A class marker used as cross-reference marker can only refer to non-third person referents when there is an overt first or second person personal pronoun in the clause (examples 36a-b). In the absence of a personal pronoun, class markers are interpreted as referring to third person (example 36d).

(36)   a.   *o   tsáː-dʒɛ*
            1S.SUB come-GCM.fem.sg
            'I, who came' (female speaker)

        b.   *ɯ   tsáː-dʒɛ*
            1S.SUB come-GCM.fem.sg
            'You (female), who came'

        c.   *gwajhkóhɨ   tsaː-dʒɛ*
            proper_name come-GCM.fem.sg
            '*Gwajhkóhɨ*, she came'

        d.   *tsaː-dʒɛ*
            come-GCM.fem.sg
            'She came' (*I came, *You came)

To make finer distinctions in personal reference (i.e., dual vs. plural, inclusive vs. exclusive, masculine vs. feminine), polysyllabic personal pronouns are used. Their forms are given in Table 8. Note that from a typological perspective, it is unusual that there are more distinctions in the dual and plural forms (given in Table 8) than in the singular forms (see Table 7 for the singular forms), namely masculine vs. feminine.[17] Table 8 also includes the forms of

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[17] Cf. Greenberg's (1963) universal number 37: "A language never has more gender categories in nonsingular numbers than in the singular". Note that Miraña is not necessarily a counterexample to Greenberg's claim since this is usually interpreted as relating to language systems as a whole.

animate third person pronouns, which are formed with the root *di:-* and general animate class markers (see section 4.3.1). The forms given in Table 8 are apparently morphologically complex, even though the morphology that is recognizable inside them is only partially productive.[18]

Table 8: Polysyllabic personal pronouns

| | | number and noun class | | |
| | | dual | | plural |
		masc.	fem.	
1st person	exclusive	*múʔtsí*	*múpɨ*	*mú:ʔáj*
	inclusive	*mɛ:mútsi*	*mɛ:múʔpɨ*	*mɛ:muu:ʔáj*
2nd person		*ámuuʔtsí*	*ámuuʔpɨ*	*ámuu:ʔaj*
3rd person		*di:-tétsi*	*di:-tépɨ*	*di:-tɛ*

When polysyllabic personal pronouns are used in subject function, they are used in addition to *mɛ* (1/2PL) to distinguish dual vs. plural (examples 37a, b), masculine vs. feminine (examples 37b-c), inclusive vs. exclusive (examples 37c-d), and first vs. second person (examples 37c-d vs. e). Note that in this case, *mɛ* (1/2PL) can refer to second person referents (examples 37e).

(37) a. *mu:ʔáj   mɛ   tsá:-ʔi*
　　　　　1PL.EXCL 1/2PL come-PRD
　　　　　'We (more than two, exclusive) came'

　　　b. *múʔtsí   mɛ   tsá:-ʔi*
　　　　　1DL.MASC.EXCL 1/2PL come-PRD
　　　　　'We (two, at least one male, exclusive) came'

　　　c. *múʔpí   mɛ   tsá:-ʔi*
　　　　　1DL.FEM.EXCL 1/2PL come-PRD
　　　　　'We (two, females, exclusive) came'

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[18] The following meanings can be attributed to the morphemes that are recognizable inside these pronouns:

mu- 　'non-singular'
mɛ:- 　'second person included'
a- 　'not first person'
-tsi 　'masculine dual'
-pɨ 　'feminine dual'
-ʔaj 　'plural'

Note that the forms for masculine dual *-tsi* and feminine dual *-pɨ* also appear in the forms of animate class markers used in the third person pronouns, showing that polysyllabic personal pronouns are closely related to animate class markers.

    d.   *mɛːmúpɨ*   *mɛ*   *tsáː-ʔi*
        1DL.FEM.INCL 1/2PL come-PRD
        'We (two, females, inclusive) came'

    e.   *ámúʔpɨ́*   *mɛ*   *tsáː-ʔi*
        2DL.FEM.EXCL 1/2PL come-PRD
        'You (two, females) came'

2.4.2.3. Number

Number is obligatorily marked on all nominal expressions, with the exception of non-count nouns (which do not combine with number markers at all) and nominal expressions that are formed with the general inanimate class marker (where number marking is optional, see chapter 8 for details). On nominal expressions that are formed with general animate class markers, number is expressed in the forms of the class markers (see the forms of the third person pronouns in Table 8; general class markers are dealt with in section 3.2). On nominal expressions that are formed with specific class markers, number is expressed by dual and plural suffixes (Table 9). These have different forms for nouns vs. numerals vs. all other pronominal expressions and relative clauses.

Table 9: Number markers

	nouns	**numerals**	**other nominal expressions and relative clauses**
plural	*-ːnɛ*	*-ßa*	*-ʔhɨ*
dual	*-ːkɯ*		

The following examples illustrate dual and plural marking on nouns (example 38), numerals (example 39), and demonstrative pronouns (40). Note the different plural markers in examples 38b vs. 39b vs. 40b, which help to establish nouns as a separate form class vs. numerals vs. other nominal expressions, such as demonstrative pronouns.

(38)   a.   *gwatsíʔhɯ-gwá-ːkɯ*
          machete-SCM.2D.straight-**DL**
          'two machetes'

       b.   *gwatsíʔhɯ-gwá-ːnɛ*
          machete-SCM.2D.straight-**PL**
          'machetes (more than two)'

(39)   a.   *mi-gwá-:kɯ*
               two-SCM.2D.straight-**DL**
               'two (machetes, planks, etc.)'

       b.   *ma:kíní-gwa-ßa*
               three-SCM.2D.straight-**PL**
               'three (machetes, planks, etc.)'

(40)   a.   *é-gwa-:kɯ*
               DIST-SCM.2D.straight-**DL**
               'those two (machete, planks, etc.)'

       b.   *é-gwa-ʔhi*
               DIST-SCM.2D.straight-**PL**
               'those (machete, planks, etc.)'

2.4.2.4. Other nominal categories

Nominal expressions can also combine with 'augmentative / diminutive', 'deceased', and 'restrictive' markers. Augmentative and diminutive markers can be added to any nominal expression. In the following examples (41a, b), the diminutive marker *-gwɯɯ* and the augmentative marker *-hkoba* are suffixed to a noun.

(41)   a.   *dá:dʒí-gwɯɯ*
               sloth-**DIM**
               'little sloth'

       b.   *dá:dʒí-hkoba*
               sloth-**AUG**
               'huge sloth'

There is an obligatory grammatical marker that is suffixed to expressions that refer to a deceased person. It is glossed 'DEC' (example 42).

(42)   *táj-náʔbɛ-úßú=pɛ*   *údʒɛ-hé-ʔi* *máhtsi-ɾi*
        POS.1S-brother-**DEC**=PAS go-DIR3-PRD festival-LOC
        'My late brother was at the festival'

The restrictive marker *-ɾɛ* expresses that only the referent denoted by the nominal to which it is suffixed is involved in what is described in the clause (examples 43a, b). Note that this marker can be used in addition to a case marker (example 43a).

(43) a. *muɯ:-tɛ   í:báj:-mɯ-kɛ   i   dáʔpɛ́-nɛ*
          PN-GCM.anim.pl deer-GCM.anim.pl-ACC 3S.SUB catch-GCM.inan
          doʔhɨ́-ba-rɨ́-rɛ
          carguero-SCM.3D-INST-**REST**
          'Those, who caught deer only with *carguero* (tree, sp.) straps' [TGW]

      b. *tsá-ro:-rɛ́   mɛ́   kɨ́ʔdáʔinú-ʔi*
          one-SCM.bottle-**REST** 1/2PL   cut-PRD
          'One cuts only one (bamboo)' [CAR2]

2.4.3. Verbs

Verbs are defined by their ability to combine with a rich set of inflectional and derivational affixes. All of these are suffixes, except for the imperative markers. Stem-forming verbal suffixes include valence-changing derivation, such as causative, reflexive, reciprocal, and directional marking. Verb stems are inflected for categories such interrogation, negation, and tense-aspect-mood (TAM) distinctions. Finite verb forms (that can be used as predicates) have to include a predication marker, a class marker (which cross-references the subject), or a subordination marker. Transitive verbs can be distinguished from intransitive verbs by their ability to be used as predicates with a direct object (see 2.4.4.4). The following sections discuss verbalization (2.4.3.1), derivational processes (sections 2.4.3.2 - 2.4.3.3), and inflectional processes (sections 2.4.3.4 - 2.4.3.5).

2.4.3.1. Verbalization

Verbalized nouns function like verb roots. There are three verbalizing morphemes. Verbs expressing that the subject acquires the quality or state expressed by the noun are derived with *-ße* (example 44a). Verbs expressing possession of the entity denoted by the verbalized noun are formed with *-ßa* (example 44b).

(44) a. *ó   dzíhi-**ßɛ́**-ʔi*
          1S death-**VBZ1**-PRD
          'I am dying'

      b. *ó   gwaʔdá-ʔi-**ßá**-ʔi*
          1S guaya_vine-SCM.bunch-**VBZ2**-PRD
          'I have a rattle' (made from *guaya* vine nuts)

The verbalizing morpheme *-nu* is used to derive a verb that expresses that the subject of the verb acts upon the entity denoted by the verbalized noun, for instance in the form of fetching fruit (example 45).

(45)   *ó   koːmí-**nú**-ʔi*
          1S milpeso-**VBZ3**-PRD
          I fetched *milpeso* (palm fruits)'

2.4.3.2. Causative, reflexive, and reciprocal

Verbal derivational processes include causative marking with *-tso* (example 46a, see also example 63b, below) and reflexive marking with *-mɛi* (example 46b).

(46)   a.   *ó   aʔdó-ʔi*
                  1S   pay-PRD
                  'I paid (someone)'

          b.   *ó   áʔdo-**tsó**-ʔi*
                  1S   pay-**CAUS**-PRD
                  'I made (someone) pay (someone)'

          c.   *ó   áʔdó-**mɛí**-ʔi*
                  1S   pay-**RFLX**-PRD
                  'I paid myself'

The following example (47) illustrates verbal derivation with the reciprocal marker *-hkatsi*. Note that the expression of object arguments is not obligatory, thus the examples in 46 and 47 are complete sentences.

(47)   a.   *táj-naʔbɛ   (náːni-kɛ)   kábórikó-ʔi*
                  POS.1S-brother (my.uncle-ACC) beat-PRD
                  'My brother hit (my uncle)'

          b.   *táj-naʔbé-mu   kábóríkó-**hkatsí**-ʔi*
                  POS.1S-brother-GCM.anim.pl   beat-**RCPR**-PRD
                  'My brothers hit each other'

2.4.3.3. Directionals

Four directional suffixes express movements that accompany what is expressed by the verb: movement away from the speaker is expressed with *-tɛ* (DIR1)

(example 48a), movement towards the speaker with *-ßa* (DIR2) (example 48b), and movement away from a given point followed by returning to that point with *-hɛ* (DIR3) (examples 48c-d). Movement away from the place where the action expressed in the verb has taken place after completion of that action is expressed with *-inu* (DIR4) (example 48e).

(48)   a.   *di:-bɛ*   *áßuiʔkɯ́-**té**-ʔi*
                PN-GCM.masc.sg bathe-**DIR1**-PRD
                'He went bathing (and has not returned yet)'

       b.   *di:-bɛ*   *áßúɯʔkɯ-**ßá**-ʔi*
                PN-GCM.masc.sg bathe-**DIR2**-PRD
                'He came to bathe (and has not gone yet)'

       c.   *ihɯ́=pɛ*   *gaspá: í:bíi mé:nɯ-**hé**-ʔi*
                yesterday=PAS Gaspar coca make-**DIR3**-PRD
                'Yesterday Gaspar came to make coca (and left again)'

       d.   *ihɯ́=pɛ*   *ádɨ́:haɯ*   *íhka-ʔúúdʒe*
                yesterday=PAS proper_name COP.SUB-LOC
                *í:bíi ó mé:nɯ-**hé**-ʔi*
                coca 1S make-**DIR3**-PRD
                'Yesterday I went to *ádɨ́:haɯ*'s house to make coca (and came back)'
                (lit. I went to where *ádɨ́:haɯ* is)

       e.   *píko-**ínɯ**-:bɛ*   *ádzɨ-ba*
                put-**DIR4**-GCM.masc.sg flash-SCM.3D
                'He put (down) the flashlight (and left)' [BACLILIG]

This section on directionals concludes the discussion of derivational morphology on verbs. The following sections deal with the inflectional categories imperative (2.4.3.4) and tense, aspect, and mood (TAM) (2.4.3.5). Interrogation and negation are discussed in sections 2.4.4.5 and 2.4.5.3, below.

2.4.3.4. Imperative

Imperative verb forms are marked by a low tone on the second syllable. On monosyllabic imperative singular forms, the second person imperative marker *di-* is used (example 49a). If the verb is polysyllabic and begins with a vowel, the imperative singular marker is reduced to *d-* (example 49b). On polysyllabic verbs that begin with a consonant, *di-* is not used and imperative singular is marked only by tone (example 49c). Plural imperatives are formed with *mɛ-* (1/2PL) (example 49d).

(49) a.   *dí-ɯː*
            2S-smoke.IMP
            'Smoke!'

      b.   *d-íʔhuɯßa*
            2S-speak.IMP
            'Speak!'

      c.   *ká:tɯɯnɯ*
            write.IMP
            'Write!'

      d.   *mɛ́-áßɯʔkɯ́-tɛ*
            1/2PL-bathe.IMP-DIR2
            'Go bathing (pl.)! / Let's go bathing!' [OV]

2.4.3.5. Tense, aspect, and mood (TAM) inflection

Two aspectual distinctions (perfective, habitual), one mood distinction (frustrative), and future tense are expressed in verbal inflection (other TAM distinctions are expressed with clitics, see section 2.4.6). Perfective aspect is marked in verbs by *-ko:* (example 50), and habitual by *-ʔihka* (example 51; see also example 76, below).

(50) a.   *o   tsáː-ʔi*
            1S   come-PRD
            'I came'

      b.   *ó   tsa:-**kóː**-ʔi*
            1S   come-**PF**-PRD
            'I already came'

(51) a.   *kɯ́gwa-:bɛ*
            sleep-GCM.masc.sg
            'He sleeps'

      b.   *kɯ́gwa-**ʔíhka**-:bɛ*
            sleep-**HAB**-GCM.masc.sg
            'He sleeps constantly'

The frustrative marker *-ɾa* expresses that the action or event denoted by the verb to which it is suffixed did not take place or did not have the desired or expected result (examples 52a, b).

(52)   a.   *ó pɛ:-**rá**-ʔi*
                1S go-**FRUS**-PRD
                'I went (in vain)' [CDC]

       b.   *ó ájnɯ-**rá**-ʔi*
                1S shoot-**FRUS**-PRD
                'I shot (in vain)' [PU]

Future tense marking on verbs takes two forms, vowel lengthening or insertion of *-i-* (FUT). If a predicate is formed with *-ʔi* (PRD) (see section 2.4.4.1), future tense is expressed by lengthening of the preceding vowel (example 53).

(53)   a.   *ó áßɯʔkɯ́-ʔi*
                1S bathe-PRD
                'I bathed'

       b.   *ó áßɯ́ʔkɯ-**:ʔi***
                1S bathe-**FUT.PRD**
                'I am going to bathe'

If the verb includes a class marker for subject cross-reference, *-i-* (FUT) is inserted immediately preceding the class markers (example 54). In negative clauses, it precedes the negation marker (example 55).

(54)   a.   *i:té-mɛ*
                see-GCM.anim.pl
                'They saw'

       b.   *í:tɛ-**í**-mɛ*
                see-**FUT**-GCM.anim.pl
                'They are going to see'

(55)   a.   *tsáʔa o   í:té-ko:-túu-nɛ*
                NEG   1S.SUB see-PF-NEG-GCM.inan
                'I have no longer seen'

       b.   *tsáʔa o   í:té-kó:-**i**-túu-nɛ*
                NEG   1S.SUB see-PF-**FUT**-NEG-GCM.inan
                'I will no longer see'

2.4.4. Main clauses

This section discusses the properties of main clauses. Main clause predicates are dealt with in section 2.4.4.1 and verbless main clauses in section 2.4.4.2. Section 2.4.4.3 discusses the marking of grammatical roles with case markers and section 2.4.4.4 word order.

2.4.4.1. Main clause predicates

Verbal predicates of main clauses either end in *-ʔi* ('predicate marker', PRD) (example 56a) or a class marker, which cross-references or stands in for the subject (examples 56b-c) (cross-referencing with class markers is discussed in section 4.7, below).

(56)   a.   *ná:ni   tsá:-ʔi*
                my.uncle come-**PRD**
                'My uncle came'

        b.   *ná:ni   tsa:-:bɛ*
                my.uncle   come-**GCM.masc.sg**
                'My uncle came'

        c.   *tsa:-:be*
                come-**GCM.masc.sg**
                'He came'

When a class marker is used for cross-reference in a predicate of a main clause, the subject noun phrase can precede the predicate (as in example 56b), be omitted (example 56c), or follow the predicate, as in the following example (57a). A predicate that ends in *-ʔi* (PRD) can only be used with an overt subject noun phrase (compare example 56a with example 57b). The subject noun phrase must precede the predicate in this construction, it cannot follow it (compare example 56a with examples 57c).

(57)   a.   *tsa-:bɛ   ná:ni*
                come-**GCM.masc.sg** my.uncle
                'My uncle came'

        b.   * *tsá:-ʔi*
                come-PRD
                Intended meaning: I/he/she/it/we came)

    c.   * *tsá:-ʔi*   *ná:ni*
                come-PRD my.uncle
                Intended meaning: my uncle came

The predication marker *-ʔi* (PRD) does not have a cross referencing function. It can be used with subjects of any person, number, or noun class (see examples 33 and 37, above). The predicate construction with *-ʔi* (PRD) (example 56a) is typically used when a participant is newly introduced and mentioned with a full noun. Participants that are already established are usually referred to with a cross-referencing class marker only (example 56c). Structures like example 56c that consist of a verb stem and a class marker for subject cross-reference constitute the minimal clauses in Miraña.

2.4.4.2. Verbless clauses

Two nominal expressions can form a main clause without a verbal predicate to express four kinds of relations: equivalence (example 58), localization (example 59), attribution (example 60), and possession (example 61). Inalienable possessors are marked for accusative case (example 61a) and alienable possessors are marked with *-di* (example 61b). A copula verb can be optionally added in these clauses.

(58)   *gwáródʒi:ʔo*   *ájßéhu-:bɛ*   *(ihká-ʔi)*
       proper_name chief-GCM.masc.sg (COP-PRD)
       '*Gwáródʒi:ʔo* is the chief'

(59)   *táj-nadʒɛ*   *té-ko:mí-ri*   *(ihká-ʔi)*
       POS.1S-sister PN-RP.town-LOC (COP-PRD)
       'My sister is in town'

(60)   *di:-bɛ*   *ajnú*   *múná-a-hpi*   *(ihká-ʔi)*
       PN-GCM.masc.sg shoot.NMZ people-PERT-GCM.masc.sg (COP-PRD)
       'He is white' (lit: a shooter[19])

(61)   a.   *o:-kɛ*   *úhka-ʔa*   *(ihká-ʔi)*
             1S-ACC beard-SCM.3D.oblong (COP-PRD)
             'I have a beard'

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[19] The Miraña noun denoting white people translates literally as 'people of (gun) shooting', describing a salient characteristic of the white people the Mirañas first came in contact with (see section 1.3.1, above).

b. *múʔpi-dí   dzoʔβúmɯ (ihká-ʔi)*
    1DL.FEM.EXCL-POS fariña   (COP-PRD)
    'We (two women) have *fariña* (manioc flour)'

2.4.4.3. Grammatical roles

The functions of arguments in a clause are expressed by case markers on noun phrases and subject cross-referencing by class markers (see examples 36a-d and 56b-c, above, see also section 4.7, below). All nominal expressions—including nouns, pronouns, and relative clauses—can function as noun phrases on their own and thus receive case marking. In the following, the use of case markers is illustrated. Direct objects of transitive predicates are only marked for accusative case if they are animate (example 62).

(62) a. *ó ajhtúmí-ʔí piʔmúi-**kɛ***
          1S find   proper_name-**ACC**
          'I met *Piʔmúi*'

      b. *ó ajhtúmí-ʔí rá:ta*
          1S find   tin.SP
          'I found a tin can'

Indirect (or dative) objects in ditransitive clauses are treated in the same way as the only (direct) objects of monotransitive clauses in that they are marked for accusative if they are animate (example 63a). The direct objects of ditransitive clauses are marked with allative case (example 63b-c). Miraña thus has a "Primary Object" (Dryer 1986) system. A different pattern of case marking and cross-referencing is found in relative clauses (see 2.4.5.1). Note that the animate marker *-di-* is used in combination with allative case marking on an animate noun in example 63b.

(63) a. *dʒoʔmái   i:té-ʔi   okáhi-**kɛ***
          proper_name see-PRD tapir-**ACC**
          '*Dʒoʔmái* saw a tapir'

      b. *piʔmúi   í:tɛ-tsó-ʔi   okáhi-**dí-βɯ** dʒoʔmái-**kɛ***
          proper_name see-CAUS-PRD tapir-**ANIM-ALL** proper_name-**ACC**
          '*Piʔmúi* showed the tapir to *Dʒoʔmái*'

      c. *o:-**kɛ** áhkɯ-:bɛ   bájnɛ-hú-**βɯ***
          1S-**ACC** give-GCM.masc.sg tobacco-SCM.tube-**ALL**
          'He gave me a cigarette'

The ablative case is used for expressing the source of the action or event described in the clause (examples 64a-d). This includes static location that involves protrusion (examples 64d). Note the use of the animate marker *-di-* in combination with ablative case marking in example 64b.

(64) a. *ißá íhha-gwá-:nɛ*   *tsißá-ʔi bá-ɛ-há-**tú***
           Iván bench-SCM.2D.straight-PL bring-PRD low-PERT-SCM.cover-**ABL**
           'Iván brought the benches from the upper house'

      b. *ó o:ßé-ʔi*   *mé:ni-**dí-tu***
           1S fill_oneself-PRD   wild_boar-**ANIM-ABL**
           'I ate a lot of wild boar' (lit. I filled myself from wild boar)

      c. *o:ʔí-:bɛ*   *máhtsi-ßá-ʔi*   *báhú pajné-**tu***
           jaguar-GCM.masc.sg song-VBZ2-PRD bush   inside-**ABL**
           'The jaguar is roaring in the bush'
           (i.e. can be heard from inside the bush in the speech situation)

      d. *úmé-ʔɛ-**tu***   *gwáboʔhúkumú-hi úgwa:-hi*
           wood-SCM.tree-**ABL** stuck-SCM.2D.round   metal-SCM.2D.round
           'The ax is stuck in the tree' (i.e. protruding from the tree)

The case marker *-ri* is used for instruments (example 65a) and static locations other than those that involve protrusion (example 65b). Further locative relations are expressed by joining a locative noun and a noun denoting the ground in a genitive construction (see section 5.2, below).

(65) a. *o dó:-ʔi*   *amó:-bɛ-kɛ*
           1S eat(meat)-PRD fish-GCM.masc.sg-ACC
           *táj-ʔóhtsi-gwá:-nɛ-**ri***
           POS.1S-hand-SCM.2D.straight-PL-**INST**
           'I ate the fish with my hands'

      b. *pájhtɛ-ʔí:gwa-**ri***   *boʔdó-gwa*   *ihká-ʔi*
           passing-SCM.open.space-**LOC** paddle.NMZ-SCM.2D.straight COP-PRD
           'The paddle is in the harbor'

The sociative case marker *-ma* is suffixed to noun phrases that denote referents that accompany the action or event (example 66). Note the use of a dual personal pronoun form for reference to the speaker and the referent of the noun marked for sociative case in example 66b.

(66) a.   *i-pahkó-ɯ-**ma***   *tsá:-:bɛ*
            3.POS-bag-SCM.3D.round-**SOC** come-GCM.masc.sg
            'He came with his bag' [MACLILIG]

      b.   *muʔtsi*   *táʔdi-**ma***   *íbíi*   *mɛ́*   *mɛ:nú-ʔi*
            1.DL.MASC.EXL grandfather-**SOC** coca 1/2PL make-PRD
            'My grandfather and I are making coca'
            (lit. We two, with my grandfather, are making coca)

The benefactive case marker *-dʒi:ʔɛ* is used on noun phrases that express the beneficiary (example 67).

(67)   *ó*   *dzíhí-ßɛ-tsó-ʔi*   *okáhi-kɛ*   *taj-ná:dʒé-**dʒi:ʔɛ***
        1S death-VBZ1-CAUS-PRD tapir-ACC POS.1S-sister-**BEN**
        'I killed a tapir for my sister'

The comparative case marker *-dɯ* is used to express a term of comparison (examples 68a, b).

(68) a.   *íhtʃi-:bɛ*   *amó-:bɛ́-**dɯ***
            swim-GCM.masc.sg fish-GCM.masc.sg-**COMP**
            'He swims like a fish'

      b.   *gwatá-hí-gwɯɯú-**dúu**-rɛ*   *né:-nɛ*
            cover.NMZ-SCM.2D.round-DIM-**COMP**-REST seem-GCM.inan
            'It looks just like a little lid' [ANDGLOR01]

In summary, the alignment of core arguments follows a nominative-accusative pattern throughout. Since "indirect" objects of ditransitive clauses pattern with "direct" objects in transitive clauses, Miraña is a "Primary Object language" in the terminology of Dryer (1986). The case system is partially sensitive to animacy in that accusative case is only marked for animates and allative and ablative case marking involves an additional form for animates. Case marker forms and their functions are summarized in the following Table (10).

Table 10: Case markers

case	markers	functions
nominative	not marked	- the only argument of intransitive predicates - the most agent-like argument of monotransitive and ditransitive predicates
accusative (ACC)	*-kɛ* (anim.) (not marked for inanimates)	- the less agent-like argument of monotransitive predicates - the "indirect object" (Primary Object) of ditransitive predicates - Inalienable possessor of animates
allative (ALL)	*-di-ßɯ* (anim.) *-ßɯ, -ɯ* (inanim.)	- the goal of the action/event - the "direct object" (Secondary Object) of ditransitive predicates of transaction.
ablative (ABL)	*-di-tɯ* (anim.) *-tɯ* (inanim.)	- the source of the action/event
benefactive (BEN)	*-dʒi:ʔɛ*	- beneficiary
instrumental / locative (INST/LOC)	*-ɾi*	- instrument - location
sociative (SOC)	*-ma*	- a participant that accompanies the action/event
comparison (COMP)	*-dɯ*	- a participant that is being compared to the subject of a predicate in terms of what is expressed by that predicate.

2.4.4.4. Word order

With the exception of the constraint that predicates formed with *-ʔi* (PRD) require an overt subject noun phrase that precedes it (see section 2.4.4.1), word order in main clauses is free in Miraña. SOV is the most frequent order (example 69a), but others also occur, such as OSV (69b) and SVO (69c).

(69)   a.   *ni:ßú-gwa   mé:-tsí:mɛ-kɛ   tsájhtɛ-kó:-ʔi*
           deer-SCM.2D.straight 1PL.POS-children-ACC take-PF-PRD
           'The deer has already taken our children away'
           (in the context of a mythical text where a personified deer abducts some people's children) [CDV]

       b.   *do:rá-:bɛ-kɛ   í:-tá:dʒé   do-ʔíhká-ʔi*
           fish-GCM.masc.sg-ACC POS.3-grandmother eat.meat-HAB-PRD
           'His grandmother always eats fish' [CDV]

       c.   *á:-nɛ-ma   ú tʃíhtʃɯ-:ʔi dí-:bɛ-kɛ*
           CON-GCM.inan-SOC 2S tie-PRD.FUT PN-GCM.masc.sg-ACC
           'And with this you will tie him' [CDV]

2.4.4.5. Interrogative clauses

In yes-no questions, the interrogation marker *-hɯ* (INTER) is suffixed to the predicate before the class marker (example 70a). The interrogation marker can also be suffixed to nouns (such as the locative noun in example 70b; see section 5.2 for more examples of locative nouns), to the negation particle (example 70c), and to independent question words and interrogative pronouns (example 70d, see also section 4.3.4, below). The interrogation particle *a:* (INTER) is optionally used at the beginning of interrogative clauses, as in example 70e.

(70) a.   *gwákímɛí-hɯ-:bɛ*
           work-INTER-GCM.masc.sg
           'Did he work?'

      b.   *tɛ́:-ʔí   pajné-tɯ-hɯ*
           PN-SCM.river inside-ADL-INTER
           'From inside the river?' [CD]

      c.   *tsáʔa-hɯ   ɯ   tsá:-tɯ-nɛ*
           NEG-INTER 2S.SUB come-NEG-GCM.inan
           'Did you not come?'

      d.   *kiá-ßɯ-hɯ   ké-nɛhkú-ßɯ-hɯ*
           where-ALL-INTER which-SCM.side-ALL-INTER
           'Where to? To which side?' [ROBERN01]

      e.   *a: tsí:-nɛ   ihká-hɯ*
           INTER other-GCM.inan COP-INTER
           'Is there another one?' [TGW]

2.4.5. Subordinate clauses

Subordinate clauses are marked by tone (see section 2.3.3). The following types of clauses are constructed as subordinate clauses in Miraña: relative clauses (section 2.4.5.1), adverbial clauses (2.4.5.2), and negative clauses (2.4.5.3). Unlike in main clauses, the predicate in subordinate clauses has to occur clause-finally.

2.4.5.1. Relative clauses

The predicate of a relative clause must include a class marker, which marks agreement with the head of the relative clause or stands in for it. Relative

clauses (marked in boldface in the following examples) can follow the head noun (example 71a) or precede it (example 71b). They can also be used without an overt head noun (example 71c). The external properties of relative clauses are discussed in section 4.5, below. This section focuses on their internal properties.

(71)   a.   *ó   i:té-ʔí   gwatsíʔhu-gwa*
            1S see-PRD machete-SCM.2D.straight
            o:-kɛ   u   dá:ku-gwa
            1S-ACC 2S.SUB give-SCM.2D.straight
            'I saw the machete that you gave to me'

       b.   ***ahi   o   gwá:-ha   ha: múhu:-ha***
            pui_ palm 1S.SUB cut-SCM.cover   house big-SCM.cover
            'The house for which I cut pui-palm (leaves) was big'

       c.   ***áí:ßɛ-ha   múhu:-ha***
            burn.SUB-SCM.cover   big-SCM.cover
            'What (house, clothes, etc.) burned down, was big'

The grammatical role of the relativized term within the relative clause is not expressed, i.e. the argument that the class marker represents can have different grammatical roles with respect to the predicate of the relative clause. The examples above include relativized terms functioning as subject (example 71c), direct (i.e. Secondary) object (example 71a), and beneficiary (examples 71b). Note that this contrasts with class markers used on predicates of main clauses, where class markers can only cross-reference the subject.

If the grammatical role of the relativized term in the relative clauses needs to be disambiguated, a resumptive pronoun is inserted. In the following examples (72a, b), the pronoun *dí:-:bɛ* (PN-GCM.masc.sg) is inserted in the relative clause and case-marked to disambiguate the grammatical role of the relativized term.

(72)   a.   *ájnú-múná-a-hpi*   ***ɛ:-nɛ́=pɛ***   ***káná:ma***
            white-PERT-people.GCM.masc.sg **DIST-GCM.inan=PAS** **salt**
            dí:-:bɛ-dí-tu   **u   náʔhuʔé-nu-:bɛ́**
            PN-GCM.masc.sg-ANIM-ABL   2S.SUB business-VBZ3-GCM.masc.sg
            pɛ-:kó:-ʔi
            go-PF-PRD
            'The white guy, he from whom you had bought salt, has already gone'

b.   *ájnú-múná-a-hpi*   *ɛ:-né=pɛ*   *káná:ma*
         white-PERT-people.GCM.masc.sg **DIST-GCM.inan=PAS salt**
         dí:-:bɛ-kɛ   *uu*   *ná?hu?é-nu-:bé*
         PN-GCM.masc.sg-ACC 2S.SUB business-VBZ3-GCM.masc.sg
         pɛ:-kó:-?i
         go-PF-PRD
         'The white guy, he to whom you had sold salt, has already gone'

Relative clauses can include clitics to express the temporal relation between the relative clause and the main clause, such as anteriority expressed by $=p\varepsilon$ 'remote past' in examples 72a and b. The predicate of a relative clause can include the same derivational and inflectional morphology as predicates of main clauses, except for interrogation and imperative. The predicate in the following example (73) contains a perfective, a future tense, a negation, and a frustrative marker.

(73)   *ájnú-múná-a-hpi*
         white-PERT-people.GCM.masc.sg
         ní:té-kó:-i-tú-ro-:bɛ   *pɛ:-kó:-?i*
         SUB.go_down-PF-FUT-NEG-FRUS-GCM.masc.sg go-PF-PRD
         'The white guy, who was already (at the point of) not going down(river), has left'

2.4.5.2. Adverbial clauses

In adverbial clauses, the place of the class marker is taken by a morpheme that expresses temporal or spatial notions. The result is a clause that functions as an adverbial modifier of the main clause. Two such clauses are illustrated in the following example, one including the 'posterior' marker *-tsi:tu* (POST) (example 74a) and one including the 'simultaneity' marker *-ko:ka* (SIMU) (example 74b). There are about half a dozen of such morphemes, but most of them have not been analyzed in sufficient detail so far.

(74)   a.   ***o***   ***máhtʃó-tsi:tu***   *pɛ-:bɛ*
             1S.SUB eat-POST   go-GCM.masc.sg
             'After I ate, he left'

     b.   ***o***   ***máhtʃó-ko:ka***   *tsa-:bɛ*
             1S.SUB eat-SIMU   come-GCM.masc.sg
             'While I was eating, he came'

2.4.5.3. Negative clauses

The negation particle *tsaʔa* functions like a predicate of a main clause. The negated clause that follows thus takes the form of a subordinate clause. The predicate of this clause usually ends in the general inanimate class marker *-nɛ*, which stands in for the event, action, etc., that is being negated. The predicate of a negated clause includes the negation marker *-tɯ* (NEG) (example 75a-b). The marker *-tɯ* (NEG) can also express negation on its own (example 75c).

(75) a.　*tsáʔa o　　áßúʔkɯ-tú-nɛ*
　　　　NEG　**1S.SUB** **bathe-NEG-GCM.inan**
　　　　'I did not bathe'

　　　b.　*tsáʔa　　　di:-tɛ　　　　　píko-:tú-nɛ*
　　　　CON-GCM.inan　**PN-GCM.anim.pl.SUB**　**put-NEG-GCM.inan**
　　　　'They did not put (it down)' [TGW]

　　　c.　*pikó-:tɯ-:bɛ*
　　　　put-**NEG**-GCM.masc.sg
　　　　'He did not put (it)'

2.4.6. Tense, aspect, and mood (TAM) clitics

Clitics modify the clauses in which they occur in terms of tense, aspect, and mood. Miraña clitics are second position clitics, i.e. they usually encliticize to the first constituent of the clause. Several of them can be combined, with no fixed order. In the following, a few examples of such clitics are given. In example 76, a 'reportative' (RPT) clitic and one expressing 'remote past' (PAS) are used.

(76) *té-kahá-gwɯɯú-né=ßá=pɛ　　pitʃápítʃa　mé:nɯ-ʔíhka-:bɛ*
　　PN-SCM.creek-DIM-PL=**RPT=PAS** OMT　　　make-HAB-GCM.masc.sg
　　'In the little creeks he always did "*pitʃápítʃa*" (sound of rubbing a bag with poison for fishing), they say' [CDV]

In example 77, the 'recent past' clitic *-nɛkɯ* (REC) is used. It indicates that what is expressed in the clause took place during the same or the previous day.

(77) *a:-bé=nɛkɯ　　　　gwáʔda-hké-ʔi-ri　　　　　ó　údʒe-hé-ʔi*
　　CON-GCM.masc.sg=**REC** guaya-SCM.vine-SCM.river-LOC 1S go-DIR3-PRD
　　'And I went to the river of the *guaya*-vine (recently)' [CDC]

The following example (78) contains the 'prospective' clitic (PRPT), as well as the already mentioned clitics 'reportative' (REPT) and 'remote past' (PAS).

(78)   *tsáʔá=**i:kɛ́**=**ßá**=**pɛ́*** tsɯ́:kaha
        NEG=**PRPT**=**RPT**=**PAS**   then
        ɯ́htsɯ-ko   *gwátá-hí-ßa-tú-nɛ*
        snail-SCM.1D.pointed.SUB cover.NMZ-SCM.2D.round-VBZ2-NEG-GCM.inan
        'In those days, they say, the snail did not have a cover yet' [DC]

Note that the meaning of some clitics is not well understood yet. These are glossed "TAM" in the following.

2.5. SUMMARY

This chapter provided an overview of the general grammatical structure of Miraña in order to introduce the categories that the system of nominal classification interacts with and to facilitate full appreciation of the examples in the following chapters. The most relevant facts for the discussion in the chapters below are the following:

- Tones mark grammatical structures like nominalization, subordination and the genitive construction.
- Tone sandhi is ubiquitous.
- Affixes, words, and clitics are distinguished from words by phonological, tonal, and morphosyntactic criteria.
- Noun roots are distinguished from other nominal roots by a special set of plural markers.
- The only syntactic restrictions on word order are that (i) in one predicate construction (the one formed with *-ʔi* (PRD)), overt subjects have to precede the predicate (if the subject is non-third person, a monosyllabic personal pronoun has to precede the verb immediately); and (ii) predicates of subordinate clauses are always in final position.
- Any argument can be omitted, except for subject noun phrases in predicate constructions formed with *-ʔi* (PRD).
- Relative clauses function as nominal phrases in clauses and have a complex internal structure.

Part II: Morphosyntax

The preceding two chapters provided an introduction to this study (chapter 1) and an overview of Miraña grammar in general (chapter 2). From the following chapter on, the focus is on the analysis of the system of nominal classification, the main concern of this study. Chapters 3 - 5 comprise the second part of this study, which deals with the morphological and syntactic characteristics of nominal classification. Chapter 3 is concerned with defining class markers as a form class, identifying subtypes of class markers, and describing their formal properties. It thus focuses on class markers at the morpheme level. The following chapter (4) deals with uses of class markers in different morphosyntactic contexts, in particular their derivational use in nouns and their use as agreement markers in other contexts. The focus of chapter 4 is thus on the role of class markers at the word level. Chapter 5 deals with the role of class markers in syntax by discussing properties of noun phrases and the nature of agreement in noun class.

3.1. DEFINITION OF CLASS MARKERS

There are 72 class markers in Miraña. The majority of these (66) belong to the set of specific class markers, which mainly encode shape distinctions. The 6 remaining class markers are general class markers, which encode animacy, natural gender, and number. Class markers are bound morphemes that can only be used as suffixes in a clearly delimited set of constructions. In addition to class markers, some nouns can be used as "repeaters"[20] in these constructions.

Class markers are suffixes that form a phonological word with their host. All the phonological processes that occur within the word but not across word boundaries occur in combinations of roots or stems with class markers, e.g. progressive palatalization, vowel harmony, and consonant dissimilation (see sections 2.2.3 - 2.2.4). Class markers always form a tonal phrase with their host, confirming that they are not independent words. What distinguishes class markers from clitics is their distribution. While clitics occur on the edge of words of any type (see section 2.4.6, above), class markers only occur in a well-defined range of contexts, often inside words, e.g. *mí-:baj*-*:kúi-ɾɛ* (two-**SCM.cont**-DL-REST) 'only two (baskets, pools, etc.)'. Class markers are assigned tone according to the rules laid out above (section 2.3.4).

The set of class markers is defined by two distributional criteria:
  (i)   Class markers can be suffixed to noun roots, roots of pronominal expressions, predicates of relative clauses, and main clause predicates.
  (ii)   Class markers cannot occur in any other position.

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[20] The term "repeater" has become established in the more recent literature for nouns that can be used in classifiers constructions, where they appear to classify themselves (e.g. Aikhenvald 2000: 103; Grinevald 2001: 1974; Enfield 2004). This term is taken over here to refer to the use of nouns in class marker positions.

As a diagnostic test for the identification of class markers, the ability to occur as a suffix on the root of the numeral 'one' *tsa-* (numerals pattern with pronominal expressions, see section 4.4, below) and as a subject cross-reference marker on the main clause predicate *ká:túßɛ-* 'fall' has been checked with various speakers for all the class markers given in the following sections. In case of doubt, the ability of a given form to occur in other contexts (such as relative clauses and pronominal roots) was also checked. The ability to occur suffixed to the roots of numerals, pronominal roots, relative clauses, and main clause predicates is the first definitional criterion for establishing the set of class markers. It is important to note that only those forms are included in the set of class markers that can occur in **all** of these contexts, since there are a number of morphemes that can only occur in **some** of these contexts. For instance, the 'simultaneity' marker *-ko:ka* (SIMU) can occur in the position of class markers in relative clauses, forming an adverbial clause (see example 74b in section 2.4.5.2, above), but not other contexts such as numerals or main clause predicates.

The second definitional criterion for class markers is that they can only be used as suffixes in these contexts. This means in particular that they cannot be used as nouns, either as free forms representing an argument in a clause, or combine with morphology that is specific for nouns, such as possessor prefixes. This has also been tested for all the class markers that are presented in the following sections. This criterion is what distinguishes class markers from nouns that can be used as repeaters in the position of class markers, e.g. suffixed to pronominal roots, relative clauses, and main clause predicates (see further discussion on the distinction between class markers and repeaters at the end of this section).

The following examples (79, 80) illustrate how the two class markers *-:baj* (SCM.cont) and *-i:ʔo* (SCM.little.stick) meet the first criterion by appearing suffixed to bound roots of pronominal expressions (exemplified here with the root of a demonstrative pronoun, examples 79a, 80a), a predicate of a relative clause (examples 79b, 80b), and a main clause predicate (examples 79c, 80c). Examples 79d-e and 80d-e show that these forms meet the second criterion since they cannot be used in other positions. The crucial case (which distinguish class markers from repeaters) is the use as nouns, e.g. representing the subject in a clause (examples 79d, 80d), or with a possessor prefix, which can only combine with nouns, but not with class markers (examples 79e, 80e).

(79) a. *í-:baj*   *úßi-:baj*
          PRX-**SCM.cont**   basket-**SCM.cont**
          'this one (container), a basket'

b.   *úßi-:baj*   *o:-kɛ*   *ɯ*   *áhkɯ-:baj*
basket-**SCM.cont** 1S-ACC 2S.SUB give-**SCM.cont**
'the basket that you gave to me'

c.   *kátɯ́:ßɛ-:baj*   *úßi-:baj*
fall-**SCM.cont**   basket-**SCM.cont**
'The basket fell down'

d.   * ***:baj***   *ká:tɯßé-ʔi*
      SCM.cont   fall-PRD
      Intended meaning: It (container) fell down

e.   * *taj-:**baj***
      POS.1S-**SCM.cont**
      Intended meaning: mine (container)

(80)   a.   *í-i:ʔo*   *ka:túnɯ-í:ʔo*
PRX-**SCM.little.stick** write.NMZ-**SCM.little.stick**
'this one (little stick), a pencil'

b.   *ka:túnɯ-í:ʔo*   *o:-kɛ*   *ɯ*   *áhkɯ-í:ʔo*
write.NMZ-**SCM.little.stick** 1S-ACC 2S.SUB give-**SCM.little.stick**
'the pencil that you gave to me'

c.   *kátɯ́:ßɛ-í:ʔo*   *ka:túnɯ-í:ʔo*
fall-**SCM.little.stick** write.NMZ-**SCM.little.stick**
'The pencil fell down'

d.   * *i:ʔo*   *ká:tɯßé-ʔi*
      SCM.little.stick fall-PRD
      Intended meaning: It (little stick) fell down

e.   * *táj-i:ʔo*
      POS.1S-**SCM.little.stick**
      Intended meaning: mine (little stick)

Within the set of class markers, i.e. those morphemes that meet both definitional criteria, two subtypes can be distinguished by a further set of distributional properties: general class markers and specific class markers. General class markers can be identified by their ability to replace specific class markers in agreement marking. Agreement or cross-reference with a noun that includes a specific class marker is usually marked with that same specific class marker (see section 5.4.2). However, it can also be marked with a general class marker. The general inanimate class marker *-nɛ* (GCM.inan) can be used to

cross-reference or mark agreement with any noun with an inanimate referent, irrespective of the specific class marker that occurs in this noun. The following examples (81a, b) illustrate that agreement with the noun *pihhú-ko* (fish.NMZ-SCM.1D.pointed) 'fishing rod' can be alternatively marked with the specific class marker *-ko* (SCM.1D.pointed) (example 81a) or with a general class marker (example 81b). Alternative agreement marking in these examples takes place on a distal demonstrative and on the verb *kátú:ße-* 'fall' (the syntactic characteristics of this alternation are discussed in section 5.4.4, below).

(81) a. *kátú:ße-ko* *ɛ:-ko*   *pihhú-ko*
    fall-**SCM.1D.pointed** DIST-**SCM.1D.pointed** fish.NMZ-**SCM.1D.pointed**
    'It (pointed) fell, that (pointed) fishing rod'

  b. *kátu:ßé-nɛ* *ɛ:-nɛ*   *pihhú-ko*
    fall-**GCM.inan** DIST-**GCM.inan** fish.NMZ-**SCM.1D.pointed**
    'It fell, that fishing rod'

In the following examples (82a, b), a specific class marker that is used for agreement marking on a demonstrative and a verb (example 82a) is replaced by a general animate class marker (example 82b), since the noun that controls the agreement, *kú:mu-hɨ* (turtle-SCM.2D.round) 'turtle', has an animate referent.

(82) a. *kátú:ße-hɨ* *ɛ:-hɨ*   *kú:mu-hɨ*
    fall-**SCM.2D.round** DIST-**SCM.2D.round** turtle-**SCM.2D.round**
    'It (disc-shaped) fell, that (disc-shaped) turtle'

  b. *kátú:ße-:bɛ* *a:-di*   *kú:mu-hɨ*
    fall-**GCM.masc.sg** DIST-**GCM.masc.sg** turtle-**SCM.2D.round**
    'It fell, that turtle'

The choice of either a general or a specific class marker is determined mainly by the degree to which a speaker whishes to specify a referent at a given point in discourse (this is a major focus of chapter 10). A specific class marker used for agreement marking or cross-reference can never be replaced by another specific class marker (see section 5.4.2). As a consequence, two nominal expressions that include two distinct specific class markers cannot be co-referential.

A set of forms distinct from class markers are repeaters. These forms can be used as suffixes on pronominal roots, relative clauses, and main clause predicates, but—unlike class markers—they can also be used as nouns.[21] These

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[21] One could also analyze repeater nouns as pairs of (almost) homophonous morphemes, one being a class marker and the other a noun. What seems to support

forms thus meet the first criterion, but fail to meet the second one. For this reason they are set apart from class markers. Example 83 illustrates how a repeater can be used as a suffix on a pronominal root, forming a demonstrative pronoun (example 83a), on a predicate of a relative clause (example 83b), and on a main clause predicate (example 83c). Examples 83d-e show that this form does not meet the second criterion since it can be used as a noun, representing the subject in a clause (example 83d), or in combination with a possessor prefix (example 83e), which can only combine with nouns, but not with class markers.

(83) a. *í-báhkɯ*
          PRX-**RP.bone**
          'this bone'

      b. *báhkɯ* *oː-kɛ* *ɯ* *áhkɯ-báhkɯ*
          bone 1S-ACC 2S.SUB give-**RP.bone**
          'the bone that you gave to me'

      c. *kátúːβɛ-báhkɯ*
          fall-**RP.bone**
          'The bone fell'

      d. *báhkɯ* *káːtɯβɛ́-ʔi*
          bone fall-PRD
          'The bone fell'

      e. *táj-báhkɯ*
          POS.1S-**bone**
          'my bone'

Repeaters can be subdivided into "full repeaters" and "partial repeaters". Full repeaters have the same form both in their uses as suffixes and as nouns (see example 83). A subset of repeaters (11 forms) have reduced forms when they are used as suffixes, e.g. *í-mo* *móːaj* (PRX-**RP.river** river) 'this river'. These are called partial repeaters. The sameness of meaning and the significant overlap of segmental material are arguments for regarding these forms as

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such an analysis is that these forms undergo tonal changes. However, tonal changes are a ubiquitous phenomenon in the language, affecting almost every morpheme when it enters a grammatical construction with another segmental morpheme or a tonal morpheme (see section 2.3), and the assumption of dozens of almost homophonous and always synonymous nouns is likewise not an elegant solution. The important point is that repeaters are distinguished from class markers by the fact that they can be used in (almost) the same form and with the same meaning as nouns.

repeaters rather then as class markers. However, the differentiation between partial repeaters and class markers is obviously less clear than the one between full repeaters and class markers. Rather than constituting a clearly delimited, discrete set, they should be viewed as a set of forms that are somewhat less strongly grammaticalized than class markers, but more so than full repeaters (see section 3.5).

The following Figure (7) summarizes the criteria for distinguishing class markers from repeaters and the subtypes of class markers and repeaters.

```
                can be suffixed to pronominal roots,
                relative clauses, and main clause predicates

              cannot be used                    can be used
                as nouns                          as nouns

    can replace other    cannot replace      reduced form        full form
    class markers        other class markers  in use as suffix    in use as suffix

    general class marker  specific class marker  partial repeater   full repeater
```
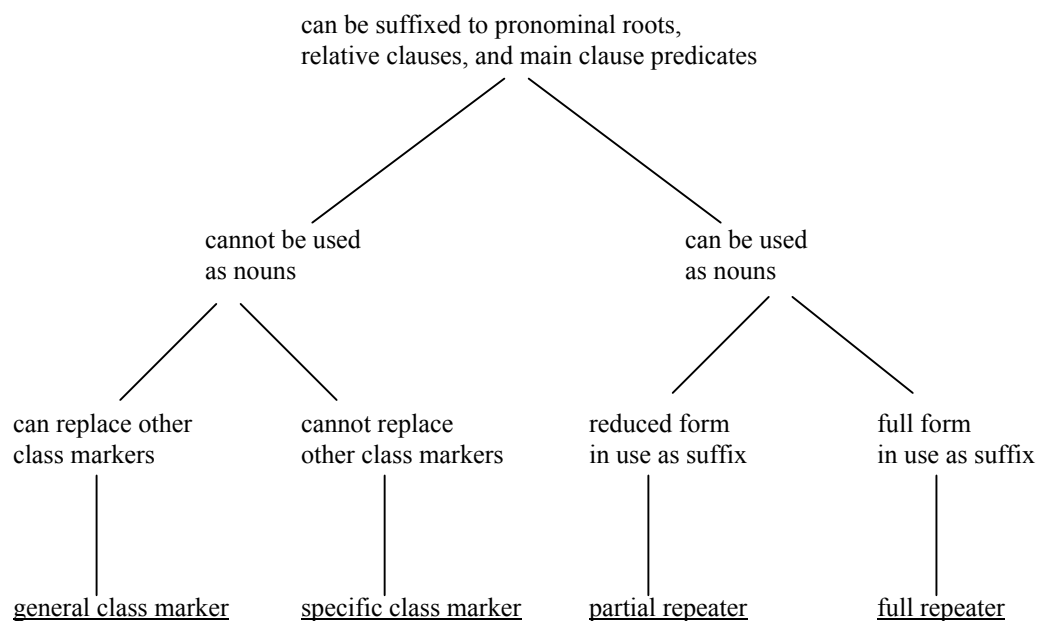
Figure 7: Criteria for distinguishing class markers, repeaters, and their subtypes

The following sections discuss the two types of class markers, general class markers (section 3.2) and specific class markers (section 3.3). Repeaters are dealt with in section 3.4. In section 3.5, the set of class markers and repeaters is characterized as a set of forms that display different degrees of grammaticalization.

3.2. GENERAL CLASS MARKERS

There are six general class markers, one for inanimates and five for animates, as given in Table 11. The inanimate general class marker does not distinguish number (see section 8.4, below, for further discussion). The class markers for animates distinguish between masculine singular and dual, feminine singular

and dual, and animate plural. Within singular and dual animate class markers, masculine is the unmarked category. If the sex of one or two animate referents is not known or is of no importance, the masculine forms are used. In all these features, the system of general class markers is like a gender system of more familiar languages.

Table 11: The forms of general class markers

		gloss	general class marker forms
animate	**singular**	GCM.masc.sg	*-:bɛ; -di; -hpi; -:pi*
		GCM.fem.sg	*-dʒɛ; -pidʒɛ*
	dual	GCM.masc.dl	*-mutsi; -tɛtsi*
		GCM.fem.dl	*-mupɨ; -tɛpɨ*
	plural	GCM.anim.pl	*-mu; -mɛ; -tɛ*
inanimate		GCM.inan	*-nɛ*

All animate class markers have allomorphs that are used in different morphosyntactic contexts. For instance, the general animate masculine singular class marker takes the form *-:bɛ* when used as subject cross-reference marker on main clause predicates (example 84a), *-di* in the distal demonstrative (example 84b), *-hpi* with the bound root *tsi-* 'other' (example 84c), and *-:pi* in the numeral 'one' (example 84d). At least some of these forms are suppletive, i.e. they originate from different paradigms. These properties are used to characterize general class markers as more strongly grammaticalized forms when compared to specific class markers in section 3.5, below.

(84)   a.   *tsa:-:bɛ*
            come-**GCM.masc.sg**
            'He came'

       b.   *aj:-di*
            DIST-**GCM.masc.sg**
            'that one (person or animal)'

       c.   *tsi-hpi*
            other-**GCM.masc.sg**
            'another (person or animal)'

       d.   *tsa:-:pi*
            one-**GCM.masc.sg**
            'one (person or animal)'

As can be seen from Table 11, some animate class markers—namely one of the feminine singular forms and the dual forms—are morphologically complex, at least historically. With respect to the dual forms it appears that non-singular is marked in a first step by *-mɨ* (or its allomorph *-tɛ*) and in a second step masculine and feminine dual are marked by *-pi* and *-tsi*, respectively. These dual markers never occur without the non-singular marker. Thus, synchronically these historically complex forms are analyzed as one form (see section 2.4.2.2 for the occurrence of related morphology in personal pronouns).

The forms of the masculine singular class marker *-hpi* and *-ːpi,* appear to be derived from *-hpi* 'body', a noun that cannot be used without an expression of its possessor, e.g. *tá-hpi* (POS.1S-body) 'my body'.[22] The term for 'body' is used in various classifier languages—in particular numeral classifier languages—as a classifier for animates (see Aikhenvald 2000: 442), presumably because the relevant unit for counting animates is their body. In Miraña, this association led to the term for 'body' being used in the class marker slot of the numeral one. In the numeral 'one', the form *-ːpi* (GCM.masc.sg) it is retained even in the feminine form, in which the general feminine singular class marker is added after *-ːpi* (GCM.masc.sg): *tsá-ːpi-dʒɛ* (one-GCM.masc.sg-GCM.fem.sg) 'one (female)'.

In summary, general class markers are a small and tightly integrated paradigm of six forms that make distinctions of animacy, natural gender, and number. As such, it is reminiscent of gender systems of European languages. What makes Miraña special is that its noun class system also includes a large set of forms with semantics in the domain of shape, the specific class markers, which are discussed in the following sections.

3.3. SPECIFIC CLASS MARKERS

The set of 66 specific class markers is internally diverse in terms of formal properties (existence of allomorphs, number of syllables, productivity of combination with nouns), semantic properties (degrees of semantic specificity, semantic domains covered), as well as frequency of use, in particular in certain constructions. The following section presents the set of monosyllabic specific class markers (section 3.3.1). Together with general class markers, these are the most grammatically important class markers of Miraña. Section 3.3.2 deals with polysyllabic specific class markers.

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[22] Strictly speaking, *-hpi* could therefore be considered a repeater. What distinguishes this form from repeaters is the fact that it is integrated as an allomorph in the paradigm of general class markers.

3.3.1. Monosyllabic specific class markers

Monosyllabic specific class markers tend to have relatively broad meanings, most of them denoting abstract geometrical shape. They are more frequent than polysyllabic specific class markers, in a derivational function in nouns as well as in their use as agreement markers. In natural discourse, about 75% of occurrences of specific class markers are monosyllabic.[23]

In Table 12 the set of 18 monosyllabic specific class markers is given in alphabetical order together with the glosses that are used in interlinear translation. These glosses are convenient labels based on central meaning components (the semantics of a selected subset of specific class markers is analyzed in more detail in section 6.3). In the third column of Table 12 the approximate meaning for each class marker is given. In brackets, additional semantic description is provided, including examples of typical uses. These descriptions are based on native speakers' explanations that were elicited in the following way: native speakers were asked what a combination of the semantically weak pronominal root *pa-* 'complete' (CPL) with a class marker could mean. For instance, prompted with *pá-hɨ* (CPL-SCM.2D.round), a Miraña speaker would provide an explanation like "something shaped like a disc, a button, etc." (see section 6.3.1, below, for further discussion on this use of class markers). Some of these explanations are given in literal translation. In the last column, examples of nouns with these class markers are given. Specific class markers are assigned consecutive numbers, starting in Table 12. Note that four monosyllabic specific class markers are polysemous, as indicated by numbered senses in brackets (specific class marker numbers 1, 14, 16, and 17; see further discussion in section 6.3.3, below).

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[23] In a representative sample consisting of texts of different genres (excluding experimental data, see section 1.4.2, above), out of ca. 2500 occurrences of class markers, about 1750 are general class markers, while about 750 are specific class markers. Of the specific class markers, about 75% are monosyllabic, while only about 25% are polysyllabic.

Table 12: Monosyllabic specific class marker

#	class marker	meaning	examples
1	*-ba, -ʔba* SCM.3D	(1) logs; (2) fruits; (3) mushy objects (plus a variety of other uses, among them many objects which are not round; concrete objects denoted by this class marker seem to be basically three dimensional, but some abstract notions are also included, such as 'year')	*ádzɨba* 'flashlight' *mútsɨ́:tsɨba* 'pear apple fruit' *úhɨba* '(thick) drink made from banana'
2	*-dʒi* SCM.brush	a number of fibers with the same orientation (e.g. skirt used as disguise in traditional festivals, the tails of squirrels and a certain species of nocturnal monkey, eyelashes, hair)	*gwaʔmídʒi* 'skirt (of fibers)' *ádʒúɯudʒi* 'eyelashes'
3	*-gwa* SCM.2D.straight	flat, rigid, at least one straight edge (the shape of a plank, e.g. a wooden plank, paddle, knife, ladder)	*boʔdógwa* 'paddle' *gwatsíʔhɯgwa* 'machete' *ni:tégwa* 'ladder'
4	*-ha* SCM.cover	cover (e.g. houses, caves; a cover made from fabric, like clothes; a shield)	*ká:mɛ́ɛha* 'shirt' *mahtʃóha* 'kitchen' *gwájhamɯ* 'clothes'
5	*-hɨ* SCM.2D.round	flat and round (e.g. a lid, a wheel, like a disc; objects that spin, also audio cassettes, the earth (for being flat))	*boʔdóhɨ* 'plate' *go:róhɨ* 'mushroom' *úgwa:hɨ* 'ax'
6	*-hkɛ* SCM.vine	climbing vines	*gwáʔdahkɛ* 'guaya liana'
7	*-hpaj* SCM.liquid	liquid	*tʃítʃihpaj* 'tucupí sauce'
8	*-hto* SCM.spine	small and thin, spine (e.g. a spine, needle, horns of animals, thorn, pointed broken branches, the quills of some fish)	*níhíʔɛhto* 'thorn of *cumare* palm' *íhto* 'horn'
9	*-hɯ* SCM.tube	tube (like a path, if one drags a liana the trace it leaves on the ground, the trails of ants; also *iʔhɯ* 'mouth')	*ajnúhɯ* 'rifle' *bájnɛhɯ* 'cigarette'
10	*-i* SCM.1D.medium	thin and of medium length (e.g. a stick the size of a walking stick; *ko-i* (wood- SCM.stick) is explicitly a wooden stick, everything similar to and the size of a walking stick, also made of other materials, etc.)	*ka:núi* 'pestle' *dɯ:rúi* 'candle'

Table 12: Monosyllabic specific class marker (cont.)

#	class marker	meaning	examples
11	*-ko* SCM.1D.pointed	thin and relatively long and pointed (e.g. a fishing rod; the beams used in the construction of a house; lance; arrow; some fruits, e.g. *múutsíːtsɨ-ko* 'pear apple fruit', the newly introduced papaya fruit, something without branches, something smooth or sleek)	*pihhúuko* 'fishing rod' *mímoko* 'knee'
12	*-mɨ* SCM.transport	transport (e.g. canoe, shape of canoe, a shallow hole in the ground, e.g. where tapirs, and jaguars, etc., sleep; also a vessel, plate, etc.; airplanes and motorboats)	*miːnɛ* 'canoe' *kámέɛmɨ* 'airplane'
13	*-ɾo* SCM.bottle	bottle shaped container (e.g. bottle, cane, muzzle (of a rifle), horn, *rohoroko* is onomatopoeic for blowing on a tube)	*úumɛɾo* 'salt container' *túʔaɾo* 'boot'
14	*-ɯ* SCM.3D.round SCM.string	(1) small, round, three dimensional (e.g. small ball, bigger ones are *-ba* (number 1); like pebbles, like the core of a *canangucho* fruit; also testicles, *mons veneris*); (2) strings	*ádʒɯɯ* 'eye' *íːʔúɯ* 'egg' *gwáːbaɯ* 'string'
15	*-ʔɛ* SCM.tree	trees (something the shape of a tree)	*tóːkɛʔɛ* 'coconut palm tree' *úumɛʔɛ* 'tree'
16	*-ʔi* SCM.river SCM.bunch	(1) a bunch (of different fruits on a plant, e.g. banana, *chontaduro*, *canangucho*, etc.) (2) a little river	*ínɛʔi* 1) 'bunch of a *canangucho* palm tree'; 2) 'Mirití Paraná river (= *canangucho* river)' *úuhiʔi* 'bunch of bananas'
17	*-ʔo* SCM.3D.oblong SCM.enclosure	(1) basically three dimensional, but elongated (the shape of a banana, nose, penis) (2) artificial enclosures (rooms, beds for horticulture, corrals)	*túuhuʔo* 'nose' *námɛʔo* 'penis' *úuhiʔo* 'banana' *ókóːmɛʔo* 'beehive'
18	*-ːbaj* SCM.cont	deep container (e.g., a basket, pool, swamp, lagoon, some standing water)	*adóːba* 'salty well' *úßiːbaj* 'basket' *gwáːbaj* 'hammock'

Within the set of 18 monosyllabic class markers, a set of semantically general and frequently used forms can be identified. This set is defined by their occurrence in animal names where they are used to derive nouns denoting

individual animals from noun roots that denote the species or an unspecified numbers of individuals. What is special about the use of class markers on animal names is that noun class assignment in these nouns is always semantically opaque (see section 7.4, below). The class markers that are used in these contexts are given in Table 13.

Table 13: The core set of specific class markers

# in Table 12	class marker	gloss
1	*-ba, -ʔba*	SCM.3D
3	*-gwa*	SCM.2D.straight
5	*-hɨ*	SCM.2D.round
10	*-i*	SCM.1D.medium
11	*-ko*	SCM.1D.pointed
14	*-ɯ*	SCM.3D.round / SCM.string
15	*-ʔɛ*	SCM.tree
17	*-ʔo*	SCM.3D.oblong / SCM.enclosure

These eight class markers are the ones that are most frequently used, and they form a "core set" in this sense. Over 60% of all occurrences of specific class markers are class markers from this set (in the text count mentioned above). This means that over 80% of occurrences of monosyllabic specific class markers are class markers from this set. They are also the only ones that may be involved in conventional or arbitrary noun class assignment of inanimate nouns, while the assignment of nouns to the classes corresponding to all other class markers is always semantically motivated (as discussed in section 7.3). Even though this set can be identified by the formal characteristic of combination with animal names, the core set of specific class markers should be thought of as a cluster of strongly grammaticalized forms (on the grammaticalization cline presented in section 3.5), rather than a clearly delimited set of forms. The occurrence on animal names is used here as a formal characteristic because it helps to sort the otherwise seemingly overwhelming diversity within the set of class markers. However, it should be kept in mind that while the forms from the core set of specific class markers are involved in semantically opaque noun class assignment with some nouns, noun class assignment is semantically motivated in most cases, even when class markers from the core set are involved (as argued in section 7.3.2). The core set includes the class markers with the most general and abstract meanings, denoting the inherent geometrical shape of objects, while other monosyllabic specific class markers may also denote configurations, e.g. *-dʒi* (SCM.bunch)

(number 2), consistency, e.g. *-hpaj* (SCM.liquid) (number 7), or function, e.g. *-mɨ* (SCM.transport) (number 12). This is further discussed in section 6.3, below.

For some of the monosyllabic specific class markers, there is a cognate noun in the language, suggesting that these class markers are historically derived from these nouns. These forms are listed in Table 14.

Table 14: Class markers with a recognizable origin

# in Table 12	class marker	gloss	corresponding noun
4	*-ha*	SCM.cover	*ha* 'house'
9	*-huu*	SCM.tube	*í-ʔhuu* (POS.3-mouth) 'his/her/their mouth, story, language'
12	*-mɨ*	SCM.transport	*mɨːnɛ* 'canoe'
18	*-ːbaj*	SCM.container	*bánɛːbaj* 'pool'

The class marker forms in Table 14 contain either a portion of the phonological material of their source noun (class markers numbers 12 and 18), or they are homophonous with that noun in terms of phonological segments (class markers numbers 4 and 9). The meaning of the class marker is always more general than the meaning of the corresponding noun. For instance, the class marker *-ha* (SCM.cover) can refer to clothes, houses, or any other kind of cover, such as mosquito nets (example 85a), but the corresponding noun *ha* 'house' (example 85b) can only refer to a house.

(85) a.   *tɛː-**ha***
            PN-SCM.cover
            'it (clothes, house, cover, etc.)'

      b.   ***ha:***
            house
            'house' (*clothes, cover, etc.)

The fact that these class markers have a different meaning than their source noun is what distinguishes them from nouns that can be used—possibly in a reduced form—as repeaters in the class markers slots of pronominal expressions, verbs, etc. (see section 3.4). Unlike pairs of class markers and their source nouns, repeaters have identical meanings in both uses.

3.3.2. Polysyllabic specific class markers

The phonological complexity of class markers forms in terms of number of syllables is a characteristic, which allows for another subdivision in the set of class markers and the characterization of some forms as more grammaticalized than others (see section 3.5). The differentiation between monosyllabic and polysyllabic specific class markers also tends to correlate with differences in the degree of semantic generality (see section 6.3, below) and frequency of use (as mentioned above). There are 48 polysyllabic specific class markers in Miraña, as listed in Table 15. They tend to have relatively specific meanings and they tend to be used less frequently (only about 25% of all occurrences of specific class markers). Their meanings are in the general domain of physical shape, where some of them denote also configuration, rather than shape itself. Some seem to have as their core meaning parts of plants (e.g. *-huːʔo* (SCM.palmleaf), number 27), while others are geographic terms (e.g. *-kaha* (SCM.creek), number 30). Yet others are like measure terms (e.g. *-ʔbabaj* (SCM.bag), number 51). One polysyllabic specific class marker is exceptional in that it is used only with animate referents (*-niːʔo* (SCM.mother), number 34).[24] Most polysyllabic specific class markers are disyllabic (numbers 19 - 58), six have three syllables (numbers 59 - 65), and one has four syllables (number 66). In Table 15 glosses are provided for each class marker as well as approximate definitions of their meaning. Further information provided by native speakers on the meanings and typical uses of class markers is given in brackets. The last column includes illustrative examples of combinations of the class markers with nouns. Note that nouns that include polysyllabic class markers are productive, rather than conventionalized derivations (see section 7.3.2).

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[24] Note that expressions referring to women with children have a separate grammatical form also in Yagua (Peba-Yaguan, D. L. Payne 1986: 114) and Andoke (isolate, Jon Landaburu, personal communication), both languages in contact with Miraña.

Table 15: Polysyllabic specific class markers

#	class marker	meaning	examples
19	*-bohɨ* SCM.pond	stationary pond of liquid	*páʔáʔibóhɨ* 'pond of the Cahuinarí river'
20	*-dʒiːhu* SCM.powder	ash, powder	*úhɨdʒíːhu* 'pulverized dried banana' *bádʒiːhu* 'ash, powder'
21	*-gwajhko* SCM.hook	a hook (e.g. a stick, folded over wire; fishhook)	*méːmɛgwájhko* 'hook for harvesting fruit'
22	*-gwajːʔɛ* SCM.crumbs	crumbs (e.g. the leftovers after sieving; useless stuff)	*íːbíʔgwájːʔɛ* 'coca crumbs'
23	*-gwajːʔo* SCM.bundle.of.sticks	slender objects aligned and attached to each other (e.g. a bridge made of aligned wooden planks or sticks, chopped objects; the very thin underarm of a person (presumably because the bones show), along these lines also the cheek of an old man (when he has no coca to chew); objects that are pulled together)	*kóːʔobagwájːʔo* 'hanging bridge'
24	*-hpajko* SCM.liquid	liquid (e.g. tobacco paste or salt, turned liquid, synonym: *-hpajko*)	*ájßɛhpájko* 'liquor' *núhpajko* 'water'
25	*-htoi* SCM.curve	curve (e.g. a curve in river, at the bank; also the curve of a receding brow)	*úmékohtói* curved stick
26	*-hɨgwa* SCM.broken.edge	objects with a broken edge (e.g. a pot, pan, canoe, but still usable, because only the edge is broken)	*karáːhɨhúgwa* 'pot with a broken edge'
27	*-huːʔo* SCM.palmleaf	palm leaf (no leaves of other trees, possibly this refers to the arrangement of leaves, while the individual leaves would by *-ʔaːmɨ*, SCM number 49)	*níhíʔɛhúːʔo* 'cumare palm leaf'
28	*-iːʔo* SCM.little.stick	relatively short two dimensional objects with an orientation (e.g. stick, maximum ca. 50 cm, e.g. a pencil, flute, the tip of a poisoned arrow, or little pointed sticks that were used on the bottom of traps in the ground)	*kaːtúnuíʔo* 'pencil' *túboíʔo* 'arrow'
29	*-iːhɨ* SCM.platform	a platform made from attaching aligned slender objects to each other (e.g. the floor of a house, plates, a grille, e.g. to smoke fish, a tree house for hunting)	*gwáiːhɨ* 'raft, floor' *tɛʔméíːhɨ* 'tree house'
30	*-kaha* SCM.creek	a little creek (also a small watercourse around a house, a flooded canangucho grove)	*ínéʔɛkáha* 'flooded canangucho grove'

Table 15: Polysyllabic specific class markers (cont.)

#	class marker	meaning	examples
31	*-miha* SCM.copaiba.stick	copaiba stick for illumination	*kógwáʔamíha* 'copaiba stick for illumination'
32	*-nɛhku* SCM.side	one side	*hánɛhku* 'one side of a house'
33	*-mɨ:ʔo* SCM.hard.shell	hard shells (e.g. carapaces of armadillos, turtles; when big trees are dry and the bark comes off; also helmets of soldiers)	*kú:múhimɨ́:ʔo* 'turtle carapace' *kómɨ:ʔo* 'bark'
34	*-ni:ʔo* SCM.mother	a woman or female animal after she/it has had her first child (in particular while she is raising it; not used to refer to older women; used as a polite form)	*ájhúgwaní:ʔo* '(adult) daughter' *ókáhiní:ʔo* 'tapir which has offspring'
35	*-padʒi* SCM.garden	garden (archaic)	*úmɨʔépádʒi* 'garden'
36	*-pahtsɨ* SCM.ring	a roll or ring, (e.g. the basket of basketball, a roll of liana, string, wire, a wheel)	*móʔopáhtsɨ* 'a ring of liana'
37	*-pa:hɨ* SCM.hole	a cave or hole (e.g. in a tree, little hole of a blowgun, a shoe, not holes in the ground, the container for tobacco paste)	*úméʔɛpá:hɨ* 'a hole in a tree' *túʔapá:hɨ* 'shoe'
38	*-ɾa:ɾa* SCM.broken	broken, rotten (e.g. of a house, a pot, something broken with a machete, a hole in the ground which was made with a stick, a rotten animal corpse)	*háɾa:ɾa* 'broken, rotten house'
39	*-ɾoʔdʒo* SCM.very.twisted	very uneven and twisted slender objects	*dú:ɾúiɾóʔdʒo* 'a completely twisted candle'
40	*-tohko* SCM.corner	corner, turning point (also of some artifacts, e.g. canoes and round houses, when they are not as nice and round as they should be)	*hátohko* 'a corner of a house'
41	*-tuhkɛ* SCM.fruit/leaf.stem	the place where a new leaf or fruit is growing from a stem	*mútsɨ́:tsíbatúhkɛ* 'stem of a pear apple fruit'
42	*-htsɯ:ʔo* SCM.bundle	objects that are folded up and tied together (also of a person who is sleeping curled up)	*úmɛhtsú:ʔo* 'pack of salt'
43	*-ɯ:ʔaj* SCM.grains	grains (e.g. an unordered pile of the same objects, e.g. coconuts, stones, manioc flour, sand, also a large number of small children, pieces of manioc bread, clay, earth ware)	*négwajú:ʔaj* 'sand'
44	*-ɯ:ʔo* SCM.club	an object used for beating (e.g. a club for slaying fish; also a basin for pounding *canangucho* fruit)	*gwáju:ʔo* 'club'
45	*-ßi:ɯ* SCM.slice	a slice of big, long and round objects (e.g. of an anaconda, a banana, certain fish, or of a watermelon)	*kóʔbaßí:ɯ* 'slice of wood'

Table 15: Polysyllabic specific class markers (cont.)

#	class marker	meaning	examples
46	*-ßɨ:ʔa* SCM.punctuated	an object with one hole in it (e.g. a cup, canoe, clothes)	*túʔapá:hɨßɨ:ʔa* 'shoe with a hole'
47	*-ßɯ:rɯ* SCM.chunk	thick and short chunk	*uménɛßú:rɯ* 'chunk of a log'
48	*-ʔahkɯ* SCM.upright	large, slender, upright objects (e.g. a pole, something like a tree, but without branches or leaves, a stick that is in the ground, as a post, e.g. of a house, an erection, something that one puts in the ground; a pile of manioc bread cakes)	*úmaʔáhkɯ* 'tree trunk' *ápɨʔáhkɯ* 'pillar'
49	*-ʔahtsɨ* SCM.clearing	a clearing (e.g. around the house, also in the bush, a savanna)	*dʒáʔahtsɨ* 'patio'
50	*-ʔa:mɨ* SCM.leaf	thin, flexible (in particular leaves)	*gwahákuʔá:mɨ* 'book'
51	*-ʔbabaj* SCM.bag	a bundle or bag	*gwaráhkoʔbábaj* 'bag to sieve coca'
52	*-ʔbɛgwa* SCM.stack	a stack of thin objects (e.g. dried fish, banana plant seedlings, chunks of raw rubber, clothes, notebooks)	*áhɨʔɛ́gwa* 'pile of palm leaves'
53	*-ʔdaʔɨ* SCM.piece	a small piece	*pɨ́kaʔdáʔɨ* 'a piece of manioc'
54	*-ʔɛhu* SCM.hole	a hole (typically in the ground, small or big, also below the water, words for holes in which animal live are formed with *-ʔɛhu*; also anus)	*tú:ʔɛhu* 'nostril' *námɛʔɛ́hu* 'anus'
55	*-ʔi:ba* SCM.small.palmtree	small palm tree, up to two meters (not used for other trees)	*tó:kɛʔɨ́:ba* 'small palm tree, sp.'
56	*-ʔo:ba* SCM.gable	a gable of a roof	*háʔo:ba* 'short gable of a house'
57	*-ʔo:gwa* SCM.doorway	an opening (e.g. a doorway, a passage in the bush)	*dʒé:ʔogwa* 'door'
58	*-ʔo:ha* SCM.cylindr.cont	cylindrical container, top open	*íbíiʔó:ha* 'coca powder container' *íhtaʔó:ha* 'manioc starch container'
59	*-dorɨ:ɯ* SCM.rounded.point	a slender object with a rounded point (as opposed to sharp points, of e.g. a stick)	*ka:núídorɨ́:ɯ* 'pestle with a rounded point'
60	*-dʒɨrɨ:ɯ* SCM.bulb	an object with a broad bottom (e.g. a pot or a fruit)	*kárá:hídzɨrɨ́:ɯ* 'bulb shaped pot'
61	*-hpɨ:rɨgwa* SCM.long.ridge	a long ridge (long and narrow, e.g. trails of animals in the bush)	*í:núhíhpɨrɨ́gwa* 'a long ridge on the ground'
62	*-karɑ:ɯ* SCM.shallow.hole	a shallow and narrow hole (e.g. vagina, navel)	*gwájʔɛhhúkará:ɯ* 'shallow hole in the ground'
63	*-mɛhkɛi* SCM.thin.part	dented part in a slender object (e.g. a trunk, branch, a person's waist)	*úméʔémɛhkéi* 'thin part of a tree'

Table 15: Polysyllabic specific class markers (cont.)

#	class marker	meaning	examples
64	*-tahigwa* SCM.very.flat	flat objects (in particular objects flattened by force, e.g. a brick, a prey animal in a trap)	*údʒébátáhigwa* 'a flat pan'
65	*-to:kɛɯ* SCM.protuberation	a round protuberation (man-made or natural, e.g. in a tree, the neck)	*kú:mútokéɯ* 'signal drum with a protuberation'
66	*-tsa:ɾagwa* SCM.fibers.sticking.out	an arrangement of unordered fibers pointing roughly in the same direction (e.g. the stump of a tree trunk after felling it, the uncombed hair of a person)	*ní:gwaútsá:ɾagwa* 'head with hair sticking out'

Grammaticality judgments of speakers concerning the acceptability of polysyllabic class markers in contexts such as cross-referencing on verbs vary considerably in some cases. For this reason, the limits of this category, in particular its distinction from the set of repeaters, is not as clear-cut as their representation in a separate table may suggest.

3.4. REPEATERS

Some nouns can be used as repeaters in the same slots that class markers occur in, i.e. on pronominal roots, relative clauses, and main clause predicates, where they are assigned tones according to tone patterns of class marker constructions (see section 2.4.4). The existence of repeaters shows that the system displays a certain degree of "openness" with respect to nouns. The following example (86) illustrates the use of a noun as a repeater in the position where usually only class markers occur, namely suffixed to a copula verb and to a numeral. The noun can be omitted in such a construction.

(86) *ó-ʔdi íhka-**báhɯ**   tsá-**bahɯ**   (*báhɯ*)
      1S-POS COP.SUB-**RP.forest** one-**RP.forest** (forest)
      'I have one (stretch of) forest'
      (lit. What (forest) is to me, one (forest), ((stretch of) forest))

Note that in spontaneous Miraña discourse constructions like the one in example 86 are rare, even though they are judged as grammatical. In natural speech, the form *báhɯ* 'forest' would only occur once—as a noun or as a repeater—and further agreement relations would be marked with a corresponding general class marker in the absence of competing referents.

Repeaters convey the same meaning in their use in class marker positions and as nouns. The forms in the following examples (87a-b) are claimed to be referentially synonymous by native speakers. This is what distinguishes repeaters from class markers for which a source noun can be identified in the language, since the class marker always has a more general meaning than its source noun (see example 85, above).

(87)   a.   *bahkɯ*
           'bone'

       b.   *tɛ-**báhkɯ***
           PN-**RP.bone**
           'bone'

Repeaters interact with the system of nominal classification in that they have the ability to occur suffixed to pronominal roots and verbs like class markers. They are a phenomenon somewhat at the margin of nominal classification since they are hardly ever used to derive nouns from noun roots (except in productive combinations in the genitive construction, see section 5.2) and only rarely used to track referents through discourse. Rather, they are typically used to establish reference independent of another noun phrase (e.g. in expression such as those in examples 87a-b), or they are used in a predicate nominal to attribute the properties they denote to a referent that is established by other means, such as in the following example (88). Note that predicate nominals do not have to agree with other constituents (see section 4.8). In example 88, the ends (of beams used in the construction of a roundhouse) are referred to with the noun *nɨ́hkɛ* 'end'. In the second line of example 88, a particular spatial property is attributed to this referent—namely that it will become fork-shaped—with a combination of *pa-* 'CPL' with a repeater that is used as a predicate nominal.

(88)   *a:-nɛ*   *nɨ́hkɛ-ʔájnɛ* *mɛ́*   *ɨ́mi-tʃó-ʔi*
       CON-GCM.inan   end-PL   1/2PL good-CAUS-PRD
       'And one fixes the ends,'

       *pá-**gwadɛ́kɛ́**-hɨ* *tɛ:-nɛ*
       CPL-**RP.fork**-PL PN-GCM.inan
       'they (will become) fork-shaped' [MLK]

Repeaters are presented here to give an account of the range of forms that can be used in the positions of class markers. Even though there are formal characteristics that distinguish repeaters from class markers, it is not always easy to assign a given form to one of the categories since speakers'

grammaticality judgments with respect to the acceptability of the use of repeaters in the relevant morphosyntactic context vary. No claim of completeness is made here for the list of repeaters given in the tables below. It is clear, however, that the set of repeaters is not entirely open since it is not possible to use just any noun of the language in the position of a class marker. The phenomenon of repeaters is also of interest because it shows a possible origin of class markers, which presumably entered the system as repeaters, and then lost their ability to be used as nouns. Accordingly, repeaters are positioned at the least strongly grammaticalized end of the grammaticalization cline proposed for class markers and repeaters in 3.5, below.

There are 53 repeaters in more or less common use in Miraña that are attested in my corpus. Of these, 42 are full repeaters (presented in the following section, 3.4.1), while the remaining 11 are partial repeaters, which have a reduced form in their use in class marker positions (section 3.4.2).

3.4.1. Full repeaters

Full repeaters are used in the same form as nouns and as suffixes in the positions of class markers (except for the tonal variation that is ubiquitous in the language). In the following, the set of 42 full repeaters is given in several tables according to semantic domains. A set of 13 repeaters denotes spatial concepts in the domain of physical shape, including configurations (Table 16). Others denote body parts (Table 17), parts of plants, botanical terminology (Table 18), geographical places (Table 19), or temporal units (Table 20). Repeaters that correspond to animal names are given in Table 21. In the third column of Tables 16 - 21 meaning definitions are given in addition to some further information on the semantics and typical uses of repeaters, based on explanations of native speakers. The explanations provided by native speakers often include metaphorical extension, such as 'protruding veins on the forehead' from the repeater with the basic meaning 'root' (number 22). Repeaters are assigned consecutive numbers throughout Tables 16 - 22.

Table 16: Repeaters based on spatial notions

#	repeater	meaning
1	-ʔbɨhɨ RP.pack	a pack (e.g. of cigarettes, or something packed in leaves)
2	-ʔbajʔɛ RP.piled.up	piled up or rolled up slender, flexible objects (e.g. a string, an anaconda)
3	-ʔihko RP.nest	nests (and similarly shaped objects, e.g. the upper part of pineapples)
4	-ʔoːɯ RP.chunk	slender objects with two flat ends (the shape of a flashlight)

Tables 16: Repeaters based on spatial notions (cont.)

#	repeater	meaning
5	*-bɨɾaj:ɯ* RP.smooth.point	a slender object with a smooth and rounded point (e.g. a bone)
6	*-iʔdzɨ* RP.unordered.fibers	a mass containing fibers in an unordered state (e.g. hair, old clothes, manioc dough)
7	*-gwa:nɛ* RP.roof.gable	one side of a roof, or a roof that consists only of one side, (also a hole in a cliff that is like one side of a roof)
8	*-gwadɛkɛ* RP.fork	an object shaped like a fork
9	*-gwahɯ* RP.rim	rim (e.g. a slope at a riverside)
10	*-hɨko* RP.funnel	a funnel-shaped object
11	*-iʔkɯ* RP.framework	framework of sticks (e.g. a house, or a very skinny animal; also used for forming neologisms like *ɯdʒɛ́-íʔkɯ* (go.NMZ-RP.framework) 'bicycle')
12	*-mɨhko* RP.corral	round, fenced-in space (e.g. for growing flowers, or to keep animals; plantations in a circle; people sitting in a circle)
13	*-ɾoʔpɛgwa* RP.twisted	a twisted long and thin object (e.g. stick, pencil, wire, tree)

Table 17: Repeaters based on body part names

#	repeater	meaning
14	*-ʔɛ:ba* RP.waist	waist (also thin part of a trail, etc., between two lakes, a peninsula)
15	*-ʔɛ:ko* RP.meat	a portion of meat without bones, ready for eating
16	*-ʔohtsɨ* RP.hand	hand
17	*-ʔumɨ* RP.face	face (the shape of a face, e.g. a mask)
18	*-bahkɯ* RP.bone	a bone (also something with little flesh in general)
19	*-hkɯba* RP.leg	leg
20	*-htɯʔa* RP.foot	foot (of humans and animals and similar looking objects)
21	*-mɨ:ʔɛ* RP.skin	skin, flexible but robust

Table 18: Repeaters based on botanical terminology

#	repeater	meaning
22	*-bajhkɛ* RP.root	root (also the veins that appear on one's forehead when screaming)
23	*-dʒi:ʔo* RP.half.rolled.up.leaf	a leaf that is (still) half rolled up (e.g. to be used in a traditional dance)
24	*-gwahka* RP.branch	branch (in particular thin and skinny ones, like a skeleton, e.g. if one carves something, e.g. an ax handle, and it turns out too thin)
25	*-tso:ʔo* RP.grove	A medium sized palm tree of different species; a group a animals

Table 19: Repeaters based on geographical notions

#	repeater	meaning
26	*-ʔbau* RP.hill	hill (also *mons veneris*, belly)
27	*-ʔɨ:gwa* RP.riverbank	a place for siding up with a boat on a river
28	*-bahu* RP.forest	a place that is overgrown (e.g. a field, on top of a roof)
29	*-hiʔa* RP.abandoned.field	abandoned fields (also lungs of aquatic turtles; something that opens)
30	*-hu:ßa* RP.trail	a trail (or the trace of somebody having walked through grass)
31	*-ko:mi* RP.village	village (i.e. people who live together, who live well, united in their spirit)
32	*-muhko* RP.bathing.place	the place on a creek for bathing and getting water, also for animals

Table 20: Repeaters based on temporal units

#	repeater	meaning
33	*-hko:hɨ* RP.day	a day
34	*-hkɯ:ßɛ* RP.afternoon	an afternoon, darkness
35	*-nɯʔba* RP.month	a month
36	*-pɛhko* RP.night	a night

Table 21: Repeaters based on animal names

#	repeater	meaning
37	*-ajnuu* RP.vulture	turkey buzzard, gen. *Cathartes*
38	*-ɨ:huu* RP.ant.eater	giant ant eater, sp. *Myrmecophaga tridactyla*
39	*-ɨhku* RP.muchilero	bird, sp. *Muchillero*
40	*-i:baj* RP.gray.deer	deer, sp. *Mazama gouazoubira*
41	*-o:ʔi* RP.jaguar	jaguar, sp. *Panthera onca*
42	*-tahku* RP.aguoti	small rodent, sp. *Agouti paca*

There is an additional set of 83 repeaters that appear to be rarely used in Miraña. These are forms that are formally and semantically related to a subset of the over 400 Bora "classifiers" listed in Thiesen and Thiesen (1998: 354ff.) and Thiesen and Weber (forthcoming). This list was compiled by the Thiesens in the Bora communities of Northern Peru between the 1950s and 1980s. All class markers of Miraña (as given in sections 3.2 - 3.3) as well as most repeaters given in this and the following section (3.4.2) appear in that list with the regular phonological changes between Miraña and Bora and minor semantic differences. An additional 83 forms from that list are recognized by Miraña speakers—often in a slightly different form or with a slightly different meaning—and their use as suffixes on pronominal roots and verbs is judged grammatical. All of these forms can also be used as nouns according to Miraña speakers. Thus, they are repeaters, not class markers in Miraña under the analysis pursued here. None of these forms occurs in my corpus of over 13 hours of natural texts, nor in the experimental data I collected. These 83 forms are given in Appendix B.

3.4.2. Partial repeaters

There are 11 nouns that can be used as partial repeaters, i.e. they appear in a reduced form when they are used in class marker positions. The forms of these when used as repeaters and as nouns are given in Table 22. Like any repeater—but unlike class markers with a nominal origin—they have the same meaning in both uses.

Table 22: Partial repeaters

#	repeater use	meaning	noun use
43	*-bo* RP.anaconda	anaconda snake (and similarly shaped objects)	*bóːa*
44	*-i* RP.coca	coca	*íbíːi*
45	*-iʔdʒo* RP.pot	pot (also a deep hole in the ground with slippery edges, a cliff, the deep eyeholes of a sick person)	*dʒíɾiʔdʒo*
46	*-kahi* RP.tapir	tapir, sp. *Tapirus terrestris*	*okáhi*
47	*-ma* RP.feces	feces (and similar looking, soft things)	*namɛ*
48	*-mo* RP.river	big river (also a huge garden, open bush land, a flooded creek)	*móːaj*
49	*-muu* RP.milk	milk	*múhpajnɛ*
50	*-pɛ* RP.mouse	mouse	*dʒiʔpɛ*
51	*-pɨ* RP.manioc	manioc	*pɨːka*
52	*-ɾa* RP.parakeet	parakeet	*dʒoːɾa*
53	*-tʃi* RP.tucupí-sauce	tucupí sauce (a hot sauce made from chili peppers)	*tʃiʔtʃi*

The reduced form of a noun that is used as repeater is always monosyllabic. It may correspond to the first syllable of the noun (numbers 43, 48, 49, and 51), its last syllable (numbers 44, 50, and 52), or be made up of some other segments of the noun (numbers 45, 46, 47, and 53). The use of partial repeaters is not common. The use of some partial repeaters that denote culturally important entities (numbers 43, 44, 48, 51) seems to be additionally restricted to formal registers, sometimes with a magical function. The same is also true for many full repeaters, animal names in particular.

3.5. DEGREES OF GRAMMATICALIZATION OF CLASS MARKERS AND REPEATERS

On the basis of the formal characteristics discussed in the preceding sections, the set of class markers and repeaters can be characterized as a set of forms that display different degrees of grammaticalization. These formal differences tend to correlate with differences in semantic specificity and differences in the conventionality of combinations of these forms with noun roots (as discussed in chapters 6 and 7) as well as differences in their preferred use as identity anaphora or indirect anaphora (see section 10.4). In terms of degrees of

grammaticalization, general class markers appear to be the most strongly grammaticalized forms, while grammaticalization of specific class markers is overall weaker, but they are an internally diverse set. Repeaters display a low degree of grammaticalization, since they can in fact be used as lexical nouns.

General class markers are a tightly integrated paradigm consisting of six forms. They have the following properties that characterize them as strongly grammaticalized forms (see Lehmann 1995: 164; see also Heine et al. 1991: 17ff.; Bybee et al. 1994: 4ff.):

(i)   fusion of marking of different grammatical categories in one form (noun class and number)

(ii)   allomorphs and suppletive forms

The set of general class markers is clearly distinguishable from that of specific class markers and repeaters. Within specific class markers and repeaters, five subsets have been distinguished by formal criteria in the preceding sections. It was also mentioned that these subsets are not always clearly distinguishable, but rather that there is some overlap and fuzzy limits. The formal characteristics of these subsets are summarized in Figure 8, where class marker forms are ordered along a "grammaticalization scale" (Lehmann 1995: 164) or "cline" (Hopper and Traugott 1993: 6).[25] The numbers in brackets refer to the numbers that were assigned to these forms in Tables 12 - 22, above. Allomorphs are separated by " ~".

As can be seen from Figure 8 the proposed ordering of repeaters and the different subsets of specific class markers according to different degrees of grammaticalization also correlates with the frequency of their use in discourse and a decreasing number of forms in each subset. The frequency of use also correlates with the semantic generality of specific class markers, which is discussed in more detail in section 6.3, below.

The formal characteristics that are used to distinguish the sets of forms represented in Figure 8 can be taken as indicators for increasingly grammaticalized forms (based on Lehmann 1995: 164; see also Craig 1992: 291):

(i) boundedness: repeaters vs. specific class markers
It is typical for strongly grammaticalized forms to be morphologically bound rather than free. The criterion of boundedness sets repeaters apart from class

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[25] This way of ordering class marker forms was inspired by Gomez (1982: 111) who provides a similar representation of the forms that make up the system of nominal classification in the Eastern Tucanoan language Tatuyo.

		------------> higher degree of grammaticalization ------------>			
subsets		full repeaters	polysyllabic SCMs	non-core monosyllabic SCMs	core set of SCMs (without -ba ~ -ʔba SCM.3D)	-ba ~ -ʔba SCM.3D
number of forms		42+	48	10	7	1
frequency/ semantic generality		low ---> high				
formal characte- ristics	boundedness	can be used as noun	can only be used as suffix -->			
	phonological complexity	polysyllabic ---------------->		monosyllabic ------------------------------>		
	occurrence on animal names (arbitrary assignment)	do not occur on animal names ---------------------------->			occur on animal names ------------>	
	allomorphs	no allomorphs -->				allomorphs
examples		*-hiko* RP.funnel (10)	*-huːʔo* SCM.palm-leaf (27)	*-hto* SCM.spine (8)	*-gwa* SCM.2D. straight (3)	*-ba ~ -ʔba* SCM.3D (1)
		-ʔohtsɨ RP.hand (17)	*-iːʔo* SCM.little. stick (28)	*-huu* SCM.tube (9)	*-hɨ* SCM.2D. round (5)	
		-bajhkɛ RP.root (23)	*-ʔbabaj* SCM.bag (51)	*-ɾo* SCM.bottle (13)	*-ɯ* SCM.3D. round (14)	

Figure 8: Degrees of grammaticalization of specific class marker and repeater forms

markers. While repeaters can be used as free forms, class markers can only be used as bound suffixes. Recall that some specific class markers are homophonous with a noun (e.g. *-ha* (SCM.cover) vs. *ha* 'house'). However—unlike repeaters—class markers with a recognizable origin are characterized by a "bleached" meaning (Hopper and Traugott 1993: 20) with respect to their source noun, while repeaters have identical meanings in their use as noun and in class marker positions. The number of repeaters is given as 42 in Figure 8, which corresponds to the forms that are attested in my corpus, but recall that there are possibly many more forms that can be used as repeaters (see Appendix B).

(ii) phonological complexity: monosyllabic vs. polysyllabic specific class markers
The criterion of phonological complexity sets polysyllabic specific class markers apart from monosyllabic specific class markers. Note that the 11 partial repeaters (see Table 22), which are monosyllabic, do not fit the scheme proposed in Figure 8. However, the restriction of use of many of these to formal registers, often with a magic function, hints at their somewhat irregular status, not along the line of "normal grammaticalization" (Lehmann 1995: 164ff.).

(iii) arbitrary assignment: core vs. non-core specific class markers
The occurrence on animal names is what defines the core set of specific class markers. Recall that this formal characteristic relates to the fact that animal names are always arbitrarily assigned to class markers, while noun class assignment of other nouns is mostly semantically motivated. Thus, while non-core class markers can often be used in productive derivations according to communicative intentions, the use of class markers from the core set is more strongly constrained by morphosyntax.

(iv) allomorphs: -ba ~ -ʔba *(SCM.3D) VS. other class markers*
Finally, the form *-ba ~ -ʔba* (SCM.3D) is formally distinguished from other specific class markers in that it has allomorphs. Note that this is also the class marker with the broadest meaning, for which three unrelated meanings have to be given, which only account for a minor part of its uses (see section 6.3.1, below). (From this section on, this class marker is only cited with the form *-ba*.)

3.6. SUMMARY AND DISCUSSION

This chapter showed that Miraña class markers can be defined as a set of suffixes that fulfill a number of distributional criteria, namely their exclusive use in a range of morphosyntactic contexts, including pronominal roots, relative clauses, and main clause predicates. Repeaters can also be used in these contexts, but unlike class markers, these forms can also be used as nouns. Within the set of class markers, general class markers are distinguished from specific class markers by their ability to replace specific class markers in agreement marking. General class markers are a small set of forms that encode animacy, sex, and number. Specific class markers are a large and internally diverse set consisting of monosyllabic and polysyllabic forms. Within specific class markers, a core set of monosyllabic forms with relatively broad meanings can be identified. These are the forms that are most frequently used in nouns and as agreement markers.

The different subsets of class markers can be said to resemble different types of systems of nominal classification that are described in the literature. The set of general class markers clearly resembles the type of natural gender systems well known from some European languages. The core set of specific class markers is reminiscent of the noun class systems of Bantu languages with respect to the size of the inventory and because some nouns are arbitrarily assigned to the classes that correspond to this subset of class markers (even though this arbitrary assignment is less common with these forms than with Bantu class markers, see section 7.3, below). The remaining set of class markers (non-core monosyllabic class markers and polysyllabic class markers) resembles a classifier system with respect to the size of the inventory, the semantic specificity, the semantic profile, namely their shape semantics (see section 6.3), and the fact that there is a certain overlap with nouns.

In Miraña the entire set of class markers competes for the same morphosyntactic contexts. As such, the system is akin to "multiple classifiers" (Aikhenvald 2000: 204ff.), i.e. a situation where one and the same set of classifying morphemes is used in a variety of different contexts. Unlike classifier systems, however, these forms are also used for redundant agreement marking (see section 5.4), which is commonly regarded as the most important property of noun class systems. At any rate, it is not the case that two or more clearly distinct sets of classifying morphemes would be used in different contexts, e.g. one set as cross-reference markers on verbs and another set in combination with numerals. Thus, the Miraña system does not correspond to what Aikhenvald (2000: 184ff.) calls "different classifier types in one language".

THE MORPHOSYNTACTIC CONTEXTS OF CLASS MARKERS

4.1. INTRODUCTION

One of the most striking characteristics of Miraña class markers is the range of morphosyntactic contexts—or "loci"—in which they are used. Besides their use in nouns, they are obligatorily used in virtually all other nominal expressions in the clause, including pronominal expressions and numerals, as well as in predicates of main clauses and relative clauses. This wide variety of construction types can be grouped into four types of class markers uses:

- (i) "derivational use" in nouns,
- (ii) "agreement use" in nominal expressions other than nouns and in main clause and relative clause predicates in response to an overt agreement controller,
- (iii) "absolute use" in the expressions listed under (ii) when there is no overt agreement controller, and
- (iv) "predicative use" in pronominal expressions that are used as predicate nominals.

Each of these uses has quite different morphosyntactic characteristics, the most important of which are described in this chapter. This serves as a basis for the discussion of further morphosyntactic as well as semantic and discourse-pragmatic characteristics of class marker uses in the following chapters. Among the four uses of class markers, their derivational and their agreement use are "major uses", at least in the sense of that they are the most frequent ones, while the remaining two are considered "minor uses". These are minor also in the sense that the absolute use is derived from the agreement use and in that the predicative use occurs in one, very specific construction only.

The morphosyntactic locus of class markers in nominal words is usually directly following the root, be it noun roots or the roots of pronominal expressions or numerals. On the other hand, class markers appear on the "right

edges" (i.e. as one of the last suffixes) of words formed from verb roots, be it nominalized verbs or predicates of main clauses or relative clauses. When class markers are used on verbs that are not nominalized, derivational and inflectional morphology may intervene between the root and the class markers. Class markers also appear to the right of modifying nominal expressions formed with -ɛ- 'pertain to' and -ɛmɛ- 'similar to'. The following Table (23) summarizes the morphosyntactic contexts that class markers occur in and the function that they typically fulfill in these contexts. The last column in Table 23 indicates the section in this chapter in which these contexts are dealt with.

Table 23: Morphosyntactic contexts of class markers

morphosyntactic context	place of CM suffixation	main function	section(s) in this chapter
nouns	on root	derivation	4.2.2 - 4.2.3
nominalized verbs	on edge	derivation	4.2.5
third person pronouns	on root	agreement/absolute	4.3.1
demonstrative pronouns	on root	agreement/absolute	4.3.2
sentence connector pronouns	on root	agreement/absolute	4.3.3
interrogative pronouns	on root	agreement/absolute	4.3.4
possessive pronouns	on root	agreement/absolute	4.3.5
tsi- 'other'	on root	agreement/absolute	4.3.6
numerals	on root	agreement/absolute	4.4
relative clauses	on edge	agreement/absolute	4.5
-ɛ- 'pertain to' and -ɛmɛ- 'similar to'	on edge	agreement/absolute	4.6
main clause predicates	on edge	agreement/absolute	4.7
predicate nominals	on root	predicative	4.8

4.2. DERIVATIONAL USES OF CLASS MARKERS IN NOUNS

Class markers are used as derivational devices in nouns, where they are suffixed directly to noun roots (or to another class marker, which is suffixed directly to the root). The addition of a class marker may cause substantial changes in the meaning of a noun, and class markers may derive count nouns from non-count nouns (as discussed in chapters 7 and 8). Class markers can also derive animate nouns from inanimate nouns and vice versa. Besides their semantic effect, class markers also determine the syntactic properties of a noun.

This includes above all the overt marking of noun class that is used in agreement marking with that noun.

Before entering into discussion of the uses of class markers on noun roots, the major noun types have to be distinguished. This is done in the following section (4.2.1). The derivational functions of class markers in the different types of nouns are discussed in sections 4.2.2 - 4.2.4. Section 4.2.5 deals with the derivational use of class markers on nominalized verbs. Successive affixation of multiple class markers in one noun is discussed in section 4.2.6. Section 4.2.7 summarizes the functions of class markers on noun roots and nominalized verbs.

4.2.1. Noun types

In section 2.4.1, above, the major types of nominal roots and stems were introduced. This section discusses the different types of noun words that are built from these roots and stems. By noun word I mean here the set of forms that share the same noun stem. A stem must include a noun root and it may also include a class marker (see Figure 5 in section 2.4.1). Note that the use of class markers on noun roots is stem forming, i.e. the addition of a class marker to a noun root results in the derivation of a new stem. Word forms can stand on their own and function as a noun phrase in a clause, e.g. representing an argument. In the following, I focus on nouns at the word level, since this is the relevant level for the study of the syntactic behavior of nouns, e.g. in agreement marking, and their referential properties. Recall from section 2.4.2.3, above, that nouns are distinguished from other types of nominal expressions by taking the plural marker form -:nɛ or the general animate plural class marker form -muɪ. Other nominal expressions combine with other forms of the plural marker and other forms of the general animate plural class marker. The category of nouns also includes non-count nouns, which do not combine with number markers (see section 8.3, below), but count nouns can be derived from them by the addition of a class marker and these count nouns combine with the plural markers typical for nouns.

The set of nouns can be subdivided into major types in a number of different ways. On the one hand, nouns can be divided into animate and inanimate nouns. Animate nouns can be identified by the presence of accusative case marking when they represent a primary object in a clause (see section 2.4.4.3) and by the ability to mark agreement with them using a general animate class marker (see section 3.1). On the other hand, nouns can be subdivided into different types according to the root and stem types that are used to build them and according to their combinatorial possibilities with number markers. The

stems of both animate and inanimate nouns are built from noun roots and possibly class markers. Recall from section 2.4.1, above, that there are three major types of noun roots: optionally classified roots, obligatorily classified roots, and repeater noun roots (see Figure 4 in section 2.4.1, above). Optionally classified roots are free roots that can optionally be combined with class markers. Obligatorily classified roots are bound roots that never occur without a class marker. Another type of noun roots are repeater roots. These are also free roots, but—unlike optionally classified noun roots—repeater roots can be used in class marker positions (see sections 3.1 and 3.4).

The stems—and, subsequently, words—that are formed with these types of roots are mostly named after the type of root that they include. Repeater roots can be used as noun stems on their own (repeater stems), and when these stems are used as nouns, they are called repeater nouns. Obligatorily classified noun roots only occur with a class marker suffixed to them. Combinations of obligatorily classified noun roots and class markers are therefore called obligatorily classified noun stems, after the root that is contained in them. When obligatorily classified noun stems are used as nouns they are called obligatorily classified nouns. Optionally classified noun roots are used in two types of nouns: non-classified nouns and optionally classified nouns. When optionally classified noun roots combine with class markers, they form optionally classified stems. When these stems are used as noun words, they are called optionally classified nouns, after the type of root they include. Please note that henceforth by optionally classified nouns I mean a noun that is classified, but formed with a root that need not combine with a class marker. The class marker is only optional with respect to the root, not with respect to the stem or word. When optionally classified noun roots are used as nouns on their own, they are called non-classified nouns in order to distinguish them from classified nouns. The ways in which the four major kinds of noun words are built are summarized in Table 24. Note that the terminology used here for the different kinds of noun words differentiates these four noun types with respect to the type of root that a noun includes and whether or not a noun includes a class marker. This is important because in the following I mostly refer to entities at the word level, e.g. in the context of the agreement system. For parts of this discussion, the distinction between optionally classified nouns and obligatorily classified nouns is not of primary relevance. Both types of nouns are thus sometimes referred to collectively as "classified nouns".

Table 24: Types of noun roots, noun stems, and noun words

root level	stem level (root+class marker)	word level
optionally classified roots	(no CM suffixation) →	non-classified nouns
	↘ optionally classified stems (optionally classified root + CM) →	optionally classified nouns
obligatorily classified roots →	obligatorily classified stems (obligatorily classified root + CM) →	obligatorily classified nouns
repeater roots →	(no CM suffixation)	repeater nouns

There are two important issues that underlie the establishment of noun types in Miraña: the function of class markers for the derivation of new nouns and the countability status of nouns. Both of these issues are discussed in detail further below, but I want to briefly mention here how these issues are relevant for the establishment of the different types of noun words.

With respect to the derivational role of class markers, note that in the terminology used here, "non-classified noun" means that the form that is used as a noun consists of a bare root and no class markers. It does not mean that the root, which is used as a non-classified noun, cannot combine with class markers. In fact, the optionally classified noun roots that are used as non-classified nouns can combine with class markers, in which case an optionally classified noun stem is derived (which can then be used as a optionally classified noun). A basic assumption that underlies this terminology is that the addition of a class marker to a noun root results in the derivation of a new lexical item. This is why a bare optionally classified noun root, when used as noun on its own, belongs to a different type of noun (namely "non-classified nouns") as against the combinations of an optionally classified noun root with a class marker (which belongs to the type called "optionally classified nouns"). In the following sections, a number of arguments for the view that the relation between these two types of nouns is a derivational one, which results in two different nouns that belong to two different noun types, are provided.

The second important issue for the establishment of noun types is countability. This issue is closely linked to the combinatorial possibilities of nouns with number morphology. These are used as criteria for distinguishing noun types in Miraña. The number marking patterns of nouns and their countability status are discussed in detail in chapter 8. For the discussion in the following sections it is sufficient to note that all classified nouns (i.e. all nouns that include a class marker, whether it is obligatorily or optional on the noun root) and repeater nouns obligatorily combine with plural markers in contexts with intended plural reference, while non-classified nouns cannot combine with plural markers at all. Classified nouns and repeater nouns are therefore count nouns, while non-classified nouns are non-count nouns.

The basic characteristics of the four types of nouns that are built from different types of roots and combinations of these roots with class markers can be summarized as follows:

Non-classified nouns consist of a single noun root (i.e. an optionally classified noun root) and no class marker. They cannot combine with plural or dual markers, nor can the optionally classified root be used as a repeater. Non-classified nouns include nouns denoting natural kinds (e.g. wood), botanical species, as well as names for smaller animals, and some nouns with human referents (such as children and orphans).

Optionally classified nouns consist of an optionally classified noun root and a class marker. By definition, the noun roots appearing in such nouns do not obligatorily take a class marker. Optionally classified nouns obligatorily combine with dual and plural markers in contexts with two or more referents. Since the root of an optionally classified noun is free and can be used as a noun on its own as a non-classified noun, optionally classified nouns are by definition in a derivational relation with a non-classified noun. Inanimate optionally classified nouns typically denote a particularly shaped instantiation of the kind denoted by the non-classified noun from which they are derived, such as a part of a plant. Animate classified nouns denote individuals of the animal species or group of humans denoted by the non-classified noun from which they are derived.

Obligatorily classified nouns also consist of a noun root and a class marker. By definition, the roots that are included in obligatorily classified nouns never occur without a class marker. Obligatorily classified nouns have the same properties as optionally classified nouns, except that they are not in a derivational relation with a non-classified noun.

Repeater nouns consist of a single noun root (i.e. a repeater noun root). Unlike non-classified nouns (which also consist of a single noun root), repeater nouns obligatorily combine with number morphology in contexts with non-singular reference and these nouns can be used as repeaters. They typically denote body parts, parts of plants or artifacts, temporal or spatial units (see section 3.4, above).

Figure 9 illustrates the morphological properties of the four noun types with examples. The arrow in Figure 9 indicates that optionally classified nouns are derived from optionally classified noun roots, which may be used on their own as non-classified nouns.

nouns

non-classified nouns
(bare optionally
classified root)

classified nouns
(classifiable root+CM)

repeater nouns
(bare repeater root)

optionally
classified nouns
(optionally classified
root + CM)

obligatorily
classified nouns
(obligatorily classified
root + CM)

ʉ́hɨ
'banana(s)/
banana substance'

ʉ́hɨ-ʔo
banana-**SCM.3D.oblong**
'banana fruit'

í:ʔʉ́-u
egg-**SCM.3D.round**
'egg'

gwahka
'branch'

cannot be used
as repeater:
*í-ʉ́hɨ
PRX-banana
Intended meaning:
this banana

root is free:
ʉ́hɨ
'banana(s)/
banana substance'

root is bound:
*í:ʔʉ́
Intended meaning:
egg(s)

repeater use:
í-gwahka
PRX-**RP.branch**
'this branch'

Figure 9: Noun types

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It may seem bothersome to distinguish noun types in Miraña (as in Figure 9) in addition to distinguishing root types and stem types (see section 2.4.1). However, it is necessary for the following discussion because it is at this level that nouns are classified by the agreement system. This is a major topic of section 5.4, below, but let me briefly mention here that the different noun types take different agreement patterns. With nouns of any type, agreement can be marked with general class markers. With classified nouns (of both subtypes), agreement can also be marked with specific class markers, and agreement with repeater nouns can be marked with general class marker or repeaters. Thus, two different nouns that include the same noun root do not necessarily take the same agreement pattern. For instance, the non-classified noun *úhɨ* 'banana(s)' takes agreement only with general class markers, while agreement with an optionally classified noun that includes the same root, e.g. *úhɨ-ʔo* (banana-SCM.3D.oblong) 'banana fruit', can be marked with a specific or a general class marker. Agreement marking with specific class markers thus only applies to a subset of nouns, namely the two types of classified nouns (obligatorily and optionally classified nouns). The elements of the specific noun classes are thus the morphologically complex classified nouns, which include specific class markers themselves. Therefore, classified nouns, not noun roots, are the elements of the specific noun classes of Miraña.[26]

The following sections discuss the role of class markers in the formation of the types of nouns that include class markers, i.e. optionally classified nouns (section 4.2.2) and obligatorily classified nouns (section 4.2.3). Section 4.2.4 deals with the properties of repeater nouns. Section 4.2.5 discusses class marker suffixation to nominalized verbs. Multiple affixation of class markers is dealt with in section 4.2.6. Section 4.2.7 summarizes the functions of class markers in the formation of classified nouns.

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[26] This use of the term "noun class" is thus consistent with the use of this term in the Bantuist tradition, where noun stems that include class markers are assigned to numbered classes. In this tradition, "genders" are subsequently defined as pairs of noun classes that correspond to singular/plural distinctions (see Corbett 1991: 44f.). The elements of "genders" in this sense are thus noun roots that take a fixed pair of noun class markers. "Genders" in this sense are hard to define in Miraña because Miraña noun classes are not assigned in such regular patterns as the singular/plural pairings of Bantu noun classes.

4.2.2. Derivation of optionally classified nouns from non-classified nouns

Optionally classified nouns are derived from optionally classified noun roots with the addition of a class marker to this root. The following examples (89 - 90) illustrate the use of class markers to derive inanimate classified nouns from optionally classified noun roots. The forms in examples 89a and 90a are optionally classified noun roots that function as non-classified nouns. These nouns are non-count nouns, i.e. they can refer to an unspecified number of items (see section 8.3 for details). They cannot combine with the plural marker (examples 89b, 90b). With the addition of a class marker (examples 89c, 90c), classified nouns are derived that have a countable status, i.e. they refer to singular entities and combine with the plural marker when plural reference is intended (examples 89d, 90d).

(89)   a.   *úßi*
             basket
             'basket(s)'

        b. * *úßi-:nɛ*
             basket-PL
             Intended meaning: baskets

        c.   *úßi-:baj*
             basket-**SCM.cont**
             '(a) basket'

        d.   *úßi-:báj-:nɛ*
             basket-**SCM.cont**-PL
             'baskets'

(90)   a.   *pí:ka*
             manioc
             'manioc'

        b. * *pí:ka-:nɛ*
             manioc-PL
             Intended meaning: manioc tubers, manioc plants, manioc peels, etc.

        c.   *pí:ka-ɯ*
             manioc-**SCM.3D.round**
             'manioc tuber'

    d.   *pí:ka-**ú**-:nɛ*
           manioc-**SCM.3D.round**-PL
           'manioc tubers'

Derivation of classified nouns by means of class markers can be very productive in some cases, i.e. some optionally classified noun roots can alternatively combine with different class markers, forming different classified nouns. The noun example 91a is a non-classified noun, i.e. a bare optionally classified noun root. Examples 91b-h illustrate the use of seven different class markers on that noun root, which derive seven different classified nouns. The underlying optionally classified noun root (example 91a) can be used as a non-classified noun to refer to 'banana' as a botanical species or substance or to an unspecified number of any of the entities denoted by the derived classified nouns in examples 91b-h. This kind of productive derivation of optionally classified nouns is widely used for the naming of different parts of botanical species or products made from these. The roots of most other inanimate nouns as well as those denoting animals only occur with one class marker.

(91) a.   *úhi*
          banana
          'banana, banana fruit(s), banana plant(s), banana bunch(es), etc.'

      b.   *úhi-**ʔo***
          banana-**SCM.3D.oblong**
          'banana fruit'

      c.   *úhi-**ko***
          banana-**SCM.1D.pointed**
          'banana plant'

      d.   *úhi-**ʔi***
          banana-**SCM.bunch**
          'bunch of bananas'

      e.   *úhi-**pájhko***
          banana-**SCM.liquid**
          'banana drink'

      f.   *úhi-**ʔbábaj***
          banana-SCM.bag
          'bag of bananas'

    g.   *úhi-**dʒí:hɯ***
            banana-SCM.powder
            'pulverized dried banana'

    h.   *úhi-**ba***
            banana-SCM.3D
            'thick drink made of sweet banana'

Some optionally classified noun roots denote species of smaller animals, typically those that usually appear in large groups, for instance gregarious animals or insects. When these optionally classified noun roots are used as non-classified nouns (examples 92a and 93a) they refer to an unspecified number of individual animals. Class markers are used to derive classified nouns denoting individual animals from these noun roots, as shown in examples 93b and 92b. Example 93c illustrates a case where a class marker is used to derive a noun denoting not an individual animal, but an object related to that species, namely the anthill of the species of ants denoted by the non-classified noun (see sections 7.4 and 8.3.3 for further discussion on the use of class markers in animal names).

(92)   a.   *a:tsári*
            rat(s)
            'rat(s) (gen. *Oryzomys*)'

       b.   *a:tsári-**ɯ***
            rat-**SCM.3D.round**
            '(a) rat'

(93)   a.   *méni:kɛ*
            ant, sp.
            'ant(s)'

       b.   *méní:kɛ-**ɯ***
            ant, sp.-**SCM.3D.round**
            '(an) ant'

       c.   *méní:kɛ-**mi***
            ant, sp.-**SCM.transport**
            'anthill'

4.2.3. Class markers in obligatorily classified nouns

Obligatorily classified noun roots are bound roots that never occur without a class marker. A classified noun that includes an obligatorily classified noun root and a class marker is called an obligatorily classified noun. Since the root contained in obligatorily classified nouns cannot occur by itself as a free form, these nouns do not display the shift between non-classified noun and classified noun that is observable with optionally classified nouns. Evidence that the class marker forms that are recognizable inside obligatorily classified nouns should indeed be considered as class markers (and not as part of the root) comes from the fact that these class markers can be used for agreement marking.

The following examples illustrate the use of class markers on inanimate obligatorily classified noun roots, forming inanimate obligatorily classified nouns. Examples 94a and 95a also illustrate the use of these class markers for agreement marking. Examples 94b and 95b show that these class markers are not detachable from the obligatorily classified noun roots.

(94) a. *tsa-**ɯ** í:ʔ*ɯ́-**ɯ**
 one-**SCM.3D.round** egg-**SCM.3D.round**
 'one egg'

    b. * *í:ʔɯ́*
 Intended meaning: egg(s)

(95) a. *tsa-**:baj** gwáj-**:baj**
 one-**SCM.cont** hammock-**SCM.cont**
 'one hammock'

    b. * *gwáj*
 Intended meaning: hammock(s)

Many animal names are obligatorily classified nouns, i.e. nouns that are built from bound noun roots and class markers. Two of these are illustrated in the following examples (96, 97). As with inanimate obligatorily classified nouns, the class markers can be used for agreement marking (examples 96a, 97a) but are not detachable from the noun root (examples 96b, 97b).

(96) a. *tsa-**ʔba** tóʔmi-**ba**
 one-**SCM.3D** woodpecker-**SCM.3D**
 'one woodpecker'

b.   * *tóʔmi*
        Intended meaning: woodpecker

(97)   a.   *tsa-ɯ*   *dʒɛ́:-ɯ*
           one-**SCM.3D.round**   armadillo-**SCM.3D.round**
           'one armadillo'

b.   * *dʒɛ́*
        Intended meaning: armadillo

Most inanimate obligatorily classified noun roots and most obligatorily classified noun roots that denote animals (examples 94 - 97, above) only ever occur with one and the same class marker. In these cases, the class marker is effectively fused onto the noun root. Most kin terms also include obligatorily classified noun roots, but—unlike the roots of obligatorily classified inanimate nouns or those of animal names—the roots they include can combine with different class markers. For instance, the noun root denoting 'brother-in-law' combines with different general animate class markers (example 98a-b), as well as with the specific class marker used for women who are currently raising children (example 98c). Example 98d shows that this noun root is an obligatorily classified noun root since it cannot occur as a free form. The forms in examples 98a-c are therefore obligatorily classified nouns.

(98)   a.   *ájtónɯ-:bɛ*
           brother/sister.in.law-**GCM.masc.sg**
           'brother-in-law'

b.   *ájtónɯ-dʒɛ*
        brother/sister.in.law-**GCM.fem.sg**
        'sister-in-law'

c.   *ájtónɯ-ní:ʔo*
        brother/sister.in.law-**SCM.mother**
        'sister-in-law (who has a child)'

d.   * *ájtónɯ*
        Intended meaning: brother(s)/sister(s) in law

4.2.4. Repeater nouns

Like non-classified nouns (i.e. bare optionally classified noun roots), repeater nouns consist of a single noun root. But unlike non-classified nouns, repeater

nouns obligatorily combine with plural morphology when they are used to refer to more than one entity, so they are countable and have singular reference when not marked for plural. Inanimate repeater nouns do not usually combine with class markers, but animate repeater nouns may combine with general animate class markers. For agreement marking, repeater nouns can be used as repeaters in class marker slots, such as on pronominal roots, predicates, or relative clauses. Repeater nouns often denote body parts, parts of plants, or spatial or temporal units (see the list of repeaters in section 3.4, above). The following examples (99a-c) illustrate an inanimate repeater noun in combination with the plural marker (example 99b) and its use as a repeater in the class marker slot of the numeral two (example 99c).

(99)　a.　*bahkɯ*
　　　　　　'bone'

　　　b.　*báhkɯ-:nɛ*
　　　　　　bone-PL
　　　　　　'bones'

　　　c.　*mí-**bahkɯ́**-:kɯ*
　　　　　　two-**RP.bone**-DL
　　　　　　'two bones'

The following examples (100a-c) illustrate an animal name that is a repeater noun in combination with the general animate plural class marker, which is used to form the plural of animate nouns (example 100b), and its use as a repeater in the class marker slot of the numeral 'two' (example 100c).

(100)　a.　*i:hɯ*
　　　　　　'giant anteater (sp. *Myrmecophaga tridactyla*)'

　　　b.　*i:hɯ́-mɯ*
　　　　　　anteater-GCM.anim.pl
　　　　　　'ant eaters'

　　　c.　*mí-**i:hɯ́**-kɯ*
　　　　　　two-**RP.anteater**-DL
　　　　　　'two giant anteaters'

Recall from sections 3.1 and 3.4, above, that agreement with repeater nouns is either marked with the repeater noun itself or with a corresponding general class marker, i.e. the general inanimate class marker in case of inanimate repeater nouns and a general animate class marker in case of repeaters corresponding to animal names. Thus, repeater nouns generally do not occur

with any specific class marker. Note that there are no repeater nouns with human referents, i.e. nouns with human referents can never be used as repeaters.

4.2.5. Class markers on nominalized verbs

Verbs are nominalized through a low tone on their first syllable (see section 2.3.3, above) and thus function like noun stems. Nominalized verbs can usually combine with animate class markers in a process that can be described as agent nominalization (examples 101b, 102b). Nominalized verbs can often also be combined with specific class markers to derive nouns denoting non-agentive objects related to what is expressed by the verb stem (examples 101c, 101d, 102c) (see further discussion in section 7.2, below).

(101) a. *ajnɯ*
shoot.NMZ
'shooting'

b. *ajnú-:bɛ*
shoot.NMZ-**GCM.masc.sg**
'shooter'

c. *ajnú-ɯ*
shoot.NMZ-**SCM.3D.round**
'bullet'

d. *ajnú-hɯ*
shoot.NMZ-**SCM.tube**
'rifle'

(102) a. *gwahákɯ*
know.NMZ
'knowledge'

b. *gwahákɯ-:bɛ*
know.NMZ-**GCM.masc.sg**
'knowledgeable person'

c. *gwahákɯ-ʔá:mɨ*
know.NMZ-**SCM.leaf**
'book'

A noun built from a nominalized verb can be used to semantically modify another noun. In that case, it must include the same class markers as that noun, such as *mahtsíßa-ba* (dance.NMZ-SCM.3D) 'stick for dancing' in example 103. Syntactically, constructions consisting of two coreferential nouns are two noun phrases in apposition (see section 5.3, below).

(103) *gwá:na-**ba***   *mahtsíßa-**ba***
       guadua-**SCM.3D** dance.NMZ-**SCM.3D**
       '*guadua* (cane, sp.) stick for dancing' (lit. a *guadua* stick, a dancing stick)

4.2.6. Multiple affixation of class markers

Miraña noun roots and nominalized verbs often allow for successive affixation of different class markers. Successively affixed class markers can serve to derive, for instance, nouns denoting parts of plants (examples 104a-b), parts of objects made from natural kinds (example 105), or parts of artifacts denoted by nouns that are built from nominalized verbs (example 106).

(104) a.   *úhí-**ko-ʔá:mi***
             banana-**SCM.1D.pointed-SCM.leaf**
             'leaf of a banana plant'

       b.   *úhí-**ʔo-ßí:u***
             banana-**SCM.3D.oblong-SCM.chunk**
             'chunk of a banana fruit'

(105) *kó-**ʔba-ßí:u***
       wood-**SCM.3D-SCM.chunk**
       'chunk of a wooden log'

(106) *ajnú-**hɯ-ɾo***
       shoot.NMZ-**SCM.tube-SCM.bottle**
       'muzzle'

The order of affixation of class markers is determined by the semantics of class markers. It is argued in section 7.2, below, that class markers are the semantic heads of the nouns in which they occur. Assuming this analysis, the denotation of the noun root to which class markers are suffixed modifies the denotation of the class marker. If a class marker is suffixed to a noun stem that already includes a class marker, the denotation of the right-most class marker is modified by the denotation of the preceding noun stem, which itself includes a class marker. The hierarchical internal structure of nouns that include more

than one class marker is indicated by bracketing in the following example
(107).

(107)   [[*ɯ́hɨ*]-***dʒɨ́:hɯ***]-***ro***
          banana-**SCM.powder-SCM.bottle**
          'bottle of pulverized banana'

There are no nouns attested that would include more than two class markers.
However, the number of successively affixed class markers in one and the
same noun seems to be restricted not so much by a structural constraint, but
rather by semantic considerations, i.e. it only makes sense to modify a concept
to a certain degree of detail in a single referring nominal expression.

4.2.7. Summary: derivational functions and overt noun class marking

The two main functions of class markers in nouns are derivation and noun class
marking. With respect to their derivational function, it should be noted that
class markers do not change major word class (e.g. verbs to nouns). However,
the addition of a class marker may cause substantial changes in the meaning of
a word, as illustrated in the following examples (108a-b; see further discussion
in section 7.2, below).

(108)   a.   *bó:a-**hɯ***
                anaconda-**SCM.tube**
                'manioc squeezer'[27]

        b.   *kɯ́:hɯ́gwa-**hpájko***
                fire-**SCM.liquid**
                'gasoline'

The changes caused by the addition of a class marker include the
transformation of animate nouns into inanimate nouns (example 108a, see also
example 93c, above). When general animate class markers are suffixed to
nominalized verbs (which usually have inanimate referents) they transform
them into animate nouns (see examples 101b, 102b, above). When class
markers are used to derive classified nouns from non-classified nouns (see

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[27]This flexible tube woven of vegetal fibers (local Spanish: *matafrío*, local
Portuguese: *tipití*) serves to squeeze the liquid out of the dough made of poisonous
manioc to be further processed into *cazabe*, the indigenous daily bread. In Miraña
mythology this instrument is related to the anaconda.

section 4.2.2, above), they transform non-count nouns into count nouns (see also chapter 8).

Class markers thus determine the morphosyntactic properties of the noun in which they occur in terms of animacy and countability. They also determine the noun class that is used for agreement marking with that noun. The class markers that appear in classified nouns overtly mark the noun class that is used for agreement marking (keeping in mind that noun class agreement may be marked alternatively with general class marker or specific class markers, see section 5.4.4). In case of repeater nouns, the repeater itself can be used as an agreement marker (alternatively to general class markers). There are only very few inanimate nouns that are covertly marked for specific noun class. Two of these are given in the following examples (109a-b). Note that the class marker that is used to mark agreement with these nouns is still recognizable inside these noun forms. This suggests that these nouns have probably undergone a derivational process that has become fossilized, but nevertheless have retained their original class. The nouns in examples 109a-b are not partial repeaters since they have a different meaning than the class markers and in fact the nominal origin of these two class marker can be shown to be different nouns (see Table 14 in section 3.3.1)

(109)   a.   *tsa-**hɯ**   **hɯ**ːβa*
                one-**SCM.tube** path
                'one path'

        b.   *tsa-**ha**   gwáj**ha**mɯ*
                one-**SCM.cover** clothes
                'one (piece of) clothing'

A small number of animate nouns, such as a few kinship terms and the noun denoting "thunder" are not overtly marked for noun class (examples 110a-b). These nouns take obligatory plural marking in contexts with plural reference (see section 8.3.4 for exemplification and further discussion). Agreement with these nouns is marked with general animate class markers. These nouns include nouns with human referents (example 110a) and nouns denoting natural phenomena, such as 'thunder' (example 110b). In these examples agreement marking is illustrated with a class marker used as cross-reference marker on a verb.

(110)   a.   *ká꞉ni tsa꞉-**꞉bɛ***
                father come-**GCM.masc.sg**
                'Father came'

b. *tʃíhtʃi   íʔhúßa-:bɛ*
   thunder speak/sound-**GCM.masc.sg**
   'Thunder is sounding'

In summary, class markers are an important device in the formation of nouns in Miraña. They are used to derive optionally classified nouns (which are countable) from optionally and obligatorily classified noun roots and nominalized verbs. Bare optionally classified roots can be used as non-classified nouns (which are non-countable). Derivation with class markers can be very productive, for instance in naming parts of plants or products made from plants or natural kinds, such as banana or wood. Some noun roots are bound and cannot occur without a class marker (obligatorily classified noun roots). Both types of classified nouns include nouns with human referents, animal names, and inanimate nouns. The class markers in classified nouns determine the grammatical properties of that noun in terms of combinatorial possibilities with number morphology, animacy, and the noun class that is used to mark agreement with that noun. The use of class markers in expressions that include class markers for agreement marking is discussed in the following sections (4.3 - 4.7).

4.3. CLASS MARKERS IN PRONOMINAL EXPRESSIONS

Class markers are used to form pronominal expressions such as demonstratives, interrogative pronouns, and possessive pronouns. Pronominal expressions consist of monosyllabic, bound roots, which obligatorily combine with class markers, except for possessive pronouns, which can be used without class markers.

Recall from section 2.4.2.1 that pronominal expressions can be distinguished from nouns in that they combine with the plural markers *-ʔhɨ*. Pronominal expressions are further characterized by the fact that they can in principle combine with any class marker and that they often include the general inanimate class marker *-nɛ* to mark agreement with inanimate nouns. This class marker is generally not used on noun roots. Pronominal expressions share with nouns the ability function as arguments in a clause and appear as the dependent element in a genitive construction (discussed in section 5.2, below). Pronominal expressions can be used to modify the reference of an accompanying noun, but their typical discourse function is to stand in for nouns (as *pro-nouns* in a literal sense). In either case, the class marker in a pronominal expression is used to mark agreement.

The following sections discuss the use of class markers in the different kinds of pronominal expressions: third person pronouns (4.3.1), demonstrative pronouns (4.3.2), pronouns that functions as sentence connectors (4.3.3), interrogative pronouns (4.3.4), possessive pronouns (4.3.5), and pronominal expressions formed with *tsi-* 'other' (4.3.6). Another pronominal expression formed with class markers, which is used primarily as a predicate nominal, is discussed in section 4.8, below.

4.3.1. Third person pronouns

Third person pronouns are formed either with the bound root *tɛ:-* (PN) and a specific class marker or the general inanimate class marker, or with *di:-* (PN) and a general animate class marker. The roots of the third person pronouns discussed in this section do not have a specific semantic content, e.g. in relation to quantification or possession, and they are not used for exophoric reference. They are often—but not exclusively—used with definite reference. The most common use of the pronouns formed with these roots is for reference tracking, where the roots *tɛ:-* and *di:-* provide a structural template that allows a class marker to appear in a clause independent from another noun phrase. The class markers they include mark agreement with an antecedent and thus provide the most important indication to establish a coreference relation with the antecedent. Thus the pronouns in the following examples can be used to refer back to any noun that includes *-gwa* (SCM.2D.straight, example 111a), or *-ʔo* (SCM.3D.oblong, example 111b), respectively. In combination with the general inanimate class marker, the third person pronouns can refer to any inanimate antecedent (example 111c).

(111) a.   *tɛ:-**gwa***
                PN-**SCM.2D.straight**
                'it (e.g. plank, bench, etc.)'

     b.   *tɛ:-**ʔo***
                PN-**SCM.3d.oblong**
                'it (e.g. banana fruit, nose, etc.)

     c.   *tɛ:-**nɛ***
                PN-**GCM.inan**
                'it (inanimate)'

When *tɛ:-* combines with class markers with relatively specific meanings (which are typically polysyllabic class markers), as in example 112a-b, it can also be used to introduce new referents. These are thus instances of the

"absolute use" of class markers. In this case, too, *tɛ:-* functions like a dummy element that is obligatory for the expression of the semantic content of a class marker, which cannot occur as free form. Since the notions of 'corner' (example 112a), and 'creek' (example 112b) are encoded in Miraña in class markers, and no full noun exists for them, the usual way to refer to these are class markers in combination with *tɛ:-* (PN). The expressions in example 112 can have definite as well as indefinite reference, i.e. 112b may translate as 'the creek' or 'a creek' according to the context. In most cases, however, third person pronouns are used with definite reference. This may be due to the semantic generality of these expressions (which does not allow for independent reference) rather than to an encoded meaning component in the pronominal root.

(112) a.   *tɛ́-tohko*
                PN-**SCM.corner**
                'the/a corner'

       b.   *tɛ́-kaha*
                PN-**SCM.creek**
                'the/a creek'

Third person pronouns with animate referents are formed with the root *di:-* and general animate class markers (example 113a-c, see also Table 7 in section 2.4.2.2, above) or with the root *tɛ:-* and the specific class marker denoting women who have children (113d). One could argue that animacy is encoded as a meaning component in these pronominal roots (with a few exceptional uses such as the animate pronoun in example 113d), but animacy may just as well be encoded only in the class markers and there is simply an allomorphic rule according to which certain class markers (the animate general class markers) combine with *di:-* and all others with *tɛ:-*.

(113) a.   *di:-bɛ*
                PN-**GCM.masc.sg**
                'he'

       b.   *di:-dʒɛ*
                PN-**GCM.fem.sg**
                'she'

       c.   *di:-tɛ*
                PN-**GCM.anim.pl**
                'they'

d.   *té-ni:ʔo*
PN-**SCM.mother**
'she (who has children)'

4.3.2. Demonstratives

Demonstrative pronouns are also formed from bound roots and class markers. The roots forming demonstrative pronouns express the relative distance of the referent from the deictic center. There are two demonstratives, proximal and distal. The following examples (114a-d) illustrate forms of proximal (examples 114a-b) and distal (examples 114c-d) demonstrative pronoun.

(114) a.   *í-gwa*
PRX-**SCM.2D.straight**
'this (e.g. plank, bench, etc.)'

b.   *í-htɛpi*
PRX-**GCM.fem.dl**
'these (two women/females)'

c.   *ɛ:-gwa*
DIST-**SCM.2D.straight**
'that (plank, bench, etc.)'

d.   *ɛ:-hi*
DIST-**SCM.2D.round**
'that (e.g. coin, button, etc.)

4.3.3. The sentence connector pronoun

The root *a:-* (CON) combines with a class marker to form a pronominal expression that is used as a connector at the beginning of a sentence. The class marker suffixed to *a:-* (CON) refers to a participant, event, or state mentioned earlier in discourse, which is thematic in the sentence that is opened with the sentence connector pronoun. The use of the sentence connector pronoun is always anaphoric, it cannot be used for exophoric reference, thus the sentence connector pronoun is a special anaphoric pronoun. The use of this pronoun is illustrated in the following example (115). In the first line a flashlight is explicitly mentioned. The noun that denotes the flashlight includes the class marker *-ba* (SCM.3D). This flashlight is thematic in the subsequent sentence

(line 2 of example 115), and reference to the flashlight is picked up with the connector pronoun that includes the class marker *-ba* (SCM.3D).

(115) **ádzi-bá**   *íhtʃïßέ-tsó-:bɛ*
  flash-SCM.3D get_out-CAUS-GCM.masc.sg
  'He took out the flashlight'

  a-ʔbá=*nɛkɯ*   *pέ:tέ-tso-:bɛ*
  CON-SCM.3D=REC burn-CAUS-GCM.masc.sg
  'And he turned it (i.e. the flashlight) on' (lit. made it burn) [MACLILIG]

Sentence connector pronouns formed with *a:-* can also be case-marked. This confirms their status as noun phrases in a clause. In example 116, the sentence connector pronoun is case-marked for locative case with *-ri* (LOC).

(116) **á:-i-rí**=*ßa*   *di:-tέ-kɛ*   *pídʒúʔkúko-:bɛ*
  CON-SCM.1D.medium-LOC=REP PN-GCM.anim.pl-ACC glue-GCM.masc.sg
  'And to it (i.e. walking stick) he glued them'
  (in the context of a myth where a personified deer takes a group of children away by gluing them to his walking stick. The stick was mentioned in the previous sentence) [CDV]

The use of a sentence connector pronoun is not obligatory, i.e. there are many sentences that do not include this pronoun, but it is very frequently used, in particular in genres such as narratives. It is an important device to structure Miraña discourse. When the general inanimate class marker is used with *a:-* (CON), it often does not refer anaphorically to any particular referent, but to the general situation that was described in the previous sentences in general, for example in the following much used expressions (examples 117a-b).

(117) a.   *á:-nέ-dʒi:ʔɛ*
      CON-GCM.inan-BEN
      'therefore' (lit. and for the benefit of it)

  b.   *á:-nɛ-tɯ*
      CON-GCM.inan-ABL
      'and then' (lit. and from it)

4.3.4. Interrogative pronouns

Interrogative pronouns are also formed with monosyllabic bound roots in combination with class markers. One type of interrogative pronoun corresponds

roughly to English *which*. It has two forms, one for animates, *kɛː-* (example 118a), and another for inanimates, *kaː-* (example 118b).

(118) a. *kɛː-**gwá**-huu*
    INTER-**SCM.2D.straight**-INTER
    'Which (plank, bench, etc.)?'

  b. *kaː-**dí**-huu*   *(dí-uhóßɛ-ːbɛ)*
    INTER-**GCM.masc.sg**-INTER (POS.2S-nephew-GCM.masc.sg)
    'Which one (is your nephew)?'

Another interrogative pronoun, formed with the root *iː-*, corresponds to English *what* (example 119). It combines only with the general inanimate class marker, because in *what*-questions, the specific class of the noun that refers to the entity that is being asked for is not known to the speaker.

(119)   *iː-**nɛ***
    INTER-**GCM.inan**
    'What?'

The interrogative pronoun, formed with the root *muː-* corresponds to *who*. It combines with the general animate class markers (examples 120a-b). If the sex of the person (or animal) asked for is not known, the unmarked, masculine form is used (example 120b).

(120) a. *muː-**dʒɛ***
    INTER-**GCM.fem.sg**
    'Who? (female)'

  b. *muː-**ːbɛ***
    INTER-**GCM.masc.sg**
    'Who? (male or unknown sex)'

4.3.5. Possessive pronouns

Possessive pronouns also combine with class markers. The class marker stands in for the noun expressing the possessed entity. There are four forms of this pronoun: first and second person singular (example 121a-b), third person, with

no number distinctions (example 121c), and one for first person plural (example 121d).[28]

(121) a.   *tájʔné-gwa*
         mine-**SCM.2D.straight**
         'mine (e.g. machete, plank, etc.)'

     b.   *díʔné-gwa*
         yours-**SCM.2D.straight**
         'yours (e.g. machete, plank, etc.)'

     c.   *íʔné-gwa*
         his/her/their-**SCM.2D.straight**
         'his/hers/theirs (e.g. machete, plank, etc.)'

     d.   *méʔné-gwa*
         our-**SCM.2D.straight**
         'our (e.g. machete, plank, etc.)'

Unlike the roots of other pronominal expressions (such as third person pronouns, demonstrative or interrogative pronouns), the roots of possessive pronouns are free forms that can be used without combining with class markers. Compare the following examples (122a-d) with examples 121a-d, above.

(122) a.   *tájʔnɛ*
         'mine'

     b.   *díʔnɛ*
         'yours'

     c.   *íʔnɛ*
         'his/hers/theirs'

     d.   *méʔnɛ*
         'ours'

Possessive pronouns have most likely developed from the possessor prefixes *taj-, di-, i-*, and *mɛ-* (see section 2.4.2.2, above) and a morpheme related to the general inanimate class marker *-nɛ*. If they historically included a class marker

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[28] Possession by second person dual and plural, as well as further number distinctions (dual and plural for third person), distinctions of gender (masculine vs. feminine) and inclusive vs. exclusive can be expressed by using polysyllabic personal pronouns (see section 2.3.2.2) in a genitive construction (see section 5.2).

(which is now not segmentable), this would explain why they can synchronically occur without an additional class marker.

4.3.6. Class markers with *tsi-* 'other'

Pronominal expressions with the meaning 'other' are formed with the bound root *tsi-* 'other' and a class marker (example 123). They are often used as non-identity anaphora, where they refer to another instance of the same type as the referent of the antecedent (see section 10.4, below).

(123) a.   *tsi-**hpi***
             other-**GCM.masc.sg**
             'another (person)'

      b.   *tsi:-**mɨ***
             other-**SCM.transport**
             'another (canoe, motorboat, etc.)'

4.4. CLASS MARKERS IN NUMERALS

Miraña has a quinary number system with native terms up to 400. Independent numeral expressions exist for numbers 'one' to 'three'. These are illustrated in the following examples (124a-c). Note that the numerals agree with the noun denoting the enumerated entity *úhɨ-ʔi* (banana-SCM.bunch) 'banana bunch' in noun class. The brackets in the examples indicate that numerals can also be used without a noun that denotes the enumerated entities and that class markers and additional number marking is optional in the numeral 'three' (example 124c), as well as in numerals higher than 'three' (see examples 125 - 126, below). Note that in the numeral two, dual marking is obligatory in addition to the expression of 'two' in the root of the numeral. Note also that the plural marker used with numerals is *-ßa* (example 124c), not *-ʔhɨ* as in pronominal expressions (see also examples 125a-b, below).

(124) a.   *tsa-**ʔi***   *(úhɨ-ʔi)*
             one-**SCM.bunch** (banana-SCM.bunch)
             'one (banana) bunch'

      b.   *mɨ́-**ʔɨ́**-:kʉ*   *(úhɨ-ʔɨ́-:kʉ)*
             two-**SCM.bunch**-DL (banana-SCM.bunch-DL)
             'two banana bunches '

c.   *ma:kíní(-ʔi-ßa)*   *(úhi-ʔí-:nɛ)*
     three(**-SCM.bunch**-PL) (banana-SCM.bunch-PL)
     'three (bunches) (of banana)'

In the numerals 'four' and 'five', the class markers and additional number marking are optional—like in the numeral 'three', but unlike in the numerals 'one' and 'two'. The numeral 'four' (example 125a) is a complex expression[29], and 'five' is expressed as 'one hand' (example 125b).

(125) a.   *tsanénáʔbéßahkátsí(-ʔi-ßa)*   *(úhi-ʔí-:nɛ)*
         four(**-SCM.bunch**-PL)   (banana-SCM.bunch-PL)
         'four (bunches) (of banana)'

       b.   *tsá-ʔohtsí(-ʔi-ßa)*   *(úhi-ʔí-:nɛ)*
         one-RP.hand(**-SCM.bunch**-PL) (banana-SCM.bunch-PL)
         'five (bunches) (of bananas)' (lit. one hand)

All numbers higher than 'five' are built from expressions for 'finger', 'toe', 'hand', 'foot', and 'person' (= 'twenty'). Examples 126a and b are representative examples of higher numbers ('eleven': example 126a, 'twenty-seven': example 126b). Note that *tsa-:pi* (one-GCM.masc.sg) and *mí:-tétsi-:ku* (two-GCM.masc.dl-DL), which are part of the complex numeral expression in examples 126a and b, agree with *páhtɯ-mɯ* (agouti-PL) 'agoutis (small rodents, gen. *Dasyprocta*)' in animate masculine noun class, the unmarked class for animates.

(126) a.   *pá-ʔohtsí-:kú*   *mɛ́-htúʔa-tɯ*   *tsa-**:pi***
         CPL-RP.hand-DL 1PL.POS-foot-ABL one-**GCM.masc.sg**
         páhtɯ-mɯ
         agouti-GCM.anim.pl
         'eleven agoutis (a small rodent)'
         (lit. two whole hands and of a foot one)

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[29] The Miraña expression for 'four' can be analyzed as *tsa-né-náʔbé-ßa-hkátsi* (one-GCM.inan-accompany-have-RECI) 'being companions to each other of one'. Forms with a similar meaning are attested in various languages of the region (e.g. in the Makú language Hupda, Patience Epps, personal communication), but how such a meaning is related to the number four is not clear.

b.   *tsa-:pi*   *mía-múnáa-hpi*   *tsí-ʔohtsí-tɯ*
      one-GCM.masc.sg true-people-GCM.masc.sg other-RP.hand-ABL
      *mí:-**tétsi**-:kɯ*   *páhtɯ-mɯ*
      two-**GCM.masc.dl**-DL agouti-GCM.anim.pl
      'twenty seven agoutis'
      (lit. one person and (one hand and) of another hand two)

Numerals (i.e. words consisting of a numeral root and a class marker) behave syntactically like pronominal expressions in that they can occur without a noun denoting the enumerated entity, in which case they stand in for that noun, and they can be case-marked. This is illustrated in the following example (127), where two instances of the numeral 'one' occur independent of other nouns. These are thus instances of the absolute use of class markers. Note that the first instance of 'one' is case-marked for ablative (see also discussion in section 5.3, below).

(127)   **tsá-hɯ:ʔó-tɯ**   **tsá-ɯ-ʔgwɯ**   *mɛ́   pikó-:ʔi*
         one-**SCM.palmleaf-ABL** one-**SCM.string-DIM** 1/2S put-PRD
         'from one palm leaf, one puts one string'
         (in the context of explaining the construction of a fish trap, in which a creek is closed with palm leafs, and to every palm leaf a string is attached) [TGW]

4.5. CLASS MARKERS IN RELATIVE CLAUSES

Class markers are used in relative clauses to mark agreement with a noun that serves as the head of the relative clause. Recall that relative clauses are marked with a low tone near its predicate (see section 2.3.3) and that the relativized term represented by the class marker can have different grammatical roles with respect to the predicate of the relative clause (section 2.4.5.1). This contrasts with the use of class markers as cross-reference markers in main clause predicates, where class markers always refer to the subject (A/S). Recall also that the position of the predicate of the relative clause is fixed to the last position in the relative clause.

Class markers are obligatorily suffixed to the verb that functions as the predicate of the relative clause, in the position where class markers are used as subject cross-reference markers in predicates of main clauses. The relative clauses in the following examples (128 - 129) include the class markers *-ha* (SCM.cover) and *-gwa* (SCM.2D.straight), respectively. These are used to mark agreement with nouns that precede the relative clauses in examples 128 and 129. Relative clauses are enclosed in square brackets in this section.

(128) *ha:* [*o   í:tɛ-ha*]   *ái:ßέ-ʔi*
      house 1S.SUB see-**SCM.cover** burn-PRD
      'The house that I saw burned down'

(129) *ó   i:té-ʔí   gwatsíʔhɯ-gwa*
      1S   see-PRD machete-SCM.2D.straight
      [*o:-kɛ   ɯ   áhkɯ-gwa*]
      1S-ACC 2S.SUB give-**SCM.2D.straight**
      'I saw the machete that you gave to me'

Relative clauses in combination with class markers function like any other nominal expression in a clause. As such, they can stand alone as a noun phrase, independent of another noun. The following example contains an instance of an independently used relative clause (compare example 130 with example 128, above.[30] This is thus another instance of the absolute use of class markers.

(130) [*o   í:tɛ-ha*]   *ái:ßέ-ʔi*
      1S.SUB see-**SCM.cover** burn-PRD
      'The one (house, cover, etc.) I saw burned down'

Any case marker can be attached to a relative clause after the class marker. This confirms their status as noun phrases in the clause. In the following example (131), a relative clause is case marked with *-ɾi* 'locative case'.

(131) *táj-pahkó-ɯ́=pɛ*   *ihká-ʔí* [*áí:ßɛ-há*]-*ɾi*
      POS.1S-bag-SCM.3D.round=PAS COP-PRD burn.SUB-**SCM.cover**-LOC
      'My bag was in the one (house, etc.) that burned down'

Relative clauses consisting only of a stative verb and a class marker are commonly used to semantically modify a noun. These "minimal" relative clauses thus have an adjective-like function. In the following example (132a) the minimal relative clause *tsítsɨ:-gwa* (white.SUB-SCM.2D.straight) 'white' is used to modify *boʔdó-gwa* (paddle.NMZ-SCM.2D.straight) 'paddle'. The relative clause is tonally marked as a subordinate clause (indicated by 'SUB' in the gloss) with a concomitant high tone on the first syllable of *tsítsɨ:-gwa* (white.SUB-SCM.2D.straight) (see sections 2.3.3 and 2.3.5, above). Example 132b illustrates that *tsítsɨ-* 'white' is in fact a verb that can also be also used as a predicate of a main clause.

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[30] From a typological perspective, these constructions correspond to "headless" relative clauses. However, in Miraña there is only weak evidence for a headedness relation between relative clauses and the noun whose reference they restrict or with which they are coreferential (see discussion in sections 5.3 and 5.4, below).

(132) a. *boʔdó-gwa*   [*tsítsi:-gwa*]
           paddle.NMZ-SCM.2D.straight   white.SUB-**SCM.2D.straight**
           'white paddle'

       b. *boʔdó-gwá*   *tsitsí:-ʔi*
           paddle.NMZ-SCM.2D.straight   white-PRD
           'The paddle is white'

4.6. CLASS MARKERS WITH -ɛ- 'PERTAIN TO' AND -ɛmɛ- 'SIMILAR TO'

Another way to build modifying nominal expressions is by combining a noun phrase with the morphemes *-ɛ-* (pertain to) or *-ɛmɛ-* (similar to) followed by a class marker. The noun phrase that these morphemes are added to express what the entity denoted by the class marker pertains to or is similar to. Example 133 illustrates the use of *-ɛ-* (pertain to) in combination with classified nouns, i.e. nouns consisting of a noun root and a class marker (examples 133a-b), and with a locative noun (example 133c).

(133) a. *í:nú-hí-ɛ-hpi*
           earth-SCM.2D.round-**PERT-GCM.masc.sg**
           'the terrestrial one' (lit. the one pertaining to the earth) [DC]

       b. *doʔhí-ʔé-ɛ-nɛ́*
           carguero-SCM.tree-**PERT-GCM.inan**
           'the one pertaining to the *carguero* (tree, sp.)'
           (referring to a strap made from *carguero*-tree bark that is used in the construction of a trap) [TGW]

       c. *pi:nɛ́-ɛ-ko*
           middle-**PERT-SCM.1D.pointed**
           'the middle one (i.e. beam in the construction of a roundhouse)' [MLK]

In the following examples, *-ɛ-* and a class marker are added to a nominalized verb (example 134), a demonstrative pronoun (example 135), and a relative clause (example 136).

(134) *tɯhkénú-ɛ-dʒɛ*
       begin.NMZ-**PERT-GCM.fem.sg**
       'the first (born)' (lit. the one pertaining to the beginning) [CHL]

(135) *í-né-ɛ-hi*
       PRX-GCM.inan-**PERT-SCM.2D.round**
       'a (disc-shaped object) pertaining to this (kind)' [ANDGLOR01]

(136) [*íhkaj:ó-né*]-***é-nɛ*-*rí-rɛ́*
       let_go.SUB-GCM.inan-**PERT-GCM.inan**-LOC-REST
       'just with that one pertaining to what lets go'
       (in the context of explaining the constructing of a trap, the part referred to here
       is the trigger, which—when touched by the prey animal—engages the trap)
       [TGW]

Combinations of *-ɛ-* (pertain to) and a class marker can also be added at the end
of a genitive construction (see section see section 5.2), as in the following
example (137). The genitive construction is enclosed in square brackets in this
example.

(137) [*tɛ́:-ʔí   pajné*]-***ɛ-hpi***
       PN-SCM.river inside-**PERT-GCM.masc.sg**
       'the aquatic one' (lit. the one pertaining to inside the river) [DC]

Combinations of *-ɛmɛ-* (similar to) and a class marker have the same
distribution as *-ɛ-* (pertain to) and a class marker. The following examples
illustrate combinations of *-ɛmɛ-* and a class marker with the third person
pronoun *tɛ́:-né* (PN-GCM.inan) 'it' (example 138a) and with a nominalized verb
(example 138b).

(138) a.   *tɛ́:-né-ɛmɛ́-gwá-rɛ*
             PN-GCM.inan-**SIM-SCM.2D.straight**-REST
             'just one (plank, bench, etc.) similar to it' [RAFGREG01]

       b.   *ka:túnú-íʔkú-ɛmɛ́-nɛ*
             write.NMZ-RP.framework-**SIM-GCM.inan**
             'something similar to a typewriter'
             (i.e. a laptop computer) [OV]

4.7. CLASS MARKERS IN MAIN CLAUSE PREDICATES

Class markers are suffixed to verbal stems to form predicates of main clauses.
Class markers in main clause predicates cross-reference the subject of
intransitive verbs (S) and transitive verbs (A). The following examples
illustrate class markers used as cross-reference markers on an intransitive verb
(examples 139a-b), monotransitive verbs (examples 139c-d), and a ditransitive

verb (examples 139e). Note that the subject noun phrase can be omitted if it is cross-referenced with a class marker and that any other argument can also be omitted (see also section 2.4.4.1, above).

(139) a. *ká:tɯ́ßɛ-**gwa***
           fall.down-**SCM.board**
           '(It (board, plank, bench, etc.) fell down'

       b. *ká:tɯ́ßɛ-**dʒɛ***
           fall.down-**GCM.fem.sg**
           'She fell down'

       c. *í:tɛ-**dʒɛ**   (okáhi-kɛ)*
           look-**GCM.fem.sg** (tapir-ACC)
           'She saw (a tapir)'

       d. *gwáʔdáínɯ-**:bɛ́**   (ahɪ)*
           cut-**GCM.masc.sg** (palm,sp.)
           'He cuts (the palm tree)'

       e. *áhkɯ-**:bɛ**   (bájnɛ-hú-ßɯ)   (gwahkódʒi-kɛ)*
           give-**GCM.masc.sg** (tobacco-SCM.tube-ADL) (proper_name-ACC)
           'He gave (a cigarette) (to *Gwahkódʒi*)'

In narratives, general animate class markers are frequently used as cross-reference markers on main clause predicates to track reference to human or personified protagonists of the narrative. Specific class markers are only rarely used as cross-reference markers since they mostly denote inanimates that typically do not appear as subjects, but rather as objects or obliques. The general inanimate class marker is used when an inanimate subject is not further specified, like in meteorological verbs (example 140a), or in the expression 'it hurts', when no source of pain is specified (example 140b).

(140) a. *adʒɛ́-**nɛ***
           rain-**GCM.inan**
           'it rains'

       b. *ái:ßɛ́-**nɛ***
           hurt-**GCM.inan**
           'it hurts'

Recall from section 2.4.4.1, above, that main clause predicates can also be formed with the 'predicator' morpheme *-ʔi* in place of a class marker. Predicates with *-ʔi* require an overt subject noun phrase preceding them within

the same clause, while there is no such restriction for main clause predicates that include class markers.

4.8. CLASS MARKERS IN PREDICATE NOMINALS

The bound root *pa-* 'complete' (CPL) in combination with a class marker forms a pronominal expression that expresses that the referent is complete (in singular expressions, example 141a) or that all referents are included (in plural expressions, example 141b).

(141) a. *pa-ʔba*
           CPL-**SCM.3D**
           'a whole (fruit, log, drink, etc.)'

    b. *pá-mɛ*
           CPL-**GCM.anim.pl**
           'everybody'

Pronominal expressions formed with *pa-* (CPL) and a class marker are often used as predicate nominals to attribute the property denoted by the class marker to a referent that is established by other means. The use of class markers in these constructions is called the "predicative use". Polysyllabic specific class markers and repeaters are often used in these expressions, presumably because they tend to encode relatively specific semantic content. In the following examples (142a-b), polysyllabic specific class markers are used in predicate nominals to attribute specific spatial property to referents that are established by other means, namely demonstrative pronouns.

(142) a. *pá-tsá:ragwa*   *í-nɛ*
           CPL-**SCM.fibers.sticking.out** PRX-GCM.inan
           'This (thing) (is) something like fibers sticking out'
           (referring to the leftovers of a burned down fire) [OV]

    b. *pá-dʒirí:ɯ*   *í-nɛ*
           CPL-**SCM.bulb** PRX-GCM.inan
           'This (is) a bulb-shaped one' [AG02]

The main function of *pa-* (CPL) in these constructions appears to be that of providing a template for the bound class marker to appear in a clause (similar to *tɛ:-* (PN)), rather than to convey its meaning 'all, complete'. Therefore the gloss 'complete' (CPL) should not be taken literally in many cases.

Predicate nominals formed with of *pa-* (CPL) are typically used in verbless clauses (see section 2.4.4.2), as in example 142, or clauses whose predicate is the copula verb *íhka-* (COP) (example 143a) or the verb *nɛ-* 'say / seem' (example 143b). Often the comparative marker *-dɯ* (COMP) (see section 2.4.4.3) is suffixed to the predicate nominal (example 143c). Besides *pa-* (CPL), which is the root that is most commonly used to form predicate nominals, third person pronouns formed with *tɛ-* (PN), can also be used in this function (example 143d) (see also example 181, line 1, and example 182 in section 6.3.2, below; see example 88 in section 3.4 for the use of a repeater in a predicate nominal).

(143)   a.   *ídʒɯ   pá-**gwá**-ʔgwɯ   íhka-nɛ*
             this_way CPL-**SCM.2D.straight**-DIM COP-GCM.inan
             'Like this, (it) is a small, plank-shaped one' [RAFGREG01]

        b.   *a:-nɛ   mɛ́   tʃihtʃɯ́-ʔi   tɛ-:nɛ*
             CON-GCM.inan 1/2PL tie-PRED   PN-GCM.inan
             *kó:gwá-ʔo-tɯ   pá-**páhtsɪ**   né-:nɛ-tɯ*
             copaiba-SCM.3D.oblong-ABL   CPL-**SCM.ring** seem-GCM.inan-ABL
             'And then one ties it to the copaiba, to the one that seems ring-shaped'
             (in the context of explaining how an Amazonian roundhouse is built. "Copaiba" is a ring-shaped element of the construction that rests on the pillars and sustains the beams) [MLK]

        c.   *í-nɛ   pá-**hɪ**-gwɯ:-kɯ́-dɯ́   né-:nɛ*
             PRX-GCM.inan CPL-**SCM.2D.round**-DIM-DL-COMP seem-GCM.inan
             'This looks like two little round and flat ones' [RAFGREG02]

        d.   *ɛ-:nɛ   té-**pahtsɪ́**-hɪ   íhka-nɛ   ɯ́ píko-:ʔi*
             DIST-GCM.inan PN-**SCM.ring**-PL COP-GCM.inan 2S put-PRD.FUT
             'Those, that are ring-shaped ones, you will put (them)' [ANDGLO01]

The use of class markers in predicate nominals is discussed in more detail in sections 6.3.1 and 7.3.1, but let me point out here that in this construction class markers are used to directly predicate their semantic content over a referent. In these constructions, there is no agreement between the expression that includes the class marker and any other constituent. In particular, there is no agreement with the subject noun phrase of the clause in which the predicate nominal occurs, i.e. with the noun phrase that expresses the entity that the predicate nominal attributes properites to. This can be observed in example 143b, where *pá-páhtsɪ* (CPL-SCM.ring) 'a ring-shaped one' is used to attribute properties to the referent of *kó:gwá-ʔo-tɯ* (copaiba-SCM.3D.oblong-ABL) 'to the copaiba', but there is no agreement in noun class between the two constituents.

4.9. SUMMARY AND DISCUSSION

This chapter discussed the role of class markers in the construction of nominal expressions, relative clauses, and main clause predicates in Miraña. Two broad types of contexts of class markers were distinguished, in which class markers play different functions: noun roots and nominalized verbs, on the one hand, and other nominal expressions and verbs, on the other hand. First, the derivational function of class markers in nouns was dealt with. It was shown how class markers are used to derive "classified" nouns from classifiable noun roots. These roots are of two types, "optionally classified roots", which can be used on their own as "non-classified" nouns, and "obligatorily classified roots", which never occur without class markers. Derivation with class markers is productive with some noun roots, i.e. some noun roots can be combined with a number of different class markers and various class markers can be successively suffixed to one noun root. These productive collocations of class markers and noun roots clearly resemble the use of classifiers in some languages (e.g. in Yucatec, see Lucy 2000: 329), except that classifiers are usually part of a separate constituent, i.e. a numeral phrase, with respect to the lexical noun root, while Miraña class markers are directly suffixed to it, and sometimes even fused to it (in obligatorily classified nouns). The use of class markers in the formation of classified nouns also resembles classifiers with respect to the semantic effects of class markers in the formation of classified nouns, as discussed in chapter 7 and 8. The degree to which derivation with class markers is productive and semantically motivated in Miraña is clearly different to the usually restricted derivational functions of class markers in noun class languages such as Swahili, even though the derivational function of class markers in Bantu languages may in fact be more pervasive than is usually assumed in the general linguistic literature, which is often based on regularized textbook examples (see Mufwene 1980; Grinevald and Seifart 2004: 253ff.).

The second major construction type of class markers that was discussed in this chapter are the obligatory uses of class markers in virtually all other nominal expressions, relative clauses, and main clause predicates. This construction type includes the uses of class markers in demonstratives, pronominal sentence connectors, interrogative pronouns, numerals, as well as modifying expressions formed with -ɛ- 'pertaining' or -ɛmɛ- 'similar'. Relative clauses also include class markers and function as noun phrases in a clause. These expressions can be used to modify the reference of an accompanying noun or they can stand alone. Class markers are also used as cross-reference markers on main clause predicates. Among this wide variety of contexts (i.e. all contexts except noun roots and nominalized verbs), none appears to be in any way "privileged" with respect to the use of class markers. If the use in, for instance, numerals was be

more obligatory or frequent than in other contexts, this could be taken to suggest that the system could be analyzed as a numeral classifier system, in which the classifiers would also be used in other contexts. However, class markers are obligatory in all these expressions, except for possessive pronouns and numerals higher than 'two' (recall that there is a historical explanation for this in the case of possessive pronouns and that higher numerals are complex expressions). Thus there is no privileged context, and in this respect the use of class markers in expressions such as numerals, demonstratives, or verbs rather resembles that of an agreement pattern of noun class systems, as discussed in section 5.4, below.

In sum, this chapter has provided an introduction to the main construction types that class markers are used in and the main functions that they fulfill in these constructions. The use of class markers on noun roots was kept apart from their use as agreement markers, where the use of class markers obeys morphosyntactic constraints that strongly delimit the choice of class markers in these contexts (see section 5.4, below). This contrasts with the use of class markers in combination with noun roots, where they are used as derivational devices, contributing semantic content to the resulting classified nouns to different degrees (see section 7.3, below). Their use in these contexts may be restricted by lexical selection of a noun root (in non-compositional classified nouns, see section 7.3.1 -7.3.2, below), but it does not obey a morphosyntactic constraint, as in their use as agreement markers. We thus have identified two basic uses of Miraña class markers: their "derivational use" on noun roots and their "agreement use" in other expressions. We have also seen that expressions that can agree in noun class can stand alone, without an element that controls the agreement. In these uses, the class markers themselves clearly contribute a meaning. These uses of class markers may be called "absolute use" (see also sections 5.4.3 and 6.3.2, below).

In addition to these three uses of class markers, a fourth construction type that class markers may occur in was introduced in this chapter: the use of class markers in pronominal expressions that are used as predicate nominals, typically in combination with the bound root *pa-* (CPL) (see section 4.8). I call the use of class markers in this construction the "predicative use". The use of class markers in these constructions has yet other characteristics, different from those of the use of class markers in nouns and in agreement positions. The morphosyntactic characteristics of the four uses of class markers are summarized in Table 25.

Table 25: Major and minor uses of class markers

class marker use	construction types
derivational use	suffixed directly to a noun root or nominalized verb (or to a class marker that is directly suffixed to a noun root or nominalized verb)
agreement use	suffixed to a nominal expression other than a noun or nominalized verb, to a relative clause predicate or main clause predicate, in response to a noun that controls agreement
absolute use	suffixed to a nominal expression other than a noun or nominalized verb, to a relative clause predicate or main clause predicate, not in response to a noun that would control agreement
predicative use	suffixed to a pronominal root (typically *pa-* (CPL)) that is used as a predicate nominal

In the preceding discussion, the constructions that were introduced in this chapter were assigned to four types of uses of class markers: their derivational use on noun roots and their agreement use in other nominal expressions and verbs appear to be major uses at least in the sense of the frequency in which these construction types occur. Additionally class markers can have an absolute use, when they are used in expressions other than nouns and no agreement controller is present, and class markers can have a predicative use, when they are used in predicate nominals. The particular morphosyntactic and semantic characteristics of the uses of class markers in each of these constructions are discussed throughout the following chapters. Chapters 7 and 8 mainly concern the semantic functions of the derivational use of class markers, where chapter 7 focuses on the contribution of descriptive semantic content to classified nouns and chapter 8 on the unitizing function. The agreement use of class markers is a major focus of the following chapter (chapter 5), in particular section 5.4. Section 5.4.3 deals with the absolute use of class markers. Chapter 10 investigates the agreement function of class markers to establish anaphoric reference in discourse. The predicative use of class markers is discussed again in sections 6.3.1, 6.3.2, and 7.3.1.

5.1. INTRODUCTION

The previous chapter described the formation of nominal expressions, relative clauses, and main clause predicates with class markers. This chapter focuses on the syntactic properties of these expressions. It discusses first the genitive construction, which forms a tightly integrated noun phrase (section 5.2). The genitive construction is the only kind of noun phrase with a clearly hierarchical internal structure in Miraña. When two or more coreferential noun phrases—either single words, relative clauses, or genitive constructions—occur in a clause, they do not form a tightly integrated constituent, but are in apposition. Noun phrases in apposition are discussed in section 5.3. The coreference relation between noun phrases in apposition is marked through agreement in noun class. Section 5.4 discusses the nature of noun class agreement between noun phrases in apposition and between subject noun phrases and predicates.

5.2. GENITIVE CONSTRUCTIONS

The genitive construction in Miraña has the following, definitional characteristics:

- It includes a noun or nominalized verb as its head and another, preposed noun phrase as a dependent. If the genitive construction expresses possession, the head corresponds to the possessed noun phrase and the dependent to the possessor noun phrase.[31] The dependent can be any

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[31] I use the term "genitive construction" instead of "possessive construction" here because this construction is used to express a wide range of meanings, possession being only one of them. It should be made clear that the term "genitive" in this usage does not refer to a case. Genitive constructions are marked by tones, completely independent of the case system of Miraña.

nominal expression, including pronominal expressions and relative clauses. The dependent can also be a genitive construction in itself.

- The only inflectional morphemes that can occur on a dependent are number markers. Other inflectional morphology, such as case markers and the restrictive marker, as well as clitics may not intervene between the elements of a genitive construction. They can only occur at its end.
- A genitive low tone marks the construction formally (see section 2.3.4).
- A genitive construction forms a single tonal phrase, i.e. there cannot be sequences of two low tones inside it, except at its end (see section 2.3.1).
- There are no prosodic breaks (e.g. pauses) between the dependent and the head.

The following examples (144a-e) illustrate genitive constructions in which the heads are nouns and nominalized verbs and the dependents are nouns. The heads of the genitive constructions in examples 144a-c are nouns, while the heads of the genitive constructions in examples 144d-e are nominalized verbs.

(144) a.   [[*níːβúgwá-múú*]   *daʔpé-ko*]
         deer-GCM.anim.pl   trap-SCM.1D.pointed
         'deer trap' [TGW]

     b.   [[*ókáhi*]   *húːβa*]
         tapir   trail
         'trail of the tapir' [TGW]

     c.   [[*táhkórá-bá*]   *táhuta*]
         trap-SCM3D   bait
         'the bait of the *tahkoraba*-trap' [TGW]

     d.   [[*amó-mɛ́*]   *dʒiːnáha*]
         fish-GCM.anim.pl   hunt.NMZ
         'hunting of fish (i.e. fishing techniques)' [TGW]

     e.   [[*úhtsú-ko-mútsí*]   *uːbádʒɛ*]
         snail-SCM.stick-GCM.masc.dl   tell.NMZ
         'the story of the two snails' [DC]

Note that a genitive construction denotes an entity of the type that its head denotes. For instance, the construction in 144a denotes a trap, and the one in 144b denotes a trail. The head of the genitive construction also determines the syntactic properties of the construction as a whole. For instance, the head of the genitive construction in example 144a is inanimate, singular, and overtly marked for noun class with *-ko* (SCM.1D.pointed). These characteristics are

relevant for agreement marking with the genitive construction. For instance, the numeral 'one' takes the form *tsa-ko* (one-SCM.1D.pointed) to mark agreement with the genitive construction in example 144a. The construction in example 144a does not have the grammatical properties of the dependent noun, which is animate and plural.

In the following example (145), pronominal expressions are the dependent elements in genitive constructions. Note that in examples 145b and 145c, the genitive constructions are case-marked.

(145) a.   [[*té:-nɛ*]   *mɛ́mɛ*]
                PN-GCM.inan name
                'its name' [TGW]

        b.   [[*té:-ʔí*]   *amɛ́-hú*]-*ßɯ*
                PN-SCM.river mouth-SCM.tube-ADL
                'toward the mouth of it (i.e. the river)' [CDC]

        c.   [[*té:-ʔɛ́*]   *doʔhí-ba*]-*ri*
                PN-SCM.tree bark-SCM.3D-INST
                'with bark (straps) of it (i.e. the tree)' [MLK]

In the following example (146), a relative clause is the dependent noun phrase in a genitive construction.

(146) [[*o*   *tsíßá-kó-ʔhɨ*]   *áʔdo*]
          1S.SUB bring-SCM.1D.pointed-PL pay.NMZ
          'the price of what (e.g. beams) I brought'

The dependent element of a genitive construction can consist of a genitive construction itself. In example 147a, the dependent is a genitive construction consisting of two nouns, while in example 147b, the dependent is a genitive construction which consists of a pronominal expression and a locative noun. Example 147c shows that the genitive dependency relation is iterative. This example consists of a locative noun as the head and a genitive construction as the dependent. This dependent genitive construction consists of a noun as its head and a relative clause as the dependent. The dependent relative clause includes yet another genitive construction.

(147) a.   [[[*tsɯ́:kahá*] *múná*] *ɯgwá:-hɨ*]
                ancient_time people metal-SCM.2D.round
                'an ax of the forefathers' (lit. of people of ancient times) [ANDGLOR01]

b.   [[[*téː-ʔí*]   *pajnɛ́*]   *uhtsíú-kó*]
        PN-SCM.river inside   snail-SCM.1D.pointed
        'aquatic snail' (lit. the snail from inside the river) [DC]

c.   [[[[*móːáj*] *uníuɪ*]-*ri* *íhká-há*]
        river   edge-LOC SUB.COP-SCM.cover
        dʒa-ʔáhtsí]   *níhkɛíú-ßu*
        yard-SCM.clearing end-ADL
        'towards the end of the patio of a house that is at the edge of a river'
        [BACLIZAC]

A common use of genitive constructions is to express locative relations. A nominal expression that expresses the ground is used as the dependent and a locative noun as the head of a genitive construction for this purpose. The following examples illustrate the use of nouns (examples 148a-b, see also example 147c, above) and pronominal expressions (example 148c-d) for the expression of the ground in such constructions.

(148) a.   [[*mónɛ́-ʔɛ́*]   *déhuɪko*]
             ceiba-SCM.tree lower_part
             'below the ceiba tree' [DC]

b.   [[*úmɛ́-í-gwuɪú*]   *nihkɛ́*]-*túu*
        wood-SCM.1D.medium-DIM end-ABL
        'from the tip of the little wooden stick' [TGR]

c.   [[*téː-í*]   *nihkɛ́*]-*tu*
        PN-SCM.1D.medium end-ABL
        'from the tip of it (i.e. stick)' [CDV]

d.   [[*ɛ́-nɛ́-ːkíú*]   *ʔadʒíú*]-*ßíú*
        DIST-GCM.inan-DL top-ADL
        'on top of those two' [AZUACE02]

The heads and dependents of genitive constructions clearly fulfill all the criteria for the identification of heads and dependents given by Zwicky (1993: 298; see also Zwicky 1985; Fraser et al. 1997: 1ff.; Himmelmann 1997: 134ff.). These criteria are given in Table 26.

Table 26: Criteria for headedness (from Zwicky 1993: 298)

	head	dependent
semantics:	characterizing	contributory
syntax:	required word rank category determinant external representative	accessory phrase rank non-determinant externally transparent
morphology:	morphosyntactic locus	morphosyntactically irrelevant

With respect to semantics, the head of a Miraña genitive construction is the "characterizing element" in that the meaning of a genitive construction "is a subtype of the meaning of the Head (*red apple* denotes a subtype of *apple*, *make a box* a subtype of *make*), while the Dependent plays a contributory role in the semantics, restricting the meaning of the Head in one way or another" (Zwicky 1993: 296; see also Zwicky 1985: 4f). This is true for all Miraña genitive constructions, at least if one understands the term "restrictive" in a broad sense, including the addition of information that is not directly relevant for reference.

With respect to the syntactic criteria given in Table 26, the head is the element required by syntax, while the dependent is accessory and can be omitted (see e.g. examples 149a-b and 150a-b, below). Which element can function as head is determined by word type (noun or nominalized verb), while the dependent can be a nominal phrase of any type (including pronominal expressions and relative clauses, see examples 145 and 146). The head determines the syntactic category of the genitive construction, e.g., in terms of noun vs. pronominal expression, and it is the external representative of the construction, e.g., in that it determines the noun class that is used for agreement marking with that noun. The head of a Miraña genitive construction is also the morphosyntactic locus of the marking that pertains to the construction as a whole, e.g. case marking (examples 145b-c, 148b-d).

In a genitive construction both elements are nominal expressions that can also occur as free forms. There are two constructions that are formally and semantically related to genitive constructions, but differ from these in that one of the elements is a bound morpheme. The first construction type related to the genitive construction is the combination of a possessor prefix and a noun (see Table 7 in section 2.4.2.2 for the forms of possessor prefixes, example 18a in section 2.2.3 and examples 32a-b in section 2.3.4 for their use). These combinations are like genitive constructions in their tone patterns and

semantics. What distinguishes these constructions formally from genitive constructions is that possessor prefixes are always bound.

The second type of construction related to genitive constructions is the productive combination of noun roots with class markers, i.e. optionally classified nouns (see section 4.2.2, above). In this case, it is the second element (the class marker) that is bound. Examples 149a-d illustrate the formal and semantic parallelism between genitive constructions and combinations of noun roots with class markers.

(149)   a.   [[*ɯ́hɨ́*]   *ɯʃí-:baj*]
                banana   basket-SCM.cont
                'a basket (full) of bananas'

        b.   *ɯʃí-:baj*
                basket-SCM.cont
                'basket'

        c.   *ɯ́hi-ʔbábaj*
                banana-SCM.bag
                'a bag of bananas'

        d.   * *-ʔbábaj*
                SCM.bag
                Intended meaning: bag

Example 149a is a genitive construction in which a non-classified noun *ɯ́hɨ́* 'banana' occurs as the dependent element. Example 149b illustrates that the head of this construction, *ɯʃí-:baj* (basket-SCM.cont) 'basket', can be used as a free form. Example 149c is a combination of the non-classified noun from example 149a with a class marker, forming a classified noun. Note the semantic parallelism between examples 149a and 149c. Example 149d shows that the class marker used in the construction in example 149c cannot occur as a free form. This is what distinguishes combinations of class markers with non-classified nouns from genitive constructions.

The following examples (150a-e) illustrate the parallelism between a classified noun and a genitive construction, in which the head is a noun that can also be used as a repeater. In this case, the two constructions become almost indistinguishable.

(150)   a.   [[*ɯ́hɨ́-ko*]   *bájhkɛ*]
                banana-SCM.1D.pointed root
                'a root of a banana plant'

b. *bájhkɛ*
'root'

c. *té-bájhkɛ*
PN-RP.root
'root'

d. *úhí-ko-ʔá:mɨ*
banana-SCM.1D.pointed-SCM.leaf
'a leaf of a banana plant'

e. * *-ʔá:mɨ*
SCM.leaf
Intended meaning: flat, flexible object / leaf

Example 150a is a genitive construction in which the head is a noun that can be used as a free form (example 150b). In example 150c, this noun is used as a repeater in the class marker slot of the root of the third person pronoun *tɛ:-*. Example 150d is a noun root to which two class markers are suffixed, forming an internally complex classified noun. Note the formal and semantic parallelism between the genitive construction in example 150a and the classified noun in example 150d. The crucial difference between the genitive construction in examples 150a and the noun in example 150d is that the class marker which semantically parallels the repeater cannot be used as a free form (example 150e).

Examples 149 and 150 show that some genitive constructions look similar to the use of class markers as derivational devices on noun roots. In fact, genitive constructions and the use of class markers as derivational devices on noun roots appear to be part of the same general pattern, in which semantically modifying elements are joined with semantically identifying elements in a tightly integrated unit (see section 7.2, below, for further discussion). The two constructions can be distinguished by two morphosyntactic criteria: First, class markers can never occur as free forms. Second, class markers are always suffixed directly to noun roots (or to another class marker which is directly suffixed to a noun root), while dependent elements in genitive constructions can include derivational morphology such as diminutives (see examples 148b, above) or inflectional morphology such as number marking (see example 148d, above), which intervenes between the dependent and the head in a genitive construction. An additional difference between the two constructions is their tonal marking (see section 2.3.4, above).

CHAPTER 5

The synchronically demonstrable difference between the two constructions supports the view that the nominal classification system is a grammaticalized system, distinct from the productive use of open-class nouns as heads of genitive constructions. The parallelism between the use of nouns as heads of genitive constructions and class markers suffixed to noun roots can be taken as an argument for an origin of specific class markers as nouns, which presumably entered the system as repeaters before losing their ability to be used as nouns and becoming grammaticalized as class markers (see section 11.1.3). This suggests that the use of class markers in nouns is in a sense more basic than the use of class markers for agreement marking in expressions other than nouns, which in turn is another argument for keeping the two types of constructions (noun roots + class markers vs. other expressions + class markers) apart (see section 4.9, above).

5.3. NOUN PHRASES IN APPOSITION

The preceding section showed how nominal expressions can be combined in a genitive construction, which forms a tightly integrated noun phrase with a hierarchical internal structure and a clearly identifiable head. This section shows that there is only weak evidence for similarly structured noun phrases other than genitive constructions in Miraña, i.e. there are no clearly identifiable "numeral phrases", "determiner phrases", or the like. Instead of expressing modification in noun phrases with a hierarchical internal structure (e.g. head noun and adjective), it is a common strategy in Miraña to use a number of noun phrases in apposition in a clause to provide additional information about a referent. The coreferential reading of such noun phrases in apposition is achieved by noun class marking (possibly in addition to number and case marking). These noun phrases in apposition are thus one of the syntactic domains in which noun class agreement takes place (as discussed in section 5.4, below).

The relation between two coreferential noun phrases in a clause is called apposition here and the noun phrases between which there is a relation of apposition are called noun phrases in apposition. This use of the term apposition follows a terminology that is becoming established in Amazonian studies (see e.g. Morse and Maxwell 1999: 94; Weber 2002) and has also been used for similar phenomena in Australian languages (e.g. Heath 1984: 498; see also McGregor 1989 where similar phenomena are treated as "phrase fracturing"). Note that unlike what is traditionally called apposition in English (see e.g. Matthews 1981: 222ff.; Quirk et al. 1985: 1300ff.; Meyer 1992: 6; Trask 1997: 18) a noun phrase in Miraña may restrict the reference of another one to which it is in apposition ("restrictive appositional type" in Quirk et al.

1985: 1305) and that noun phrases in apposition can be non-adjacent. However, since noun phrases in apposition with restrictive reference and non-adjacent noun phrases in apposition pattern with those that are fully coreferential and adjacent, they are treated together here.

In the following example (151), members of a species of birds ("panguanas" in local Spanish) are referred to with a third person pronoun, a demonstrative, and a relative clause, which are in apposition (noun phrases in apposition are enclosed in square brackets in the examples in this section). Note that the noun phrases in apposition agree in noun class.

(151)　[*di:-tɛ*]　　　[*í-htɛ*]
　　　　PN-GCM.anim.pl　PRX-GCM.anim.pl
　　　　'they, these,'

　　　　[*ajnú*　　*múna*　*panguá:ná-mú*　　　*né:-mɛ*]
　　　　shoot.NMZ　people　panguana.SP-GCM.anim.pl　say.SUB-GCM.anim.pl
　　　　'whom the white people call *panguanas*'　[TGW]

Noun phrases in apposition exhibit a high degree of syntactic independence in Miraña, even if they occur adjacent to each other in a clause and if one restricts reference of the other. The following characteristics are indicative of this independence:
- Any noun phrase can be omitted.
- Case markers, the restrictive marker, clitics, or even other words, can intervene between noun phrases in apposition.
- The order of noun phrases in apposition is relatively free.
- Noun phrases in apposition always form separate tonal phrases.
- There is often a prosodic break (e.g. a pause) between noun phrases in apposition.

The following example (152) contains six noun phrases in apposition, each of which adds a piece of information to one and the same referent. The referent is a terrestrial snail, one of the protagonists of the myth from which this example is taken.[32]

(152)　1.　*á:-nɛ-tú=ßá=pé=iʔdɯ*　　　*úhkɯ-:bɛ*
　　　　　　CON-GCM.inan-ADL=RPT=PAST=TAM　take-GCM.masc.sg.
　　　　　　'And then, they say, in that time, indeed, he took,'

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[32] Note that noun class agreement between the noun phrases in apposition in example 152 is marked with general class markers, not with the specific class marker included in the agreement controller *úhtsɯ-ko* (snail-SCM.1D.pointed) 'snail' (see section 5.4.4, below).

2. [*di:-bɛ́*] = *iʔdu*   [*úhtsu-ko*]
    PN-GCM.masc.sg=TAM   snail-SCM.1D.pointed
    'he, indeed, the snail,'

3. [*í:nú-hí-ɛ-hpi*]
    earth-SCM.disc-PERT-GCM.masc.sg
    'the terrestrial one,' (lit. the one pertaining to the earth)

4. [*mɛ:gwá-kó*   *di:-tɛ*   *né-:bɛ*]
    hawk-SCM.1D.pointed PN-GCM.anim.pl say.SUB-GCM.masc.sg
    'the one they call "hawk",'

5. [*mɛ:gwá-mú*   *úhtsú-ko*]
    hawk-GCM.anim.pl snail-SCM.1D.pointed
    'snail of the hawks,'

6. [*mɛ:gwá-mú*   *íɛ-:bɛ*]
    hawk-GCM.anim.pl relative-GCM.masc.sg
    'relative of the hawks' [DC]

In line 1, the referent snail is referred to only with a class marker used as subject cross-reference marker on a main clause predicate. The six noun phrases in apposition that follow are used to add information about this referent. Line 2 contains two noun phrases in apposition, a third person pronoun and a noun denoting 'snail', which for the first time identifies the referent more fully. Line 3 includes a noun phrase formed with *-ɛ-* 'pertain to', which restricts the reference of the preceding noun denoting 'snail' to 'terrestrial snail', differentiating it from the second main protagonist of the myth, an aquatic snail. In line 4, an appositive relative clause further specifies the reference of the preceding noun phrases to a particular (mythical) snail. The noun phrases in apposition in lines 5 and 6 are genitive constructions that add independent information (i.e. other names of the snail) to the same referent.

Now consider the following example (153), where the subject and the object are expressed with two noun phrases in apposition each.

(153) [*di:-tɛ*]   [*na:ßé-mu-hɛ́*]   *iʔdʒó-ʔí*
       PN-GCM.anim.pl spirit-GCM.anim.pl-people fell-PRD
       'They, the spirits, knocked down'

       [*pí:ßé-ʔɛ*]   [*né:gwáj-nɛ-ʔɛ*]
       creation-SCM.tree stone-GCM.inan-SCM.tree
       'the tree of creation, the stone tree' [DC]

The two nouns in object position, *pí:ßɛ́-ʔɛ* (creation-SCM.tree) 'tree of creation' and *nɛ́:gwáj-nɛ-ʔɛ* (stone-GCM.inan-SCM.tree) 'stone tree' can be considered a classical example of apposition, where two coreferential nouns are adjacent and provide different kinds of information about the same referent. The pronoun and noun in subject position in the first line of example 153 exemplify a common strategy in Miraña to highlight a referent, often in first mention (see also section 10.2.3. below). This strategy consists of using a semantically general expression such as a third person pronoun preceding the noun that fully identifies the referent (see example 151 and line 2 of example 152, above, for other instances of this pattern). The fact that this structure is recurrent and that the order of pronoun and noun is relatively fixed could be taken as an argument that these two elements form a tighter unit than other noun phrases in apposition, i.e. something like a "determiner phrase". However, the following characteristics show that the pronoun and the noun do not form a tightly integrated constituent: The pronoun and the noun always form two separate tonal phrases (note the two low tones at the end of *di:-tɛ* (PN-GCM.anim.pl) 'they' in example 153). They are usually separated by a short pause. Clitics can be inserted between the pronoun and the noun (see line 2 of example 152). Also, pronouns can be used on their own, representing the argument in a clause. The following example (154) shows that both the pronoun and the noun are case-marked when they appear in non-subject position. This gives further evidence for the independence of the two elements. Again, both elements form independent tonal phrases, as shown by the occurrence of two low tones at the end of the first element, *dí-:bɛ-kɛ* (PN-GCM.masc.sg-ACC) 'him'.

(154) [*dí-:bɛ*]-*kɛ*   [*í:nú-hí*   *uhtsú-ko*]-*ké*
     PN-GCM.masc.sg-ACC earth-SCM.disc snail-SCM.1D.pointed-ACC
     didʒó-ßa-:bɛ
     ask-DIR2-GCM.masc.sg
     'him, the terrestrial snail, he came to ask' [DC]

The following example (155) illustrates that numerals are also case-marked when they precede a noun that denotes the enumerated entity.

(155) *ó uhkú-ʔi* [*ma:kíní-mu-ßá*]-*kɛ*   [*kuʔrí-mu*]-*kɛ*
     1S take-PRED three-GCM.anim.pl-PL-ACC pintadillo-GCM.anim.pl-ACC
     'I caught three *pintadillo* (fish, sp.)' [CDC]

It is very rare that the case marking on one of two noun phrases in apposition is omitted. In the following example (156) the sociative case marker only appears on the noun, but not on the preceding numeral.

(156) *tsa-:bɛ*   [*mí-ʔó-:kɯ*]   [*ɯ́hi-ʔó-:kɯ*]-*ma*
       come-GCM.masc.sg two-SCM.3D.oblong-DL banana-SCM.3D.oblong-DL-SOC
       'he came, two, with two bananas' [BACLIIGI]

Example 156 is from the rapid speech of a younger speaker. It could be a case of reformulation. It nevertheless raises the question of whether numerals and nouns form a tighter syntactic unit than combinations of other types of coreferential nominal expressions, i.e. whether there is a clearly definable "numeral phrase" in Miraña. Another argument in favor of such an analysis would be the fact that numerals, like third person pronouns, consistently precede nouns. However, the independence of numerals from the noun that denotes the enumerated entity is shown by the fact that clitics and other elements can appear on the numeral. In the following examples, clitics occur on numerals, which are followed by nouns that denote the enumerated entities. In example 157a there is one clitic, while in example 157b there are four, in addition to the restrictive marker -*rɛ*.

(157) a.   [*tsa:-pí*]=*nékɯ*   [*mía-:bɛ*   *íhka-:bɛ*]
             one-GCM.masc.sg=REC   real-GCM.masc.sg   COP.SUB-GCM.masc.sg
             pé:-ʔi
             go-PRD
             'One, recently, who was an adult (lit. real) one, came' [BACLILIG]

       b.   *a:-:báj*   *pajné*   [*tsá-ʔo*]-*ré*=*ko*=*ɯ́bá*=*nékɯ*
             CON-SCM.cont   inside   one-SCM.3D.oblong-REST=PF=TAM=REC
             [*ɯ́hi-ʔo*]
             banana-SCM.3D.oblong
             'In it (i.e. basket) (was) only one (i.e. banana) recently, I guess, already, a banana' [BACLILIG]

The order of other elements in apposition appears to alternate freely. For instance, relative clauses can follow the noun with which they are in apposition (as in example 152, see also sections 2.4.5.1 and 4.5, above), as well as precede it, as in the following example (158).

(158) [*ihká-mɛ*]-*dí-ßɯ*   [*bó:mé-mɛ*]-*dí-ßɯ*   *ó ɯ́:hɛté-ʔi*
       COP.SUB-GCM.anim.pl-ANIM-ADL otter-GCM.anim.pl-ANIM-ADL 1S arrive-PRD
       'Where they were, where the otters were, I arrived' [CDC]

Coreferential noun phrases are also often non-adjacent. In the following example (159), an inanimate referent is first referred to by a pronominal expression that includes a class marker and then, after the main verb of the clause, it is referred to again with a noun including the same class marker and the same case marker.

(159) [*pá-hɯ:ʔó*]-*tɯ*   *mɛ:nú-mɛ́*   [*bɛ́-hú:ʔo*]-*tɯ*
CPL-SCM.palmleaf-ABL make-GCM.anim.pl palm,sp.-SCM.palmleaf-ABL
'From a (complete) palm leaf they make (it), from the leaf of the *bɛ*-palm'
[TGW]

In the following example (160), an additional clause is inserted between two coreferential noun phrases.

(160) [*dóʔhɨ-ko*]   *dóʔhɨ-ko*   *nɛ:-mɛ*
carguero-SCM.1D.pointed carguero-SCM.1D.pointed say-GCM.anim.pl
[*mái̯ʔtsɯ-kó*]
medium-SCM.1D.pointed
'*Carguero* (tree, sp.), *carguero* they call (this), a medium-sized one' [TGW]

Let me now briefly discuss how the criteria of headedness given in Table 26, above, apply to noun phrases in apposition. With respect to semantics, one noun phrase can often be identified as a "characterizing element", in the sense that the meaning of the combination can be conceived as a subtype of the meaning of this noun phrase. For instance, 'the otters that were (there)' is a subtype of 'otters' (example 158, see also example 152, lines 2 - 4). However, this appears to be a purely semantic effect, which is independent of the syntactic construction, as shown by the fact that relative clauses (which can have restrictive reference) can precede as well as follow a coreferential noun and that the element that provides "contributory" information, e.g. a relative clause, can stand alone (see example 159 for another case where none of the noun phrases is clearly the "characterizing element").

With respect to the syntactic criteria given in Table 26, there is no element in noun phrases in apposition that would be required by syntax, since any noun phrase can stand on its own (including pronominal expressions, numerals, and relative clauses), and any of them can be omitted. Which element can enter into apposition is determined by phrase type, i.e. noun phrases of any type (including pronouns and relative clauses) can be used in apposition, not by word type, as is the case for heads of genitive constructions. The syntactic category of noun phrases in apposition is not determined by any of its elements. Syntactically, both elements of noun phrases in apposition are equally external representatives in the clause in the sense that they may be case marked, combine with other morphology, such as the restrictive marker, as well as with clitics. The morphosyntactic locus of such marking, e.g., case marking is also not fixed to any of the elements.

In summary, there is no real evidence for a headedness relation between coreferential noun phrases in Miraña. While one of these can sometimes—but not always—be identified as the semantically characterizing element, syntactically these noun phrases are in a relation of loose apposition. This can be shown by criteria such as tone marking, prosodic breaks, case marking, and the insertion of clitics or words. The order of noun phrases in apposition is mostly free, but third person pronouns, demonstrative pronouns, and numerals usually precede nouns. The fact that pronominal expressions (such as numerals and third person pronouns) usually precede nouns is consistent with the general tendency in Miraña to place a semantically weak expression before a fully identifying expression (such as a noun) when mentioning an important referent (see section 10.2.3, below, for further discussion). This semantically weak expression can also take the form of a class marker as cross-reference marker on a main clause predicate (example 152, line 1) or a relative clause consisting only of a copula verb (example 158), before fully identifying a referent with a noun (example 152, line 2, example 158), or some other more explicit expression such as a complex relative clause (example 151).[33]

The aim of this section has been to show that noun phrases in apposition display a high degree of syntactic independence. However, the relation between two noun phrases in apposition is not always symmetric in all respects. Firstly, one noun phrase may restrict reference of another. Secondly, nouns are typically agreement controllers, while other nominal expressions typically are agreement targets. This results in an asymmetric relation if a noun is combined with a noun phrase other than a noun in apposition. Agreement in noun class is the topic of the next section.

5.4. AGREEMENT IN NOUN CLASS

5.4.1. Introduction

This section investigates the use of noun class markers in expressions such as pronouns, relative clauses, and main clause predicates from the perspective of agreement. It shows that the use of class markers in these contexts is morphosyntactically constrained and semantically redundant if an overt agreement controller is present. These constructions serve to define the "canonical" agreement pattern in Miraña, which cannot be explained away

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[33] A similar pattern has also been described for the Tucanoan language Kubeo (Morse and Maxwell 1999: 94), where classifying morphemes also obligatorily combine with a range of nominal elements, including pronouns.

other than by positing an agreement rule. However, the constructions that are involved in this pattern can have other uses that are less clearly instances of agreement, for instance, when a pronominal expression is used without an agreement controller. The presence of agreement is a crucial criterion in the typology of systems of nominal classification, where it is taken as the main definitional characteristic of noun class systems as opposed to classifier systems (see section 1.2.1, above). Therefore the nature of agreement in noun class is discussed in some detail in this section.

Two types of expressions display agreement in noun class in Miraña: main clause predicates (see section 4.7) and nominal expressions other than nouns and nominalized verbs. These include pronominal expressions (see section 4.3), numerals (see section 4.4), and nominal expressions formed with *-ɛ-* 'pertain to', and *-ɛmɛ-* 'similar to' (see section 4.6). Relative clauses function as nominal phrases in the clause (see sections 2.4.5.1 and 4.5, above) and they also agree in noun class, which is marked on their predicate.

I adopt Steele's (1978: 610) definition of agreement (which is also adopted by Aikhenvald 2000: 29; Corbett forthcoming): "The term <u>agreement</u> commonly refers to some systematic covariance between a semantic or formal property of one element and a formal property of another" (underlined in original). Following Corbett (2003b; see also Ferguson and Barlow 1988: 3f.; Corbett 2003a), I describe agreement in terms of five basic elements: An agreement **controller**, i.e. the element which determines the agreement, a **target**, i.e. the element whose form is determined by agreement, an agreement **domain**, i.e. the syntactic configuration in which agreement occurs, and agreement **features**, i.e. the category in which the controller and target agree. Additionally, there may be **conditions** on agreement, i.e. agreement may depend on conditions other than agreement rules themselves.

I also follow Corbett (2003a; 2003b) in assuming that—within and across languages—agreement phenomena may be considered as being more or less "canonical" instances of agreement. The most canonical case of agreement is identified as gender agreement between a head noun and a modifier within a noun phrase in this approach (Corbett 2003a: 110). A general assumption of the canonical approach to agreement is to use these undisputable cases to define agreement and then "work outwards" (Corbett 2003b: 161) to include less canonical instances. Within this approach it is proposed that the ways in which agreement phenomena extend away from the canonical cases tend to cluster around three principles: canonical agreement is (i) redundant rather than informative, (ii) syntactically simple, and (iii) inflectional.

The following section (5.4.2), deals with the most canonical instances of agreement in noun class in Miraña, showing that there is a systematic covariance and providing arguments for considering the uses of Miraña class markers in the constructions under consideration as an agreement phenomenon. Sections 5.4.3 and 5.4.4 discuss aspects of agreement marking which deviate from these canonical instances. Section 5.4.3 is about the (a)symmetry of agreement relations and the optionality of the agreement controller. The possibility of alternative agreement marking with either general or specific class markers is dealt with in section 5.4.4. Section 5.4.5 discusses agreement in noun class in Miraña in terms of how canonical it is and how it compares to the use of classifiers in classifier languages and noun class marking in noun class languages.

5.4.2. Agreement as a systematic covariance

This section is about canonical cases of noun class agreement in Miraña, which are used to define agreement. The following examples (161-162) illustrate agreement between a classified noun and a nominal expression other than a noun (in this case a numeral, examples 161a-b) and between a subject noun phrase and a main clause predicate (examples 162a-b).

(161) a. *tsa-i*   *dɯ:rɯ́-i*
         one-**SCM.1D.medium** wax-**SCM.1D.medium**
         'one (stick-shaped) candle'

     b. *tsa-:pi*   *gwa-hpi*
         one-**GCM.masc.sg** human-**GCM.masc.sg**
         'one man'

(162) a. *kátɯ́:ße-i*   *dɯ:rɯ́-i*
         fall-**SCM.1D.medium** wax-**SCM.1D.medium**
         'It (stick-shaped) fell, the candle'

     b. *kátɯ́:ße-:bɛ*   *gwa-hpi*
         fall-**GCM.masc.sg** human-**GCM.masc.sg**
         'He fell, the man'

In examples 161a and 162a the agreement **controller** is the noun *dɯ:rɯ́-i* (wax-SCM.1D.medium) 'candle', in examples 161b and 162b it is *gwa-hpi*

(human-GCM.masc.sg) 'man'. It is important to note that the agreement controllers in these examples are the derived, classified nouns, i.e. nouns that include combinations of noun roots with class markers, not the noun roots (which would take a different agreement pattern if used on their own). The controller determines the form of the agreement **target** (as indicated by the arrows), i.e. it determines the choice of a class marker in the numeral (examples 161a-b), and in the main clause predicate (examples 162a-b). The agreement **domains** in the examples above are two noun phrases in apposition (examples 161a-b) and a main clause predicate and its subject noun phrase (examples 162a-b). The agreement **feature** is noun class. Agreement in Miraña is generally not subject to special **conditions**, i.e. it applies regularly between different types of controllers and different types of targets in the relevant domains.[34] Note that next to number (and, arguably, case), noun class is the only category in Miraña that is involved in agreement. In particular, there is no agreement in person between a predicate and any of its arguments (see section 2.4.2.2).

Examples 161 and 162 illustrate that there is agreement in the sense of a systematic covariance in nominal expressions and in main clause predicates. This covariance (i.e. the choice of the class marker in a numeral or main clause predicate) is determined by the noun class of the element that controls the agreement. Agreement in noun class is obligatorily marked in these constructions since neither the numeral (like the majority of pronominal expressions and all relative clauses) nor the main clause predicate (in the construction used in example 162) can occur without a class marker.

For examples 161 and 162, one might be tempted to argue that the choice of a class marker on the numeral or the predicate is determined by the semantics of the agreement controller or possibly even properties of its referent, without actually involving an agreement relation. Under such an analysis, the class marker -*i* (SCM.1D.medium) would be used in the numeral and the predicate because the noun denotes a long and thin object (a candle), and -*:pi* (GCM.masc.sg) would be used because the accompanying noun denotes to a single male person. Thus, the choice of a class marker could conceivably be predicted directly from the semantic content of nouns and agreement morphology and the matching effect between the controller and target would arise simply from the fact these semantic characteristics coincide (cf. Corbett 2003a: 124). However, even though class markers used as agreement markers often semantically match the agreement controller, their use is governed by a

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[34] There are some issues related to conditions on agreement marking in Miraña that require further investigation, in particular agreement resolution in case of two agreement controllers that belong to different noun classes.

strict morphosyntactic constraint. This constraint determines that agreement in noun class can only be marked with the same class marker that is also included in the noun that functions as an agreement controller, not any other class markers, even though it may be compatible semantically (the only variation that is allowed is between a specific class marker and a general class marker, see section 5.4.3, below). This can be illustrated with the following example. The classified noun denoting avocado fruits can be derived with two different class markers, as shown in example 163.

(163)   a.   *kó:hɯ-ba*
                avocado-**SCM.3D**
                'avocado (fruit)'

        b.   *kó:hɯ-ʔo*
                avocado-**SCM.3D.oblong**
                'avocado (fruit)'

Once formed with a specific class marker, agreement with a classified noun can only be marked with that same class marker, as shown in the following examples (164a-d).

(164)   a.   *tsa-ʔba*   *kó:hɯ-ba*
                one-**SCM.3D**   avocado-**SCM.3D**
                'one avocado (fruit)'

        b.   *tsa-ʔo*   *kó:hɯ-ʔo*
                one-**SCM.3D.oblong**   avocado-**SCM.3D.oblong**
                'one avocado (fruit)'

        c.   * *tsa-ʔo*   *kó:hɯ-ba*
                one-**SCM.3D.oblong**   avocado-**SCM.3D**
                Intended meaning: one avocado (fruit)

        d.   * *tsa-ʔba*   *kó:hɯ-ʔo*
                one-**SCM.3D**   avocado-**SCM.3D.oblong**
                Intended meaning: one avocado (fruit)

If the use of a class marker on a numeral was governed by semantic characteristics of the controller noun (or properties of its referent) alone, constructions such as those in examples 164c and 164d should be acceptable, but they are not. To account for this constraint on the use of class markers, we have to assume an agreement rule, even though there is a clearly observable relation between the semantics of the class markers and the semantics of the noun that controls the agreement.

Another case that provides an argument for an analysis of the use of class markers outside nouns as an agreement phenomenon is agreement marking with nouns that are arbitrarily assigned to noun classes (see section 7.3, below).[35] In these cases, the semantics of the class markers bear no relation to the semantics of the classified noun and the use of the class marker could thus not be predicted from its semantics, as in the following examples (165a-b).

(165) a.   *tsa-**ko***   *kaʔgɨ́nɨ-**ko***
         one-**SCM.1D.pointed** cahuana-**SCM.1D.pointed**
         'one cahuana (thick drink made from manioc starch)'

     b.   *tsa-**gwa***   *kɨ́:hɨ-**gwa***
         one-**SCM.2D.straight** fire-**SCM.2D.straight**
         'one fire'

The use of class markers on agreement targets is further constrained by the rule that agreement with nouns that include more than one class marker is only marked with the outer-most class marker, as in example 166.

(166) *mítá-**kó**-koba*
     be.big.SUB-**SCM.1D.pointed**-AUG
     *ɨmɛ́-**ʔɛ-ko***   *íhka-**ko***
     wood-**SCM.tree-SCM.1D.pointed** COP-**SCM.1D.pointed**
     'it is a huge the wooden stick'
     (in the context of explaining the size of a stick used in the construction of a trap) [TGW]

The previous examples have illustrated agreement marking with classified nouns, i.e. nouns that are overtly marked for noun class. Agreement with non-classified nouns, i.e. bare optionally classified noun roots that are used as nouns on their own, is marked with general class markers according to the animacy of the noun. The following example illustrates agreement marking with a non-classified inanimate noun (example 167a, see also example 225 in section 8.4, below). Agreement marking with a specific class marker (which would add information that is not present in the agreement controller) is not possible, even though it may be semantically compatible (example 167b, see also example 209 in section 8.3.1, below).

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[35] Nouns that are arbitrarily assigned noun class markers are often—but not always—obligatorily classified nouns, i.e. nouns that are built from bound, obligatorily classified roots (see section 4.2.3, above).

(167) a.   *úhí*   *ihká-**nɛ***
              banana COP-**GCM.inan**
              'There is banana (e.g. fruits)'

      b. * *úhí*   *íhka-**hɨ***
              banana COP-**SCM.2.oblong**
              Intended meaning: There is (a) banana fruit(s)

In addition to classified nouns and non-classified nouns, there are a few nouns (less than a handful) that are covertly marked for specific class. These also take agreement in a specific noun class (see examples 109a-b in section 4.2.7, above). For agreement marking with another type of exceptional nouns (animate nouns that do not include a class marker but are nevertheless countable), see examples 110a-b in section 4.2.7, above). For agreement marking with repeater nouns, see examples 83a-e and 86 in chapter 3, above.

In summary, agreement targets such as pronominal expressions and main clause predicates display a systematic covariance with agreement controllers, i.e. nouns, in the sense that the choice of the class markers that they obligatorily include is determined by the agreement controller. The choice of a specific class marker used for agreement marking obeys a morphosyntactic constraint in that it has to be identical with the class marker that is also present in the agreement controller, even though other specific class markers may be semantically compatible. This is what distinguishes Miraña class markers from most classifier languages, where typically the choice of a classifier is determined by semantic features of nouns or by properties of the referent directly (see section 5.4.5, below for further discussion). Note also that a class marker used for agreement marking may provide relatively detailed information about a referent (e.g. with respect to its shape), but it never provides information about a referent that would not be present in the agreement controller, since the class marker used for agreement marking also has to be present in the agreement controller.

5.4.3. Asymmetry of agreement and overtness of agreement controllers

Having identified canonical instances of agreement in noun class in the previous section, this section discusses two related issues that correspond to ways in which agreement phenomena may deviate from the canonical pattern: the symmetry of the agreement relation and the overtness of the agreement controller. Canonical instances of agreement involve an asymmetric relation between an overt agreement controller and an agreement target, for instance

between the head of a noun phrase and a dependent element, e.g. an adjective. In the non-canonical case, two items match for the same external reason (Corbett 2003a: 121). In the cases of noun class agreement illustrated above (examples 161 - 162), nouns were identified as agreement **controllers** and a numeral and a main clause predicate were identified as agreement **targets**. In case of subject agreement on the verb, the subject noun phrase can be clearly identified as the agreement controller. However, if two coreferential noun phrases that agree in noun class occur in a clause, these are usually in a relation of apposition (see section 5.3, above), so there is no clear relation of headedness between these elements. Given this situation, we cannot simply identify the heads of noun phrases as agreement controllers. This section attempts to show that agreement controllers and targets can be defined independently of noun phrase structure, and we can therefore identify agreement controllers and targets even in syntactically flat, appositional structures.

Nouns can be identified as agreement controllers based on their combinatorial possibilities. First, noun roots can only combine with a limited number of class markers. Even if derivation by class markers is very productive in some cases (such as the derivation of nouns denoting parts of a banana plant and products made from banana, see section 4.2.6, above), a given noun root cannot just combine with any class marker out of the large set available. In any case, when the use of different class markers in combination with the same noun root is possible, it results in the derivation of a different lexical item. Expressions that function as agreement targets, on the other hand, are defined by their ability to combine with any class marker.[36] The choice of a class marker in these expressions is determined by an agreement controller (if there is one, see below). Expressions that function as agreement targets include pronominal expressions, numerals, relative clauses, nominal expressions formed with *-ɛ-* 'pertain to' and *-ɛmɛ-* 'similar to', and main clause predicates (see sections 4.3 - 4.7). These expressions are further characterized as agreement targets by the fact that they obligatorily include a class marker, while some noun roots can occur without a class marker. The only instances of non-obligatory class markers in agreement targets are higher numerals, possessive pronouns, and the possibility to replace a class marker with *-ʔi* (PRD) in main clause predicates under certain conditions (see section 2.4.4.1). Another difference between agreement controllers and agreement targets is the possibility of an alternation between general class markers and specific class markers in agreement targets

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[36] Exceptions may be selectional restrictions. For example, some verbs may require an animate subject noun phrase and will thus only combine with general animate class markers and with the class marker *-ni:ʔo* (SCM.mother) when they are used as main clause predicates.

(see section 5.4.4). In contrast, if a class marker on a noun root is replaced by another class marker, inevitably a new noun is derived. Furthermore, the expressions that can function as agreement controllers are the only ones that can also be used as heads of genitive constructions (see section 5.2). The properties of agreement controllers and agreement targets are summarized in Table 27. Nominalized verbs behave like nouns roots in that they can occur without a class marker and in that no alternation between class markers without the derivation of a new lexical item occurs. Unlike noun roots, however, many nominalized verbs can combine with a wide range of class markers. For instance, *ka:túːßɛ* (fall.NMZ) 'falling' can probably combine with just about any class markers. Thus, the status of nouns formed with nominalized verbs as agreement controllers is not as easily recognizable as that of nouns formed with noun roots.

Table 27: Agreement controllers vs. agreement targets

agreement controllers nouns, nominalized verbs	agreement targets pronominal expressions, numerals, nominal expressions formed with -ɛ- 'pertain to' and -ɛmɛ- 'similar to', relative clauses, main clause predicates
• limited possibilities of class marker alternation	• combine with any class marker
• some do not include a class marker	• class marker obligatory
• no alternation of class markers without derivation of new lexeme	• agreement marking with general or specific class markers
• can be used as heads of genitive constructions	• cannot be used as heads of genitive constructions

If a noun co-occurs with an agreeing nominal expression, a relative clause, or a predicate in a clause, there is thus an asymmetric agreement relation in that the noun controls the agreement, even though these two expressions may be syntactically in a relation of apposition. This is the case in examples 161 and 163 - 167, above, as well as most examples given in section 5.3 on apposition (e.g. examples 152, 154, 156, 160). In each of these examples, one of the agreeing expressions is a noun (which can be identified by the criteria given above as an agreement controller) and the agreement relation is thus asymmetrical. In these cases, the two expressions do not match for the same external reason. The choice of the class marker in the noun may be determined by the need to derive a noun that appropriately describes the properties of the

intended referent or simply by the fact that it is lexically specified by the noun root (see section 7.3). The reason for choosing a class marker on the agreeing expression, on the other hand, is to match the class marker of the agreement controller.

However, if there are two or more nouns or nominalized verbs in a clause and these agree in noun class (as in example 103 and line 2 of example 153), none of them can be identified as an agreement controller and the agreement relation is thus symmetric. It is not common in Miraña that two or more agreeing nouns or nominalized verbs occur in one clause. It is common, however, that a number of agreeing nominal expressions other than nouns or nominalized verbs are used in one clause. In this case, again, there is no controller and the agreement relation is thus symmetric.[37] The examples in the section on apposition include a number of cases of symmetric agreement. For instance, in example 151, a third person pronoun, a demonstrative, and a relative clause show agreement in noun class, but none of these expressions can be clearly identified as an agreement controller. Symmetric agreement is illustrated again in the following example (168), which is taken from the portion of a recording of songs, where a speaker introduces a new song.

(168) *tsi-**hɯ***   *téʔdɯɾɛ tɛː-**hɯ***   *naʔbɛ́-**hɯ***
       other-**SCM.tube** also   PN-**SCM.tube** accompany.NMZ-**SCM.tube**
       *íhka-**hɯ***   *éʔdɯɾɛ ó máhtsí-ßa-ːʔi*
       COP.SUB-**SCM.tube** also   1S song-VBZ2-PRD.FUT
       'Another one (i.e. song) also, which is a companion (i.e. song) to it (i.e. song), I will also sing'

In example 168 the specific class marker *-hɯ* (SCM.tube) is used in different constructions to refer to a song. The noun denoting 'song' (*mahtsí-hɯ*; song-SCM.tube) is not explicitly mentioned in the preceding or following context.[38] The full noun denoting 'song' does not need to occur overtly since reference to the song can be retrieved from the class marker *-hɯ* (SCM.tube) alone in this situation. As in cases of asymmetric agreement, the main function of agreement in this example is to mark coreferentiality between the different nominal expressions that are in apposition, except that there is no controller.

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[37] Note that the inclusion of symmetric agreement in agreement follows the basic assumption of the "canonical approach" that agreement should be defined first with undisputable cases and then one should "work outwards" (Corbett 2003b: 161) to include the less canonical instances.

[38] Note that the noun *naʔbɛ́-hɯ* (accompany.NMZ-SCM.tube) 'companion song' is used as a predicate nominal and thus cannot control the agreement of the other expressions (see section 4.8).

In example 168 the agreement is symmetric since none of the agreeing expressions can be clearly identified as an agreement controller. The agreement controller *mahtsí-hu* (song-SCM.tube) 'song' is omitted in this example. However, expressions that typically function as agreement targets can also be used to introduce new referents without being linked to any noun that would control the agreement, whether overt or omitted. This is the case in the absolute use of class markers. In examples 169a-c, pronominal expressions are used to refer to novel objects that do not have a name in the language, namely to objects of the Shape Classifier Task (see sections 1.4.2, 6.3.2, see Appendix A for a picture of the objects referred to in this example). In these expressions, the use of class markers is not determined by a controller and the class markers clearly contribute a meaning to the utterance. Repeaters (see section 3.4) are often used in this function (example 169c). A closely related case (that of "indirect anaphora") is discussed in section 10.4, below.

(169) a.　　*a:há ɛʔdúú íhka-hí-kúú　　mi-hí-:kuu*
　　　　　ITJ　also　COP-**SCM.2D.round** two-**2D.round**-DL
　　　　　'Yes, there are also two flat and round ones' [ROBERN02]

　　 b.　　*ɛ́:-ɯ　　　　　ítʃíhkɛʔhí-ßɯ*
　　　　　DIST-**SCM.3D.round** here-ADL
　　　　　'That round one, to over here' [RAFGREG02]

　　 c.　　*aó:ra　d-ɯ:kɯ　　ɛ:-nɛ　　mí-ʔo:ɯ́-gwɯɯ-:kɯ*
　　　　　now.SP IMP.2S-take DIST-GCM.inan two-**RP.chunk**-DIM-DL
　　　　　'Now take those two little chunks' [AZUACE02]

In summary, this section has described various aspects of the use of Miraña class markers that are problematic for an analysis as an agreement system. First, it was pointed out that agreement controllers cannot be simply identified with heads of noun phrases since these are generally flat. Then it was argued that agreement controllers and agreement targets can be identified even in syntactically flat constructions like noun phrases in apposition, resulting in an asymmetric agreement relation between noun phrases in apposition. Thus, agreement has to be considered symmetric only if none of the agreeing expressions can be identified as an agreement controller. Finally, it was shown that expressions that typically function as agreement targets can also have an absolute use when they are used to introduce new referents. In these two cases (symmetrical agreement and absolute use), there is no overt agreement controller and agreement marking is "informative" in the sense that it provides information that is not already provided by an agreement controller. These cases introduce a "non-canonical" component in the agreement pattern of

Miraña. One could simply define these cases out by saying that agreement only takes place when there is an overt agreement controller, and symmetrical agreement and the absolute use of class markers are a different phenomenon. However, since these constructions are clearly related to those with evidently redundant and asymmetrical agreement, the approach taken here is to treat them as less canonical cases within a general agreement pattern.

Another construction where class markers are used, and where they clearly contribute a meaning is the predicative use of class markers, i.e. their occurrence in pronominal expressions that are used as predicate nominals in verbless clauses or in combination with a copula verb or the verb *nɛ-* 'seem' (see section 4.8, above). These constructions look superficially like agreeing nominal expressions, but predicate nominals never have to agree with another constituent (e.g. the subject noun phrases of the clauses in which they are used) in noun class. Therefore the use of pronominal expressions in these constructions is excluded from the discussion on the agreement use of class markers in this and the following sections.

5.4.4. Alternative agreement marking by specific and general class markers

An unusual characteristic of agreement in noun class is that agreement marking with classified nouns that include a specific class marker (see sections 4.2.2 and 4.2.3) can be done either with that same specific class marker or with a general class marker. Recall that this possibility of alternative agreement marking helps to define general class markers as a form class (see section 3.1). As discussed in chapters 9 and 10, below, this alternation can be used in the reference tracking system to specify referents to different degrees.

The following examples (170a-d) illustrate how general class markers and specific class markers can be used to mark agreement with the noun *ɯgwá:-hɨ* (metal-SCM.2D.round) 'ax' (see also examples in section 3.1, above). The relative clauses, numerals, and the noun in these examples are syntactically in apposition (see section 5.3, above), but the noun can be identified as the agreement controller (partially through the fact that it does not allow for an alternation of general vs. specific class marker, see section 5.4.3, above), resulting in an asymmetrical agreement relation.

(170) a. *ó-ʔdi íhka-**hɨ*** *tsa-**hɨ*** *ɯgwá:-**hɨ***
1S-POS COP.SUB-**SCM.2D.round** one-**SCM.2D.round** metal-**SCM.2D.round**
'I have one ax' (lit. What (flat, round) is to me, one (flat, round), ax)

b. *ó-ʔdi íhka-**hi**   tsa-**nɛ**   ɯgwá:-**hi***
    1S-POS COP.SUB-**SCM.2D.round** one **GCM.inan** metal-**SCM.2D.round**
    'I have one ax' (lit. What (flat, round) is to me, one, ax)

c. *ó-ʔdi íhka-**nɛ**   tsa-**hi**   ɯgwá:-**hi***
    1S-POS COP.SUB-**GCM.inan** one-**SCM.2D.round** metal-**SCM.2D.round**
    'I have one ax' (lit. What is to me, one (flat, round), ax)

d. *ó-ʔdi íhka-**nɛ**   tsa-**nɛ**   ɯgwá:-**hi***
    1S-POS COP.SUB-**GCM.inan** one-**GCM.inan** metal-**SCM.2D.round**
    'I have one ax' (lit. What is to me, one, ax)

There is no syntactic restriction concerning which element should mark agreement by which type of class marker.[39] In example 170a, a specific class marker is used in a copula verb (which is the predicate of a relative clause), and in a numeral. In example 170b, this specific class marker is replaced by the general inanimate class marker in the numeral. In example 170c, it is replaced only in the copula verb, and in example 170d it is replaced on the copula verb and in the numeral.

Alternation between general and specific class markers in an agreement controller is never possible. Thus, any construction with a general class marker in an agreement controller and a specific class marker in an agreement target is ungrammatical (examples 171a-c). In most cases, such combinations are already ruled out by the fact that only few noun roots include the general inanimate class marker. The root *ɯgwá:-* 'metal', however, can be combined with the general inanimate class marker, forming a noun that denotes '(a piece of) metal'. Agreement marking with this noun is only possible with general class markers (example 171d).

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[39] An interesting task for future research is to establish whether there are statistical tendencies with respect to how frequent the different types of agreement are in the different constructions, in order to see whether these tendencies correspond to the Agreement Hierarchy (Corbett 1991: 225ff.). The Agreement Hierarchy predicts increasing likelihood of "semantic agreement" (as against "syntactic agreement") in the following types of expressions: attributive modifiers < predicates < relative pronouns < personal pronouns. Semantic agreement corresponds to agreement marking with general class markers in Miraña, since these (almost) always reflect the natural gender of the referent, while agreement marking with specific class markers is determined by the overt noun class marking on the controller and therefore more akin to "syntactic agreement".

(171) a.   * *ó-ʔdi   íhka-**hi***   *tsa-**hi***   *uigwá:-**nɛ***
                 1S-POS COP.SUB-**SCM.2D.round** one-**SCM.2D.round** metal-**GCM.inan**
                 Intended meaning: I have one (piece of) metal

      b.   * *ó-ʔdi   íhka-**nɛ***   *tsa-**hi***   *uigwá:-**nɛ***
                 1S-POS COP.SUB-**GCM.inan** one-**SCM.2D.round** metal-**GCM.inan**
                 Intended meaning: I have one (piece of) metal

      c.   * *ó-ʔdi   íhka-**hi***   *tsa-**nɛ***   *uigwá:-**nɛ***
                 1S-POS COP.SUB-**SCM.2D.round** one-**GCM.inan** metal-**SCM.2D.round**
                 Intended meaning: I have one (piece of) metal

      d.   *ó-ʔdi   íhka-**nɛ***   *tsa-**nɛ***   *uigwá:-**nɛ***
                 1S-POS COP.SUB-**GCM.inan** one-**GCM.inan** metal-**SCM.2D.round**
                 'I have one (piece of) metal'

The previous examples illustrated alternative agreement marking with inanimate nouns. The following examples (172a-d) illustrate the possibility of marking agreement with a classified noun that denotes an animal with either type of class marker.[40]

(172) a.   *ɛ:-**hi***   *múhui-**hi***   *kú:mui-**hi***
                 DIST-**SCM.2D.round** be.big.SUB-**SCM.2D.round** turtle-**SCM.2D.round**
                 'that big turtle'

      b.   *ɛ:-**hi***   *múhui-:**bɛ***   *kú:mui-**hi***
                 DIST-**SCM.2D.round** be.big.SUB-**GCM.masc.sg** turtle-**SCM.2D.round**
                 'that big turtle'

      c.   *aj:-**di***   *múhui-**hi***   *kú:mui-**hi***
                 DIST-**GCM.masc.sg** be.big.SUB-**SCM.2D.round** turtle-**SCM.2D.round**
                 'that big turtle'

      d.   *aj:-**di***   *múhui-:**bɛ***   *kú:mui-**hi***
                 DIST-**GCM.masc.sg** be.big.SUB-**GCM.masc.sg** turtle-**SCM.2D.round**
                 'that big turtle'

These elicited (and, in fact, prompted) examples (170 - 172) illustrate the range of syntactic possibilities of alternative agreement marking. The following examples illustrate that agreement marking with specific class markers and general class markers occurs in comparable contexts in spontaneous speech also. In example 173a, a specific class marker is used in a third person pronoun

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[40] Note that the expression *múhui-hi / -:bɛ* (be.big.SUB-SCM.2D.round / -GCM.masc.sg) 'big' is a relative clause (see section 4.5, above).

to mark agreement with the noun *maɾέ:tá-bá* (trunk.SP-SCM.3D) 'trunk'. In example 173b, which is from the same source, a general class marker is used in place of the specific class marker in the same construction.

(173) a.   *tɛ-ʔba*   *maɾέ:tá-bá*   *pajné-ɯ*   *píko:-bɛ*
       PN-**SCM.3D**   trunk.SP-**SCM.3D**   inside-ADL   put-GCM.masc.sg
       'inside it, the trunk he put' [MACLIJOAQ]

      b.   *tɛ:-nɛ*   *maɾέ:tá-bá*   *pajné-ɯ*
       PN-**GCM.inan**   trunk.SP-**SCM.3D**   inside-ADL
       'inside it, the trunk' [MACIJOAQ]

In the following example (174a), a specific class marker is used in the numeral 'two' to mark agreement with the noun *úhi-ʔó-:kɯ* (banana-SCM.3D.oblong-DL) 'two bananas'. In example 174b, which is from the same source as example 174a, a general class marker is used in the same numeral to mark agreement with another instance of the same noun.

(174) a.   *a:-bɛ*   *tsaʔɾó-bá*   *pajné-ßɯ*   *pikó:-ʔi*
       CON-GCM.masc.sg   basket-SCM.3D   inside-ADL   put-PRD
       mi-ʔó-:kɯ   *úhi-ʔó-:kɯ*
       two-**SCM.3D.oblong**-DL   banana-**SCM.3D.oblong**-DL
       'And he put inside the basket two bananas' [BACLISONJ]

      b.   *tsa:-bɛ*
       come-GCM.masc.sg
       mi-né-:kɯ-ma   *úhi-ʔó-:kɯ-ma*
       two-**GCM.inan**-DL-SOC   banana-**SCM.3D.oblong**-DL-SOC
       'He came with two bananas' [BACLISONJ]

This alternative agreement marking occurs mainly with inanimate nouns. While the use of specific class markers to mark agreement with animal names (as in example 172a) is judged grammatical by native speakers, general animate class markers are almost always used in spontaneous speech to mark agreement with these nouns (as in example 172b, see example 152 in section 5.3, above).

The fact that alternation between specific class markers and general class markers is only possible in agreement targets, but not in agreement controllers makes agreement between noun phrases in apposition more asymmetric and thus more "canonical" in terms of the symmetry of agreement. On the other hand, the alternation between general and specific class markers makes agreement in Miraña less "canonical" in terms of its syntactic simplicity. In syntactically simple agreement, agreement marking is not subject to any alternations or special conditions. However, this alternation is highly restricted:

agreement with a given classified noun can only be marked with one specific class marker or one general class marker. No other alternations between class markers are allowed (see section 5.4.2, above). Note also that agreement marking in both general and specific class is determined by properties of the controller: its overtly marked specific noun class or its animacy (and number). Therefore neither agreement marking with general nor agreement marking with specific class markers could add any information that would not be already expressed in the controller (see next section, 5.4.5, for further discussion).

5.4.5. Agreement in noun class: summary and discussion

Let us now discuss how noun class agreement in Miraña relates to the three principles proposed by Corbett (2003a; 2003b) for the characterization of agreement as more or less canonical.

(i) informativeness of agreement
According to this principle, the most canonical instances of agreement are those in which the information available in a target is restricted to a subset of the information provided by the agreement controller. The previous sections have shown that if an agreement controller is present, the information provided by the class marker in the target is necessarily also available in the controller. This holds for agreement marking with specific class markers as well as general class markers. However, it was also shown that agreement controllers can be absent. In these cases, agreement is informative in the sense that the class markers convey information that is not provided by an overt agreement controller.

Another case where class markers used as agreement markers convey information that is not present in the controller is when the controller is a non-third person personal pronoun. Class markers can be used to refer to non-third person participants, for instance in the sentence connector pronoun (see section 4.3.3, above). The connector pronoun in example 175 shows agreement in noun class with a first person pronoun, which is not specified for noun class (see also examples 36a-b in section 2.4.2.2, above). Thus the noun class marking in the connector pronoun provides information that is not available in the controller in this case.[41]

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[41] Such cases are given a lot of attention in Barlow's (1992; 1999) work where they are taken as evidence for a view of agreement as a discourse-referential phenomenon, which is not adequately described in terms of an asymmetric syntactic relation of "feature copying" from a fully specified controller to a target.

(175) *á:-**bɛ**-kɛ*   ***o:**-kɛ   ní:ha-bá   adʒé-ʔi*
       CON-**GCM.masc.sg**-ACC **1S**-ACC rain-SCM.3D to_rain-PRD
       'And on me, it rained on me' (male speaker) [CDC]

(ii) syntactically simple agreement
Agreement marking in Miraña does not usually take place within tightly integrated, hierarchical syntactic configurations. Agreement marking in this language primarily serves the function of establishing coreference relations in discourse rather than specifying syntactic structures. But where agreement is marked, it is syntactically simple in that sense that it is obligatorily and uniformly marked on all targets. There is one major syntactic complexity in the agreement pattern, namely the possibility of alternative agreement marking by general and specific class markers. However, this restricted alternation is not subject to any syntactic conditions, but rather to the degree to which a speaker wishes to specify a referent at a given point in discourse, as argued in chapters 9 and 10, below.

(iii) agreement realized as inflection
By most definitions of agreement, agreement is an inflectional category (e.g. Matthews 1997: 12; see also Aikhenvald 2000: 30). For Corbett (2003a; 2003b), agreement realized as inflection is more canonical than agreement that is realized in clitics or with free words. In their use as agreement markers, Miraña class markers share the following properties that are typically associated with inflection in contrast to derivation (see also D. L. Payne 1990b: 130ff.) (note these properties do not necessarily apply to the use of class markers on agreement controllers, i.e. their use as derivational devices on noun roots):
   • Their use is obligatory.
   • They form complete words from bound roots (pronominal expressions and numerals) and bound stems (verbs and expressions formed with *-ɛ-* 'pertain to', and *-ɛmɛ-* 'similar to').
   • They have a high frequency (as a category, keeping in mind that some class markers are more frequent than others).

However, it is unusual for an inflectional category to involve such a large number of forms as noun class markers in Miraña. Within this large set of forms, general class markers and a subset of monosyllabic specific class markers behave more like a typical inflectional category than others. These frequently used and short forms are found at the "grammaticalized end" of the continuum along which class marker forms were ordered in section 3.5 and they are in fact systematically used for agreement marking with overt agreement controllers. The forms from the opposite end of the

continuum—polysyllabic class markers and repeaters—are more often used for establishing reference independent from nouns (i.e. in an absolute use) for attribution of properties to referents that are established by other means (i.e. in a predicative use, see section 3.4 for examples).

The fact that the set of class markers that are analyzed as having an inflectional status in agreement targets are used as derivational devices in nouns (see section 4.2) is not necessarily an unusual characteristic for an inflectional category. This is common in all noun class systems, where noun class assignment is semantically motivated. For instance, gender markers are used in Spanish to derive animate nouns, e.g. *muchach-o* (young_person-masc) 'boy' vs. *muchach-a* (young_person-fem) 'girl', as well as inanimate nouns, e.g. *manzan-o* (apple-masc) 'apple tree' vs. *manzan-a* (apple-fem) 'apple (fruit)' (see Lucy 2000: 330f.; see Evans 1997: 116f. for some examples from Australia; for further examples see Aikhenvald 2000: 84). However, such derivational functions of agreement markers are marginal in most noun class and gender languages. In contrast, in Miraña it is the rule rather than the exception for class markers to have a derivational function in nouns, and these derivational processes may be very productive (see section 4.2.2, above).

In summary, following the approach to the phenomenon of agreement proposed by Corbett (2003a; 2003b), the preceding sections first identified canonical instances of agreement in noun class in Miraña and then discussed deviations form this canonical pattern. With respect to the informativeness of agreement, the canonical instances of noun class agreement are redundant, but the agreeing expressions may also be used to convey information (absolute use). With respect to syntactic simplicity, agreement is canonical in that it is obligatory and not subject to syntactic restrictions, but somewhat irregular in allowing for alternative agreement marking. With respect to the inflectional status of agreement marking, the use of class markers as agreement markers is canonical, but the same markers have a derivational function in agreement controllers.

The non-canonical characteristics of agreement may be summarized as belonging to two clusters. Firstly, the possibility for controller omission and the pervasive derivational use of class markers, and secondly, the lack of a strict syntactic relation between an agreement controller and its target. These characteristics stem from the specific semantic content of class markers, which allows for their derivational use and for identification of a referent without a noun in some cases, on the one hand, and the non-configurational nature of nominal phrases, which favors loose apposition over tightly integrated constituents, on the other hand. These general semantic and syntactic

characteristics of the language appear to underlie the deviations from the canonical cases that the general agreement pattern of Miraña allows for.

The agreement system described in the preceding sections is what defines "noun classes" in Miraña. Noun classes are understood as agreement classes, i.e. as the set of forms that take the same agreement pattern. The agreement classes that nouns belong to are thus morphological classes that are only defined by the agreement pattern that a given noun takes. In most cases, the specific class marker that is used for agreement marking is also overt in the noun that controls the agreement, but this is in fact irrelevant for the establishment of agreement classes. All that matters for including a noun in a noun class in Miraña is which class markers are used to mark agreement with it. For establishing the noun classes (in the above defined sense, i.e. as agreement classes), it is also irrelevant whether the assignment of the class marker in the noun that controls the agreement is semantically motivated or opaque (see section 7.3, below). The classificatory processes within classified nouns—to the extent that they can be said to be classifications at all, given the possibility of many optionally classified noun roots to productively combine with a number of different class markers—are thus a different phenomenon from the noun classes imposed by the agreement system. The agreement classes are a morphosyntactic phenomenon, which serves the function of marking coreferentiality between different kinds of nominal expressions and cross-reference on verbs. When a class marker combines with a noun root, its function is mainly a semantic one, since class markers usually contribute a meaning component to the resulting classified nouns, at least in the sense of specifying a countable unit (see chapter 8), but usually also a clearly identifiable, descriptive content. The semantic processes within noun words are dealt with in chapter 7, in particular section 7.3.

Let us now briefly consider how agreement in noun class in Miraña compares to the use of classifiers on multiple targets and to some properties of noun class marking in prototypical noun class languages. The obligatory use of classifying morphemes in multiple targets, where their choice is determined by a property of an accompanying noun, is in fact a characteristic of many classifier languages where one and the same set of classifiers is used on multiple targets, e.g. in the Austronesian language Kilivila (Senft 1996; see also Senft 2000a: 18ff.). In this language, classifiers are used as prefixes or infixes in different expressions, including demonstratives, numerals, and adjectives. The result is a pattern that superficially looks like the use of specific class markers in Miraña. What distinguishes Miraña from languages like Kilivila is that in Miraña there is a rule whereby the specific class marker used in expressions such as numerals and demonstratives must be identical with the specific class marker

that overtly marks noun class on the noun that functions as agreement controller. Thus, in Miraña we never find that class markers would be used in agreeing expressions to single out an aspect of a referent according to its relevance in the discourse situation, as classifiers do in Kilivila (example 176 and 177) (taken from Senft 1996: 19, "CL" added to gloss).

(176) a. *kevala-lima   yena*
           CL.batch_drying-five fish
           'five batches of smoked fish'

       b. *oyla-lima   yena*
           CL.string-five fish
           'five strings with stringed-on fish'

(177) *kai   ma-bubo-si-na   kwela-tolu*
        wood this-CL.cut_across-PL-this CL.potlike-three
        'these three potlike sawed-off sections of timber'

These examples show that the use of classifiers in languages such as Kilivila is governed by the properties of referents (or, at best, semantic features of nouns), and it does not involve a morphosyntactic constraint, as in the case of Miraña class markers. The use of Kilivila classifiers in contexts such as numerals and demonstratives is comparable to the use of Miraña class markers as derivational devices on noun roots, but not to the use of Miraña class markers in expressions such as numerals and demonstratives, which is strictly constrained morphosyntactically. Consequently, the classification imposed by Kilivila classifiers is always one of referents—or at best "concepts" (Hellwig 2003: 195) or "experience" (Lucy 2000: 326ff.; see also Aikhenvald 2000: 229)—but never of nouns, as in the classification imposed by the Miraña agreement system. Since the overtly marked noun class is the basis for agreement in specific noun classes in Miraña, noun class agreement with overt agreement controllers never corresponds to temporary classification found in many classifiers languages, where different classifiers may be chosen according to particular aspects of the referent that are relevant in the discourse situation, as in the Kilivila examples above.[42] This type of re-classification, which one might expect to be performed by specific class markers in Miraña, does not occur in the agreement use of Miraña class markers.

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[42] As another example of temporary classification by classifiers, one may cite the Australian language Yidiny, where, for instance, expressions with reference to a piece of charcoal may alternatively include the classifier for 'fire' or 'moveable object' (Dixon 1977: 487, 495) (see Wilkins 2000 for similar examples from the Australian language Arrente; see also discussion in Grinevald 2002).

A different phenomenon is the alternative agreement marking by general and specific class marker. Agreement marking by both types of class markers has been shown to be semantically redundant with respect to the agreement controller. Within the agreement system, the use of general class markers may be understood as a neutralization of the fine-grained classification that specific class markers impose. The neutralization of noun class distinctions in agreement marking with some nouns under specifiable conditions is a feature that is not uncommon in noun class languages.[43] In some languages of the Bantu family, for instance, agreement with animate nouns can often be marked either with the overtly marked noun class of that noun (to which it is more or less arbitrarily assigned) or with a general animate class marker expressing animacy or humanness, resulting in patterns comparable to those in the Miraña examples (Heine 1982: 195f.; Katamba: 2003: 113f.). In the following example (178a) from Swahili (Bantu), which is taken from Katamba (2003 113), agreement with the noun *ki-tabu* 'book' (which is overtly marked for noun class 7, a class which is used mainly for inanimates) is marked on an adjective with a class 7 prefix. In example 178b, agreement with the noun *ki-boko* 'hippo', which is also overtly marked for class 7, is marked with a class 1 prefix (a class which is used mainly for animates). Unlike in Miraña, however, Swahili speakers apparently attribute a meaning difference to alternative agreement marking with one and the same noun, as can be observed in examples 179a-b, which are taken from Heine (1982: 195), and the alternative agreement marking occurs mainly with animate nouns.

(178) a.   *ki-tabu*   *ki-kubwa*
              class.7-book class.7-large
              'large book'

       b.   *ki-boko*   *m-kubwa*
              class.7-hippo class.1-large
              'large hippo'

(179) a.   *zee*   *yu-le*
              old_man(class.5)   class.1-that
              'that old man'

       b.   *zee*   *li-le*
              old_man(class.5)   class.5-that
              'that funny/extraordinary/extremely old man'

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[43] The phenomenon that a semantically general class marker may replace a more specific one in some contexts is also reported to exist in the Amazonian language Yagua (Peba-Yaguan, D. L. Payne 1986: 122).

5.5. SUMMARY

This chapter first discussed the genitive construction in Miraña, which is formally similar to classified nouns (suggesting a possible origin of class markers as nouns), but may be distinguished from these (which is an argument for considering nominal classification a distinct grammatical phenomenon). The second issue discussed was that of noun phrases in apposition, as one of the syntactic domains in which agreement in noun class occurs. Finally, it was shown that the use of class markers in expressions such as pronominals, relative clauses, and main clause predicates in response to overt agreement controllers constitute undisputable cases of agreement, while the general agreement pattern also allows for cases that are less "canonical" instances of agreement, namely the absolute use of class markers and alternative agreement marking.

Part III: Semantics

The following three chapters (6 - 8) comprise the third part of this study, which focuses on semantic characteristics of the system of nominal classification in Miraña. Chapter 6 offers an analysis of the semantic content of class markers. Chapter 7 deals with the semantic contribution of class markers to the meaning of classified nouns and the assignment of noun class. In chapter 8, the unitizing function of class markers is discussed.

SEMANTICS OF CLASS MARKERS

6.1. INTRODUCTION

This chapter deals with the semantic content of class markers. It aims to show that class markers in Miraña have an identifiable and constant semantic content and that shape is the central component in the semantics of specific class markers. Class markers usually contribute this semantic content to nouns when they combine with nouns roots or nominalized verbs, forming classified nouns (see chapter 7). However, in this chapter the meanings of class markers are analyzed independently of their use on noun roots, since nouns can also be arbitrarily assigned to class markers, where the semantic content of class markers does not surface (see section 7.3, below, for details). For instance, the semantic content of the class marker -*ko* (SCM.1D.pointed) surfaces in the noun *pihhú-ko* (fishing-SCM.1D.pointed) 'fishing rod' but does not surface in the noun *íhta-ko* (manioc-SCM.1D.pointed) 'manioc starch'.

The focus in this chapter is on specific class markers, and within these on the core set of the eight semantically relatively general ones. These are the ones that display most clearly the interesting characteristic of being systematically used for agreement marking while at the same time retaining a clearly identifiable and constant semantic content in the domain of shape. The combination of these two characteristics underlies the claim that Miraña has a grammaticalized reference-tracking system that uses shape (see section 11.3).

Before entering into the discussion of Miraña data, the notion of shape as a semantic domain is clarified in the following section (6.2). Section 6.3 deals with the semantic content of specific class markers with a focus on monosyllabic class markers and shape semantics. Section 6.4 discusses the semantics of general class markers. Section 6.5 summarizes the discussion in this chapter.

6.2. THE SEMANTIC DOMAIN OF SHAPE

Shape may be defined as the extension of concrete objects in space. The shape of single, concrete objects can be characterized by the following, basic properties:

(i)   dimensionality (saliently one- vs. two- vs. three-dimensional)
(ii)   axial geometry (long vs. thick vs. wide)
(iii)   curved vs. straight edges (e.g. round vs. square)
(iv)   negative spaces (hollow vs. solid)
(v)   orientated axis (e.g. pointedness)

I call semantic distinctions that represent these shape properties "basic shape distinctions". Basic shape distinctions are often closely related to the representation of other physical properties, among them material properties (e.g. 'rigid'), texture (e.g. 'smooth'), arrangement and/or configuration (e.g. 'circular arrangement'), or size (e.g. 'small'). Shape properties are also often closely linked to function, i.e. the ways in which humans typically interact with a particularly shaped object. For instance, the function of an object used as a container is intrinsically linked to the shape property of hollowness.

It is well known that shape plays a central role in human perception and cognition. From the point of view of the vision sciences, shape is the most important of all object properties because "shape allows a perceiver to predict more facts about an object than any other property" (Palmer 1999: 363). Among the basic shape distinctions identified above, dimensionality seems to be particularly important in perception and cognition. Accordingly, dimensionality is a fundamental building block of visual perception in the theories proposed by Marr (1982) and Biederman (1987; see also Landau and Jackendoff 1993: 218; Levinson 1994: 294ff.). The importance of shape for human cognition is also shown by the fact that shape distinctions (including dimensionality) are operational in young children's pre-linguistic cognition irrespective of the linguistic encoding of shape distinctions in the target language (see Clark 1976, 2001). Other studies have shown that shape distinctions are captured by children across language communities at a very early age and play a crucial role in early word learning and the emergence of language-specific conceptualizations (Landau et al. 1998; Bloom 2001).

Thus, basic shape distinctions such as dimensionality play a crucial role in object recognition, visual processing, and language acquisition. At the linguistic level, distinctions of dimensionality (i.e. saliently one- vs. two- vs. three-dimensional) have been found to be basic in the internal semantic organization of many numeral classifier systems that have developed

independently around the world. This has already been noted by Greenberg (1977), and has been confirmed with further data in many other studies (e.g. Friedrich 1970; Denny 1976; Allan 1977; Croft 1994: 164f.; Aikhenvald 2000: 271ff.; Bisang 2002). The following section (6.3) aims to show how basic shape distinctions are represented in the semantics of specific class markers in Miraña and how these distinctions interact with further shape distinctions and distinctions other than shape.

6.3. SEMANTICS OF SPECIFIC CLASS MARKERS

This section describes the semantic content of specific class markers. It focuses on the core set of monosyllabic specific class markers identified in section 3.3.1. Recall that the forms from this set are defined by their occurrence on animal names (as discussed in section 7.4, below) and that over 60% of specific class marker tokens in natural discourse come from this set. The following section (6.3.1) deals with the shape distinctions encoded in these class markers. Section 6.3.2 reports on the spontaneous use of class markers to refer to differently shaped objects in an experimental situation. Section 6.3.3 discusses polysemous class markers.

6.3.1. Shape distinctions in specific class markers

Shape is the central component in the meaning of specific class markers. However, the semantic content of class markers is not always easy to discern. The following kinds of evidence underlie the description of the meanings of class markers in this section:
  (i)   translations of combinations of class markers with semantically weak pronominal roots provided by native speakers
  (ii)   elicitation of the acceptability of class markers in the description of differently shaped reference objects

One difficulty in establishing the semantic content of Miraña class markers lies in the fact that they may be involved in arbitrary noun class assignment, where they do not convey any of their semantic content. This is most obvious in the use of class markers on animal names, where there is no correlation between the shape of the animal and the meaning that a class marker encodes (see section 7.4, below). Surely we do not want to include in the definition of a class marker's meaning all the animal species that are denoted by the nouns that are formed with that class marker. The derivational use of class markers in

classified nouns is thus not a reliable indicator for establishing their semantic content.

Therefore we need to identify a context where class markers convey only their encoded meaning, independently of the possibility of uses that are governed by arbitrary assignment or by an agreement rule. This is the case in the predicative use of class markers, i.e. when class markers combine with semantically weak pronominal roots and the resulting combination is used as a predicate nominal. In this context, the use of class markers is neither restricted by possibly arbitrary assignment nor by an agreement rule, and class markers can thus be used according to their encoded meaning. How this works is best illustrated with an example from a better-known language in which noun class assignment is also semantically motivated for some nouns and arbitrary for others. In German, noun class (traditionally called "gender" for this language, see section 1.2.1, above) is assigned on a transparent semantic basis to nouns with human referents, but in an almost arbitrary way to inanimate noun, even though some regularities can be observed (see Zubin and Köpke 1986). Regardless of this arbitrary assignment to inanimate nouns, the masculine and feminine genders retain the core meanings 'male' and 'female', which is the semantic basis for the gender assignment of animate nouns. These meanings surface when forms that are marked for gender, e.g. a form of a third person pronoun, are used as predicate nominals to assign properites to a referent. For instance, the form of the third person masculine singular pronoun *er* 'he' can be used as a predicate nominal to attribute the property 'male' to a referent in a sentence like *Das ist ein ér* 'that is a hé' (with stress on *ér* 'he'), which can be used, for instance, to specify the sex of an animal.[44] In this sentence frame, *er* conveys the semantic content 'male', even though in other contexts the form *er* is chosen to mark coreference with a noun that is arbitrarily assigned masculine gender, e.g. *Tisch* 'table', *Stift* 'pen', *Becher* 'mug', etc.

Similar to German, Miraña nouns are sometimes arbitrarily assigned to noun classes, although this is less common in Miraña than in German. However, when Miraña class markers are used predicatively, they convey an identifiable and constant meaning, which is the semantic basis for the noun class assignment of inanimate nouns.[45] Class markers can be used in combination with semantically weak pronominal roots in a predicative function, e.g. in the

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[44] See Bosch (1988: 215f.) for a similar observation on the use of German pronouns.

[45] Hellwig (2003: 172ff.) makes a similar observation with respect to classificatory posturals in Goemai, which can have an "assertional" use, in which they are used according to the actual position of a referent in a discourse situation and a "classificatory" use, in which they are used according to the canonical position of a referent, irrespective of its actual position in the discourse situation.

verbless clause (see section 2.4.4.2, above) *pá-ko í-nɛ* (CPL-SCM.1D.pointed PRX-GCM.inan) 'this is a slender and pointed one'. In the predicative use *-ko* can only mean 'slender, pointed object', even though this class marker is also used in nouns that denote drinks, foreheads (among other objects that are not pointed and slender), as well as a number of animal species (see further discussion in section 7.3.1, below). Thus, the encoded meaning of class markers can be elicited by putting them in a sentence frame where they are used predicatively.

In Table 28 summaries of translations provided by native speakers are given for the core set of class markers, when they are used predicatively.[46] To further specify the meaning of these class markers, speakers typically mentioned a number of objects that these class markers can refer to. This information is also included in Table 28. (Note that the information on class marker semantics provided in Table 12 in section 3.3.1, above, includes additional meaning components that do not surface in predicative use; see also section 6.3.3, below, on polysemous class markers.)

Table 28: Translations of specific class markers used in predicate nominals

# in Table 12	class marker	meaning in predicative use
1	*-ba* SCM.3D	logs, detached from trees, like firewood, round fruits, mushy things
3	*-gwa* SCM.2D.straight	flat, rigid, like planks, tables, etc.
5	*-hɨ* SCM.2D.round	flat and round, like buttons, coins, etc.
10	*-i* SCM.1D.medium	slender and longish, but not very long, e.g. walking sticks, chalk, etc.
11	*-ko* SCM.1D.pointed	slender, relatively long, and pointed, like fishing rods, beams, etc.
14	*-ɯ* SCM.3D.round	round and small, like pebbles, small round seeds, etc.
15	*-ʔɛ* SCM.tree	trees
17	*-ʔo* SCM.3D.oblong	oblong, like bananas, avocado, etc.

The translations and paraphrases provided by native speakers indicate that shape distinctions play a central role in the semantics of these forms. The first, spontaneous translations offered by native speakers are typically adjectives that describe the shape of objects, and this shape is further specified by mentioning

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[46] These translations were given to me in Spanish, from which I translated them into English. The speakers who provided them have a good command of Spanish.

objects that match this shape. Only the meaning of *-ʔɛ* (SCM.tree) seems to be associated not with an abstract shape, but with a class of complex entities, namely trees. This class marker cannot be used to refer to other saliently one-dimensional, upright objects. On the other hand, the class marker *-ba ~ ʔba* (SCM.3D) has a variety of meanings, also in also in its predicative use. A number of speakers independently offered "log-shaped", "fruit-shaped" and "mushy substances" for this class marker. These three meanings appear to converge only in that this class marker usually refers to three- rather than two- or one-dimensional objects.

A second technique for establishing the distinctions encoded in class marker semantics is careful elicitation of the applicability of class markers to differently shaped objects. I asked speakers what the objects from the Shape Classifier Task would be called in Miraña (see Appendix A for pictures of the objects, see also sections 1.4.2 and 6.3.2). Speakers typically provided expressions such as *tɛ:-ko* (PN-SCM.1D.pointed), *pa:-i* (all-SCM.1D.medium), etc. I then further elicited the acceptability of using other specific class markers, which were not provided spontaneously, to refer to these objects. Such elicitation revealed that long and slender objects can in principle be referred to with expressions such as *tɛ:-ko* (PN-SCM.1D.pointed) 'it (pointed)' or *tɛ:-i* (PN-SCM.1D.medium) 'it (stick-shaped)', depending partially on size. However, an expression including *-ko* (SCM.1D.pointed) can only be correctly applied with reference to objects that have an oriented axis, i.e. a physical point at one end of the reference object or an orientation that derives from the object's use.[47] Thus, while the forms *-ko* (SCM.1D.pointed) and *-i* (SCM.1D.medium) are both used to refer to basically one-dimensional objects, *-ko* (SCM.1D.pointed) is additionally specified for 'pointed'. With respect to the applicability of *-i* (SCM.1D.medium), speakers consistently maintain that *-i* (SCM.1D.medium) should be used for slender objects that are "not too long", i.e. a maximum of about 80 centimeters. According to native speakers, the polysyllabic class marker *-i:ʔo* (SCM.little.stick) should be used for reference to objects shorter than about 15 centimeters.

Within the class markers referring to flat (i.e. saliently two-dimensional) objects, elicitation of the acceptability of class markers with reference to differently shaped objects showed that all flat and rigid objects can in principle be referred to with *-hɨ* (SCM.2D.round), but if they have at least one straight edge, *-gwa* (SCM.2D.straight) should be used. This suggests that 'at least one

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[47] Objects that have an orientated axis that does not involve a physical point are, for instance, walking sticks or pestles, where the two ends are not necessarily distinguished physically, but they have an orientation derived from their use.

straight edge' is an additional semantic specification of *-gwa* (SCM.2D.straight), but not of *-hɨ* (SCM.2D.round). As a consequence, the use of *-gwa* (SCM.2D.straight) for flat objects with no straight edges, in particular round objects, is judged non-acceptable.

Similar elicitation of the applicability of class markers denoting basically three-dimensional objects reveals that *-u* (SCM.3D.round) is only appropriately used with round objects of about equal axes, but *-ʔo* (SCM.3D.oblong) should be used if a spherical, three dimensional object is clearly elongated. The class marker *-u* (SCM.3D.round) is also only used for relatively small objects. For bigger ones, *-ba* (SCM.3D) should be used.

The core set of eight class markers can thus be arranged according to their meaning as in Figure 10.[48] Note that in addition to dimensionality, which clearly emerges as the basic parameter of categorization from explanations provided by speakers as well as from further elicitation, the following shape characteristics are encoded in the core set of specific class markers: size (*-i* (SCM.1D.medium)), axial orientation (*-ko* (SCM.1D.pointed)), straight vs. curved edges (*-gwa* (SCM.2D.straight) vs. *-hɨ* (SCM.2D.round)), and a three-dimensional axial geometry (*-ʔo* (SCM.3D.oblong)).

saliently one-dimensional:	upright:	*-ʔɛ* (SCM.tree)
(long and thin)	medium:	*-i* (SCM.1D.medium)
	pointed:	*-ko* (SCM.1D.pointed)

| saliently two-dimensional: | straight edge: | *-gwa* (SCM.2D.straight) |
| (flat) | no straight edge: | *-hɨ* (SCM.2D.round) |

saliently three-dimensional:	general:	*-ba* (SCM.3D)
(spherical)	spherical:	*-u* (SCM.3D.round)
	oblong:	*-ʔo* (SCM.3D.oblong)
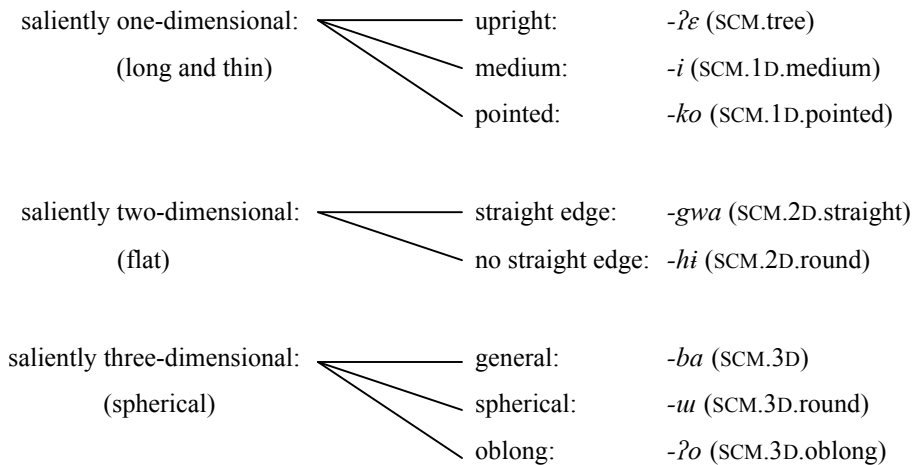
Figure 10: Semantic distinctions in the core set of specific class markers

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[48] This arrangement is meant to be descriptively adequate in that it is based on distinctions that are demonstrably present in the semantics of these forms. It is not claimed that this arrangement of class markers corresponds to anything like conceptualizations of speakers. Note that Berlin (1968: 42) and Lakoff (1987: 96) make similar remarks with respect to their analyses of Tzeltal numeral classifiers and Dyirbal noun classes, respectively.

We now discuss semantic properties of some of the more common specific class markers that do not belong to the core set. A much-used class marker for objects that have negative spaces is *-:baj* (SCM.cont). It is used for deep and wide containers such as hammocks, baskets, pools, and wells. For cylindrical containers, *-ʔoːha* (SCM.cylindr.cont) is used. Some other non-core class markers, in particular polysyllabic ones, encode meanings that relate to the domain of physical shape, yet are not basic shape distinctions. Some of these denote configuration of a number of objects, e.g. *-ɯːʔa* (SCM.grains), and *-dʒi* (SCM.brush). At least one class marker encodes material consistency, namely *-pajko* (SCM.liquid). Other class markers encode meanings related to function in addition to shape. These include *-ha* (SCM.cover), *-mi* (SCM.transport), and *-huɯ* (SCM.tube), which is used for tubular channels, such as muzzles and paths. Note that these three derive from the nouns *ha* 'house', *miːnɛ* 'canoe', and *-huɯ* 'mouth, story, song', respectively, but have broader meanings than these nouns (see section 3.3.1).

Some specific class markers seem to have as their core meaning the denotation of a part of a plant, e.g. *-ʔaːmi* (SCM.leaf), *-dʒiːʔo* (SCM.bud), and *-huɯːʔo* (SCM.palmleaf). The meaning of *-ʔaːmi* (SCM.leaf) extends to other flat and flexible objects, e.g. paper sheets, as in *gwahákɯ-ʔáːmi* (know.NMZ-SCM.leaf) 'book' (see also section 7.2). The denotation of a part of a plant is probably the older meaning of this class marker, which over time has been extended to other objects of similar shape. In this process of semantic "bleaching" (Hopper and Traugott 1993: 20), the shape semantics of class markers presumably become more important than the denotation of the concrete object.

The general impression is that the meanings of polysyllabic specific class markers are more specific than the meanings of monosyllabic class markers. This would ideally be tested by the establishment of one-way entailment relations between class markers, i.e. one would have to test whether some monosyllabic specific class marker are hypernyms to some polysyllabic specific class markers. Some hypernymic relations between monosyllabic specific class markers have been described above, e.g. *-gwa* (SCM.2D.straight) and *-hi* (SCM.2D.round). A systematic study of eventual hypernymic relations between mono- and polysyllabic specific class markers has not been carried out so far. For some pairs of class markers, however, we know that they are not in a hypernymic relation. For instance, an object that can be described with *-ʔoːha* (SCM.cylindr.cont) could not be described with *-:baj* (SCM.cont). Another way in which this difference in semantic specificity could be captured is by establishing the number of specifications that are necessary to define the

meaning of a class marker. Thus, for instance, the meaning definition of -*tsa:ragwa* (SCM.fibers.sticking.out) 'a bunch of unordered fibers in an upright position' requires a number of specifications (which may presuppose further specifications, e.g., concerning the nature of the fibers). On the other hand, the meaning of class markers from the core set can often be described with a reduced number of basic concepts, e.g. -*ko* (SCM.1D.pointed) 'one dimensional with an axial orientation'. This intensional assessment of semantic specificity is reflected in the extensions of the meanings of class markers, i.e. in the set of entities that can be denoted by them: semantically specific class markers can only be used to refer to a small set of entities that share a number of specific properties, while semantically less specific class markers can refer to a large set of entities that have only a few general properties in common.

Definitions for polysyllabic class markers were provided in Table 15 in section 3.3.2, above. A detailed analysis of the semantic content of these, which is interesting from an anthropological perspective, is outside the scope of this study, which focuses on the grammatical functions of Miraña class markers and thus on the core set of specific class markers, which may be involved in arbitrary noun class assignment and which are frequently used for agreement marking and reference tracking.[49]

In summary, within the core set of monosyllabic specific class markers, basic shape distinctions such as dimensionality, axial geometry, size, and curved edges can be clearly identified. However, the system as a whole is internally complex and characterized by a high number of class markers with quite specific semantic content, often bound to prototypical objects such as parts of plants. These overall semantic characteristics of class markers in Miraña appear to be rather typical for systems of nominal classification in the Amazonian languages (cf. e.g. Gomez 1982; D. L. Payne 1986; Aikhenvald 1994, 1996a; Aikhenvald and Green 1998; Vengoechea 2000).

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[49] The importance of differentiating within a given set of classifying morphemes according to the role that these forms play in the language is also expressed in de León's (1988: 15) critique of Berlin's (1968) analysis of Tzeltal classifiers, which describes semantic characteristics of a set of over 500 forms. León (1988: 15) suggests that the complexity of Berlin's (1968) analysis may be "a result of *hyper*generation of raw material, a process that gives a distorted image of the semantics of classifiers" (italics in original). The same problem pertains to the undifferentiated list of over 400 Bora classifiers in Thiesen and Thiesen (1998).

6.3.2. The spontaneous use of class markers in an experimental situation

A different kind of evidence for the role that shape semantics plays in class markers comes from data obtained with a referential communication task called the "Shape Classifier Task" (ShaClaTa), which was specifically designed by the author to study the role of shape semantics in languages with systems of nominal classification. Data from this experiment show that specific class markers in Miraña are used spontaneously to refer to differently shaped objects. Recall from section 1.4.2 that in this task one speaker (the director) describes a photograph that depicts an arrangement of small wooden objects (see Photos 4 and 5 for two examples, another 8 are reproduced in Appendix A) to another speaker (the matcher). The matcher does not see the picture, but the director has full view of the objects and the actions of the matcher. The matcher has to choose the right objects from a given set and rebuild the arrangement from the picture according to the director's verbal instructions. The data thus include reference to the task objects in two kinds of situations: when the matcher has to identify the objects and when he or she arranges them in the required way. The task objects were designed to represent the basic shape distinctions that were identified in section 6.1, e.g. saliently one- vs. two- vs. three-dimensional (see Photo 5), negative spaces (hollow vs. solid in Photo 4), and curved vs. straight edges (objects in Photo 4 vs. Photo 5). Distinctions of material, function, and size are kept constant. All objects are made of the same kind of wood, they have no obvious or conventional function, and they are roughly the same size. The advantage of data from this task is that it provides us with speakers' spontaneous use of linguistic forms, without having to ask them to introspect or speculate on meanings.

Miraña speakers use class markers both as their primary means to identify the task objects in first mentions and to anaphorically refer back to them in later mentions. They hardly use noun roots in expressions that refer to these objects at all (a notable exception being *úmɛ* 'wood'). Class markers appear typically in combination with pronominal roots such as demonstratives and quantifiers. If no full noun occurs (e.g. one derived from *úmɛ* 'wood'), these uses of class markers thus correspond to cases where there is no controller of agreement and class markers themselves clearly convey a meaning (see section 5.4.3, see also additional examples from ShaClaTa therein). In example 180 the demonstrative *ɛ́:-i-ʔhɨ* (DIST-SCM.1D.medium-PL) 'those (stick-shaped) ones' refers to the objects on the bottom left of the picture in Photo 5, and the expression *tsi:-gwa* (other-SCM.2D.straight) 'another (plank-shaped) one' refers to the object above them.

Photo 4: ShaClaTa Picture 1   Photo 5: ShaClaTa Picture 7
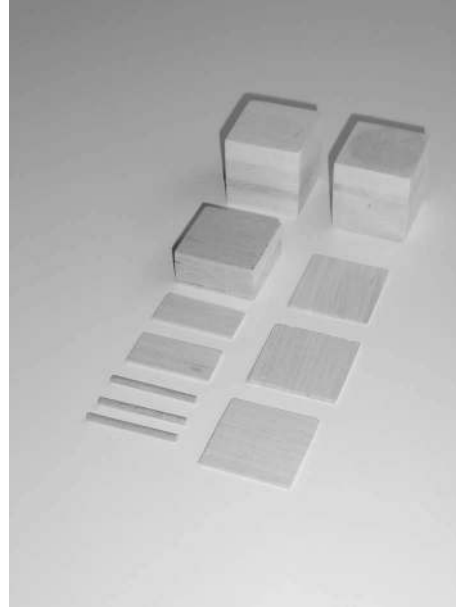
(180) *ɛ́:-**i**-ʔhi*   *ɯ*   *gwáhinú-dɯ*   *tsi:-**gwa***
       DIST-**SCM.1D.medium**-PL 2S.SUB line.up-COMP other-**SCM.2D.straight**
       'like those (stick-shaped) ones you lined up, (put) another one (plank-shaped)'
       [ROBERN07]

The following example (181) is a longer passage from this task. Roberto is the
director (DIR) and Ernesto is the matcher (MAT) in this trial. This example is
from the rebuilding of the arrangement on the first task picture (Photo 4). Class
markers that are used to refer to task objects (or to attribute properties to these
objects) are in boldface. Underneath the interlinear gloss, the reference objects
are identified using the following abbreviations: "H1.1" is the object on the top
left in Photo 4, "H1.2" is the one on the top right, identical to "H1.1". "H2"
(not in the Photo) is a similar looking object, which is taller than "H1.1" and
"H1.2". "P1" is one of the objects from the middle row of the arrangement in
Photo 4. The relevant parts of the example are repeated in the discussion
below.

(181) ShaClaTa Picture 1 [ROBERN01]

1.   DIR   *ɛ:-**nɛ***   *pá-**pahí**-kɯ́*   *né-**nɛ**-:kɯ*   *píko*
              DIST-**GCM.inan**   CPL-**SCM.hole**-DL   seem-**GCM.inan**-DL put
                [H1.1]   **[H1.1]**   **[H1.1]**
              'Those ones, two that look like something with a hole, put them'

2.   *tsatsí:-ɯ*   *í-**nɛ***   *a:ha*
                there-ADL   PRX-**GCM.inan**   yes
                            [H1.1]
                'there, this, yes' (matcher holding up object H1.1)

3.   MAT   *aßɛɾ*   *ídʒú = ʔahtʃí:hɯ*
                let's.see.SP   like.this=TAM
                'Let's see, maybe like this/these' (matcher placing object H2)

4.   DIR   *tsáʔa*   *tɛ:-**hi***   *ɛ:-**né**=iʔdɯ*   *atárá*   *hká:mé-ɾɛ*
                no   PN-**SCM.2D.round**   DIST-**GCM.inan**=TAM   too.much   tall-REST
                       [H1.2]   **[H2]**
                'No, a (flat and round) one, that one is definitely too tall'

                {5}

5.   *tɛ:-**né***   *naʔbé-**hí***   *í-**hi***
                PN-**GCM.inan**   accompany.NMZ-**SCM.2D.round**   PRX-**SCM.2D.round**
                 [H.1.1]   **[H1.2]**   **[H1.2]**
                'that (flat and round) one is a (flat and round) companion to it'

6.   MAT   *í-**hi***   *í-**hi***   *ídʒɯ*   *átsiʔdɯ*
                DIST-**SCM.2D.round**   DIST-**SCM.2D.round**   like.this   there
                    [H.1.1]   **[H.1.1]**
                'This (flat and round) one, this (flat and round), like this, there'

7.   DIR   *ítʃi*   *tɛ:-**nɛ***   *tɯhkéßé-ú*   *piko*   *ɛ:-**nɛ***
                here   PN-**GCM.inan**   begin.NMZ-ADL   put   DIST-**GCM.inan**
                    [H.1.1+H1.2]   **[P1]**
                'Here, put it to the beginning of this (arrangement), those ones'

8.   *pá-**hi**-kú*   *nɛ:-**nɛ***
                CPL-**SCM.2D.round**-DL   seem-**GCM.inan**
                 [P1]   **[P1]**
                'the ones that look like two (flat and round) ones'

                {1}

9.   MAT   *tɛ:-**né**-hɯ-ko*   *í-**nɛ***   *ídʒɯ*
                PN-**GCM.inan**-INTER-PF   PRX-**GCM.inan**   like.this
                   [entire arrangement]   **[entire arrangement]**
                'Is this (arrangement) it already?'

This example shows various aspects of how class marker semantics are used in identifying and differentiating between differently shaped objects in an

experimental situation. Besides deictic information given in demonstrative roots,[50] specific class markers provide the most important cues for the correct identification of the objects. Speakers use class marker constructions in predicative as well as referential function. In the first line of example 181, a pair of reference objects is identified by a demonstrative in combination with a general class marker. Then these objects are further specified by a relative clause, which includes the specific class marker *-pahɨ* (SCM.hole). Note that this polysyllabic specific class marker is used predicatively to attribute the properties it denotes to the referent and that this property pertains to a part of the referent, namely its hole:

1.   DIR   *ɛ:-**nɛ***   *pá-**pahɨ**-kúu*   *né-**nɛ**-:kuu*   *píko*
                 DIST-**GCM.inan** CPL-**SCM.hole**-DL seem-**GCM.inan**-DL put
                    [H1.1]   **[H1.1]**   **[H1.1]**
                 'Those ones, two that look like something with a hole, put them'

From there on, the two speakers use the specific class marker *-hɨ* (SCM.2D.round) in a variety of constructions to refer to the two objects and to describe them, e.g., in a third person pronoun in line 4, and a nominalized verb and a proximal demonstrative in line 5:

4.   DIR   *tsáʔa* *tɛ:-**hi***   *ɛ:-**né**=iʔdu*   *atárá*   *hká:mɛ́-rɛ*
                 no   PN-**SCM.2D.round** DIST-**GCM.inan**=TAM too.much tall-REST
                         [H1.2]   **[H2]**
                 'No, a (flat and round) one, that one is definitely too tall'

                 {5}

5.   *tɛ:-**né***   *naʔbé-**hɨ***   *í-**hi***
               PN-**GCM.inan** accompany.NMZ-**SCM.2D.round** PRX-**SCM.2D.round**
               [H.1.1]   **[H1.2]**   **[H1.2]**
               'that (flat and round) one is a (flat and round) companion to it'

The only instance of a noun root that is involved in establishing reference by specifications of properties of a shaped object is *hká:mɛ́* (tall one), the last word in line 4.

The following example (182) is also from the Shape Classifier Task. It illustrates the use of different specific class markers to describe the same object and to differentiate it from another, similar looking one. In line 1, a ring-shaped

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[50] The video-taped data also contain a number of pointing gestures, in particular lip-points (cf. Enfield 2001) for the purpose of identifying particular objects.

object is referred to with a demonstrative root in combination with a specific class marker. In line 2, this referent is described in more detail in a relative clause that contains another class marker. Note that the relative clause agrees with the demonstrative in noun class, while the expression *pá-táhigwa* (CPL-SCM.very.thin) 'a very thin one' is used as a predicate nominal with the predicate of the relative clause and does not agree in noun class with the other expressions.

(182) ShaClaTa Picture 19 [ROBERN19]

1.   MAT   *í-**pahtsí** = ʔahtʃíːhɯ*
                 PRX-**SCM.ring**=TAM
                 'Maybe this (ring)'

2.   DIR   *tsáʔa ími-**nɛ**   pá-**táhigwa**   né-**pahtsi***
                 no   good-**GCM.inan** CPL-**SCM.very.thin** seem-**SCM.ring**
                 'No, the (ring) seems very thin indeed (lit. nicely thin)'

The Shape Classifier Task strongly encourages the use of pronominal expressions independent of agreement controllers by asking speakers to repeatedly refer to differently shaped objects that do not have a name in the language. Data from this task show how Miraña class markers are spontaneously used independent from noun roots as a means to convey information about the shape of concrete objects, be it in order to establish reference, or to attribute shape properties to such objects. This indicates that the semantic content of class marker, in particular their denotations of shape properties, are productive in the sense that they can be used for independent reference to differently shaped novel objects.[51]

6.3.3. Polysemous class markers

It was shown above (section 6.3.1) that in a predicative use, class markers from the core set usually convey only one meaning (with the exception of *-ba ~ ʔba* (SCM.3D') and that this meaning is usually related to basic shape distinctions. It has also been mentioned that the assignment to noun classes that correspond to the core set of specific class markers can be unrelated to this shape meaning. This assignment may be completely arbitrary, as in the case of animal names (see section 7.4, below). However, some class markers contribute one

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[51] Note that it is not ruled out by the data from the task that other semantic distinctions, such as function, play a role in the semantics of class markers, which may surface in other contexts.

identifiable and constant meaning to one group of nouns and another identifiable and constant meaning to another group of nouns. These class markers are analyzed here as polysemous. One of these meanings is always the shape-related meaning that surfaces in predicative constructions. This can be observed in the following examples (183a-d). In examples 183a and 183b, the class marker *-ʔo* (SCM.3D.oblong) contributes its central meaning component, which is related to basic shape distinctions. In examples 183c and 183d, however, the same class maker contributes the meaning of 'artificial enclosure', which is a second, unrelated meaning of this polysemous class marker.

(183)   a.   *úhi-ʔo*
                banana-**SCM.3D.oblong**
                'banana fruit'

        b.   *mé:mɛ-ʔo*
                palm-**SCM.3D.oblong**
                'palm fruit, sp. *chontaduro*'

        c.   *ka:há-ʔo*
                till.NMZ-**SCM.enclosure**
                'bed for horticulture'

        d.   *míhko-ʔo*
                corral-**SCM.enclosure**
                'corral / room'

Note that the only those class markers are considered polysemous for which an additional meaning is attested in a number of nouns and available for productive derivation (such as the noun derived from a nominalized verb in example 183c). That is, idiosyncratic uses of class markers in nouns that are arbitrarily assigned to noun classes (such as animal names) are not considered to be additional meanings.

The following Table (29) lists the polysemous specific class markers along with their definitions and a number of examples of uses that are covered by these definitions (see also Table 12 in section 3.3.1, above). Only one polysemous class marker is not from the core set, namely *-ʔi* (SCM.bunch / SCM.river). Note also that for the class marker *-ba* (SCM.3D) no attempt is made to provide different glosses for each meaning since in addition to having three unrelated meanings this class marker is often involved in arbitrary noun class assignment.

Table 29: Polysemous class markers

class marker	gloss	examples of uses
-ʔi SCM.bunch / SCM.river	(1) relatively small rivers (2) bunches of fruits	(1) small rivers (2) bunches of bananas, bunches of palm fruits
-ɯ SCM.3D.round / SCM.string	(1) small and round objects (2) strings	(1) small fruits, mosquito bite, eye, manioc tuber, calabash fruit, egg, heart, head (2) lianas, strings
-ʔo SCM.3D.oblong / SCM.enclosure	(1) oblong objects (2) artificial enclosures	(1) oblong fruits, penis, nose (2) rooms, beds for horticulture, corral
-ba SCM.3D	(1) logs (2) fruits (3) mushy objects	(1) logs, leg, sticks (sugarcane, bamboo) (2) oranges, pear apples (3) thick drinks, natural tar

Polysemy of class markers can arise as a result of historical developments within the language, such as clash of formerly distinct noun classes or reanalysis of phonological material as class marker morphology. The historical origin of the polysemous class markers of Miraña cannot be shown with the available data. However, the possible emergence of a polysemous class marker can be observed in Bora, where the form *-mɯ* can be used as a partial repeater in class marker positions for (i) *kɯːmɯ* 'signal drum', (ii) *múhpajn*e 'breast' and (iii) *niːmɯ* 'umarí (species of fruit)' (my own field data, 2003). If this form becomes grammaticalized as a class marker, three unrelated definitions would have to be given.

6.4. SEMANTICS OF GENERAL CLASS MARKERS

The semantics of general class markers is simple and straightforward. The general inanimate class marker is almost exclusively used in expressions with inanimate referents and the animate class markers are almost exclusively used in expressions with animate referents. Within animate class markers singular and dual class markers, masculine is the unmarked category that is used when the sex of the referents is unknown or of no importance. Feminine dual forms are only used for two female referents, while masculine forms are used for two male referents as well as one male and one female (see also section 3.2, above). The category of animate nouns (i.e. nouns which take general animate class markers as agreement markers) includes all nouns denoting animals and humans (where animal names can additionally include specific class markers), except that the noun denoting 'child' is formed with the general inanimate class marker (see sections 7.3.2 and 8.3.4). In addition, about a dozen nouns denoting non-living entities can combine with animate general class markers. These include nouns denoting natural phenomena such as thunder (see example

110b in section 4.2.7, above), rainbow, and celestial bodies (moon, sun, stars), as well as the nouns denoting fishhooks and edible mushrooms. These two nouns include a specific class maker in their singular form, but form their plural with the general animate class marker (examples 184 - 185). The categorization of fishhooks as animate probably stems from their association with fish, while edible mushrooms may be compared to prey animals.

(184) a.   *pihhúú-**gwa***
              fish.NMZ-**SCM.2D.straight**
              'fishhook'

        b.   *pihkúú-**mɯ***
              fish.NMZ-**GCM.anim.pl**
              'fishhooks'

(185) a.   *goːró-**hi***
              mushroom-**SCM.2D.round**
              '(edible) mushroom'

        b.   *goːró-**mɯ***
              mushroom-**GCM.anim.pl**
              '(edible) mushrooms'

6.5. SUMMARY AND DISCUSSION

In summary, Miraña class markers have identifiable and constant meanings, and some of them are polysemous. While the semantics of general class markers are restricted to a standard, three-way gender distinction (in addition to the expression of number), shape distinctions are prominent among the meanings encoded in specific class markers in Miraña. This was shown for a selection of class markers through:

  (i)   the translation equivalents provided by native speakers of class markers in combination with semantically weak pronominal roots in predicative function;

  (ii)   the applicability of these forms with reference to differently shaped objects;

  (iii)   the fact that in order to distinguish novel objects that are differentiated only by abstract shape properties, Miraña speakers spontaneously use class markers.

The core set of eight monosyllabic specific class markers encodes basic shape distinctions, such as dimensionality, axial geometry, and curved edges. In addition to having one meaning component related to shape, some class markers are polysemous. Shape distinctions, and among these dimensionality in particular, are a characteristic typically associated with numeral classifiers (Croft 1994: 152; Aikhenvald 2000: 286ff.; Grinevald 2000: 72f.). This semantic profile contrasts with the semantic distinctions found in other types of classifier systems. Noun classifiers are said to encode primarily material properties, but not physical shape, and possessive classifiers often encode functional categories (Aikhenvald 2000: 285ff.; Grinevald 2000: 72f.). Shape has been shown to play a role in the assignment of noun classes, for instance, in Papuan languages, but it does so usually only indirectly. The noun class markers of these languages thus do not directly encode the shape of their referents as Miraña class markers do (see discussion in section 7.5, below). The fact that in Miraña almost every specific class marker encodes clearly identifiable and constant shape distinctions is highly unusual for a noun class system. How nouns are assigned to the noun classes corresponding to these class markers, and how these class markers contribute their shape semantics to classified nouns is discussed in the next chapter.

SEMANTICS OF CLASSIFIED NOUNS AND NOUN CLASS ASSIGNMENT

7.1. INTRODUCTION

This chapter discusses the semantic processes that can be observed in classified nouns, i.e. in combinations of noun roots (or nominalized verbs) and class markers. These processes are discussed here for two main reasons: first, to understand the semantic characteristics of the derivational use of class markers, and second, to describe the semantic motivation of the assignment of noun classes. Recall that noun classes are defined as agreement classes. The assignment of noun classes is understood as the principles that explain the choice of a noun class marker in agreement marking (see Corbett 1991: 7). Section 5.4, above, has shown that the use of specific class markers for agreement marking is determined by the overtly marked noun class on the agreement controller. Thus, morphological characteristics of the agreement controller are in principle sufficient to explain the choice of a specific class marker for agreement marking and the assignment system for specific classes could therefore be called a "morphological system" in Corbett's (1991: 34ff.) terminology. However, such a characterization would miss the observation that the meanings of specific class markers used for agreement marking often bear a clearly observable relation to the meanings of the classified nouns that function as their agreement controllers. These semantic relations show that in addition to the morphological characteristics that determine the choice of a noun class marker in agreement marking, semantic principles are at work in the assignment of noun classes. The internal semantic processes in classified nouns described in this chapter show that there is in fact a strong tendency towards semantically motivated noun class assignment within the morphosyntactically determined agreement pattern in Miraña. For inanimate classified nouns, the basis of this assignment is the mostly shape-related semantic content of specific class markers, resulting in shape-based noun classes for this section of the nominal lexicon. However, some classified nouns are also arbitrarily assigned

to noun classes that correspond to the core set of specific class markers. The meanings of these classified nouns bear no relation to the meaning of the class markers they include.

In addition to overtly marking noun class, class markers usually contribute semantic content (as described in chapter 6) to classified nouns. Therefore the semantic motivation of noun class assignment in Miraña can be described in terms of the degree of semantic compositionality of classified nouns. When a classified noun is semantically compositional, the meaning of the class marker is represented in the meaning of the classified noun and I speak of semantically motivated noun class assignment. When a classified noun is non-compositional, the meaning of the class marker is not represented in the classified noun and the assignment to the noun class is semantically opaque or arbitrary. The distinction between semantically motivated vs. arbitrary assignment is closely related to—but not identical with—the distinction between the uses of class markers that are lexically specified by the noun root vs. those uses that are not specified by the noun root. If the assignment is semantically motivated in the sense defined above, then the class marker adds semantic information to the classified noun that is not present in the noun root. In this case it is not necessarily lexically specified by the noun root. If, however, the assignment is semantically opaque or arbitrary, then the class marker is necessarily lexically specified by the noun root, since no semantic motivation for its choice is observable.

There are two things that are important to keep in mind for the following discussion. First, the use of class markers for the formation of classified nouns is fundamentally different to the use of class markers for agreement marking. In classified nouns, the use of class markers is semantically informative to different degrees (according to the degree of semantic motivation of the assignment). In their use as agreement markers with overt agreement controllers, on the other hand, the class markers do not add any information, but they are mechanically chosen according to the noun class of the agreement controller, irrespective of the semantic motivation of the assignment of the class marker to the agreement controller. The second important thing to keep in mind is that the function of class markers in classified nouns is analyzed here as derivation (see section 4.2). Assuming this analysis, the addition of a class marker to a noun root results in the derivation of a new lexical item. For that reason, when I speak of the assignment of nouns to noun classes (or to class markers), I mean the assignment of nouns that include a class marker themselves, not the assignment of noun roots to class markers. This is necessary because the relevance of the assignment of noun classes extends beyond the noun word, namely when class markers are used for agreement

marking. And it is classified nouns (i.e. combinations of noun roots and class markers) that are the relevant units for agreement in specific noun classes, not noun roots. So in order to maintain a consistent terminology when speaking of the semantic motivation of noun class assignment, it is necessary to speak of the assignment of classified nouns—not noun roots—to noun classes.

As a background to the discussion of the compositionality of classified nouns, the following section (7.2) deals with regular semantic processes in the formation of classified nouns. Section 7.3 discusses compositional classified nouns (where noun class assignment is semantically motivated) and non-compositional classified nouns (where class marker assignment is semantically opaque). In section 7.4, the special case of the use of class markers on animal names is discussed. Section 7.5 summarizes the semantic characteristics of classified nouns and discusses some implications of having semantically motivated noun classes based on shape.

7.2. REGULAR SEMANTIC PROCESSES IN CLASSIFIED NOUNS

The meanings of semantically compositional classified nouns are construed as a combination of the meanings of their parts, i.e. that of a noun root (or a nominalized verb) and that of a class marker. The meanings of these two elements are usually linked according to a general rule such that the meaning of the class marker is modified by the meaning of the preceding noun root or nominalized verb, but not the other way around (very much like English compounds, see Quirk et al. 1985: 1330ff., 1567ff.). This can be shown rather informally here.

Modification of the meaning of one element by the meaning of a preposed element is a basic combinatorial rule in nominal expressions in Miraña. It is also operative in the genitive construction, in which the meaning of the head noun is modified by the meaning of the preposed dependent noun phrase (see section 5.2). Unlike genitive constructions, combinations of noun roots with class marker are single words that are built from (sometimes bound) noun roots and (always bound) class markers. Like heads of genitive constructions, class markers are the semantic heads of classified nouns in the sense that the whole denotes an entity of the kind denoted by the class marker. This semantic relation can be observed in the following examples (186a-e).

(186) a. *úhi-ʔo*
banana-**SCM.3D.oblong**
'banana fruit'

b.   *kó:-**i***
     wood-**SCM.1D.medium**
     'wooden stick'

c.   *mi:rúgwa-**mí:ʔo***
     bug-**SCM.hard.shell**
     'carapace of a bug, sp.'

d.   *bó:a-**hu̵***
     anaconda-**SCM.tube**
     'manioc squeezer'
     (tubular instrument for squeezing out manioc dough)

e.   *tú̵ʔa-**pá:hi***
     foot-**SCM.hole**
     'shoe'

The classified nouns in examples 186a-f denote entities of the kind that the class marker denotes. The noun in 186a denotes an oblong object, which is further specified as belonging to the botanical species banana. The noun in example 186b denotes a slender object of medium size that is further specified as being made of wood. Even though it may seem counter-intuitive, one could also construe the denotation of the classified nouns in examples 186a and 186b as the intersection of the denotations of its parts, without positing a hierarchical internal structure. Under such an analysis the denotation of *ú̵hi̵-ʔo* (banana-SCM.3D.oblong) 'banana fruit' (example 186a) would be construed as the intersection of 'banana substance' (the denotation of the noun root) and 'oblong objects' (the denotation of the class marker). However, such an analysis is less plausible for the nouns in examples 186c-e. For instance, the noun in example 186c denotes a carapace that is further specified as belonging to a species of bugs, i.e. the bug's carapace. It does not denote a bug that would be further specified as being or having a carapace. Note that the class marker also determines that the classified noun is inanimate in this case (see also example 93c in section 4.2.2, above). Thus, an interpretation of the internal semantics of classified nouns as independent, equally ranked contributions of the meanings of its parts is possible in some cases. However, the assumption of a combinatorial rule facilitates the correct interpretation of nouns such as the one in example 186c as denoting a carapace of a bug rather than bugs that are further specified as being associated with carapaces.

Another piece of evidence that is suggestive of the status of the class marker as the semantic heads of classified nouns is the fact that the entity denoted by the

classified noun can always be referred to with the class marker, but not necessarily with the noun root alone. Class markers cannot occur as free forms, but the root *tɛ:-* (PN) provides a structural template for the class marker without adding to its semantic content (see section 4.3.1, above). Thus, in a given discourse situation, the referent of the noun in example 186a (a single banana) can be referred to with *tɛ:-ʔo* (PN-SCM.3D.oblong) 'it (oblong)', but not necessarily with *úhɨ* 'banana', which usually refers to banana substance or a large number of objects related to bananas, but not a single fruit. In a similar way, the referent of the noun in example 186d can be referred to with *tɛ:-hu* (PN-SCM.tube) 'it (tubular)', but not with *bo:a* 'anaconda', which refers to anaconda snakes. In sum, there is some evidence for a combinatorial rule that builds on a relation of semantic headedness in classified nouns. However, as examples 186a-b show, not every classified noun in the language requires the application of such a rule for a correct interpretation.

In terms of the semantic content that the parts of a classified noun contribute, it can be observed that in inanimate nouns, class markers typically contribute a specification of shape to the denotation of the whole, e.g. 'oblong' in example 186a, 'slender and of medium length' in example 186b, and 'tubular' in example 186d. The noun roots in inanimate classified nouns typically contribute a denotation of material or substance ('banana' in example 186a, 'wood' in example 186b), or some other characteristic not related to shape, such as being related to anaconda snakes in example 186d. In classified nouns formed with nominalized verbs, the verb stem often modifies the denotation of the class marker in terms of function, as in the following examples (187a-d). These nouns could thus be literally translated as, for instance, 'a little stick for shooting' (= 'arrow', example 187a) or 'a disc-shaped object for sieving' (= 'sieve', example 187b).

(187) a.   *tubó-**í:ʔo***
            shoot.NMZ-**SCM.little.stick**
            'arrow'

      b.   *gwaʔrá-**hɨ***
            sieve.NMZ-**SCM.2D.round**
            'manioc sieve' (round and flat artifact for sieving manioc flour)

      c.   *mahtʃó-**ha***
            eat.NMZ-**SCM.cover**
            'kitchen'

     d.   *adó-ɾo*
           drink.NMZ-**SCM.bottle**
           'drinking bottle'

In addition to linking the denotation of the class marker with the denotation of the noun root or nominalized verb in a relation of modification, another semantic process that is operational in the construction of the meanings of some classified nouns is metonymy (see Lakoff and Johnson 1980: 35ff.). This process can be observed in some nouns denoting traps. The trap denoted by the noun in the following example (188a) consists of a number of elements, among them a log (recall from sections 6.3.1 and 6.3.3, above, that the polysemous class marker *-ba* (SCM.3D) denotes logs in one of its definitions), but it does not resemble a log as a whole. Likewise, the trap denoted by the noun in example 188b includes a stick of the kind that the class marker *-ko* (SCM.1D.pointed) could refer to, but does not resemble a stick as a whole. The denotations of these nouns can be obtained from linking the denotations of its parts (which results in 'log of/for a trap') and a single step of metonymy, which transforms the denotations of the part of the trap to a denotation of the trap as a whole. Another instance of metonymy can be observed in the classified noun formed with a nominalized verb in example 188c, which includes the class marker denoting leaf-shaped objects, *-ʔa:mɨ* (SCM.leaf). This noun denotes books, i.e. complex arrangements that include leaf-shaped objects, namely sheets of paper.

(188)   a.   *tahkóɾa-ba*
               trap-**SCM.3D**
               'log-trap (i.e. a trap of the log-kind)'

        b.   *daʔpé-ko*
               trap-**SCM.1D.pointed**
               'stick-trap (i.e. a trap of the stick-kind)'

        c.   *gwahákɨ-ʔá:mɨ*
               know.NMZ-**SCM.leaf**
               'book'

In summary, there is a basic combinatorial rule in the formation of classified nouns according to which the meaning of the whole is construed as a modification of the meaning of the class marker by the meaning of the noun root or nominalized verb. Specific class markers typically contribute the denotation of a particularly shaped object as a meaning component to the whole. The objects denoted by specific class markers are typically further specified as being made of a particular substance (by noun roots) or as fulfilling a particular function (by nominalized verbs). Additionally, the

meanings of some nouns involve a metonymic step from the denotation of a part to the denotation of the whole. Whether the meaning of a classified noun involves metonymy or not is not predictable and must be attributed to conventionalization. Other ways in which the meanings of classified nouns may be restricted by convention are dealt with in section 7.3.2, below.

7.3. COMPOSITIONALITY AND CONVENTIONALITY OF CLASSIFIED NOUN MEANINGS

7.3.1. Introduction

Most classified nouns are semantically compositional. In these nouns the semantic contribution of a class marker can be easily recognized and noun class assignment is thus semantically motivated. The meanings of many compositional classified nouns are further restricted by convention. However, in some classified nouns the meaning contribution of the class marker is not recognizable. These nouns are non-compositional and noun class assignment to these nouns is opaque.

Conventionalization and compositionality are a matter of degree. For Jackendoff (2002) the differences in conventionalization and compositionality pertain to "what aspects of an utterance *must* be stored in long-term memory, and what aspects *can* be construed online in working memory" (Jackendoff 2002: 152, italics in original; see Makkai 1972: 56f. for a similar approach; see Schultze-Berndt 2000: 30 for further discussion). This criterion sets apart those expressions whose the meanings can be predicted unambiguously from the meaning of their parts (and possibly combinatorial rules of the language) from any expression that involves additional meaning components that are idiosyncratic and must attributed to convention. For instance, the meaning of the English idiom *kick the bucket* cannot be construed online, but must be learned. However, many conventionalized expressions are formed according to combinatorial rules of the language and the meaning contribution of their parts are still clearly identifiable, even though the meaning of the whole is further restricted by convention. For instance, *brown book* is a regular formation of English, and the meaning of its parts are clearly identifiable, but the restriction of the meaning of this combination to 'books with a brown cover', excluding 'books with brown paper', is conventionalized and cannot be construed online. There may thus be important differences within conventionalized expressions. These differences are referred to here as the difference between "compositional" expressions (such as *brown book*) and "non-compositional" expressions (such as *kick the bucket*).

The internal semantic structure of combinations of elements such as noun roots and class markers may thus be of three basic types: (i) not requiring any convention, (ii) conventional, but still compositional, and (iii) non-compositional. For the purpose of establishing the difference between semantically motivated and semantically opaque noun class assignment, the crucial difference is between the second and the third type, compositional classified nouns (which may be conventional to some extent) and non-compositional classified nouns. In order to distinguish between these two, the criterion used here is whether or not the meaning of the class marker is represented in the meaning of the classified noun. Thus the discussion in the following focuses on compositionality and conventionality with respect to the meaning contribution of class markers, not necessarily that of noun roots or nominalized verbs.

For Miraña, the following test can be used to assess the compositionality of a classified noun. This test is based on the predicative use of class markers, i.e. on the possibility of using class markers in a pronominal expression that is used as a predicate nominal to attribute the properties denoted by the class marker to a referent that is established by other means (see sections 4.8 and 6.3.1). When the referent of a classified noun can be described with a predicate nominal that includes the same class marker that is also included in this noun, then the class marker contributes its meaning to this noun. These classified nouns are semantically compositional. This is the case for the classified nouns in examples 189a-b.

(189) a. *úhi-ʔo*   *pá-ʔo-dúi*   *né:-nɛ*
banana-**SCM.3D.oblong** CPL-**SCM.3D.oblong**-COMP seem-GCM.inan
'A banana is like an oblong one'

b. *ka:túnui-í:ʔo*   *pá-i:ʔó-dúi*   *né:-nɛ*
writing-**SCM.little.stick** CPL-**SCM.little.stick**-COMP seem-GCM.inan
'A pencil is like a little stick'

For the classified nouns in the following examples (190a-b) the class marker they contain cannot be used in a predicate nominal to describe the objects they denote. The sentences in example 190 are unacceptable for native speakers. These nouns are therefore considered non-compositional.

(190) a. * *kaʔgúinui-ko*   *pá-ko-dúi*   *né:-nɛ*
cahuana-**SCM.1D.pointed** CPL-**SCM.1D.pointed**-COMP seem-GCM.inan
Intended meaning: Cahuana (drink) is like a pointed one

    b.   * *kó:mɨ-**hɨ***   *pá-**hɨ**-dúú*   *né:-nɛ*
                 palm-**SCM.2D.round**   CPL-**SCM.2D.round**-COMP   seem-GCM.inan
                 Intended meaning: The palm tree is like a round and flat one

Note that I am not claiming that the meaning of the nouns in examples 189a and 189b is entirely predictable. They may in fact be restricted by convention. For instance, the noun in example 189a cannot refer to any oblong object made from or related to bananas, but just to banana fruits. What the test proposed here tells us is that these nouns are compositional in the sense that the meaning of the class marker is reflected in the meaning of the classified noun, setting them apart from non-compositional nouns such as those in examples 190a-b. Note also that I do not exclude the possibility that there are regularities in the noun class assignment of non-compositional nouns, such as those in examples 190a-b. In fact, it is reasonable to assume that these nouns were assigned to noun classes according to some semantic principle at one point. Synchronically, however, the meaning encoded in the class markers is not reflected in the meaning of the classified noun, which results in the unacceptability of sentences such as those in examples 190a-b.

The following sections discuss compositional classified nouns (section 7.3.2) and non-compositional classified nouns (section 7.3.3). Section 7.3.4 summarizes these discussions.

7.3.2. Compositional classified nouns

This section discusses compositional classified nouns, which can enter a sentence frame like the one in example 189, above. The following examples (191a-e) illustrate Miraña nouns formed with specific class markers whose meanings can be reliably obtained from linking the meanings of the noun roots and class markers such that the former modify the latter. The meanings of these nouns can thus presumably be construed online and do not involve conventionalization. Among the nouns that do not involve conventionalization are productive derivations, such as those that are used to refer to the differently shaped objects of the Shape Classifier Task (examples 191d-e).

(191)   a.   *úɨhɨ-**ʔbábaj***
                banana-**SCM.bag**
                'a bag of bananas'

        b.   *kó:hɯ-**ʔɛ***
                avocado-**SCM.tree**
                'avocado tree'

    c.   *nɨ́hɨ́-ʔɛ-hto*
        palm, sp.-**SCM.tree-SCM.spine**
        'thorn of a *cumare* palm tree'

    d.   *úmɛ́-ʔɛ-gwa*
        wood-**SCM.tree-SCM.2D.straight**
        'wooden plank' [ROBERN07]

    e.   *úmɛ-i*
        wood-**SCM.1D.medium**
        'wooden stick' [ROBERN07]

The uses of general class markers only very rarely involve conventionalization. The denotation of general class markers is almost always directly represented in the meaning of the classified nouns that include them. For instance, classified nouns that are formed with the general animate feminine singular class marker -*dʒɛ* (GCM.fem.sg) always denote single, female beings, and those that are formed with the general animate masculine dual class marker -*muʔtsi* (GCM.masc.dl) always denote two animals or humans, at least one of which is male (if the sex is known or of importance to the speaker). There are only very few exceptions to semantically motivated assignment of general class markers. On the one hand, the noun denoting 'children' is formed with the general inanimate class marker (see example 218 and discussion in section 8.3.4, below). On the other hand, there are about a dozen nouns with inanimate referents that combine with general class markers, such as the nouns denoting edible mushrooms, fishhooks (examples 184 - 185 in section 6.4), and thunder (example 110b in section 4.2.7). Taken by itself, the system of general class markers is thus almost a "strict semantic system" (Corbett 1991: 8ff.).

The meanings of the classified nouns in the following examples (192a-c) cannot be predicted unambiguously from the meanings of their elements. These combinations would allow for at least one alternative interpretation given the semantic input from its parts and the combinatorial rule of modification. While these nouns are still semantically compositional, they are conventionalized to a certain degree.

(192)   a.   *úhi-hɨ*
           banana-**SCM.2D.round**
           'seed of a wild species of banana'
           (Not: any other (disc-shaped) object related to banana of any other
           species, e.g. a slice of a banana fruit)

b.   *do:dʒέ-**gwa***
       lift_up.NMZ-**SCM.2D.straight**
       '(plank-shaped) visor of a blowgun'
       (Not: any other (plank-shaped) object related to lifting up)

c.   *á:nɯ́gwa-**í:ʔo***
       manioc-**SCM.little.stick**
       'manioc seedling'
       (Not: any other (stick-shaped) object made from or related to manioc)

When polysemous class markers are used in classified nouns, the interpretation of the resulting noun may have to be conventionally restricted to one of the meanings of the class marker, as in the nouns in examples 193a-b. The class markers contained in these nouns are polysemous (see section 6.3.3), but the classified nouns are not.

(193)   a.   *í:nɯ-**ʔo***
       earth-**SCM.3D.oblong/SCM.enclosure**
       'stove' (an elevated enclosure made from clay used for cooking)
       (Not: any oblong object made from clay)

b.   *gwáj:ba-**ɯ***
       hammock-**SCM.3D.round/SCM.string**
       'string'
       (Not: any round object related to hammocks)

The restrictions of the meanings of the classified nouns in examples 192 and 193 cannot be predicted online and must be attributed to convention. However, in the nouns in these examples the meaning contribution of the class markers is identifiable as the denotation of the shape of the entity denoted by the classified noun. Thus the noun class assignment of these nouns is still semantically motivated, other than in nouns that are not only conventional but also non-compositional (see section 7.3.3).

A good way to test for the existence of semantic motivation of noun class assignment in a language is to look at how loanwords are treated in the language. If noun class assignment is semantically motivated, we should expect loanwords to be assigned to noun classes according to the same semantic principles that can be observed in the rest of the nominal lexicon (see Corbett 1991: 71ff.). In Miraña, there are very few loanwords,[52] but these principles

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[52] Where at all possible, Miraña favors the creation of neologisms over borrowing of morphological material. In the case of concrete objects, in particular artifacts, class marker play a major role in these creations.

can be also observed in neologisms, i.e. names for objects that were relatively recently introduced to Miraña culture. The following examples illustrate semantically motivated noun class assignment in loanwords (example 194) and in neologisms (example 195).

(194) a.   *ɾjoːmá-ɯ*
        rheumatism.SP-**SCM.3D.round**
        'rheumatic deformation'

    b.   *kókakóːɾa-ro*
        coca_cola.SP-**SCM.bottle**
        'coca cola bottle'

(195) a.   *kaːtúnɯ-íːʔo*
        write.NMZ-**SCM.little.stick**
        'pencil'

    b.   *káːmɛ́ː-mi*
        high-**SCM.transport**
        'airplane'

    c.   *ajnɯ́-hɯ*
        shoot.NMZ-**SCM.tube**
        'rifle'

    d.   *pɛːtɛ́-ɯ*
        shine.NMZ-**SCM.3D.round**
        'light bulb'

Noun class assignment to loanwords and neologisms shows that semantically motivated assignment is an active process in the language. On the other hand, the fact that motivated noun class assignment can also be observed in obligatorily classified nouns (see section 4.2.3) shows that semantically motivated noun class assignment may persist even if class markers are morphologically fused to a noun root. Some of the roots that are part of obligatorily classified nouns only occur with one and the same class marker. This morphological characteristic is indicative of the conventionalized nature of these nouns. Obligatorily classified nouns do, however, often denote objects of the kind that the class marker that they include denotes. This shows that the noun class assignment of these nouns is semantically motivated. Two such

nouns are given in the following examples (196 and 197, see also examples 94 and 95 in section 4.2.3, above).[53]

(196) a.   *á:nɛ-**hto**
        needle-**SCM.spine**
        'needle'

    b.   * *á:nɛ*
        Intended meaning: needle

(197) a.   *í:bɯ-**ɯ***
        heart-**SCM.3D.round**
        'heart'

    b.   * *í:bɯ*
        Intended meaning: heart

Combinations of noun roots (or nominalized verbs) with specific class markers that do not belong to the core set appear to be always semantically compositional. That is, I have found no instances of classified nouns that include non-core class markers where the meaning of the class marker would not be reflected in the meaning of the classified noun. Examples of classified nouns that are formed with non-core specific class markers are given in Table 30 (see Tables 12 and 15 in sections 3.3.1 and 3.3.2, above, for further examples).

Table 30: Semantically motivated assignment of non-core SCMs

class marker	examples
-*ro* SCM.bottle	*úmɛ-ro* 'salt container'
	ajnúhɯ-ro 'muzzle'
-*hɯ* SCM.tube	*bájnɛ-hɯ* 'cigarette'
	tú:tsi:-hɯ '(tubular) husk of *guamo* (tree, sp.)'
-:*baj* SCM.cont	*adó-:baj* 'salty well'
	úßi-:baj 'basket'
-*hto* SCM.spine	*í-hto* 'horn'
	níhíʔɛ-hto 'thorn of *cumare* palm, sp.'
-*ʔɛhɯ* SCM.hole	*tú:-ʔɛhɯ* 'nostril'
	gwáj:-ʔɛ́hɯ 'trap (including a hole in the ground)'
-*ɯ:ʔo* SCM.club	*gwapóáhko-ú:ʔo* 'club'
	gwáj-ɯ:ʔo 'club (for beating fish)'

[53] Note that the meanings of noun roots contained in obligatorily classified nouns can only be approximated by subtracting the likely meaning contribution of the class marker from the meaning of the combination, since these roots cannot occur as free forms.

Table 30: Semantically motivated assignment of non-core SCMs (cont.)

class marker	examples
-ʔa:mɨ SCM.leaf	*gwaháku-ʔá:mɨ* 'book'
	tá:ßi-ʔá:mɨ 'leaf of *ta:ßi*-tree, sp.'
-dʒi:hu SCM.powder	*úhɨ-dʒí:hu* 'pulverized dried banana'
	bá-dʒi:hu 'ash'
-hpajko SCM.liquid	*nú-hpajko* 'water'
	tú-hpajko 'blood'
-i:hɨ SCM.platform	*gwá-ɨ:hɨ* 'raft, floor'
	tɛʔmé-ɨ́:hɨ 'tree house'
-pahtsɨ SCM.ring	*móʔo-páhtsɨ* 'ring of liana'
	ʔohtsígwa-páhtsɨ '(finger-)ring'

Only class markers from the core set of specific class markers may be involved in arbitrary noun class assignment (see next section, 7.3.3). But even within the set of nouns that are built with specific class markers from the core set, the assignment is still semantically motivated in the majority of cases. Examples of semantically motivated assignment involving specific class markers from the core set of specific class markers are given in Table 31 (see Table 12 in section 3.3.1, above, for further examples).

Table 31: Semantically motivated assignment of core SCMs

class marker	examples
-ba SCM.3D (i) fruits	*né:ba-ba* 'anetto fruit'
	nɛ:ßá-ba 'fruit (generic)'
	i:ʔúhɛ-ba 'lemon (fruit)'
-ba SCM.3D (ii) logs	*úménɛ-ba* 'tree trunk'
	á:dʒa-ba '*bombona* (tree, sp.) trunk'
	dzí:níha-ba 'tree, sp. trunk'
-ba SCM.3D (iii) mushy objects	*úni-ba* 'spit'
	máʔni-ba 'tar'
	úhɨ-ba 'thick drink made from banana'
-gwa SCM.2D.straight	*nihtú-gwa* 'bar of soap'
	boʔdó-gwa 'paddle'
	ígwa-gwa 'board of *sancona* (tree, sp.)'
-hɨ SCM.2D.round	*boʔdó-hɨ* 'plate'
	má:ʔo-hɨ '*cazabe* (manioc bread) loaf'
	gwatáhko-hɨ 'hat'
-i SCM.1D.medium	*ko:i* 'wooden stick'
	ka:nú-i 'pestle'
	kuhkú-i 'walking stick'
-ko SCM.1D.pointed	*á:múta-ko* 'shaft of harpoon'
	á-ko 'beam'
	pihhú-ko 'fishing rod'
-ɯ SCM.3D.round	*kó:mɨ-ɯ* '*milpeso* (palm, sp.) fruit'
	ádʒɯ-ɯ 'eye'
	kúni:-ɯ 'yams tuber'

Table 31: Semantically motivated assignment of core SCMs (cont.)

class marker	examples
-ɯ SCM.string	áʔdi-ɯ 'cotton string'
	mo:ʔó-ɯ 'liana'
	gwáj:ba-ɯ 'string'
-ʔɛ SCM.tree	bá:ko-ʔɛ 'grape tree'
	kó:hɯɯ-ʔɛ 'avocado tree'
	teʔké-ʔɛ 'calabash tree'
-ʔo SCM.3D.oblong	á:-ʔo 'maraca (tree, sp.) fruit'
	námɛ-ʔo 'penis'
	túhɯɯ-ʔo 'nose'
-ʔo SCM.enclosure	mátsáhkɛ-ʔo 'peanut plantation'
	míhko-ʔo 'room'
	í:nɯ-ʔo 'stove'

7.3.3. Non-compositional classified nouns

This section discusses non-compositional classified nouns, i.e. nouns in which there is no recognizable contribution of the meaning of class markers. Examples 198a-b are two instances of such nouns. Since the meaning of the whole does not bear a relation to the meaning of the class marker, these classified nouns are considered not only conventionalized but also non-compositional. This is particularly evident in the noun in example 198b, which denotes a kind of stew, which has nothing to do with the denotation of the class marker -ko (SCM.1D.pointed) that is used in the formation of this noun.

(198) a. *di:-**hi***
          chili-**SCM.2D.round**
          'ground chili'
          (Not: flat and round object, or any other object made from or related to chili)

       b. *túta-**ko***
          cooking-**SCM.1D.pointed**
          'bowl of stew'
          (Not: any other (pointed) object related to cooking)

As mentioned in section 7.3.1, above, non-compositional nouns cannot enter a predicative construction in which the class marker from the noun is used to attribute its properties to the referent of the noun. This is illustrated once more in the following examples, which include non-compositional classified nouns that denote body parts (examples 199a-b).

(199) a. * *í-ʔgwá-i*   *pá-i-dú*   *né:-nɛ*
           3.POS-jaw-**SCM.1D.medium** CPL-**SCM.1D.medium**-COMP seem-GCM.inan
           Intended meaning: His jawbone is like a slender one of medium length

       b. * *né:mi-ɯ*   *pá-ɯ-dú*   *né:-nɛ*
           elbow-**SCM.3D.round** CPL-**SCM.3D.round**-COMP seem-GCM.inan
           Intended meaning: The elbow is like a spherical round one

Note that a remote semantic relation between the denotation of the class markers and the classified nouns could be construed in these nouns. For instance, elbows (example 199b) could be said to resemble a round point, which would be roughly compatible with the denotation of the class marker. However, this semantic link is apparently not motivated enough to pass the test for semantic compositionality proposed here. The difference between non-compositional nouns (for instance those in examples 198 and 199) and conventionalized, but still compositional nouns (such as those in examples 192 and 193 in section 7.3.2, above) is also part of the metalinguistic knowledge of native speakers. When asked why a particular class marker is used on a noun such as those in examples 192 and 193, above, native speakers say that it is because the denoted object is of the shape that the class marker denotes. When asked this question about non-compositional nouns such as those in examples 198 and 199, they say that there is no reason and that this is "just its name".

The set of non-compositional nouns includes nouns denoting abstract concepts, such illnesses, states of the body, and temporal units, as in the following examples (200a-c). These are obligatorily classified nouns (see section 4.2.3, above).

(200) a. *ɛ:hé-ko*
           flue-**SCM.1D.pointed**
           'flue'

       b. *í:ßa-ko*
           pregnancy-**SCM.1D.pointed**
           'pregnancy'

       c. *píhka-ba*
           year-**SCM.3D**
           'year'

One and the same class marker can be used in compositional classified nouns as well as in non-compositional classified nouns. In the following examples (201, 202), the same class markers are combined with different noun roots and nominalized verbs. In the classified nouns in examples 201a and 202a the class

markers contribute their meaning, and the meaning of the classified nouns is compositional. In other classified nouns, the same class markers do not contribute a meaning component that would be part of their encoded meaning, and the meaning of the combination is thus non-compositional (examples 201b, 202b). Thus class marker assignment is semantically motivated in examples 201a and 202a, but not in examples 201b and 202b.

(201) a.   *pihhú-**ko***
              fish.NMZ-**SCM.1D.pointed**
              'fishing rod'

       b.   *kaʔgúnɯ-**ko***
              cahuana-**SCM.1D.pointed**
              'cahuana (a thick drink made from manioc starch)'
              (Not: a pointed object made from or related to cahuana)

(202) a.   *úɯmé-ʔɛ-**gwa***
              wood-SCM.tree-**SCM.2D.straight**
              'wooden plank'

       b.   *pájkó:mɯ-**gwa***
              manioc-**SCM.2D.straight**
              'manioc plant'
              (Not: a flat object with a straight edge made from or related to manioc)

As mentioned above, specific class markers from the core set are the only ones that are found in non-compositional nouns. Of these, noun class assignment involving -*ʔɛ* (SCM.tree) is only opaque in animal names, while in inanimate nouns it is always motivated. Within the set of inanimate classified nouns that are formed with the remaining seven specific class markers from the core set, the majority is still compositional (see Table 31, above, for examples). In Table 32 examples are given from the remaining set of classified nouns formed with core class markers that are non-compositional.

Table 32: Semantically opaque assignment of core SCMs

class marker	examples
-*ba* SCM.3D	*ní:ha-ba* 'rain'
-*gwa* SCM.2D.straight	*kú:hɯ-gwa* 'fire'
-*hɨ* SCM.2D.round	*di:-hɨ* 'ground chili'
-*i* SCM.1D.medium	*iʔgwá-i* 'his jawbone'
-*ko* SCM.1D.pointed	*íhta-ko* 'manioc starch'
-*ɯ* SCM.3D.round/SCM.string	*má:ni-ɯ* 'tobacco paste'
-*ʔo* SCM.3D.oblong/SCM.enclosure	*o:ní-ʔo* 'dart'

For some cases of synchronically opaque class marker assignment ethno-historic explanations can be found. For instance, the noun denoting spoons, *dɛíhhu-gwa* (to.spoon.up.NMZ-SCM.2D.straight), includes the class marker *-gwa* (SCM.2D.straight), which is defined as 'flat, rigid, at least one straight edge' (see section 6.3.1, above), even though spoons do not have a straight edge. Traditionally, however, pieces of wood with straight edges were used as spoons. A similar case is the noun denoting axes *uɡwáː-hɨ* (metal-SCM.2D.round) 'ax'. Modern axes are not round, but the stones that were traditionally used as axes are. The nouns denoting spoons and axes were maintained, even though the shapes of spoons and axes have changed over time.

7.3.4. Summary

In sum, the meaning of most classified nouns is compositional with respect to the meaning contribution of class markers. Opaque noun class assignment only occurs in a minority of nouns that are formed with seven class markers from the cores set of specific class markers. For the remaining nouns, noun class assignment is thus semantically motivated. The following Table (33) summarizes which section of the nominal lexicon follows which principle of noun class assignment and how these principles relate to the conventionality and compositionality of classified nouns.

Table 33: Principles of noun class assignment in classified nouns

assignment	compositionality	conventionality	classified nouns
semantically motivated noun class assignment	compositional classified nouns	non-conventional	• almost all nouns formed with GCMs • some nouns formed with non-core SCMs
		conventional	• some nouns formed with non-core SCMs • the majority of nouns formed with core SCMs
semantically opaque noun class assignment	non-compositional classified nouns	conventional	• the minority of nouns formed with core SCMs

7.4. SPECIFIC CLASS MARKERS IN ANIMAL NAMES

The occurrence on animal names is what defines the core set of specific class markers (see section 3.3.1). What is important about these uses is not so much the fact that these nouns denote animals, but that noun class assignment in case of these nouns is always arbitrary. That is, class markers do not contribute any semantic content to these nouns, although they do perform a unitizing function (see section 8.3.3, below). No animal can be described with a pronominal expression used as a predicate nominal when this pronominal expression includes the same class marker as the noun denoting the animal. Thus sentences like the ones in example 203 are unacceptable to native speakers.

(203) a. * *ni:mú-**ko** *pá-**ko**-dú* *né:-nɛ*
     bird,sp.-**SCM.1D.pointed** CPL-**SCM.1D.pointed**-COMP seem-GCM.inan
     Intended meaning: The bird (gen. *Crax*) looks pointed

  b. * *níʔha-**gwa** *pá-**gwa**-dú* *né:-nɛ*
     frog,sp.-**SCM.2D.straight** CPL-**SCM.2D.straight**-COMP seem-GCM.inan
     Intended meaning: The frog looks pointed

The following Table (34) gives examples of animal names that include the eight class markers from the core set. It can be seen that each of these class markers combines with names for animals of different kinds, including birds, fish, insects, mammals, and reptiles. The class marker *-i* (SCM.1D.medium) is the only one of this set for which no names for mammals or fish are attested.

Table 34: The core set of class markers used in animal names

class marker	examples
-ba SCM.3D	*pá:páj-ba* 'wild boar, sp. *Tayassu tajacu*' *í:ki-ba* 'gadfly' *tóʔmi-ba* 'woodpecker, sp. *Taraba major*' *kuʔrí-ba* 'fish, sp. *árɨú:mɛ-ba* 'terrestrial turtle, sp.'
-gwa SCM.2D.straight	*tsuhtsú-gwa* 'bird, sp. *Odontophorus hyperythrus*' *mí:rɨu:-gwa* 'palmworm, sp. *mojojoy*' *ó:ba-gwa* 'monkey, sp. *Pithecia pithecia*' *níʔha-gwa* 'frog, sp.' *piʔrɨú-gwa* 'lizard, sp.'
-hɨ SCM.2D.round	*pí:ka-hɨ* 'bird, sp. *Aburria pipile*' *níhta-hɨ* 'fish, sp. *piraña*' *to:ró-hɨ* 'cockroach, sp.' *óʔtsárɨ-hɨ* 'tamarin, sp. *Saguinus mystax*' *gwá:ka-hɨ* 'frog, sp.'

Table 34: The core set of class markers used in animal names (cont.)

class marker	examples
-i SCM.1D.medium	*ókáhíma:má-i* 'bird, gen. *Galbula*' *ma:tsí-i* 'cuckoo, sp. *Coccyzus cinerus*' *pí?pɛtá-i* 'palmworm, sp.' *nuʔné-i* 'worm, sp.' *oʔtsá-i* 'chameleon, sp.'
-ko SCM.1D.pointed	*ni:mú-ko* 'bird, gen. *Craxs*' *úhtsɯ:mú-ko* 'palmworm, sp.' *óʔda-ko* 'aquatic rat, gen. *Muridae*' *má:ti-ko* 'chameleon, sp.' *a:rí-ko* 'spider, sp.'
-ɯ SCM.3D.round	*tohpá-ɯ* 'bird, sp. *Crypturellus berschepschi*' *kó:hu-ɯ* 'fish, sp. *dorado*' *ní:kɯ-ɯ* 'tick, sp.' *tso:gwa-ɯ* 'bush dog, sp. *Speothos venaticus*' *dʒé:-ɯ* 'armadillo, gen. *Dasypus*'
-ʔɛ SCM.tree	*tó:mɛ-ʔɛ* 'pigeon, gen. *Geotrygon*' *na:mí-ʔɛ* 'fish, sp.' *tsɛ:ré-ʔɛ* 'cricket, sp.' *kídʒóga:-ʔɛ* 'fox, sp. *Cerdocyon thous*' *go:rí-ʔɛ* 'frog, sp.'
-ʔo SCM.3D.oblong	*pá:bi-ʔo* 'hummingbird, sp.' *tʃiʔrí-ʔo* 'fish, sp. *picalón*' *gwá:ni-ʔo* 'louse, sp.' *tí:ti-ʔo* 'squirrel, sp. *Sciurus ignitus*' *máj:na-ʔo* 'lizard, sp.'

There are, however, some apparent regularities in noun class assignment of animal names. The following Table (35) shows that names for at least three species of snails and woodpeckers, respectively, are formed with the class markers *-hɨ* (SCM.2D.round) and *-ʔo* (SCM.3D.oblong), respectively. At least for snails it can be said that they roughly resemble the shape denoted by the class marker that is used to form their names by having an apparently round shape, although many of them are not really flat.

Table 35: Nouns with identical class markers denoting similarly shaped animals

animals	class markers	examples
snails	*-hɨ* (SCM.2D.round)	*káʔgo-hɨ* 'snail, sp.' *ɯ:tsúri-hɨ* 'snail, sp.' *mátsí:ro-hɨ* 'snail, sp.'
woodpeckers	*-ʔo* (SCM.3D.oblong)	*tʃó:oró-ʔo* 'woodpecker, sp. *Lurocalis semitorquatus*' *i:rí-ʔo* 'woodpecker, sp.' *tjɯ:rjá-ʔo* 'woodpecker, sp.'

However, the hypothesis that animal names may be assigned to noun classes on the basis of the overall shape of the denoted animals is refuted when noting that every set of nouns that denotes a set of similar looking animals (such as snails, macaws, frogs, etc.) contains nouns that are formed with different class markers. Examples of these are given in Table 36.

Table 36: Nouns with different class markers denoting similarly shaped animals

animals	class markers	examples
macaws	-*hɨ* (SCM.2D.round)	*íßa:-hɨ* 'macaw, sp. *Aratinga leukophtalmus*'
	-*gwa* (SCM.2D.straight)	*éré-gwa* 'macaw, sp. *Ara severa*'
frogs	-*ʔɛ* (SCM.tree)	*dí:ri-ʔɛ* 'frog, sp.'
	-*gwa* (SCM.2D.straight)	*aʔhó-gwa* 'frog, sp.'
	-*ba* (SCM.3D)	*a-ʔba* 'frog, sp.'
snails	-*hɨ* (SCM.2D.round)	*mátsí:ro-hɨ* 'snail, sp.'
	-*ko* (SCM.1D.pointed)	*úhtsɯ-ko* 'snail, sp.'
woodpeckers	-*ba* (SCM.3D)	*tóʔmi-ba* 'woodpecker, sp. *Taraba major*'
	-*ʔo* (SCM.3D.oblong)	*ɨ: rí-ʔo* 'woodpecker, sp.'

It is tempting to look for motivations for noun class assignment of animal names in mythology. Some names for animals that are linked through mythological association may in fact be assigned to the same class marker. Recall that in the myth cited in example 152 in section 5.3, above, a snail denoted by *úhtsɯ-ko* is characterized as being a relative of the hawk species called *mé:gwa-ko*, and both names include the class marker *-ko* (SCM.1D.pointed). However, any of my attempts at explaining the use of a class marker in an animal name by such an association (in this and other cases) was inevitably met by the firm rejection of any such relation (and usually laughter) by native speakers. In fact, in a database of over 400 Miraña animal names, there are no apparent regularities in noun class assignment, based on shape or any other characteristic. We may thus conclude that if there are semantic principles for the noun class assignment of animal names, they must be very abstract and remote from native speakers' intuitions and metalinguistic knowledge.

7.5. SUMMARY AND DISCUSSION

This chapter has attempted to show that the assignment of classified nouns to noun classes is semantically motivated in most cases, but opaque in some other cases. Semantic motivation of noun class assignment was discussed in terms of the conventionality and compositionality of classified nouns. As a background to this discussion, the internal semantic structure of classified nouns was shown to involve regular processes such as modification of the denotation of the class marker by the denotation of the noun root and metonymy. To distinguish semantically motivated assignment from semantically opaque assignment, a test was proposed which indicates whether the meaning of a class marker contributes to the meaning of a classified noun or not.

Assignment to general classes is almost always semantically motivated. The assignment to specific classes that do not correspond to the core set appears always to be semantically motivated, as is the assignment to specific classes of most nouns that include specific class markers from the core set. The noun class assignment of a minority of inanimate classified nouns that are built with seven class markers from the core set of specific class markers is semantically opaque. Noun class assignment of animal names is always opaque. The fact that loanwords and neologisms are assigned to noun classes according to the semantic content of class markers is an additional piece of evidence for a strong tendency towards a semantically motivated noun class assignment system.

However, just as the semantic motivations of noun class assignment are a matter of degree, so are conventionalization and compositionality of classified nouns. These degrees range from productive derivational uses, where the use of class markers appears to be determined primarily by properties of the referent, e.g. *úmɛ-i* (wood-SCM.1D.medium) 'a wooden stick', to classified nouns which involve some conventionalization, which restricts the meaning of the classified noun in one way or the other, e.g. *úhi-hɨ* (banana-SCM.2D.round) 'seed of a wild species of banana', to non-compositional classified nouns, where the class markers are apparently lexically specified by the noun root, e.g. *dɨ:-hɨ* (chili-SCM.2D.round) 'ground chili'.

These differences in degree of conventionalization and compositionality tend to correlate with the ordering of class markers along the grammaticalization cline according to formal characteristics proposed in section 3.5. The assignment to polysyllabic specific class markers and non-core monosyllabic class markers is always semantically motivated. The assignment to class markers from the core set of monosyllabic specific class markers can also be opaque (e.g. on animal

names). Within this set, the assignment to the class marker *-ba* (SCM.3D), which is distinguished formally from others by being the only one with allomorphs, is most often opaque. It was suggested in section 6.3.1, above, that the short and frequent forms from the "grammaticalized end" of the continuum also tend to have more general meanings. The semantic and morphological properties that characterize these forms as more grammaticalized thus also tend to correlate with their tendency to be involved in opaque noun class assignment, whereas noun class assignment is always motivated in the case of longer, less frequent, and semantically more specific forms.

The fact that noun class assignment is not always semantically motivated is an argument for considering nominal classification in Miraña a grammatical phenomenon rather than considering noun class markers as bound lexical items that combine with noun roots in the genitive construction (see Weber's 2002 analysis of Bora). However, besides animal names, opaque assignment is by far less common than motivated assignment in Miraña and noun class assignment to inanimate nouns is directly related to the shape of the referent of a given classified noun in most cases. This is highly unusual for noun class languages. While shape (sometimes in combination with size) has been shown to play a role in noun class assignment in Papuan languages (see Bruce 1984: 97; see also Foley and van Valin 1984: 325; Foley 1986: 80; Aikhenvald 1996b; Terrill 2003: 137) and African languages (see e.g. Denny and Creider 1986; Spitulnik 1989; Contini-Morava 1997: 607ff.), it does so usually only indirectly, e.g., by a tendency for round objects to be assigned masculine gender in Lavukaleve (Terrill 2003: 137) or by mapping shape distinctions through complicated assignment rules onto a two-way gender distinction in Manambu (Aikhenvald 1996b). Thus, while shape seems to play a role in noun class assignment in these languages, its role differs from that played by shape in Miraña in that the assignment of shape-based noun classes is not semantically motivated to the same degree.

The fact that the assignment of inanimate nouns to specific classes is mostly semantically motivated has important consequences for the use of specific class markers in reference tracking. When shape-denoting class markers whose assignment is semantically motivated are used in anaphoric expressions, they provide the same information about the shape of the referent as they do in their use in the classified nouns that is the antecedent. Thus their shape semantics can be used for correct identification of an antecedent. Chapter 10, below, shows that specific class markers are in fact systematically used for tracking inanimate referents (recall from section 5.4.4 that agreement marking with animal names—and thus the tracking of their referents—is done mostly with general animate class markers). But before entering into discussion of the

anaphoric uses of class markers in part IV of this study (chapters 9 and 10), we have to discuss another semantic effect of class markers in classified nouns, namely that of unitizing non-count nouns. This is done in the next chapter.

UNITIZATION

8.1. INTRODUCTION

The previous chapter discussed the derivational functions of class markers in nouns with respect to the class markers' contribution of semantic content to classified nouns. This chapter is concerned with the unitizing function of class markers, i.e. with their function of deriving count nouns from non-count nouns. It is thus concerned with the role that class markers play in the expression of quantity and number. Unitization is a major theme in the literature on systems of nominal classification (see e.g. Seiler 1986; Lucy 1992; Wiese 1997; Bisang 2002). It has been claimed to be a common function of classifiers (at least numeral classifiers, noun classifiers, and genitive classifiers), setting classifiers apart from other nominal classification systems (Grinevald 2000: 74ff.). It is highly unusual for a noun class system to be involved in unitization. Therefore, this function of Miraña class markers is dealt with in some detail in this chapter.

Some topics related to the unitizing function of class markers have already been mentioned in various places in this study. Recall in particular from the discussion of noun types in section 4.2 that non-classified nouns are defined through their inability to combine with number morphology, while classified nouns, which are derived from these by the addition of a class marker, obligatorily combine with number markers when non-singular in reference. This chapter offers a unified treatment of the phenomenon of unitization by providing additional data and a discussion of unitization in Miraña from a typological perspective.

In the following section (8.2), relevant issues from the theoretical discussion on countability and unitization are briefly reviewed. In section 8.3 the role of class markers in deriving count nouns from non-count nouns is discussed. Section 8.4 deals with the countability status of nominal expressions other than nouns, with special reference to those that include the general inanimate class marker.

Finally, the marking of countability in the nominal lexicon is discussed from a typological perspective in section 8.5.

8.2. THEORETICAL AND TERMINOLOGICAL ISSUES

Two conceptually distinct items are involved in quantified expressions: the expression of a countable unit, and the expression of the number of these units. We focus on two issues related to the expression of quantified expressions: First, the morphosyntactic mechanisms for expressing units and their number, and second, the split in the lexicon between items that lexically encode a countable unit and those that do not. In the following, only some essential issues from the complex topic of countability are discussed, which will suffice for the discussion of Miraña data.[54]

The countability status of a noun is based on whether or not it includes as part of its lexical meaning a specification of a unit. This specification has received a number of labels in different approaches, e.g. "bounded region" (Langacker 1987b: 58), "ENTITY" (Lyons 1977: 462), or "Shape" (Rijkhoff 2002: 50ff.). We shall call nouns that encode as part of their lexical semantics such a specification "count nouns". As a result of this specification, count nouns usually refer to single, bounded entities if they are not marked for plural (or dual, trial, etc.). Nouns that lack a specification of a countable unit are called "non-count nouns" here (these include "mass nouns", see below). What characterizes non-count nouns is that a speaker does not commit himself to the number of referents when he uses a non-count noun. The process of transformation of a non-count noun to a count noun (or to a noun phrase which behaves like a count noun, respectively) is called "unitization" here.

The countability status of a noun is thus understood as a distinction in the lexical semantics of a noun. However, this semantic distinction has reflexes in morphosyntax in that some grammatical contexts require the specification of a unit, namely plural formation and counting. These contexts can be used as cross-linguistic tests for the identification of count nouns (see e.g. Lucy 1992: 56f.). If a noun is obligatorily pluralized when it is used to refer to more than one entity (e.g. when it is enumerated), it is a count noun. Thus languages that

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[54] One problematic issue within countability, which is not directly relevant for the discussion of Miraña data, concerns the fact that in most languages, nouns cannot be divided into just two categories of count vs. non-count nouns, but a number of categories have to be assumed according to distributional restrictions in different constructions that involve quantification (see Allan 1980; Wierzbicka 1988: 499ff.; Lucy 1992: 32ff.; Corbett 2000: 78ff.).

do not mark the singular-plural distinction at all do not have count nouns. If, on the other hand, a noun cannot enter a construction that involves quantification (without undergoing a semantic shift or prior derivation), it is a non-count noun. Thus, the number distinction is only relevant for count nouns, while non-count nouns are outside of the number system of a language, where number system is understood as an overt marking of number distinctions (e.g. singular, dual, plural) on nouns (see Corbett 2000: 54).

The ways in which individual languages handle countability varies in two main respects. First, languages differ in the mechanisms they employ for unitizing non-count nouns in contexts with reference to individual units, e.g. for pluralization or counting. These mechanisms include, for instance, numeral classifiers and singulative markers. Second, languages differ in how their nominal lexicon is divided into count nouns and non-count nouns. For instance, Hopi is said to have only count nouns (Whorf 1946: 139ff.), while the nominal lexicon of Mandarin Chinese has been analyzed as consisting only of non-count nouns (Li and Thompson 1981: 11f., 40f.).

In the following, three kinds of language-specific modes of handling countability that have attracted special attention in the literature are briefly reviewed. These are the typological modes for handling countability that are compared to how countability is handled in Miraña in the following sections.

Firstly, in well-known European languages such as English there is set of nouns such as *sand*, *water*, or *flour* that have particular restrictions with respect to combinatorial possibilities with plural morphology and numerals. They can usually not combine with plural morphology, e.g. * *milk-s*. If such a noun does combine with plural morphology, its denotation inevitably undergoes a semantic shift to a denotation of a kind, e.g. [kinds of] *water-s*. These nouns cannot be directly modified with a numeral either, but need to combine first with a unitizing element, e.g. * *two milk* vs. *two glasses of milk.* If they do combine with numerals directly, there is an unexpressed unit, e.g. *two water-s* (i.e. glasses of water). These non-count nouns in English typically denote masses or substances. The distinction between count nouns and non-count nouns is therefore often referred to as the count-mass distinction. Mass nouns in these languages are usually a minor part of the nominal lexicon, while the majority are count nouns that are characterized by taking obligatory plural marking in contexts with plural reference.

Secondly, in some dialects of Arabic and in Celtic languages, such as Breton or Welsh, a number of nouns can be used with singular as well as with plural reference. These nouns are thus not specified for units in the same sense as

count nouns in English or German. These nouns have been called "transnumeral", in particular in the tradition initiated by Hansjakob Seiler (e.g. Biermann 1982: 234; Unterbeck 1990: 98ff.; Wiese 1997: 140ff.; Mihatsch 2000: 40f.). The mechanism that these languages apply to unitize transnumeral nouns for the purpose of pluralization or enumeration is typically a small set of "singulative" markers that derive count nouns from transnumeral nouns. Once a count noun is derived with a singulative marker, it can usually take a plural marker, as in the following examples (204a-c) from the Celtic language Breton (taken from Royen 1929: 636; see Cowell 1964: 369 for examples from Arabic):

(204) a.   *ed*
             'wheat'

       b.   *edenn*
             'one grain of wheat'

       c.   *edenn-ou*
             'a certain amount of grains, some grains'

Thirdly, the nouns of East and South East Asian languages such as Mandarin Chinese or Japanese are said to be all non-countable. In order to enter into a numeral construction, any noun in these languages has to be first unitized with a numeral classifier. In these languages, the set of non-count nouns includes translation equivalents of English mass nouns, but additionally nouns such as *person*, *airplane*, or *book* (see example 5 in section 1.2.1, above). For these nouns, the designation "mass noun" is inappropriate. They have been called "concept nouns" (Grinevald 2000: 74) or "sort nouns" (Rijkhoff 2002: 52; see also Rijkhoff 1991: 293ff.). There is a conceptual difference in the unitization process of sort nouns and mass nouns. The unitization of a sort noun makes explicit a unit for which the noun that is enumerated can be said to be already specified, e.g. *one classifier:volume book, one classifier:person woman*, etc.[55] The unitizing element which is involved in such a process is called a "sortal classifier". Mass nouns, on the other hand, are not *per se* specified for a particular unit, and the unitizing element thus contributes the specific unit as a new meaning component to the resulting construction. The unitizing element in these processes is called a "mensural classifier" or "mensurative". A mass noun

[55] The semantic processes that underlie unitization by sortal classifiers have received considerable attention among semanticists. The discussion is aimed at establishing a feature structure of nouns and classifiers in these languages that would allow for a compositional analysis of these constructions. The major issue, which has not been resolved yet, is what the features of putative "concept nouns" in languages like Chinese are (cf., among others, Link 1983; Chierchia 1985; Wiese 1997).

can usually combine with a number of such mensuratives, e.g. *a bag of sand, a pile of sand, a pound of rice, a bowl of rice*, etc. These two types of unitization have also been called "creative individuation" (by mensural classifiers) and "actualizing individuation" (by sortal classifiers) (Bisang 1999: 121; see also Croft 1994: 162). However, in most languages this difference is not reflected morphosyntactically (Grinevald 2000: 58; Lucy 2000: 332ff.; Bisang 2002: 121).[56]

As we shall see in more detail below, unitization in Miraña displays characteristics of two of the modes for handling countability just sketched. The morphosyntactic status of class markers is comparable to singulatives (as in Arabic and Celtic languages), while the number of unitizing morphemes and their semantics are similar to numeral classifiers (as in Chinese or Japanese).

With this brief literature review I have tried to show that languages vary with respect to the morphosyntactic means of handling countability. Languages may also vary as to which nouns are treated as countable and which are treated as non-countable. For instance, in English generally only nouns denoting masses are non-countable, while in Syrian Arabic the set of non-count nouns includes nouns denoting vegetables and animals (Cowell 1964: 297ff.), and in Chinese, arguably all nouns are non-count nouns (Li and Thompson 1981: 11f.; see also Lucy 1992: 61ff.). In these languages, the nominal lexicon is thus differently "split" (Smith-Stark 1974) into count and non-count nouns. Where in the nominal lexicon this split occurs has been argued to be universally constrained by a hierarchy called the Animacy Hierarchy (Corbett 2000: 56; for similar approaches see Smith-Stark 1974; Lucy 1992: 46). This hierarchy is given in Figure 11.[57]

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speaker > addressee > third person > kin > human > animate > inanimate

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Figure 11: The Animacy Hierarchy (from Corbett 2000: 56)

The major claim in connection with the Animacy Hierarchy is that "the singular-plural distinction in a given language must affect a top segment of the Animacy Hierarchy" (Corbett 2000: 56). The hierarchy thus predicts that if a given category of nouns (e.g. animate nouns) is treated as countable in a

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[56] However, Hundius and Kölver (1983: 168, 170) argue that they are distinct form classes in Thai. For further discussion of this distinction see Greenberg (1977) and Rijkhoff (2002: 47ff.).

[57] Note that Lucy (1992: 64)—based on Silverstein (1987)—adds a further position of "discreteness" at the lower end of the hierarchy.

language, the nouns of every category of nouns above it (e.g. kin terms) are also treated as count nouns. It also predicts that the categories of count vs. non-count nouns cannot cut across the hierarchy represented in Figure 11. For instance, a hypothetical language with a set of count nouns that includes most kin terms and inanimate nouns, but not nouns with human referents other than kin terms is ruled out.

The main issues in the theoretical discussion on countability thus include the morphosyntactic means of forming quantified expressions and the split in the nominal lexicon between count nouns and non-count nouns. In the following section, we shall see how Miraña nouns behave with respect to these two issues.

8.3. COUNTABILITY AND UNITIZATION OF NOUNS

This section discusses the countability status of Miraña nouns and the unitizing function of class markers in the nominal lexicon. First, we consider how count nouns and non-count nouns are defined in Miraña (section 8.3.1). Then we discuss count nouns, non-count nouns, and the unitizing function of class markers in different segments of the nominal lexicon: inanimate nouns (section 8.3.2), animal names (8.3.3), and nouns with human referents (section 8.3.4). Section 8.3.5 summarizes the unitizing function of class markers in the nominal lexicon.

8.3.1. Count nouns and non-count nouns

Non-classified nouns (i.e. bare optionally classified noun roots, see section 4.2.1) cannot combine with number markers. This is what defines these nouns formally as non-count nouns. To these nouns, the number distinction is not relevant. Consequently, a speaker does not make a commitment as to the number of referents when he uses a non-count noun. In fact he cannot make a commitment to the number of referents, since no number distinction is available for these nouns. This is illustrated in the following examples (205a-c). The noun in example 205a is non-countable as shown by the fact that it cannot combine with number markers (205b-c).

(205) a. *ko:*
           'wood/log(s)'

b.   *   *koː-ːkɯ*
         wood-DL
         Intended meaning: two (pieces of) wood

c.   *   *koː-ːnɛ*
         wood-PL
         Intended meaning: (pieces of) wood

The inability of non-classified nouns to combine with number markers contrasts with number marking on classified nouns (i.e. combinations of noun roots and class markers). These nouns obligatorily combine with number markers in contexts with non-singular reference. This is illustrated by the following examples. Example 206a is an optionally classified noun (i.e. a noun that is built from an optionally classified noun root and a class marker) that is derived from the optionally classified noun root that is used as a non-classified noun in the previous example (205a). Without further number marking, the optionally classified noun in example 206a has singular reference. It obligatorily combines with number markers in contexts with non-singular reference (examples 206b-c). Examples 207a-c illustrate the same characteristics for an obligatorily classified noun (i.e. a noun that is built from a noun root that cannot occur without a class marker, see section 4.2.3, above). This noun is also obligatorily marked for number in contexts with non-singular reference.

(206)   a.   *ko-ʔba*
           wood-SCM.3D
           'log' (* logs)

       b.   *kó-ʔba-ːkɯ*
           wood-SCM.3D-DL
           'two logs' (* one log, * more than two longs)

       c.   *ko-ʔbá-ːnɛ*
           wood-SCM.3D-PL
           'logs' (* one log, * two logs)

(207)   a.   *gwáj-ːbaj*
           hammock-SCM.cont
           'hammock' (*hammocks)

       b.   *gwáj-ːbáj-ːkɯ*
           hammock-SCM.cont-DL
           'two hammocks' (* one hammock; * more than two hammocks)

    c.   *gwáj-:báj-:nɛ*
           hammock-SCM.cont-PL
           'hammocks' (* one hammock; * two hammocks)

The following examples (208a-d) illustrate the status of a repeater noun (see sections 4.2.1 and 4.2.4, above) as a count noun. Unlike non-classified nouns (i.e. bare optionally classified noun roots; see example 205, above), repeater nouns have singular reference in their basic, underived form (example 208a). They also directly and obligatorily combine with number morphology in contexts with more than one referent (examples 208b-c).

(208) a.   *gwajhko*
           hook
           'hook'

      b.   *gwajhkó-:kɯ*
           hook-DL
           'two hooks' (* one hook; * more than two hooks)

      c.   *gwajhkó-:nɛ*
           hook-PL
           'three hooks' (* one hook; * two hooks)

Table 37 summarizes the countability status of noun types. All nouns that include a class marker are count nouns, irrespective of whether the class marker is fused or optional on the root (obligatorily classified nouns vs. optionally classified nouns). Count nouns that do not include a class marker are typically repeater nouns. The only non-count nouns in Miraña are non-classified nouns, i.e. bare optionally classified noun roots. From all optionally classified noun roots, count nouns can be derived by the addition of a class marker.

Table 37: Miraña noun types and countability

morphological structure	count nouns (obligatory number marking)	non-count nouns (no number marking possible)
noun root + class marker	obligatorily and optionally classified nouns (noun root + CM)	none
bare noun root	repeater nouns (bare repeater root)	non-classified nouns (bare optionally classified root)

It emerges from Table 37 that there is a tight connection between class markers and countability in the set of nouns of Miraña (the pattern is somewhat different in pronominal expressions, see section 8.4, below). Except for repeater nouns (which are a minor portion of the lexicon, see the list in section 3.4, above), class markers are required for the formation of count nouns (some exceptions are discussed in section 8.3.4, below). Class markers perform a unitizing function when they are used to derive classified nouns from optionally classified noun roots, which can function on their own as non-classified nouns. In this process, they semantically specify a countable unit. A morphosyntactic reflex of this specification is obligatory pluralization. Note that a non-count noun can only be unitized by directly suffixing a class marker to that non-count noun, as in examples 209a-b. A class marker used on a separate word, which can be a numeral, cannot unitize non-count nouns. Thus a construction like 209c, which corresponds to the morphosyntactic mode of unitization in numeral classifier languages, is ungrammatical in Miraña.

(209) a. *úhɨ*
          'banana(s)'

       b. *úhɨ-ʔo*
          banana-SCM.3D.oblong
          '(a) banana fruit'

       c. * *tsa-ʔo*   *úhɨ*
          one-SCM.3D.oblong banana
          Intended meaning: one banana

Class markers fulfill a unitizing function on inanimate nouns, animal names, and nouns with human referents, although to different degrees in each or these categories, as discussed in the following sections (8.3.2 - 8.3.4).

8.3.2. Unitization of inanimate nouns

Class markers are a widely used mechanism to derive inanimate count nouns denoting concrete objects from optionally classified noun roots, which can be used on their own as non-classified (and non-countable) nouns, i.e. from bare optionally classified noun roots. These derivational processes are most productive with nouns denoting botanical species and natural kinds. Another very common use of class markers is the derivation of count nouns denoting artifacts from nominalized verbs. Examples of the derivation of these three types of inanimate count nouns are given in Table 38 (for further examples see section 4.2.2, above).

Table 38: Unitization of inanimate non-count nouns

	non-count noun (bare optionally classified noun root / nominalized verb)	count noun (optionally classified noun)
botanical species	*tɛʔkɛ* 'tree, sp.'	*tɛʔké-ba* tree, sp-SCM.3D 'calabash (= fruit of the *tɛʔkɛ*-tree, sp.)'
	tó:kɛ 'palm, sp.'	*tó:kɛ-ʔi* palm, sp-SCM.bunch 'bunch of palm fruits'
	ahɨ 'palm, sp.'	*áhɨ-ʔí:ba* palm, sp.-SCM.small.palmtree 'palm tree, sp.'
natural kinds	*ko* 'wood'	*ko-ɨ* wood-SCM.1D.medium 'wooden stick'
	núpáhki 'clay'	*núpáhki-ba* clay-SCM.3D 'piece of clay'
	né:gwaj 'stone'	*né:gwaj-ɯ* stone-SCM.3D.round 'pebble'
artifacts	*ka:nɯ* pound.NMZ 'pounding'	*ka:nú-ɨ* pound.NMZ-SCM.1D.medium 'pestle'
	boʔdo paddle.NMZ 'paddling'	*boʔdó-gwa* paddle.NMZ-SCM.2D.straight '(a) paddle'
	gwatáhko cover.NMZ 'covering'	*gwatáhko-hɨ* cover.NMZ-SCM.2D.round 'hat'

The non-unitized forms of inanimate nouns (i.e. the bare optionally classified roots used as non-classified nouns) are used whenever there is no need (or no possibility) to specify a particular unit or number of referents. Non-unitized forms of nouns denoting botanical species are used, for instance, to express an uncertain number of plants or parts of that plant. The referent in example 210 is an unspecified number of individual canes (the bark of which is used for weaving). An individual cane is denoted by *bájhɯ-ba* (guarumo, sp.-SCM.3D) 'a guarumo cane'. The referent in example 211 is an unspecified number of palm leaves (used for thatching houses), which are denoted by *áhɨ-hú:ʔo* (palm, sp.-SCM.palmleaf) 'palm leaf'.

(210) *bájhɯ   mɛ́   ɯhkú-ʔi*
    guarumo, sp. 1/2PL take-PRD
    'one takes *guarumo*(s)' [MAT]

(211) *mɛ́   uhkʉ́-ʔi ahɨ*
       1/2PL take-PRD   palm, sp.
       'one takes palm leaf/leave s' [MLK]

In inanimate nouns, class markers usually contribute semantic content to the classified nouns, in addition to specifying a countable unit. This is particularly evident when an optionally classified noun root can combine with a number of different class markers, as in the following examples (212a-d) (see sections 4.2.2 and 4.2.6, above, for further examples). The non-unitized form (i.e. the bare optionally classified roots used as non-classified nouns) can usually refer to an unspecified number of any of the entities denoted by the derived, unitized forms.

(212) a. *ínɛ*
           palm, sp.
           'palm, sp. / palm tree(s) / palm fruit(s) / palm fruit bunch(es)'

       b. *ínɛ-ʔɛ*
           palm, sp.-SCM.tree
           'palm tree'

       c. *ínɛ-ʔo*
           palm, sp.-SCM.3D.oblong
           'palm fruit'

       d. *ínɛ-ʔi*
           palm, sp.-SCM.bunch
           'bunch of palm fruits'

In terms of the different kinds of unitization processes that can be observed in numeral classifier languages (as mentioned in section 8.2, above), these processes are comparable to "creative individuation", as opposed to "actualizing individuation", since there is no evidence that the non-classified noun would be specified for any of the units that the derived classified nouns denote.

8.3.3. Unitization of animal names

Class markers are also used to unitize animal names. The non-countable form of animal names is typically used for reference to large groups of animals, where there is no focus on any individual, as in the following example (213). An individual of the species of ants that is referred to in example 213 is

denoted by *ka-ʔba* (ant, sp.-SCM.3D) '(an) ant'. Note that in this example the general inanimate class marker *-nɛ* is used to mark agreement with the non-count noun (see discussion in section 8.4). The expression *míta-* is ambiguous between 'much' and 'many'. When it is used to modify a non-count noun (in which case agreement on *míta-* is necessarily combines with the general inanimate class marker) it translates as 'much', while in combination with count nouns, it translates as 'many'.

(213) *í-huː-ɾí = ni   mɛ   pɛ́ː-huɪ-ɾi   míta-nɛ́   ka:*
  this-SCM.tube-LOC=TAM 1/2PL.SUB go-SCM.tube-LOC much-GCM.inan ant
  'On this one (i.e. path) that we are going on, there are a lot of stinging ants'
  (lit. much stinging ant) [CDV]

Animal names generally pattern with inanimate nouns in Miraña in that they usually include a specific class marker (see examples in Tables 34 - 36 in section 7.4, above). The name for a species of ants from example 213 can be pluralized, after it is unitized with a class marker (examples 214a-c). Note that the plural of this animal name is formed by adding the general animate plural class marker, in addition to the specific class marker.

(214) a.   *ka:*
          ant, sp.-SCM.3D
          'ant(s)'

       b.   *ka-ʔba*
          ant, sp.-SCM.3D
          '(an) ant'

       c.   *ka-ʔbá-mɪ*
          ant, sp.-SCM.3D-GCM.anim.pl
          'ants' (* an ant; * two ants)

While most animal names include specific class markers, the unitization process on this category of nouns is not as productive as on inanimate nouns, since on many animal names class markers are fused, i.e. the roots that are used to form these nouns cannot be used as non-classified nouns (see examples 96 and 97 in section 4.2.3, above).

Recall from section 7.4, above, that specific class markers usually do not contribute semantic content to animal names, i.e. the assignment of class markers to animal names is not semantically motivated. The only semantic effect of adding a class marker to an animal name is to unitize this noun. Unlike inanimate nouns, animal names usually only combine with one class

marker. Unitization of animal names is thus comparable to what has been called "actualizing individuation" in numeral classifier languages.

A small set of nouns denoting culturally important animals are repeater nouns, i.e. they can be used as repeaters. The basic, underived form of these nouns refers to an individual animal. The plural of these nouns is formed with the general animate plural class marker. This is illustrated with the names for 'anteater' (examples 215a-b), which can be used as a full repeater (example 215c), and with the name for 'anaconda' (examples 216a-b), which can be used as a partial repeater (example 216c). (See Tables 21 and 22 in section 3.4, above for a list of repeater animal names.)

(215)　a.　　*i:hú*
　　　　　　anteater
　　　　　　'anteater, sp. *Myrmecophaga tridactyla*'　(* anteaters)

　　　　b.　　*i:hú-mu*
　　　　　　anteater-GCM.anim.pl
　　　　　　'anteaters'

　　　　c.　　*tsá-i:hu*　　　　(*i:hu*)
　　　　　　one-RP.ant.eater　(anteater)
　　　　　　'one anteater'

(216)　a.　　*bó:a*
　　　　　　anaconda
　　　　　　'anaconda, sp. *Eunectes murinus*' (* anacondas)

　　　　b.　　*bó:a-mu*
　　　　　　anaconda-GCM.anim.pl
　　　　　　'anacondas'

　　　　c.　　*tsa-bo*　　　　(*bó:a*)
　　　　　　one-RP.anaconda　(anaconda)
　　　　　　'one anaconda'

The animal species denoted by repeater nouns include the biggest animals found in the region, e.g. *i:baj* 'deer, sp. *Mazama gouazoubira*', *kɯ:mɯ* 'common woolly monkey, sp. *Lagothrix lagothrichia*', and *okáhi* 'tapir, sp. *Tapirus terrestris*'.[58] Many of these animals are also culturally important, e.g. they may be protagonists of important myths or the totem of a clan.

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[58] In addition there are a few animal names that never combine with class markers and cannot be used as repeaters either. These include *amána* 'dolphin, sp. *Inia*

The split between classified nouns and repeater nouns in the category of animal names in principle fits in with the Animacy Hierarchy, if we take the set of animals that are denoted by repeater nouns to be categorized together with humans (or, more specifically, to kin terms, see section 8.3.4, below) in the culture-specific conceptualization. The pattern in Miraña then shows that in addition to the general pattern predicted by the Agreement Hierarchy, fine grained, culture-specific conceptualization may play a role in the distribution of count vs. non-count nouns in the lexicon of a language.[59] What exactly these culture-specific conceptualizations are and how they interact with Miraña grammar is an interesting question for future research.

8.3.4. Unitization of nouns with human referents

Nouns with human referents are usually obligatorily classified nouns built from noun roots and general animate class markers. However, a few nouns with human referents are also non-classified nouns, i.e. bare optionally classified noun roots. These include the nouns denoting orphans and children (examples 217, 218). The nouns denoting individual orphans of different sexes are derived with general animate class markers (examples 217a-c). The noun denoting a single child is derived with the general inanimate class marker (examples 218a-d). It is the only animate noun that includes the general inanimate class marker (a different case is the use of the class marker *-ni:ʔo* (SCM.mother) for animates, since this is a specific class marker, not a general one). The general inanimate class marker does not usually occur on inanimate nouns, either, but is typically only used as an agreement marker.

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geoffrensis' and *káraka* 'chicken'. At least the latter one is a loanword, in this case from the Tupí language Nhengatú (Alexandra Aikhenvald, personal communication), which was the *lingua franca* of the traders, whom the Mirañas first came in contact with (see section 1.3.1, above). This makes their exceptional behavior less surprising.
[59] A similar split in faunal terminology exists in Kubeo, an Eastern Tucanoan language spoken in the Vaupés region, some 200 miles north of the present Miraña territory, but still belonging to the same general cultural context. Kubeo also has a large system of nominal classification (Gomez-Imbert 1996; see also Morse and Maxwell 1999: 73ff.), as is typical for Eastern Tucanoan languages. Gomez-Imbert (1996) reports that in Kubeo the names for a set of large and culturally important animals pattern with nouns with human referents in that they denote a single animal in their basic form. The nouns denoting other animals refer to unspecified numbers of animals in their basic form and nouns denoting individual animals are derived with classifying morphemes. Interestingly, the split in Kubeo faunal terminology largely coincides with the split in Miraña animal names.

(217) a.   *úhoßɛ*
             'orphan(s)'

       b.   *uhóßɛ-:bɛ*
             orphans-GCM.masc.sg
             '(male) orphan' (* orphans)

       c.   *uhóßɛ-dʒɛ*
             orphans-GCM.fem.sg
             '(female) orphan' (* orphans)

(218) a.   *tsímɛ*
             'child(ren)'

       b.   *tsí:mɛ-nɛ*
             children-GCM.inan
             '(a) child' (* children)

Many nouns with human referents are obligatorily classified nouns that combine with different animate class markers, but cannot occur without a class marker, such as the one in the following examples (219a-d). General class markers are used on these nouns to derive nouns denoting humans of different sex and number (examples 219b-e). No non-countable form without a class marker exists for this noun (examples 219d).

(219) a.   *í:ɛ-:bɛ*
             relative-GCM.masc.sg
             '(male) relative'

       b.   *í:ɛ-dʒɛ*
             relative-GCM.fem.sg
             '(female) relative'

       c.   *í:ɛ-htɛ*
             relative-GCM.anim.pl
             'relatives'

       d. * *í:ɛ*
             Intended meaning: relative

Examples such as the noun denoting 'orphans' (examples 217a-c) suggest that nouns such as 'relative' (examples 219a-d) may at one point have been formed from non-classified nouns, but the non-countable form has become obsolete. Nouns denoting children and orphans are in principle exceptions to the

Animacy Hierarchy (which predicts no non-count nouns as one moves up the hierarchy), but one could argue that children and orphans are lower than other humans in terms of "animacy" in the culture-specific conceptualization of Miraña.

Most kin terms do not combine with class markers. They refer to individuals in their basic, underived form, and the plural is formed with the general animate class marker (examples 220a-b, see also example 110a in section 4.2.7, above). They are thus morphosyntactically comparable to repeater animal names (see section 8.3.3, above), but unlike those, nouns with human referents, such as kin terms, can never be used as repeaters.

(220)   a.   *na:ni*
                'uncle' (* uncles)

        b.   *ná:ni-mʉ*
                uncle-GCM.anim.pl
                'uncles'

In summary, nouns with human referents do not follow a uniform pattern with respect to number marking and countability. Most of them are built from obligatorily classified noun roots that combine with different class markers to derive different obligatorily classified nouns denoting humans of different sex and number. Since the roots contained in these nouns cannot be used on their own as non-classified nouns, obligatorily classified nouns do not display a shift between non-count and count noun (example 219). These nouns fit the general pattern sketched in Table 37, above, according to which only nouns that include class markers and repeater nouns are countable. The only nouns that do not follow this pattern are kin terms (examples 220), which denote individuals in their basic form, but cannot be used as repeaters.

8.3.5. Summary

The unitizing function of class markers can most clearly be observed with inanimate nouns. These are typically non-countable in their basic form and count nouns are productively derived by the addition of class markers. As we move up the Animacy Hierarchy, the picture becomes more complicated, with a split between classified nouns and repeater nouns within the category of animal names and a number of different ways to form nouns with human referents. However, the great majority of nouns follow the principle that nouns require a class marker to be countable, the only systematic exceptions being repeater nouns and kinship terms.

Class markers may thus serve a unitizing function on inanimate nouns, animal names, and nouns with human referents. However, the unitization processes are not productive to the same degree in these three categories, i.e. the possibilities of deriving countable, optionally classified nouns from optionally classified noun roots (which can be used on their own as non-classified nouns) are more restricted in some of these categories than in others. This is a productive process with inanimate nouns. Many animal names and most nouns with human referents are built from obligatorily classified noun roots, which do not allow for a non-countable form. The overall distribution of count vs. non-count nouns in the nominal lexicon follows the Animacy Hierarchy in that most inanimate nouns and many smaller animals can be denoted by non-count nouns, while many nouns with reference to bigger animals are repeater nouns (which are countable) and almost all nouns denoting humans are obligatorily classified nouns (which are likewise countable).

8.4. NUMBER MARKING ON OTHER NOMINAL EXPRESSIONS

The preceding sections have argued that non-classified nouns (i.e. bare optionally classified noun roots) do not combine with plural markers at all and are therefore non-countable, while classified nouns (which are derived from optionally classified noun roots) and repeater nouns are countable because they obligatorily pluralize. This section discusses number marking on nominal expressions other than nouns, where class markers are typically used for agreement marking (see sections 4.3 - 4.7 and 5.4, above). I argue that expressions that are formed with the general inanimate class marker -*nɛ* have optional number marking. The possibilities of number marking and the resulting countability status of nominal expressions other than nouns are thus different to those of nouns, in that expressions that include -*nɛ* (GCM.inan) are not unitized. The characteristics of these expressions are exemplified with the proximal demonstrative in this section.

Number is obligatorily marked on pronominal expressions that are formed with specific class markers. If such an expression is not marked for number, it refers to a single referent. If it is marked for dual, it refers to two referents, and if it is marked for plural, it refers to more than two referents. The following examples (221a-c) illustrate this behavior with the proximal demonstrative pronoun.

(221)　a.　　*í-ʔo*
　　　　　　PRX-SCM.3D.oblong
　　　　　　'this one (e.g. banana)' (* these ones)

b.   *í-ʔo-:ku*
PRX-SCM.3D.oblong-DL
'these two (e.g. bananas)' (* this one; *these ones (more than two))

c.   *í-ʔo-:nɛ*
PRX-SCM.3D.oblong-PL
'these ones (more than two) (e.g. bananas)' (* this one; * these two)

As a result of the obligatory number marking on pronominal expressions that include specific class markers, these forms also have to match the number of their agreement controller. Thus, a pronominal expression which includes a specific class marker and no number marker can only be used with an agreement controller that is likewise countable and not marked for dual or plural (example 222a), but not with an agreement controller that is marked for dual or plural (examples 222b-c). When the agreement controller is marked for dual or plural, the agreeing pronominal expression must likewise be marked for dual or plural (examples 222d-e). (Note that the plural marker has the form *-ʔhɨ* on pronominal expressions and *-:nɛ* on nouns, see section 2.4.2.3, above.)

(222)   a.   *í-ʔo*   *úhɨ-ʔo*
PRX-SCM.3D.oblong   banana-SCM.3D.oblong
'this banana' (* these bananas)

b.   *   *í-ʔo*   *úhɨ-ʔó-:ku*
PRX-SCM.3D.oblong banana-SCM.3D.oblong-DL
Intended meaning: these two bananas

c.   *   *í-ʔo*   *úhɨ-ʔó-:nɛ*
PRX-SCM.3D.oblong banana-SCM.3D.oblong-PL
Intended meaning: these bananas

d.   *í-ʔo-:ku*   *úhɨ-ʔó-:ku*
PRX-SCM.3D.oblong-DL banana-SCM.3D.oblong-DL
'these two bananas'

e.   *í-ʔo-ʔhɨ*   *úhɨ-ʔó-:nɛ*
PRX-SCM.3D.oblong-PL banana-SCM.3D.oblong-PL
'these bananas'

The obligatory number marking on pronominal expressions that are formed with specific class markers contrasts with optional number marking on pronominal expressions that are formed with the general inanimate class

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marker *-nɛ* (GCM.inan), such as the proximal demonstrative pronoun in the following examples (223a-d). The examples show that this demonstrative can be used without number marking in contexts with one or more referents when the demonstrative stands alone (example 223a). The demonstrative can also be used without number marking when an agreement controller is present that is countable and marked for number (examples 223b-d).

(223) a. *í-nɛ*
    PRX-GCM.inan
    'this/these'

  b. *í-nɛ*   *úhi-ʔo*
    PRX-GCM.inan banana-SCM.3D.oblong
    'this banana'

  c. *í-nɛ*   *úhi-ʔó-:ku*
    PRX-GCM.inan banana-SCM.3D.oblong-DL
    'these two bananas'

  d. *í-nɛ*   *úhi-ʔó-:nɛ*
    PRX-GCM.inan banana-SCM.3D.oblong-PL
    'these bananas'

Nominal expressions that are formed with *-nɛ* (GCM.inan) can optionally combine with number morphology, as shown in the following examples (224a-b), which should be compared to examples 223c-d.

(224) a. *í-nɛ-:ku*   *úhi-ʔó-:ku*
    PRX-GCM.inan-DL banana-SCM.3D.oblong-DL
    'these two bananas'

  b. *í-nɛ-ʔhɨ*   *úhi-ʔó-:nɛ*
    PRX-GCM.inan-PL banana-SCM.3D.oblong-PL
    'these bananas'

The general inanimate class marker is also used to mark agreement with non-classified (i.e. non-count) nouns. This is illustrated in the following example (225).

(225) *í-nɛ*   *úhɨ*
  PRX-GCM.inan banana
  'this banana (substance) / these banana fruits, plants, drinks, etc.'

The optional number marking on nominal expressions that include the general inanimate class marker contrasts with the obligatory number marking in expressions that include specific class markers. The number marking pattern of expressions that include the general inanimate class marker -*nɛ* is also different to that of non-count nouns (i.e. non-classified nouns), since these cannot take number marking at all. Thus, the general pattern that can be observed in the countability status of nouns ("if there is a class marker, the noun is unitized") does not hold for pronominal expressions that include the general inanimate class marker. The general inanimate class marker is neutral with respect to number as well as countability status. Therefore it can be used to mark agreement with inanimate nouns that have any countability status and number.

The number marking patterns of all nominal expressions (including nouns and other nominal expressions) are summarized in the following Table (39), which incorporates the patterns summarizes in Table 37, above.

Table 39: Number marking on nominal expressions

no number marking	obligatory number marking	optional number marking
non-classified nouns (i.e. bare optionally classified noun roots)	repeater nouns (i.e. bare repeater roots)	nominal expressions (other than nouns) built with the general inanimate class marker
	obligatorily and optionally classified nouns (i.e. noun roots in combination with class marker)	
	nominal expressions (other than nouns) built with specific class markers and general animate class markers	

8.5. SUMMARY AND DISCUSSION

Two kinds of morphosyntactic devices are involved in the formation of quantified expressions in Miraña: class markers and number marking. These devices coexist throughout the language, where non-count nouns are obligatorily unitized by derivation with class markers to form count nouns, and these derived nouns are obligatorily pluralized by inflectional number morphology. In this language, unitization by class markers is not restricted to a minor subpart of the lexicon, but is a widespread and highly frequent

mechanism for forming inanimate count nouns and most animal names, as well as some nouns with human referents.[60]

The morphosyntactic mechanisms for the formation of quantified expressions in Miraña share characteristics of two of the types reviewed in section 8.2, above: singulative marking and numeral classifiers. Comparable to singulative marking, unitization is realized as a derivational process directly on noun roots (not in a separate constituent, e.g. in a numeral), and it co-occurs with number marking in the same construction. This contrasts with the morphosyntactic characteristics of unitization by numeral classifiers, which are always (part of) a separate word with respect to the noun that is unitized. Numeral classifiers are always more closely attached to the numeral than to the nouns, e.g., as a suffix on the numeral in Yucatec (Lucy 1992: 48ff.). Miraña is comparable with numeral classifier languages in that it has a large set of morphemes with specific semantic content that are used for unitization. Also, like numeral classifier languages, the majority of Miraña nouns require class markers to form quantified expressions. The commonalities and differences between unitization by singulative markers, numeral classifiers, and class markers in Miraña are summarized in Table 40. Available sources suggest that this pattern is not an isolated case but rather a common pattern in the North West Amazon. Similar structures exist at least in Eastern Tucanoan languages, such as Kubeo (Morse and Maxwell 1999: 75f.) and Tatuyo (Barnes 1990: 283), and Northern Arawak languages of the region (Aikhenvald 2000: 50f., 58).

Table 40: Unitization by singulatives, class markers, and numeral classifiers

	Arabic and Celtic singulatives	Miraña class markers	Chinese numeral classifiers
large number of unitizing forms:	no	yes	yes
applies to most nouns of the language:	no	yes	yes
derivational process on nouns:	yes	yes	no
co-occurrence with plural marking:	yes	yes	no

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[60] The co-existence of obligatory unitization and obligatory pluralization in Miraña could be taken as an exception to a universal proposed by Sanches and Slobin (1973: 6; see also Greenberg 1977: 290): "When in a quantification expression, there is an element which encodes semantic information in agreement with the item being enumerated [i.e. a numeral classifier], there will be no element in conjunction with the item being enumerated which marks number". However, the universal proposed by Sanches and Slobin (1973) is aimed at a particular type of unitizing forms, namely numeral classifiers, so I make no strong claims about the incompatibility of Miraña data with this universal.

This section concludes part III of this study, which dealt with semantic aspects of nominal classification in Miraña, so let me briefly summarize here the topics covered in this part. Chapter 6 showed that Miraña specific class markers encode semantic distinctions in the domain of shape. Chapter 7 argued that noun class assignment is mostly semantically motivated. The present chapter argued that class markers have a unitizing function and that the typological mode for forming quantified expressions in Miraña is comparable to two modes that are described in the literature. What sets Miraña class markers apart from both of these modes is the systematic use of unitizing morphemes (i.e. class markers) for agreement marking and as anaphoric devices. This function is dealt with in the next part of this study, starting with the next chapter.

Part IV: Discourse

The following two chapters comprise part IV of this study, which discusses the function of Miraña class markers at the discourse level. In the preceding parts it was shown that Miraña class markers play a crucial role in the formation of potentially referential expressions, in particular classified nouns and pronominal expressions that include class markers for agreement marking. In the present part, the uses of these expressions at the discourse level are analyzed, with a focus on class markers in pronominal expressions that are used for reference tracking. Chapter 9 deals with the theoretical background to the study of reference tracking and anaphora and the structural resources for reference tracking in Miraña. Chapter 10 analyzes the use of these resources in sustained discourse.

ANAPHORA AND REFERENCE TRACKING:
THEORETICAL ISSUES AND THE MIRAÑA SYSTEM

9.1. INTRODUCTION

The major aim of part IV is to show that class markers are tightly integrated into the reference-tracking system of Miraña. This is important for the typological characterization of the system. It shows that the functions of Miraña class markers are not restricted to contributing to the reference of classified nouns, but that they are also systematically involved in tracking referents through discourse. A common device for reference tracking in Miraña are pronominal expressions that include specific class markers, such as *tɛ:-ʔo* (PN-SCM.3D.oblong) 'it (oblong)' or *tɛ:-hɨ* (PN-SCM.2D.round) 'it (flat and round)'. Within the reference-tracking system of Miraña, they constitute a type of expression that is intermediate in terms of semantic specificity between classified nouns, e.g. *úhɨ-ʔo* (banana-SCM.3D.oblong) 'banana fruit' and pronominal expressions that include a general class marker, e.g. *tɛ:-nɛ* (PN-GCM.inan) 'it/they (inanimate)'. As shown in chapter 10, below, this intermediate specification of a referent in discourse can be used for a variety of purposes, including disambiguation between competing inanimate referents, e.g. between a banana (oblong shape) and a hat (flat and round shape) and marking a discourse boundary.

The focus of the following analysis is thus on the alternating uses of pronominal expressions which include specific class markers with other expressions (mostly classified nouns and pronominal expressions that include general class markers) in discourse. As such, the analysis that follows is a partial description of the reference-tracking system. A complete study of reference tracking in Miraña would require systematically taking into account animate referents, which are typically tracked only with general animate class markers.

The present chapter serves two main purposes: The first is to introduce the main theoretical issues with respect to anaphora and reference tracking. This is done in section 9.2. Besides discussing general theoretical and terminological issues, section 9.2 also serves to justify the methodology used in the empirical study in chapter 10. The second main purpose of this chapter is to present the structural resources for reference tracking in Miraña. This is done in section 9.3. This involves a discussion of the different kinds of potentially referential nominal expressions as well as a discussion of the contribution of other devices to reference tracking. Section 9.4 summarizes this chapter.

9.2. ANAPHORA AND REFERENCE TRACKING: THEORETICAL ISSUES

The following section (9.2.1) makes explicit the basic assumptions that one has to make for an adequate description of anaphora and reference tracking. Section 9.2.2 discusses the importance of taking into account the local discourse structure for an analysis of anaphora. Section 9.2.3 focuses on the role of relative semantic generality in anaphora. Section 9.2.4 summarizes the issues discussed in this section.

9.2.1. Anaphora, reference tracking, and agreement

In many communicative situations speakers need to track referents, i.e. they need to refer back to something that has already been mentioned. A subsequent mention in such a situation has to be linked to a prior mention for a correct interpretation. The establishment of this link is called anaphora. As mentioned in section 1.2.3, above, anaphora is defined 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)" (Levinson 2000: 267; see Huang 2000: 1; Austin and Stirling 2001: 5 for similar definitions).

Pronominal expressions that agree in noun class with their antecedent are an important part of the reference-tracking system of Miraña (and presumably other languages). The noun class that is expressed in these pronominal expressions provides a cue for the correct identification of the antecedent, but these expressions are usually not semantically specific enough to independently establish reference. When a language has a set of pronouns that show agreement with their antecedent, these can be said to constitute a grammaticalized reference-tracking system (such systems may interact with other systems, such as obviatives, switch-reference, etc., see Comrie 1989b). Agreement is thus viewed as a grammatical relation which may be part of the

reference-tracking system of a language and which contributes to establishing anaphoric links in a discourse situation. Note that in this view, there is no principled distinction between agreement at the sentence level and anaphoric agreement. Both contribute to the correct identification of a referent (see also section 1.2.3, above). This is a view held in most of the more recent literature on agreement (see Moravcsik 1978; Lehmann 1982; Barlow 1992; Pollard and Sag 1994: 60ff.; Barlow 1999; Siewierska 1999: 225; Givón 2001: 399ff; Corbett 2003a, 2003b, forthcoming).

Anaphoric reference is established on the basis of two distinct kinds of information: The first kind is information encoded in the anaphoric expression, i.e. specifications in the semantics of an anaphoric expression, which typically include a specification of categories such as noun class. These specifications have to be at least compatible with the semantic specifications of the antecedent. Ideally they represent a subset of the specifications encoded in the antecedent. For example, a third person singular masculine anaphoric pronoun (e.g. English *he*) has to have a third person masculine singular antecedent (e.g. *John*). The compatibility of the semantic content of anaphoric pronouns may in fact be partially required by the morphosyntax of a language through obligatory agreement in categories such as noun class and number. The second kind of information used in anaphoric reference is derived from the relative semantic generality of the anaphoric expression. In principle, only expressions that are semantically general with respect to a possible antecedent are interpreted as anaphora, i.e. as coreferential with an antecedent (the issue of semantic generality is taken up in section 9.2.3, below). For successful anaphoric reference, a speaker thus has to provide the hearer not only with the right kind of information (in terms of the compatibility of the semantically encoded meanings of the anaphoric expression and the antecedent), but also with the right amount of information about the intended referent at a given point in discourse.

Languages have a number of ways of referring to third person referents, i.e. they have a number of types of nominal expressions that can be used anaphorically. These types usually include at least lexical nouns and pronouns. Many languages also allow for zero anaphora, the omission of overt expression of an argument under definable conditions. These ways of referring can be ordered hierarchically according to how semantically specific they are (Figure 12, based on Levinson 2000: 267).

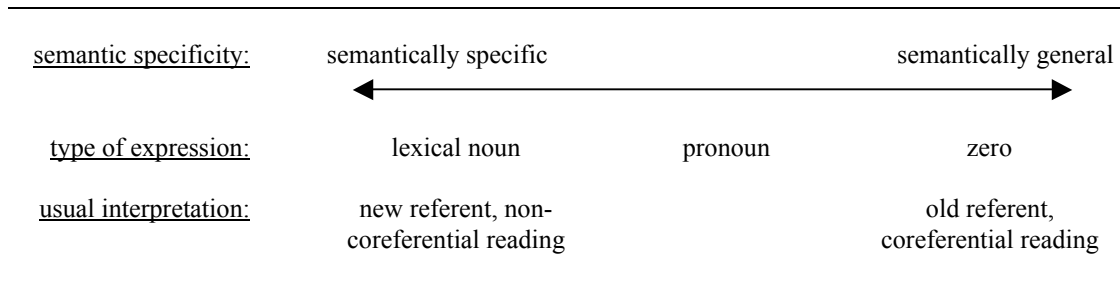| semantic specificity:	semantically specific		semantically general
type of expression:	lexical noun	pronoun	zero
usual interpretation:	new referent, non-coreferential reading		old referent, coreferential reading

Figure 12: Types of referential expression and default interpretation

In an interactive situation, information about referents thus tends to be allocated in the following way (based on Givón 1983a: 18; Ariel 1988: 84; Gundel et al. 1993: 284; Chafe 1994: 71f.; Levinson 2000: 267):

> With the use of an elaborate and semantically specific expression (to the left in Figure 12), the speaker signals that there is something special about the intended referent, e.g., because it is newly introduced or reintroduced. With the use of a reduced, semantically general form (to the right in Figure 12) a speaker signals that the hearer should already know what is being talked about.

There is much empirical evidence for regular patterns of choice of anaphoric expressions according to the basic scheme sketched in Figure 12, in particular from studies in the "topic continuity" framework, which is a standardized quantitative method that has been applied to a variety of languages (see the contributions in Givón 1983b; see also Daley 1996; Fox 1987: 137ff.; T. Payne 1988). However, there is some debate about the exact nature and theoretical status of the factors that should ultimately explain this pattern. Why is it that the use of semantically weak expressions tends to correlate with old information and the use of semantically specific ones for new information?

Functionalist approaches in the tradition of Givón (1983b) take the notion of topicality as basic for explaining this correlation. Topicality is understood as the status of a referent at a given point in discourse in terms of whether it represents given or new information and how important it will be in the upcoming discourse. The topicality of a referent is measured by counting the number of clause boundaries since its last mention and the number of mentions in a fixed number of clauses following the point in discourse under consideration. Having assessed the topicality of a referent by these measures, it can be observed that highly topical referents are consistently mentioned with semantically weak expressions and less topical referents with more elaborate ones. A related strand of research investigates the question of anaphoric

reference in the context of the information structure of discourse (e.g. Chafe 1994; see also Lambrecht 1994: 93ff.). In this approach, discourse referents are assumed to be at different activation states in the consciousness of language users. When the activation state of a referent has decayed over time, the cost of reactivating it increases, which leads to the use of a more elaborate referential expression (see Ariel 1988 for a similar approach, using the term "accessibility" instead of "activation").

The approaches just mentioned crucially rely on the assumption of either a notion of topicality (which is derived from text counts) or activation states of referents (which are taken to be psychological states). As mentioned in section 1.2.3, above, it is assumed in this study that much of the regular patterns of anaphoric choice can be explained by linguistic pragmatics without having to refer to topicality or psychological states (Huang 2000; Levinson 2000). In this approach, the interpretation of anaphoric expressions is supported by pragmatic implicatures, which generate default interpretations on the basis of the semantic content of the anaphoric expressions. Implicatures may be highly context-dependent, but there is a set of implicatures that are based on general expectations of normal communicative behavior and therefore operate in all communicative situations. These "Generalized Conversational Implicatures" (Levinson 2000; see also Levinson 1983; Huang 2000) provide a mechanism by which the semantically encoded meanings of linguistic expressions are systematically enriched. The theory of Generalized Conversational Implicatures is captured in three principles (Levinson 2000: 35ff.), which are based on Grice's (1975) famous maxims of conversation. Most important for anaphora resolution are the complementary I- and M-principles, which are briefly introduced in the following (for an illustration with an example, see section 9.2.3, below).

The coreferential reading of a semantically relatively general expression such as a pronoun is achieved primarily because a hearer can assume that a speaker follows the I-principle. According to this principle a hearer can expect that "what is expressed simply is stereotypically exemplified" (Levinson 2000: 37; see also Huang 2000: 319), i.e. the hearer can expect that the speaker does not say what can be taken for granted and that no unnecessary information is provided about referents that are already established. This principle predicts the preferred interpretation of semantically weak expressions, such as pronouns, as referring to referents that have already been mentioned, i.e. as anaphora. According to the complementary M-principle, "what's said in an abnormal way isn't normal" (Levinson 2000: 38f.). Thus a hearer can expect that a speaker uses a more elaborate expression, e.g. a lexical noun, when he wishes to draw attention to a new referent. In this case, the hearer may M-implicate a non-

coreferential reading with respect to a possible antecedent in the preceding context. Under this approach, the anaphoric link between a semantically stripped pronoun, which possibly only encodes gender and number, and an antecedent can thus be achieved by pragmatic implicatures, which take as their input the encoded meaning of linguistic expressions and expectations of regular communicative behavior.

9.2.2. Anaphora and discourse structure

In the discussion in the preceding section, the use and interpretation of anaphoric expressions has been related to their potential to receive correct interpretations based on their semantic content, their semantic generality relative to an antecedent, and pragmatic implicatures that operate on general conversational principles. In addition to these factors, the use and interpretation of anaphoric expressions is intrinsically linked to the local discourse context. This has been convincingly shown by studies of anaphora in the tradition of conversation analysis, in particular in Fox's (1987) seminal study on anaphora in English, which strongly influenced the analysis of Miraña data in the following chapter.

What is meant here by local discourse context is the hierarchical organization of utterances in turns, sequences, side-sequences, and the like. Sequences are the basic structural units of discourse. Sequences are typically internally organized. For instance, a sequence of English conversation may consist of a number of "adjacency pairs". A sequence can also be disrupted by a "side sequence" and then taken up again in a "return pop".[61] Within a sequence, the unmarked pattern for the use of anaphoric expressions can be defined. For instance, Fox (1987: 18) identifies the unmarked pattern for "anaphoric devices in non-story conversation" in English as follows: "The first mention of a referent in a sequence is done with a full NP. After that, by using a pronoun the speaker displays an understanding that the preceding sequence has not been closed down". Fox (1987: 40) further finds that in two genres of English "full nouns are used to display an understanding that a sequence is closed". It appears to be a general pattern that a semantically relatively specific anaphoric expression may signal the end of a sequence or text. This function of anaphoric

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[61] The terms "sequence" and "adjacency pair" are established in the conversation analytical literature (e.g. Fox 1987: 18; see also Levinson 1983: 284ff.). The term "sequence" is roughly equivalent to what others call "paragraph" (e.g. Longacre 1979; see also Serzisko 1992). The term "return pop" is introduced by Fox (1987: 27ff.). For a detailed treatment of the principles of conversation analysis see Schegloff (forthcoming).

expressions has been attested in a wide variety of languages (see Hinds 1979; Longacre 1979; Clancy 1980: 169ff.; Li and Thompson 1981: 330; T. Payne 1988: 381ff.; Stirling 2001). Experimental evidence for the function of relatively specific anaphoric expressions to signal discourse boundaries is reported in Vonk et al. (1992).

Another important finding of the approach to anaphora from the perspective of conversation analysis is that the relevant units in which antecedents for anaphoric expressions are usually sought can be discontinuous. Fox (1987) shows how, in English conversation, discourse units can be interrupted by side sequences and that—after the side sequence is over and the main sequence is resumed, e.g., by a return-pop—antecedents are sought in the stretch before the side sequence. Relatively general anaphoric expressions are chosen accordingly, even though the immediately preceding side sequence may include mentions of grammatically possible competing antecedents.

The fact that the use of an anaphoric expression is tightly linked to the hierarchically structured discourse in which it occurs has two important consequences for the study of anaphora. First, the use of an anaphoric expression not only conveys (semantic) information about the intended referent (from which additional pragmatically implied information about its correct identification is derived), but it additionally signals something about the local discourse environment in which it occurs, e.g. the closing of a sequence. Second, patterns of anaphoric choice are framed primarily in terms of the relevant units of a hierarchically structured discourse, rather than in terms of linear distance (as measured, for instance, by the number of clause boundaries since last mention) or importance (as measured by the number of mentions in a given number of clauses following the mention under consideration).

The ways in which discourses are structured as well as how these structures are signaled are not universal, neither within, nor across languages. For instance, Fox (1987) discusses the different structural properties of two types of English discourse and their associated patterns of use of anaphoric expressions: spoken conversation and written narratives.[62] As an example of a language-specific pattern of use of anaphoric expressions, Huang (2000: 328) reports that in

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[62] Patterns of anaphoric choice are also dependent on modalities, e.g. written vs. spoken language (see Cohen 1984 for an experimental study comparing the use of referential expressions in different modalities: oral, written, per keyboard, with and without interaction). As for cross-linguistic variation in the use of anaphoric expressions, Bickel (2003) describes drastic language-specific differences in "referential density", i.e. in the overall number of explicit mentions of referents, in neighboring speech communities in Nepal (see also Woodbury 1998).

Chinese conversation the second mention of a newly introduced referent tends to be expressed also by a full noun, not by a pronoun (as it typically would be in English). In chapter 10, below, some patterns that are particular to Miraña discourse are discussed, among them the use of a "thematic prompt" pronoun preceding an explicit mention of a new referent.

Following the approach by Fox (1987), the study of the anaphoric use of Miraña class markers in chapter 10 focuses on describing the use of anaphoric expressions on a case-by-case basis in relation to the local discourse surroundings. This study shows that the approach by Fox (1987), which she applies to expressions with human referents, can be successfully applied to the study of anaphoric reference to inanimates, which are tracked with specific class markers in Miraña. A quantitative study, e.g., in the framework proposed by Givón (1983b) is outside the scope of this study. It would be a major research project on its own which would have to take into account all referential expressions, including mentions of animate referents. However, in focusing on the overall distribution of all referential expressions, such a study would have to abstract out some of the particularities of local discourse structure, which are shown in chapter 10 to play an important role in the use and interpretation of anaphorically used specific class markers in Miraña.

9.2.3. Relative semantic generality and anaphora

The previous sections focused on the role of the semantic content of anaphoric expressions, the pragmatic principles that motivate the use and interpretation of relatively general expressions, and the close relation between local discourse structure and anaphora. This section picks up the issue of the semantic generality of anaphoric expressions, since it is with respect to this property of anaphora that Miraña data display particularly interesting characteristics.

The most fundamental, uncontroversial, and probably universal property of anaphoric expressions is that they tend to be semantically general with respect to their antecedents (see Levinson 2000: 269). The hierarchy of referential expressions sketched in Figure 12 represents a cline of the amount of linguistic material involved. This cline is usually understood as involving phonological material (e.g. short, unstressed pronouns vs. phonologically complex, stressed nouns) as well as semantic content (e.g., pronouns are semantically more general than full nouns). However, semantic generality is the crucial parameter that underlies this hierarchy. More precisely, it is the semantic generality relative to an antecedent that gives rise to the anaphoric potential of an expression. This can be shown by the fact that of a pair of expressions, the one

that is more general can be used for anaphoric reference to the more specific one, but not the other way around. In the following examples (adapted from Levinson 2000: 269), the semantically more general noun *vessel* is usually interpreted as coreferential (and thus anaphoric) to the semantically more specific noun *ferry* (example 226a), but not the other way around (example 226b).

(226) a. *The ferry hit the rock. The vessel capsized.*

       b. *The vessel hit the rock. The ferry capsized.*

The nature of the semantic generality of an anaphoric expression can be captured more precisely as a hyponymic (i.e. subordinate) relation between an anaphoric expression and its antecedent (at least in the case of "direct", i.e. fully coreferential anaphora, see section 10.4, below, for further discussion). In the example above, *vessel* is a superordinate term to *ferry*. Suppose now we attempt a componential analysis of the semantic features of these expressions (see Nida 1975). Then we may say that anaphoric expressions (as superordinate terms) encode a subset of the semantic features of their antecedent. For instance, the meaning of the noun *vessel* can be said to include the features [-animate], [+floating], and [-plural], among others. *Ferry* (its antecedent in example 226a), is a hyponym (i.e. subordinate term) to *vessel* in that it encodes all the semantic features that *vessel* encodes, plus some additional features, for instance one that could be called [+public transport]. The pragmatic implicatures that support anaphora (see section 9.2.1, above) exploit this difference in encoded semantic content. The fact that *vessel* lacks some of the semantic features of the preceding noun *ferry* is the basis on which a hearer I-implicates a coreferential reading in example 226a. On the other hand, the additional information encoded in the noun *ferry* is the basis on which a hearer M-implicates a non-coreferential reading with respect to preceding, semantically more general noun *vessel* in example 226b.

Vessel and *ferry* belong to the same part of speech, they are both from the open class of lexical nouns. However, anaphoric reference is usually achieved with the use of a pronoun. We can continue the sentence in example 226a in the following way (example 226a').

(226) a'. *The ferry hit the rock. The vessel capsized. It sank immediately.*

It is interpreted as coreferential with *vessel* and *ferry*. English *it* is part of a closed class of pronouns, which are dedicated to anaphoric and exophoric reference. Nevertheless, like lexical nouns, *it* encodes a set of semantic features that we could specify as [-animate] and [-plural]. Given these features, *it* is a

superordinate term to *vessel* and *ferry*, which encode these features, plus a number of additional features. The compatibility of the semantic features encoded in *it* and the generality of *it* with respect to other features gives *it* the potential to function as an anaphor with any noun that includes the features [-animate] and [-plural] as an antecedent, in this case *ferry* and *vessel*.

The English third person pronouns *he, she, it,* and *they* encode number, animacy, and natural gender for animates. These are thus the features that are conveyed—and, in fact, must be conveyed—to invite the establishment of an anaphoric link by the use of an English third person pronoun. The feature constellation found in English third person pronouns is probably common in the languages of the world, i.e. this set of features is used systematically in many languages for reference tracking (Givón 1976: 171). But there is no reason to assume *a priori* that this precise constellation of features—and the degree of semantic generality with respect to nouns that they represent—is somehow privileged or even universal. For instance, some Australian languages have only one third person pronoun, which does not encode number or natural gender (Dixon 1980: 358f.). The only information that such a pronoun provides to establish an anaphoric link is something like [+third person]. The pronominal systems of noun class languages, on the other hand, typically make a larger number of distinctions in pronouns than English, in particular in the domain of inanimates. For instance, Foley (1991: 119ff.; see also Foley and van Valin 1984: 325ff.) reports a noun class system in the Papuan language Yimas, which distinguishes 10 noun classes that are marked in pronouns that can be used anaphorically. This language thus has a grammaticalized reference-tracking system that makes 10 distinctions with respect to possible antecedents. Typical Bantu languages have up to 24 noun classes, which are realized via cross-reference on verbs and in pronouns that can also be used anaphorically (cf. e.g. Katamba 2003: 106). The present study deals with a language with a noun class system consisting of over 60 classes, which are also marked in anaphorically used pronouns (even though not all occur with the same frequency in an anaphoric function).

The pronominal forms that individual languages use for reference tracking (with their specification for categories of the antecedent such as noun class) are thus semantically general to different degrees. They restrict possible antecedents to a member of a single class out of a total of either 4 classes (English), 10 (Yimas), about 24 (typical Bantu languages), or over 60 (Miraña). By only looking at the number of noun classes distinguished in pronouns, we get an indication that the pronouns in some languages are semantically more general than those in other languages. A Miraña pronoun that includes a specific, shape-encoding class marker may thus be less semantically general

with respect to its antecedent than an English pronoun (which only encodes number and natural gender) is with respect its antecedent.

While the number of noun classes of a language points at possible differences in the overall semantic generality of pronominal expressions, let us now consider briefly the question of the semantic features with respect to which pronominal expressions are semantically general. In the ideal case anaphoric pronouns are superordinate terms when compared to their antecedent and encode a subset of the features of the antecedent. They are thus semantically general with respect to all other features of the antecedent. For Miraña it was shown in chapter 6, above, that the most important semantic domain in specific class markers is shape. In chapter 7, it was shown that noun class assignment is predominantly semantically motivated, i.e. nouns are usually assigned to noun classes on the basis of the encoded semantic content of class markers. Given that noun class is used as a reference-tracking device (e.g. in anaphoric pronouns), this means that the reference-tracking system in Miraña systematically singles out the shape of the intended referent. This is a situation quite different to languages where shape semantics play no role in reference tracking at all (e.g. English) and also different to languages where shape semantics arguably play a role in noun class assignment, but where this assignment is not semantically motivated to the same degree as in Miraña (see discussion in section 7.5, above, and 11.3, below).

9.2.4. Summary

The preceding sections have provided an introduction to the main theoretical issues in anaphora and reference tracking. Summarizing relevant parts of the existing literature, it was shown that anaphoric expressions have two basic properties: their semantic content is compatible with the semantic content of the antecedent and they are semantically general with respect to the antecedent. Agreement in noun class (and possibly number) can help to ensure semantic compatibility of anaphorically used pronouns. The link between a semantically compatible and general anaphoric expression and an antecedent can be established by pragmatic implicatures, which are based on the expectations of normal communicative behavior. Furthermore, the use of an anaphoric expression is intrinsically linked to the local discourse structure. Going beyond the existing literature, it was suggested that the semantic generality of anaphorically used pronouns may depend on particular characteristics of the noun class system of a given language, pointing at interesting cross-linguistic differences with respect to which semantic features are systematically singled out in anaphoric expressions.

9.3. STRUCTURAL RESOURCES FOR REFERENCE TRACKING IN MIRAÑA

This section describes the structural resources that constitute the reference-tracking system of the Miraña language. The following section (9.3.1) describes different types of potentially referential nominal expressions in terms of different degrees of semantic specificity. Section 9.3.2 deals with other devices that contribute to reference tracking in Miraña. These sections draw heavily on those parts of the morphosyntactic and semantic analyses from previous chapters that are relevant to reference tracking.

9.3.1. Degrees of semantic specificity in referential expressions

The degree of semantic specificity of a referential expression is a key property for its anaphoric use and interpretation. Three basic types of potentially referential expressions, which differ in degrees of semantic specificity can be identified in Miraña. Furthermore, it is common that nominal arguments remain unexpressed in Miraña. There are thus four basic possibilities for anaphoric reference in Miraña:

(i)   classified nouns, e.g. *tódʒi:-huɯ* (blowgun-SCM.tube);
(ii) pronominal expressions that include a specific class marker, e.g. *tɛ:-huɯ* (PN-SCM.tube) 'it (tubular shape)';
(iii) pronominal expressions that include a general class marker, e.g. *tɛ:-nɛ* (PN-GCM.inan) 'it/they (inanimate)'; and
(iv) zero anaphora, e.g. *páj:húkɯ-:bɛ* Ø (open-GCM.masc.sg) 'He opened (it)'.

The following example (227) illustrates the use of the three types of overt expressions for referent introduction and reference tracking. It demonstrates in a nutshell some of the most important characteristics of reference tracking in Miraña, which are discussed in detail in the following chapter. The example contains the beginning, a middle portion, and the end of a native speaker's explanation of how he made a blowgun. The different types of nominal expressions identified above are used to introduce and then track an inanimate referent, i.e. the blowgun. Mentions of the blowgun are set in boldface.

(227)   Blowgun making [CERB]

1.   *i:hú = pé*   ***tɛ-:nɛ***   ***tódʒi:-hɯ***   *o*   *pákigwájhhɯ-kí ájnú-múná: gwaʔrá-bá*
yesterday=PAS **PN-GCM.inan blowgun-SCM.tube** 1S.SUB rasp-PURP   white-people   rasp-SCM.3D
'Yesterday I sandpapered **the blowgun**, (with) the white man's rasp,'

2.   *ó-ʔdi-ɯ*   *tsí:ßa-:bɛ*   *ájnú-múná-a-hpi*
1S-ANIM-ALL bring-GCM.masc.sg white-people-PERT-GCM.masc.sg
'the white man had brought me a rasp'

[...]

3.   *i-htú:-rí*   *o*   *míbéhhɯ-ki* ***tɛ-:nɛ***   *kóʔpɛ-né*   ***i***   *káßá:ßɛ-ki*
POS.3-blood-INST 1S.SUB wrap-PURP   **PN-GCM.inan** hard-GCM.inan **3S.SUB** become-PURP
'So I would with its sap (i.e. the rubber tree's), wrap **it**, so **it** would become hard'

4.   ***a:-nɛ***   *ó* *míbéku-ʔíhka-ʔí* *ó* *míbɛhkú-ʔí*
CON-GCM.inan 1S wrap_up-HAB-PRD 1S wrap_up-PRD
'And I wrapped **it** up over and over, I wrapped it up,'

5.   *ími-nɛ*   ***tɛ:-nɛ***   ***í***   *káßá:ßɛ-ki*
good-GCM.inan **PN-GCM.inan 3S.SUB** become-PURP
'so **it** would become good'

6.   ***a:-nɛ***   *ó* *nɯhtsókɯ-ʔi* *úßéʔkóʔ*
CON-GCM.inan 1S try_out-PRD   good
'and I tried **it** out: good!'

[...]

7.   *tétsi:tú = iʔdu á:báhá-hpi:-ké*   *ó* *áhkú-ko-:ʔi*   ***té:-hɯ-ßɯ***
then=TAM   owner-GCM.masc.sg-ACC 1S give-PF-FUT.PRD **PN-SCM.tube-ALL**
'and after that, indeed, I will give **it** to its owner'

8.   *ajɯ́hɯ*
all_right
'all right.'

In the beginning of the text (line 1) a full lexical noun that includes a specific class marker is used to introduce the referent blowgun. Note that this noun is preceded by a pronominal expression (see section 5.3, above, and 10.2.2, below, for further discussion). Throughout the text, the general inanimate class marker in combination with pronominal roots is used to refer to the blowgun being made (lines 3, 4, 5, and 6). Additionally, the third person subject pronoun is used in the subordinate clauses in lines 3 and 5 (see section 9.3.2.1, below). The pronominal expressions that include the general inanimate class markers are semantically extremely general. The only semantic information they provide about the referent is that it is inanimate. Since no other inanimate participant occurs that would count as a competing antecedent (in the speaker's understanding of the structure of the text), this "minimal specification" is sufficient for the hearer to establish correct reference. In fact, a minimal

specification communicates to the hearer that he should look backwards in the text for a referent. At the very end of the text, the speaker uses a different kind of expression to refer to the blowgun: the specific class marker -*hɯ* (SCM.tube)—which also occurs in the noun denoting 'blowgun'—is used in combination with a pronominal root (line 7). This expression specifies the shape of the intended referent. As such, it is semantically not as specific as the lexical noun used in line 1, but considerably more specific than the expressions used so far, which only encode inanimacy. At this point, the speaker's use of a more specific expression (a pronoun that includes a specific class markers) may communicate that the sequence is coming to an end.

The three types of nominal expression that a Miraña speaker can use when referring to an inanimate object differ in semantic generality. The relative semantic generality can be described by hyponymic relations which exist between them: A pronominal expression that includes a general class marker is a superordinate term to a pronoun which includes a specific class marker, which is in turn a superordinate term to any noun that includes this class marker (as long as this noun is compositional, see section 7.3). The hyponymic relations that the pronoun *tɛ:-hɯ* (PN-SCM.tube) 'it (tubular shape)' enters into are illustrated in Figure 13. The lines in this figure should be read from bottom to top as "is in a hyponymic relation to".
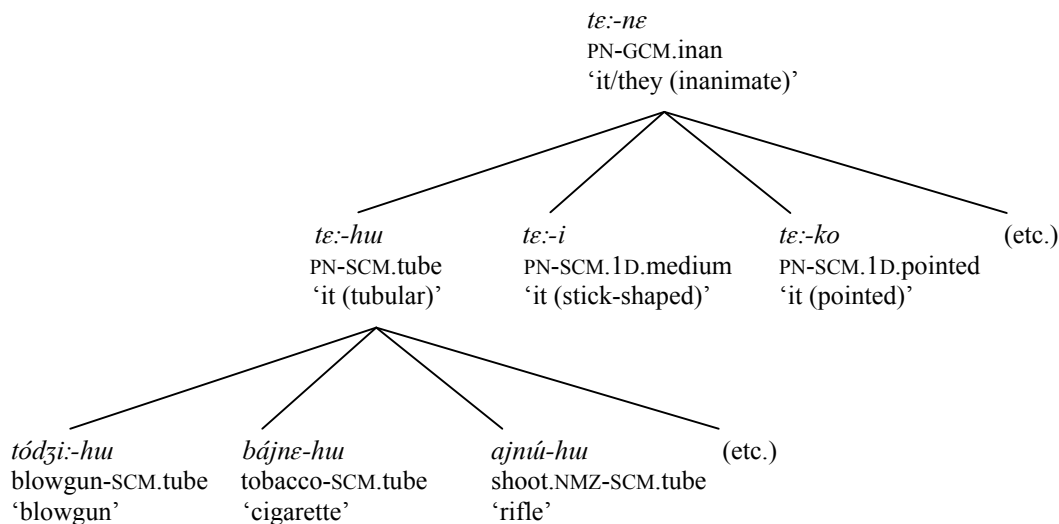

Figure 13: Hyponymic relations between different kinds of nominal expressions

In chapter 7, above, it was argued that in Miraña shape information is encoded in specific class markers, while the noun roots and nominalized verbs that are used to form classified nouns typically encode information about substance, function, and possibly other specifications. The shape information in specific

class markers is thus the subset of the specifications of the hyponymic (i.e. subordinate) classified nouns that are preserved in the superordinate pronominal expressions that include specific class markers. Recall from sections 8.3 - 8.4, above, that classified nouns and pronominal expressions that include a specific class marker are obligatorily marked for number. As a consequence, these two types of expressions convey information about the number of their referents, where unmarked expressions refer to single referents. In contrast, number marking on pronominal expressions that are formed with the general inanimate class markers is optional, so a pronominal expression that includes a general class marker can refer to single as well as multiple referents. The levels of semantic specificity of these three types of expressions can thus be stated more precisely as specifying

  (i) the substance/function, shape, and number of a referent in a classified noun,

  (ii) only the shape and number of a referent in a pronominal expression that includes a specific class marker,

  (iii) only the inanimacy of a referent in a pronoun that includes the general inanimate class marker.

The degrees of semantic specificity of potentially referring nominal expressions in Miraña are summarized in Figure 14. Also included in this Figure is the possibility of zero anaphora, i.e. of argument ellipsis. Recall from section 2.4.4, above, that any argument can be omitted in main clauses, except the subject of predicates that are formed with -*ʔi* (PRD). The dependent noun phrase of genitive constructions can also be omitted (see section 5.2).

semantic specificity	semantically specific			semantically general
morpho-syntactic type	classified noun: noun root + SCM / n'lized verb + SCM	pronoun: pron. root + SCM	pronoun: pron. root + GCM.inan	zero
examples	*úhi-ʔo* banana-SCM.3D.oblong 'banana'	*tɛ:-ʔo* PN-SCM.3D.oblong 'it (oblong)'	*tɛ:-nɛ* PN-GCM.inan 'it/they (inan.)'	*dʒé:nɛ-:bɛ* Ø eat-GCM.masc.sg 'He ate (it)'
encoded meaning	substance/function, shape, number	shape, number	inanimate	none
number of distinc- tions	> (open class of nouns, plus productive compounds) + three-way number distinctions	over 60 classes + three-way number distinctions	one	none

Figure 14: Degrees of semantic specificity of nominal expressions in Miraña

When compared to referential expressions of the languages that are discussed in the standard literature on anaphora and reference tracking (see Figure 12, above), Miraña thus has an additional category, that of pronominal expressions which include specific class markers, such as *tɛ:-ʔo* (PN-SCM.3D.oblong) 'it (oblong)'. This kind of expression is intermediate between lexical nouns (which presumably all languages can make use of as reference-tracking devices), on the one hand, and semantically stripped pronouns, which typically encode just a minor number of distinctions, such as natural gender and number, on the other hand.

9.3.2. Other devices involved in reference tracking

Since the overall aim of this study is an analysis of the system of nominal classification in Miraña, special attention is given to the role that class markers play in reference tracking and anaphora. However, reference tracking in Miraña also involves a number of other devices, which contribute to the correct interpretation of anaphoric expressions and the construction of coherent discourse in general. These devices are briefly discussed in the following sections. Section 9.3.2.1 focuses on the contribution of pronominal roots to reference tracking. Section 9.3.2.2 discusses the role of selectional restrictions of verbs and nouns in reference tracking.

9.3.2.1. Roots of pronominal expressions

In principle, all pronominal expressions in Miraña can be used for reference tracking. Recall from section 4.3, above, that class markers are obligatory in all of these expressions, except in possessive pronouns and numbers higher than two, where class markers are optional. All roots that form pronominal expressions can combine either with a general class marker or with a specific class marker. Recall also that any of these expressions can be used independently of another noun phrase.

The pronominal roots that are most commonly used for reference tracking are those forming third person pronouns, i.e. *tɛ:-* (PN) (which combines with specific class markers and the general inanimate class marker) and its counterpart *di-* (PN) (which combines with the general animate class markers). These pronominal roots do not seem to add any semantic content the pronominal expressions that are formed with the addition of a class marker (except arguably definiteness and animacy, see section 4.3.1). These pronouns are primarily used for the tracking of previously introduced referents, but they may also be used preceding a noun in first mention (as, for instance, in example

227, above) or to introduce referents in their absolute use or in "indirect anaphora", as discussed in section 10.4.3, below.

Another pronominal root that plays an important role in reference tracking is the one that forms the sentence connector pronoun, *a:-* (CON). Recall from section 4.3.3, above, that this expression is used at the beginning of a sentence and that it refers to an aforementioned referent that is thematic in the sentence that this pronoun introduces. Recall also that the general inanimate class marker is commonly used in this pronoun to refer to the previously described situation in general rather than to any particular referent.

Demonstrative pronouns are another device that can be used for reference tracking, in addition to their exophoric uses. The distal demonstrative formed with *ɛ:-* (DIST) seems to be used when the antecedent is somehow remote in the discourse, while the proximal demonstrative formed with *i-* (PRX) seems to be preferred when the antecedent has been mentioned relatively recently. However, the exact values of the endophoric uses of demonstratives in Miraña have not been established yet.

In principle, other pronominal expressions, such as interrogative pronouns, and possessive pronouns, as well as numerals can also be used for reference tracking, but they are less common in this function than the pronominal expressions mentioned above.[63] The pronominal root *tsi-* 'other' (see section 4.3.6), on the other hand, is commonly used for "non-identity anaphora", where the referent is a different token of the same kind as the referent of the antecedent (see section 10.4.2, below). The pronominal root *pa-* (CPL) is not usually involved in reference tracking directly, since it is mostly used in predicate nominals (see sections 4.8, above).

The only third person pronominal expression that never includes a class marker is the third person subject marker *i* (3S). Recall from section 2.4.2.2, above, that it is only used in subordinate clauses when these have the same subject as the main clause.[64] Instances of this form occur in lines 3 and 5 in example 227, above. In this function, it may also help to track referents.

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[63] It is noteworthy that the numeral 'one' *tsa-* does not systematically perform functions comparable to indefinite pronouns or indefinite determiners, as it does in many other languages (Givón 1981).

[64] As such, this form is also the only pronominal expression with reference to third persons that may be considered as syntactically controlled. Note that this expression does not agree in noun class.

In summary, the pronominal roots that class markers combine with may also contribute to the tracking of referents. Above all, they provide a structural template for the use of class markers, since these cannot occur as free forms. They may further specify the reference of a pronominal expression in terms of a type identity with an antecedent rather than a token identity (*tsi-* 'other'), and possibly in terms of the proximity of the antecedent in the discourse context (in the case of demonstrative roots).

9.3.2.2. Selectional restrictions of verbs and nouns

In addition to the specifications carried by anaphoric expressions themselves, the correct identification of antecedents may be supported by specifications found in the surrounding linguistic context. Particularly important for the use of anaphoric expressions are the semantics of the verbs with which they co-occur. If a verb has strong selectional restrictions on the argument role in which the anaphoric expression occurs, a semantically less specific expression may be used than one would otherwise expect, or an argument may be completely omitted (see e.g. Brown 2000). In this sense, selectional restrictions of verbs may contribute to reference tracking.

In Miraña, an argument is often left unexpressed when the verb provides sufficient information about the intended referent. This can be observed in the following example (228). In this example, a bag is referred to with a noun in line 1. In line 3, reference to the bag is left implicit. In this case, the verb is actually a verbalization of the noun that refers to the bag in the first line, so the verb could not be more specific about its argument, which as a result does not need to be realized separately. The semantics of this verb also eliminates possible reference to the pack of cigarettes that is introduced as a referent in line 2.

(228) [MACLIEVA]

1. ***í-kaʔpáj-ɨ́ú***   *pajnɛ   ɯáko-:bɛ*
    POS.3-bag-SCM.3D.round inside put_into-GCM.masc.sg
    'in **his bag** he put'

2. *tɛ:-nɛ   bájnɛ-ʔbɨ́hɨ́*
    PN-GCM.inan tobacco-SCM.pack
    'it, the pack of cigarettes,'

3. *á:-na: Ø kápáj-:ßɛ-:bɛ*
    CON-after   bag-VBZ2-GCM.masc.sg
    'and he put **(it)** on' (lit. he 'bagged')

Selectional restrictions of nouns also provide information that may serve to disambiguate reference and lead to the omission of an overt expression of an argument. In Miraña, the dependent noun phrase of a genitive construction can be omitted when its referent is retrievable from the context. In example 229, the dependent element of a genitive construction, whose head is the locative noun *pajɲɛ* 'inside', is omitted, since the only possible antecedent is a previously mentioned trunk.

(229) [MACLIJUVE]

a:-nɛ   píko-:bɛ   pɛí-έ-ʔuudʒέ-ßúu-rέ
CON-GCM.inan put-GCM.masc.sg same-PERT-place-ALL-REST
'And he put (it) to the same place,'

Ø pajɲέ-ßuu
   inside-ALL
'to (**its**) inside (i.e. of a trunk)'

In summary, expressions other than anaphorically used pronouns may provide additional information about referents that are being tracked through discourse. This information may influence the choice of an anaphoric expression, such that a referent need not be mentioned with a semantically specific expression even in a situation of possible competing antecedents, since ambiguity is eliminated by selectional restrictions of a verb or noun.

9.4. SUMMARY

This chapter began by making explicit some theoretical assumptions for a treatment of anaphora and reference tracking and relating the study of reference tracking by class markers in the following chapter to the relevant literature. According to these assumptions, the semantic content of anaphoric expressions has to be semantically compatible and semantically general with respect to their antecedent. The establishment of the anaphoric link is conceived as a pragmatic process, based on expectations of regular communicative behavior. The use of anaphoric expressions is further closely related to local discourse structure. Section 9.3 of this chapter presented the structural resources for reference tracking in Miraña. How these are used in Miraña discourse is analyzed in the following chapter.

ANAPHORIC FUNCTIONS OF CLASS MARKERS

CHAPTER 10

10.1. INTRODUCTION

This chapter deals with the anaphoric functions of class markers. It aims to show how Miraña speakers invite hearers to establish anaphoric links by using the structural resources of the language, in particular the different kinds of nominal expressions that were ordered according to degrees of semantic specificity in section 9.3.1, above. Special attention is given to the "intermediate" kind of expressions, namely pronominal expressions that include specific class markers. With the use of these expressions, a speaker can provide a hearer with information about the shape of the intended referent, and a hearer can use this information to identify the intended referent.

As laid out in section 9.2.2, above, the use and interpretation of anaphoric expressions can only be understood within the context of the structure of the local discourse surroundings. The basic units of discourse structure are sequences. A sequence is defined as a stretch of verbal interaction with a recognizable beginning ("sequence opening") and an end ("sequence closing"). The beginning and end of a sequence can be marked by a variety of means, among them intonation, lexical cues and syntactic structures, as well as the choice of anaphoric expressions. A sequence can be interrupted by side sequences. The beginning and end of side sequences can likewise be marked by a variety of means, e.g. by repeating keywords or syntactic structures from the main sequence before it was interrupted by the side sequence. The term sequence is used here to refer to the basic units of conversational texts as well as expository texts such as procedural texts and narratives.

The main focus of this chapter is the anaphoric use of specific class markers. Therefore, the following sections deal mainly with expressions that refer to inanimate objects, since it is with reference to these that Miraña speakers can use all three types of referential expressions discussed in section 9.3.1, above. The anaphoric expressions under consideration here appear predominantly in object position, in first mention as well as in subsequent mentions, as is typical

for the expression of inanimate referents. Thus, for the aspects of the reference-tracking system dealt with here, the syntactic role of the anaphoric expression is not of primary interest (see Du Bois et al. 2003 on the importance of the syntactic role of anaphoric expressions for the overall organization of discourse).

Examples in this chapter come mainly from two types of texts: procedural texts and retellings of two short stimulus films. The procedural texts used here were produced by native speakers who were asked to explain a procedure to another native speaker, who had less knowledge about the procedure or, alternatively, to myself (see Table 4 in section 1.4.2, above). The procedures covered in the examples include culture-specific techniques such as basket weaving, the construction of traps, blowguns, and panpipes. In these texts, there is usually one primary speaker (the expert), who has the floor most of the time, and at least one interlocutor who gives feedback and asks questions. In some cases, the main reference object of the procedural text, e.g. a panpipe, is present in the speech situation. Procedural texts were chosen here as one main source of data because they contain a high number of mentions of inanimate referents, which are typically tracked with specific class markers.

The second major source of data used in this chapter are retellings of two short stimulus films that were specifically designed to study the anaphoric use of class markers, the banana clip and the trunk clip (see section 1.4.2, above). The films feature a number of inanimate objects that are handled by two actors in various ways. For instance, in the banana clip one actor puts a banana in a basket, leaves, and then another actor appears, takes out the banana and eats it (see Photo 2 in section 1.4.2). Reference to these objects has to be tracked in the retellings of the films, and speakers often use pronominal expressions that include specific class markers for this purpose, as shown in the examples below.

Data of both types were recorded and later transcribed with the help of native speakers. The transcription indicates overlaps and pauses that are longer than one second.[65] Expressions with different referents are distinguished by boldface and different underline styles in the examples in this chapter.

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[65] This transcription is relatively broad when compared to the standards of conversation analysis (e.g. Fox 1987; Schegloff forthcoming), but contains sufficient detail to show the levels of structure of a text that are relevant for the distribution of anaphoric expressions. Other regular mechanisms that conversation analysis is concerned with, such as turn taking, cannot be adequately studied without a much more fine-grained transcription, which in particular has to take into account intonational phenomena.

It is impossible to translate pronominal expressions that include specific class markers into English in an idiomatic way. In the examples in this chapter, they are translated as 'it' (or 'one', 'another', as appropriate) with the addition of an approximation of their semantic content—and where necessary the intended referent—in brackets. If, for instance, the expression *tɛ:-ɯ* (PN-SCM.3D.round) is used to refer to a calabash, it is translated as 'it (round, i.e. calabash)'. This kind of translation is given also when pronominal expressions are used next to a coreferential noun. Thus, for instance, *tɛ:-ɯ dó:to-ɯ* (PN-SCM.3D.round calabash-SCM.3D.round) is translated as 'it (round), the calabash'. In this case, the comma in the translation indicates the prosodic break between the pronominal expression and the noun (see section 5.3).

The following sections analyze the use of anaphoric expressions in different kinds of environments. Section 10.2 discusses anaphora in the absence of competing referents. Section 10.3 deals with the use of anaphoric expressions in situations where competing referents are present. Section 10.4 focuses on indirect anaphora and non-identity anaphora, i.e. anaphoric expressions that rely on the linguistic context for a correct interpretation, but that are not in a strict coreferential relation with an antecedent. Section 10.5 discusses the use of anaphoric expressions over longer stretches of discourse. Section 10.6 concludes this chapter.

10.2. ANAPHORA IN THE ABSENCE OF COMPETING ANTECEDENTS

10.2.1. The unmarked pattern

This section analyzes the reference-tracking function of Miraña class markers in situations where no competing antecedents are present within the same sequence. In these cases, the anaphoric function of class markers operates within the unmarked pattern of use of anaphoric expressions that can be stated as follows:

(i) New referents are introduced by a lexical noun, possibly in combination with other expressions.

(ii) Subsequent mentions of this referent within the same sequence are by less specific expressions, typically pronominal expressions or zeros.

(iii) In final mentions of a referent in the closing of a sequence, a more specific expression than the previous one can be used, e.g., a pronominal expression that includes a specific class marker if in previous mentions pronominal expressions that included a general class marker were used.

The crucial characteristics of this pattern are that—once a referent has been introduced—there is a "step-down" in semantic specificity in subsequent mentions and that in final mentions there may be a "step-up" in specificity. In this general form, this pattern is similar to the pattern described by Fox (1987) for conversational English. However, unlike English, Miraña can make use of a type of pronoun that is intermediate in semantic specificity, namely pronouns that include specific class markers. The use of these may correspond to a "partial step-down" in semantic specificity (after a mention with a lexical noun) or to a "partial step-up" in semantic specificity (after a mention with a pronominal expression that included a general class marker or a zero). An additional difference to English is that Miraña has a particular structure for putting emphasis on a referent, namely preposing a pronominal expression before an explicit mention (see section 10.2.3).

It is important to note that the unmarked pattern of use of anaphoric expressions does not predict the use of anaphoric expressions in a deterministic way, since a multitude of additional factors may interfere. These include factors stemming from the linguistic contexts (e.g. verb frames), as well as from the extralinguistic context (e.g. pointing gestures).

The following sections discuss components of this pattern of use of anaphoric expressions: Referent introduction (section 10.2.2), the special case of referent introduction with a "thematic prompt" (section 10.2.3), subsequent mentions (section 10.2.4), anaphora across side sequences (section 10.2.5), and the closing of sequences (section 10.2.6).

10.2.2. Referent introduction

Not surprisingly, the first mention of a new referent typically includes a lexical noun (except when this new referent is introduced in non-identity anaphora or indirect anaphora, see section 10.4, below). In the following examples (230, 231), new inanimate referents are introduced by lexical nouns, which are built from noun roots and class markers. Example 230 comes from a text where a speaker explains how edible larvae (called *mojojoy* in local Spanish) are harvested. This is done by felling a particular species of palm tree (called *canangucho* in local Spanish), which is then left behind in the bush for a few weeks. During this time the larvae develop inside it. The palm tree is introduced as a new referent in line 2 of the example with a full noun.

(230) [MOJ]

1. *áhpaj-ko   tsɨ́:ma-ßá-ʔɨ́*
    larva-SCM.1D.pointed children-VBZ2-PRD
    'The *mojojoy* has children,'

2. **íné-ʔɛ-ba   *mɛ́ idʒó-ʔi*
    canangucho-SCM.tree-SCM.3D** 1/2PL knock_down-PRD
    'one fells a ***canangucho* palm tree**'

Example 231 is from a mythical text about two snails, an aquatic one and a terrestrial one. At the point of the story from which example 231 is taken the terrestrial snail takes a liana to measure the depth of a pool of water. Again, the newly introduced referent, the liana, receives a mention by a full lexical noun.

(231) [DC]

1. *í:nú-hɨ́   uhtsú-kó*
    earth-SCM.2D.round snail-SCM.1D.pointed
    'The earth snail,'

2. ***mó:ʔo-ú*=*ßá*=*pɛ́*=*iʔduu   i   úhkuu-na:*
    liana-SCM.string**=RPT=PAS=TAM 3S.SUB take-after
    'after taking **a liana**, ...'

Often, a newly introduced referent is described in more detail than just with a lexical noun. The following example (232) comes from the retelling of a magical healing ritual, in which a female healer extracts a number of items from a sick person's body by blowing and sucking. Example 232 contains the first mention of a stone which she extracts. This newly introduced referent is mentioned with a full noun and further described by two relative clauses. These add further specification to the reference of the lexical noun denoting the stone. Note that both relative clauses include a specific class marker, which marks agreement with the preceding noun.

(232) [HPG]

*iʔátsɯʔháko-dʒɛ úhkuu-dʒɛ   **né:gwáj-ú-gwuu***
blow-GCM.fem.sg take-GCM.fem.sg **stone-SCM.3D.round-DIM**
'She blew and she took out **a little stone**,'

ruutúuruútuú né:-uu   brijánté íhka-uu
shiny.OMT   seem.SUB-SCM.3D.round shiny.SP COP.SUB-SCM.3D.round
'**a shiny looking one (round)**, **one (round) that was shiny**'

10.2.3. Referent introduction with a "thematic prompt"

Miraña has a particular structure for giving special emphasis to a referent, which is often used for the introduction of new referents. This structure consists of a combination of a semantically general expression, typically a pronoun, which is immediately followed by a more explicit, coreferential expression, typically a lexical noun (see also section 5.3, above). I call this structure "thematic prompt".[66] Usually there is a small pause between the pronoun and the lexical noun. Example 233 illustrates the use of pronominal expressions which include general class markers as thematic prompts for the introduction of new referents. This example contains two further passages from the retelling of the magical healing ritual cited in the previous example (232). This time the healer extracts a fishbone and a hair of a jaguar from the sick man's body. The first mentions of these two referents in lines 1 and 3 of example 233 are preceded by *tɛ:-* (PN) in combination with the general inanimate class marker.

(233)   [HPG]

1.   *tsóʔoʔháko-dʒɛ* **tɛ:-nɛ** **dáʔóhpa-htó-ʔdu**
        suck-GCM.fem.sg **PN-GCM.inan fish,sp.-SCM.spine-COMP**
        'She sucked, **it**, like **a fishbone of a *tucunaré* fish**'

2.   *kaíhkáj:o-dʒɛ* *i-ʔóhtsí* *pajné-ɯ*
        spit_out-GCM.fem.sg POS.3-hand inside-ALL
        'she spat out, into her hand'

        [...]

3.   *kaíhkáj:o-dʒɛ* **tɛ:-nɛ** **o:ʔí-:bɛ́** **iʔhí-nɛ**
        spit_out-GCM.fem.sg **PN-GCM.inan jaguar-GCM.masc.sg hair-GCM.inan**
        'She spat **it** out, **a hair of a jaguar**'

The following example (234) contains another instance of a thematic prompt used for referent introduction. It is taken from the retelling of a hunting trip. When the speaker relates that in the event of following a tapir he comes across

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[66] The use of "thematic prompts" in Miraña appears to be related to a more general phenomenon that is called "prospective indexicals" (Goodwin 1996: 384) and "dummy terms" (Schegloff 1982) in conversation analysis. The general function of these expressions is to signal that there is something new and special in the upcoming interaction to which the hearer should pay attention. However, unlike "prospective indexicals" and "dummy terms", "thematic prompts" in Miraña usually directly precede more explicit, coreferential expressions and such a combination is therefore analyzed as one mention here.

a tree trunk, he introduces this referent with a semantically general pronoun that precedes a lexical noun in line 1.

(234) [PU]

1.   *aː-né=pɛ*   **tɛː-nɛ**   **úmé-nɛ-bá**=*pɛ*
     CON-GCM.inan=PAS **PN-GCM.inan wood-GCM.inan-SCM.3D**=PAS
     'And (there was) **it**, **a tree trunk**'

2.   *ɛʔdu pajhtɛ́kuunúú-ʔi tɛː-ʔi*
     like   pass-PRD   PN-SCM.river
     'like that, across it (i.e. river)'

The use of a thematic prompt before a fully referential lexical noun is not obligatory in referent introduction (as examples 230 - 232 above show), but it is common. It makes the first mention of a referent more elaborate, and thus fits in well with the general tendency that the newness of a referent is signaled by elaborate and long expressions (see Figure 12 in section 9.2.1, above). In some cases, the function of such an expression may be hard to tell apart from that of a hesitation marker. However, the regularity with which thematic prompts occur in situations where special emphasis is given to a referent, e.g., in first mentions, and the fact that this expression always agrees in noun class with the following, fully referential expression suggest that it performs a regular function in the language, which is analyzed here as that of marking the importance of a referent.

The essential characteristic of such a thematic prompt is that it is semantically more general than the following explicit mention. In principle, any construction that has this characteristic can be used as a thematic prompt, including relative clauses, as in the following example (152). The function of the relative clause in this example is the same as that of the pronouns in the previous examples. This example comes from another hunting story, and it is an animate referent that is introduced in this case (see also the discussion of this example in section 5.3, above).

(235) [CDC]

       ihká-mɛ-dí-ßu   **bóːmémɛ-dí-ßu** *ó* *úːhɛté-ʔi*
       COP.SUB-GCM.anim.pl-ANIM-ALL otter-ANIM-ALL 1S arrive-PRD
       'to where **they** were, to **the otters**, I arrived'

10.2.4. Subsequent mentions

For subsequent mentions of referents that have already been introduced, less specific expressions are used, typically pronominal expressions that include either specific class markers or general class markers. The important characteristic of these expressions is that they are semantically more general than the expression that was used in first explicit mention. The following example (236) illustrates a subsequent mention of a referent with a pronominal expression that includes a specific class marker. The example is taken from a procedural text about the making of a mousetrap. A knife is mentioned explicitly in line 1. Then, in line 2, reference to the knife is picked up by the interlocutor with a demonstrative pronoun in combination with the appropriate specific class marker. Note that in this example the reference object is present in the discourse situation and that the anaphoric pattern occurs across different speakers.

(236)   [DPK]

1.   ROB   *í:dʒɛ-ɯ* **pídóho-gwá-ɯ**   *o:-ké*   *gwá:o*
                 here-ALL **knife-SCM.2D.straight-ALL** 1S-ACC throw.IMP
                 'Over here, throw me **the knife**'

                 {1.6}

2.   MIG   ***í-gwa***   *óho*
                 PRX-SCM.2D.straight look
                 '**this one** (straight, i.e. knife), look!'

3.   ROB   *á:*   *ɯ:hɯ*
                 ITJ   OK
                 'ah, OK'

The next example contains an instance of a subsequent mention by a pronominal expression that includes a general class marker. The example is taken from the beginning of a retelling of the trunk clip, and the referent under consideration is the trunk. It is introduced in line 3, and is referred to again in line 5, with a pronominal expression that includes a general class marker. This subsequent mention is thus even more reduced than the one used in the previous example. This could be due to the fact that the verb *paj:húkɯ-* 'open' provides additional information for the correct identification of the referent trunk in this case.

(237) [MACLIFAV]

1. *ó=nɛkɯ ó ɨ:té-ʔi*
   1S=REC 1S see-PRD
   'I just saw'

2. *tɯhkénɯ́ dʒa-ʔahtsɨ́   hpɨ:né piko*
   begin.NMZ yard-SCM.clearing middle put
   'first, in the middle of the yard there was placed'

3. **ɛ:-nɛ   dí-mamámi-ba**
   DIST-GCM.inan POS.2S-trunk-SCM.3D
   '**that one, your trunk**'

4. *á-tsi:tɯ́=nɛkɯ   ɯhkábá   ihtʃíßɛ-:bɛ*
   CON-until-ABL=REC proper_name get_out-GCM.masc.sg
   'and then *ɯhkába* appeared'

5. **tɛ:-nɛ   paj:hɯ́kɯ-té-ʔi**
   PN-GCM.inan open-DIR2-PRD
   'he went to open **it**'

10.2.5. Anaphora across side sequences

A sequence may be interrupted, and then continued. In principle, an interruption does not interfere with the basic pattern of anaphora, i.e. subsequent mentions tend to be semantically less specific even if a side sequence intervenes. In fact, the use of a semantically general anaphoric expression may be interpreted by a hearer as a signal that the speaker is now back to normal in terms of the ongoing discourse. The following example (238) illustrates how a referent is taken up again with a semantically general expression after a side sequence. The example is first given as a whole and the relevant lines are repeated in the discussion below. This example contains another passage from the procedural text about the making of the mousetrap that was already cited in example 236. The referent under consideration here is a strap, which is a part of the trap. ROB is building the trap while he speaks, and his primary interlocutor is MIG. There are a number of other people present in the speech situation, and they occasionally intervene. This text is characterized by a lot of joking.[67] Note that the pattern of anaphoric references illustrated in this example occurs again across different speakers.

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[67] Joking remarks of this sort are common in informal conversation among male Mirañas. The name in the example has been changed.

(238) Strap sequence [DPK]

1. MIG *pírapíra-ré = huko tɛ:-nɛ*
         weak-REST=PF   PN-GCM.inan
         'it is weak' (referring to a stick, which is part of the trap)

2. ROB *a:ha*
         yes
         'yes'

         {2.3}

3.   *ajúhu í:ko:ká = iʔ dóʔhi-bá-ɾɛ = ko*
         OK   now=TAM **strap-SCM.3D**-REST=PF
         'OK, now **the strap**'

4. MIG **é-ʔba**   **é-ʔba**   **é-ʔba**   *ójo*
         DIST-SCM.3D DIST-SCM.3D DIST-SCM.3D look
         '**that one** (three-dimensional, i.e. strap), **that one** (three-dimensional, i.e. strap), **that one** (three-dimensional, i.e. strap), look!' (finger-pointing at the strap)

5. ROB *a:*
         ITJ
         'ah'

6. MIG **éʔ-nɛ**
         DIST-GCM.inan
         '**that one**' (lip-pointing at the strap)

7. AZU *huá: namé-ʔo-tu   d-a:húku = íha:*
         Juan genital-SCM.3D.oblong-ABL IMTV.SG-make_strap=TAM
         'Make a strap from Juan's penis!'

8. ROB *o*   [*á:húku-kí*
         1S.SUB make_strap-PURP
         'I'll make a strap'

9. MIG   [@@@@

         {1.4}

10. ROB *a:*   **tɛ:-né** = *hukó = ßá*
         INTER **PN-GCM.inan**=PF=RPT
         '(Is this) **it** (i.e. strap) already?' (still fiddling with the strap)

11. MIG [*ɛ:ʔé a:há* **tɛ-ʔbá** = *huuko*]
         yes yes **PN-SCM.3D**=PF
         'Yes, yes, this (three-dimensional, i.e. strap)'

12. ROB [*a:ha*
         yes
         'yes'

         {4.3}

13.   *ídʒú=pɛ   ní:ha-bá   íihuu*
            this_way=PAS rain-SCM.3D yesterday
            'What a rainfall yesterday'

Lines 1 and 2 of example 238 are the end of a previous sequence, which was about a stick. After a pause of 2.4 seconds, ROB announces in line 3 that he will now proceed to fix the strap to the trap, using a full noun to refer to the strap:

3.   *ajúhuu í:ko:ká=iʔ **dóʔhi-bá**-rɛ=ko*
            OK   now=TAM   **strap-SCM.3D**-REST=PF
            'OK, now **the strap**'

While he speaks, he stands up and looks around for the strap. His interlocutor, MIG, has spotted the strap lying on the ground behind ROB and points to it while uttering a demonstrative pronoun which includes a specific class marker in line 4:

4.   MIG   ***é-ʔba***   ***é-ʔba***   ***é-ʔba***   *ójo*
            DIST-SCM.3D **DIST-SCM.3D** **DIST-SCM.3D** look
            '**that one** (three-dimensional, i.e. strap), **that one** (three-dimensional, i.e. strap), **that one** (three-dimensional, i.e. strap), look!' (finger-pointing at the strap)

ROB accepts MIG's suggestion in line 5. The interlocutor MIG asserts that this is in fact the strap he meant by using the same demonstrative root, but this time it is in combination with a general class marker in line 6:

5.   ROB   *a:*
            ITJ
            'ah'

6.   MIG   ***éʔ-nɛ***
            DIST-GCM.inan
            '**that one**' (lip-pointing at the strap)

By using this general expression MIG displays an understanding that the sequence about the strap has not come to an end, and in fact ROB has only begun to fix it to the trap. At this point, AZU, who is standing at some distance, joins in. In line 7 he makes a joking remark that the strap could have been made from someone's penis. He thus initiates a new sequence, a joke, which will require a separate uptake. ROB takes up AZU's remark by jokingly asserting that he will in fact make the strap in this way in line 8, where he uses the same verb as AZU in the previous line. ROB's main interlocutor, MIG, also joins in by laughing in line 9, in overlap with ROB's utterance in line 8:

7.   AZU   *huuá: namé-ʔo-tuu   d-a:húku=íha:*

                     Juan   genital-SCM.3D.oblong-ABL IMTV.SG-make_strap=TAM

                     'Make a strap from Juan's penis!'

8.   ROB   *o*   [*á:húku-kí*

                     1S.SUB make_strap-PURP

                     'I'll make a strap'

9.   MIG   [@@@@

With the repetition of ROB and MIG's laughing the joke-sequence has come to a completion. After a pause of 1.4 seconds, during which ROB is busy fixing the strap to the trap, ROB comments on his progress, suggesting that the strap is already in place in line 10. He uses a pronominal root in combination with a general class marker to refer to the strap. Note that it is grammatically possible that this expression refers to the penis mentioned in line 7. However, this referent is not selected since it occurs in a side sequence, which has been closed. Rather, this semantically general anaphoric expression naturally ties in with the discourse previous to the side sequence:

10.   ROB   *a:*   **tɛ:-né**=*hukó=ßá*

                     INTER **PN-GCM.inan**=PF=RPT

                     '(Is this) **it** (i.e. the strap) already?' (still fiddling with the strap)

ROB's suggestion that the strap may already be in place is taken up by MIG in line 11, in which he uses the same pronominal root, but in combination with a specific class marker. ROB may interpret MIG's use of a more specific expression than the previous one as a proposal that the sequence about the strap is now closing (see next section, 10.2.5, for discussion and further examples). In fact, MIG's assertion is simultaneous with ROB's utterance in line 12, where he likewise gives a positive answer to his own question in line 10 (the question about whether the strap was already in place):

11.   MIG   [*ɛ:ʔé a:há* **tɛ-ʔbá**=*huuko*]

                     yes   yes **PN-SCM.3D**=PF

                     'Yes, yes, this (three-dimensional, i.e. strap)'

12.   ROB   [*a:ha*

                     yes

                     'yes'

Line 13 shows that the previous sequence about the strap has in fact been closed, since (after a pause of 4.3 seconds) ROB initiates a new sequence by proposing to talk about the weather:

13.   ROB   *ídʒú=pɛ*   *ní:ha-bá*   *íihuu*

                     this_way=PAS rain-SCM.3D yesterday

                     'What a rainfall yesterday'

10.2.6. The closing of sequences

One of the mechanisms that a speaker can use to propose the closing of a sequence is a relatively specific mention of one of the main referents of the ongoing sequence. I call such a mention an "over-specification". If one important referent of a sequence is inanimate, Miraña speakers often use pronominal expressions that include specific class markers as a proposal to end the sequence. An instance of over-specification at the end of a sequence occurred in line 11 of the previous example (238). Recall also the over-specification at the end of the sequence about the making of a blowgun (example 227 in section 9.3.1, above), when the expression *tɛ́:-hu-ßu* (PN-SCM.tube-ALL) 'it (tubular)' was used to refer to the blowgun.

The following example (239) is taken from the retelling of the trunk clip. It contains a full cycle of anaphoric mentions of a flashlight across a sequence: The introduction of a referent by a full noun, subsequent mentions by semantically general expressions, a more elaborate expression at a possible sequence endpoint (line 4), and finally, a "post-expansion" (see Fox 1987: 14) of the sequence (lines 5-6), which begins with a less specific mention (line 5) of the flashlight and ends again with a relatively specific one (line 6).

(239) [MACLIIGI]

1. *á:nu   mía-múná-a-hpi   i   kánó-nɛ*
   DIST.ANIM real-people-PERT-GCM.masc.sg 3S.SUB bend_down-GCM.inan
   'that one, the adult (lit. real) person bending down,'

2. *ɯhkú-ʔi tɯɯhkɛ́nɯ́ **tsa-nɛ́   ahtʃú-ʔó:ɯ***
   take-PRD begin.NMZ **one-GCM.inan shine-SCM.chunk**
   'took first **one flashlight**'

3. *imí-dʒɛ́-ró-:bɛ   Ø i   pɛ́:tɛ-tsó-nɛ*
   good-consider-FRUS-GCM.masc.sg   3S.SUB burn-CAUS-GCM.inan
   'he wanted to turn (**it**) on (lit. make it burn)'

4. *a:ró-náa tsáʔ **tɛ́-ʔo:ɯ**   pɛ́:tɛ-tɯ́-**nɛ***
   but-after NEG **PN-SCM.chunk** SUB.burn-NEG-**GCM.inan**
   'but then **it** (chunk, i.e. flashlight) did not work'

5. ***a:-nɛ**   pɛ́:tɛ-tɯ́-**nɛ́**-dʒi:ʔɛ*
   CON-GCM.inan SUB.burn-NEG-**GCM.inan**-BEN
   'and because **it** did not work,'

6. *píko-:bɛ   i:nɛ í:nú-hí   ʔadʒɯ́-ßɯ́ **tɛ́-ʔo:ɯ***
   put-GCM.masc.sg HES earth-SCM.2D.round top-ADL   **PN-SCM.chunk**
   'he put, eh, **it** (three-dimensional, i.e. flashlight) on the ground'

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In lines 1 and 2, the speaker relates that the actor picks up one of the two flashlights that appear in the trunk clip. He refers to the flashlight with a full noun, accompanied by a numeral in line 2. In line 3, he refers again to the flashlight, when he describes how the actor tries it out, but the subject argument of the subordinate verb *pé:tɛtsó-* 'to make burn, shine' is left unexpressed.[68] In line 4, the speaker states that the flashlight did in fact not work (which is already expressed by the frustrative suffix in the main verb in line 3). The flashlight is referred to now with a pronominal expression that includes a specific class marker as the subject noun phrase of the negated subordinate verb, which includes an additionally general class marker. A general class marker would certainly have been enough to establish reference to the flashlight at this point, but the structure of the text, in particular the nature of this clause as a possible conclusion to the sequence about trying out the flashlight, warrants a more specific encoding, which can be interpreted by a hearer as a proposal that the sequence is closing. Note that the specific class marker (in combination with a pronominal root) is enough to meet this end, and there is no need to revert to a full noun.

The following two lines are a post-expansion to the preceding sequence. In line 5—which is a subordinate clause dependent on the following main clause—the flashlight is referred to with the sentence connector pronoun that includes the general inanimate class marker and a general class marker on the subordinate verb. These are relatively general expressions, as typical for the continuation of a sequence. The following main clause (in line 6) includes a mention of the flashlight with a pronominal expression in combination with the specific class marker. With the use of this relatively specific expression, the speaker again signals that the sequence about the flashlight is being closed. Note that the position of the pronoun (which is the direct object of the main verb) at the right margin of the sentence, following an oblique object, makes this mention of the flashlight even more marked. At this point, the sequence about the flashlight is closed.

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[68] Note that the third person subject pronoun *i* (3.SUB) cannot refer to the flashlight since it must be coreferential with the subject of the main clause, i.e. it refers to the actor. The general inanimate class marker attached to the subordinate verb stands in for the object of the verb *imídʒé-* 'want', namely the event of making shine, and thus does not refer to the flashlight either.

10.2.7. Summary

The preceding sections discussed the uses of anaphoric expressions in situations with no competing referents. It was shown that Miraña works in a way parallel to languages such as English in that subsequent mentions within a sequence typically involve a step-down in semantic specificity and that a step-up in semantic specificity can be used to signal the closing of a sequence. Unlike languages such as English, the Miraña language provides its speakers with two different kinds of pronominal expressions to express this step-down or step-up: those which include specific class markers, and those which include general class markers. In a situation with no competing antecedents, a "partial specification" of a referent by a pronominal expression which includes a specific class marker can be used in subsequent mentions (step-down in semantic specificity after a mention with a lexical noun) as well as in final mentions (step-up in semantic specificity after a mention with a pronominal expression which includes a general class marker).

10.3. DISAMBIGUATION

10.3.1. Introduction

This section deals with the use of anaphoric expressions in situations where more than one possible antecedent is present. In such a situation, semantically general expressions may be ambiguous. Let me illustrate this first with an example from English. In the sentence *Last week, I bought a book and a record* two inanimate referents are introduced. A continuation of this sentence such as *I really enjoy having it* clearly sounds odd because the reference of the pronoun *it* is ambiguous. Contextual cues, such as verb frames, can serve to disambiguate the reference of *it*, as in *I really enjoy listening to it.* English speakers can also revert to a more specific expression to disambiguate reference, e.g. a lexical noun, as in *I really enjoy having the record,* or they can use other devices, such as in *I really enjoy having the former.* Miraña speakers can often make use of specific class markers to perform the function of disambiguating reference in such circumstances, as this section shows.

Not all grammatically ambiguous anaphoric expressions lead to actual ambiguity in a speech situation. Referential ambiguity can be resolved by many linguistic cues other than the anaphoric expression itself, such as verb semantics (as just mentioned), as well as non-linguistic factors, such as world knowledge, pointing gestures, gaze, etc. In addition, the given local discourse

structure may exclude grammatically possible antecedents. Thus, noun phrases that occur in the preceding sequence or in a side sequence are usually not selected as possible antecedents, and thus do not lead to ambiguity (see example 238 in section 10.2.5). Thus, many factors may eliminate grammatically possible referential ambiguities of anaphoric expressions and license a mention of the referent with a relatively unspecific expression.

If, however, none of the above mentioned factors resolve the referential ambiguity in a given discourse situation, a relatively explicit mention of the intended referent is used to resolve the ambiguity. A relatively specific mention may at the same time function as another cue to the speaker's understanding of the discourse structure. By using such an expression, a speaker displays that his understanding of the ongoing sequence is such that it includes more than one possible antecedent.

For Miraña, two situations of potential ambiguity of anaphoric expressions have to be distinguished. In the first situation, the possible antecedents belong to different specific classes. In this situation, the preferred means for the resolution of ambiguity is to use specific class markers in pronominal expressions. This is shown in the following section (section 10.3.2). In the second kind of situation, the possible antecedents belong to the same specific class. There, specific class markers alone are not sufficient for disambiguation, and more specific expressions have to be used, typically lexical nouns. This is discussed in section 10.3.3.

10.3.2. Anaphora in the context of different-class antecedents

For the purpose of disambiguating reference between more than one inanimate antecedent, the system of specific class markers is particularly efficient. It allows a Miraña speaker to use pronominal expressions that have a high potential for disambiguation, without having to revert to the use of full nouns. The default pattern for the use of anaphoric expressions in such a situation is thus as follows:

> When there are competing antecedents of different specific noun classes, a pronominal expression that includes a specific class marker is used.

This pattern complements the default pattern for situations with no competing referents established in section 10.2.1, above. Again, this pattern cannot be expected to predict the choice of anaphoric expression in a deterministic way. Speakers may also use less specific expressions in such a situation, running the

risk of creating ambiguity, or more specific expressions, running the risk of confusing hearers by a possible over-specification.

In example 240 disambiguation by specific class markers is illustrated with a segment of a mythical text.

(240) [CDV]

1. **í-kuhkúú-i**   *ékɛ́ːβéko-ːbɛ*   *níhko-ːbɛ*
    POS.3-walking_stick-SCM.1D.medium grab-GCM.masc.sg smear-GCM.masc.sg
    'He grabbed **his walking stick**, he smeared'

2. *tɛ́ː-nɛ*   *maʔní-ba-ɾi*   *píɾɪu tɛ́ː-nɛ*
    PN-GCM.inan tar-SCM.3D-INST all   PN-GCM.inan
    'it, with tar, all (over), it'

3. **á:-i-ɾí**=*ßa*   *di:-té-kɛ*   *pídʒɪúʔkɪúko-ːbɛ*
    CON-SCM.1D.medium-LOC=REP PN-GCM.anim.pl-ACC glue-GCM.masc.sg
    'And to **it** (stick-shaped, i.e. walking stick) he glued them.'

The main protagonist of this myth is a personified male deer whose brother had been killed and eaten by a group of people. In the passage before the one given in example 240, the deer has come to take those peoples' children away in revenge for having eaten his brother. In line 1 of example 240, a new inanimate referent, the deer's walking stick, is introduced with the lexical noun *í-kuhkúú-i* (POS.3-walking_stick-SCM.1D.medium) 'his walking stick'. This noun includes the specific class marker *-i* (SCM.1D.medium). In line 2, another inanimate referent is introduced with a lexical noun, *maʔní-ba* (tar-SCM.3D) 'tar', in combination with a pronoun used as a thematic prompt. This noun includes another specific class marker, *-ba* (SCM.3D).[69] In line 3, the speaker refers again to the first referent, the walking stick. In order to do so, he uses a pronominal expression that includes a specific class marker, *á:-i-ɾi* (CON-SCM.1D.medium-INST/LOC) 'at/with it (stick-shaped)'. If only one possible inanimate antecedent had occurred in the previous context, a general inanimate class marker could have been used in this construction. Note that the case marker *-ɾi*, which appears on *á:-i-ɾi* (CON-SCM.1D.medium-INST/LOC) 'at/with it (stick-shaped)' can have an instrumental as well as a locative reading (see section 2.4.4, above). Had a general class marker been used, an instrumental reading of the case marker and an interpretation of the connector pronoun as referring to the tar would have been likely, i.e. 'with it (i.e. tar) he glued them'.

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[69] I was not able to unambiguously identify the referent of the second instance of *tɛ́ː-nɛ* (PN-GCM.inan) 'it' in line 2. This form could refer either to the stick, the tar, the stick with the tar, or the situation as a whole. However, note that none of these interpretations affects the fact that there is possible ambiguity between the stick and the tar in line 3 of the example.

Additionally, the structural similarity to the mention of the tar in line 2, which includes the same case marker, would favor such an interpretation. However, the speaker apparently did not intend reference to the tar, but rather to the stick, so he uses a specific class marker to disambiguate the referent of this pronoun. There is no need to use a full noun since the two possible antecedents belong to two different specific noun classes.

The following example (241) comes from the retelling of one of the stimulus films designed to study the anaphoric use of class markers, the banana clip. The banana clip was specifically designed to include only reference objects that are denoted by Miraña nouns that belong to different specific noun classes. The retellings of this film are thus characterized by a high number of pronominal expressions that include specific class markers, which are a sufficient means to disambiguate between references to the objects that occur in this film. A longer stretch of a retelling of the banana clip is given in order to give an impression of how Miraña class markers are used for disambiguating reference to inanimate objects. In the discussion of this example, below, the relevant lines are repeated.

(241)   [BACLILIG]

1.   LIG   *ó=nékɯ ó i:téi-ʔi mɯ-ʔdɯ o né:-hú-i-ɾo*
                1S=REC 1S see-PRD what-COMP 1S say-INTER-FUT-FRUS
                'I just saw, how should I say,'

2.   **tsa-:baj   ɯßí-:baj**
                one-SCM.cont basket-SCM.cont
                '**one basket**'

3.   *ákɯ́ɯ́úkɯnɯ́-né dʒá-ʔahtsí   nihké-ɯ-ɾi*
                sit-GCM.inan   yard-SCM.clearing end-SCM.3D.round-LOC
                'sitting at the end of the yard'

4.   ELI   *a:ha*
                yes
                'yes'

5.   LIG   **a-:baj   a-:baj**   *édʒɛ-ßɯ́=nɛkɯ́=idéhɯ́*
                CON-SCM.cont CON-SCM.cont there-ADL=REC=TAM
                '**it** (container, i.e. basket)**, it** (container, i.e. basket) to there'

6.   *tsa-:pí=nékɯ*
                one-GCM.masc.sg=REC
                'one person'

7.   *tsa-:pí=nékɯ   tsí:mɛ-nɛ*
                one-GCM.masc.sg=REC children-GCM.inan
                'one person, a child'

8.   *a: tsáʔa*
    ITJ NEG
    'Ah! No.'

9.   *tsa-:pí=nékɯ   mía-:bɛ   íhka-:bé=nékɯ   pé:-ʔi*
    one-GCM.masc.sg=REC real-GCM.masc.sg COP.SUB-GCM.masc.sg=REC go-PRD
    'someone who was an adult (lit. real one) went'

10.   **tɛ:-:báj**   *tuhkéβé-tu*
    PN-SCM.3D begin.NMZ-ABL
    'right to **it** (container, i.e. basket)'

11.   *a:-:bɛ   pikó:-ʔí*
    CON-GCM.masc.sg put-PRD
    'and he put'

12.   <u>*mí-ʔó:-kú=nékɯ   úhi-ʔó-:kɯ*</u>
    <u>two-SCM.3D.oblong-DL=REC banana-SCM.3D.oblong-DL</u>
    '<u>two</u> <u>bananas</u>'

13.   ***í-gwatáhko-hi***   *éʔdɯ*
    POS.3-cover-SCM.2D.round also
    '(and) also **his hat**'

14.   ELI   *mhm*
    'OK'

15.   LIG   *a:-:bé=nékɯ*   ***té-:baj-tu***   *pɛ:-né-bo:nɛ*
    CON-GCM.masc.sg=REC **PN-SCM.cont-ABL** go.SUB-GCM.inan-after
    'And after he had gone away from **it** (container, i.e. basket),'

16.   *tsi-hpi   gwahtsí-ʔi*
    other-GCM.masc.sg arrive-PRD
    'another one arrived'

17.   *a:-:bé=nékɯ*   ***tɛ:-nɛ***   ***té-:báj***   *pajné-tú*
    CON-GCM.masc.sg=REC **PN-GCM.inan PN-SCM.cont** inside-ABL
    'And he, from inside **it**, **it** (container, i.e. basket)'

18.   ***té-:báj***   *pajné-tú   úhkɯ-:bɛ*
    PN-SCM.cont inside-ABL take-GCM.masc.sg
    'from inside **it** (container, i.e. basket) he took'

19.   <u>*tsá-ʔo*</u>   <u>*úhi-ʔo*</u>
    <u>one-SCM.3D.oblong</u> <u>banana-SCM.3D.oblong</u>
    '<u>one</u> <u>banana</u>'

20.   *dʒé:nɛ-:bɛ*   <u>Ø</u>
    eat_fruit-GCM.masc.sg
    'he ate <u>(it)</u>'

21.   <u>*á:-ʔó*</u>   *kápajró:βé=ɯbáʔa=nékɯ*
    <u>CON-SCM.3D.oblong</u> exchange=maybe=TAM=REC
    'and in exchange for <u>it</u> (oblong, i.e. the banana), I guess,'

22. *píko-ínɯ-:bɛ*   *ádzi-ba*
    put-DIR3-GCM.masc.sg flash-SCM.3D
    'he went to put a flashlight'

23. ELI   *ádzi-ba*
    flash-SCM.3D
    'a flashlight'

24. LIG   *a:-nɛ*   *tsájhtɛ-:bɛ́=nɛ́kɯ*   **_tɛ:-nɛ_**   **_gwatáhko-hi_**
    CON-GCM.inan take-GCM.masc.sg=REC **PN-GCM.inan** **cover.NMZ-SCM.2D.round**
    'and he brought **it**, **the hat**'

25. **_á:-hi-má_**=*nɛ́kɯ*   *pɛ-:bɛ*
    CON-SCM.2D.round-SOC=REC go-GCM.masc.sg
    'and with **it** (round and flat, i.e. the hat), he left'

In line 2 of example 241, a first inanimate referent, a basket, is introduced with the lexical noun *ɯβí-:baj* (basket-SCM.cont), accompanied by a numeral, which includes the same specific class marker:

2. LIG   **_tsa-:baj_**   **_ɯβí-:baj_**
    one-SCM.cont basket-SCM.cont
    'one basket'

The next mentions of the basket occur in lines 5 and 10, where the pronominal sentence connector that includes a specific class marker (line 5) and a pronominal root that includes the same specific class marker (line 10) are used. Note that at this point there are no competing antecedents for these expressions (except the situation as a whole), so presumably a general class marker could also have been used:

5. LIG   **_a-:baj_**   **_a-:baj_**   *édʒɛ-βɯ́=nɛkɯ́=idéhɯ́*
    CON-SCM.cont CON-SCM.cont there-ADL=REC=TAM
    '**it** (container, i.e. basket)**, it** (container, i.e. basket) to there'

10. LIG   **_tɛ:-:báj_**   *tɯhkéβé-tɯ*
    PN-SCM.3D begin.NMZ-ABL
    'right to **it** (container, i.e. basket)'

In line 12, a new inanimate referent is introduced, namely two bananas. The speaker uses a full noun here in combination with a numeral, both of which include the same specific class marker:

12. LIG   *mí-ʔó:-kɯ́=nɛ́kɯ*   *ɯ́hi-ʔó:-kɯ*
    two-SCM.3D.oblong-DL=REC banana-SCM.3D.oblong-DL
    'two bananas'

In line 13, yet another inanimate referent is introduced, a hat, again with a noun including a specific class marker:

13.   LIG   ***í-gwatáhko-hi***   *έʔdɯ*
                POS.3-cover-SCM.2D.round also
                '(and) also **his hat**'

At this point, three inanimate referents are on stage: the basket, the two bananas, and the hat. However, the nouns that denote these objects belong to different specific classes. Thus, anaphoric reference to these objects in the following can be achieved by pronominal expressions that include specific class markers: In lines 15, 17, and 18, *tɛ:-* (PN) in combination with the specific class marker for containers *-:baj* is used to refer to the basket. Note that in line 17 the speaker uses an additional pronoun as a thematic prompt to give emphasis to the mention of the basket, without using a full noun:

15.   LIG   *a:-:bέ=nέkɯ*   ***té-:baj-tu***   *pɛ:-nέ-bo:nɛ*
                CON-GCM.masc.sg=REC **PN-SCM.cont-ABL** go.SUB-GCM.inan-after
                'And after he had gone away from **it** (container, i.e. basket),'

16.   *tsi-hpi*   *gwahtsí-ʔi*
        other-GCM.masc.sg arrive-PRD
        'another one arrived'

17.   *a:-:bέ=nέkɯ*   *tɛ:-nɛ*   ***té-:báj***   *pajné-tú*
        CON-GCM.masc.sg=REC **PN-GCM.inan PN-SCM.cont** inside-ABL
        'And he, from inside **it, it** (container, i.e. basket)'

18.   ***té:-báj***   *pajné-tú* *úhkɯ-:bɛ*
        PN-SCM.cont inside-ABL take-GCM.masc.sg
        'from inside **it** (container, i.e. basket) he took'

Then, one of the two bananas is referred to in line 19. The speaker uses a full noun in combination with a numeral here. This mention is unexpectedly specific, since a specific class marker would have been enough to disambiguate. The fact that this reference contrasts with the previous mention in number (one out of the two bananas) may explain the use of a full noun here:

19.   LIG   <u>*tsá-ʔo*</u>   <u>*úhi-ʔo*</u>
                <u>one-SCM.3D.oblong</u> <u>banana-SCM.3D.oblong</u>
                '<u>one</u> <u>banana</u>'

The banana is being referred to again in line 21. This time the pronominal sentence connector with a specific class marker is used. A specific class marker is used here since reference would have been ambiguous had a general class marker been used. Note that the semantics of *kápajɾó:ßέ* 'exchange' (which is the head of the genitive construction of which *á:ʔó* 'it (oblong)' is the dependent) does not contribute to disambiguating reference:

21. LIG <u>*á:-ʔó*</u>   *kápajɾó:ßé* = *ɯbáʔa* = *nékɯ*
     con-scm.3d.<u>oblong</u> exchange=maybe=tam=rec
     'and in exchange for <u>it</u> (oblong, i.e. the banana), I guess,'

In line 22, a fourth inanimate referent is introduced, a flashlight. A full noun that includes a specific class marker is used for this purpose:

22. LIG *píko-ínɯ-:bɛ*   *ádzi-ba*
     put-dir3-gcm.masc.sg flash-scm.3d
     'he went to put a flashlight'

After another explicit mention of the hat in line 24, the hat is referred to again with the connector pronoun in combination with a specific class marker in line 25:

24. LIG *a:-nɛ* *tsájhtɛ-:bé* = *nékɯ* **<u>tɛ:-nɛ</u>** **<u>gwatáhko-hi</u>**
     con-gcm.inan take-gcm.masc.sg=rec **<u>pn-gcm.inan</u>** **<u>cover.nmz-scm.2d.round</u>**
     'and he brought **<u>it</u>**, **<u>the hat</u>**'

25.   **<u>*á:-hi-má*</u>** = *nékɯ*   *pɛ-:bɛ*
     <u>con-scm.2d.round-soc</u>=rec go-gcm.masc.sg
     'and with **<u>it</u>** (round and flat, i.e. the hat), he left'

The speaker puts a lot of emphasis on the referent hat in line 24, by using a full noun in combination with a pronoun used as a thematic prompt in a situation where reference to the hat could have been made unambiguously with a pronominal expression that includes a specific class marker. This example thus also shows that the pattern of use for anaphoric expressions stated above can be overridden by other factors. The point to be made here is that the use of pronominal expressions that include specific class markers is an option for a Miraña speaker to disambiguate between several possible inanimate antecedents. This option is used throughout the example for reference to the basket, and at different points for reference to the other objects.

10.3.3. Anaphora in the context of same-class antecedents

In a situation where various potential antecedents belong to the same class, a pronominal expression that includes a specific class marker may not be explicit enough to disambiguate a referent. A speaker may then revert to the use of a full lexical noun, if reference is not disambiguated by any other means. The default pattern for the use of anaphoric expressions in such a situation is thus as follows:

When there are competing antecedents of the same specific noun class, a lexical noun is used for anaphoric reference.

The following examples illustrate this pattern. They are taken from retellings of the trunk clip. Unlike the banana clip, the trunk clip features a number of objects that are denoted by Miraña nouns that belong to the same specific class. Two of the nouns denoting objects in the film belong to the -*ba* (SCM.3D) - class: *ádzɨ-ba* (flash-SCM.3D) 'flashlight' and *mamámɨ(-ba)* (trunk(-SCM.3D)) 'trunk'. The latter noun is exceptional in that the class marker is optional on the noun. Three of the objects from the trunk clip are denoted by nouns that include the polysemous class marker -*ɯ* (SCM.3D.round/SCM.string) (see section 6.3.3, above): *kaʔpáj-ɯ* (bag-SCM.3D.round) 'bag', *dó:to-ɯ* (calabash-SCM.3D.round) 'calabash', and *gwáj:ba-ɯ* (hammock-SCM.string) 'string'. Bags can also be referred to by the synonymous noun *pahkó-ɯ* (bag-SCM.3D.round).

The following example (242) is taken from a retelling of the trunk clip. In the immediately preceding context, the speaker recounts how the actor took out a number of objects from the trunk (see Photo 1 in section 1.4.2). One of them is a calabash (lines 1 and 2). What has to be conveyed in the passage following this is that the actor takes a string out of the bag and ties it to the calabash. Thus, three objects that are denoted by nouns that belong to the - *ɯ* (SCM.3D.round/SCM.string) class have to be tracked: the string, the bag, and the calabash. These three inanimate referents are introduced in lines 2, 4, and 5, respectively. Each of these mentions includes a lexical noun. Note that the explicit mention of the bag in line 4 is preceded by an implicit mention of this referent in line 3 by a verb that can be translated as 'to be bagged'.[70]

(242)   [MACLISEV]

1.   *ihtʃíʑɛ́-tso-:bɛ*   *téʔdɯ-ɾɛ́=nɛkɯ*
     get_ out-CAUS-GCM.masc.sg also-REST=REC
     'he took out, also,'

2.   **ɛ:-nɛ**   *té-ʔbá*   *pajné-tɯ-ɾɛ*   **dó:to-ɯ**
     DIST-GCM.inan PN-SCM.cont inside-ABL-REST **calabash-SCM.3D.round**
     '**that**, from inside it (three-dimensional, i.e. trunk), **a calabash**'

---

[70] The sentence connector pronoun that includes the general inanimate class marker in line 3 does not appear to refer to any of the reference objects of the stimulus film, but to the situation as a whole, as is often the case with this pronoun. Note that in line 5 the same form is used to refer to the bag.

3.   *a:-né̜ = nɛkɯ*   *Ø* *kaʔpáj-úkɯnú-:bé̜*   *é̜ʔdɯ-rɛ*
    CON-GCM.inan=REC   bag-VBZ-GCM.masc.sg also-REST
    'and he had a bag on, also' (lit. he bagged (<u>it</u>))

4.   *i:*   <u>*í-kaʔpáj-ɯ*</u>
    and.SP <u>POS.3-bag-SCM.3D.round</u>
    'and <u>his bag</u>'

5.   <u>*á:-né̜*</u>   *pajné-tú ihtʃíʃé̜-tso-:bɛ*
    <u>CON-GCM.inan</u> inside-ABL get_out-CAUS-GCM.masc.sg
    'from inside <u>it</u> (i.e. the bag) he took out'

6.   **<u>tsa-ɯ</u>**   **<u>gwáj:ba-ú-gwɯ</u>**
    <u>one-SCM.3D.string</u> <u>hammock-SCM.3D.string-DIM</u>
    '**<u>one little string</u>**'

In the following, the direct continuation of this retelling of the trunk clip is given. In this passage, there are three alternating references to the calabash and the bag. The context does not otherwise disambiguate between reference to the bag or to the calabash. In such cases, lexical nouns are normally used. After referring to the last-mentioned string with a pronominal expression that includes a specific class marker in line 7, mentions to the bag and calabash are made by lexical nouns in lines 8, 9, and 11, as expected.

(242) [MACLISEV] (cont.)

7.   *< á-:nɛ-tɯ >*   **<u>á:-nɛ-ma</u>**   *doʔhí-nɯ-:bɛ*
    CON-GCM.inan-ABL **<u>CON-GCM.inan-SOC</u>** strap-make-GCM
    '<and from it> and with **<u>it</u>** (i.e. string) he strapped'

8.   **<u>tɛ:-ɯ</u>**   **<u>dó:to-ɯ</u>**
    <u>PN-SCM.3D.round</u> <u>calabash-SCM.3D.round</u>
    '**<u>it (round)</u>, <u>the calabash</u>**'

9.   *a:-nɛ átsiʔdú = nɛkɯ*   <u>*í-kaʔpáj-ú = né̜kɯ*</u>   *ɯáko-:bɛ*
    CON-GCM.inan then=REC <u>POS.3-bag=REC</u>   put_into-GCM.masc.sg
    'and, and then he put <u>his bag</u>'

10.   *tɛ:-nɛ*   *mamámí-ba pajné-ʃɯ*
    PN-GCM.inan trunk-SCM.3D inside-ADL
    'it, into the trunk'

11.   *a:-nɛ*   *úhkɯ-:bɛ*   **<u>tɛ:-ɯ</u>**   **<u>dó:to-ɯ</u>**
    CON-GCM.inan take-GCM.masc.sg **<u>PN-SCM.3D.round</u> <u>calabash-SCM.3D.round</u>**
    'and he took **<u>it</u>** (round), **<u>the calabash</u>**'

The following example (243) is from another Miraña account of the trunk clip. In the passage given in this example, two referents that belong to the *-ba* (SCM.3D) - class have to be tracked simultaneously: the trunk and two flashlights. The instance where the use of a full noun for unambiguous

reference to the trunk becomes necessary occurs in line 15. After giving the example as a whole, the relevant lines are repeated below.

(243) [MACLILIG]

1.   *tsi-ʔba*   *mí-ʔbá-:ku=nékɨ́ú=idé* *íhka-ʔbá-:ku-tu*
    <u>other-SCM.3D</u> two-SCM.3D-DL=REC=TAM COP-SCM.3D-DL-ABL
    '<u>the other</u> (three-dimensional, i.e. flashlight), of the two (three-dimensional, i.e. flashlights) that (three-dimensional, i.e. flashlights) were (there),'

2.   *píko-:bɛ*   *tsa-ʔba* **mamámí** *pajné-ßu*
    put-GCM.masc.sg <u>one-SCM.3D</u> **trunk**   inside-ADL
    he put <u>one</u> (three-dimensional, i.e. flashlight) in **the trunk**'

3.   *tsa-ʔba*   *tsájhtɛ-:bɛ*
    <u>one-SCM.3D</u> take-GCM.masc.sg
    'he took <u>one</u> (three-dimensional, i.e. flashlight)'

4.   *uáko-:bɛ*   *í-do:tó-ú*   *pajné-ßu*
    put_into-GCM.masc.sg POS.3-calabash-SCM.3D round inside-ADL
    'and he put inside his calabash'

5.   *á-na:*   *pɛ-:bɛ*
    CON-after go-GCM.masc.sg
    'and then he left'

6.   *<pɛ:>* *pɛ-:bé=nɛku*
    <go> go-GCM.masc.sg=REC
    'he left'

7.   *a:-nɛ́*   *dɛhú-ßú=nékɨ́ú*
    CON-GCM.inan down-ADL=REC
    'and after that'

8.   *dʒɛ:ʔógwa=nékɨu tsá:-ʔi*
    proper_name=REC come-PRD.FUT
    '*Dʒɛ:ʔógwa* came'

9.   *dʒɛ:ʔógwa* *peí-ɛ-dú-rɛ*   *tsá-:bɛ*   **tɛ-ʔbá** *paj:húkú-ʔi*
    proper_name same-PERT-COMP-REST come.SUB-GCM.masc.sg **PN-SCM.3D** open-PRD
    '*Dʒɛ:ʔógwa*, who also came, opened **it** (three-dimensional, i.e. trunk)'

10.   *paj:húkɨ-:bɛ*   **tɛ-ʔba**
    open-GCM.masc.sg **PN-SCM.3D**
    'he opened **it** (three-dimensional, i.e. trunk)'

11.   **tɛ-ʔbá**   *pajnɛ dúhúhko-:bɛ*
    PN-SCM.3D inside search-GCM.masc.sg
    'he looked inside **it** (three-dimensional, i.e. trunk)'

12.   *á:-na:* *ihtʃíßé-tso-:bɛ*   *ádzɨ-ba*
    CON-after get_out-CAUS-GCM.masc.sg <u>flash-SCM.3D</u>
    'and then he took out <u>a flashlight</u>'

13.   <u>*a-ʔba*</u>   *pɛí-ɛ-dú-ré*   *píko-:bɛ*
    <u>CON-SCM.3D</u> same-PERT-COMP-REST put-GCM.masc.sg
    'he put <u>it</u> (three-dimensional, i.e. flashlight) also'

14.   ***té-ʔbá***   *pajné-ɯ*
    PN-SCM.3D inside-ADL
    in **it** (three-dimensional, i.e. trunk)'

15.   ***mamámí*** *pajné-ɯ́*   Ø *píko-ínɯ-:bɛ*
    trunk   inside-ADL   put-DIR3-GCM.masc.sg
    'inside **the trunk** he put <u>(it)</u> (and left)'

The trunk is mentioned with a lexical noun in line 2 of example 243, surrounded by anaphoric mentions to the flashlights (recall that the class marker *-ba* (SCM.3D) is optional on the noun that denotes the trunk:

1.   <u>*tsi-ʔba*</u>   *mí-ʔbá-:kɯ=nékɯ́=idɛ́* *íhka-ʔbá-:kɯ-tɯ*
    <u>other-SCM.3D</u> two-SCM.3D-DL=REC=TAM COP-SCM.3D-DL-ABL
    '<u>the other</u> (three-dimensional, i.e. flashlight), of the two (three-dimensional, i.e. flashlights) that (three-dimensional, i.e. flashlights) were (there),'

2.   *píko-:bɛ*   <u>*tsa-ʔba*</u>   ***mamámí*** *pajné-ßɯ*
    put-GCM.masc.sg <u>one-SCM.3D</u> **trunk**   inside-ADL
    he put <u>one</u> (three-dimensional, i.e. flashlight) in **the trunk**'

3.   <u>*tsa-ʔba*</u>   *tsájhtɛ-:bɛ*
    <u>one-SCM.3D</u> take-GCM.masc.sg
    'he took <u>one</u> (three-dimensional, i.e. flashlight)'

Note that reference to one of the flashlights in line 3 is unexpectedly unspecific, allowing in principle for ambiguity between the flashlight and the trunk (since this expression refers to a different flashlight, it is in fact a case of non-identity anaphora, see section 10.4.2, below). Presumably the semantics of the verb *tsájhtɛ-* 'take' and the parallelisms to the mention of the other flashlight with the same expression in line 2 are explicit enough for a correct identification of the referent here. The next mentions of the trunk are in line 9, 10, and 11. Here, the speaker uses a pronominal expression in combination with a specific class marker:

9.   *dʒe:ʔógwa* *pɛí-ɛ-dɯ-rɛ*   *tsá-:bɛ*   ***tɛ-ʔbá***   *paj:húkɯ́-ʔi*
    proper_name same-PERT-COMP-REST come.SUB-GCM.masc.sg **PN-SCM.3D** open-PRD
    '*Dʒe:ʔógwa*, who also came, opened **it** (three-dimensional, i.e. trunk)'

10.   *paj:húkɯ-:bɛ*   ***tɛ-ʔba***
    open-GCM.masc.sg **PN-SCM.3D**
    'he opened **it** (three-dimensional, i.e. trunk)'

11.   ***tɛ-ʔbá***   *pajnɛ dúhúhko-:bɛ*
    PN-SCM.3D inside search-GCM.masc.sg
    'he looked inside **it** (three-dimensional, i.e. trunk)'

The speaker seems to assume that the context is explicit enough to disambiguate between the two possible antecedents of this expression, the flashlight and the trunk. However, another Miraña speaker, who was helping to transcribe and translate this passage from a recording, could not tell at first whether the flashlight or the trunk was the intended referent. This indicates that ambiguity can in fact arise if an anaphoric expression is used that is not explicit enough.

In the continuation of this retelling of the trunk clip, the flashlight needs to be referred to again. Now the speaker uses an unambiguous lexical noun (line 12, repeated below). The flashlight is referred to once more in the following line 13, before the trunk receives another mention. In line 14, the speaker again uses a potentially ambiguous pronominal expression in combination with a specific class marker to refer to the trunk, but in the following line 15, she makes her reference more explicit by repeating the structure from line 14, but inserting the lexical noun denoting the flashlight instead of the pronominal expression:

12. *á:-na: ihtʃíßé-tso-:bɛ*   *ádzɨ-ba*
    CON-after get_out-CAUS-GCM.masc.sg <u>flash-SCM.3D</u>
    'and then he took out <u>a flashlight</u>'

13. *a-ʔba*   *pɛí-ɛ-dú-rɛ́*   *píko-:bɛ*
    <u>CON-SCM.3D</u> same-PERT-COMP-REST put-GCM.masc.sg
    'he put <u>it</u> (three-dimensional, i.e. flashlight) also'

14. **té-ʔbá**   *pajné-ɯ*
    PN-SCM.3D inside-ADL
    in **it** (three-dimensional, i.e. trunk)'

15. **mamámí** *pajné-ɨ́*   Ø   *píko-ínɯ-:bɛ*
    trunk   inside-ADL   put-DIR3-GCM.masc.sg
    'inside **the trunk** he put <u>(it)</u> (and left)'

10.3.4. Summary

In the previous sections it was shown that Miraña speakers can use pronominal expressions that include specific class markers for unambiguous reference in situations where various inanimate referents have to be tracked simultaneously (section 10.3.2). In such a situation, the full functional potential of the Miraña noun class system for reference tracking can be observed. Situations where two inanimate referents that belong to the same class have to be simultaneously tracked are rare in natural speech. If two inanimate referents occur, it is very likely that they belong to different specific classes, given their high number. Therefore a stimulus film was designed specifically to observe the use of

anaphoric expressions in such a situation. Section 10.3.3 showed that Miraña speakers may revert to the use of full nouns in such a situation.

10.4. NON-IDENTITY ANAPHORA AND INDIRECT ANAPHORA

10.4.1. Introduction

The preceding sections focused on anaphoric expressions that have explicit antecedents with which they are in a strictly coreferential relation. These anaphoric relations can be called identity-anaphora. This section deals with two types of anaphoric expressions which rely on contextual information for a correct interpretation, but which are not strictly speaking coreferential with an antecedent. Section 10.4.2 discusses non-identity anaphora. Cases of non-identity anaphora are expressions that refer to an entity that is of the same type as the referent of the antecedent, but a different token of it. In section 10.4.3, the role of class markers in indirect anaphora is dealt with. In this use, the anaphoric expression under consideration has no explicit antecedent at all, but its correct interpretation depends on contextual cues. An indirect anaphora may, for instance, refer to a part of a referent of an antecedent noun phrase.

Indirect anaphora and non-identity anaphora are anaphoric phenomena in the sense that the expressions involved in these kinds of anaphoric relations lack independent reference and depend on the context for a correct interpretation, although they are not in a strict coreferential relation with an explicit antecedent. In both of the types of anaphoric uses discussed in the following sections, class markers play as equally an important role as in strictly coreferential identity-anaphora.

10.4.2. Non-identity anaphora

In non-identity anaphora, the anaphoric expression refers to a different token of the same type as the referent of the antecedent.[71] In this sense, non-identity anaphora relies on an antecedent for a correct interpretation, but what is tracked in this case is the identity of types, not of tokens. In Miraña, pronominal

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[71] The relation of non-identity anaphora has also been termed "sloppy anaphora" (e.g. Huang 2000: 133). A special case of non-identity anaphora are so-called "paycheck anaphora", after a famous example first given by Kartunnen (1969): *The man who gave his paycheck to his wife was wiser than the one who gave it to his mistress*. In this example, *it* refers to a different token of the same type as its antecedent *paycheck*.

expressions that include specific class markers often fulfill the function of non-identity anaphora. In these cases, the class marker typically denotes the type of entity—and thus establishes the anaphoric link—while the root to which it attaches typically expresses that the referent is a different token of this type. For instance, the root *tsi-* 'other' can be used for this purpose.

The following example (244) comes from a retelling of the trunk clip, in which two flashlights occur. In line 1 of example 244, the speaker introduces one flashlight as a new referent. This flashlight is mentioned again in line 2. In line 3, the speaker refers to another flashlight. The root *tsi-* 'other' is combined with the specific class marker *-ba* (SCM.3D) to establish the (non-identity) anaphoric link to the mention of the first flashlight.

(244)   [MACLISEV]

1.   *ṭuhké   ihtʃíẞé-tso-:bɛ*   **ádzi-ba**
        beginning get_out-CAUS-GCM.masc.sg **flash-SCM.3D**
        'first he took out **a flashlight**'

2.   *i   núhtsó-ró-na:*   *Ø tsáʔa tsáʔá=ɯbáʔa* **tɛ:-nɛ**   *pájné-ẞa-tú-nɛ*
        3S.SUB try_out.SUB-FRUS-after   NEG NEG=TAM   **PN-GCM.inan** inside-VBZ2-NEG-GCM.inan
        'after he tried (**it**) out (in vane), no, **it** (i.e. flashlight) was not charged (i.e. with batteries)'

3.   *á:-nɛ-tɯ*   **tsi-ʔba**   *ihtʃíẞé-tso-:bɛ*
        CON-GCM.inan-ABL **other-SCM.3D** get_out-CAUS-GCM.masc.sg
        'and then, he took out **another** (three-dimensional, i.e. flashlight)'

The next example (245) comes from a retelling of the banana clip, which features several bananas. Example 245 shows that pronominal expressions with specific class markers have the potential to establish non-identity anaphoric links over longer stretches of discourse, even when other referents intervene. The speaker introduces a banana as a new referent in line 2. The noun denoting bananas is formed with the specific class marker *-ʔo* (SCM.3D.oblong). In the following, two more inanimate referents are introduced: a hat (line 4) and a flashlight (line 6). Note that these referents are denoted by nouns that belong to different specific noun classes, *-hɨ* (SCM.2D.round) and *-ba* (-SCM.3D), respectively. In line 9, the speaker refers to another banana. The root *tsi-* 'other' in combination with the specific class marker *-ʔo* (SCM.3D.oblong) is sufficient to establish correct reference to the other banana, even though other inanimate referents intervene between this anaphoric mention and the antecedent in line 2. In line 10, the reference to the second banana is made more explicit, by combining the class marker *-ʔo* (SCM.3D.oblong) with other nominal stems. Note that in these expressions the lexical noun denoting bananas is likewise not used.

CHAPTER 10

(245) [BACIFAV]

1.   *a:-nɛ*   *gwáhtsi-:bɛ*   *ihtʃíʃɛ-tsó-ʔi*
     CON-GCM.inan arrive.SUB-GCM.masc.sg get_out-CAUS-PRD
     'And, the one who arrived, took out'

2.   *i*   *í:tɛ́kú-na: máhtʃo-:bɛ*   **tsa-ʔo**   **úhi-ʔo**
     3S.SUB peel-after   eat-GCM.masc.sg **one-SCM.3D.oblong banana-SCM.3D.oblong**
     'after peeling, he ate **one banana**'

3.   *i:*   **tɛ:-nɛ**   *i*   *máhtʃó-tsi:tu*
     and.SP **PN-GCM.inan** 3S.SUB eat-after
     'and, after eating **it**,'

4.   *ihtʃíʃɛ́-tso-:bɛ*   <u>*tɛ:-nɛ*   *gwatáhko-hɨ*</u>
     get_out-CAUS-GCM.masc.sg <u>PN-GCM.inan cover-SCM.2D.round</u>
     'he took out that hat,'

5.   *píká-mɛí-:bɛ*   <u>Ø</u>
     put-RFLX-GCM.masc.sg
     'he put (<u>it</u>) on.'

6.   *á:-nɛ-ma*   *píko:-ínu-:bɛ*   <u>*tɛ:-nɛ*   *í-adzí-bá*</u>
     CON-GCM.inan-with put-DIR4-GCM.masc.sg <u>PN-GCM.inan POS.3-flash-SCM.3D</u>
     'and then he put **it** down, <u>his flashlight</u>'

7.   *á:-nɛ-má=iʔ*   *pɛ-:bɛ*
     CON-GCM.inan-with=TAM go-GCM.masc.sg
     'and then he left'

8.   *a:-né=htané*   *tsi-:nɛ*   *gwáródʒi:ʔo ihtʃíʃɛ-:bɛ*   *tsá:-ʔi*
     CON-GCM.inan=TAM other-GCM.inan proper_name get_out-GCM.masc.sg come-PRD
     'and then again, *gwáródʒi:ʔo*, who appeared, came'

9.   *í:tɛ-:bé*   **tsi-:ʔo**   *úhku-:bɛ*
     see-GCM.masc.sg **other-SCM.3D.oblong** take-GCM.masc.sg
     'he looked, he took **another** (oblong, i.e. banana),'

10. **tsá-ʔo**   **niʔné-ɛ-ʔó-rɛ**
     one-SCM.3D.oblong last-PERT-SCM.3D.oblong-REST
     '**one** (oblong, i.e. banana), just **the last one** (oblong, i.e. banana)'

The following example (246) contains a number of instances of non-identity anaphora. It is an excerpt from an account of how a *maloka*, a traditional North West Amazonian roundhouse, is built. The construction of such a house involves a number of beams that hold up the roof. The beams are introduced as a new referent in line 1 of the example with the lexical noun denoting beams (*a:ko*). This noun belongs to the specific class *-ko* (SCM.1D.pointed), even though the class marker does not appear as a segmentable form on that noun.[72]

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[72] This noun is an obligatorily classified noun, which could be the lexical origin of the class marker. It is not a repeater noun, since its meaning is more restricted than that of

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In lines 2 -5, the different individual beams are referred to by class markers that combine with different kinds of expressions: the noun in line 2, relative clauses in lines 2, 3, and 4, and finally, a numeral in line 5.

(246) [MLK]

1.　*mɛ́　pikó:-ʔi í-ka:mɛ́-gwá:nɛ-ɯ*　　　*pɛ́-i-nɛ*　　　***á:ko-:nɛ***
　　1/2PL put-PRD POS.3-long-RP.gable-ADL go-FUT-GCM.inan **beam-PL**
　　'one puts, where the long gable is going to go, the beams'

2.　***pí:nɛ́-ɛ-ko***　　　　　　　*a-:nɛ*　　　　*úníɯ-tɯ* ***íhka-ko***
　　middle-PERT-SCM.1D.pointed CON-GCM.inan edge-ABL **COP-SCM.1D.pointed**
　　'**The middle one** (pointed, i.e. beam). And there is **one** (pointed, i.e. beam) at its side,'

3.　*a:-nɛ́*　　　***úníɯ-tɯ íhka-ko***　　　　*tsi-:nɛ*
　　CON-GCM.inan **edge-ABL COP-SCM.1D.pointed** other-GCM.inan
　　'And there is **one** (pointed, i.e. beam) at its side, again

4.　*niʔnɛ́-ɾɛ́* ***í-úníɯ-tɯ***　　　***íhka-ko***
　　last-REST **POS.3-edge-ABL COP-SCM.1D.pointed**
　　'finally, there is **one** (pointed, i.e. beam) at its side'

5.　***tsáʔohtsí-ko-βa***　　　*í-ka:mɛ́-gwá:nɛ*
　　five-SCM.1D.pointed-PL POS.3-long-RP.gable
　　'**five** (pointed, i.e. beams) (are on) its long gable'

10.4.3. Indirect anaphora

The term "indirect anaphora" (e.g. Erkü and Gundel 1987) is used here to cover phenomena that have been discussed in the literature under the headings "bridging" (Clark 1977) and "associative anaphora" (Hawkins 1978: 123ff.). Referents of indirect anaphora have also been called "anchored" referents (Prince 1981: 236f.; see also Lambrecht 1994: 85ff.). Indirect anaphoric items receive a correct interpretation in a given discourse context via contextual cues, but—unlike "direct anaphora"—indirect anaphoric items are not strictly coreferential with an antecedent. For instance, an indirect anaphor may refer to a part of the referent of a noun phrase in the preceding discourse. An indirect anaphor may also refer to an entity that belongs to a "scenario" (Garrod and Sanford 1981: 110ff.) invoked by the preceding discourse. The information that an indirect anaphor relies on may also be given by the extralinguistic context, e.g., when a referent is present in the speech situation.

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the class marker (see section 3.4). The noun *a:ko* can only refer to beams used in the construction of houses, while the related class marker *-ko* can refer to any two-dimensional and pointed object.

The literature on indirect anaphora has focused on the use of definite noun phrases for the introduction of anchored referents, e.g. *the driver* in the English sentence *I got on the bus. The driver was friendly*. The newly introduced referent driver is referred to with a definite noun phrase here because a driver is associated with the scenario that is evoked by the previous mention of a bus. But new referents can also be referred to with pronouns given sufficiently explicit contextual information, e.g. *she* and *he* in *I saw a wedding yesterday where she was dressed in pink and he wore purple*. In Miraña discourse, pronominal expressions that include specific class markers play an important role in introducing new referents that are anchored in the previous discourse or speech situation. Repeaters are also used in this function.

Anchored referents often correspond to a part of a referent that has been mentioned in the preceding context. In the following example (247), taken from a retelling of the banana clip, the peel of the banana is introduced as a referent in the second line with a pronominal expression that includes a repeater used in the class marker slot of a third person pronoun. This is an indirect anaphor with respect to the banana, of which the peel is a part, which is last mentioned in the first line of example 247.

(247) [BACLILIG]

> *mɯ-:bɛ́=nɛkɯ   tɛ:-ʔo   í   dʒɛ́:nɛ́-na:*
> who-GCM.masc.sg=REC PN-SCM.3D.oblong 3S.SUB eat_fruit-after
> 'and this guy, after eating it (oblong, i.e. banana),'

> *kiá-ɯ́   **tɛ́-mi:ʔɛ́**   pikó-hɯ*
> where-ADL   **PN-RP.skin**   put-INTER
> 'where did he leave **it** (skin, i.e. peel)?'

The following example (248) is taken from the text about the making of a blowgun (*tódʒi:-hɯ* (blowgun-SCM.tube) 'blowgun'), which was cited in example 227 in section 9.3.1, above. The referent of the pronominal expression used as an indirect anaphor in line 3 of example 248 is a part of the blowgun, namely its hole. Recall from example 227, above, the blowgun was explicitly mentioned at the beginning of the text and is then tracked with different pronominal expressions. Note that the speaker puts special emphasis on the referent hole by using a pronoun as a thematic prompt before the pronominal expression that refers to the hole.[73]

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[73] Note also that the blowgun as a whole cannot be referred to with an expression including -*pa:hɨ* (SCM.hole), but only -*hɯ* (SCM.tube), since this is the class marker that the noun *tódʒi:-hɯ* (blowgun-SCM.tube) 'blowgun' includes.

(248) [CERB]

1.   *a:-nɛ*   *mɛ*   *ɛ́:ßɛ́-tsi:tu*   *tsiʔdɩ́kánɛ-rɩ́*
    CON-GCM.inan 1/2PL.SUB measure-after something-INST
    'and after measuring, with something'

2.   *o:*   *pɩdóhó-gwa-dɩ́:ßá-nɛ-ri*
    or.SP knife-SCM.2D.straight-for_example-GCM.inan-INST
    'or for example with a knife'

3.   **tɛ:-nɛ**   **té-pa:hɩ**   *mɛ́*   *kádʒórɩkú-ʔi*
    PN-GCM.inan PN-SCM.hole 1/2PL scrape-PRD
    'one scrapes **it**, **the hole**'

The following example (249) comes from the recording of an event in which two women are preparing *tucupí*, a hot sauce or soup. After being asked what they are putting into it, one of them (AND) replies *di:* 'chili' in line 1. This is an unclassified noun, which is non-countable and denotes chili as a substance or an unspecified number of objects related to chili (see section 8.3.2, above). In lines 2 - 4, the other woman (LIG) asks whether it was true that the *tucupí* sauce would become hotter if the chili peppers were ground before putting them into the sauce. The peppers are being referred to with a relative clause that includes the specific class marker *-ɯ* (SCM.3D.round) in line 4. This is a case of indirect anaphora since in the previous mention of chili in line 1, no particular instantiation of chili was specified. However, the mention of chili as a substance, in addition to the general context (talking about *tucupí* sauce) and the semantics of the verb 'grind' are sufficient information for an interpretation of the class marker *-ɯ* (SCM.3D.round) as referring to chili peppers.

(249) [TUC]

1.   AND   *a: di:*
              ITJ chili
              'well, chili'

2.   LIG   *ikáʔha mɛ́ʔɛ*
              right? my_aunt
              'is it right, aunt,

3.   *ɛʔdu íhka-nɛ*   *mɯ-ʔdɯ*   *iʔníʔó ajßɛ́-ʔi*   *tédɯɾɛ*
    also   COP-GCM.inan what-COMP strong hurt-PRD also
    'it is also (like that), that it is really hot (lit it hurts)'

4.   **mɛ**   **tátsóʔko-ú-ʔhɩ́**   *mɛ́*   *píko:-nɛ*
    1/2PL.SUB grind-SCM.3D.round-PL 1/2PL put-GCM.inan
    '(when) one puts (inside) **ones** (round, i.e. chili peppers) that one grinds?'

Polysyllabic class markers such as *-pa:hɩ* (SCM.hole) and repeaters such as *-mɩ:ʔɛ* (RP.skin) are often used independently of noun roots, in pronominal

expressions such as the ones cited in examples 248 and 247. Although they can be suffixed to noun roots to derive nouns denoting parts of what is denoted by the noun root, they are never conventionally associated with any particular noun (see section 7.3.2). Thus a common use of polysyllabic class markers with very specific meanings is that of introducing anchored referents, for instance particularly shaped subparts of assembled objects. Two such instances occur in the following example (250), which is taken from an explanation of how a fish trap is made. This trap consists of a barrage woven from palm leaves that is placed in creeks. In line 1, this fish trap is mentioned with a lexical noun. In line 2, two specifically shaped subparts of this trap are referred to with pronominal expressions that include polysyllabic specific class markers.

(250) [TGW]

1.   *pájkɛ́:-hɯ-gwa*   *mɯ́ɯ́nɛkɛ íhka-dɯ*
        trap-SCM.tube-SCM.2D.straight well   COP-COMP
        'Like the *pájkɛ́:hɯgwa*-trap, well, (it) is like'

2.   *ídʒɯ*   **tsá-ʔdaʔi**   **tsá-hpi:rígwá**   *ídʒɯ*
        this_way **one-SCM.piece one-SCM.small.ridge** this_way
        'like this, **one (piece)**, **one (small-ridged piece)**, like this,'

10.4.4. Summary

This section showed how pronominal expressions that include specific class markers can be used to establish reference independent of an explicit antecedent noun phrase with which they would be in a strictly coreferential relation. Two such cases were distinguished: non-identity anaphora, where pronominal expressions refer to a different token of the same type as the referent of an antecedent, and indirect anaphora, where the reference of a pronominal expression is resolved by contextual cues other than an explicit antecedent. In both cases, the use of specific class markers in pronominal expressions can be a sufficient device to correctly identify a referent.

10.5. ANAPHORA IN EXTENDED DISCOURSE

This section shows that Miraña class markers can pick up anaphoric reference over longer stretches of discourse, in particular when this reference is further supported by contextual cues. This is illustrated with an example containing passages from a recording in which one speaker tells another about a nocturnal hunting trip that he undertook together with a companion. Storytelling of this kind is a common practice among men in the evening hours. Slight to extreme exaggeration of events is not only accepted but expected in such an account. There are some recurring referents in a hunting story, among them rifles and

cartridges of ammunition. These are the referents that are tracked in the excerpts given in example 251. The example is first given as a whole, and then the relevant lines are repeated in the following discussion. Expressions referring to the rifle are underlined, expressions referring to the cartridges are boldface.

(251) [PU]

1.   *aː-nɛ*   *ó ajhtúmí-ʔi píːné-ʔi-rí-hukó*   *péː-bɛ-kɛ*
    CON-GCM.inan 1S see-PRD   middle-SCM.river-LOC-PF go-GCM.masc.sg-ACC
    'And I saw it (i.e. a tapir) already going in the middle of the river.'

2.   <u>*tɛː-nɛ*</u>   <u>*táj-ajnú-hú*</u>   *o*   *úhkú-naː díː-bɛ-kɛ*   *ó ajnú-ʔi*
    <u>PN-GCM.inan</u> <u>POS.1S-shoot.NMZ-SCM.tube</u> 1S.SUB take-after   PN-GCM.masc.sg-ACC 1S   shoot-PRD
    'After taking <u>it</u>, <u>my rifle</u>, I shot it.'

3.   *ó ájnu-rá-ʔi*   *ájnu-rá-ʔi*
    1S shoot-FRUS-PRD shoot-FRUS-PRD
    'I shot (in vain), I shot (in vain)')

4.   *ihtʃíːβɛ-ínu-ːbɛ*   *ɛdʒé-βú-huko tɛː-nɛ*
    get_out-DIR4-GCM.masc.sg there-ADL-PF   PN-GCM.inan
    'and it (i.e. the tapir) went out, to over there'

5.   *í-ʔhúːβá-kóba-rí-huko*   *ɛdʒé-βú-huko*
    POS.3-path-AUG-LOC-PF   there-ADL-PF
    'on its huge path, to over there'

6.   *ɛdʒé-βú-huko*
    there-ADL-PF
    'to over there'

7.   *díː-bɛ*   *húːdá-kɛ*   *o néː-ʔi máho mɛ-péː-ki*
    PN-GCM.masc.sg proper_name-ACC 1S say-PRD let's_go IMP.PL-go-PURP
    'I said to *húːda*: 'Okay, let's go'

8.   *diː-bɛ*   *ókáhi déhu-tu o néː-ʔi*
    PN-GCM.masc.sg tapir   behind-ABL 1S say-PRD
    'after the tapir, I said'

9.   *ɯːhu oː-kɛ* **tsíː-ɯ-βɯ**   **anjɯ-ɯ-βɯ**   *d-áːkɯ*
    OK   1S-ACC **other-SCM.3D.round-ADL shoot.NMZ-SCM.3D.round-ADL** IMP.SG-give
    'Okay, give me **another** (round, i.e. cartridge), **a cartridge** (he said)'

[one and a half minutes skipped]

10.   *aː-nɛ*   *díː-bɛ-ké*   *o néː-ʔi*
    CON-GCM.inan PN-GCM.masc.sg-ACC 1S say-PRD
    'And I said to it (i.e. the tapir)'

11.   *ɛdʒé-ú*   *ímí-nɛ = úßú*   *d-ájʔnu*
    there-ADL good-GCM.inan=TAM IMP.SG-shoot
    'shoot it (i.e. the tapir) right there'

12.   *tsá-ihú-rí*   *mú:nɛkɛ* **tsá-ú-ʔgwɯɯú-ré**= *huko*   *né:bo-ne*
       one-TEMP-LOC well   **one-SCM.3D.round-DIM-REST**=PF explode-GCM.inan
       'For once, well, just **one little one** (round, i.e. cartridge) should go off'

13.   **né:bo-ú-gwúɯú**= *ʔahtʃí:hú*   *ihk-áʔi*
       explode-SCM.3D.round-DIM=maybe COP-PRD
       'There is a little **one** (round, i.e. cartridge) that maybe goes off'

[one minute skipped]

14.   *a:-nɛ*   *nɛ-:bé*   *o:-kɛ*
       CON-GCM.inan say-GCM.masc.sg 1S-ACC
       'And he said to me'

15.   *máho* **tsi-:ɯ**   *mɛ*   *ájnu-ki*
       let's_go **other-SCM.3D.round** 1/2PL.SUB shoot-PURP
       'Okay, let's shoot **another one** (round, i.e. cartridge)'

16.   *dí-:bɛ-kɛ*   *mɛ*   *dzɨhi-ßé-tso-ki*   *nɛ-:bɛ*
       PN-GCM.masc.sg-ACC 1/2PL.SUB death-VBZ2-CAUS-PURP say-GCM.masc.sg
       'in order to kill him, he said'

17.   *ɯhɯ o né:-ʔi*
       OK 1S say-PRD
       'Okay, I said'

18.   *a:-nɛ*   **tsi:-ɯ**   *í*   **píkó:-ɯ**-*ɾi*   *ɛ:-nɛ*
       CON-GCM.inan **other-SCM.3D.round** 3S.SUB **put-SCM.3D.round**-INST DIST-GCM.inan
       'And with **another one** (round, i.e. cartridge) **one** (round, i.e. cartridge) that he put,'

19.   *ájnú-ɾo-:bɛ*   *tsáʔa* <u>*te:-hu*</u>   *né:bo-tú-ne*
       shoot-FRUS-GCM.masc.sg NEG   <u>PN-SCM.tube</u> explode-NEG-GCM.inan
       'he shot (in vain). No, <u>it</u> (tubular, i.e. rifle) did not go off.'

20.   *a:* **tsi:-ú**= *ɯbáʔa*   *né-:bɛ-ré*= *ʔá*= *pɛ:*   *ájnu-ɾá-ʔi*
       ITJ **other-SCM.3D.round**=maybe say-GCM.masc.sg-REST=TAM=PAS shoot-FRUS-PRD
       'Ah, **another one** (round, i.e. cartridge), I guess, he said, (and) shot (in vain)'

21.   *ɛ: téʔdɯɾɛ tsáʔa* <u>*te-:hɯ*</u>   *né:bo-tú-né*= *pɛ*
       yes also   NEG <u>PN-SCM.tube</u> explode-NEG-GCM.inan=PAS
       'Yes, also, <u>it</u> (tubular, i.e. rifle) did not go off'

The rifle is explicitly mentioned in line 2 of example 251. The noun that denotes the rifle is formed with the nominalized verb *ajnú* (shoot.NMZ) 'shooting' and the class marker -*hu* (SCM.tube). This verb appears also as the last word in line 2:

1.   *a:-nɛ*   *ó ajhtúmí-ʔi pí:né-ʔi-rí-hukó*   *pé-:bɛ-kɛ*
       CON-GCM.inan 1S see-PRD   middle-SCM.river-LOC-PF go-GCM.masc.sg-ACC
       'And I saw it (i.e. a tapir) already going in the middle of the river.'

2. <u>tɛ:-nɛ</u>   <u>táj-ajnú-húú</u>   o   úhkɯ-na: dí-:bɛ-kɛ   ó ajnú-ʔi
    <u>PN-GCM.inan</u> <u>POS.1S-shoot.NMZ-SCM.tube</u> 1S.SUB take-after   PN-GCM.masc.sg-ACC 1S shoot-PRD
    'After taking <u>it</u>, <u>my rifle</u>, I shot it.'

3. ó ájnɯ-rá-ʔi   ájnɯ-rá-ʔi
    1S shoot-FRUS-PRD shoot-FRUS-PRD
    'I shot (in vain), I shot (in vain)')

At this point of the story, the speaker and his companion have been following a tapir and the speaker tries to shoot it for the first time. But he does not manage to kill it. This is expressed by the frustrative markers in the verbs in line 3. The tapir thus escapes. In line 9, the companion asks the speaker for another cartridge. The speaker refers to the cartridge with a noun (which is also formed with the nominalized verb *ajnú* (shoot.NMZ) 'shooting') in addition to a pronominal expression that includes the specific class marker *-ɯ* (SCM.3D.round):

9. ɯ:hɯɯ o:-kɛ   **tsí:-ɯ-βɯ**   **anjú-ɯ-βɯ**   d-á:kɯ
    OK   1S-ACC **other-SCM.3D.round-ADL** **shoot.NMZ-SCM.3D.round-ADL** IMP.SG-give
    'Okay, give me **another** (round, i.e. cartridge), **a cartridge** (he said)'

From this point on, the rifle and different cartridges are referred to by pronominal expressions that include specific class markers. A longer stretch of discourse that follows, in which the rifle and cartridge are not mentioned, is skipped in the example. In it, the speaker relates how the two hunters have found the tapir again. At the point of the text given in lines 12, they are ready to make another attempt at shooting it. In lines 12 and 13 the speaker refers to the cartridge again, hoping that it would go off this time. Reference is established by a specific class marker in combination with a numeral (line 12) and a relative clause (line 13), both of which include the specific class marker *-ɯ* (SCM.3D.round):

12. tsá-ihúú-rí   mú:nɛkɛ **tsá-ú-ʔgwɯɯú-rɛ́** = huuko   né:bo-nɛ
    one-TEMP-LOC well   **one-SCM.3D.round-DIM-REST**=PF explode-GCM.inan
    'For once, well, just **one little one** (round, i.e. cartridge) should go off'

13. **né:bo-ú-gwɯɯú** = ʔahtʃí:húú   ihk-áʔi
    explode-SCM.3D.round-DIM=maybe COP-PRD
    'There is a little **one** (round, i.e. cartridge) that maybe goes off'

After another stretch of discourse with no mentions of the rifle and cartridge (skipped here), the two hunters are still trying to shoot the tapir. Another cartridge is mentioned in lines 15 and 18 with a specific class marker in combination with *tsi-* 'other'. This is an instance of non-identity anaphora:

15.   *máho*   **tsi-:ɯ**   *mɛ*   *ájnɯ-ki*
              let's_go **other-SCM.3D.round** 1/2PL.SUB shoot-PURP
              'Okay, let's shoot **another one** (round, i.e. cartridge)'

18.   *a:-nɛ*   **tsi:-ɯ**   *í*   **píkó:-ɯ**-*ɾi*   *ɛ:-nɛ*
              CON-GCM.inan **other-SCM.3D.round** 3S.SUB **put-SCM.3D.round**-INST DIST-GCM.inan
              'And with **another one** (round, i.e. cartridge) **one** (round, i.e. cartridge) that he had put,'

In what immediately follows (line 19), the rifle is mentioned again. This time, the rifle is held responsible for not going off. The rifle is mentioned with the specific class marker *-hɯ* (SCM.tube) in combination with *tɛ:-* (PN). Note that a pronominal expression in combination with a specific class marker is enough to establish reference to the rifle at this point, despite that fact that since the last explicit mention of the rifle several minutes have already past, and in the immediately preceding context, another inanimate referent has been mentioned (a cartridge):

19.   *ájnú-ɾo-:bɛ*   *tsáʔa* <u>*tɛ:-hɯ*</u>   *né:bo-tú-nɛ*
              shoot-FRUS-GCM.masc.sg NEG   <u>PN-SCM.tube</u> explode-NEG-GCM.inan
              'he shot (in vain). No, <u>it</u> (tubular, i.e. rifle) did not go off.'

The following line (20) contains another non-identity anaphor. Another cartridge is mentioned with a specific class marker in combination with the root *tsi-* 'other'.

20.   *a:* **tsi:-ɯ́** = *ɯbáʔa*   *né-:bɛ-ɾé* = *ʔá* = *pɛ:*   *ájnɯ-ɾá-ʔi*
              ITJ **other-SCM.3D.round**=maybe say-GCM.masc.sg-REST=TAM=PAS shoot-FRUS-PRD
              'Ah, **another one** (round, i.e. cartridge), I guess, he said, (and) shot (in vain)'

Finally, the rifle is mentioned once more, again in a pronominal expression in combination with a specific class marker in line 21.

21.   *ɛ: téʔdɯɾɛ tsáʔa* <u>*tɛ-:hɯ*</u>   *né:bo-tú-né* = *pɛ*
              yes also   NEG <u>PN-SCM.tube</u> explode-NEG-GCM.inan=PAS
              'Yes, also, <u>it</u> (tubular, i.e. rifle) did not go off'

Both of the referents under consideration—the rifle and the cartridge—have been explicitly mentioned once in the excerpts given in example 251. However, the general context of a hunting story seems to be an equally important factor for correct anaphor resolution in example 251. In the description of a shooting event, pronouns that include *-hɯ* (SCM.tube) are naturally interpreted as referring to a rifle (*ajnú-hɯ*), and pronouns that include *-ɯ* (SCM.3D.round) as referring to a cartridge (*ajnú-ɯ*). What this example shows is that the system of nominal classification allows a Miraña speaker to use pronominal expressions to simultaneously track several inanimate referents across long stretches of discourse without having to revert to the use of full nouns.

10.6. SUMMARY AND DISCUSSION

In the previous sections, the anaphoric uses of class markers were analyzed. Specific class markers were shown to be an important component of the reference-tracking system of Miraña. While the use of specific class markers in anaphoric pronouns is not obligatory from a syntactic point of view (they can be replaced by general class markers), their use appears to be highly preferred under specifiable conditions at the discourse level, e.g., for disambiguation and across longer stretches of discourse.

Specific class markers are used in pronominal expressions for subsequent mentions (step-down in semantic specificity from a lexical noun) and for final mentions (step-up from a pronominal expression that includes a general class marker) in a sequence. The fact that this step-up can be signaled by pronominal expressions shows that it is not a distinction of morphosyntactic categories (noun vs. pronoun) that underlies this pattern (as the analysis of anaphora in languages such as English may suggest), but that the crucial characteristic of the expressions involved in this pattern is their relative semantic specificity.

Given that specific class markers impose a fine-grained classification on the nominal lexicon, they can be used in the context of competing different-class antecedents for disambiguation. Their relatively detailed semantic content also allows for the use of pronominal expressions that include specific class markers to introduce new referents in non-identity anaphora and in indirect anaphora. These anaphoric uses of pronominal expressions that include specific class markers can be observed in longer stretches of experimental data as well as naturally occurring discourse.

Since specific class markers provide relatively detailed semantic information, the process of anaphora resolution of a pronominal expression that includes a specific class marker can be assumed to operate as follows: The anaphoric expression is interpreted as referring to an entity of the shape denoted by the specific class marker, and a thus specified referent is then linked to a referent that is already established in discourse, e.g. the referent of an antecedent noun. The assumption that pronominal expressions that include specific class markers can receive such an interpretation is supported by the fact that they can be used without an antecedent to establish independent reference, namely in "indirect anaphora" (see examples in section 10.4.2) and in the absolute use, e.g. to refer to differently-shaped novel objects (see examples in section 6.3.2), where their semantic content clearly matters. However, in some cases, the knowledge of the (possibly arbitrary) assignment of a classified noun to a class marker may

be necessary for anaphora resolution in addition to its shape semantics. For instance, the assignment to the specific class marker *-ba* (SCM.3D) is often not semantically motivated (see section 7.3.3). Examples in the previous sections have shown that it can be used for reference tracking, e.g., to refer back to *ádzi-ba* (flash-SCM.3D) 'flashlight' or to *mamámi-ba* (trunk-SCM.3D) 'trunk'. In these cases, an anaphoric expression that includes this class marker presumably cannot be interpreted via its semantic content alone, but the knowledge of the (conventional or arbitrary) assignment of the antecedent noun to this class marker is necessary for correct anaphora resolution.

Thus, while acknowledging that the complex system involves noun class assignment that is semantically motivated to different degrees, the overall conclusion is that with the use of specific class markers in anaphoric pronouns in Miraña, referents are systematically tracked by providing information about their shape.

Part V: Conclusions

CONCLUSIONS

The major aim of this study has been to provide a detailed description of the unusually complex system of nominal classification of Miraña, which is an integral part of this language. To give a sufficiently thorough picture of this system, it was described giving equal attention to its morphosyntactic properties, semantics, and discourse use. The following section (11.1) summarizes some of the most important findings of the description presented in the previous chapters. The specific characteristics of the system described here are of particular relevance for two areas of linguistics, which are discussed in the sections further below: The typology of systems of nominal classification (section 11.2) and the typology of reference-tracking systems (section 11.3).

11.1. SUMMARY OF FINDINGS

The particular interest of the Miraña system of nominal classification is that it is complex and heterogeneous in two respects: First, with respect to the inventory of class markers, and second, with respect to the functions these class markers perform in their different uses. Some of the most important findings of this study thus pertain to the ways in which this internal complexity could be handled. Summarizing findings of the previous chapters, the following two sections deal firstly with regularities that can be observed within the heterogeneous set of class markers in terms of morphosyntactic, semantic, and discourse-pragmatic characteristics (section 11.1.1). Secondly, the characteristics of the variety of class marker uses are summarized and these are discussed with respect to the question of what is in fact being classified by class markers in their different uses (section 11.1.2). Section 11.1.3 summarizes the evidence given at different points of this study that allows the formation of hypotheses about the historical development of the system. Some further outcomes of this study are summarized in section 11.1.4.

11.1.1. A heterogeneous inventory of class markers

The set of Miraña class markers is united by the fact that they compete for the same morphosyntactic slots. However, this set is internally heterogeneous in a number of respects. This section summarizes the morphosyntactic, semantic, and discourse-pragmatic properties that have been attributed to different subsets of specific class markers in the previous chapters. It suggests that the apparently overwhelming internal complexity in the set of specific class markers can be to some extent reduced by ordering class markers along a cline defined by a number of correlating morphosyntactic, semantic, and discourse-pragmatic parameters.

A first subdivision that has been made within the set of class markers is between general class markers and specific class markers. The set of general class markers can be firmly set apart from specific class markers by morphosyntactic criteria, namely their ability to replace specific class markers in agreement marking. General class markers are a small, closed set of forms that exhibit properties well known from the gender systems of many languages of the world, including many European languages, for instance, by encoding distinctions of natural gender and combining the marking of these distinctions with number marking.

Specific class markers are a large and heterogeneous set. It is this set that turns out to be difficult to describe and has therefore been the focus of this study. At various points in this study it has been suggested that this set can be divided into a number of subsets, each with particular characteristics. In section 3.5, formal criteria (such as phonological complexity, boundedness, and the existence of allomorphs) were discussed that can be used to divide the large set into a number of subsets. These subsets can be described as forms that display different degrees of grammaticalization, keeping in mind that the differentiation between the various subsets is not always clear-cut. Accordingly, specific class marker forms were ordered along a grammaticalization cline in Figure 8 in section 3.5. In chapters 4 - 10 further morphosyntactic, as well as semantic and discourse-pragmatic characteristics were added to the formal characteristics discussed in chapter 3. All of these characteristics describe the internal heterogeneity of the inventory of specific class markers.

In chapters 4 and 5, the types of constructions in which class markers are used were introduced. Besides their derivational use on noun roots, class markers are used as agreement markers, but they can also have an absolute use and a predicative use. While all class markers can be used in any of these

constructions—this is what defines this set—it was suggested that some forms are more likely to be used in some constructions than others. Most importantly, it is the short, desemanticized forms that tend to be used more often for agreement marking with overt agreement controllers, while the longer forms with specific semantic content tend to be used more often in the absolute use and in the predicative use.

With respect to the semantics of class markers (discussed in chapter 6), it was shown that specific class markers from the core set encode relatively general and abstract shape distinctions, while other specific class markers encode detailed semantic information, often denoting specific spatial configurations or temporary aspects of nominal referents. The semantic specificity of class markers thus appears to be another parameter that correlates with the proposed ordering of class markers.

The semantic characteristics of the derivational use of class markers (i.e. the semantic processes in classified nouns) are again not the same for all specific class markers. In chapter 7 it was shown that the assignment of most classified nouns to class markers is semantically motivated. There are, however, some nouns with semantically opaque class marker assignment. The only class markers that are used in these nouns are specific class markers from the core set. Thus, this subset of class markers behaves differently from the rest of specific class markers with respect to the semantic motivation of class marker assignment.

In chapter 10, the agreement use of class markers was amply illustrated with anaphoric expression occurring in spontaneous speech. In the discussion of the anaphoric functions of class markers, another distinction was introduced: the distinction between direct, coreferential anaphora and indirect anaphora. Indirect anaphoric expressions refer to referents that are "anchored" but not explicitly mentioned in the surrounding linguistic context. It was suggested that class markers with a specific semantic content are prone to be used in indirect anaphoric expressions, for instance, to refer for the first time to a part of an object, when this object has been mentioned in the preceding discourse.

The characteristics attributed to the different subsets of specific class markers are summarized in Figure 15 together with the frequency of class marker occurrences in texts. Figure 15 thus illustrates the wide variety of morphosyntactic, semantic, and discourse-pragmatic characteristics displayed by the set of specific class markers, which is nevertheless united by shared morphosyntactic contexts.

specific class marker subsets:	core SCMs	polysyllabic SCMs
	←	→

frequency of use:	frequent	rare
	←	→
preferred class marker uses:	agreement	predicative/absolute
	←	→
semantic specificity:	non-specific	specific
	←	→
preferred type of assignment:	opaque	motivated
	←	→
preferred uses as anaphor:	coreferential	indirect
	←	→
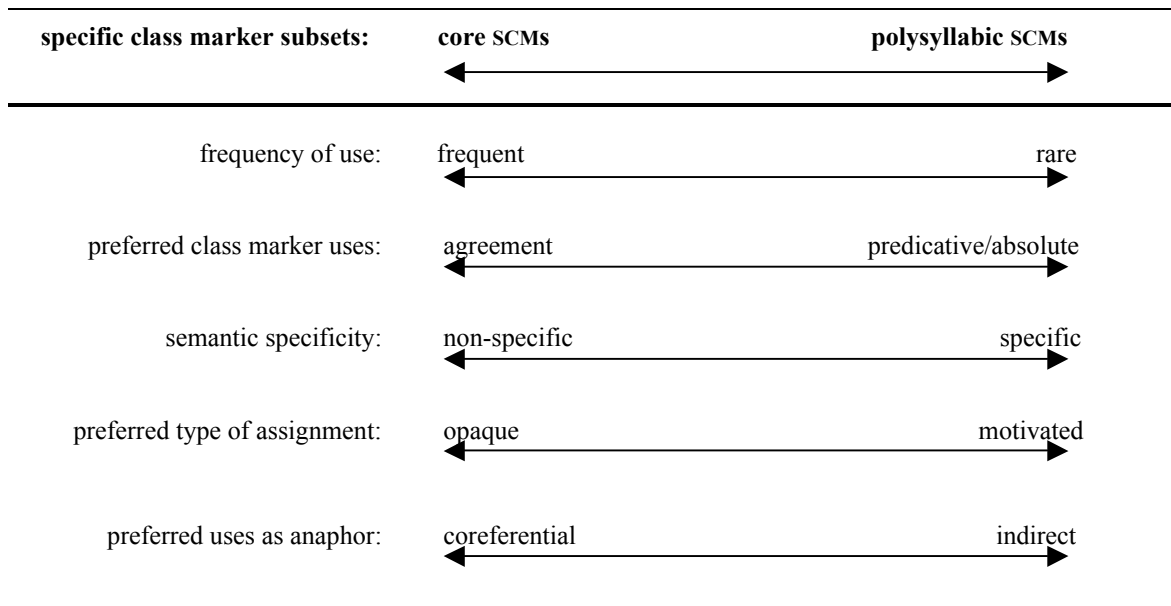
Figure 15: Typical characteristics of different subsets of specific class markers

11.1.2. Four different uses of class markers

The previous section summarized characteristics associated with different subsets within the inventory of class markers. This section takes a different perspective on the system by looking at the characteristics of the different morphosyntactic contexts that this set of forms is used in. The contexts that Miraña class markers occur in can be grouped into four uses of class markers: their derivational use, agreement use, absolute use, and predicative use. The derivational and agreement uses are considered major uses. The absolute use and the predicative use are related to the agreement use, but can be distinguished from it by the following criteria: Class markers have an absolute use when no agreement controller is present and a predicative use when the expression they occur in is used as a predicate nominal. The previous chapters have described the morphosyntactic and semantic characteristics of these four uses. Based on a summary of these characteristics, it is pointed out here that class markers in each of these uses classify different kinds of elements, ranging from a classification of elements of the language (i.e. nouns) in the agreement use to a classification of extralinguistic referents in the predicative use.

The agreement use of class markers (i.e. their use in pronominal expressions, numerals, verbs, etc. in response to an overt agreement controller) brings about a classification of the nouns of the language. The noun classes that are set up through the agreement use of class markers are defined as sets of nouns that take a particular class marker as agreement marker. For establishing the

agreement classes, it is irrelevant whether the class marker assignment in the noun that controls the agreement is semantically motivated or not. In either case, the agreement pattern a noun takes is fixed. The possibility of alternative agreement marking by specific and general class markers imposes a cross-classification on many nouns, namely nouns that are formed with a specific class marker. The agreement pattern that these nouns take includes the possibility of marking agreement with exactly one general class marker and exactly one specific class marker. In both kinds of agreement marking, the choice of a class marker is determined by the properties of the noun that controls the agreement, and the classification imposed by the agreement use of class markers is thus in any case a classification of nouns, i.e. of parts of the language. This classification sets up disjunctive classes, since any given noun only takes one agreement pattern.

It has become clear throughout this study that the processes involved in the derivational use of class markers are quite different to those that underlie their agreement use. The derivational use is not as uniform as the agreement use with respect to what is being classified by class markers in this use. Therefore, the processes that determine what is being classified through class markers in this use, i.e. the internal semantic processes in classified nouns, have been described in terms of degrees (in chapter 7), more specifically in terms of degrees of semantic compositionality and semantic conventionality.

A first process that can be observed is that class markers can be used in combination with noun roots according to the properties of a referent in the case of classified nouns that do not involve any conventionalization. These nouns are productive derivations, often nonce words, that may be formed in a given discourse situation to refer to an object that does not have a conventional name in the language, for instance a particularly shaped wooden object of the Shape Classifier Task, e.g. *úmɛ-i* (wood-SCM.1D.medium) 'wooden stick of medium length'.

Moving up towards the processes involved in conventional and non-compositional nouns, we find that the choice of a class marker in some classified nouns does not reflect the actual properties of a referent in a given discourse situation, but rather that a class marker is part of a conventionalized, pre-canned noun stem. In this case, the meaning of the class marker may be related to some salient property of the entity denoted by the noun, but it is not sensitive to temporary aspects of a referent in a given discourse situation. In this case, what is classified by a class marker may be called a concept, which is conventionally associated with a particular classified noun, independent of the shape of the actual referent. Thus, for instance, the noun denoting banana fruits

is derived from the noun root *úhɨ* 'banana' with the class marker *-ʔo* (SCM.3D.oblong) and the resulting classified noun is used to refer to whole banana fruits of any particular shape, even if they happen to be flat. On the other hand, the meaning of this noun is restricted by convention to denote only banana fruits and cannot be used to refer to any other oblong object made from or related to banana substance, which should be possible if the choice of the class marker was determined by the properties of the referent alone. Thus—unlike the classification of referents in non-conventional nouns—the classification of concepts in the use of class markers in conventional nouns is not sensitive to the actual properties of a referent, but is imposed on the basis of the properties that are conceptualized as being salient properties of a set of referents in the language-specific semantic system.

The classificatory processes observed in the use of class markers in nouns that are not only conventional but also non-compositional are of a yet different kind. In non-compositional classified nouns, class markers are lexically specified by the noun roots and do not add semantic content to the classified nouns. In these cases, class markers classify parts of the language, i.e. noun roots, and not concepts, since there is no evidence that, for instance, a particular animal species would be conceptualized as being associated with the properties denoted by the class marker that is used to form the noun that denotes it. For instance, there is no evidence for any kind of relation between the denotation of the class marker *-ko* (SCM.1D.pointed) and the snails denoted by *úhtsɨ-ko* (snail-SCM.1D.pointed) 'snail, sp.' (see section 7.4).

The derivational use of class markers on noun roots thus does not allow for a straightforward answer to the question of what it is that is being classified. Rather, a number of different processes are involved. These are different for the three kinds of nouns that have been identified in chapter 7, i.e. non-conventional nouns, conventional nouns, and non-compositional nouns. A further complicating factor is that the notions of conventionality and compositionality that are used to establish the three kinds of nouns do not allow for a clear-cut separation of sets of nouns, but must be considered a matter of degree. At any rate, it is important to note that the possible classification of noun roots in the derivational use of class markers does not set up disjunctive classes, since many noun roots can combine with a number of different class markers, deriving different nouns.

Let us now turn to the minor uses of class markers, i.e. the absolute use and the predicative use. Within the absolute use, i.e. uses of class markers in expressions other than nouns independent of an agreement controller, we must now differentiate two subtypes: In one case, an agreement controller is simply

omitted. In this case, the absolute use of class markers is comparable to the agreement use in terms of what is classified, namely nouns, which happen to be covert in this instance. In the other kind of absolute use, there is no agreement controller whatsoever, whether covert or overt. This use can be observed in the data from the Shape Classifier Task, where speakers use pronominal expressions to refer to differently shaped objects. In this case, class markers classify referents—comparable to the derivational use in non-conventional nouns.

With respect to the predicative use of class markers it is possible to give a straightforward answer to the question of what is being classified. It was shown that the function of class markers in this use is to predicate their semantic content over a referent. Thus, in this use, the choice of a class marker is only determined by the properties of referents, and it is referents that are classified through the predicative use of class markers.

The classificatory processes that can be observed in the four different uses of class markers are summarized in Table 41. The hyphens in the row on the derivational use indicate that the processes corresponding to the classification of the three kinds of entities are not strictly separable, but correspond to degrees, unlike the two classificatory processes that are involved in the absolute use, which are clearly distinct from each other.

Table 41: Classificatory processes in different class marker uses

class marker uses	what is classified
agreement use	nouns
derivational use	nominal referents - nominal concepts - noun roots
absolute use	nouns or nominal referents
predicative use	nominal referents

11.1.3. Diachronic sources of nominal classification

It is outside the scope of this study to offer a fully developed account of the historical sources of nominal classification in Miraña. However, I want to briefly summarize in this section some findings of this study that suggest a probable path of development from nouns to class markers.

The large, shape-based classification system constituted by specific class markers appears to be a relatively recent development, as shown by the fact

that some forms can be used as nouns and as class markers (i.e. repeaters) and by the demonstrable nominal origin of some specific class markers. These cases provide indications of how the rest of the class markers may have entered the system. First, a subset of nouns would have been frequently used as heads of the genitive construction. Some of these may have been inherently possessed nouns, denoting, for instance, parts of plants, such as leaves and trunks. To explain the spread of the use of these nouns to other morphosyntactic contexts, we may assume an already existing agreement pattern (in which general class markers might have been used), which provided morphosyntactic slots for the use of these nouns in expressions such as pronouns, demonstrative, etc. At this stage, we might conceive of a classifier system, characterized by the loose association of these forms with noun roots (in the genitive construction) and possibly optional use in other contexts. Synchronically, repeaters resemble this stage of development, since they can be used as heads of genitive constructions as well as in the position of class markers in expressions such as numerals, demonstratives, etc.

In a next step, the association of these forms with noun roots became more fixed and they broadened their meaning. The same form may have been used as a free noun for some time, where its meaning remained unchanged. Synchronically, class markers that have a recognizable nominal origin in the language correspond to this stage of development. Finally, these old nouns lost their ability to be used as free forms, the sources of class markers became fused on some noun roots (i.e. obligatorily classified noun roots), some nouns were arbitrarily assigned to them, and their use in expressions other than nouns would have become more strongly morphosyntactically constrained. At this stage, the system has effectively been grammaticalized as a system that shares many characteristics with typical noun class systems.

Some specific class markers must have entered the system earlier than others, in particular the core set of short, semantically relatively general and frequent class markers, which are often fused to obligatorily classified noun roots. Taken by itself, the core set of specific class markers is comparable to noun classes in Niger-Congo languages such as Swahili (Bantu) in its size and frequency and obligatoriness of use (although the Miraña system retains more semantic content than these and these forms are part of a larger set). As such, it shows a possible grammaticalization path that results in a noun class system like those of Bantu languages.

For Nichols (1992: 141), there are two possible origins of "transitional Niger-Congo and western Amazon shape-based elaboration of gender". These systems could "conceivably come from regrammaticalization of numeral

classifiers; but there is equally good evidence that gender systems can be semanticized under the right set of conditions" (Nichols 1992: 141).[74] For the latter, she proposes a scenario in which an existing gender system becomes elaborate and acquires shape semantics through "metaphor and simile" in the "poetic canon" (Nichols 1992: 140). Miraña data lend support to the first hypothesis rather than to the second, by providing evidence that a classifier system (which has a lexical origin itself) may become reduced, desemanticized, and obligatory. There is no evidence for a process of elaboration or semanticization of existing class markers in Miraña.

11.1.4. Further outcomes

The main conclusions to be drawn from the description presented in this study concern the typology of systems of nominal classification and the typology of reference-tracking systems. Before entering into discussion of these, I would like to mention in this section some further outcomes of this study that are not directly related to these two areas.

(a) grammatical description of an underdescribed language
Chapter 2 provides a grammatical description of central aspects of the Miraña language. In chapters 3 - 5, the aspects of the language that pertain to nominal expressions are analyzed in considerable detail. These chapters provide data for typological comparison in areas such as noun phrase structure and agreement.

(b) experimental methods for linguistic description
Two experimental techniques were developed and successfully applied in this study, showing the possibility and usefulness of integrating experimental data into linguistic description. The Shape Classifier Task provided data on the spontaneous use of class marker forms. The objects of the Shape Classifier Task were additionally used to elicit information on the extension of the meanings of specific class markers. A second experimental technique used here are two video stimuli, the banana clip and the trunk clip. The material obtained with this technique was used to systematically study the reference-tracking function of specific class markers in situations of same-class and different-class

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[74] Yagua (Peba-Yaguan), the only example from the Amazon that Nichols (1992) cites, has a nominal classification system comparable to Miraña. In particular, it has been convincingly shown to involve agreement on a number of targets, including numerals (D. L. Payne 1986, 1990b, 2003). Thus the sources of gender markers that Nichols (1992) has in mind were probably not genuine numeral classifiers, but possibly some other type of classifier (see also section 11.2, below).

antecedents. The material used in the Shape Classifier Task and the video stimuli are available from the author by request.

(c) an unusual typological mode for handling countability
The analysis of the unitizing function of class markers in chapter 8 showed that unitization in Miraña shares a number of characteristics with two modes for handling countability that are described in the literature, singulatives and numeral classifiers. The pattern in Miraña constitutes a hitherto unattested typological mode for handling countability.

(d) discourse functions of an Amazonian nominal classification system
Chapter 10 of this study represents one of the few discourse studies on nominal classification systems. It is the first one to be written on an Amazonian language (see Carpenter 1986; Downing 1986; Hopper 1986; Sun 1988; Daley 1996 for studies of discourse functions of classifiers in South East Asian languages). This study has shown how expressions that are intermediate in terms of semantic generality, i.e. pronominal expressions that include specific class markers, are used to establish anaphoric links as well as to signal a speaker's understanding of the local discourse structure. Furthermore, this study has revealed some general properties of discourse organization in Miraña, such as the use of thematic prompts to highlight important referents.

11.2. THE TYPOLOGY OF SYSTEMS OF NOMINAL CLASSIFICATION

The nominal classification system of Miraña displays a rich interaction of characteristics typically associated with systems that are recognized as distinct types in terms of existing typologies of nominal classification systems (see section 1.2.1, above). Miraña shares with noun class languages the overt noun class marking in nouns and the realization of class markers in agreement, which is the main definitional characteristic of noun class systems. At the same time, nominal classification in Miraña shares a number of properties with classifier systems. These include the large number of class markers, their specific semantic content in the domain of shape, and their unitizing function. In the following section (11.2.1) we discuss the evidence presented in the body of this study with respect to the morphosyntactic criteria that are used in current typological approaches and the questions that Miraña data raise about these typologies. Then, we discuss how the descriptive strategy of differentiating between different uses and subsets of class markers is useful in order to highlight a typologically very interesting characteristic of Miraña (section 11.2.2), namely that one and the same set of classifying morphemes is used to an equal extent as derivational devices and as agreement markers.

Section 11.2.3 provides an outlook for future research by sketching a multidimensional typology of systems of nominal classification.

11.2.1. Miraña and the morphosyntactic typology of nominal classification

In current approaches to the typology of nominal classification systems (most prominently Aikhenvald 2000; Grinevald 2000), a number of different types of systems are identified by morphosyntactic criteria (see section 1.2.1, above). The first, most general distinction made in these approaches is that between noun class systems, which are considered to be grammaticalized agreement systems, and classifier systems, which are characterized by "incomplete grammaticalization" (Grinevald 2000: 61). Within the broad category of "classifiers", individual classifier types are distinguished by additional properties, most importantly the morphosyntactic locus in which classifiers occur. For instance, the occurrence in numeral phrases is an additional morphosyntactic property of numeral classifiers. This section discusses Miraña data with respect to this framework.

The distinction between classifiers (used here as a cover term for the different kinds of classifier systems) and noun classes was most clearly drawn in a highly influential paper by Dixon (1982), which was reworked in Dixon (1986). Dixon (1982, 1986) provides a number of criteria for identifying noun class systems vs. classifier systems. These are given in Table 42 in a summarized and slightly rearranged manner, which is based on the summary given by Grinevald (2000: 62), but somewhat closer to the original source.

Table 42: Dixon's (1982; 1986) criteria for distinguishing noun classes vs. classifiers

	noun class-gender systems	classifier systems
1	realized in agreement pattern	marked once
2	can be marked on noun	not affixed to noun, but an independent constituent
3	classify *all* nouns	do not classify all nouns
4	noun uniquely assigned to a class	noun possibly assigned to various classes
5	a *closed* system	a possibly open system (i.e. some nouns can be used as classifiers)
6	a smallish number of classes (2-20)	a largish number (more than about 20)
7	can be fused with other grammatical categories	not fused with marking of other grammatical categories
8	no variation in register or according to individual	individual variation, formal/informal uses

It is generally assumed that the most important criterion to distinguish noun class systems from classifier systems is that noun classes are realized in agreement and classifiers are not. Thus, the presence of agreement is a definitional characteristic of noun class systems, and the absence of agreement is held to be a definitional characteristic of classifier systems (e.g. Corbett 1991: 5, 105, 136f.; Aikhenvald 2000: 21, 229; Grinevald 2000: 55). If the agreement criterion is taken as decisive, Miraña should be unambiguously considered as having noun classes. However, such an analysis poses a serious problem for the typology, since it does not account for the characteristics that the Miraña nominal classification system shares with classifier systems. These include the large number of class markers (Dixon's criterion 6), the fact that the set is somewhat open (Dixon's criterion 5) and their variable use in some contexts (Dixon's criterion 8), as well as other characteristics typically associated with classifiers, e.g. the specific semantic content of class markers and their unitizing function (Grinevald 2000: 74f.). Thus, if only the agreement criterion was decisive, the typology would have a very reduced predictive power—at least for Miraña—in the sense that many of the criteria proposed by Dixon do not correlate with the basic distinction drawn by the agreement criterion. In addition, grouping Miraña with those noun class systems that are said to be "prototypical", such as those of Bantu languages and gender systems of European languages, means that the nature of this taxon would be radically enlarged.

While it is generally accepted that the agreement criterion must be treated as a definitional criterion of noun classes, some authors (e.g. Silverstein 1986: 501; and following him, Green 1997: 249) have emphasized the importance of another characteristic of noun classes: in noun class languages, each noun belongs to one class. This characteristic corresponds to Dixon's criteria 3 and 4 (as given in Table 42). The importance of this characteristic is also recognized in the typological approach by Aikhenvald (2000). Thus, for her, the type "noun class" is defined by two "definitional" characteristics, which are said to correlate with a number of "contingent" characteristics. The two definitional characteristics of noun classes are in essence: "some constituent outside the noun must agree in noun class" and "each noun in the languages belongs to one noun class (occasionally more than one)" (Aikhenvald 2000: 20f.).

Most classifier languages fail to meet the second criterion since a number of different classifiers can often be used with a given noun, e.g., to highlight a particular property of a referent that is important in a given discourse situation (see e.g. Lucy 2000: 330f.). A similar process can be observed in productive derivations of classified nouns by class markers in Miraña. Thus, Miraña noun

roots can be "re-classified" through combinations with different class markers. But it is at the level of nouns (not noun roots) that noun classes are defined, namely through the agreement pattern that a noun takes (Corbett 1991: 5; Aikhenvald 2000: 20), and once a Miraña noun is derived with a particular class marker, its agreement pattern is fixed, i.e. it cannot be "re-classified" in agreement marking.

However, the agreement pattern of many Miraña nouns involves the possibility of two types of agreement marking: with nouns that are derived with specific class markers, agreement marking is possible with either a specific or a general class marker. Thus, many Miraña nouns "belong" to two noun classes, a specific noun class and a general noun class. The alternation of general class markers and specific class markers for agreement marking is highly restricted (i.e. there are never more than two possibilities of agreement marking with such a noun) and agreement marking is redundant in both cases. In fact, agreement marking by general class markers can be seen as a neutralization of the distinctions made by specific noun classes under specifiable conditions rather than a re-classification of nouns. The alternative agreement marking is one aspect in which agreement in noun class in Miraña deviates from "canonical agreement" in terms of Corbett's (2003a, 2003b, forthcoming) approach, despite the fact that it adheres to the canon in other respects, most importantly in the non-informativeness of agreement with respect to an overt agreement controller. From the perspective of the typology of systems of nominal classification, the possibility of alternative agreement marking is a characteristic that distinguishes Miraña from "prototypical" noun class languages.

Should we then conclude that Miraña is a classifier language since it fails to meet Aikhenvald's second definitional criterion in that—unlike "prototypical" noun class languages—nouns belong to more than one noun class more often than "occasionally", even though the alternative agreement marking corresponds to neutralization rather than re-classification? Additional arguments for such an analysis would be the "contingent" characteristics of classifier systems that Miraña displays, among them the large and somewhat open inventory of class markers (Dixon's criteria numbers 5 and 6 in Table 42), their specific semantic content, and their unitizing function. If one wants to pursue an analysis as a classifier system, then the question arises which type of classifier system Miraña should be considered to have, since each type of classifier is defined as occurring only or mainly in one context, e.g. numerals, verbs, or possessive expressions, while Miraña class markers are used in all of these contexts in addition to many more.

Based heavily on data from Amazonian languages, Aikhenvald (2000) proposes to account for such a situation with the conception of "multiple classifier systems". Under the assumption of "multiple classifiers", occurrences of one and the same set of classifying morphemes in different morphosyntactic contexts are treated as if they were instances of different types of nominal classification systems. For example, one and the same set of "classifiers" of Tucanoan languages is presented alternatively as "noun class" (Aikhenvald 2000: 80), "noun classifiers" (93), "numeral classifiers" (100, 110, 123), "possessed classifiers", or "deictic classifiers" (207; see also 207 for more examples of other languages). Bora (a close dialectal variant of Miraña, see section 1.3.3) is cited as an example for "multiple classifiers" (221, 246), including "numeral classifiers" (123).[75] Strictly speaking, as many classifier types as there are morphosyntactic contexts for classifying morphemes have to be recognized under such an analysis. For Miraña this would include noun classifiers, numeral classifiers, verbal classifiers, deictic classifiers, and possessed classifiers. Even then, the uses of class markers for which there is no corresponding classifier type are still unaccounted for, e.g. their use in relative clauses.

The application of a "multiple classifier" analysis to Miraña is problematic in two main respects. On the one hand, this analysis runs the risk of missing generalizations by describing the use of one and the same set of forms in a number of different contexts as instances of a number of separate types of systems, while the use of Miraña class markers on expressions such as numerals, demonstratives, or possessive pronouns follows a uniform pattern, which shares many—but not all—characteristics with "canonical" agreement.

On the other hand, the inclusion of one and the same system in a number of different categories of the typological framework seriously jeopardizes the identification of each of these categories as a coherent set of systems. For instance, numeral classifiers are defined—in addition to the criterion of absence of agreement—as occurring mainly with numeral expressions, where they form a unit with the numeral rather than with the noun (Greenberg 1977: 293; Aikhenvald 2000: 104f.). In contrast, the usual pattern in Miraña is the following: when a numeral that includes a class marker is used to enumerate a noun, the noun that is being enumerated must already include a class marker, which is suffixed to the noun root. This is a precondition for the possibility of

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[75] Bora-Witoto languages are also cited as examples of "gender" (Aikhenvald 2000: 246) and "two noun class systems for different types of modifiers" (Aikhenvald 2000: 80), but it is not clear whether these are supposed to be different uses of the same set of "multiple classifiers" or separate systems. It is also not clear which modifiers are meant.

this class marker to also occur on the numeral. Furthermore, numerals are just one of the many morphosyntactic contexts of class markers, and this is in no way privileged over the use of class markers in expressions such as third person pronouns, demonstratives, or possessive pronouns. Thus a difference between Miraña class markers and numeral classifiers can be shown even with the morphosyntactic criteria that this approach uses. But this difference becomes fully apparent once one takes into account the functions of the two types of classifying morphemes in combination with numerals (as further discussed in the next section): In numeral classifier languages, the function of the classifier in the numeral construction is to specify a countable unit for the referent of the noun that is being enumerated, while Miraña class markers are used for agreement marking in these contexts (they also perform a unitizing function in the language, but they do this in another construction, namely when they are suffixed to noun roots).

Thus, to include nominal classification systems such as that of Miraña in the type "numeral classifiers"—on a par with languages such as Chinese, Japanese, and Yucatec—would make the category of numeral classifiers very heterogeneous with many exceptional cases. Under an analysis as "multiple classifiers", a system such as that of Miraña would also feature exceptional instance of possessed classifiers, deictic classifiers, verbal classifiers, etc., and each of these categories of the typology would become increasingly heterogeneous. The differences between Miraña class markers and numeral classifiers were discussed above, and similar cases could be made for other classifiers types. For instance, verbal classifiers are said to usually cross-reference the subject noun phrase in an intransitive clauses or the object noun phrase in a transitive clause (Aikhenvald 2000: 149), while Miraña class markers used on main clause predicates always cross-reference the subject noun phrase. Also, verbal classifiers are typically incorporated in the verb stem, or at least they appear very close to the verb root (see Aikhenvald 2000: 149ff.; Grinevald 2000: 67ff. for examples), while Miraña class markers are often suffixed to inflected verb forms.

Incidentally, nominal classification in Miraña has at least two characteristics that do not match with what Aikhenvald (2000) claims to be properites of multiple classifiers, and which are said to distinguish these systems from noun class systems. First, she claims that "the choice of a classifier in a multiple classifier language is always semantically based" (Aikhenvald 2000: 229). This is not true for the use of class markers in non-compositional classified nouns and it is not always true for the use of class markers in agreement marking, where the choice of a class marker is morphosyntactically constrained. Second, "if classifiers of any type are fused with the head noun, or with a modifier, they

cannot be used in multiple classifier environments" (Aikhenvald 2000: 205). This is not true for obligatorily classified nouns in Miraña, where class markers are not detachable. In addition, there are a number of nouns in which class marker forms are recognizable, but have been effectively incorporated in the noun stem, with additional morphology appearing after the class marker form.

In sum, a characterization of the Miraña system within a morphosyntactically-based typology is highly problematic. Miraña arguably fails to meet one definitional characteristic of noun class systems and—more importantly—it does not display many of the characteristics of this type that are said to correlate with the basic distinction drawn by the agreement criterion. An analysis of the system as being composed of "multiple classifiers" turns out to be at least equally problematic.

11.2.2. Derivational and agreement uses of Miraña class markers

At least some of the problems that arise when attempting a characterization of the Miraña system within the typological framework reviewed above seem to stem from the fact that this framework gives a lot of importance to two kinds of characteristics: the overall characteristics of the set of classifying morphemes, e.g. in terms of its size, and the morphosyntactic locus of classifying morphemes, without differentiating between the different functions that classifying morphemes fulfill in these loci. Thus, the occurrences of a large set of classifying morphemes on a number of loci will lead to a confusion of different classifier types, unless the system can be unambiguously identified as an agreement system. This section tries to show the advantages of a descriptive strategy that takes into account functional criteria to distinguish the uses of class markers in different contexts and that distinguishes different subsets within the inventory of class markers. The generalizations that can be reached through this strategy suggest that the typologically most interesting characteristic of Miraña is the extent to which class markers perform both derivational and agreement functions.

The descriptive strategy taken in this study has been to group the multiple contexts of class markers into four "uses". Each of these uses corresponds to a set of constructions that share a number of formal and functional characteristics. The first is the derivational use of class markers in combination with noun roots and nominalized verbs. This locus can be distinguished formally from other kinds of nominal roots (e.g. by a special set of plural markers). The functions of class markers in these constructions are derivation and unitization. The second set of constructions in which class markers occur

are all other nominal expressions, relative clauses, and main clause predicates. These constructions can be identified formally by a number of criteria, among them the alternation between general and specific class markers. The main function of class markers in these constructions is agreement marking. Two minor uses are set apart from the agreement use, with which they share at least some of their morphosyntactic loci, by another set of criteria which relate to syntactic function: When nominal expressions (other than nouns), relative clauses, or main clause predicates are used without an overt agreement controller, class markers have an absolute use. The predicative use of class markers is identified through the syntactic function of the expression that includes the class marker, namely its functions as a predicate nominal.

Once these four uses are distinguished, it is possible to see that the functions of class markers in their derivational use resemble those of prototypical classifiers (used here as a cover term for the individual classifier types) in some important respects, for instance in that class markers unitize non-countable noun roots in this use and—more generally—usually contribute semantic content to the noun phrase in which they occur (see e.g. Lucy 2000: 330ff.). On the other hand, the functions of class markers in the agreement use resemble those of prototypical noun classes in many respects, for instance in the reference-tracking function, or—more generally—the marking of co-reference (see e.g. Foley and van Valin 1984: 336f.). Finally, the functions of the minor uses (predicative use and absolute use) are somewhat at the margins of the phenomenon of nominal classification, since class markers behave more like lexical items than like classifying morphemes in these contexts in that their use is determined only by properties of referents (keeping in mind that one kind of absolute use patterns with the agreement use in this respect).

The identification of the two major uses of class markers thus opens the possibility of describing the systems as a combined noun classifier system (derivational use) and noun class system (agreement use). Such a characterization is interesting for the typological approaches reviewed above because noun classifiers are said to be often used anaphorically (Aikhenvald 2000: 81; see also Grinevald 2000: 65), although the semantic profile of Miraña class markers matches that of numeral classifiers rather than noun classifiers (Aikhenvald 2000: 288; Grinevald 2000: 72). However, the aim of this study has not been to assign Miraña to pre-defined types (which at any rate is problematic since one and the same set of forms occurs in both uses), but rather to understand the Miraña system in its own right. With respect to the typology of nominal classification, the point here is to show that the descriptive strategy taken here allows for a reduction of the apparent "multiplicity" of class

marker contexts to two major uses, which then can be shown to resemble two types of systems of nominal classification in some important respects.

Keeping the two major uses apart also helps to clarify what is meant by the criterion that in noun class languages nouns must belong to one class only. The alternative agreement marking by general class markers and specific class markers can be analyzed as regular neutralization under specifiable conditions within the agreement pattern, and thus may not be a strong argument against a characterization of the system as a noun class system. What really distinguishes Miraña from "prototypical" noun class languages, however, is the pervasive "re-classification" of noun roots in the derivational use of class markers in combination with noun roots, which resembles the typically variable association of classifiers with nouns. Since it is the same class markers that are also used in agreement marking, the typologically most significant characteristic of Miraña appears to be the extent to which one large set of forms, which is united by shared morphosyntactic contexts, performs both derivational functions and agreement functions.

However, not all class marker forms perform both derivational functions and agreement functions to the same degree, so at this point we have to take into account the internal heterogeneity of the inventory of class markers. Within the inventory of class markers, the small and tightly integrated set of general class markers can be clearly identified. These have reduced derivational functions, limited to specifying natural gender for nouns with animate (mostly human) referents, but they are extremely frequently used for agreement marking, and in fact they are the default class markers used for nouns that are not otherwise specified for specific class. For the set of general class markers, the agreement use may thus be characterized as primary and the derivational use marginal. The set of general class markers taken by itself resembles a typical gender system and they may be considered the most grammaticalized forms within the set of Miraña class markers. At the other extreme of the spectrum of class marker forms, we have a large set of polysyllabic specific class markers with specific semantic content, some of which are hard to tell apart from nouns. The typical use of these forms is not the agreement use but the predicative or absolute use. They can also be used in productive derivations in combination with noun roots, which are often hard to tell apart from genitive constructions. These forms are thus primarily used in non-agreeing contexts (among them productive derivation), and hence their resemblance to classifiers.

Between the two extremes, there is a set of class markers, which roughly corresponds to the "core set" of specific class markers, that appears to play an equally important role in both morphosyntactic functions, i.e. derivation and

agreement. These class markers are systematically used as derivational devices in a large number of nouns, including animal names, names for artifacts, some of them built from nominalized verbs, as well as names for parts of plants and products made from them. On the other hand, they frequently occur in spontaneous speech as agreement markers, most importantly for the tracking of inanimate referents. For this set of forms, it is not possible to explain away as marginal or irregular either their function as agreement markers or their function as derivational devices in nouns. It is this constellation that really distinguishes the Miraña system from prototypical noun class systems and prototypical classifier systems.

The finding that one and the same set of forms can be used to an equal extent for derivational purposes on noun roots (where they contribute semantic content to the resulting noun phrase, like classifiers) and as agreement markers in other constructions may be of significance both from the perspective of noun class systems and from the perspective of classifier systems, understood as systems whose main function is contribution to noun phrase reference, be it through morphological derivation or in syntactic constructions like numeral phrases.

From the perspective of noun classes, this finding suggests taking more seriously the derivational functions of the noun class markers of noun class languages, which are defined by agreement. These derivational functions are often treated as marginal, or sometimes they are simply defined out (see also Lucy 2000: 330f.). For instance Corbett (1991: 44, 67) analyses instances like Spanish *hijo* 'son' vs. *hija* 'daughter' or Swahili (Bantu) *ki-ti* (class.1-wood) '(wooden) stool' vs. *m-ti* (class.7-wood) 'tree' as "motion nouns" which are characterized as "two separate nouns sharing a similar stem but with different inflections" (Corbett 1991: 67). This analysis is well justified when the function of class markers on nouns is restricted to, e.g., specifying the natural gender of nouns with human referents (as in languages such as Spanish) or to number marking (as in many noun classes of Bantu languages). However, such an analysis becomes increasingly problematic when a given noun root combines productively with a number of different class markers (see Mufwene 1980 for examples from Bantu languages) and it becomes impossible in Miraña.

From the perspective of classifier systems, the description presented here shows that forms that look like classifiers and behave like classifiers in some constructions can be involved in morphosyntactically constrained and semantically redundant agreement marking in other constructions. This finding may be of particular relevance for systems of nominal classification of

Amazonian languages. For these languages, the general descriptive strategy has been to simply label classifying morphemes as "classifiers" (presumably based on criteria such as the size of the inventory of classifying morphemes and possibly their occurrence in numeral phrases) without considering an analysis as an agreement system (see footnote 3 in section 1.2.1 for references). It appears to be common that classifying morphemes are used in a derivational function on nouns in these languages. This is in accordance with analyses as classifier languages, since classifying morphemes add new semantic information to noun phrases in these contexts.[76] However, like in Miraña, in many Amazonian languages the same (or almost the same) set of classifying morphemes is also used in the formation of modifiers of the noun, such as relative clauses and adjectives, and in pro-forms, such as demonstratives and third person pronouns. The question whether these uses of classifying morphemes are determined by an agreement rule is generally not discussed. D. L. Payne (1990) is the only study I am aware of that does address this question explicitly for an Amazonian system of nominal classification. D. L. Payne (1990: 134ff.) shows that the use of classifying morphemes in numerals and demonstratives in Yagua (Peba-Yaguan) has to be analyzed as inflectional agreement, while their use in other modifiers of the noun may be analyzed as derivation.[77]

The general impression one gets from the available descriptions of Amazonian systems of nominal classification—including the one in Yagua—is that these systems are overall somewhat less strongly grammaticalized than the Miraña system. It appears that nouns occur without classifying morphemes more often in these languages than in Miraña (see Derbyshire and D. L. Payne 1990: 254, 256; Barnes 1990: 285 for examples), and the only occurrence of a classifying morpheme in a clause may thus be in a modifying expression or in a pro-form. Unlike in Miraña, classifying morphemes are said to be optional in at least

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[76] Given the relatively high degree of polysynthesis of Amazonian languages (D. L. Payne 1990a: 214ff.; Dixon and Aikhenvald 1999: 8) classifying morphemes are usually bound affixes in these languages, rather than free morphemes. The use of classifying morphemes for the formation of ethnobotanical terminology appears to be particularly important in Amazonian languages (Gomez-Imbert 1985; Goodwin Gómez 2000; Montes 2001; Epps 2004).

[77] Aikhenvald's work on North Arawak languages is not conclusive on the question whether the use of classifying morphemes in contexts such as demonstratives, numerals, and verbs is determined by agreement or not. For instance, Tariana is characterized by Aikhenvald (2000: 235ff.) as a "multiple classifier language", which—by definition— should "involve lexical selection rather than agreement" (Aikhenvald 2000: 229). At the same time, the classifying morphemes in Tariana are described as "noun class agreement markers" (Aikhenvald 2000: 93) and as having the function of marking "predicate-argument agreement" (Aikhenvald 2000: 201).

some of these contexts in some Amazonian languages (for instance on adjectives in Yagua, see D. L. Payne 1990: 132f.). Thus, it appears that class-marked nouns do not co-occur with class-marked expressions such as numerals, adjectives, or relative clauses in a pattern of alliterative concord in these languages as systematically as in Miraña. However, it is hard to decide at this point to what extent this impression follows from the data itself or from the perspectives taken in the available studies. It is hoped that the present study will provoke more careful studies of other complex systems of nominal classification, especially in Amazonian languages, so that a better understanding of the form and function of these systems and their typology can be established.

11.2.3. Towards a multidimensional typology

The previous sections have discussed the difficulties that arise when trying to account for Miraña within a morphosyntactically-based typological framework and how some generalizations could be reached by taking into account further criteria, such as the morphosyntactic function of classifying morphemes in each context. This section provides an outlook and prospects for future research by sketching a multidimensional typology of systems of nominal classification.

The morphosyntactically-based approach to the typology of systems of nominal classification tries to reduce much of the cross-linguistic diversity found in nominal classification systems to two main dimensions. The first dimension is that of degrees of grammaticalization, which is synthesized in the agreement criterion, and the second is that of morphosyntactic loci, which only applies to a subset of systems, namely those that have been identified as not being involved in agreement. These two dimensions lay out the basic scheme for the identification of types of systems, to which further correlating characteristics are attached. Systems that do not fit this scheme (such as Miraña) must be treated as being composed of "multiple" systems, as "transitional", i.e. developing from or towards "prototypical" systems, or simply as aberrant. Thus, for any given system of nominal classification whose specific characteristics do not correlate with the basic distinctions this framework makes, the typology has very reduced explanatory and predictive power.

This study has shown that nominal classification is in fact a complex phenomenon, which may play an important role at different levels of linguistic structure, among them the morphology (e.g. in derivational uses of classifying morphemes), semantics (e.g. when classifying morphemes add shape specifications to essence-denoting noun roots), syntax (e.g. when classifying

morphemes are used as agreement markers), as well as discourse (e.g. when the alternating use of classifying morphemes signals discourse boundaries). In addition, this study has shown that the inventory of classifying morphemes of one and the same system, defined by shared morphosyntactic contexts, can be internally complex and composed of a number of subsystems with different characteristics. To account for such a complex situation, the space set out by the existing typological approaches does not provide sufficient differentiation. Rather, it seems clear that a full typology of nominal classification requires a more complex descriptive apparatus.[78]

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[78] Note that Aikhenvald (2000: 14ff.) mentions seven parameters that she claims to use for the definition of types of systems of nominal classification. These parameters are:

      (A) morphosyntactic locus,
      (B) scope of categorization (e.g. noun phrase, verb phrase),
      (C) principles of assignment (e.g. semantic, phonological),
      (D) kind of surface realization (e.g. clitic, affix),
      (E) agreement,
      (F) markedness relations (i.e. the existence of an unmarked term), and
      (G) degree of grammaticalization.

Additionally, Aikhenvald (2000: 14ff.) lists four parameters that are said to provide "contingent" characteristics of systems that are defined by the above mentioned parameters. These are:

      (H) interaction with other grammatical categories
      (I) semantic organization (e.g. preferred semantic domains)
      (J) evolution and decay
      (K) acquisition and dissolution

However, at closer inspection it turns out that no more than two of the definitional parameters in fact distinguish the different types that are recognized in Aikhenvald's approach, namely parameter E (agreement) and parameter A (morphosyntactic locus). All other parameters are only used to attribute further properties to the types defined by these two parameters. Some of the additional parameter allow for some interesting observations, e.g. locative classifiers are differentiated from other classifiers (in addition to the morphosyntactic locus and absence of agreement) in that they are always fused to adpositions (parameter D) (Aikhenvald 2000: 172). Other parameters, however, do not seem to add any interesting differentiations to the two main ones. For instance, parameter B (scope of categorization) appears to always directly follow from parameter A (morphosyntactic locus), e.g. the scope of numeral classifiers is the numeral phrase, the scope of verbal classifiers the verb phrase, etc. Finally, some of the parameters appear to be too general in order to allow for any kind of meaningful differentiation, e.g. parameter G (degree of grammaticalization). Additionally, these parameters are not systematically applied to the different types recognized in Aikhenvald's approach, except for parameters A and E (agreement and morphosyntactic locus). For instance, there is no information on markedness relations (parameter G) within noun classifier systems. Thus, the parameters that Aikhenvald

The proposal here is thus to break out of the restricted space of the traditional approaches and work towards building a multidimensional typology that uses a relatively high number of rather detailed factors to capture the particularities of the nominal classification systems of individual languages. A first step towards such a typology would thus be to break down the relatively broad criteria used in the traditional approach into a larger number of individual factors. The following are proposals for refined criteria for the identification of types of nominal classification. When compared to the criteria in the existing approaches, the criteria proposed here are considerably more specific (numbers i-ii), and some of them have to be applied separately to different constructions (numbers iii-iv):

  (i)   Are the elements of the noun classes (defined as agreement classes) simple roots or derived stems (which themselves may include classifying morphemes)?
 (ii)   Does the alternation of the use of classifying morphemes correspond to neutralization or is it adding new semantic content?
(iii)   What is being classified when classifying morphemes occur with lexical noun roots in a noun phrase: noun roots or referents?
 (iv)   What is being classified when classifying morphemes are used as co-reference markers: noun roots, noun stems, or referents?

Putting together a comprehensive list of such detailed factors would require a large amount of conceptual work as well as empirical testing. An additional complication is that many factors may have to be applied separately not only to different construction types of one and the same system, but also separately to individual classifying morphemes, since the inventories of classifying morphemes may be internally heterogeneous.

The promise that a "multidimensional typology" holds is that eventually in such a multidimensional space clusters of individual factors and implicational associations across dimensions will become apparent, and a typology would have some predictive power. Such clusters and implicational associations would, of course, only become apparent after a list of factors has been applied to a sufficiently large sample of languages. The "canonical approach" to agreement by Corbett (2003a; 2003b; forthcoming) may serve as an example of how a complex phenomenon can be understood by first setting out a multidimensional space to describe the phenomena and then studying which dimensions in this space tend to cluster together. In this approach, a

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(2000) assumes (and the way they are handled) are only of limited usefulness to an approach that tries to overcome the underlying problems raised by the exaggerated importance given to the parameters of agreement and morphosyntactic locus in a typology of nominal classification systems.

questionnaire of 19 relatively detailed criteria (each corresponding to one dimension) was applied to agreement phenomena in a sample of languages. Then, it could be shown that the apparently overwhelming variety of ways in which agreement phenomena in individual languages deviate from "canonical" agreement tend to cluster around three general principles. Similarly, a multidimensional typology of nominal classification might be able to show that languages that appear to be abnormal in the current approach in fact follow a common pattern.

Using examples from Miraña, one may speculate about possible clusters that may become visible in a multidimensional typology of nominal classification, but which are not easily captured in the traditional approach. For instance, it may turn out that shape semantics cluster together with a unitizing function rather than with the occurrence of classifying morphemes in numeral constructions. Another informed guess, already mentioned above, would be that systems that are described as "noun classifiers" share more characteristics with noun class systems than with any of the classifier systems, with which they are grouped in the traditional approach.

11.3. TOWARDS A SEMANTIC TYPOLOGY OF REFERENCE TRACKING

This section elaborates on the implications of the systematic use of shape-denoting class markers for the theory of reference tracking. It aims to show the extent of variation within reference-tracking systems, using the example of Miraña class markers, and to suggest a way to typologize these differences. The proposal here is that these differences can be systematically captured by distinguishing within noun classes as reference-tracking devices according to (i) the semantic content of class markers, i.e. the property of the nominal referent they denote, and (ii) the semantic motivation of noun class assignment, i.e. the degree to which noun class markers denote properties of referents at all. In the following sections, an attempt is made to sketch a "semantic typology of reference tracking" that uses these two parameters to account for the differences between the reference-tracking systems of Miraña and languages such as German, English, and Swahili (Bantu). These issues have to my knowledge not been explicitly addressed in the literature. The major aim in this section is to draw attention to these issues in order to open them for further discussion.

11.3.1. Noun classes as reference-tracking devices

In typologies of reference-tracking systems, noun classes play a central role. In accordance with the terminology used in the typology of systems of nominal classification, the term "noun class" is used here to refer to agreement systems that include those systems traditionally called "gender", such as English and German gender (see section 11.2.1; see also Comrie 1989b: 39f.). And since reference tracking through noun class agreement is a salient characteristic of the system of nominal classification of Miraña, it is included here in the discussion of noun classes as reference-tracking devices. The typology proposed by Comrie (1989b; see also Comrie 1994; Huang 2000: 8; Terrill 2001) uses the parameters of "global vs. local" and "inherent vs. assigned" to characterize the way in which morphosyntactic devices such as noun class marking, switch-reference systems, and obviation contribute to reference tracking (see Table 43). Note that this typology—and likewise the extension proposed here—is limited to morphosyntactic systems. Other means that may contribute to reference tracking, such as lexical nouns and (non-agreeing) classifiers, are not considered here.

Table 43: The typology of reference-tracking systems (based on Comrie 1989b)

	inherent	**assigned**
global	gender, noun class	obviation
local	n/a	reflexives, switch reference

Noun classes are characterized in this approach as reference-tracking devices that are "inherent" in that they are available in any use of a given noun and "global" in that noun classes can be used to track the referent of a previously mentioned noun independent of the syntactic or discourse context. All other morphosyntactic devices used for reference tracking are "assigned" to noun phrases. Reflexives and switch-reference systems operate on reference-tracking features that are assigned in a "local" context (spanning over one or two clauses), while in obviation systems, the reference-tracking feature assigned to a noun phrase is "globally" available in the following discourse. Within the tracking device called noun classes, the typology proposed by Comrie (1989b), make no further distinctions. On the contrary, Comrie (1989b: 40; see also Huang 2000: 8) even includes person and number in the reference-tracking device labeled noun classes.

To account for differences between Miraña and languages such as English or Swahili (Bantu) that I am concerned with here, the notion of noun class as an "inherent and global" device, possibly including distinctions such as person and number, is too broad. The proposal here is to refine this basic typology by systematically differentiating subtypes of noun classes as reference-tracking devices according to semantic characteristics. In a first step, it is proposed to keep noun classes as reference-tracking devices apart from distinctions of person and number. Noun classes are thus understood here in a more narrow sense, as they are defined in the typology of systems of nominal classification. The discussion in the following proceeds from the assumption that noun class markers used for reference tracking provide partial information about the intended referent, which may previously have been described in more detail in an antecedent noun phrase (see Givón 1976: 171; Lehmann 1988: 61f.). The discussion is thus limited to noun classes that have some sort of semantic basis, i.e. that are not assigned by semantically arbitrary principles, e.g. phonological or morphological characteristics of nouns (see Corbett 1991: 83ff.). Since agreement marking in noun class is semantically redundant (at least in "canonical" agreement), noun class marking used for reference tracking provides semantic information about the referent that is already provided by the antecedent noun phrase. Recall that for the definition of noun classes the nature of this information is irrelevant, since noun classes are defined as agreement classes. However, the following discussion attempts to go beyond the morphosyntactic definition of noun classes by systematically describing the nature of this information. The first question for a semantic typology of reference tracking is therefore: Which part of the information about the referent is systematically singled out in order to track this referent through discourse? This question is addressed in the discussion of the parameter of semantic domains in the following section (11.3.2). A second question is: How directly does the information provided by the noun class marker relate to properties of the referent? This question is addressed in the discussion of semantic motivation of noun classes in section 11.3.3. In section 11.3.4, the two parameters are integrated and some further implications of the analysis of Miraña as having predominantly semantically motivated, shape-based noun classes are discussed.

11.3.2. Semantic domains used for reference tracking

The first parameter in the semantic typology of reference tracking proposed here differentiates between semantic domains encoded in noun classes as reference-tracking devices. A source of information on which domains can be encoded in noun classes as reference-tracking devices is Barlow's (1992: 46ff.)

cross-linguistic survey of semantic domains encoded in agreement morphology. Barlow's (1992: 46ff.) survey aims to show how information about nominal referents is distributed throughout the sentence in different kinds of expressions, including nouns and agreement markers. In an attempt to find out "which categories of nouns are exhibited in agreement markers", Barlow (1992) surveys 15 languages according to which "cognitive dimensions that are relevant for describing objects" (Barlow 1992: 51) are coded in the nouns and in the agreement morphology in these languages. The major dimensions Barlow takes into account include:[79]

- person
- number/configuration
- animacy
- gender/noun class
- physical characteristics
- location
- respect marking

The results of the survey that are relevant for the discussion here can be summarized by stating that most languages in the sample encode distinctions of person, number, animacy, and gender in agreement morphology. Of the domains that correspond to noun classes as reference-tracking devices as they are understood here, animacy and gender are thus represented. Even though "physical characteristics" are assumed as one major domain, Barlow pays little attention to the encoding of this domain in agreement morphology. The major aim of Barlow's (1992) survey is to show that nouns "contain more information concerning, for example, physical characteristics, collectivity, and location", while pronouns and agreement markers "are more likely to indicate discourse-related dimensions such as person, respect marking, and spatial deictics" (Barlow 1992: 97). This may be why Barlow plays down the fact that physical shape can be encoded in agreement markers, despite the fact that his sample includes a language with noun classes that are based partially on shape, namely Fula (see Arnott 1967: 57). However, Barlow (1992: 73) notes that "none of the pronouns indicate physical characteristics, except perhaps in those noun class systems in which particular classes are associated with specific physical characteristics". The Miraña data in the present study suggest that the encoding of physical characteristics in pronominal systems (through noun class marking) may not be so exceptional after all.

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[79] This list is somewhat arbitrary and "lacks specification", as Barlow (1992: 52) acknowledges. For instance, it confounds linguistic categories such as "gender/noun class" with properties of referents, such as "physical characteristics".

Another source of information on possible semantic domains found in noun classes as reference-tracking devices is Aikhenvald's (2000: 275ff.) attempt to generalize about the parameters involved in the semantics of noun classes, based on a sample of a few hundred languages (see also Corbett 1991: 30ff.). Aikhenvald claims that cross-linguistically the most important semantic distinctions represented in noun classes involve "animate/inanimate, person/non-person, and sex", as well as "physical properties" such as shape and size, but not "kin and social status for humans, or material and value for inanimates [or] color" (Aikhenvald 2000: 275ff.).

The generalizations by Barlow (1992) and Aikhenvald (2000) thus give a rough indication of semantic domains that may be encoded in noun class systems. In the context of the discussion here, these semantic domains correspond to the kinds of properties of nominal referents that languages tend to single out systematically in noun classes as reference-tracking devices. While the importance of animacy and natural gender distinctions for these systems seems to be uncontroversial, the present study supports Aikhenvald's (2000) claim that physical characteristics such as shape are another relevant semantic domain in the semantics of noun classes and thus a semantic domain in noun classes as reference-tracking devices.

Accordingly, we may distinguish—within noun classes that have a semantic basis—minimally four types of reference-tracking systems according to the semantic domains that they encode: animacy-based systems, natural-gender-based systems, shape-based systems, and size-based systems. In addition to these types, various domains may be present in one and the same system, e.g. a given noun class system may represent shape distinctions and natural gender in different sections of the noun class system. In Miraña, these two domains are encoded in the two main subsets of class markers, specific class markers and general class markers. Different semantic domains may also be combined in one and the same noun class. For instance, in Alamblak (a Sepik language spoken in Papua New Guinea), nouns with male referents as well as nouns with long and slender referents are assigned to masculine gender. Thus, this category combines the domain of natural gender with the domain of shape (Bruce 1984: 96ff.; Foley 1986: 80f.; see also Corbett 1991: 32).

The differentiation between semantic domains encoded in noun classes is the first parameter in the typology proposed here. It sets Miraña apart from languages such as English in that Miraña noun classes encode physical shape (in specific class markers), in addition to natural gender (in general class markers), while physical shape is not a semantic domain in the reference-tracking system of English.

11.3.3. Semantic motivation of noun classes

In addition to the semantic domains encoded in noun class markers, noun classes with a semantic basis may differ in the degree to which noun class assignment is semantically motivated. The semantic motivation of noun classes is thus the second parameter in the typology proposed here. It relates to the degree that a noun class marker has what Lyons (1977: 664) calls "descriptive content" (see also Corbett 2003b: 169; Bosch 1988: 214ff.). When noun class assignment is semantically opaque, i.e. when the semantic parameters that demonstrably play a role in the semantics of noun classes do not apply directly, noun class markers have little or no descriptive content. For instance, while shape plays a role in the noun class systems of many Bantu languages (see Spitulnik 1989; Contini-Morava 1997, as discussed below; see also Neumann 1999), it does so in a less direct way than in Miraña. For Miraña, it was argued that the assignment of inanimate nouns to shape-denoting class markers is generally directly related by physical characteristics of the nouns' referents, and that inanimate nouns with semantically opaque noun class assignment are a relatively small fraction of the nominal lexicon (a minority of the nouns that are derived with seven specific class markers from the core set).

One problem with the parameter of semantic motivation is that there is no generally accepted and operationalizable way to measure the semantic motivation of noun class assignment. In section 7.3.1, above, the acceptability of the use of a class marker in a predicate nominal in combination with a classified noun was suggested as a test to determine whether the noun class assignment of a given noun is semantically motivated. With this test, nouns can be identified whose assignment to noun class markers is not semantically motivated. However, even if more reliable tests can be found for assessing the semantic motivation of noun class assignment (and, crucially, tests that can be applied cross-linguistically), the semantic motivation of noun class assignment is clearly not a question of either/or, but a matter of degree.

Degrees of semantic motivation may range from noun class markers that unambiguously describe a property of a referent (in "strict semantic systems", see Corbett 1991: 8ff.), to semantic assignment rules involving metaphorical extensions and the like (e.g. in the Australian language Dyirbal, see Lakoff 1987), and to complex assignment rules with many exceptions, such as those proposed by Zubin and Köpke (1986) for noun class assignment of inanimate nouns in German (traditionally called "gender" for this language). For instance, German nouns denoting types of cloth, precipitation, wind, and minerals tend

to be assigned to masculine gender according to Zubin and Köpke (1986: 175). As mentioned above, the question of semantic motivation does not apply to noun classes that are assigned on principles other than semantic ones, i.e. phonological or morphological properties of nouns.

The degree of semantic motivation of noun class assignment may vary within a language for different sections of the nominal lexicon, i.e. it may be motivated for one part of the nominal lexicon, but opaque for another. For instance, noun class assignment in German and French is semantically highly motivated for nouns with human referents, while most animal names and inanimate nouns are assigned to the same noun classes in an almost arbitrary way. For this reason, the parameter of semantic motivation may apply differently for different sections of the nominal lexicon.

The parameter of semantic motivation of noun class is the second parameter in a semantic typology of reference tracking, which is integrated with the first one in the following section.

11.3.4. Integrating semantic domains and semantic motivation

The combination of the parameters of semantic domains and semantic motivation in the proposed semantic typology of reference tracking is illustrated in Figure 16, which attempts to generalize about the overall semantic characteristics of the noun class systems of English, Miraña, and Swahili. Figure 16 diagrams the semantic motivation of noun class systems on the horizontal axis, while the semantic domains are identified on the vertical axis. Note that the parameter of semantic motivation is understood as continuous, while the parameter of semantic domains involves discrete categories. These two parameters interact in that semantic domains can only be distinguished in the case of noun class assignment that is semantically motivated to some degree, while in opaque noun class assignment the question of semantic domains does not apply. This is visualized by the shades in Figure 16. Swahili is mapped as encoding shape at an intermediate degree of semantic motivation for the domain of shape. Swahili noun classes make no distinctions in the domain of natural gender, as there is only one class for humans, which does not distinguish natural gender (Katamba 2003: 115).
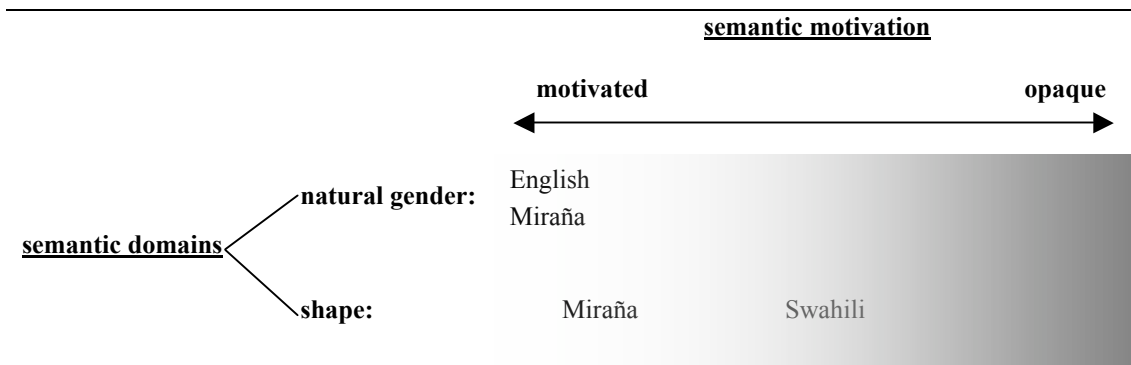
Figure 16: Semantic domains and semantic motivation of noun classes

Within the proposed typology, Miraña noun classes are represented both in the domain of natural gender (through animate general class markers) and in the domain of shape (through specific class markers).[80] In either case, Miraña noun classes appear roughly on the same vertical axis as English because in both languages noun class assignment is semantically motivated, where the degree of semantic motivation in the domain of natural gender is very high in both languages, while the semantic motivation in the domain of shape for Miraña is somewhat lower. The major difference between these two languages within the proposed typology is with respect to the parameter of semantic domains, since Miraña noun classes encode an additional semantic domain, namely physical shape, which is not present in English.

With respect to the parameter of semantic motivation (depicted on the horizontal axis in Figure 16), the main contrast is between Miraña and Swahili. Both languages encode shape as one semantic domain in their noun class systems, but noun class assignment is less motivated in Swahili. According to Contini-Morava (1997), shape is a relevant semantic domain in at least three noun classes of this language. In Contini-Morava's (1997: 607ff.) analysis, the semantic network that describes class 3 contains the component "extended things", that of class 7 contains "pointed things", and that of class 11/14 contains "long, thin things" (see Spitulnik 1989: 210f. for a similar analysis of the Bantu language ChiBemba). However, these classes contain many exceptions, and the whole system has to be considered at least partially opaque from a synchronic perspective. Whether there is any significance in attributing semantic characteristics to Swahili noun classes is in fact a debated issue (see Contini-Morava 1997: 601f.; see Denny and Creider 1986 for arguments for more transparent shape semantics in reconstructed Proto-Bantu noun classes).

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[80] Languages that display a "mixing" of semantic domains in one noun class, such as Alamblak (see section 11.3.2), would likewise be represented in both dimensions.

Note also that the semantic domain of shape is only represented in three classes in Swahili, which is in clear contrast to Miraña, where shape distinctions are a prominent semantic domain throughout the whole set of specific class markers. And since for the majority of nouns the assignment of class markers is semantically motivated, noun classes as reference-tracking devices in Miraña can be characterized as predominantly motivated and shape-based.

In summary, the typology proposed here can be used to systematically differentiate within the broad category of reference-tracking devices called noun classes according to semantic domains and semantic motivation. In this approach, it was shown that Miraña is not unusual in having semantically motivated noun classes (a characteristic which it shares with many languages, e.g. English), nor is it unusual in the fact that shape is a semantic domain in its noun class system (a characteristic which it shares with languages such as Swahili, which is argued to encode shape in some of its classes). It appears to be highly unusual, however, in displaying a high degree of semantic motivation in the assignment to shape-based noun classes.

The systematicity with which the Miraña reference-tracking system singles out the semantic domain of shape points at interesting cross-linguistic differences in the use of nominal semantics for discourse organization. Miraña noun classes provide a unique case study on the question of the "semantic reduction [...] of the nominal system" (Givón 1976: 171) represented in reference-tracking systems (see also Lehmann 1988: 61f.; Barlow 1992: 46ff.). It has been suggested that this reduction is not arbitrary, but that "pronominal agreement features represent only the top of the hierarchy of semantic features that underlie the noun universe" (Givón 1976: 171). The natural gender of animates, in particular humans, represents such a feature, as shown by the fact that the overwhelming majority of noun class and gender systems encode natural gender distinction. The present study suggests that shape may have a comparable status for inanimates, since it is the property that is systematically singled out in Miraña for the purpose of tracking inanimate referents.

APPENDIX A: THE SHAPE CLASSIFIER TASK

The following is a slightly modified version of the instructions to run the Shape Classifier Task. This task was designed for a cross-linguistic study by the author at the Max Planck Institute in Nijmegen in 2001. The original task description is contained in the Max Planck Institute's manual for field research 2003 (Seifart 2003a). Besides Miraña, this task was run in Kilivila (Austronesian) by Gunter Senft, Yucatec (Mayan) by Jürgen Bohnemeyer, Lao (Tai) by Nick Enfield, Jahai (Mon-Khmer) by Niclas Burenhult, Lavukaleve (Papuan) by Angela Terrill, and Solomon Island Pijin by Michael Dunn. For first results, see the Annual Reports of the Max Planck Institute (Kelly and Melinger 2001; Johnson and Matsuo 2003). For a different outcome from data obtained with this task, see Burenhult (2003).

Motivation and basic idea

The basic idea behind this task is to find out how languages encode basic shape distinctions such as dimensionality, axial geometry, relative size, etc. More specifically, we want to find out (i) which formal means are used cross-linguistically to encode basic shape distinctions, and (ii) which are the semantic distinctions that are made in this domain. In languages with many shape-classifiers, these distinctions are presumably encoded (at least partially) in classifiers. In other languages, positional verbs, descriptive modifiers, such as "flat", "round", or nouns such as "cube", "ball", etc. might be the preferred means. In this context, we also want to investigate what other "grammatical work" shape encoding expressions possibly do in a given language, e.g. unitization of mass nouns, or anaphoric uses of shape encoding classifiers, etc. This task further seeks to determine the role of the shape-related parameters that underlie the design of the objects (see below) in the semantics of the system under investigation. It has often been assumed that dimensionality (i.e. one- vs. two- vs. three-dimensional) is conceptually as well as cognitively the most basic shape related parameter, but it is unclear to what extent this

parameter is in fact represented in the internal organization of systems of individual languages. Shape semantics may also be closely linked to—or even subordinate to—other parameters of categorization, such as position or function. An additional hypothesis we want to test with data from this task is whether speakers of languages with dedicated systems that encode detailed shape distinctions, e.g. numeral classifiers, are faster at solving this task.

The interactive, referential communication task, which involves the matching of arrangements of differently shaped objects, is complemented by direct elicitation of denotations for each of the objects. In addition to the research questions outlined above, the task can provide data for the semantic description of shape-encoding expressions (to be complemented by further elicitation, distribution in texts, etc.), as it ideally reveals the extensional limits between shape-encoding expressions in individual languages such as "flat" and "round". Additionally, the interactional data from this task will include expressions of position, topological relations, as well as numerous anaphoric references, deictic expressions, and possibly pointing gestures.

Materials

I. 48 wooden objects with identification numbers

The set contains of 25 types of wooden objects. Of these, 6 are represented three times, 9 are represented twice and the remaining 10 once, adding up to 46 tokens. There are doubles and triples to encourage the use of classifiers that only occur in quantifying expressions (in numeral classifier languages). Identification numbers consisting of two digits are assigned to the objects on a set of six photos (ShaClaCodSug01-06). The first digit refers to its basic dimensionality (11, 12, etc. are saliently one-dimensional; 21, 22, etc. are saliently two-dimensional, and so forth). Examples of the assignment of identification numbers are given below.
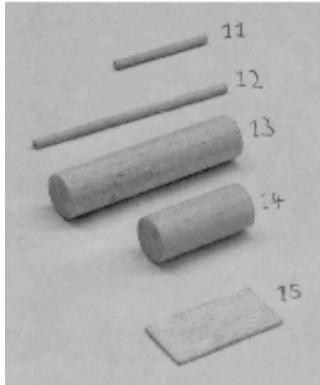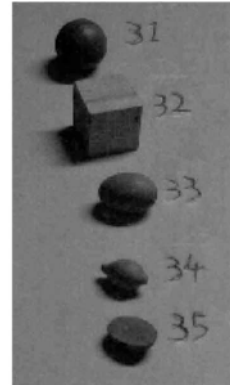
ShaClaCodSug 01   ShaClaCodSug 02   ShaClaCodSug 03

The parameters along which the task objects systematically vary are:
    (i) dimensionality (one, two, and three-dimensional)
    (ii) axial geometry (long or oblong, respectively, thick, wide)
    (iii) round vs. square (or cubic, respectively)
    (iv) negative spaces vs. solid.

Parameters of "material" and "function" are controlled for. All objects are made of very similar wood, and are in principle afunctional. Additionally, there are a few "odd" items in the set to blur the aim of the task and to "fish" for further shape expressions.

II. 20 numbered photos for matching task

For the matching task, there are 20 numbered photos (ShaClaTa01-20). On these, between 5 and 11 objects are depicted in different arrangements. The photos are ordered according to complexity, starting with few objects (5) in simple configurations, gradually moving towards more objects and complex configurations. On the first 10 of these photos, all important shape contrasts are represented at least once. At least these should be used if, for limitations of time, the researcher cannot run or transcribe sessions from all 20 photos. Photos 2 - 6 and 8 - 10 are reproduced in reduced size below (for reproductions of photos 1 and 7, see section 6.3.2, above).

ShaClaTa Photo 2

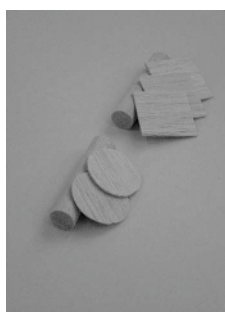
ShaClaTa Photo 3

ShaClaTa Photo 4

ShaClaTa Photo 5


ShaClaTa Photo 6

ShaClaTa Photo 8

ShaClaTa Photo 9

ShaClaTa Photo 10

III. 4 numbered photos for elicitation task

For the additional elicitation task, there is a set of 4 photos that indicate the order in which expression that denote the task objects should be elicited in isolation (ShaClaSup01-04). The only function of these pictures is for the researcher to know the order in which to present the objects. An example of these photos is given below.
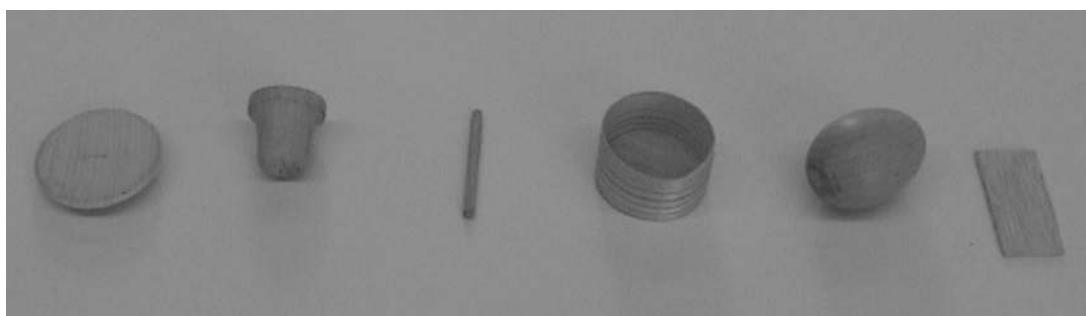
ShaClaSup01

How to run the task

I. Picture object matching task

Two speakers are seated at a 90% angle to each other, e.g. at a table. One (the director) is given a stack of photos in the order of their numbering. The other (the matcher) is given the objects, either in a box or on a heap. The researcher should make sure the matcher cannot see the pictures that the director is describing. The director should familiarize himself with the objects before starting the task. Then the director is asked to describe the scene he sees on the photo so the matcher can identify the correct objects and rebuild the scene on the table to a reasonable degree of accuracy. After completion of an arrangement, all objects are back in the game, i.e. should be put together with the rest again, e.g. in the box. After five trials (pictures), the director and matcher change roles.

This task must be filmed, since the identification of the reference objects is crucial for the coding of the data. Adjust the camera angle in a way that allows as much identification of the objects from the video recording as possible. At the same time, the director as well as the matcher, including their full gesture space, have to be visible in the video recording. For this reason, the director and the matcher should be seated as close to each other as possible. The task should be run with as many pairs of consultants as possible, but three pairs should be the minimum. If the task is taking too long to complete, only the first 10 of the 20 trials (pictures) should be run. In a variant of the task, a screen shields off the director and matcher from one another, in order to stimulate more elaborate linguistic descriptions.

II. Elicitation task

The data from the matching task will provide spontaneous, interactively negotiated descriptions of the objects. However, the actual semantics of the expressions used to refer to the objects may be blurred by the special circumstances of the task situation, e.g. by the need to contrast two similar-looking objects that occur in the same scene. In order to elicit expressions that denote the objects in a situation that does not involve contrast, expressions that can be used to refer to each object in isolation should be elicited in the following way.

The researcher presents the objects one by one and asks: "What do you call this?" He or she writes down the spontaneous answer(s) in order (first, second, etc.). Additionally, the researcher should elicit which other expressions (especially those that have been used for other objects in the task) can be used

and which cannot be used with reference to the object under consideration. This may lead to the establishment of hyponym relations within shape-denoting expressions, e.g. one general "flat" which can be applied to all flat objects, and one or more specific ones, which only apply to some. After finishing with one object, the researcher should put it away again, to prevent contrastive uses, as well as answers like "a little thinner than that one". The elicitation should be recorded, ideally on video, for future reference. The (pseudo-randomized) order in which the objects should be presented can be obtained from the pictures "ShaClaSup01-04".

Data coding

For the transcription and coding of data from the matching task, there are no particular suggestions, except that the researcher may want to use the numbers for identifying the objects suggested in the ShaClaCodSug01-06 pictures. For the coding of the data from the direct elicitation task, an Excel spreadsheet is provided, where consultants' answers can be filled in directly.

APPENDIX B: MIRAÑA REPEATERS COGNATE WITH BORA "CLASSIFIERS"

This appendix presents 83 repeater forms that are not in common use in Miraña but are recognized by Miraña speakers from the list of over 400 Bora classifiers contained in Thiesen and Weber (forthcoming) (a slightly shorter list with Spanish glosses is contained in Thiesen and Thiesen 1998: 354ff.).[81] These forms were elicited in the following way: Miraña speakers were prompted with forms from this list in combination with the root *pa-* (CPL) and asked whether they knew this form. By further elicitation it was established that these forms can be used as nouns, i.e. they are repeaters, not class markers in the Miraña system (see section 3.1, above). The forms that were recognized by Miraña speakers are given in various tables according to semantic domains: spatial notions (Table 44), body parts (Table 45), botanical terminology (Table 46), and geographical places (Table 47). Table 48 gives the forms of repeaters that cannot be assigned to any of these categories. Note that there are no repeaters based on temporal notions or animal names in this set of repeaters (see section 3.4.1, above).

The repeaters in Tables 44 - 47 are given in the form that was provided by Miraña speakers along with the meaning that is attributed to them by these speakers. Unlike the repeaters presented in section 3.4.1, above, Miraña speakers were often not confident in settling on the exact forms and meanings of the repeaters given in the tables below. Often, they resorted to simply stating that two forms are synonymous, such as numbers 9 and 12 in the following Table (44). In some cases, on being prompted with a Bora form, Miraña speakers provide a slightly different form, which can be used as a repeater in

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[81] It is not clear to what extent the forms given by Thiesen and Weber (forthcoming) are in actual use in Bora. Thiesen and Weber (forthcoming) note that only about 147 forms are said to be in common use, and 73 were removed by younger Bora speakers in the 1990s, either because they are not commonly used or because they correspond to a different dialect.

Miraña. For instance, the Bora form *-kaʔdadaɯ*, glossed in Thiesen and Weber (forthcoming) as 'with the head bowed down' prompted a Miraña speaker to produce the repeater form *-kaʔdoßɛɯ* (RP.bent.down), to which a similar meaning was attributed (number 80 in Table 48).

Table 44: Repeaters based on shape and configuration

#	repeater	meaning, synonyms
1	*-ʔahka* RP.piled.up	piled up or rolled up slender objects (e.g. an anaconda)
2	*-ʔɛhtɛ* RP.fluffy	a fluffy object (e.g. a new born chick, a piece of cotton)
3	*-ʔoːʔa* RP.group	a group of about 3 to 4 persons or objects
4	*-aːdʒako* RP.tube.bulging	a tube with a bulge
5	*-aːmamai* RP.row	a row of animals or humans
6	*-aːpaʔroɯ* RP.circular.stain	a circular stain (e.g. on clothes)
7	*-aßoʔoːɯ* RP.face.down	something placed face down
8	*-bahɯːtsai* RP.small.ridge	a small ridge (e.g. in the ground or on a piece of wood)
9	*-bɛroːɯ* RP.smooth.point	a slender object with a smooth and rounded point (e.g. a bone) (= *-doɾiːɯ*)
10	*-dɛhdɛɯ* RP.chunk	a slightly cylindrical chunk (= *-padziɾiːɯ*)
11	*-dimumɯːɯ* RP.aligned	tightly aligned (e.g. lips, two planks)
12	*-doɾiːɯ* RP.smooth.point	a slender object with a smooth and rounded point (e.g. a bone) (= *-bɛroːɯ*)
13	*-dɯhka* RP.winding	winding slender objects (e.g. paths, rivers)
14	*-dʒaːʔi* RP.bent	bent or dented flat and flexible objects (e.g. of clothes, woven baskets, pots)
15	*-dʒoʔdʒo* RP.flabby	wrinkled (e.g. of genitals, skin that is elastic or flabby)
16	*-goniɾiːɾi* RP.mouthform	bulging edges (e.g. the shape of protruding lips)
17	*-gwaːgwa* RP.ditch	a ditch or scratch in a hard surface
18	*-gwaːnɯgwa* RP.notch	a notch or an indentation
19	*-gwatʃɛkɛ* RP.Y-shape	an object shaped like the letter Y (e.g. open legs)
20	*-hiʔto* RP.empty.flexible	empty flexible containers (e.g. after taking out flesh, and only skin remains, e.g. of edible larvae)
21	*-hihto* RP.striped	stripes or parallel lines (e.g. of a striped shirt; the trace that a dragged piece of wood (or an anaconda) leaves; the dividing line, e.g. between two lots; a path
22	*-hoːro* RP.path	a canal, the scuffed trail of an animal, e.g. wild boar = *-hihto*

Table 44: Repeaters based on shape and configuration (cont.)

#	repeater	meaning
23	*-iʔbaɯ* RP.protruding	a round, protruding object (e.g. belly, canoe, pot, etc.)
24	*-kaʔmai* RP.pile	a pile (e.g. of tin coins)
25	*-kadʒaha:ɯ* RP.disorganised.group	an unordered group of objects
26	*-kadʒoɯ* RP.head.down	an object with an orientation towards the ground (e.g. a cat that climbs down a tree)
27	*-kadzɯdzɯɯ* RP.shrunk	a shrunken object (e.g. a woven basket pushed together)
28	*-kadʒɯɾɯ:hɨ* RP.assymetrical	a container with an asymmetrical edge (e.g. a pot, a house)
29	*-kano:ɯ* RP.inclined	an inclined object (e.g. a branch that bends down, a person that bends the head down)
30	*-kanɯnɯ:i* RP.stuffed	stuffed powder (e.g. the coca which is stuffed together after pounding)
31	*-kapajtɯ:ɯ* RP.pierced	a slender object that punctuates a surface (e.g. manioc sprouts coming through the ground)
32	*-kaɾoʔhagwa* RP.channel	a little watercourse (e.g. beside a house)
33	*-katoɾo:ɯ* RP.prop	a slender object in horizontal position, self-sustained from a horizontal surface or object (e.g. when a stick pushed against something soft stays there hanging in the air, when a man's erection is showing through his clothes)
34	*-koʔnai* RP.tall	a tall and slender object (e.g. a trunk, a skinny person, in general tall)
35	*-koha* RP.bunch.tied.together	a bunch of baskets or prey loosely tied together
36	*-kɯʔdu* RP.knob	a knob (e.g. on a stick)
37	*-kɯʔdʒɯ* RP.twisted	a twisted slender object (e.g. a stick)
38	*-kɯʔkoi* RP.skinny	a very skinny animal or person
39	*-kɯʔßi* RP.fishhookshape	the shape of a fishhook
40	*-mɨ:ɾo* RP.ditch	ditch (e.g. a dry riverbed; abdominal cavity)
41	*-ña:ʔi* RP.dented	a dented hard object (e.g. a dent in an aluminum can)
42	*-nɯʔtsɨ* RP.piled.up.earth	a pile of earth (e.g. piled up by the roots of a fallen tree)
43	*-patʃitʃa:ɯ* RP.criss-crossed	crossed slender objects or lines, the shape of the letter X
44	*-patɯ:ɯ* RP.streched.out	stretched out flexible objects (e.g. cloth or string)
45	*-ɾa:ʔo* RP.in.between	an open space in between two given objects
46	*-ɾaʔha* RP.opening	the opening between two slender objects, e.g. two poles, legs, etc.)

Table 44: Repeaters based on shape and configuration (cont.)

#	repeater	meaning
47	*-rɛßo:ɯ* RP.turned.over	a turned over objects (e.g. a machete, a person turning his head to looking behind)
48	*-rjohkɛ* RP.mould	a mould in a soft object (e.g. in one's arm's skin after sleeping on it)
49	*-tʃa:tʃa* RP.mushy	a mushy and soft object (e.g. a notebook left in the rain after a chicken steps on it, in general beaten, broken, and ugly)
50	*-tʃɛ:rɛ* RP.split	a split slender object (e.g. a wooden stick)
51	*-tʃɛʔmɯgwa* RP.flattened	flat soft objects (typically of dough)
52	*-tʃɛi* RP.stripe	stripes (e.g. stripes on a shirt, scratch marks on a body)
53	*-tʃiʔro* RP.frayed	frayed ends of flexible objects (e.g. clothes or strings)
54	*-tʃihto* RP.marked	a line that circumscribes a cylindrical object (e.g. on a sugar cane, on some fish, on body adornment around the legs)
55	*-tso:ha* RP.triangle	a triangle (e.g. a piece of land; vulva)
56	*-tsoʔna* RP.upright.cone	a slender cone in upright position (e.g. a particularly high roundhouse)
57	*-tʃoʔra* RP.too.long	long, thin and flexible objects that hang loose (e.g. the loose strap of a bag or hammock)
58	*-tʃɯ:tʃɯ* RP.broken	a broken, sharp object (e.g. a broken tooth, knife)
59	*-tɯhɯgwa* RP.point	the point of slender objects (e.g. the tip of a nose)
60	*-ɯhkɯkɯ* RP.partitioning	partitioning of a slender object (e.g. of a path, of a stick)

Table 45: Repeaters based on body part names

#	repeater	meaning
61	*-kɯʔtsiɯ* RP.hip.bone	hipbone (or something similar looking or something that sustains like a hipbone)
62	*-kɯni:ɯ* RP.heel	heel

Table 46: Repeaters based on botanical terminology

#	repeater	meaning
63	*-ko:ʔaj* RP.w/o.leaves	a tree without leaves, a house without a roof (made of leaves)
64	*-tsɯhɨ* RP.bare.root	bare roots (common for many Amazonian trees), everything that looks like it

Table 47: Repeaters based on geographical terms

#	repeater	meaning
65	*-hka:mɨ* RP.puddle	a puddle
66	*-kado:ɯ* RP.dried.riverbed	a dried riverbed
67	*-ko:ʔo* RP.palm.in.a.row	a plantation of about 10-30 plants in a row (e.g. banana plants, coconut palm, etc.)
68	*-tsi:ba* RP.peninsula	a peninsula, or cut-off pieces of something else

Table 48: Miscellaneous full repeaters

#	repeater	meaning
69	*-ʔadzɨ* RP.flashes	flashes of light
70	*-ajtoʔrihɨ* RP.scattered	small objects lying around scattered, thrown away objects in general
71	*-aɾa:ɾaɯ* RP.small.stain	a small stain or hole, which is round
72	*-dibɛ:ɯ* RP.held.between.lips	the form of tightly closed lips
73	*-dobɛ:ɯ* RP.gathered	objects that are held together and form one unit
74	*-dza:ɾa* RP.fluffy	fluffy objects (e.g. old and worn-off clothes)
75	*-dzɛ:ɾɛ* RP.onomat	a very sharp and irritating sound
76	*-gjɾajɾa:ɯ* RP.blinking	blinking lights
77	*-hkɛ:mɛ* RP.old.man	old man
78	*-hpajɾɯ* RP.small.puddle	a small puddle (e.g. in a patio after rain)
79	*-imihaɯ* RP.nice	nice and good people, animals, etc.
80	*-kaʔdoßɛɯ* RP.bent.down	literally head bent down, metaphorically of a sad person
81	*-nihkɛ* RP.grave	grave
82	*-ɾɯhtsi* RP.tightly.woven	a container woven of fibers (metaphorically the mouth of certain fish)
83	*-tsɯ:tsɯ* RP.tightly.woven	tightly woven (e.g. of a basket)

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SAMENVATTING

De structuur en het gebruik van op vorm gebaseerde nominale klassen in het Miraña

Deze studie biedt een gedetailleerde analyse van het zeer complexe systeem van nominale classificatie in het Miraña, een bedreigde Witoto taal, die gesproken wordt in het Colombiaanse Amazonegebied. De morfosyntactische, semantische en pragmatische eigenschappen worden in deze studie beschreven. De analyse is gebaseerd op een veelzijdig corpus van data, dat door de auteur tijdens meer dan tien maanden durend veldwerk verzameld werd. Deze studie bevat ook een beknopte beschrijving van de grammatica van het Miraña.

Het systeem van nominale classificatie in het Miraña bestaat uit meer dan zestig klassenmarkeerders in de vorm van suffixen. Zes daarvan zijn "algemene klassenmarkeerders", die geslacht en getal aangeven. De overige klassenmarkeerders zijn "specifieke klassenmarkeerders" en drukken vorm uit. Deze categorie is uiteenlopend en bevat naast een kerngroep met vaak gebruikte monosyllabische vormen ook een groep met polysyllabische vormen met een relatief specifieke semantische inhoud. Bovendien kunnen ongeveer vijftig naamwoorden gebruikt worden als "repeaters" in contexten waarin normaliter klassenmarkeerders voorkomen. In hoofdstuk 3 worden de beide categorieën van klassenmarkeerders en de "repeaters" in termen van toenemende grammaticalisatie beschreven.

Tot de morfosyntactische contexten van klassenmarkeerders (hoofdstuk 4) behoren naamwoorden, waarbij klassenmarkeerders als productieve afleidingen gebruikt worden. Andere contexten van klassenmarkeerders zijn voornaamwoordelijke uitdrukkingen (bijvoorbeeld aanwijzende voornaamwoorden en bezittelijke voornaamwoorden) en telwoorden.

Klassenmarkeerders worden ook verplicht in betrekkelijke bijzinnen gebruikt en als "cross-reference markers" in het gezegde van de hoofdzin.

Alle nominale uitdrukkingen, inclusief voornaamwoorden en betrekkelijke bijzinnen, kunnen alleen als nominale woordgroep fungeren. In hoofdstuk 5 wordt aangetoond dat twee coreferentiële nominale uitdrukkingen apposities zijn en geen hiërarchische constituenten vormen. De syntactische onafhankelijkheid wordt mogelijk gemaakt doordat de coreferentie door verplichte concordantie in nominale klassen aangeduid wordt. Concordantie kan ofwel met specifieke klassenmarkeerders ofwel met algemene klassenmarkeerders worden aangegeven.

In hoofdstuk 6 wordt beargumenteerd dat fysieke vorm een belangrijk bestanddeel van de semantiek van specifieke klassenmarkeerders is. De betekenis van klassenmarkeerders kan geëliciteerd worden door een pronominale uitdrukking met een klassenmarkeerder te gebruiken als naamwoordelijk deel van het gezegde. In deze context hangt het gebruik van klassenmarkeerders alleen maar af van de eigenschappen van referenten en wordt niet beïnvloed door concordantie. De kerngroep van monosyllabische specifieke klassenmarkeerders drukt abstracte vorm uit, zoals dimensionaliteit (een- , twee-, driedimensionaal) en relatieve lengte van de assen (bijvoorbeeld lang vs. dik). Polysyllabische klassenmarkeerders drukken normaliter specifiek ruimtelijke eigenschappen uit (bijvoorbeeld 'gerafeld').

In hoofdstuk 7 wordt uiteengezet dat klassenmarkeerders normaliter een duidelijk herkenbare betekeniscomponent toevoegen aan de geclassificeerde naamwoorden, die ze afleiden. De toewijzing van klassenmarkeerders is dus meestal semantisch gemotiveerd. Er bestaan echter ook combinaties van naamwoordelijke stammen en klassenmarkeerders die conventioneel of niet-compositioneel zijn. In dit geval is de toevoeging van klassenmarkeerders semantisch arbitrair. In beide gevallen echter bepaalt de klassenmarkeerder van een naamwoord zijn syntactische eigenschappen, vooral met betrekking tot concordantie.

Een andere functie van klassenmarkeerders is individuering. In hoofdstuk 8 wordt uitgelegd dat niet-geclassificeerde naamwoorden grammaticaal niet telbaar zijn. Telbare naamwoorden worden met behulp van klassenmarkeerders afgeleid. Individuering door klassenmarkeerders gebeurt dus in het naamwoord zelf en niet in verbinding met telwoorden, waarbij klassenmarkeerders voor concordantie gebruikt worden.

De grote variëteit aan contexten waarin klassenmarkeerders voorkomen kunnen in vier categorieën ingedeeld worden: "afleidend gebruik", "concordantie gebruik", "absoluut gebruik" en "predicatief gebruik". De meest voorkomende zijn het afleidend gebruik in verbinding met naamwoorden (waarbij een van de functies individuering is) en het concordantie gebruik in verbinding met andere woordklassen, bijvoorbeeld voornaamwoorden. Wanneer een dergelijk voornaamwoord gebruikt wordt om een nieuwe referent te introduceren zonder een coreferentieel naamwoord te gebruiken, wordt dat absoluut gebruik genoemd. Bovendien kunnen klassenmarkeerders een predicatief gebruik hebben, wanneer een voornaamwoord met een klassenmarkeerder als naamwoordelijk deel van het gezegde gebruikt wordt. Hoofdstuk 3 tot en met 8 beschrijven de morfosyntactische en semantische eigenschappen van deze vier gebruikswijzen. Hoofdstuk 9 en 10 zetten de anaforische functie van klassenmarkeerders in taalgebruik uiteen.

Door de vele mogelijkheden in het Miraña om klassenmarkeerders met stammen van naamwoorden en voornaamwoorden te combineren, bestaan er drie typen van referentiële uitdrukkingen die gebruikt kunnen worden om levenloze referenten te traceren: (i) geclassificeerde naamwoorden die uit een stam van een naamwoord en een specifieke klassenmarkeerder bestaan, (ii) voornaamwoordelijke uitdrukkingen met een specifieke klassenmarkeerder en (iii) voornaamwoordelijke uitdrukkingen met een algemene klassenmarkeerder. In hoofdstuk 9 worden deze drie typen gerangschikt naar semantische specificiteit: naamwoorden met specifieke klassenmarkeerders geven normaliter de substantie en de vorm van de referent aan. Voornaamwoordelijke uitdrukkingen met specifieke klassenmarkeerders geven normaliter alleen de vorm aan. De desbetreffende algemene klassenmarkeerder drukt slechts de levenloosheid van de referent uit.

Hoofdstuk 10 behandelt de manier waarop de informatie, geëncodeerd in bovengenoemde typen van uitdrukkingen, in taalgebruik verstrekt wordt om coherente discoursen te vormen. Binnen een discourse-eenheid, ofwel een sequentie, worden nieuwe referenten door semantisch specifieke uitdrukkingen (normaliter naamwoorden) geïntroduceerd en verder door semantisch minder specifieke uitdrukkingen (normaliter voornaamwoorden) getraceerd. Het gebruik van een uitdrukking die specifieker is dan de voorgaande vermelding, bijvoorbeeld een voornaamwoord met een specifieke klassenmarkeerder in plaats van een algemene klassenmarkeerder, kan het einde van een sequentie aangeven. Voornaamwoordelijke uitdrukkingen met een specifieke klassenmarkeerder worden ook vaak gebruikt voor desambiguering in contexten met verschillende mogelijke antecedenten, wanneer deze tot twee verschillende klassen behoren. Ze kunnen tevens teruggrijpen op een

antecedent dat ver daarvoor in de tekst vermeld werd zonder herhaling van het naamwoord.

Hoofdstuk 11 vat de belangrijkste bevindingen van deze studie samen en stelt de implicaties ervan ter discussie met het oog op twee aspecten van linguïstische typologie. Ten eerste worden de morfosyntactische criteria in twijfel getrokken, die in de bestaande typologieën van systemen van nominale classificatie gebruikt worden om "noun classes" en "classifiers" als twee verschillende typen te onderscheiden. Los daarvan schijnt de typologisch meest interessante eigenschap van het systeem van het Miraña te zijn dat klassenmarkeerders zowel voor afleiding als voor concordantie met dezelfde mate van belangrijkheid gebruikt worden. Ten tweede wordt een semantische typologie van het traceren van referenten voorgesteld. Deze kan gebruikt worden om Miraña systematisch met andere talen te vergelijken met betrekking tot de semantische eigenschappen van nominale klassen die gebruikt worden voor het traceren van referenten.

CURRICULUM VITAE

Frank Seifart began studies in General Linguistics (major), Psychology, and Sociology (minors) at the Freie Universität Berlin in 1992. He later switched minors (Spanish for Psychology) and did additional studies in German Literature and Anthropology. In 1996 and 1997 he spend a year at the Universitat de Barcelona, where he focused on experimental Phonetics. In early 1999, he obtained a Masters in General Linguistics from the Freie Universität Berlin with a thesis on fundamental issue in the documentation of endangerd languages. He then followed a two-year Masters program at the Centro Colombiano de Estudios de Lenguas Aborígenes (CCELA) in Bogotá, Colombia. During that period, he began doing regular fieldtrips to the Miraña communities in the Colombian Amazon region. In early 2001 he received a Masters in Etnolingüística from the the CCELA with a thesis on the morphosyntax of nominal classification in Miraña. He was then offered a Ph.D. scholarship at the Max Planck Insititiute for Psycholinguistics in Nijmegen. He is currently employed as the principal researcher and coordinator of the DobeS project "Documenting the languages of the People of the Center, especially Bora and Ocaina (North West Amazon)", which is funded by the Volkswagenstiftung and housed at the Ruhr-Universität Bochum.