Pluralizing Entities and Events in Yucatec Maya

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Yidong Yu
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Abstract

Pluralizing Entities and Events in Yucatec Maya

by

Yidong Yu

The central topic of this dissertation is the grammatical marking of semantically plural entities and events by means of suffixation in Yucatec Maya, a Mayan language spoken primarily in Yucatán Peninsula in Mexico. The empirical arguments in this dissertation come from my original fieldwork data, published data and previous typological observations. The theoretical arguments in this dissertation are built upon the Linkean algebraic semantic framework of plurals, the neo-Davidsonian framework of event semantics and Lasersohn’s formalization of pluractionality, among other things.

The first part of this dissertation investigates the grammatical marking of nominal plurality on nouns with the Yucatec plural suffix -o’ob. Three claims are made in this regard. First, the nominal plural marking with -o’ob in today’s Yucatec Maya is neither constrained by syntactic factors such as animacy status or surface grammatical role, nor by semantic factors such as numerical quantification, but is systematically optional; this observation reinforces accounts such as Butler (2011, 2012, 2013) that propose that the plural marker -o’ob is an adjunct. Second, the number opposition between an -o’ob-marked Yucatec noun and its bare counterpart is exclusive plural versus general; this data point is formally analyzed in terms of differences in noun denotations: the denotations of -o’ob-marked Yucatec nouns are sets of non-atomic entities, whereas the denotations of bare
Yucatec nouns are cumulatively closed sets of entities. Third, the systematic optionality of nominal plural marking in Yucatec Maya is due to a variation in noun denotations (Borer 2005; Chierchia 1998a,b) that varies between apportionable and generic; these two variations are the manifestation of an optional pseudo-partitive operation (Selkirk 1977; Higginbotham 1994) available at the final stage of the interpretation of the nouns in the semantics.

The second part of this dissertation investigates the grammatical marking of pluractionality on verbs with suffixation in Yucatec Maya. Three claims are made in this regard. First, the two pluractional morphs in Yucatec Maya, namely -la’an and -la’aj, are allomorphs of the same morpheme PLR whose morphological realization is determined by the local transitivity of the verb stem on which the suffixation takes place. Second, the pluractional suffix PLR in Yucatec Maya encodes event-external pluractionality, which is manifested in the following aspects: (i) PLR-sentences denote plural events; (ii) the PLR targets verbs of all Aktionsarten; (iii) the plural events denoted by the PLR-predicates must be contiguous in time but not necessarily in space; (iv) the PLR-predicates can have both habitual and single occasion readings; (v) the plural events denoted by the PLR-predicates can be satisfied by simple plurality; (vi) the resulting PLR-predicates are uniformly atelic; (vii) PLR-sentences entail their minimally different non-PLR counterparts; these attributes contrast with event-internal pluractionality, which is encoded by the morphological means of root reduplication in Yucatec Maya. Third, the pluractional suffix PLR in Yucatec Maya requires distributivity, namely, PLR-sentences must have plural internal event participants, but the plural internal event participants do not need to each participate in a plural event; this data point indicates a formal analysis of the Yucatec pluractional suffix PLR as a distributive pluractional marker that marks event-external pluractionality.

The last part of this dissertation brings together the related linguistic phenomena of number in both nominal and verbal categories in Yucatec Maya and investigates the overt grammatical marking of plural arguments and/or plural events
under the discourse context of event plurality and distributivity. Two claims are made in this regard. First, the number opposition in the verbal number system is plural versus general, the parallelism of the number opposition in the verbal and nominal number systems enables a unified treatment for number in both nominal and verbal categories in Yucatec Maya. Second, despite Yucatec Maya being a language whose plural marking and agreement are essentially optional, there are a few cases of obligatoriness in plural marking and agreement: (i) the grammatical indication of plurality of the internal arguments under the discourse context of event plurality and distributivity; (ii) the grammatical indication of plurality and singularity of the external arguments of the PLR-clauses; (iii) the nominal plural marking of the NPs in the PLR-clauses. These novel findings with respect to the obligatory display of number morphology shed light on the researches of optional number marking in Mayan languages as a whole and evoke close examinations on the exact conditions of the optionality and obligatoriness of the grammatical expression of number in future researches.
Zusammenfassung

Pluralisierung von Entitäten und Ereignissen im Yukatekischen Maya

von

Yidong Yu


Der zweite Teil dieser Dissertation untersucht die grammatischen Markierungen der Pluralität mittels Suffigierung der Verben. In diesem Zusammenhang werden die nachstehenden drei Ergebnisse präsentiert. Erstens sind die beiden pluraktionalen Formen des Yukatekischen Maya, nämlich -la’an und -la’aj, Allo morphe desselben Morphems PLR, dessen morphologische Realisierung durch die lokale Transitivität des Verbstamms, an welchem die Suffigierung stattfindet, bestimmt wird. Zweitens kodiert das pluraktionale Suffix PLR im Yukatekischen Maya ereignisexterne Pluralität, die sich in den folgenden Aspekten manifestiert: (i) PLR-Sätze bezeichnen plurale Ereignisse; (ii) das PLR zielt auf Verben aller Aktionsarten ab; (iii) die von den PLR-Prädikaten bezeichneten pluralen Ereignisse müssen zeitlich, aber nicht notwendigerweise räumlich zusammenhängend sein; (iv) die PLR-Prädikate können sowohl gewohnheitsmäßig als auch anlassbezogen gelesen werden; (v) die durch die PLR-Prädikate bezeichneten pluralen Ereignisse können durch einfache Pluralität befriedigt werden; (vi) die resultierenden PLR-Prädikate sind einheitlich atelisch; (vii) PLR-Sätze implizieren ihre mini-
mal unterschiedlichen nicht-PLR-Gegenstücke. Diese Attribute stehen im Gegensatz zur ereignis-internen Pluralität, die im Yukatekischen Maya durch das morphologische Mittel der Wurzelreduplikation vollzogen wird. Drittens erfordert das pluractionale Suffix PLR im Yukatekischen Maya Distributivität, d.h. PLR-Sätze müssen plurale interne Teilnehmer des Ereignisses haben, die jedoch nicht alle an einem pluralen Ereignis teilnehmen müssen. Dieser Sachverhalt deutet auf eine formale Analyse des pluractionalen Suffixes PLR als distributiver pluractionaler Marker hin, der ereignis-externe Pluralität markiert.

zukünftigen Forschungsfragen eingehender zu untersuchen.
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Part I

Introduction
Chapter 1

Introduction

1.1 Scope of Inquiry and Highlights

In this dissertation, I investigate the grammatical marking of semantically plural entities and events in Yucatec Maya, a Mayan language spoken primarily in Yucatán Peninsula in Mexico. More precisely, I delimit the scope of this investigation to the examination of the grammatical expression of nominal and verbal plurality through suffixation. The suffixes under investigation are -o’ob for nominal plural marking, and la’an and -la’aj for verbal plural marking (i.e. pluractional marking). As we will see in later chapters, -la’an and -la’aj are allomorphs of the one and same pluractional suffix, which I gloss as plr.

There are three main research questions which guide the writing of this dissertation. First, how to understand the optionality in plural marking in Yucatec Maya, and what are the underlying factors that contribute to this optionality? Second, are there grammatical expressions of pluractionality in Yucatec Maya, and how should the pluractional morpheme(s) be understood both language-specifically and cross-linguistically? Third, are there any parallelism between the nominal and verbal number categories, and how should this parallelism be accounted? These three research questions also structurally divide the dissertation into three parts (Part II, III and IV).
After the introductory part, Part II investigates the grammatical marking of nominal plurality on nouns with the Yucatec plural suffix -o’ob. Three claims are made in this regard. First, the nominal plural marking with -o’ob in today’s Yucatec Maya is neither constrained by syntactic factors such as animacy status or surface grammatical role, nor by semantic factors such as numerical quantification, but is systematically optional; this observation reinforces accounts such as Butler (2011, 2012, 2013) that propose that the plural marker -o’ob is an adjunct. Second, the number opposition between an -o’ob-marked Yucatec noun and its bare counterpart is exclusive plural versus general; this data point is formally analyzed in terms of differences in noun denotations: the denotations of -o’ob-marked Yucatec nouns are sets of non-atomic entities, whereas the denotations of bare Yucatec nouns are cumulatively closed sets of entities. Third, the systematic optionality of nominal plural marking in Yucatec Maya is due to a variation in noun denotations (Borer 2005; Chierchia 1998a,b) that varies between apportionable and generic; these two variations are the manifestation of an optional pseudo-partitive operation (Selkirk 1977; Higginbotham 1994) available at the final stage of the interpretation of the nouns in the semantics.

Part III investigates the grammatical marking of pluractionality on verbs with suffixation in Yucatec Maya. Three claims are made in this regard. First, the two pluractional morphs in Yucatec Maya, namely -la’an and -la’aj, are allomorphs of the same morpheme PLR whose morphological realization is determined by the local transitivity of the verb stem on which the suffixation takes place. Second, the pluractional suffix PLR in Yucatec Maya encodes event-external pluractionality, which is manifested in the following aspects: (i) PLR-sentences denote plural events; (ii) the PLR targets verbs of all Aktionsarten; (iii) the plural events denoted by the PLR-predicates must be contiguous in time but not necessarily in space; (iv) the PLR-predicates can have both habitual and single occasion readings; (v) the plural events denoted by the PLR-predicates can be satisfied by simple plurality; (vi) the resulting PLR-predicates are uniformly atelic; (vii) PLR-sentences
entail their minimally different non-PLR counterparts; these attributes contrast with event-internal pluractionality, which is encoded by the morphological means of root reduplication in Yucatec Maya. Third, the pluractional suffix PLR in Yucatec Maya requires distributivity, namely, PLR-sentences must have plural internal event participants, but the plural internal event participants do not need to each participate in a plural event; this data point indicates a formal analysis of the Yucatec pluractional suffix PLR as a distributive pluractional marker that marks event-external pluractionality.

Part IV brings together the related linguistic phenomena of number in both nominal and verbal categories in Yucatec Maya and investigates the overt grammatical marking of plural arguments and/or plural events under the discourse context of event plurality and distributivity. Two claims are made in this regard. First, the number opposition in the verbal number system is plural versus general, the parallelism of the number opposition in the verbal and nominal number systems enables a unified treatment for number in both nominal and verbal categories in Yucatec Maya. Second, despite Yucatec Maya being a language whose plural marking and agreement are essentially optional, there are a few cases of obligatoriness in plural marking and agreement: (i) the grammatical indication of plurality of the internal arguments under the discourse context of event plurality and distributivity; (ii) the grammatical indication of plurality and singularity of the external arguments of the PLR-clauses; (iii) the nominal plural marking of the NPs in the PLR-clauses. These novel findings with respect to the obligatory display of number morphology shed light on the researches of optional number marking in Mayan languages as a whole and evoke close examinations on the exact conditions of the optionality and obligatoriness of the grammatical expression of number in future researches.
1.2 Source of Data

The empirical arguments in this dissertation come from previous typological observations and data from three main sources:

First, the uncited data. These are original data from my fieldwork between 2018 and 2020. The transcription, the glosses and the translation of these data are all mine. The methodology of the collection of these data will be discussed in depth in chapter 3.

Second, data from published monographs and research papers, which are in most cases original data collected by other researchers. These data are usually already transcribed, glossed and translated by the authors in their own transcription and glossing conventions. Throughout this dissertation, I cite these data as I do for standard publications (i.e. author-year). I try to stay true to the original sources, but would minimally alter the transcription or the glosses, if they are not in accordance with the orthographical conventions utilized in this dissertation (cf. section 2.3).

Third, data from other sources, including published dictionaries and narration series as well as online corpora. These data are mostly transcribed, but not glossed. I cite these data by providing their sources. There are a few sources that appear very frequently, hence data from these sources are cited with abbreviations (1). I adopt the original transcription of these data, except when the transcription does not follow the orthographical convention in section 2.3; in that case, I would alter it minimally to conform with the orthographical convention. The glosses and the translation of these data are my own.

(1) Abbreviations of data sources cited in this dissertation

   
   Example: BVS-11.03
(Stands for: the third Yucatec sentence in chapter 11 of *Spoken (Yucatec) Maya*).


Example: NM-158

(Stands for: a sentence from page 158 of *Narraciones Mayas*).


Example: NMC-131-2

(Stands for: the second sentence cited from page 131 of *Narraciones Mayas de Campeche* in this dissertation).


Example: TM-hnaz_054.1

(Stands for: the sentence numbered as hnaz_054.1 from the online corpus *Textos mayas*).

1.3 Formal Foundation

1.3.1 Ontological Assumption

For the formal analyses of plurality in this dissertation, I follow the algebraic semantic framework of plurals introduced by Link (1983)\(^1\).

\(^1\)Cf. also Sharvy (1980); Link (1987) and Kratzer (2000).
events. I assume that individuals and events are variables of different semantic types (Champollion 2015); individuals are denoted by \( x, y, z, x_1, x_2, x_3, \ldots \), whereas events are denoted by \( e_1, e_2, e_3, \ldots \); the domains of individuals and events are denoted by \( D_e \) and \( D_v \), respectively. In these domains, there are atomic individuals and events, which compose the respective singleton sets, denoted as \( A_e \) and \( A_v \); the atomic elements are denoted as \( \text{atom}(x) \) for individuals and \( \text{atom}(e) \) for events, they form the relation that \( \text{atom}(x) \in A_e \subseteq D_e \) and \( \text{atom}(e) \in A_v \subseteq D_v \). The domain of individuals is the power set of the singleton set of individuals minus the empty set, the domain of events likewise (Henderson 2012: 41): 
\[
D_e = \mathcal{P}(A_e) \setminus \emptyset, \\
D_v = \mathcal{P}(A_v) \setminus \emptyset.
\]

The domains of individuals and of events are each partially ordered by a mereological “part-of” relation, denoted by \( \subseteq \); both domains form complete join-semilattices, i.e. partially ordered sets that have a least upper bound for any nonempty finite subset. The sum operation, denoted by \( \oplus \), is defined based on the \( \subseteq \) relation; \( \oplus \) maps entities onto their sums.

The pluralization operator, denoted by \( * \), closes predicates under their sum (Link 1983; Krifka 1989; Champollion 2010b): \( *P \) is the smallest set such that (i) \( P(x) \Rightarrow *P(x) \) and (ii) \( *P(x_1) \& *P(x_2) \Rightarrow *P(x_1 \oplus x_2) \).

### 1.3.2 Word Formation

Word formation in Yucatec Maya is somewhat complicated due to the relatively opaque morphological structure shared by languages of the Mayan family. Henderson (2012: 42-44) studies verb formation in Kaqchikel (Mayan; Guatemala) and assumes that all verb roots denote sets of atomic events and must undergo cumulative algebraic closure (Link 1983; Krifka 1989; Champollion 2010a: 15) before they are inflected. Cumulative algebraic closure, also known as the Linkean

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3 Cf. the discussion in sec. 2.4.1 of this dissertation on roots and stems in Yucatec Maya; cf. also Lois (2011). In addition, cf. Coon (2004) for the problem of word formation in Chol (Mayan; Mexico).
star (⋆) operation, is an operation that takes a set and returns another set that contains any sum of things taken from the original set; this operation can be defined as \( \star P = \{ x | \exists P' [x = \oplus P' \land P' \subseteq P] \} \). In contrast to the previous literature that shares the view that all verbal predicates are cumulatively closed by default (Landman 1996; Kratzer 2008; Krifka 1989, 1992, among others), Henderson (ibid.: 43) argues that not all verbs are cumulatively closed in the lexicon. This non-homogeneous assumption of the cumulative closure of the lexicon enables root-level plural modification, in addition to the word-level.

As a language in the Mayan family, Yucatec Maya shares similar features with Kaqchikel. In this dissertation, I make the following assumptions for the word formation in Yucatec Maya:

(2) a. All roots in Yucatec Maya denote sets of atoms

   b. All stems of verbs and nouns in Yucatec Maya are cumulatively closed before further operations.

   c. Not all lexemes are cumulatively closed.

(2a) is motivated by the fact that the smallest interpretable unit in Yucatec Maya is the root. As a result, it is reasonable to give roots an atomic status.

(2b) is motivated by the fact that the interpretation and the categorial information of a root are fixed only when a stem is formed (cf. the locality constraint on the interpretation of roots (LCIR) in Marantz 2000 and the application in a Mayan language (Chol) in Coon 2004), and that the union of two predicates entails the sum of the predicates and their arguments (e.g. ‘I build a house’ + ‘You build a house’ → ‘We build houses’). In other words, verbal and nominal stems in Yucatec Maya should be cumulative, and the cumulative closure should be done as soon as the categorial stems are formed.

Although all stems are cumulatively closed, we do not want to assume that all nouns and verbs in the lexicon are cumulatively closed. This is because we are not yet certain whether all of the nominal and verbal affixations target cumulative
predicates. In order to make space for the possibility that some affixes in Yucatec Maya do not apply to cumulatively closed predicates, I further assume (2c) in the formal analysis.

1.3.3 Thematic Roles

I follow a neo-Davidsonian framework of event semantics (Parsons 1990, 1995; Schein 1993; Krifka 1989; Landman 1996, 2000; Champollion 2010a, 2010b, 2015, among others) and assume that verbs denote relations between events and their arguments (Davidson 1967, 1980). In addition, I assume that events are mapped to their arguments by a set of thematic-role functions (Fillmore 1966, 1968; Parsons 1990; Schein 1993; Dowty 1989, 1991) which is determined by the syntactic structure.

In my formal analysis of the pluractional suffix in Yucatec Maya in chapter 7, I will define one such function, namely argi(e, x), which is a function that maps an event onto its internal argument; the internal argument of the event is determined by the syntactic relation of the verb and the argument NP.

1.3.4 Times and Spaces

In addition to the domains of individuals and events, I assume structured domains of times and of spaces, which compose part of an event structure (cf. Krifka 1998). The domains of times and of spaces are a non-atomic mereology of time and of space, hence the “part-of” operator ⪯ and the sum operator ⊕ apply in these domains.

There are trace functions τ and σ assigned to events the time and space in which they occur. τ and σ are partial functions on the domain of events D_e: τ maps events to one-dimensional temporal intervals, while σ maps events to areas of space; both temporal intervals and areas of space are of the same semantic type, namely type i (interval).

Temporal intervals are ordered by two binary temporal relations: complete
precedence $<$ and overlap $\circ$ \(^4\). Likewise, I assume the same two binary orderings for spatial relations.

### 1.3.5 Semantic Types

Following previous literature (Champollion 2010a; Parsons 1990; Krifka 1992; among others), I assume the following semantic types for the formal analyses in this dissertation:

(3) Semantic types:

- Individuals (ordinary objects) are of type $e$
- Events are of type $v$
- Intervals, both temporal and spatial, are of type $i$
- Numbers are of type $n$
- Thematic-role functions are of type $<v,e>$
- Trace functions, both temporal and spatial, are of type $<v,i>$
- Verbs and VPs are of type $<v,t>$
- Predicates are of type $<e,t>$
- Quantifiers are of type $<<e,t>,t>$
- The existential closure\(^5\) is of type $<<v,t>,t>$

---

\(^4\)Here, I adopt an interval-based model of time. For discussion on instant-based and interval based models of time cf. Kamp (1979) and Øhrstrøm and Hasle (1995), among others.

\(^5\)The existential closure (Davidson 1967, 1980) turns sets of events into truth conditions.
1.3.6 Pluractionality

The basis upon which the semantics of pluractionality in chapter 7 of this dissertation is built comes from Lasersohn’s (1995: 238-266) analysis of pluractional markers. There are two main ideas that constitute Lasersohn’s (ibid.) analysis. First, pluractional markers reflect plurality of the verbs, which are understood as representing events; hence, pluractional verbs are taken to denote sets of events that correspond to the denotation of the corresponding non-pluractional verbs. Second, typological variations of pluractional markers are reflected in additional clauses of the denotation of the pluractional verbs; this enables a language specific modelling of the pluractional markers.

The basic meaning of pluractional markers is the plurality of events denoted by the non-pluractional verb (4)\(^6\). Two salient pluractional meanings are fixed in this base clause. First, pluractional verbs denote a plurality of events, which is formalized as a set of events that each satisfies the property \(P (\forall e \in X[P(e)])\). The reason that each event needs to satisfy a property \((P)\), rather than the predicate \((V)\), is that not all pluractional verbs require a multitude of the events that the non-pluractional verb denotes. As we will see in the discussion in chapter 6 and 7, the distinction between event-internal and external pluractionality\(^7\) can be very well accounted for through the stipulation of the value of \(P\): for event-internal pluractionality in which a multitude of sub-events constitute a complete event, \(P\) corresponds to the atomic property required by \(V\); on the other hand, for event-external pluractionality in which a plurality of events is expected, \(P\) corresponds to \(V\). Second, many pluractional markers require a minimal repetition of the plural events, which translates into the second clause in (4) that the cardinality of the set of events is greater or equals to a specific number \(n\) determined by the specific pluractional marker \((\text{card}(X) \geq n)\).

---

\(^6\)Lasersohn (1995: 238-266) originally uses \(PA\) for pluractional morphemes and \(V-PA\) for pluractional verbs.

\(^7\)The distinction between event-internal and event-external pluractionality is elaborated in 6.2.2 with examples.
In words: a pluractional verb denotes a set of events that each satisfies a specific verbal property (which is defined by the specific pluractional marker) and the cardinality of this set of events (i.e. the repetition of events required by the specific pluractional marker) is at least $n$.

In Lasersohn’s (ibid.) treatment, language specific meanings of the pluractional markers, as described in typological works such as Cusic (1981: 74-75), are translated as additional clauses that add to the basic pluractional meaning in (4). One of the most common plural meanings that is associated with the pluractionality is distributivity. Distributivity is modeled as a clause that defines specific aspects of the plural events as non-overlapping ($-f(e) \circ f(e')$). To achieve this, a trace function $f$ that maps events to their traces in a stipulated domain is defined with the specification of a temporal (5a), spatio-temporal (5b) or thematic relation (5c). Further specifications of this clause can be made by adding yet another clause which specifies the between time of the repetitive events, which renders separated (6) or continuous (7) readings.

(5) Neutral distributive reading

$V-\text{PLR}(X) \iff \forall e, e' \in X[P(e) \& -f(e) \circ f(e')]\&\text{card}(X) \geq n$

In words: a pluractional verb denotes a set of events that each satisfies a specific verbal property $P$, and the traces of any of the two events do not overlap on a chosen domain, and the cardinality of this set of events is at least $n$.

a. Temporal: $V-\text{PLR}(X) \iff \forall e, e' \in X[P(e) \& -\tau(e) \circ \tau(e')]\&\text{card}(X) \geq n$

b. Spatio-temporal: $V-\text{PLR}(X) \iff \forall e, e' \in X[P(e) \& -K(e) \circ K(e')]\&\text{card}(X) \geq n$, where $K$ is defined as $K(e) = <\sigma(e), \tau(e) >$

c. Participant-based: $V-\text{PLR}(X) \iff \forall e, e' \in X[P(e) \& -\theta(e) \circ \theta(e')]\&\text{card}(X) \geq n$, where $\theta$ is a thematic relation assigned by the verb $V$
(6) Strong distributive reading (separated reading)

\[ V \text{-} PLR(X) \iff \forall e, e' \in X [P(e) \& \neg f(e) \circ f(e') \land \exists x [\text{between}(x, f(e), f(e')) \land \neg \exists e'' [P(e'') \& x = f(e'')]]] \]

where:

\[ \text{between}(x, x', x'') \iff x'RxRx'' \lor x''RxRx' \]

\(R\) is a binary relation that is dependent on the context (i.e. temporal precedence, spatial position, etc.)

\(x\) is a variable that can be one-place or multiple-place, depending on the specific meaning to be modeled

(ii) and (iii) in words: there is a trace \(x\) that is between the traces \(f(e)\) and \(f(e')\) in the domain in question with respect to the binary relation \(R\), and there is no event which satisfies the verbal property \(P\) that takes place in the time or space indicated by \(x\).

(7) Weak distributive reading (continuous reading)

\[ V \text{-} PLR(X) \iff \forall e, e' \in X [P(e) \& \neg f(e) \circ f(e') \land \exists x [\text{between}(x, f(e), f(e')) \land \neg \exists e'' [P(e'') \& x = f(e'')]]] \]

(ii) and (iii) in words: there is no such trace that is between the traces \(f(e)\) and \(f(e')\) in the domain in question with respect to the binary relation \(R\), and there is no event which satisfies the verbal property \(P\) that takes place in the time or space between \(f(e)\) and \(f(e')\).

The distinction between event-internal and event-external pluractionality is made merely through the stipulation of \(P\) in Lasersohn’s (ibid.) treatment of pluractional markers. For event-external pluractionality, it is the event itself that is being repeated, hence \(P = V\); on the other hand, for event-internal plurac-
tionality, it is the action within the complete event that is being repeated, hence $P$ is determined lexically. As we will see in the discussion of Wood (2007) and Henderson (2012), the current treatment is oversimplified in its stipulation of $P$ only relative to $V$ but nothing else; in other words, Lasersohn’s (ibid.) treatment not only neglects the pluractional markers that do not receive interpretations that are only relative to the interpretation of the verb, but also over-predicts types of pluractional markers cross-linguistically that do not actually exist, because the property $P$ in this treatment is not restricted enough. Since most of the problematics only concern event-internal pluractionality, I will not go into detail here, but some will be mentioned later in relevant discussions.

1.4 Structure of the Dissertation

The dissertation is structured as follows. Part I is the introductory part, which comprises three chapters. Chapter 1 introduces the main research topics and the sources of the empirical evidence, lays out the formal foundation of the analysis, and outlines the structure of the dissertation. Chapter 2 is a concise description of the object language, Yucatec Maya, which provides ethnographic information of the language and its speakers, phonology and orthography, and morphosyntactic descriptions. Chapter 3 discusses issues related to fieldwork methodologies.

Part II examines the nominal plurality in Yucatec Maya, in particular the optionality in plural marking. This part comprises two chapters. Chapter 4 presents a typological picture of the study of number and plurality, and highlights some of the important factors that can be examined for the study of Yucatec nominal plurality. Chapter 5 scrutinizes the nominal plurality in Yucatec Maya. After the introduction, section 5.2 examines the morphosyntax of nominal plurality, and presents the nominal number values, contrast and system of Yucatec Maya. Section 5.3 revisit the optionality in Yucatec plural marking which is widely reported in previous literature, and presents a current description of this variation; several
morphosyntactic and semantic factors are examined but are determined as non-contributors to this variation; moreover, language contact and internal change are also taken into consideration as factors that may have contributed to the variation in plural marking in modern Yucatec Maya. Section 5.4-5.5 deals with the optionality in more depth and pins the variation in plural marking on the variation in noun denotations; a formal analysis, presented through 5.4.3-5.5.2, is hence motivated, which accounts for the optionality in plural marking by adopting an optional pseudo-partitive operation at the final stage of the noun interpretation. In addition, 5.5.3 further goes compositional and demonstrates the efficacy of the proposed analysis in yielding the desired interpretations in all possible plural constructions in Yucatec Maya. 5.5.4 gives an interim summary of the semantics proposed thus far. Lastly, 5.5.5 discusses further issues related to the variation in number marking in Yucatec Maya.

Part III investigates the verbal plurality, or pluractionality, in Yucatec Maya, more specifically, the pluractionality expressed through suffixation. This part comprises two chapters. Chapter 6 presents a typological picture of the study of pluractionality, both in forms and in meanings, and reviews the existing literature on this topic. Chapter 7 deals with the phenomenon of pluractionality in Yucatec Maya. Section 7.2 settles the question which suffix(es) is/are within the scope of investigation. 7.2.1 briefly addresses the morphological means of root modification as a way to express plural events and classifies it under the event-internal pluractionality within the semantic typology. 7.2.2-7.2.6 discusses the morphology of the pluractional suffix, which is determined as having two allomorphs in the morphological distribution. Section 7.3 examines the pluractional meaning of the pluractional suffix; the suffix is placed within the framework of semantic typology of pluractionality, and several semantic parameters are taken into consideration; as a result, it is determined that the suffix is an event-external pluractional. Section 7.4 further examines the language-specific pluractional meaning of the pluractional suffix, which include distributivity (7.4.1-7.4.2), iteration (7.4.3) and
intensification (7.4.4), which contributes to the descriptive account of the Yucatec pluractional suffix. Based on the semantic description collected through sections 7.3-7.4, Section 7.5 presents a formal analysis of the Yucatec pluractional suffix (7.5.1-7.5.2), and demonstrates how this analysis can successfully account for all the descriptive properties of this suffix (7.5.3-7.5.4).

After the individual investigation into the nominal and the verbal plurality in Yucatec Maya respectively, Part IV looks at both nominal and verbal categories as well as their interaction with the grammatical number and the number system. Section 8.2 compares the nominal and verbal number system and unifies them into one. Section 8.3 discusses some interesting behaviors of the interaction between plural nouns and pluractional marker in Yucatec Maya. Finally, chapter 9 presents the conclusions and points out some broad directions for future researches.
Chapter 2

Yucatec Maya:
A Concise Description

2.1 Introduction

A concise description of the language under investigation, Yucatec Maya, will be presented in this chapter in hope that the readers will be able to grasp the data presented in the later chapters of this dissertation more easily. This chapter is structured as follows. After this introduction, section 2.2 provides some general information about modern Yucatec Maya, section 2.3 presents the phonology and the orthography of the language, section 2.4 describes the Yucatec morphology, section 2.5 describes the Yucatec syntax, and section 2.6 is the summary.

2.2 General Information

Yucatec Maya, together with other 28 languages of the Mayan family, originates from a common ancestor language known as Proto-Mayan, spoken by the ancient Maya inhabitants, the ancestors of the present-day Maya people, around 5,000 years ago. Modern Yucatec Maya is spoken on the Yucatán Peninsula, in the states of Yucatán, Campeche and Quintana Roo of Mexico, in northern Belize, and in neighboring areas in Guatemala. Having approximately 824,670 speakers
(INEGI 2010), it is the largest indigenous language in Mexico. The name of the language given by the speakers is simply Maya, transcribed as *maaya, maaya t’aan* ‘Maya speech’ or *maayáa* (INALI 2007). Genealogically speaking, Yucatec Maya belongs to the Yucatecan branch of the Mayan languages, which, aside from Yucatec, also includes Itza’, Mopan and Lacandon.

The language is considered relatively homogeneous with respect to its synchronic geographical variation, though differences at all linguistic levels within the language structure are noticeable. Based on lexical and morphological parameters, a distinction between a *western* and an *eastern* variety of the language is made (Pfeiler 1995; Ayres and Pfeiler 1997: 18-21; Briceño Chel 2000; Sobrino Gómez 2005; Blaha Pfeiler and Hofling 2006). On the other hand, two varieties of Yucatec Maya are currently distinguished by the speakers based on the intrinsic characteristics: *Jach Maya* ‘true, pure and old Maya’ and *Xe’ek* ‘modern, mixed and Spanish-influenced’ (Pfeiler 1985, 1998, 1999; Berkley 1998). The later is the more widely spoken variety and is spoken by the younger generation (Pfeiler 1998: 131-134, 2012), although the former is the one that is considered as “good” Maya (Armstrong-Fumero 2009: 362) for its social-ethnological value.

One of the most salient characteristics of Yucatec Maya is its language contact situation (Lope Blanch 1987: 22). Significant influence on the language is rendered by Spanish, the now common and dominant language of the region, since the initial arrival of the Spaniards in the early 16th century. Most prominently, Spanish vocabulary is largely integrated into Yucatec Maya (Lucy 1992; Pfeiler 2014) - not only words that reflect modern aspects of thoughts and life, but also those that restrictively express language-internal grammatical meaning (Brody 1987; Stolz 1998). Other aspects of the impact of language contact with Spanish are also observed in present-day Yucatec Maya, including Spanish-like behavior in phonological (Uth and Gutiérrez Bravo 2020) and morpho-syntactic (Gutiérrez Bravo and Uth 2020) domains.

Another aspect resulting from the strong and close contact with Spanish is the
prevailing bilingualism of the speakers. Due to mostly economic reasons, continuous decreases in the number of monolingual Maya speakers are witnessed since the 1940s, when a series of wide-ranging regional transformations took place (Mossbrucker 1992; Baños 2000; Gaskins 2003). Federal education policy in bilingual education, which was implemented in the Yucatá Peninsula since the 1950s, along with the policy of compulsory education, have also played a non-negligible role in the promotion of bilingualism among the Mayan people. To this day, only less than 1% of the Maya speakers are monolingual (INEGI 2010); the current tendency is, rather, a shift from bilingualism of Yucatec Maya and Spanish to Spanish monolingualism (Pfeiler 2014).

2.3 Phonological Inventory and Orthography

The phonological system of modern Yucatec Maya consists of 20 consonants and 5 series of vowels. The orthographic representation (INALI 2014: 179-195) of this system is shown below in (8). This orthographical system is in accordance with the 1984 phonemic orthographic conventions of the Academia de la Lengua Maya de Yucatán (CDAM 1984).

(8) a. Consonants:

\[ b, ch, ch', j, k, k', l, m, n, p, p', r, s, t, t', ts, ts', w, x, y. \]

b. Vowels:

\begin{align*}
\text{Short: } & a, e, i, o, u. \\
\text{Long with low tone: } & aa, ee, ii, oo, uu. \\
\text{Long with high tone: } & áa, ée, íi, óo, úu. \\
\text{Glottalized: } & a', e', i', o', u'. \\
\text{Rearticulated: } & a'a, e'e, i'i, o'o, u'u. \\
\end{align*}

In this representation, the consonants \( ch', k', p', t' \) and \( ts' \) are ejective (i.e. glottalized) consonants. The symbol ‘ in vowels corresponds to a glottal stop
[?], hence the rearticulated a’a, for example, is pronounced as [aʔa]. More on the pronunciation of Yucatec alphabets see INALI (2014: 179-195); Bricker et al. (1998: XI-XIII), among others. For descriptions on the Yucatec tonal system see Kügler and Skopeteas (2006); Kügler et al. (2007); Gussenhoven and Tseeuw (2008), among others.

In some literature, in particular in *Diccionario Maya Cordemex* (Barrera Vásquez et al. 1980), the Yucatec stories collected by Andrade and others (Andrade and Vermont-Salas 1971; Andrade and Máas Collí 1990) and the works that follow the scientific orthography (*el alfabeto científico* advocated by Christian Lehmann (see Lehmann 2017a, 2018), the transcription of oral Yucatec Maya data is written phonemically, rather than orthographically. Most commonly, the following differences are noted:

\[
\begin{align*}
(9) & \quad a. \quad h &= j \\
& \quad b. \quad âa &= aa, \ èe &= ee, \ ii &= ii, \ òo &= oo, \ ùu &= uu \\
& \quad c. \quad a’ &= a’a, \ e’ &= e’e, \ i’ &= i’i, \ o’ &= o’o, \ u’ &= u’u
\end{align*}
\]

Unless otherwise stated, throughout this dissertation, the data cited from other work will be automatically altered into the orthographic representation listed in (8).

### 2.4 Morphology

This section presents a very brief morphological description of Yucatec Maya. The aim of this section is not to give a complete literature review on every single aspect of the morphology of Yucatec Maya, but to lay the foundations for the understanding of the constituents in a Yucatec sentence, for the morphological

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1The phonemic representation is placed on the left side of the equality sign, and the orthographic representation (i.e. the representation that is used throughout this dissertation) is placed on the right side.
structure in Yucatec Maya is not exactly transparent, as we will see in the data in the coming sections.

2.4.1 Roots and Stems

Roots are traditionally understood by Mayanists as the minimal lexical elements in the language which are categorial. All Mayan roots can be divided into various groups according to their morpho-phonological behavior: transitive verbs, intransitive verbs, positionals, nouns, adjectives, particles, expletives, numerals, etc. (Bricker et al. 1998: 329). The division of root classes varies depending on the specific classification system, but the three main root classes retain: transitive (verbal) roots, intransitive (verbal) roots and nominal roots.

The majority of the roots in Mayan languages has the form of CVC. In Yucatec Maya, the V can be manifested in four out of the five types of vowels: short, long with low tone, long with high tone and rearticulated (cf. section 2.3). Bricker et al. (1998: X-XIV), for instance, generated all of the possible combinations of the vowels and consonants in the shape of CVC, and attested that only about 2,000 of them are meaningful in Yucatec Maya (i.e. are roots); among these c. 2,000 roots, c. 300-500 are transitive roots, c. 70-80 are intransitive roots, and c. 800-900 are nominal roots.

Criticisms of the traditional root classification were posed in recent literature from two main perspectives: first, the question was raised whether Mayan roots are categorial; second, whether roots in all Mayan languages have the shape of CVC, as assumed by the traditional descriptions. With respect to the categorization of Mayan roots, Haviland (1994: 700) has already argued upon the data from Tzotzil (Mayan, Tzeltalan branch) that the traditional root classification is delusional because many roots fail to fall clearly into a certain category. Lois and Vapnarsky (2003) and Lois (2011) examined data from the Yucatecan branch and

\[2\] The number of roots in these three main root groups comes from Lois (2011).

\[3\] The Yucatecan branch of Mayan includes Yucatec, Itza’, Mopan and Lacandon. Among these four language, Yucatec is the only language that is spoken by a good portion of the population.
called into question the traditional root classification; as a result, they proposed that, instead of the determination of a verb-noun opposition at the root level, at least a sufficient amount of the roots should better be analyzed as category-neutral. In the same vein, Lois et al. (2017) extended the examination to another two branches of Mayan (Cholan and Tzeltalan) and argued that roots in these languages should also be analyzed as category-neutral. The acategorial roots in the Yucatecan branch received a first formal treatment in Lois (2011), which adopted the Distributed Morphology framework and the idea of root templates borrowed from the radicals (i.e. consonantal roots) of the Semitic languages. A first treatment of the acategorial roots in Mayan of this kind is Coon (2004) for Chol (Mayan, Cholan branch).

With respect to the CVC shape of Mayan roots, Briceño Chel (2006: 39-41) and Gutiérrez Bravo (2015: 38) argues that present-day Yucatec roots have exceeded the sole CVC shape. The main controversial point at issue is the treatment of roots that are articulated nowadays as vowel-initial. For example, il ‘see’ was treated by Bricker et al. (1998: 12-13) as a verbal root √İl, which is of the traditional CVC shape, while Briceño Chel (2006: 41) and Gutiérrez Bravo (2015: 41) treated it as a VC root. The different treatment of the root templates in Yucatec Maya also results in a difference in the further classification of the roots, especially the ones that primarily form verbs. For example, contrary to Bricker’s

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4The original terminology in their article was “polycategorial”, which was elaborated by the authors as “[linguistic elements that are] used in different lexical categories with an identical form” (Lois et al. 2017: 102).

5This is not to say that previous scholars assume that all roots in Mayan have the CVC shape. Campbell (1999: 64-65), for example, points out that roots that do not follow the standard CVC template are often loanwords or compounds. As we will see in the next sentence, the point at issue is not whether exceptions from the CVC root template exist, but whether the root forms of those Mayan roots that were previously analyzed as CVC still maintain such standard shape.

6Now I remain agnostic to the actual pronunciation of the roots or words that are elicited as vowel-initial in today’s Yucatec Maya. Given the starting time of Bricker’s work, which was around 1970, it is fully possible that the speakers at that time did in fact still pronounce those words with a glottal stop preceding the initial vowel and hence her treatment does actually reflect the ad hoc phonology of the language as it was spoken back then.

7There is also a difference in assuming when and where the categorization takes place among
classification (Bricker et al. 1998), which groups the roots into 10 classes depending on their form, categorial feature and the derivational suffixes with which they are able to combine\(^8\); the classification of Gutiérrez Bravo (2015) is much lighter: depending on the shape of the root (i.e. whether the root has the shape of CVC in the strictest sense\(^9\)), all roots are divided into 2 classes, and depending on transitivity, these 2 classes are further divided into 4 groups. The latter root classification system has some didactic advantages, for instance, it gives the complex derivational morphology in Yucatec Maya a more comprehensible presentation, which we will see below in section 2.4.5.

Stem is understood as the next level in the process of the lexical formation after root. Mayanists use this terminology uniformly to refer to the linguistic unit that is larger than a root but smaller than a word, but the exact size of a stem and/or a word varies. As we will see in the discussion of the pluractional morphology in Yucatec Maya in section 7.2, different understanding of the size of a stem can result in a contradictory analysis of the same phenomenon. An alternative is to set the discussion of the boundary between stem and word in Yucatec Maya aside, whenever such discussion is unnecessary, which is the position much recent literature took, such as Ayres and Pfeiler (1997); Briceño Chel (2006); Gutiérrez Bravo (2015). For these authors, roots are combined with various morphemes to form words and other larger constituents.

In this dissertation, I adopt the position that roots in Yucatec Maya are atomic lexical elements that are acategorial; the categorial feature of a root is specified through a process of merge with a category head; this category head these various treatments; depending on the specific treatment, possible positions for categorization are: root level, stem level and word level.

\(^8\)Another root classification that also utilizes these three criteria is Owen (1968), which groups the roots into 3 classes and 14 sub-classes.

\(^9\)The shape of CVC in the strictest sense means that the vowel has to have the form of V, which corresponds to a short vowel; previous discussion of CVC in this section used V in a looser sense, i.e. it corresponds to a form of vowel in (Yucatec) Maya. In other words, in Yucatec Maya, in particular, CVC in the strictest sense corresponds only to the form of CVC (e.g. ts'\(^{-}\)o\(-\)n, whereas CVC in a looser sense corresponds to the following four possible forms: ts'\(^{-}\)a\(-\)n, ts'\(^{-}\)o\(-\)o\(-\)n, ts'\(^{-}\)o\(-\)o\(-\)o\(-\)n and ts'\(^{-}\)o'\(-\)a\(-\)n.)
projects, and the projection is the node where both the categorial feature and
the interpretation of the root is determined. I use the term stem to refer to any
linguistic elements that are at or above the category projection but below a word,
which is the element that can appear in a sentence in isolation.

2.4.2 Pronominal System

The description of the pronominal system of modern Yucatec Maya in this section
is based on the works of Gutiérrez Bravo (2015: 14-23); Gutiérrez Bravo (2019);
Verhoeven (2007: 100-104); Ayres and Pfeiler (1997: 1-12); Bohnemeyer (2002:

The pronominal system of Yucatec Maya consists of three series of pronouns:
2 series of bound pronouns, and 1 series of free pronouns. Traditionally, the
bound pronominal series that marks ergativity is called the set A pronouns, and
the bound pronominal series that marks absolutivity is called the set B pronouns.
In what follows, I will use the terminology of set A and set B to refer to these two
series of bound pronouns.

The set A pronominal series consists of proclitics that mark ergativity. These
proclitics appear before their host, which can be either a nominal or a verbal
constituent, and must be specified for person and number\(^{10}\). The set B pronominal
series consists of suffixes that mark absolutivity. These suffixes are attached to
their host, and must also be specified for person and number. The following table
shows these two series of bound pronouns:

<table>
<thead>
<tr>
<th></th>
<th>Ergative (A)</th>
<th>Absolutive (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sg.</td>
<td>Pl.</td>
</tr>
<tr>
<td>1st</td>
<td>in</td>
<td>k/t</td>
</tr>
<tr>
<td>2nd</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>3rd</td>
<td>u</td>
<td>u</td>
</tr>
</tbody>
</table>

Table 2.1: Bound pronouns

\(^{10}\)The marking of number is essentially optional in Yucatec Maya. For more details on this
topic cf. chapter 4.

\(^{11}\)Strictly speaking, there is no such thing as an absolutive suffix for third person plural,
It is worth noting that, in set A, a distinction in form between singular and plural is only available for the first person. In order to express plurality, the proclitics for second and third person must be combined with their respective suffixes from set B. For example, second person plural ergative subject is marked by a ...-e‘ex, and third person plural ergative subject is marked by u ...-o‘ob:

(10) Táan a jats‘-ik-Ø-e‘ex.
PROG A.2 whip-IND-B.3SG-B.2PL

‘You (pl.) are whipping it.’

(Gutiérrez Bravo 2015: 17)

(11) Le ch’ujuk-o‘ob k-u ko‘on-ol-o‘ob-o’.
DET sweet-PL HAB-A.3 sell.PASS-IND-PL-D2

‘The sweets that are sold.’

(Verhoeven 2007: 106)

Phonologically, the process of epenthesis is observed for all of the proclitics in set A except for k/t (1st person plural), when they are followed by a syllable that starts with a vowel. For in (1st person singular) and a (2nd person), the semivowel w [w] will be inserted between the proclitic and the following vowel, and the inserted [w] will become the onset of the second syllable. For u (3rd person), the semivowel y [j] will be inserted, and [j] will also become the onset of the resulting syllable.

(12) K-in w-il-ik-Ø.
HAB-A.1SG EP-see-IND-B.3SG

‘I see it.’

because the suffix that is presented here, -o‘ob, is a universal plural marker in Yucatec Maya that can be attached to all of the syntactic categories. Hence, in what follows, I will gloss -o‘ob as Pl. More to the characteristics of the plural marker -o‘ob cf. chapter 4.
(13)  
\[ K-u \quad y-a'al-ik-\emptyset. \]

HAB-A.3 EP-say-IND-B.3SG

‘He says it.’

Set A and set B pronouns are primarily used as agreement markers on verbs. For instance, in (10), the proclitic of set A (a ...-e’ex) marks the person and number of the subject of the sentence, while the suffix of set B (-\emptyset) marks the person and number of the object of the sentence. The case for intransitive constructions is more complicated, because Yucatec Maya has split-ergative person marking which is determined by aspect and mood. This will be elaborated in section 2.4.4.

Set A proclitics can also be used to express the possessor in a NP. For example:

(14)  
\[ u \quad y-ich. \]

A.3 EP-eye

‘His eye.’

(Gutiérrez Bravo 2015: 16)

Set B suffix can also be used to refer to the subject of non-verbal predicates. For example:

(15)  
\[ kooolnáal-en. \]

peasant-B.1SG

‘I am a peasant.’

(Gutiérrez Bravo 2015: 16)

When more than one pronominal suffix appear in a construction, the universal plural marker always comes last:

(16)  
\[ u \quad paal-e’ex-o’ob \quad j-k’áaxil-o’ob. \]

A.3 child-B.2PL-PL M-farmer-PL

‘You (pl.) are the children of farmers.’

(Lehmann 1998: 42)
Now we turn to the series of free pronouns. As is suggested by the name, free pronouns are syntactically independent from the verbal component\(^{12}\) and appear outside of it. The following table shows the paradigm of this pronominal series:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>teen</td>
<td>to'on</td>
</tr>
<tr>
<td>2nd</td>
<td>teech</td>
<td>te'ex</td>
</tr>
<tr>
<td>3rd</td>
<td>leti'</td>
<td>leti'(ob)(^{13})</td>
</tr>
</tbody>
</table>

Table 2.2: Free pronouns

As we can see from the table above, the formation of this set of free pronouns follows the following archetype (17), as suggested in Bohnemeyer (2002: 89), that a free pronoun is built by the combination of an optional determiner le, a preposition ti’ and a set B enclitic of the corresponding person and number.

\[(\text{det})-\text{prep}-\text{b}\]

Free pronouns can be used to indicate indirect objects. For example:

\[(18)\]  
\[
\text{T-in}\quad ts’a-aj-∅\quad te’ex\quad jun\quad p’êel\quad waaj.
\]

COMPL-A.1SG  give-PFV-B.3SG  2.PL  one  CLF  tortilla

‘I gave you (pl.) a tortilla.’  
(Gutiérrez Bravo 2015: 21)

They can also be used to refer to the subject, the direct object, and the possessor of a NP. In these cases, the free pronoun must be in correspondence with the respective bound pronoun. For example:

\(^{12}\) A verbal component in Yucatec Maya is the constituent that comprises an auxiliary, a set A proclitic and a verb. See section 2.5.1 for more details.

\(^{13}\) Similar to the bound pronouns, there is no specific form for the third person plural free pronoun. The third person plural free pronoun is formed by adding the universal plural marker -ob (i.e. the allomorph of -o’ob) to the singular form. Cf. footnote 11.
(19)  in  kajól-t-ik-Ø₁  leti’₁-o’.
       A.1SG  know-TR-IND-B.3SG  3.SG-D2

   ‘I came to know him.’
   (NM-23)

Another usage of the free pronouns is to form oblique constructions. In this usage, the free pronoun is introduced by a preposition:

(20)  ba’ax ti’  to’on  k’abéet-Ø.
       what  PREP  1.PL  necessary-B.3SG

   ‘...what is necessary for us.’
   (NM-13)

Pragmatically, the free pronouns often appear in emphatic contexts and occupy the topic or focus positions (cf. section 2.5.3). For example, in (22), the first free pronoun to’on occupies the topic position, and the free pronoun leti’ occupies the focus position of the sentence:

(21)  To’on-e’,  ma’  [FOC  leti’]  kaan-s-a’an-Ø  to’on-i’.
       1.PL-TOP  NEG  3.SG  learn-CAUS-PTCP-B.3SG  1.PL-CL.NEG

   ‘As for us, that was not what we were taught.’
   (NM-266)

2.4.3 Mood and Aspect

The description of the marking of mood and aspect in Yucatec Maya in this section is based on the works of Chan Dzul (2010); Gutiérrez Bravo (2015); Briceño Chel (2006); Verhoeven (2007); Bohnemeyer (2002); Lehmann (2017b); Bricker et al. (1998).

Yucatec Maya does not have grammatical tense, the temporal meaning is either expressed by lexical means or implied by the aspectual and modal meaning of the verbal component. Mood and aspect, on the other hand, are expressed
through grammatical marking within the verbal component. Like many indigenous languages of the Americas, these two verbal features are intertwined, and are marked in more than one position in a clause, which are differentiated by the morphology and the semantic abstractness of the respective markers (Bohnemeyer 2002: 104-105). In Yucatec Maya, in particular, the mood-aspect marking appears in two slots within the verbal component: in pre-verbal position, which precedes the verbal core and the set A proclitic and is realized as an auxiliary; and in post-stem position, which is realized as a suffix that is attached to the verbal stem before the suffixation of the set B suffix. For the purpose of illustration, I follow Gutiérrez Bravo (2015: 23-33) in calling the mood-aspect markers that appear in pre-verbal position aspect auxiliaries, and the mood-aspect markers that appear in post-stem position mood suffixes, although the inventory of the aspect auxiliaries is not restricted solely to the expression of aspectual meanings, and the mood suffixes do not always correspond to the traditional definition of grammatical mood.

(22) \( \text{aspect auxiliary} \quad \text{set A} \quad \text{verbal stem} \quad \text{mood suffix} \quad \text{set B} \quad \text{enclitic} \)

The mood suffixes in Yucatec Maya make a triple distinction of grammatical moods: indicative, irrealis and perfective. This tripartite system differentiates three degrees of empirical verifiability of an event, with perfective being the highest, irrealis being the lowest, and indicative being intermediate (Gutiérrez Bravo 2015: 23-29). Each mood suffix has a series of allomorphs which are conditioned by the transitivity of the verb. It is not always necessary to have a mood suffix in a verbal component, because some allomorphs have very restricted distribution. In these optional cases, the absence of the mood suffix does not affect the expression and interpretation of mood in a clause, because the mood-aspect meaning is also encoded in the aspect auxiliary of the clause. The inventory of the mood suffixes

\[ \text{The only exception is the present perfect aspectual marker, which is a post-stem suffix, -m. This aspect suffix never co-occur with any pre-verbal aspect auxiliaries, and it always appears before the mood suffix within the verbal core.} \]
Yucatec Maya has a large number of grammatical aspects. As is mentioned above, except for the present perfect aspectual marker -m, all of the aspectual markers are realized as pre-verbal auxiliaries. All of the aspect auxiliaries are compatible with all of the verbs, but each verbal component allows maximally one aspect auxiliary, hence the aspect markers in Yucatec Maya cannot be combined with one another in a clause (Chan Dzul 2010: 35). Each aspect auxiliary is related to one and only one of the three mood suffixes (ibid.), hence the aspect auxiliaries in Yucatec Maya can be divided into three groups, depending on the mood suffix they are able to combine with. Below are some examples of the aspect auxiliaries from each group that will appear frequently throughout this dissertation:

(23)

<table>
<thead>
<tr>
<th>Related mood of the aspect auxiliaries</th>
<th>indicative</th>
<th>irrealis</th>
<th>perfective</th>
</tr>
</thead>
<tbody>
<tr>
<td>habitual</td>
<td>k</td>
<td>bín</td>
<td>t/j</td>
</tr>
<tr>
<td>progressive</td>
<td>t(áan)</td>
<td>indefinite future</td>
<td>completive</td>
</tr>
<tr>
<td>inceptive</td>
<td>jo’op’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.4: Aspect auxiliaries

### 2.4.4 Split Ergativity

The description of the split ergativity feature of Yucatec Maya in this section is based on the works of Bricker (1981); Gutiérrez Bravo (2015: 18-20); Gutiérrez Bravo (2019); Lois and Vapnarsky (2003: 110-119).

15 $V$ indicates the duplication of the main vowel of the verbal root.
Yucatec Maya is a split-ergative language. The split is determined by the aspect and mood of the verb. The subject of an indicative intransitive verb is treated like the subject of a transitive verb, whereas the subject of a irrealis and perfective intransitive verb is treated like the object of a transitive verb. The former follows the alignment pattern of nominative-accusative, while the latter follows the alignment pattern of ergative-absolutive, hence the ergativity splits. These two alignment patterns are summarized below in (24):

(24) a. Subject - Object  
    ERG - ABS  

    b. Subject  
        ERG  

    c. Subject  
        ABS  

        indicative intransitive

        irrealis, perfective intransitive

In section 2.4.2, we have mentioned that there are two sets of bound pronouns in Yucatec Maya that mark ergativity and absolutivity: set A proclitics mark ergativity, set B suffixes mark absolutivity. In section 2.4.3, we have discussed that indicative, irrealis and perfective belong to the verbal feature of mood, which is triggered by the aspect auxiliary that precedes the verbal core. Hence morphosyntactically speaking, the choice of a set A or set B pronoun of an intransitive clause is dependent on the aspect auxiliary of the clause as well as the mood suffix that is triggered by the auxiliary. Some examples are given below:

(25) T-in \ w-il-aj-ech.  \  transitive  

    COMPL-A.1SG  EP-see-PFV-B.2SG

    ‘I saw you.’  

    (Gutiérrez Bravo 2015: 19)
2.4.5 Valency Change

Transitivity plays an important role in Mayan languages. Verbal stems, as soon as they are formed, are specified for transitivity; hence the valency of the verbal stem is determined at the end of the stem formation. The feature of transitivity can nevertheless be altered after the stem formation is completed through the morphological operation of valency change; in other words, there are various morphological means that either alter the stems or take up post-root positions in the verbal components, and these morphological means can change the valency of the verbs. The meaning of the verbs usually changes accordingly through the morphological operation of valency change, though not always in a predictable way.

Transitive verbal stems in Yucatec Maya can go through several types of morphological operation of valency reduction, these types include: passivization, intransitivization, and anticausative. Intransitive verbal stems in Yucatec Maya can go through several types of morphological operation of valency increase, these types include: transitivization, causative, and antipassivization. It is possible that multiple types of valency change operation take place within one verbal component. See Gutiérrez Bravo (2015: 33-43); Gutiérrez Bravo (2019); Verhoeven (2007: 113-114); Ayres and Pfeiler (1997: 57-82); Blair (1964), among others, for

\[(26)\quad \text{Taan in k’uch-ul.} \quad \text{indicative intransitive}\]

\[\text{PROG A.1SG arrive-IND}\]

‘I am arriving.’

(Bricker 1981)

\[(27)\quad \text{Ka’aj k’uch-ak-ech} \quad \text{irrealis intransitive}\]

\[\text{SBJV arrive-IRR-B.2SG}\]

‘You might arrive.’
more on this topic.

2.4.6 Agent Focus Morphology

The description of the agent focus morphology in Yucatec Maya in this section is based on the works of Bricker (1979); Gutiérrez Bravo and Monforte (2011); Tonhauser (2003a,b); Norcliffe (2009); Gutiérrez Bravo (2015); Bohnemeyer (2002).

Note that I treat the phenomenon of agent focus solely as a morphological device in Yucatec Maya, hence here I present only its morphological display, leaving its syntactic function open. For the same reason, I put the description of agent focus morphology under the section that discusses Yucatec morphology, rather than under the section that discusses focus.

A number of Mayan languages make use of a specific verb form, agent focus, when the subject of a transitive verb is focused, interrogated, or relativized (Stiebels 2006). Differing from other Mayan languages, Yucatec Maya does not display a specific morpheme for agent focus, but rather exhibits a defective form of the verbal component, as is shown below in (28a):

\[(28) \quad M\acute{a}ax \ k\acute{\i}n-s-ik-\emptyset\]

who \text{die.AF-CAUS-IND-B.3SG}

‘Who is killing him?’

b. \text{Máax} \ k-u \ \text{kín-s-ik-∅}

who \text{HAB-A.3 die-CAUS-IND-B.3SG}

‘Who is he killing?’

(Stiebels 2006)

Comparing (28a) with (28b), we can see that, in an agent focus construction, the set A proclitic and the aspect auxiliary, which usually precede the verb, are deleted from the verbal component, leaving the set B suffix the only agreement marker on the verb. In other words, the agent focus form is a verbal form that lacks ergative agreement and any types of auxiliary.
The morphology of agent focus can be triggered by various conditions. It is obligatorily displayed when the transitive subject is a contrastive focus\(^\text{16}\). In interrogatives and relative clauses, agent focus is utilized as a morphological means to disambiguate between the event participants.

Agent focus constructions show a different mood morphology from the rest of the transitive constructions. Because of this, verbs that are in agent focus form can be understood as components of a subset of the transitive verbs\(^\text{17}\). Below is the inventory of the mood suffixes in Yucatec Maya under this conception (cf. table 2.3):

\[\text{(29)}\]

<table>
<thead>
<tr>
<th>Mood</th>
<th>Transitive verbs</th>
<th>Intransitive verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>canonical</td>
<td>agent focus</td>
</tr>
<tr>
<td>indicative</td>
<td>-ik</td>
<td>-ik</td>
</tr>
<tr>
<td>irrealis</td>
<td>-ej</td>
<td>-</td>
</tr>
<tr>
<td>perfective</td>
<td>-aj</td>
<td>-ej</td>
</tr>
</tbody>
</table>

Table 2.5: Mood suffixes with agent focus verb forms

\[\text{2.4.7 Enclitics}\]

There are four enclitics in Yucatec Maya: -a’, -o’, -e’ and -i’.

Traditionally, the first three enclitics, -a’, -o’ and -e’, are analyzed together as a set of deictic markers in Yucatec Maya (the \textit{AEO-constructions} in Andrade’s terms: Andrade 1955: 4.51) because one of the most salient usages of these three enclitics is to mark the right boundary of a phrase which is initially introduced by a deictic or demonstrative element, such as le ‘DET’, \textit{way} ‘here’, \textit{te’el} ‘there’, \textit{je’el} ‘PRSV’, inter alia (Verhoeven 2007: 104-105; Bohnemeyer 2018). An example of such a usage within a bipartite construction is shown in (30).

\(^{16}\)In contrast to an information focus (Kiss 1998), cf. section 2.5.3.1 below.

\(^{17}\)Tonhauser (2003a,b), for instance, argues that agent focus (AF) is a transitive voice, which belongs to the grammatical voice system of Yucatec Maya and is distinguished from the regular transitive active (TA) voice, hence transitive verbs can be divided into two groups, depending on their voice: AF transitives and TA transitives.
(30) Je’el j taal-en in w-il le nojoch máak-a’.

OST COMPL come-B.1SG A.1SG EP-see DET big person-CL

‘Here I came to see the grand old man.’

(BVS-13.08)

Another form of the deictic usage of -a’, -o’ and -e’ is the direct combination of these enclitics with non-final deictic or demonstrative elements, which gives a presentative or pronominal demonstrative (following the demonstrative system proposed in Treis 2008: 8.3, 9.3; cf. also Treis 2016). An example of this usage is given in (31).

(31) Pues, máax ts’-u paak’áal way-e’?

so who TRM-A.3 sow here-CL

‘So, who has already sown here?’

(NM-271)

Spatial reference relative to the discourse participants is marked by -a’ and -o’, hence, traditionally, -a’ is referred to as the proximal or immediate marker and -o’ the distal or non-immediate marker (Hanks 1990, 2005; Lehmann 1998; Bohnemeyer 2002; Verhoeven 2007, among others). On the other hand, the usage of -e’ in these constructions suggests that the referent is present not physically but contextually (Andrade 1955: 3.6; Verhoeven 2007: 105).

Apart from the deictic usage, the enclitic -e’ can also appear at the right boundary of the topic position as a topic marker (32) or, in some varieties of Yucatec Maya, as a continuator (33).

(32) Jo’oljeak-e’, j bin-o’on Ya’axkaba’.

yesterday-TOP COMPL go-B.1PL Yaxcabá

‘Yesterday, we went to Yaxcabá.’

(NM-197)
Once when he left, he forgot to take the keys...

Yu (2019) reports that -e’ exhibits epistemic modality when used together with the non-final presentative demonstrative je’el in a bipartite construction (34) (see also Hanks 1983: 23, 285-292; 1984, 1985), although the author does not commit herself on the issue of the part of the bipartite construction in which the epistemic modality is encoded. Given that je’el can also combine with the phrase-final enclitics -a’ and -o’ but renders a presentative demonstrative interpretation, it is plausible to assume that -e’ at least contributes to, if not encodes, the epistemic modality. Along these lines, AnderBois (2016) argues that with -e’ marking the sentential topic, Topic+Clause attitude reports differ from their minimally different Bare Clause counterparts in that the former conventionally mark the attitudinal information as being not-at-issue whereas the latter respond to QUdS.

(34) Je’el  u  bin-e’.

OST  A.3  go-CL

‘He is certainly going.’

The enclitic -i’ is different from the other three enclitics in Yucatec Maya in that it is never observed in the morphological environment in which -a’, -o’ and -e’ are expected (Andrade 1955: 3.7, 4.59). In other words, -i’ does not appear in the type of deictic constructions described above. The most salient usages of -i’ are to mark sentential negation (35) and to signal locational (36) or interrogative (37) information. In the former case, -i’ usually appears at the right boundary
of a verbal phrase, which frequently coincides with the clause-final position, and is preceded by a sentential negation marker ma’ at the beginning of the clause (Gutiérrez Bravo 2015: 68). In the latter case, -i’ is cliticized at the clauses-final position (Andrade 1955: 4.59).

(35) Pero ma’ ti’ tulāakal k-u ts’a’ab-al-i’.
    but NEG PREP all HAB-A.3 give.PASS-IND-CL.NEG

    ‘But they are not given to all (people).’

    (NM-62)

(36) Tumen in k’áat in man ts’e’ets’ek-i’.
    because A.1SG wish A.1SG buy a.few-CL.LOC

    ‘Because I want to buy a few of them.’

    (BVS-11.03)

(37) Yaan u ts’a ba’ax-i’?
    CPLS A.3 give thing-CL.Q

    ‘You have to give what?’

    (NMC-185)

All of these four enclitics must appear phrase-final. For a specific phrase-final position, at most one enclitic can occur. The hierarchy of these four enclitics is shown in (38), irrespective of the syntactic function of the phrases and the enclitics in question. In other words, the interpretation of the specific enclitic that overtly occurs at a particular position does not necessarily imply that this interpretation is the only meaning required by that very position. For example, the phrase-final -o’ in (39) not only marks proximity but also marks the right boundary of the sentential topic; this is because the occurrence of -o’ blocks the occurrence of the topic marker -e’, given the hierarchy of the enclitics.

(38) -a’/-o’ > -e’ > -i’

    (Bohnemeyer 2002: 132)
Le Nenela’-o’, t-u máan u tóok-la’an-t-o’ob u y-éet

wínikil-o’ob.
man-PL

‘As to Nenelá, they went burning down the houses of the fellow men.’
(NM-134)

On the other hand, since the enclitics must cliticize to the right boundary of
the phrase, it is possible that the very word to which the enclitic cliticizes does
not equate the unit which the enclitic modifies. For example, it is obvious that
the clause-final -i’ in (35) corresponds to the negation of the entire sentence (ti’
tuláakal ku ts’a’abal ‘to all they are given’, the negation of which would be ‘not to
all they are given’), rather than merely of the verb to which -i’ cliticizes (ts’a’abal
‘they are given’, the negation of which would be ‘they are not given’).

Hanks (1990: 18-19) includes -be’ as a fifth phrase-final enclitic that can occur
in the type of deictic constructions described above. Yu (2019) also reports some
of the demonstrative usages of -be’ in combination with non-final demonstratives,
which provides evidence that the demonstrative usage of -be’ still exists in today’s
Yucatec Maya. However, due to the scarcity of data reported in these sources,
neither of the two authors are able to make any conclusive remarks about -be’.
Bohnemeyer (2002: 131-132) suspects that -be’ may be a dialectal phenomenon.

A sixth enclitic, -ti’, is included in Hanks (1983: 23, 1985, 2005), which is
described by the author as an individuated enclitic. Since the only usage of -ti’
in modern Yucatec Maya is in the 3rd person singular independent pronoun leti’,
which is highly fossilized and lexicalized in today’s usage, it seems more plausible
to analyze leti’ as one single unit, rather than consising of the determiner le and
the enclitic -ti’.

In what follows, I gloss all of the four aforementioned enclitics as CL for the
sake of simplicity, unless specific functional meaning is indicated by the usage of
these enclitics. In that case, I will gloss them with additional information, for
example (CL.)TOP, CL.NEG, CL.LOC, CL.Q, etc.

2.4.8 Nominal Morphology

One of the main topics of this dissertation is the expression of nominal number in Yucatec Maya, hence it is important to also introduce the nominal inflections in this chapter, even though nominal inflectional morphology is relatively simple, as we will see below.

The expression of gender is very restricted in Yucatec Maya. The gender is expressed through two prefixes: \textit{x-} (allomorph \textit{ix-}) for female, and \textit{j-} (allomorph \textit{aj-}) for male. These two prefixes are only used in the following cases (INALI 2014: 283-291): (i) short forms of given names and nicknames: e.g. \textit{Xpiil} ‘Felipa’, \textit{Jpiil} ‘Felipe’; (ii) kinship terms: e.g. \textit{xpriim} ‘female cousin’, \textit{jpriim} ‘male cousin’; (iii) names of deities, rulers and authorities; (iv) in descriptions of the birth place of a man or a woman: e.g. \textit{xjapónil} ‘she is from Japan’, \textit{jjapónil} ‘he is from Japan’; and (v) in descriptions of certain economic activities: e.g. \textit{ixchuuy} ‘she sewed’, \textit{ajchuuy} ‘he sewed’. Note that the gender marking of all of these cases indicates biological sex of humans, hence it is arguable whether Yucatec Maya really has a grammatical gender. To indicate the gender of animals, except a few cases of prefixation, lexical expressions are utilized. For example, \textit{xch’upul miis} ‘female cat’, \textit{jxibil miis} ‘male cat’ (ibid.). There is no gender agreement in Yucatec Maya.

The expression of case is absent in nominal category altogether. There is no distinction between nominative and accusative. Other case-related meanings are expressed either by set A proclitics (e.g. genitive) or by prepositions (e.g. dative, ablative). See Tozzer (1921: 37) and others.

Number is the only grammatical category that is systematically found in the nominal category in Yucatec Maya, although it is poorly inflected. There are three ways to express nominal plurality in Yucatec Maya: (i) through suffixation of the plural marker \textit{-o’ob} (allomorph \textit{ob}) on the nouns and \textit{-tak} (allomorph \textit{-Vtak}, where \textit{V} is a rearticulation of the main vowel in the root; cf. INALI (2014: 298-299))
on the adjectives; (ii) through the use of plural free pronouns, and (iii) through number agreement. As we will see in the discussion in chapter 5, except for some cases of the first and second person plural, all of the above ways of expressing grammatical nominal plurality are optional. For more details on the optionality in the nominal plural morphology see Andrade (1955); Lehmann (1998); Lucy (1992); Briceño Chel (2002). The adjective plural marking will not be dealt with in this dissertation due to space limitation.

Apart from the above mentioned affixes for the expression of phi features, there are another two types of suffixes in the nominal inflectional inventory (cf. Gutiérrez Bravo and Uth 2020): an honorific suffix -tsil, which is rarely used in today’s Yucatec Maya, and two relational suffixes, -il and -el. Except in certain contexts in which the relational suffixes are obligatory, these nominal suffixes are optional.

2.5 Syntax

This section presents a very brief syntactic description of Yucatec Maya, which will help the readers understand the data presented in the later chapters of this dissertation.

2.5.1 Basic Clause Structure

The configuration in (22) schematizes the structure of the most indispensable part of a clause in Yucatec Maya, for this sequence by itself can function as an independent clause. In this dissertation, I follow Gutiérrez Bravo (2015: 45-48) in calling this sequence the verbal component of the clause, I follow Bohnemeyer (2002: 82-83) and Verhoeven (2007: 102-104) in calling the sequence of the set A proclitic plus the finite verb the verbal core of the clause:

(40)
The layering of these terminologies can help us understand complex syntactic phenomena in Yucatec Maya. For example, many syntactic processes work the same way on the verbal component, irrespective of the specific internal structure of the verbal component. On the other hand, the three elements within the verbal component, the aspect auxiliary, the set A proclitic and the finite verb, are independent constituents in other syntactic processes, hence the notions of verbal core and the verb make it easier to describe and analyze the syntactic phenomena observed within the verbal component.

As is mentioned above, a verbal component consists of three elements, the aspect auxiliary, the set A proclitic and the finite verb. Among these three elements, only the finite verb is obligatory for a verbal component. This means, all of the following four configurations are valid verbal components, and all of them can be used as independent clauses:

(41) a. \[\text{AUX} \quad A \quad V\]
    b. \[A \quad V\]
    c. \[\text{AUX} \quad V\]
    d. \[V\]

18The plural marker in Yucatec Maya appears after the set B suffix and before the enclitic. However, this plural marker is optional, more details cf. chapter 4.

19This is the slot for one of the four enclitics in Yucatec Maya that is required by some of the aspect auxiliaries to cliticize to the verb. Note that not all enclitics that are cliticized directly to the verb belong to this sequence. All of the four enclitics in Yucatec Maya described in section 2.4.7 must appear phrase-final, and maximally one can occur in one phrase-final position. This means, if a verbal component is the last constituent of a phrase, a phrase-final enclitic may appear in the same slot, although morpho-syntactically speaking, it is cliticized to the phrase, rather than to the verb. In other words, only the enclitic that is required by the aspect auxiliaries that appears in this slot belongs to the verb, other enclitics that appear here are not part of the verb.
2.5.2 Basic Word Order

The topic of basic word order in Yucatec Maya has been largely debated. More precisely, the majority of the controversy surrounds the basic word order of transitive clauses in Yucatec Maya. Since Mayan languages are usually analyzed as verb-initial, early works generally classify Yucatec Maya as a VOS language; however, various recent research that focuses primarily on the word order in Yucatec Maya suggests otherwise. Works that suggest VOS as the basic word order include England (1991); Skopeteas and Verhoeven (2005); Yoshida (2013), among others. Works that oppose the previous proposal and instead suggest SVO as the basic word order of Yucatec Maya include Durbin and Ojeda (1978); Hofling (1984); Briceño (2002); Gutiérrez-Bravo and Monforte (2008, 2010).

Despite the controversy between VOS and SVO as the basic word order of transitive clauses in Yucatec Maya, it is uniformly observed that in clauses where only the subject has phonetic content, i.e. in intransitive clauses as well as in transitive clauses where the transitive object is pro-dropped, the basic word order is prevailingly VS (Gutiérrez-Bravo and Monforte 2010).

2.5.3 Topic and Focus

Topic and focus are categories that are related to the information structure of the sentence. In Yucatec Maya, these two categories interact with the syntactic structure in that they occupy specific positions in the left periphery (i.e. pre-verbal domain) of a given sentence. More specifically, the focus position is immediately to the left of the verbal component, this position can be filled maximally once; on the other hand, the topic position is at the left boundary of the left periphery, this position can be filled with multiple constituents, each marked by the topic marker -e’ on the right boundary of the topic phrase.

The description of topic and focus in Yucatec Maya in this section is based on the works of Gutiérrez Bravo (2015); Bohnemeyer (2002); Gutiérrez Bravo and Monforte (2011); Tonhauser (2003a,b); Gutiérrez Bravo (2011); Skopeteas and
Verhoeven (2009a,b); Avelino (2009); Bricker (1979); Aissen (1992).

2.5.3.1 Focus

Two different types of focus can be distinguished in the description of the languages of the world, namely, *contrastive focus* and *information focus*, depending on their respective syntactic and semantic properties (Kiss 1998). In Yucatec Maya, these two types of focus are realized with focus constructions of distinct manners.

Information focus conveys new information and involves no syntactic re-ordering of the constituents (ibid.). In Yucatec Maya, in particular, this type of focus is realized *in situ*, i.e. in the original position of the constituent which complies with the basic word order; a change in the word order (cf. contrastive focus construction below) will result in pragmatic infelicity. As is shown below in (42), the information required by the interrogative pronoun *ba’ax* ‘what’ corresponds to the new information in the answer sentence, and hence it is an information focus; the fact that (42a) is felicitous while (42b) is not, exemplifies that information focus in Yucatec Maya must be focused *in situ*:

(42) *Ba’ax t-u man-aj-Ø le ko’olel-o’?*  
what COMPL-A.3 buy-PFV-B.3SG DET woman-D2

‘What did the woman buy?’

a. *T-u man-aj-Ø [FOC bu’ul].*  
COMPL-A.3 buy-PFV-B.3SG bean

‘She bought BEANS.’

b.♯*[FOC Bu’ul] t-u man-aj-Ø.*  
bean COMPL-A.3 buy-PFV-B.3SG

‘She bought BEANS.’

(Gutiérrez Bravo 2015: 54-55)

Contrastive focus, on the other hand, represents the exhaustive subset of a set
of potential alternatives (Kiss 1998). In Yucatec Maya, contrastive focus occupies a position that is immediately pre-verbal (43), i.e. the focused constituent moves out of its original position and is fronted. This implies, other pre-verbal constituents of the sentence, irrespective of whether they are base-generated or they land in the left periphery via movement, will have to precede the contrastive focus (cf. discussion on sentence topic and negation in 2.5.3.2 and 2.5.4 below).

(43) \[ \text{[FOC Leti'] k-in \textit{jaats'-ik-Ø}.} \]

\hspace{1cm} 3.SG \text{ HAB-A.1SG beat-IND-B.3SG}

‘It is HE whom I beat.’

(Bricke 1978)

(44) is a configuration that shows the immediate pre-verbal focus position:

(44)

\[
\begin{array}{|c|c|c|c|}
\hline
\text{FOC} & \text{AUX} & \text{A} & \text{V} \\
\hline
\text{left periphery} & \text{verbal component} & \text{post-verbal position} \\
\hline
\end{array}
\]

The fronted focus position can be occupied by a variety of constituents: subject (45), direct object (43), prepositional phrase (46), adverbial phrase (47), and verb (48). When a transitive subject is focused, as in (45), the transitive verb in the sentence must exhibit the agent focus form (cf. section 2.4.6). When a verb is focused, a light verb \textit{beet} ‘do’ or \textit{meet} ‘make’ must appear as the main verb of the sentence, and the agreement is marked solely on the light verb (Bohnemeyer 2002: 125-127; Gutierrez Bravo 2015: 57-58); furthermore, the fronted verb must be intransitive (ibid.), this means, if the focused verb is transitive, it must be intransitivized through morphological means, such as gerundive formation of \textit{-bil} suffixation (Verhoeven 2007: 113, 124), as in (48).
2.5.3.2 Topic

There is a specific syntactic slot in Yucatec Maya that is designated for the sentence topic, namely, the sentence-initial position, which is at the left boundary within the left periphery of a sentence, outside of the verbal component. (49) is a configuration that shows this position:

(49) \[ [\text{FOC} \ 	ext{Juan}] \ il-ik-ech. \]

Juan see-IND-B.2SG

‘JUAN (not somebody else) sees you.’

(Tonhauser 2003a)

(46) \[ \text{Pero ma’ [FOC ti’ tuláakal] k-u ts’a’ab-al-i’}. \]

but NEG PREP all HAB-A.3 give.PASS-IND-CL.NEG

‘But they are not given to ALL (people).’

(NM-62)

(47) \[ [\text{FOC} \text{Ma’aloh}] \ ween-ik-∅. \]

well sleep-REL.PFV-B.3SG

‘He slept WELL.’

(Bricker et al. 1998: 332)

(48) \[ [\text{FOC} \text{Puts’-bil}] \ t-u beet-aj-∅ u y-atan. \]


‘What he did was to ELOPE with his wife.’

(Gutiérrez Bravo 2015: 57)

Sentence topics always appear in the left peripheral topic position, as is schematized above; they are marked by the topic marker ‘-e’ (50), except when
the topicalized NP itself requires another deictic enclitic (cf. section 2.4.7), as in (51).

(50) \textit{Le áak-e’, t-u jaan-t-aj-Ø su’uk.}

\begin{tabular}{l}
\textsc{TOP} \\
\textsc{FOC} \\
\textsc{AUX} \\
\textsc{V} \\
\textit{left periphery} \\
\textit{verb component} \\
\textit{post-verbal position}
\end{tabular}

\texttt{DET turtle-TOP COMPL-A.3 eat-\textit{TR-PFV-B.3SG grass}}

‘The turtle ate grass.’

(Avelino 2009)

(51) \textit{Le Nenela’-o’, t-u máan u tóok-la’an-t-o’ob u y-éét}

\begin{tabular}{l}
\textsc{TOP} \\
\textsc{FOC} \\
\textsc{AUX} \\
\textsc{V} \\
\textit{left periphery} \\
\textit{verb component} \\
\textit{post-verbal position}
\end{tabular}


\texttt{wínikil-o’ob.}

\texttt{man-PL}

‘As to Nenelá, they went burning down the houses of the fellow men.’

(NM-134)

A sentence topic can be an argument of the predicate (50), or a temporal or spatial adjunct (52), or a constituent that has a far looser relation with what follows (Aissen 1992: 71), for example, a \textit{hanging topic} (Cinque 1977: 406), as in (51); it is possible to have multiple topics in one sentence (53).

(52) \textit{Jo’oljeak-e’, j bin-o’on Ya’axkaba’}.

\begin{tabular}{l}
\textsc{FOC} \\
\textsc{AUX} \\
\textsc{V} \\
\textit{post-verbal position}
\end{tabular}

\texttt{yesterday-TOP COMPL go-B.1PL Yaxcabá}

‘Yesterday, we went to Yaxcabá.’

(NM-197)
(53)  
\textit{To’on-e’, jach u jaajil-e’}, mina’an-Ø to’on mix jun p’ēcl

1.PL-TOP very A.3 truth-TOP EX.NEG-B.3SG 1.PL not.even one CLF

quincena.

salary

‘Because us, truly, not even a salary exists for us.’

(NM-13)

2.5.4 Negation

Sentential negation is formed by placing the negation marker immediately to the left of the verbal component (54). There are three sentential negation markers in Yucatec Maya, \textit{ma’} ‘not’, \textit{mix} ‘not even’, and \textit{ma’atech} ‘not ever’ (Gutiérrez Bravo 2015: 68). The presence of the negation marker is observed to be accompanied by the presence of the phrase-final enclitic -\textit{i’} (cf. section 2.4.7), though in some cases this enclitic is not present (Durbin and Ojeda 1978; Bohnemeyer 2002: 127; Gutiérrez Bravo 2015: 68).

(54)  
\textit{Ma’ in w-ojel-i’}.

NEG A.1SG EP-know-CL

‘I don’t know.’

(Blair 1964: 126)

The construction of sentential negation triggers reduced mood-aspect marking (Bohnemeyer 2002: 129; cf. section 2.4.3). In other words, not all of the aspect markers in standard affirmative clauses can be combined with the negation markers. In still other words, negative sentences distinguish fewer mood-aspect categories than their affirmative counterparts, which results in a merge of categories where one aspect marker carries more aspectual meanings in a negative environment than in an affirmative environment. For example, the combination of the negation marker and the progressive aspect auxiliary \textit{t(āan)} can have several
other aspectual readings aside from progressive; (55) shows the usual progressive aspect, (56) shows habitual aspect, and (57) shows prospective aspect:

(55) \( Ma’ \ táan \ in \ jaats’-i’ \).
\[
\begin{array}{ll}
\text{NEG} & \text{PROG \ A.1SG} \\
\text{beat-CL} & \\
\end{array}
\]
‘I was not batting.’

(Bohnemeyer 2002: 128)

(56) \( Ma’ \ táan \ u \ janal \).
\[
\begin{array}{ll}
\text{NEG} & \text{PROG \ A.3} \\
eat & \\
\end{array}
\]
‘He doesn’t eat.’

(Durbin and Ojeda 1978: 53)

(57) \( Ma’ \ t-a \ kín-s-bil \).
\[
\begin{array}{ll}
\text{NEG} & \text{PROG-A.2} \\
die-CAUS-GRD & \\
\end{array}
\]
‘You are not going to get killed.’

(NMC-40)

Yucatec Maya is a negative concord language (Labov 1972), or more precisely, a non-strict negative concord language (Giannakidou 1997, 2000, 2006). The occurrence of a negative pronoun in postverbal position requires the presence of a sentential negation marker (58), but if the negative pronouns appear in a preverbal position, the sentential negation marker is not allowed (59).

(58) \( Ma’ \ u \ y-úuch-ul \ mixba’al \ ti’-ob \).
\[
\begin{array}{ll}
\text{NEG} & \text{EP-happen-IND} \\
\text{nothing} & \text{PREP-B.3PL} \\
\end{array}
\]
‘Nothing happens to them.’

(Gutiérrez Bravo 2012: 10)
(59) *Tumen mixmáak in k'ajóol way-e*.

because nobody  A.3 know here-cl

‘Because I do not know anyone here.’

(Gutiérrez Bravo 2012: 12)

In relation to the topic and focus constructions in Yucatec Maya, the negation marker precedes the focused constituent in the left periphery but comes after the topic constituent, as is schematized below:

(60)

However, the negation that precedes the focused constituent is different from the negation in (54-58) (Gutiérrez Bravo 2012), because in this case it is a *local negation* (Haegeman 1995: 72), as opposed to a *sentential negation* (ibid.). There are two pieces of evidence that argue in favor of this proposal. First, this type of negation does not permit the occurrence of a pre-verbal negation marker and a post-verbal negative pronoun, whereas sentential negation does (Gutiérrez Bravo 2012). Second, this type of negation allows the co-occurrence of the negative maker with the habitual aspect auxiliary *k*, which is observed to be incompatible with the sentential negation marker. Both pieces of evidence imply that the scope of this type of negation is in fact narrower than the entire sentence.

In addition, it is possible to negate a specific non-focused constituent of a clause (Durbin and Ojeda 1978: 58-59). Negation of non-verbal clauses is also observed (Blair 1964: 126; Gutiérrez Bravo 2019: 12.6).
Chapter 3

Fieldwork Methodologies

3.1 Introduction

In her 1929 short story *The Unbreakable Alibi*, Agatha Christie pointed out through the fictional detective Tuppence Beresford that the process of evidence collection is far more tricky in practice than it is presented in the literature:

“This alibi business is very trying,” said Tuppence. “In books it is all passed over in two or three paragraphs. Inspector Something then boarded the train to Torquay and questioned the dining car attendants and so ended the story.” (Christie 1929: 142)

The same goes for the collection of linguistic data. As linguists, we rely on linguistic data to perform analyses and make further theoretical hypotheses, but how linguists lay hands on those data in the first place is like a black box whose internal working is made purposely or unintentionally opaque to the outsiders. In other words, the process of linguistic data collection is not as straightforward and effortless as it appears to be in the formal linguistic literature which mentions such information only marginally.

In this chapter, I intend to open up this black box and unravel the obscurity of the process of linguistic data elicitation. I will walk the readers through multiple aspects of the methodological and ethical issues that are centered around linguistic fieldwork, display the logistics and other particularities of my entire fieldwork,
discuss specific problematics in my particular case, and finally present my solutions
to these problematics.

Fieldwork methodologies have received special attention and have developed
into a subfield of studies in recent linguistic literature (cf. Crain and Thornton
1998; Matthewson 2004; Hellwig 2006; Bowern 2008; Krifka 2011; Davis et al.
2014; Burton and Matthewson 2015, among others). Among these, the method-
ologies employed in semantic fieldwork in particular have also been widely dis-
cussed (cf. Crain and McKee 1985; Crain and Thornton 1998; Matthewson 2004;
Bochnak and Matthewson 2015, among others). Contrary to the traditional lin-
guistic fieldwork entries, which were made predominantly by researchers from a
descriptive background, recent debates on linguistic fieldwork methodologies have
witnessed a significant increase in the contributions made by researchers who pri-
marily received formal linguistic training (the so-called ‘C-linguists’ in the words
of Levinson and Evans 2010); these contributions have showcased successful expe-
riences in linguistic data elicitation towards the goal of understanding linguistic
universality (cf. Polinsky and Kluender 2007; Baker and McCloskey 2007; Cinque
2007; Polinsky 2010; Davis et al. 2014, among others). Finally, the choice of tar-
geted one-on-one fieldwork over large-scale experiment in linguistic investigations
like the one I carried out was fully supported by previous literature and has been
proven to be just as reliable (cf. den Dikken et al. 2007; Fanselow 2007; Grewen-
dorf 2007; Haider 2007; Weskott and Fanselow 2008; Phillips 2010; Sprouse and
Almeida 2012, among others).

As the present dissertation is a formal linguistic work based largely upon
my original data, it is important to address how these data were collected. In
addition, the questionnaires I designed for my elicitation purposes as well as the
targeted elicitation approaches discussed below will add to the repertoire of lin-
guistic questionnaires and elicitation methodology, especially for the elicitation of
the languages of the Americas. Further, the methodological discussion below will
contribute to the larger-scale discussion on the methodologies of semantic field-
work, which has proven to be one of the subfields of linguistic fieldwork that is more challenging with respect to the obtainment of the desired data.

3.2 General Information

The original data presented in this dissertation were collected between 2018 and 2020 during my two fieldwork stays in the Yucatán Peninsula, Mexico and in several email and whatsapp correspondences with the consultants. I initially worked on various topics during my first fieldwork stay, which was a 4-week trip from February to March 2019, but focused intently on the elicitation of pluractionality and plurality on my second trip, which was a 6-week stay from February to the beginning of April 2020 (when the pandemic struck the globe). For the purpose of taking language variation into account, I have consulted in total 13 speakers, 9 female and 4 male, originating from various cities (ciudades), towns (villas) and villages (pueblos) of the three Mexican states of the Yucatán Peninsula: Yucatán (7), Campeche (3) and Qintana Roo (3). The age of the consultants ranges from 18 to 59. All of these consultants are Yucatec-Spanish bilingual and are comfortable speaking both languages. In addition, all of them are literate in both Spanish and Yucatec Maya. See appendix A for detailed information of these consultants.

I aimed to obtain adequate data in order to gain semantic understanding of both nominal and verbal plurality in Yucatec Maya. Given the different status of the existing data on these two phenomena, different elicitation targets and methods were employed. For the Yucatec plural marker -o’ob, sufficient occurrences can be gathered from the previously collected speech and texts, hence the primary goal of the elicitation of -o’ob is to achieve a deepened semantic understanding of this suffix as well as the linguistic phenomena that are related to this suffix, rather than pure text-gathering.

On the other hand, the pluractional morphology in Yucatec Maya is not only poorly understood, its occurrence in previously collected texts and conversations
is also very rare. In fact, there were only 9 occurrences in the two series of Yucatec narrations published by INALI (*Narraciones Mayas* and *Narraciones Mayas de Campeche*). As a result, before any semantic interpretation of the pluractionals in Yucatec Maya can be determined, more targeted elicitation of sentences with pluractional morphology needs to be done.

In addition to traditional linguistic fieldwork, I also explored the possibilities of *email fieldwork* and *whatsapp fieldwork* due to the restrictions cast by the pandemic (more discussion see 3.9 below). These scattered fieldwork sessions were mostly dedicated to simple judgement tasks. I am fully aware of the drawbacks of these non-face-to-face elicitation sessions, hence the results from these sessions are used primarily as additional information and are treated the same way as consultants’ comments in normal elicitation environment (see below).

### 3.3 Target of Data Collection

The target of my data collection is three-fold. First, to gather sufficient Yucatec sentences with pluractional morphology. Second, to determine the semantic interpretation of the Yucatec plural marker *-o’ob* through direct elicitation. Third, to determine the semantic interpretation of the Yucatec pluractional suffix through direct elicitation.

### 3.4 Guidelines and Meta-Language

I follow the general guidelines for semantic fieldwork discussed in Matthewson (2004) throughout my fieldwork. More specifically, the following five principles are primarily valued:

(61) a. Direct elicitation is the preferred technique for collecting useful information about meaning.

b. The minimal elicitation unit is complete sentences.
c. The source string used for judgement or translation tasks must be grammatical.

d. Speaker’s comments and the meta-linguistic information they offered are used as a source of clue, rather than an answer to the phenomenon under investigation.

e. The use of a meta-language is not only legitimate, but also preferable in semantic fieldwork.

Below, I will elaborate these five principles in turn:

**61a. Direct elicitation is the preferred technique for collecting useful information about meaning.** As mentioned above, the goal of my data collection is to achieve a deepened understanding of the semantic interpretation of the Yucatec plural suffix *-o’ob* and to understand the semantics of the various pluractional morphs in Yucatec Maya. Mere text-gathering is disfavored for these goals, not only because the contexts that can be drawn from the collected texts that are available for determining the semantic interpretation are insufficient or incomplete, but also because the negative evidence that is crucially needed for the explanation of certain semantic interpretation is lacking (Matthewson 2004).

For example, from the previously collected text materials we have observed that *-o’ob* is optionally suffixed to the noun for semantic plural meaning (cf. section 5.3.1). This observation tells us that the lack of morphological plural marker on a noun does not denote semantic singular, but it does not tell us the differences between a plurally marked noun and its unmarked counterpart in the same context. The latter is the case simply because in collected text materials only the preferred expression is used. Hence, in order to determine the meaning difference between a plurally marked noun and its unmarked counterpart, direct elicitation technique is called for. One can construct minimal pairs and ask for a consultant’s translation or judgement; one can also construct contexts in which the use of *-o’ob* on the noun is categorically rejected. Evidence drawn from either of these designs
can not be obtained through a pure text-gathering method.

**61b. The minimal elicitation unit is complete sentences.** As discussed in Matthewson (2004), any string of language that is smaller than a sentence has meanings that cannot be clearly defined by the consultant. A sentence contains at least one independent predicated phrase. In Yucatec Maya, a minimal sentence is made up of a single verb or a noun complex (Blair 1964: 27); the former is a verbal sentence, while the latter is a nominal sentence. Since my fieldwork involves the elicitation of both verbal and nominal sentences, I will discuss them in turn.

In Yucatec Maya, as long as a string comprises a verb, it can function as an independent clause\(^1\), although a verbal component that comprises the strings of mood-aspect auxiliary, set A proclitic and the verb provides more complete information. As a result, I tried to use or elicit sentences with auxiliaries, set A proclitics and verbs whenever it was possible, but in the rare cases in which difficulties with such elicitation arose, I used or elicited strings of verbs instead. Since both of these two alternatives are complete sentences in Yucatec Maya, principle 61b is not violated in either way. I never used or elicited a part of a verb because it is smaller than a sentence.

(62-64) are examples from my elicitation. (62) is a string that is larger than a basic clause; it comprises not only the complete verbal component, which comprises a mood-aspect auxiliary, a proclitic from set A and a verb, but also the subject and the object. (63) is a string that equals a verbal component, which comprises exactly a mood-aspect auxiliary, a proclitic form the set A and a verb. (64) is a string that is of the minimal size for a complete-sentence elicitation, which comprises a sole verb. Note that in order to make the interpretation of the clause clearer, some modificational information was added occasionally as in (64):

\(^1\)Cf. section 2.5.1 for detailed discussion on the basic clause structure of Yucatec Maya.
(62)  *Pedro-e’ k-u xo’ox-t-ik le páak’al-o’ob-o’*  
Pedro-TOP HAB-A.3 cut.RED-IND DET plant-PL-CL  
‘Pedro cuts the plants several times.’

(63)  *t-u áalkab-s-la’an-t-aj-i*’  
COMPL-A.3 run-CAUS-PLR-TR-PFV-LOC  
‘They ran from there.’

(64)  *áalkab-n-aj-o’ob (óox-péel k’iin)*  
run-ANTIP-PFV-B.3PL three-CLF.INAN day  
‘They ran (for three days).’

(65)  *k’oop-la’an-t*  
knock-PLR-TR  
‘knock repeatedly’

A nominal sentence in Yucatec Maya comprises at least a predicated NP. Since sentences as such can be very short in form and, consequently, not clear in the interpretation, I tried to use or elicit nominal sentences that have at least one additional constituent outside of the predicated NP. For example, instead of (66), which is an NP, I used sentences like (67) for my elicitation and judgement tasks.

(66)  *le lu’um-o’ob-o’*  
DET earth-PL-CL  
‘the (pieces of) earth.’
The source string used for judgement or translation tasks must be grammatical. In general, both the source strings provided by the fieldworkers and the resulting strings produced by the consultants should be grammatical. After all, it is the nature of the native speakers to receive and produce grammatical sentences in their native language given the universal linguistic ability. In other words, one should not expect the consultants to spontaneously produce an ungrammatical sentence in normal speech circumstances, nor should one expect the consultants to give any real meta-linguistic information regarding the ungrammaticality of an ungrammatical source string. What one could instead expect is that, whenever an ungrammatical source sentence arises, the consultant will find a way to explain that it is not how people usually speak.

In my elicitation sessions, there are two main methods that I utilized to control the grammaticality of my source strings designated for the judgement and translation tasks. In both methods, I divided the consultants into two groups before any elicitation session started: the first group I call the scout group, the second group I call the task group. Note that to which group a specific consultant is assigned has nothing to do with the individual ability, it is merely a random assignment which aims to make sure that no consultant would simultaneously belong to both groups for the same set of sentences, and hence no consultant would have to participate in any task that consists of the sentences they scouted (i.e. they produced, rejected, translated or reformulated; see below). In other words, it is fully fine if a specific consultant belongs to the scout group for task A but is assigned to the task group for task B.

The first method I call the production scout. It requires that the scout group consultants produce a set of grammatical sentences for me. There are two vari-
ations of the production scout sessions. The simpler variation is similar to a translation task in which I ask the consultant to translate some sentences from Spanish to Yucatec Maya (on meta-language, see below). The more complex variation is similar to a targeted elicitation session in which I describe the utterance context either verbally or using non-verbal props (i.e. pictures, drawing, acting, etc.) so that the consultants would be stimulated to utter sentences with the intended meaning.

The two variations of the production scout sessions are utilized with different types of elicitation objects. The simpler variation is chosen when it is attested that the elicitation object is similarly encoded in both Spanish (i.e. the meta-language) and Yucatec Maya (i.e. the object language). For example, both Spanish and Yucatec Maya utilizes plural suffixation as a grammatical means to express nominal plurality, hence the simpler variation of the production scout session is chosen when I tried to acquire grammatical Yucatec sentences that involve plural arguments. On the other hand, I use the more complex variation whenever I am not certain whether there is a direct translation of the elicitation object from one language to the other. For instance, the grammatical meaning of verbal plurality can be found manifested in the verbal morphology in Yucatec Maya, but this is not the case in Spanish; as a result, it would be risky if I ask the consultant to translate a sentence of verbal plurality directly from one language to the other. In this case, the safest way of obtaining sentences of verbal plurality in Yucatec Maya has to be elicitation with the more complex variation of the production scout.

The second method I call the judgement scout. It requires that the scout group consultants do a series of grammaticality judgement, and in some cases, reformulate the sentences after I have explained the intended meaning or described the utterance context. For example, in order to find out the distribution of the two pluractional morphs -la'an and -la'aj in Yucatec Maya, I have constructed a long list of possible verbal environment; the list itself exhausts all the occurrence possibilities of a verbal morpheme, nevertheless I am not certain whether all of
them are grammatical. As a result, I brought the list to the scout consultant during the elicitation sessions, and asked for grammaticality judgement. I was then able to obtain a list of grammatical sentences of various verbal environment for the two pluractional morphs. However, there were a few verbal environment conditions in which all of the sentences I constructed were rejected by the grammaticality judgement of the scout consultant; for these few verbal environment conditions, I asked the scout consultant to further rephrase the sentences that were previously judged as unacceptable in the intended context.

Only after I have made sure by utilizing the above described scouting methods that all of the Yucatec sentences that I would be using in the following tasks are grammatical, did I move on to the main tasks of my targeted semantic elicitation. The main tasks will be elaborated from section 3.5 to 3.7.

61d. Speaker’s comments and the meta-linguistic information they offered are used as a source of clue, rather than an answer to the phenomenon under investigation. During my fieldwork, I have worked with different types of consultants, some are cautious in offering a solid answer, others are more willing to “educate” me with their meta-linguistic knowledge. In the latter case, I would take notes of whatever they told me, but only treat the information acquired this way as a source of clue.

For example, there are three morphologically marked forms of the semantically plural counterpart of paal ‘child’, which seems to have no differences in interpretation (68a-c). I wanted to investigate the exact meaning and function of the suffix -al, which I assume to be one realization of the suffix -Vl. In two separate elicitation sessions, I asked the consultants whether they think these three forms are the same in the given environment:

(68)     __ tin wilaj

a. le paal-al-o’

   DET child- Vl-CL
The first consultant told me that all of these three forms are the same because they all mean ‘children’. But he further commented that (68c) is a poetic form and is used in poetry. He then wrote down a stanza from a poem for me to prove his point.

The second consultant told me that these three forms are not the same: (68a) refers to small boys and girls (los niños y niñas), (68b) refers to children of a much older age, (68c) refers to younger children. He then concluded that the differences in form indicate different age groups of the children.

These meta-linguistic analyses cannot be treated as an answer to the linguistic issue under investigation. Nevertheless, they can provide abundant information which brings us one step further. In this specific case, though the initial question of what -Vl exactly does cannot be resolved, some tentative conclusions can still be drawn: whilst escaping my comprehension, (68a-c) do have different distribution and interpretations; nonetheless, the difference may not lie in the text type or in the age of the referent, as suggested by the consultants. As a consequence, we now at least know that -Vl should not be analyzed as indicating plurality the same way as -o’ob.

61e. **The use of a meta-language is not only legitimate, but also preferable in semantic fieldwork.** Matthewson (2004) discusses the traditional single language elicitation method (e.g. Harris and Voegelin 1953) and argues against an uncritical universal application of such method. She points out that such method is subject to two obvious drawbacks, the cumbersome logistics and the
incompleteness of the information gathered. As a result, she proposes that it is not only useful but also preferred in some cases to use a meta-language for elicitation. Though this line of argumentation is reasonable for translation tasks and simple judgement tasks, whether a meta-language is still legitimate or preferred in more complex tasks in which the discourse scenarios need to be presented with precision is left undiscussed. Moreover, Matthewson also fails to take into account the language ability of both the researchers and the consultants in the object and the meta-language.

In continuation of the discussion on the use of meta-language in elicitation sessions, AnderBois and Henderson (2015) provide two case studies of establishing discourse contexts in their targeted semantic elicitation on two Mayan languages in which different languages were favored in presenting the discourse context. They distinguish two languages generally used during the elicitation sessions: the object language (OL) and the language of wider communication (LWC). They conclude that whether OL or LWC should be used is a crucial methodological decision that depends on a variety of sociolinguistic factors. Consequently, they advocate the disclosure of the researcher’s choice of language in establishing the discourse context and the reasons therein.

In my case, the OL is Yucatec Maya and the LWC is Spanish. Throughout my elicitation sessions, I chose Spanish as the meta-language for communication, giving instructions, presenting discourse contexts and discussing further issues around the elicited data. There are three main reasons for this choice of meta-language.

First, some pure linguistic considerations. As illustrated in the previous subsection, my elicitation sessions are centered around two issues under investigation, the phenomena of nominal and verbal plurality. Below I will elaborate my considerations for these two issues under investigation in turn.

Let us look at the issue of nominal plurality first. In Spanish, plural nouns are always marked by the plural suffix; in Yucatec Maya, however, plural nouns
either take the plural suffix or have no morphological marking at all. I know from previous literature and my pilot study that there are two possible morphological realizations of the plural form of a Yucatec noun, but whether the choice of the specific realization of a plural noun is subject to any particular conditions is beyond my understanding. In other words, I want to know if there are any cases in which one realization is completely banned, and if there are any meaning differences of the two realizations in the cases in which both forms are equally legitimate. In the elicitation environment, the specific discourse context has to be presented in order to delimit the number interpretation of the entities. If I use Yucatec Maya to establish the discourse context, I would have to commit myself to a certain form of the plural noun (i.e. marked or unmarked) before consultants' utterance, which would largely influence the consultants’ own choice of form in their later utterance. On the other hand, since plural nouns in Spanish always receive plural marking, there is no form preference in the context establishing phase, and hence no influence of such would be cast on the consultants prior their utterance. As a result, Spanish is the more appropriate meta-language in this case.

Now we turn to the issue of verbal plurality. Spanish does not have any morphemes that are able to express the grammatical meaning of pluractionality; the verbal plurality is either encoded by adverbial modification or implied from the context. On the other hand, in addition to the “Spanish strategies” (i.e. adverbial modification and contextual interpretation), Yucatec Maya also has the ability to encode verbal plurality in its verbal morphology. According to my previous researches and pilot study, there are at least two pluractional morphs that can be individuated from the verb stem, and these two pluractional morphs express pluractional meanings that are distinct from other morphological strategies (e.g. root reduplication). In other words, there are three ways of encoding pluractionality in these two languages: (i) adverbial modification, (ii) pluractional morphs, and (iii) other verbal morphology; Spanish only utilizes (i), whereas Yucatec Maya utilized all of them. Now this is a similar situation to the elicitation of nominal plural-
ity, namely, discourse context specified for verbal number interpretation should be established prior to consultants’ utterance, but the influence on the consultants’ choice of form should be minimized. In addition - and this is different from the case of eliciting nominal plurality - I do not understand the exact pluractional meaning and the implication thereof of each of the three ways of encoding pluractionality in Yucatec Maya at all, hence I do not know whether the use of one way would automatically ban the use of the other two. In this respect, Spanish is not only the preferred but also the only language that can be used as a meta-language in this case, if we want to obtain a reasonable linguistic answer to the issue under investigation.

Second, the sociolinguistic competence of the consultants. All of the consultants I have interviewed are Yucatec-Spanish bilingual and are comfortable speaking both languages. Moreover, due to the education system and the social situation, these consultants are used to speak Spanish at school and in their working environment, with friends, family members and relatives who are of the same generation. As a result, using Spanish as the meta-language is more advantageous in this case because even though the consultants possess native fluency in both languages, it is Spanish that they primarily use when it comes to expressing and processing abstract and analytical information.

Third, the language ability of the researcher. Due to the different methods I adopted learning the two languages, I am more fluent in Spanish than in Yucatec Maya when it comes to describing a complex situation or constructing a detailed scenario. As a consequence, it is easier for me to accurately establish the intended discourse context in Spanish than in Yucatec Maya.

In addition to using the meta-language to verbally present the discourse context, I have also employed non-linguistic strategies whenever it seemed better suitable either methodologically or logistically. For example, in some of the sessions in which I elicited sentences with pluractional meanings, I first acted in front of the consultants (e.g. knocking at the door multiple times), then asked them to
describe to me what I was doing. In other elicitation sessions, I drew pictures of the intended context (e.g. I drew three pictures: in the first picture, I drew one man and one house; in the second picture, I drew three men and three houses, with each man being in a house; in the third picture, I drew three men and one house, with all of the men in the house), I then suggested some keywords (e.g. \textit{tu k’axaj naj} ‘he built houses/a house’ (lit. ‘he tied up house’)), and let the consultants tell me what they understand from each picture. Note that in the second example, I used verbal cues (i.e. the keywords that I provided) to direct the consultants, in addition to non-linguistic presentations. But since these verbal cues were usually very short and incomplete linguistic units that do not specify relevant linguistic information on the issues under investigation, I did not commit myself to one particular language when giving cues: in some cases I used Yucatec Maya, while in others I used Spanish.

### 3.5 Sentence-Gathering of Pluractionality

In the following three subsections, I will illustrate the logistics of my fieldwork with respect to the three elicitation targets. I start with the sentence-gathering of pluractionality in this subsection.

The first part of gathering Yucatec sentences with pluractional morphology comes from established literature. These sentences are obtained prior to my fieldwork from the two volumes of Yucatec narrations \textit{Narraciones Mayas} (NM) and \textit{Narraciones Mayas de Campeche} (NMC), the corpus on Christian Lehmann’s website (TM), the descriptive grammar by Andrade (Andrade 1955), and the morphological description by Bricker (in Bricker et al. 1998). Through these sentences, I was able to acquire a tentative understanding regarding how the pluractional morphology may look like in a sentence in Yucatec Maya.

The second part of gathering Yucatec sentences with pluractional morphology was conducted in a fieldwork situation. The main elicitation method I used during
these sessions is direct elicitation with non-linguistic questionnaires. As briefly illustrated above in the discussion in (61e) on the use of meta-language during elicitation, there are two non-linguistic strategies that I used: acting and drawing.

The third part of gathering Yucatec sentences with pluractional morphology was also achieved under fieldwork situation. The main elicitation method I used during these sessions is direct elicitation with linguistic questionnaires. Prior to each elicitation session, I have prepared a list of grammatical Yucatec sentences with non-pluractional predicates; during the elicitation session, I present the sentences to the consultant in turn, and ask how the consultant would say the sentence differently if the event takes place multiple times.

I obtained sentences with pluractional suffixation from the first part of the sentence-gathering, and was able to obtain sentences with pluractional suffixation, pluractional root modification and zero pluractional morphology from the second and third part of the sentence-gathering elicitation.

3.6 Direct Elicitation of the Pluractional Morphs

After pure sentence-gathering of pluractionality, I was able to obtain a sufficiently large list of Yucatec sentences with pluractional suffixation. As it turned out, there are two morphs in Yucatec Maya that can be suffixed to verbs and result in pluractional interpretation. Accordingly, the next step of my elicitation aimed at establishing a more elaborate description of the two pluractional morphs, both of their morphological distribution and of their semantic interpretation.

There are four sets of questionnaires that I designed for the purpose of eliciting pluractional behaviors of the two morphs. See appendix B for more details.

(69) Questionnaires for the Elicitation of Pluractionality in Yucatec Maya

a. Questionnaire 1: Transitivity and Distribution

b. Questionnaire 2: Aspectual Selection and Atelicity
c. Questionnaire 3: Contiguity, Downtime and Genericity

d. Questionnaire 4: Distributivity

In practice, these questionnaires were split up and re-combined into various one-hour one-on-one elicitation sessions. Each single elicitation session was between one fieldworker (me) and one Yucatec Maya consultant only, but the consultant for different sessions may vary. The settings of all of these elicitation sessions are similar: the consultant and I sat together in a quiet room, we went through the tasks designed for the present session, I took note with pen and paper, the consultant was able to read, correct or comment on anything I had written down.

Questionnaire 1: Transitivity and Distribution. In this questionnaire, I have provided verbal stems with various derivational and inflectional morphology, which amount to a total of 13 types of morphological environment with respect to transitivity and 37 tokens of possible morphological arrangement. These 37 tokens of possible morphological arrangement are what I assume to cover all of the possible distributional environment of the two pluractional morphs in Yucatec Maya. I thereby placed the two pluractional morphs direct after the respective morphological environment, with three suffixation options: the direct suffixation of -la’aj, the direct suffixation of -la’an, and the direct suffixation of -la’an plus the transitivizer -t. This yields a total of \([37 + 3 =]111\) tokens. In addition, in order to test whether it is possible to use more than one pluractional morph on the same verb, I randomly chose 2 tokens from the 37 tokens, one being transitive and the other being intransitive, and added to them the most likely arrangement of a double appearance of the pluractional morphs respectively: -la’an-t-aj-la’aj (-la’an-TR-INTR-la’aj) for the transitive verbal environment, and -la’aj-t-la’an-t (-la’aj-TR-la’aj-TR) for the intransitive verbal environment. This yields another two tokens. In sum, I have a total of \([111 + 2 =]113\) tokens for questionnaire 1.

These 113 tokens are divided into three groups for judgement tasks (or scout
judgement, see the discussion in (61c) in 3.4). Group A comprises tokens that are formed from the 37 verbal environment plus the pluractional morph that is predicted to be grammatical by my hypothesis (i.e. -la’an-t for transitive verbal environment and -la’aj for intransitive verbal environment; cf. Part III of this dissertation); replacing all of the -la’an-t by -la’aj and vice versa for all of the tokens in group A, I was able to obtain another 37 tokens that constitute group B; replacing only -la’an by -la’aj and -la’aj by only -la’an for all of the tokens in group A, I was able to obtain another 37 tokens that constitute group C; finally, the 2 additional tokens that contain double pluractional suffixation are also put into group C. Following my hypothesis on the distribution of the two pluractional morphs in Yucatec Maya, I expect that (i) some, if not all, sentences from group A are grammatical, and (ii) all of the sentences from group B and C are ungrammatical.

In order to minimize observer bias and other experimenter effects (e.g. Rosenthal and Rosnow 2009) during the judgement tasks, I have randomized the tasks for each elicitation session. More precisely, the judgement tasks are designed as follows. First, I numbered each token by the group name to which it belongs and the number of its placement; for example, the token from group C that is third on the list is numbered as C03. Then, I hid all of the numbering of the tokens and rearranged them in a random order; now I obtained a list of 113 tokens, with a new numbering, from 001 to 113. Next, I divided these randomly ordered tokens into 9 sessions, with 4 sessions consisting of 12 tokens and 5 sessions consisting of 13 tokens; each session received tokens according to the numbering on the new list: for example, session 1 contains 12 tokens, so I assign tokens 001 to 012 to this session; session 5 contains 13 tokens, so I assign tokens 049 to 061 to this session. Finally, I combined these judgement tasks together with tasks from other questionnaires to complete one elicitation session. I rated and analyzed the results when all of the elicitation sessions that contain judgement tasks of questionnaire 1 were completed, only then did I reveal the original numbering (i.e. C03, for
instance) of each token.

In the design of my elicitation sessions, the randomization of the tokens guarantees that the obtained results are not affected by the subjective anticipations of neither the interviewer nor the interviewees, and the combination of multiple elicitation tasks within one session makes my elicitation sessions more interesting for the consultants to participate in.

**Questionnaire 2: Aspectual Selection and Atelicity.** This questionnaire targets the property of aspectual selection of the pluractional suffixation and the property of atelicity of the resulted pluractional predicate. Together with questionnaire 3, the tasks in these questionnaires were designed in order to acquire an elaborate understanding of the semantic interpretation of the pluractional suffix in Yucatec Maya.

I considered five Aktionsarten: states, activities, achievements, accomplishments and semelfactives (Vendler 1957; Smith 1991). I chose one verb from each Aktionsart (Dowty 1979; Rothstein 2004; Wood 2007; Smith 1991): *ojel ‘know’* (states), *áalkab ‘run’* (activities), *kiin ‘die’* (achievements), *meen ‘do’* (accomplishments), and *k’oop ‘knock’* (semelfactives). I then constructed plurational sentences by adding plurational suffixation to these verbs. For each verb, I constructed two types of morphological environment corresponding to the transitive and intransitive stem formation, and combine them with the two different realizations of the pluractional suffix; as a result, I obtained a list of \([5 \times 2 =]10\) plurational tokens.

Task 1 is a combination of a judgement scout and a translation task. In this task, the consultant was presented with the 10 plurational tokens. First, the consultant was asked whether the token is “understandable”. Since no discourse context was given, I assume this to be the paraphrase of a grammaticality judgement: an “understandable” token is grammatical and an “ununderstandable” token is not.

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2The substitute for *k’oop* is *p’it ‘jump’*. This is because some consultants do not use *k’oop* on a daily basis.
is ungrammatical. Then, the consultant was asked to translate the tokens that were previously judged as understandable from Yucatec Maya into Spanish. The purpose of this additional translation step is to make sure that the consultant indeed gave judgement to the token I intended, rather than a morphophonological similar token (see my discussion on these matters in Chapter 7, especially sections 7.2.2 and 7.2.5). Through task 1, I was able to acquire information regarding the combinational ability of the Yucatec pluractional suffix with the Aktionsarten of the verbs (i.e. aspectual selection). Since all of the 10 tokens were judged as “understandable” (i.e. grammatical), and the translation of these tokens indeed rendered the intended pluractional meaning, I concluded that the Yucatec pluractional suffix can be combined with verbs of all of the five Aktionsarten, hence there is no aspectual selection with this suffix. See section 7.3.1.

Task 2 is a judgement task. In this task, the consultant was presented with a modified version of the 10 tokens used for the previous task. The modified version of each token was made by adding an atelic adverbial to the original sentence. The atelic adverbial I used was *junp’él hora* ‘one hour’. The consultant was asked whether the sentence presented is “understandable”. Different from task 1 where judgement of understandability is taken as the judgement of grammaticality, the judgement of understandability in task 2 is taken as a judgement of felicity; this is because I have already learnt from task 1 that the core constituents of the tokens are grammatical, and hence the reasons for a token to be “ununderstandable” for the consultant should lie in pragmatic grounds. Through task 2, I was able to acquire information regarding the atelicity of the pluractional predicates through the *for*-adverbial test (Dowty 1979; van Geenhoven 2004; Henderson 2012). Since all of the 10 tokens survived the *for*-adverbial test, I concluded that the predicates resulted from a pluractional suffixation in Yucatec Maya are always atelic. See section 7.3.5.

The principle of designing my elicitation sessions in which the current questionnaire was employed is similar to the one I have reported above. Namely,
I randomized the sequence of appearance of the tokens to minimize the experimenter effects, and mixed various elicitation tasks from different questionnaires into one elicitation session, so that the sessions appeared to be more interesting for the participants.

**Questionnaire 3: Contiguity, Downtime and Genericity.** This questionnaire was designed to elicit more facets of the pluractional meaning of the Yucatec pluractional suffix. In practice, the tasks from this questionnaire are mixed with the tasks from other questionnaires in a randomized manner for each elicitation session, for the same reason as already discussed above.

There are three tasks in this questionnaire. Task 1 targets the facet of contiguity of the repetitions of an event. It is a judgement task within an established discourse context. In this task, the consultant was presented with a pluractional sentence in Yucatec Maya and several scenarios described in Spanish, the consultant was then asked whether the Yucatec sentence can be uttered in the scenarios presented. See section 7.3.2.

Task 2 targets the facet of downtime variation between two non-contiguous repetitions of an event. It was designed as a judgement task within an established discourse context. In this task, the consultant would be presented with the same set of pluractional sentences in Yucatec Maya as in task 1, but the scenarios presented in Spanish would differ in length of pause between repetitions; the consultant would then be asked whether the Yucatec sentence can be uttered in the scenarios presented. In practice, this task was not carried out, because I have determined from task 1 that the plural events denoted by the pluractional predicates must be contiguous in time (without pause), hence there is no downtime between repetitions.

Task 3 targets the facet of the possibility of a generic or habitual readings of a pluractional predicate. It is also a judgement task within established discourse context. There are two sets of Yucatec sentences I prepared for this task. In the first part of the task, the first set of sentences was used. This part of the task
is similarly designed as task 1: the consultant was presented with a pluractional sentence in Yucatec Maya and several scenarios described in Spanish, the consultant was then asked whether the Yucatec sentence can be uttered in the scenarios presented. In the second part of the task, the second set of sentences was used. The second part of the task is designed as follows: the consultant was presented with a pluractional sentence in Yucatec Maya, then asked whether the given sentence can be uttered for the description of a habit, a profession or a ritual that happens regularly. From the first part of task 3, I was able to conclude that the Yucatec pluractional suffix allows both a single occasion reading and a habitual reading; from the second part of task 3, I was able to conclude that the Yucatec pluractional suffix allows generic and habitual readings. See section 7.3.3.

**Questionnaire 4: Distributivity.** This questionnaire was designed in order to elicit the facets of the pluractional meaning of the Yucatec pluractional suffix that are related to the property of distributivity. More specifically, I wanted to figure out the exact implications of a distributive predication within a pluractional context, and whether there are any constraints with respect to a distributive quantification within a pluractional context. See section 7.4.2.

There are five tasks in this questionnaire. Task 1 is a judgement task. In this task, the consultant was presented with a list of Yucatec pluractional sentences in which the predicates can only happen once for each individual (e.g. ‘die’), the consultant was then asked to give a felicity judgement to these sentences. Through this task, I was able to determine that the event participants of a plural event with distributive predication do not have to participate in a plural event.

Task 2 is a translation task. In this task, the consultant was asked to translate a series of Spanish sentences into Yucatec Maya. The series of Spanish sentences presented have collective reading, distributive reading or are ambiguous between a collective and a distributive reading. Then the consultant was asked to comment on their translation with respect to the number of event participants and how the event may have been carried out collectively. Through this task, I was able to
conclude that there is also a type of sentence that is ambiguous in its collective and distributive reading in Yucatec Maya, and this type of sentence may have an additional third reading (i.e. partial participation reading).

Task 3 is a judgement task. In this task, the consultant was presented with a list of Yucatec pluractional sentences that are modified by the Yucatec counterparts of the two Spanish (or English) distributive quantifiers: *jujuntúul*/*jujunpéel* ‘each’, and *chen tu jun* ‘individually’. The list of Yucatec sentences includes both predicates that can only happen once for each individual (e.g. ‘die’) and predicates that can happen an unlimited amount of times for an individual (e.g. ‘build a house’). The consultant was asked to give felicity judgement to these sentences. Then, the consultant was asked to give comments to the sentences that were previously judged as felicitous on the following aspects: the number of the subject, the number the object, the number of the event, the number of times each event participant takes part in the event, and whether the atomic events take place simultaneously. The result of this task will be discussed below together with task 4 and 5.

Task 4 is a translation task. In this task, the consultant was asked to translate a series of Spanish sentences into Yucatec Maya. The Spanish sentences exhibit the usage of the quantifiers ‘every’, ‘all’, ‘each’ and ‘individually’. The result of this task will be discussed below together with task 3 and 5.

Task 5 is a judgement task. In this task, the consultant was asked to give felicity judgement within a series of minimally different scenarios to five Yucatec sentences: four containing the quantifiers ‘every’, ‘all’, ‘each’ and ‘individually’, and one that does not contain a quantifier. The scenarios are minimally different in the number of people, the number of house(s) they have built and the grouping of the people and the houses in the scenarios. The scenarios were presented using non-linguistic materials, namely, pictures. The result of this task will be discussed in the next paragraph together with task 3 and 4.

Task 3, 4 and 5 aim to unravel the behaviour of the Yucatec distributive
quantifiers, which I initially assumed exist. However, the results of these three tasks suggest otherwise. More precisely, the results of these three tasks suggest that Yucatec Maya either does not have the kind of distributive quantifiers like ‘each’ in English, or does not have any distributive quantifiers at all. The result of task 3 shows that (i) under pluractional predication, event arguments can participate in a plural event, but do not have to; and (ii) pluractional sentences under distributive quantification do not require participation in the plural event. This result argues against the generalization acquired from the study of distributive predication and quantification from other languages. The result of task 4 shows that the Yucatec counterparts of the English or Spanish sentences with distributive quantifications do not exhibit any specificities that distinguish them from those without distributive quantifications. The result of task 5 shows that since all sentences presented can be uttered in all of the given scenarios, the Yucatec counterparts of ‘every’, ‘all’, ‘each’ and ‘individually’ may not be quantifiers. To sum up, the assumption that I started with, namely, that Yucatec Maya has the kind of distributive quantifiers like ‘each’ in English is false. Hence, Yucatec Maya either does not have the kind of distributive quantifiers like ‘each’ in English, or does not have any distributive quantifiers at all. For detailed discussion see the later half of section 7.4.2.

The tasks from this questionnaire were carried out in elicitation sessions in the sequence given in the questionnaire. Since these tasks are mostly very short, they were scattered in various elicitation sessions and used as time-fillers. Sometimes the consultants or I thought that there was more to say about the Yucatec sentences, then we would stretch the discussion onto the next elicitation session. The information acquired from these discussions is treated the same way as consultant’s comments (see (61d) above).
3.7 Direct Elicitation of the Yucatec Plural Marker

Prior to my fieldwork, I have already gained a preliminary understanding of the present day usage of the Yucatec plural marker -o’ob through a careful examination of the two volumes of Yucatec narrations Narraciones Mayas (NM) and Narraciones Mayas de Campeche (NMC), which were published in the 2010s. I have concluded that the usage of -o’ob in today’s Yucatec Maya is more prevalent than it was described in the previous literature (e.g. Lucy 1992; Pfeiler 2009) or than its counterparts in other Mayan languages of different sub-branches (e.g. the eastern branch, cf. England 2011 for K’iche’; Henderson 2009 for Kaqchikel, among others), namely, the usage of -o’ob in today’s Yucatec Maya is no longer constrained by syntactic factors such as animacy status or surface grammatical role. In other words, today’s Yucatec Maya speakers can use -o’ob on any noun, regardless of its syntactic position, as long as the referent of the noun indicates some kind of plurality. See chapter 5 for more details.

In light of these preliminary pre-fieldwork findings, I centered my elicitation of the Yucatec plural marker around the following five aspects:

(70) Desiderata of the Elicitation of Plural Marker in Yucatec Maya

a. Meaning differences of the same semantically plural noun: plural marking versus no plural marking

b. Meaning differences of the same semantically plural noun: plural marking versus adverbial modification

c. Form preference for the same semantically plural noun: is there any speaker’s preference with respect to overt plural marking?

d. Overt plural marking of the arguments under event plurality and distributivity

e. The relation between -Vl and -o’ob
The desiderata (70a-d) were carried out primarily along the elicitation sessions of the second part of the sentence-gathering of pluractionality (cf. 3.5 above), with bits and pieces scattered in other sessions. In these situations, the consultant would utter a sentence with a pluraly marked noun; I would then ask the consultant whether the sentence would mean the same if I take away -o’ob (70a), whether the sentence would mean the same if I use for example ya’ab ‘many’ to modify the noun instead of marking it with -o’ob (70b), and which, from all the possible ways of uttering the sentence, the consultant prefer, and why (70c-d).

The desideratum (70e) was done separately. As mentioned in (61d), I asked two consultants in two separate elicitation sessions whether they think the three noun forms in (68) (repeated below in (71)) are the same, and if not, how they would use them differently. Although I was not able to obtain sufficient information in order to determine the exact grammatical meaning of the suffix -Vi, I was able to determine that (i) the grammatical meaning of -Vi and -o’ob does not overlap, and (ii) the grammatical meaning of -Vi implies plurality.

(71)  ____ tin wilaj

a.  le  paal-al-o’
    DET child-Vl-CL

b.  le  paal-o’ob-o’
    DET child-PL-CL

c.  le  paal-al-o’ob-o’
    DET child-Vl-PL-CL

‘the children’
3.8 Methodological Innovation: Rephrasing as a Device for Disentangling Similar Morphological Forms

One difficulty I encountered during my elicitation sessions on pluractionality was that the pluractional morpheme takes similar or even identical form(s) with other verbal morphemes in certain morphological environment, which resulted in confusions and entanglements with respect to the exact morpheme that was utilized in a specific sentence. This problematic will be discussed at length in section 7.2.2.

In relation to this problem, I have developed a new elicitation method in order to double-check the pluractional data that I elicited with the consultants and to disentangle the morphological forms that appear to be similar or identical, namely, the method of rephrasing. After the Yucatec sentences were acquired (either through linguistic or non-linguistic questionnaires, see 3.5 above), I would ask a different consultant to translate the elicited Yucatec sentences into Spanish; this way, I was able to control whether the sentences I previously acquired indeed have the intended pluractional meaning. If the Spanish translation of a specific sentence seemed dubious as to whether the predicate is pluractional, I would ask the consultant who did the translation for me to rephrase the Yucatec sentence in the way that people from her or his village would speak (¿Cómo se diría esta frase en su idioma en su pueblo?) for the exact interpretation of the sentence that this consultant had understood from the Yucatec sentence presented for translation. After the elicitation sessions, I would compare the two versions of the same elicited sentence; this way, I was able to find out whether the consultant had used the pluractional suffix or another verbal suffix that is of a similar form.

This methodological innovation enables me to utilize rephrasing as a device for disentangling similar morphological forms throughout my sentence-gathering elicitation sessions in Yucatec Maya. If it turned out that, instead of the intended pluractional suffix, a verbal suffix of a similar form was utilized in the elicited
sentence, I would exclude this sentence from my pluractional data corpus.

3.9 Fieldwork in the Time of a Pandemic

In addition to traditional tête-à-tête linguistic fieldwork, I also explored the possibilities of email fieldwork and whatsapp fieldwork due to the restrictions cast by the pandemic. These scattered fieldwork sessions were mostly dedicated to simple judgement tasks, as exemplified in (72):

(72) An example question used for a nonconventional fieldwork session:

¿Usted cree que se puede decir estas dos oraciones en maya? ¿Significan lo mismo? (Do you think these two Yucatec sentences can be uttered? Do they mean the same?)

a. Tu jóok'sla'antaji', jujuntúulil le máako'.

b. Tu jóok'sla'antaji', jujunpéelil le máako'.

I am aware that the data I acquired from these sessions should be treated with special care due to the following reasons: (i) the communication in these sessions rely mostly on text, hence it is possible that the consultant may interpret my questions slightly differently as I intended; (ii) the source strings in Yucatec Maya are presented exclusively in written form, this may result in certain degree of deviation from the result, had the strings been presented in other forms (for instance, in recordings); (iii) the questions that are able to fit into the shape of simple judgement tasks are limited, as a result, the consultant’s answer may only reflect the linguistic landscape partially.

In light of the limitations of nonconventional fieldwork, the answers I obtained from these sessions are used primarily as additional information and are treated the same way as consultants’ comments in normal elicitation environment (see discussion in 3.4 (61d)).
3.10 A Note on Ethics

All of the participants of my fieldwork have reached the age of majority in both Germany and Mexico (18 years old) at the time of partaking the elicitation sessions. They were informed of the purpose of my study, the tasks they would be expected to complete, the usage of the data, as well as their right with respect to these data, and have verbally agreed upon these terms before any elicitation activities took place (‘informed consent’). The work and efforts of the participants were remunerated; in addition, knowledge exchange in the form of academic presentations were provided as a way of giveback.

The elicitation sessions were designed as various one-hour one-on-one sessions. Each single elicitation session was between one fieldworker (me) and one Yucatec Maya consultant only, but the consultant for different sessions may vary. The sessions were not recorded or filmed, hence no copyright issues may arise in this specific case. The settings of all of these elicitation sessions were similar: the consultant and I sat together in a quiet room, we went through the tasks or questions designed for the session, I took note with pen and paper, and the consultant was eligible to read, correct or comment on anything I had written down.

3.11 Summary

In this chapter, I discussed the methodological and ethical issues that are related to my fieldwork where I collected the linguistic data that serve as the empirical foundation for the present dissertation. First, I presented general information about my fieldwork, which includes information about the consultants, the aims of my fieldwork and the guidelines that I adopted as I conducted the fieldwork. Next, I discussed the meta-language that I used during my fieldwork, which is nonconventional to fieldworkers who advocate and work according to an ‘elicitation-without-meta-language’ approach, and further discussed the reasons that motivated me to choose this meta-language for my elicitation and the legitimacy of this de-
liberate decision. Then, I outlined the three targets of my elicitation, namely, the sentence-gathering of pluractional morphology, the direct elicitation of the pluractional morphology and the direct elicitation of the plural marker. Within each part of the illustration, I described with all the particulars the logistics, the questionnaires and the tasks of each subordinate part of the elicitation. As the highlight of this chapter, I additionally discussed two specific methodological issues that will hopefully be useful or applicable for future fieldworkers, namely, (i) a methodological innovation in elicitation scenarios where similar morphological forms are entangled, and (ii) nonconventional ways to do fieldwork when it is impossible to conduct fieldwork on-site. Finally, I remarked on the ethic aspects of my fieldwork.

I hope this chapter has provided sufficient insights into how the linguistic data are obtained before any theoretical frameworks can be adopted and before any formal analyses can be performed. I also hope the methodological issues that I discussed here will inspire future fieldworkers to find creative ways of obtaining linguistic data, not only in Yucatec Maya, but also in other languages.
Part II

The Plurality of Entities
Chapter 4

Number and Plurality

4.1 Introduction

This part of the dissertation addresses the linguistic phenomenon of nominal number and plurality. Chapter 4 outlines the general aspects of the study of number and plurality, and chapter 5 discusses the nominal number system and the plural marking in Yucatec Maya in particular.

The current chapter presents the linguistic study of number and plurality from a typological perspective. In the course of the presentation, several aspects regarding the study of number and plurality will be highlighted for the study of number and plurality in Yucatec Maya in the next chapter. The chapter is structured as follows. After this introduction, section 4.2.1 discusses the phenomenon of number marking, and presents three types of number marking; section 4.2.2 elaborates the distinctions of number values and number oppositions, which are crucial for the determination of the number systems of languages; section 4.2.3 discusses the animacy hierarchy and how it affects other parameters within the number category; section 4.2.4 illustrates the number system of a language, and presents the typological possibilities of multiple number systems within one language; section 4.2.5 discusses the phenomenon of number agreement, which is distinguished from the phenomenon of number marking; section 4.2.6 and 4.2.7
discuss two additional language-internal factors that can affect the nominal number marking, namely argument structure and numeric constraints; finally, section 4.3 sums up the chapter.

4.2 Typology of Nominal Number Marking

4.2.1 Markedness

The world’s languages show a great variety regarding how nominals can have a number opposition. By examining the possibilities of number expression of nominals (i.e. the possible forms through which distinctions of number meaning can be expressed), three types of number marking can be distinguished:

First, obligatory marking. In this type, the difference in semantic number interpretation of the nominals is obligatorily expressed in forms. There are a few possibilities in terms of how number can be marked, the most available ones among them are: special number words, syntax, morphological means and lexical means (Corbett 2000: 133-159). Nevertheless, the ranges of number interpretations as well as number markers of a specific language depend on the number meaning system (i.e. the possible number values, number oppositions and number hierarchies) and the number expression system (i.e. the available forms and marking strategies) within the language in question. This enables various subtypes. The contrast between singular and plural count nouns in English serves as an example of the type of obligatory number marking:

(73) friend - friend-s English

Second, optional marking. In this type, the difference in semantic number interpretation of the nominals is optionally expressed in forms. Similar to the first type of obligatory number marking, the ranges of number systems of meaning and expression vary cross-linguistically, which hence also gives rise to various subtypes. What is worth noting for the type of optional number marking is that it almost
always involves the general number value (cf. 4.2.2 below) on nouns\(^1\). Number marking on Japanese common nouns serves as an example of the current type:

(74) *inu* - *inu-tatai*  
Japanese  
a dog/some dogs  the dogs

Third, *excluded marking* or *zero marking*. In this type, the difference in semantic number interpretation of the nominals is not overtly expressed in form. In other words, the meaning of the number of the nominals can only be made clear either by context or through agreement, if a certain form of number agreement is available for the kind of nominal in question in a specific language. Mandarin Chinese is an example of zero number marking\(^2\):

(75) *māo*  
Mandarin Chinese  
a cat/the cat/some cats/the cats

Note that it is not uncommon that multiple types or subtypes of number marking coexist within one language. When this happens, the split always corresponds to a position on the animacy hierarchy (cf. 4.2.3 below). For example, in Japanese, the plural marking on proper nouns falls into different types of number marking at different positions on the animacy hierarchy: high on the hierarchy, the segment of human proper nouns requires obligatory plural marking; in the middle of the hierarchy, the segment of other non-human animate proper nouns receives optional plural marking; low on the hierarchy, the segment of inanimate proper nouns is excluded from number marking (Downing 1996: 200-209):

---

\(^1\)With very few exceptions of optional marking on pronouns or optional number agreement on verbs. Cf. Reed and Payne (1986) for an example of general-plural contrast within the pronominal system in Asheninca (Arawakan; Peru); van den Berg (1989) for an example of optionality within the agreement system for non-human animates in Muna (Austronesian; Indonesia).

\(^2\)There is a morpheme *-men* in Mandarin Chinese which has a plural connotation. Some researchers argue that *-men* is a plural marker which originated from the number distinction in the pronominal system and spread further to (a small number of) nouns including certain occupations and professions. For this view, cf. Chappell 1996, among others. Other researchers argue that *-men* is in fact a collective marker, rather than a plural marker. For this view, cf. Ilić 1994, among others.
4.2.2 Number Values and Oppositions

The possible distinctions that may be drawn within number go beyond the mere distinction between singular and plural. Let us call these distinctions *number values*. Common number values include: singular, plural, dual, trial, paucal (i.e. small number), greater plural (i.e. greater numbers) and general (Corbett 2000: 9-35).

Distinguishable from other number values, the general number value is the only one that is devoid of the explicit indication of meaning that is related to number (i.e. it does not specify the number of the involved entities in the real world). That is to say, the general number value *per se* is outside of the number meaning spectrum, because the meanings of the nouns of general number are expressed without reference to number. Nevertheless, the general number value is crucial for the typology of number systems, because it contributes several number contrasts to the typology.

*Number contrasts*, or *number oppositions*, signify the available distinctions of number values that can be made through morphological means. To illustrate this, we could construct a version of Pseudo English (below PE-A, for *Pseudo English A*) in which all nouns must take number markers of either -i SG or -o DU or -a PL when they enter the syntax. As a result, PE-A has the number contrasts of singular-dual-plural:

\[(76) \quad \text{dog-i} \quad \text{dog-o} \quad \text{dog-a} \quad \text{PE-A}\]

\[
\begin{align*}
\text{dog-SG} & \quad \text{dog-DU} & \quad \text{dog-PL}
\end{align*}
\]

The situation gets trickier if one of the number values does not receive overt morphological marking. The difficulty arises due to the non-marking nature of the general number value. In other words, the unmarked form of the noun could
receive either the general number interpretation or a specific non-empty number 
interpretation, depending on the number system of that particular language. To 
illustrate this, we could construct another four versions of Pseudo English:

(77) \textit{dog} \quad \textit{dog-o} \quad \textit{dog-a} \quad \text{PE-B}

\begin{verbatim}
dog.SG dog-DU dog-PL
\end{verbatim}

(78) \textit{dog} \quad \textit{dog-o} \quad \textit{dog-a} \quad \text{PE-C}

\begin{verbatim}
dog.GRL dog-DU dog-PL
\end{verbatim}

(79) \textit{dog-i} \quad \textit{dog-o} \quad \textit{dog} \quad \text{PE-D}

\begin{verbatim}
dog-SG dog-DU dog.GRL
\end{verbatim}

(80) \textit{dog-i} \quad \textit{dog-o} \quad \textit{dog-a} \quad \textit{dog} \quad \text{PE-E}

\begin{verbatim}
dog-SG dog-DU dog-PL dog.GRL
\end{verbatim}

In the first three languages (77-79), there are two number markers but three 
possible forms with which a noun can enter the syntax. Just like PE-A, PE-B also 
distinguishes the number contrasts of singular-dual-plural; the only difference is 
that the number value of singular is expressed by the singular marker in PE-A, 
while it is expressed by the lack of number markers in PE-B. Both PE-C and 
PE-D have the number value of general in their number system, although the 
general number value receives different denotations in each system, because they 
are contrasted with distinct number values in various systems. For PE-C, the 
number contrasts are general-dual-plural; the general number value includes the 
singular interpretation as well as the general interpretation, which together serves 
as a value that is opposed to plural\textsuperscript{3}. For PE-D, the number contrast are singular-
dual-general; the general number value includes the plural interpretation as well

\textsuperscript{3}To simplify matters, let us just assume that in all of the versions of our Pseudo English, the 
use of dual is very restricted (for example, it can only be used for natural pairs of things, such 
as eyes, ears, twins...), hence it does not interact with the number values of singular, plural and 
general.
as the general interpretation, which together serves as a value that is opposed to singular.4

The fourth language, PE-E (80), is different from the other three in that it has three number markers but four possible forms with which a noun can enter the syntax. When the noun is marked with a number marker, it expresses number meaning denoted by that marker; however, when the noun is unmarked for number, it does not specify the number information of the referent which the noun in question denotes. The number contrasts distinguished in this language are singular-dual-plural-general; the general number value includes the singular interpretation as well as the plural interpretation, which is opposed to both the singular value and the plural value.

The above examples of types of Pseudo English help explain the concepts of number value, number contrast or opposition, and number markedness, which are important building blocks for determining the number system of a specific language. These examples also show that languages with similar number values can be typologically classified into various groups if the number oppositions are different. As a result, a thorough examination of these parameters should be done before any conclusions can be drawn about the number system of a particular language. We will come back to these parameters in the next chapter when we examine the number system of Yucatec Maya.

4.2.3 Animacy Hierarchy

It has been pointed out by many previous researchers that the availability of certain number oppositions may ‘split’ a language; the position where the split occurs conforms with a hierarchy based on the animacy level of the nominal referents (Smith-Stark 1974; Silverstein 1976; Comrie 1981; among others). Following

---

4Note that PE-D is predicted impossible by Greenberg’s universal 34 that “[n]o language has a dual unless it has a plural” (Greenberg 1963: 94). Here, I only use it to illustrate the point that there can be multiple possible interpretations of the general number value depending on the number system.
Corbett (2000: 56), we will call this hierarchy the *animacy hierarchy*. The configuration below shows the hierarchy positions with which we are concerned:

\[(81)\]

The animacy hierarchy:

\[
1 > 2 > 3 > \text{kin} > \text{human} > \text{animate} > \text{inanimate}
\]

We can see from the animacy hierarchy that, generally speaking, pronouns are higher on the hierarchy than nouns, human are higher than non-human, and animate are higher than inanimate. More specifically, high on the animacy hierarchy we have the speaker (i.e. 1st person pronouns) and the addressee (i.e. 2nd person pronouns), followed by the 3rd person pronouns. After the pronouns, we have kinship terms and nouns that denote human. After human, we have other animate nouns. At the bottom of the hierarchy, we have the inanimate nouns.

Subdivisions are also available within each hierarchy position. For example, a split within human between rational and non-rational (i.e. infants or children) can be found for some languages\(^5\). Within animate, a split between pets or domesticated animals versus other animals is possible. Within inanimate, a split between count and mass is possible. We will see examples of the latter two subdivisions in our subsequent discussions on Yucatec Maya plural marking.

As is mentioned above, the establishment of an animacy hierarchy contributes to our understanding of the number system of the world languages, including number marking and number agreement (cf. 4.2.5 below). The animacy hierarchy serves to constrain the possible candidates of number systems: in general, if there is a singular-plural distinction in the number system in a specific language, it must affect the top segment of the hierarchy; a contrast in number values must appear higher on the hierarchy than the segment on the hierarchy where number is non-differentiable; the probability of number being distinguished decreases monotonically along the animacy hierarchy (Corbett 2000: 55-88). The fact that various number oppositions occupy various positions on the animacy hierarchy constitutes numerous number systems cross-linguistically.

\(^5\)An example of such is Tamil (Dravidian; India), cf. Smith-Stark (1974).
4.2.4 Multiple Systems

The typology of number systems is determined by the possible combination of number values and number contrasts (cf. 4.2.2) cross-linguistically. The number system of a particular language is determined by the number values and the number contrasts that are available for the language in question. In addition, the possible number contrasts of a particular language is determined by the range of each number value on the animacy hierarchy.

Some languages only have one single number system. Standard Spanish, for example, exhibits straightforward singular-plural contrast throughout the entire animacy hierarchy. In this regard, Standard Spanish is a language with a single number system with two number values and one number opposition. Table 4.2 below illustrates languages that are of the same type with Standard Spanish in terms of their number system:

<table>
<thead>
<tr>
<th>Hierarchy position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>kin</th>
<th>human</th>
<th>animate</th>
<th>inanimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of singular</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Range of plural</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Number contrast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Number system of Standard Spanish

Other languages have multiple number systems. Below, I will use the data from Yimas (Lower Sepik-Ramu; Papua New Guinea) to showcase multiple number systems (cf. Corbett 2000: 92-93, 120-121; Foley 1986). Yimas has four number values (singular, dual, paucal and plural) and three number oppositions (singular-dual-paucal-plural, singular-dual-plural and number non-differentiable). The range of each number value on the animacy hierarchy is different: singular, dual and plural affect larger segments on the hierarchy than paucal, which only affects the top segment of the hierarchy. This results in different number oppositions on different segments of the hierarchy: the top segment, which equals the pronominal system, has a fourfold number opposition singular-dual-paucal-plural; the next segment, which includes the majority of the nouns, has a threefold number...
opposition singular-dual-plural; the last segment, which is a group of inanimate nouns that is at the very bottom of the animacy hierarchy, is off the scale of number differentiability. This, in turn, forms three number value systems that split the entire animacy hierarchy: the top system, the second system and the bottom system. Table 4.3 below illustrates languages that have multiple number systems like Yimas:

<table>
<thead>
<tr>
<th>Hierarchy position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>k.</th>
<th>h.</th>
<th>an.</th>
<th>inan.</th>
<th>inan. others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of singular</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Range of plural</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Range of dual</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Range of paucal</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Number contrast</td>
<td></td>
<td>singular-dual-paucal-plural</td>
<td>singular-dual-plural</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number system</td>
<td></td>
<td>top</td>
<td>second</td>
<td>bottom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3: Number systems of Yimas

4.2.5 Number Agreement

Before we proceed the discussion on further aspects of number systems, let me briefly address the phenomenon of number agreement.

There are two ways languages can overtly express grammatical number: either through morphological means, or through syntactic means. The former way of number expression is what we have discussed in 4.2.1, which we call number marking, for it typically requires a kind of morphological marker that is affixed to the noun. The latter way of number expression is what we will call thenceforth number agreement, for the indication of grammatical number is not directly shown on the noun itself, but rather, through syntactic agreement on verbs, adjectives, anaphoric pronouns and so on.

Two relevant questions within the current research aim are, firstly, how number agreement conforms with the animacy hierarchy, and secondly, how number agreement correlates to number marking in terms of their relation to each other and to the animacy hierarchy. For now, I can only give a tentative answer to these
questions, due to the hitherto insufficient or incomplete studies in the number category of the world’s languages. Number agreement does conform with the animacy hierarchy. Moreover, number agreement conforms with the hierarchy even when number marking shows irregularity at certain points on the hierarchy. In other words, we would expect both number marking and agreement to show conformity with the animacy hierarchy, and a priori we would expect that number agreement is at least as regular with respect to the animacy hierarchy as is number marking. In still other words, with respect to the animacy hierarchy, we would expect to see regular number agreement of lexical items when number marking is irregular, but not vice versa.

4.2.6 Argument Structure

In the following two sections, I will discuss two language-internal factors that interact with or restrain the nominal number marking (i.e. the marking of the number of the entities): argument structure and numeral quantification. I will start with argument structure in the current section.

Argument structure constructions (Goldberg 1995) are the form-function pairings that constitute the basic “linking” patterns of simple clauses (Bresnan and Kanerva 1989; Dowty 1991; Grimshaw 1990; Gleitman 1994; Jackendoff 1983; Pinker 1989). The phrasal form-meaning correspondences have been argued to exist independently of particular verbs (Goldberg 1989, 1995; Jackendoff 2002). Hence, if certain positions or roles of arguments are salient for the speakers, it is possible that nouns that are in certain positions or nouns that bear certain roles will receive a higher degree of morphological marking.

4.2.7 Numerals and Numerical Quantification

In some languages, the overt morphological marking of nominal number can be suppressed by the presence of numerals or numerical quantification.

Xrakovskij (1997a) observes a cross-linguistic incompatibility of plurally marked
items with the explicit mentioning of the number of those items, i.e. a general
tendency to avoid the collocation of numerical quantification and morphologically
pluralized elements (Yu 2003). In Chechen (Nakh-Daghestanian; Russia), for in-
stance, a plural NP cannot take the plural marker as long as it is quantified by a
numeral determiner:

(82) a. qwo twop
    three gun
    ‘three guns’

b. *qwo tuep-ash
    three gun-PL
    ‘three guns’

(Yu 2003)

Note that a similar phenomenon can be found in the verbal category as well.
For example, in English if an event is “frequentivized”, then the presence of a
numerical quantificational adverbial is banned:

(83) John used to go fishing with his father (*four times).

(Yu 2003)

The above examples show that the same restriction applies to both the nominal
and the verbal domain, an interesting parallelism that we will look into in
chapter 8.

4.3 Summary

Nominal number marking denotes the morphological and syntactical marking of
the number of the nominal constituents in a sentence, i.e. the entities. In con-
trast, verbal number marking denotes the marking of the number of the verbal
constituents in a sentence, i.e. the events. The current chapter focused on the phenomenon of nominal number marking, verbal number marking will be discussed in detail later in chapter 6.

The current section deals with three main topics in relation to the typology of nominal number marking:

First, I discussed the phenomenon of the possible forms of nominal number marking. I have distinguished three typological marking types: obligatory, optional and excluded. We have seen that it is possible for multiple marking types to coexist in one particular language, and the marking type available for a specific animacy segment of the language conforms with the animacy hierarchy. In a stricter sense, number marking includes morphological marking on the nominal constituents as well as the syntactical marking of the nominal number on the verb; in this sense, the latter is called number agreement.

Second, I discussed the phenomenon of number value systems. I have noticed that the typology of number value systems is determined by a combination of factors, namely, the availability of number values and oppositions. Among all the number values that are possible cross-linguistically, the general number value is unique in that it is outside of the number meaning spectrum, for it denotes number indifferentiability, rather than a specific number value. The presence of a general number value, hence, makes the number opposition(s) in a particular language more complicated. For a specific language, it can have multiple number systems or a mono-system, depending on the range of number values and oppositions available along the animacy hierarchy.

Third, I discussed three language-internal factors that interact or restrain the overt morphological marking of nominal number: the animacy hierarchy, the argument structure and the presence of numerals or numerical quantification together with the plural nominal constituents. The constraints of the animacy hierarchy of the number marking and number systems is more prevailing, whereas the other two factors play a major role only in certain languages.
Chapter 5

Plurality in Yucatec Maya

5.1 Introduction

This chapter investigates the number system and the optional marking of plurality in Yucatec Maya. The chapter is structured as follows. After the introduction, section 5.2 focuses on the examination of the Yucatec number system. 5.2.1 presents the morphosyntax of the expression of grammatical number in Yucatec Maya, 5.2.2 examines the number values and oppositions available in the language, and 5.2.3 illustrates the Yucatec number system. Section 5.3 discusses the question of optionality in number marking in Yucatec Maya. 5.3.1 presents the data points that nominal plurality is optionally marked in Yucatec Maya, 5.3.2 presents a syntactic analysis that is successful in accounting for this optionality. 5.3.3-5.3.5 discusses three linguistic factors that may result in an optionality in number marking typologically, but I argue that these factors do not contribute to the optionality in Yucatec Maya. 5.3.6 discusses how language contact and the internal change of a language can result in variations and optionality in linguistic expressions. 5.3.7 poses the question how we should understand the variation of nominal number expressions in Yucatec Maya, which leads to the discussions in the next section.

In response to the question posed at the end of section 5.3, sections 5.4-5.5 approach an answer from a semantic perspective because syntax fails to provide such
an answer. 5.4.1-5.4.4 sketch out the semantic assumptions on Yucatec nouns and
the plural marker based on the observations thus far. 5.5.1 provides evidence that
argues against any accounts that would imply that the optionality can be under-
stood as a free variation of the expressions in the language. 5.5.2 discusses the ex-
isting analyses on generic terms, individuation, partitivity and pseudo-partitivity,
which leads to a semantic treatment of the optionality in plural marking in Yu-
catec Maya. 5.5.3 further goes compositional and demonstrates how this semantic
solution correctly predicts the interpretation of other types of number expressions
in Yucatec Maya. After a brief interim summary of the semantics presented thus
far, 5.5.5 discusses further issues that can be investigated in this regard in future
studies. Finally, section 5.6 presents the conclusions of this chapter.

5.2 Number Marking in Yucatec Maya

5.2.1 Morphosyntax of Plurality

There are three ways to express plurality of entities in Yucatec Maya: by suffixing
the plural marker on nouns, by using the plural form of a free pronoun, or by
number agreement on the verbal component.

5.2.1.1 Plural Suffixes on Nouns

Nouns in Yucatec Maya are pluralized by suffixing -o’ob. For example:

(84) a. *naj*
   house
   ‘house’

b. *naj-o’ob*
   house-PL
   ‘houses’
There is an allomorph of -o’ob, namely -ob, which is used when the preceding component ends with a glottalized vowel. For example:

(85) a. ba’alc’he’
   animal
   ‘animal’

b. ba’alc’he’-ob
   animal-PL
   ‘animals’

The plural marker -o’ob (and its allomorph -ob) can be combined with all of the nouns in Yucatec Maya, although it is optional, as reported by previous literature (Andrade 1955; Lehmann 1998; Lucy 1992; Briceño Chel 2002). This topic will be revisited and discussed in depth in section 5.3.

Nouns that are loanwords from Spanish can sometimes be pluralized by the plural suffix -s which is resulted from language contact with Spanish. For example:

(86) ocho u túul-ul señora-s
    eight A.3 CLF.AN-REL woman-PL
    ‘eight women’
    (NM-273)

But not all Spanish loanwords have to be pluralized by -s. For example:

(87) le señora-’ob-o’
    DET woman-PL-CL
    ‘the women’
    (NMC-158)

Although -o’ob can only be suffixed once for one root component, it is possible for a noun to be double marked for plurality through the combination of both the
Yucatec plural suffix -o’ob and the Spanish plural suffix -s, though only in the sequence of -s-o’ob (Uth and Gutiérrez Bravo 2018). For example:

\[(88) \quad u \quad abuelo-s-o’ob\]

A.3 grandparent-PL-PL

‘his grandparents’

\[(NM-24)\]

Essentially, plural marking in Yucatec Maya through the Spanish plural suffix -s is also optional with the one exception where Spanish nouns are preceded by a Spanish numeral (Uth and Gutiérrez Bravo 2018). Due to space limitation, language contact will not be dealt with in this dissertation, and hence the Spanish plural suffix -s will not be further discussed in the coming sections\(^1\).

A few nouns can form their plural counterparts by the suffixation of -al, rather than -o’ob, as reported in Tozzer (1921: 37); Bricker et al. (1998: 358). For example:

\[(89) \quad a. \quad paal\]

child

‘Child’

b. \quad \text{paal-al}\]

child-AL

‘Children’

\[(Bricker \text{ et al. } 1998: 358)\]

I am skeptical to Tozzer and Bricker’s description that -al is a plural marker in Yucatec Maya because \textit{paal} ‘child’ (89) is the only noun they give as example to illustrate this point. Consequently, I gloss -al as AL in this dissertation in order to differentiate it from -o’ob, which is a genuine plural marker that can apply to

\(^1\)For a formal analysis of the syntactic behavior of the Spanish plural suffix -s in Yucatec Maya cf. Gutiérrez Bravo and Uth (2020).

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all nouns in Yucatec Maya. In addition, I argue that the suffix -al should not be treated as another plural marker that has a similar status as the plural suffix -o’ob in Yucatec Maya, for the very reason that it is possible to mark a noun with both -al and -o’ob\(^2\). For example:

(90) \[x-ch’upul-pal-al-o’ob\]

F-girl-child-AL-PL

‘girls’

Similar to the argumentation when dealing with the grammaticality of -s-o’ob versus the ungrammaticality of *-o’ob-o’ob, as is mentioned above, the two suffixes must have different status in the system in order to co-occur on the same root component. Both -s and -al have very restricted application in Yucatec Maya. In the case of the suffix -s, it is a competition and interaction of the new and old forms of plural marking resulted from language contact between Yucatec Maya and Spanish. Along the same lines, in the case of the suffix -al, we would also expect that there are systematic differences that could distinguish -al from -o’ob. These differences may lie in the subtlety of their meaning, or in their morphosyntactic behavior.

Hence, it is reasonable to conclude here that -al and -o’ob are different suffixes in Yucatec Maya, and while -o’ob is a plural marker, -al is not. A thorough investigation of the suffix -al that expresses plurality will be left for another occasion.

5.2.1.2 Free Pronouns

Another way of marking plurality of entities in Yucatec Maya is by using the plural form of the free pronouns. See section 2.4.2. The list of free pronouns in Yucatec Maya is repeated in the table below:

\(^2\)But only in the sequence of -al-o’ob, not the other way round.
The marking of number for first and second person free pronouns is obligatory. In other words, the use of *teen* and *teech* indicates singular referent while the use of *to’on* and *te’ex* indicates plural referents.

In contrast, the marking of number for third person free pronouns is optional. The third person plural form of the free pronoun is constructed by the third person singular form *leti’* plus the Yucatec plural marker *-ob* (the allomorph of *-o’ob*); since *-o’ob* is universally optional (cf. section 5.3.3-5.3.5), the number marking on the third person plural free pronoun is also optional. Hence, while the use of *leti’ob* indicates plurality, the use of *leti’* merely indicates a general number.

### 5.2.1.3 Number Agreement

The plurality of entities can also be marked through agreement on the verbal components in Yucatec Maya. In this case, set A and set B clitics are utilized (cf. section 2.4.2). An example of number marking through agreement is shown in (91), and the set A and set B pronominal clitics are repeated below in table 5.2.

(91) *Le ch’ujak-o’ob k-u ko’on-ol-o’ob-o’ jach mejen-tak-o’ob.*

DET sweets-PL HAB-A.3 sell.PASS-PL-CL really small-SBS.PL-PL

‘The sweets that are sold are really small ones.’ (Verhoeven 2007: 106)
In (91), le ch’ujuko’ob is in the focus position of the sentence, which is left dislocated from the main clause ku ko’onolo’obo’ jach mejentako’ob, hence the agreement on the verb marks the subject plurality.

Ergative number agreement is done through the combination of the set A proclitic and the set B enclitic of the same person and number on the verbal component. For first person ergative agreement, the form of the proclitic for singular and plural is distinct, hence ergative number agreement for first person is obligatory. For second person ergative agreement, although the forms of the proclitic are identical for singular and plural, the forms of the enclitics are distinct; therefore, ergative number agreement for second person is also obligatory\(^3\). For third person ergative agreement, since -o’ob is optional as it is throughout the whole number system in Yucatec Maya (cf. section 5.3.3-5.3.5), ergative number agreement is optional.

Absolutive number marking is made through the suffixing of the specific set B clitic on the respective verbal component. As is shown in table 5.2, for first and second person, the forms of the clitics are distinct, hence absolutive number agreement for first and second person is obligatory. For third person, similar as with ergative agreement, the plural form -o’ob is optional, hence absolutive number agreement for third person is optional.

To summarize, the expression of plurality of entities through agreement on the verbal components in Yucatec Maya is obligatory for first and second person\(^4\), but optional for third person.

5.2.2 Number Values and Types of Number Contrast

The phenomenon of the optionality of number marking in certain parts of the number system in Yucatec Maya invites the question of what exactly the values of

\(^3\)Set B enclitics must appear on the verbal component for second person number agreement, cf. Butler 2012: 33.

\(^4\)Again, to delimit the scope of inquiry in this dissertation, whether there is a distinction between plurality and associative plurality in Yucatec Maya will not be investigated. Nevertheless, I am pointing this potential distinction out here to invite further discussion in this regard.
the marked and unmarked components are. As a result, this section addresses the problem of the exact values and the contrasts in the number system in Yucatec Maya.

Number marking through suffixation of the Yucatec plural marker -o’ob on nouns is essentially optional; this results in a contrast in number value between plural, when marked, and general, when unmarked.

Number marking on free pronouns is obligatory for first and second person, but optional for third person; this results in a split of two types of contrast in the number value. For first and second person free pronouns, a contrast between plural and singular is made. Both of these values are marked via overt morphological forms. For third person free pronouns, a contrast is made between plural and general. This is similar to the number marking through suffixation where the marked form has the number value plural and unmarked form has the number value general.

Number marking through agreement is obligatory for first and second person, but optional for third person; this also results in a split of two types of contrast in number value, as is the case with number marking on free pronouns. For first and second person free pronouns, the contrast is between plural and singular. For third person free pronouns, the contrast is between plural, when marked, and general, when unmarked.

Hence, we have detected three number values and two types of number contrast in the number category in Yucatec Maya.

(92) Three values in the number system:

a. singular

b. general

c. plural

The value singular is available for first and second person free and bound pronouns, the value general is available for third person free and bound pronouns as well as
nouns, and the value *plural* is available for all nouns and pronouns.

(93) Two types of number contrast:

   a. singular-plural
   b. general-plural

The contrast *singular-plural* is available for first and second person free and bound pronouns, whereas the contrast *general-plural* is available for third person free and bound pronouns as well as nouns. This pattern is in line with the constraint of the animacy hierarchy on number distinctions that the singular-plural distinction in a given language must affect a top segment of the animacy hierarchy (Corbett 2000: 56). We will turn to the discussion of the role animacy plays in the number system in Yucatec Maya in the coming sections.

### 5.2.3 Multiple Number Systems

In the previous section, I have determined that there are three values and two types of contrast in the number category in Yucatec Maya and that different types of value and contrast are available for different groups of nouns and pronouns. This finding leads us to think that there should be more than one number value system in Yucatec Maya.

At least two number value systems in Yucatec Maya can be determined on the basis of the finding that there are three values and two types of contrast in number. The first system targets first and second person free and bound pronouns. In this number value system, the values *singular* and *plural* are available, but the value *general* is unavailable; the contrast *singular-plural* is available, but the contrast *general-plural* is unavailable. The second system targets other nouns and pronouns in the entire system. In this number value system, the values *general* and *plural* are available, but the value *singular* is unavailable; the contrast *general-plural* is available, but the contrast *singular-plural* is unavailable. Note that I divide the animacy hierarchy into five segments: kin, human, non-human animate, inanimate
discrete and inanimate indiscrete. This division is made based on the assumptions on Yucatec nouns in previous literature, see Lucy (1992, 1996: 55).

The two number value systems are summarized below in table 5.3:

<table>
<thead>
<tr>
<th>Hierarchy position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>kin</th>
<th>human</th>
<th>non-human</th>
<th>animate</th>
<th>inanimate discrete</th>
<th>inanimate indiscrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of singular</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of general</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of plural</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.3: Yucatec number value systems (pending)

The question arises whether there is a third system apart from the two I have just described above. At first glance, it seems that there is no room for a third number value system, because from third person below all pronouns and nouns are able to be marked for plurality with the suffix -o’ob and all of the number marking on these nouns and pronouns is optional. However, a close examination toward the bottom segment of the animacy hierarchy gives us a positive answer. Though inanimate discrete nouns can be marked for plurality the same way animate nouns do (84), inanimate indiscrete nouns (i.e. mass nouns) behave subtly differently.

For example:

(94) a.  *diez bolsa-s lu’um, u lu’um-il kool-e’*
   
   ten bag-PL soil A.3 soil-REL corn-CL

   ‘ten bags of soil, the soil from the cornfield’

   (NM-14)

b.  *Pues le semillero, pues ts’o’ok u nuk-t-a-l k’a’ana’an*
   
   so DET seedbed so TRM A.3 grow-TR-PASS-IND necessary

   **xak’-la’an-t-ik-o’ob te’ lu’um-o’ob-o’**.

   jumble.AF-PLR-TR-IND-PL LOC earth-PL-CL

   ‘So the seeds have grown, it is necessary to transplant them to the earth.’

   (NM-189)
Comparing (94) and (84), we can see that there is indeed a difference between these two types of inanimate nouns with respect to their behavior under plural marking. While the notional meaning of *naj* ‘house’ does not change with or without the plural marker -o’ob, the notional meaning can alter for *lu’um* ‘soil’ when it is marked for plurality. More specifically, the bare version\(^5\) of *lu’um* can receive a mass interpretation\(^6\), as is shown in (94a), in addition to the normal general interpretation, as it is the case with *naj* or other animate nouns. The mass interpretation as is exemplified in both *lu’um* in (94a) is still a version of general number value because it is unspecified in number; nevertheless, it is different from the general number value of the bare version of *naj* or other animate nouns in that, while the general value of *naj* can be specified for plural by the modification of -o’ob, the general value of the mass interpretation of *lu’um* can never be specified for plural by any further modification. This contrast shows that there is a split within the general number value in Yucatec Maya, if the potential of specification of number is taken into consideration. On the other hand, the marked version, *lu’um-o’ob*, receives, and is only able to receive, the apportioned reading. This results in a distinction in the meaning of the contrast general-plural between inanimate indiscrete nouns and other nouns, as is shown below in table 5.4:

<table>
<thead>
<tr>
<th></th>
<th>Number contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>plural</td>
</tr>
<tr>
<td></td>
<td><em>lu’um-o’ob</em></td>
</tr>
<tr>
<td>Meaning</td>
<td>‘pieces of soil’</td>
</tr>
<tr>
<td></td>
<td><em>naj-o’ob</em></td>
</tr>
<tr>
<td>Meaning</td>
<td>‘houses’</td>
</tr>
</tbody>
</table>

Table 5.4: Distinction in meaning of the general-plural contrast

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\(^5\)It is not exactly the equivalent to bare nouns in English, cf. section 5.5.2 for more discussion in this regard.

\(^6\)Again, it is not exactly the same as mass interpretation in English, cf. section 5.5.2 for more discussion in this regard.

\(^7\) *lu’um* exemplifies the noun group of inanimate indiscrete.
As is shown in table 5.4, the plural version of the nouns is a specification of the general version of the respective nouns. That is to say, the meaning of the plural version of a noun is a subset of the meaning of the general version of the same noun. This is true regardless of noun groups. The distinction that discriminates the noun group inanimate indiscrete from the rest of the noun groups lies in the choices of the specific meaning available within the general value. More specifically, there are three choices of specific meaning available for the general value of the noun group inanimate indiscrete, while there are only two for the noun groups animate and inanimate discrete; the three choices are singular portion, plural portions and non-apportioned respectively, while the two choices are singular (portion) and plural (portions). Hence, the pluralization of the nouns from the noun groups animate and inanimate discrete picks out the plural entities and discards the singular, while the pluralization of the nouns from the noun group inanimate indiscrete picks out only the plural entities and discards the singular as well as the ones that are not apportioned.

Strictly speaking, the apportioned interpretation of the inanimate indiscrete nouns makes these nouns discrete in essence. If we treat the noun group inanimate indiscrete by notion, i.e. if we single out only the non-apportioned interpretation of the inanimate indiscrete nouns, we will find that this group does not have any other values aside from general. Whether we should put all inanimate indiscrete nouns with all possible interpretations in the noun group inanimate indiscrete, or whether we should only put the nouns that are interpreted as inanimate indiscrete in the noun group inanimate indiscrete is a question of the inherent properties of Yucatec nouns, and hence will not be further dealt with here. For the current purpose, it suffices either way to prove the existence of a systematic split between the noun groups inanimate discrete and inanimate indiscrete, irrespective of the specifications of noun classification in Yucatec Maya.

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8 *naj* exemplifies the noun groups of animate and inanimate discrete.

9 More discussion on the inherent properties of the Yucatec nouns, cf. sections 5.4 and 5.5.2.
Now we have established a third system in addition to the two that we have described above (cf. table 5.3). The top system covers first and second person free and bound pronouns. In this number value system, the values singular and plural are available, but the value general is unavailable; the contrast singular-plural is available, but the contrast general-plural is unavailable. The second system covers the segments from third person free and bound pronoun to inanimate discrete nouns. In this number value system, the values general and plural are available, but the value singular is unavailable; the contrast general-plural is available, but the contrast singular-plural is unavailable. The bottom system covers inanimate indiscrete nouns. In this number value system, the values general and plural are available, but the value singular is unavailable; the contrast general-plural is available, but the contrast singular-plural is unavailable. The bottom system is discerned from the second system because it is possible to include the non-apportioned interpretation in the general value in the bottom system, while it is not in the second system.

The complete number value systems in Yucatec Maya are summarized below in table 5.5:

<table>
<thead>
<tr>
<th>Hierarchy position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>kin</th>
<th>human</th>
<th>non-human</th>
<th>inanimate</th>
<th>inanimate</th>
<th>inanimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of singular</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of general</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>(x)</td>
<td></td>
</tr>
<tr>
<td>Range of plural</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>(x)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.5: Yucatec number value systems (complete)

To summarize, I have discussed in section 5.2 how the grammatical number of entities is expressed in Yucatec Maya. There are multiple forms of plural markers in Yucatec Maya, and I focused on the Yucatec plural marker -o’ob. Number can be marked through suffixation on nouns and pronouns as well as through agreement. I have determined that there are three values, namely singular, general and plural, and two types of contrast, namely singular-plural and general-plural,
in the number category in Yucatec Maya, and that different types of value and contrast are available for different groups of nouns and pronouns. Further, I have resolved that the number value system of Yucatec is threefold.

Along the analysis above, I have mentioned that the marking of plurality in Yucatec Maya is essentially optional, and that the optionality is homogeneous throughout the entire system. In the next section, I will turn to the phenomenon of optional plural marking in Yucatec Maya.

5.3 Optionality

This section focuses on the optionality in plural marking in Yucatec Maya. Several factors that are associated with the plural marking behavior cross-linguistically will be examined.

5.3.1 Observation

In the previous section, I have mentioned that the marking of plurality in Yucatec Maya is essentially optional, and that the optionality is homogeneous throughout the entire system. This invites the question whether there are language-internal parameters that have an effect on the explicit expression of plurality in Yucatec Maya. More precisely, in what follows, I will examine the following language-internal parameters with respect to plural marking: (1) the syntactic structure of plural marking, (2) the degree of animacy of nouns, (3) nouns in relation to the argument structure constructions, and (4) nouns in relation to numerical quantification.

5.3.2 Syntax of the Plural Marker

The optionality of plural marking in Yucatec can be accounted for by the morphosyntactic analysis that the Yucatec plural suffix -o’ob is merged as an adjunct modifier of DP (Butler 2011, 2012, 2013; Butler et al. 2014). This analysis follows
from the universal typology proposed in Wiltschko (2008) that the plural marking in the world’s languages can merge in two ways at all levels: it can either merge as a head, resulting in a new projection which takes the label of the head, or it can merge as an adjunct modifier and does not change the syntactic label of the resulting projection. Butler (ibid.) argues that the plural marking in Yucatec belongs to the latter case in the typology, and that the plural suffix is merged at the DP level. For example, under this analysis, (95a) has the syntactic structure in (95b):  

(95) a. le  áak’-o’ob-o’
   DET liana-PL-CL
   ‘the lianas’

b. 

\[ \begin{array}{c}
   \text{XP} \\
   \text{DEP} \\
   \text{DP} \\
   \text{D} \\
   nP \\
   \sqrt{n} \\
   le \quad áak’ \quad -o’ob \quad -o’ \\
   \text{DET} \quad liana \quad PL \quad CL
\end{array} \]

Despite the fact that Butler’s (ibid.) syntactic analysis accounts very well for the phenomenon of optional plural marking in Yucatec Maya, it nevertheless shows that syntax only plays a role in determining the optional nature of plural marking in Yucatec Maya, rather than in determining when and where the nouns are overtly marked for plurality. In other words, although how the plural marker merges in the syntactic structure contributes to the optionality of plural marking

10The description of the four Yucatec enclitics see section 2.4.7. What is relevant here is that they always appear phrase-final. Since the main topic of this dissertation does not concern the syntax of Yucatec enclitics, I simply assume that CL is in a projection higher than DP and leave out other syntactic details. For a KP-head (Kase Phrase, Löbel 1994) analysis of the Yucatec enclitics, see Butler (2011: 59-60).
in Yucatec Maya, syntactic structure is not a factor that conditions the speaker’s choice of an explicit grammatical expression of plurality.

5.3.3 Animacy Hierarchy

The degree of animacy of a noun is a factor that motivates the display of plural marking cross-linguistically (Smith-Stark 1974: 663; Comrie 1981: 102-103; Corbett 2000: 55-69). This universal hypothesis is manifested in Yucatec Maya in two ways.

First, the plural marking in Yucatec Maya conforms with the animacy hierarchy in that the obligatory number marking (singular-plural distinction) affects the top segments of the animacy hierarchy (speaker and addressee) whereas the facultative number marking affects the lower segments of the animacy hierarchy, as is shown below in table 5.6:

<table>
<thead>
<tr>
<th>Hierarchy position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>kin</th>
<th>human</th>
<th>non-human animate</th>
<th>inanimate discrete</th>
<th>inanimate indiscrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number marking</td>
<td>+</td>
<td>+</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>(*)</td>
</tr>
<tr>
<td>Number agreement</td>
<td>+</td>
<td>+</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>(*)</td>
</tr>
</tbody>
</table>

Table 5.6: Number marking in relation to animacy hierarchy in Yucatec Maya

Second, plural morphology in Yucatec Maya has a tendency to be displayed more frequently higher on the animacy hierarchy (Pfeiler 2009; Schellenbach 2018).

However, despite these two aspects in which the animacy level has an impact on the plural marking in Yucatec Maya, data show that the explicit grammatical expression of plurality in Yucatec Maya is not determined by the animacy level of the nouns whatsoever. The most evident reason for this claim is that all nouns from all animacy levels can be semantically plural with or without the grammatical plural marker -o’ob\textsuperscript{12,13}:

\textsuperscript{11}Cf. section 5.2.3 for in-depth discussions on noun properties and the number marking and agreement for inanimate indiscrete nouns.

\textsuperscript{12}The noun phrases listed here are asked for judgement under the linguistic environment of \textit{Je’el le -o’ ilaj wilej!} ‘There are \underline{______}, look!’.

\textsuperscript{13}Contrary to our current observation, Lucy (1992, 1996: 55) describes the Yucatec plural
suффикс as being limited only to animate entities. Pfeiler (2009), in addition, describes that the Yucatec plural suffix can also be used on inanimate entities possessed by animate beings in Standard Yucatec Maya. The disparities in the three versions of descriptions on the distribution of plural marking via suffixation in Yucatec Maya may be due to an on-going change in Yucatec Maya resulted from language contact with Spanish (Pfeiler 2009; Uth and Gutiérrrez Bravo 2018). For more discussion on this topic, cf. section 5.3.6.
Therefore, the degree of animacy as an inherent property of the denotation of a noun is also not a factor that conditions the speaker’s choice of an explicit grammatical expression of plurality in Yucatec Maya.

5.3.4 Argument Structure

In a particular language, if certain syntactic positions or thematic roles are salient for the arguments in general, these positions or roles may receive a higher degree of morphological markedness (Bresnan and Kanerva 1989; Dowty 1991; Grimshaw 1990; Gleitman 1994; Jackendoff 1983; Pinker 1989). I examine in this subsection the markedness of Yucatec plural arguments within various argument structure.

On the syntactic level, I examine nouns that are subject, direct object as well as nouns that are in propositional phrases. Data\textsuperscript{14} show that all nouns can be morphologically marked as well as unmarked for plurality in Yucatec Maya, regardless of their syntactic function in the sentences. For example:

(102) Subject

a. \textit{J} \textit{jaat in nook’}.

\text{COMPL} tear A.1SG cloth

‘My clothes got torn.’

(Lehmann 2015)

b. \textit{J} \textit{jaat in nook’-o’ob}.

\text{COMPL} tear A.1SG cloth(-PL)

‘My clothes got torn.’

\textsuperscript{14}The pairs of sentences used for judgement in this subsection are modified from existing sentences in the published works. Only the original sentences are cited. The modification I made to these sentences is minimal: I leave out or add -o’ob on the targeted argument noun so that the modified sentence forms a minimal pair with the original sentence. In carrying out the judgement test, I ask for speaker’s judgement on both sentences in the pair with the same intended meaning; in other words, the sentence pairs in this section are judged as felicitous without interpretation alternations.
(103) Direct object

a. Mantats’ táan u t’ab-ik kib ti’ kili’ch Anton.
constantly PROG A.3 kindle-IND candle PREP saint Anton
‘Regularly he lights candles for St. Anthony.’

(Lehmann 2015)

b. Mantats’ táan u t’ab-ik kib-o’ob ti’ kili’ch Anton.
constantly PROG A.3 kindle-IND candle-PL PREP saint Anton
‘Regularly he lights candles for St. Anthony.’

(104) Prepositional phrase (possessed nominal15)

a. Ma’ a w-ojel tumen leti’-e’ u tak-m u baj
NEG A.2 EP-know because 3.SG-TOP A.3 hide-PP A.3 REFL
 t-u paach che’-e’.
PREP-A.3 back tree-CL
‘You don’t know (where he is), because he hides himself behind the trees.’

(Gutiérrez Bravo 2015: 75)

b. Ma’ a w-ojel tumen leti’-e’ u tak-m u baj
NEG A.2 EP-know because 3.SG-TOP A.3 hide-PP A.3 REFL
 t-u paach che’-o’ob-e’.
PREP-A.3 back tree-PL-CL
‘You don’t know (where he is), because he hides himself behind the trees.’

15In this case, the Yucatec noun, che’ ‘tree’, is the possessor of an expanded possessed nominal (Lehmann 1998; Verhoeven 2007); the entire possessor NP is the complement of a PP.
On the semantic level, I examine nouns that serve different thematic roles. Data show that all nouns can be morphologically marked as well as unmarked for plurality in Yucatec Maya, regardless of their thematic roles in the sentences. For example:

(105) Agent and Patient

a. Je’ u chi’-ik máak sina’an-e’.

ASR A.3 bite-IND person scorpion-CL

‘Scorpions (certainly) bite people.’

(Hanks 1984: 162)

b. Je’ u chi’-ik máak sina’an-o’ob-e’.

ASR A.3 bite-IND person scorpion-PL-CL

‘Scorpions (certainly) bite people.’

c. Je’ u chi’-ik máak-o’ob sina’an-e’.

ASR A.3 bite-IND person-PL scorpion-CL

‘Scorpions (certainly) bite people.’

(106) Theme

a. Ma’ uts t-in t’aan káa in w-u’uy a tsolxikin

NEG good PREP-A.1SG speech that A.1SG EP-feel A.2 advice

sáansamal-i’.

every.day-CL.NEG

‘I don’t like to hear your advices every day.’

(Verhoeven 2007: 132)
b. Ma’ uts t-in t’aan káa in w-u’uy a
NEG good PREP-A.1SG speech that A.1SG EP-feel A.2

_tsolxikin-o’ob  sáansamal-i_’.  
advice-PL every.day-CL.NEG

‘I don’t like to hear your advices every day.’

(107) Experiencer

HAB-A.3 leave.this.way-IND EP-mood person exist-INCH-CL

‘People who live there get bored.’

(Verhoeven 2007: 210)

HAB-A.3 leave.this.way-IND EP-mood person-PL exist-INCH-CL

‘People who live there get bored.’

(108) Stimulus

a. _Pedro-e’ su’ulak yéetel u xanab._  
Pedro-TOP ashamed with A.3 shoe

‘Pedro is ashamed of his shoes.’

(Verhoeven 2007: 163)

b. _Pedro-e’ su’ulak yéetel u xanab-o’ob._  
Pedro-TOP ashamed with A.3 shoe-PL

‘Pedro is ashamed of his shoes.’

On the pragmatic level, I examine nouns that are in topic and focus positions. Data show that all nouns can be morphologically marked as well as unmarked for
plurality in Yucatec Maya, regardless of the information structure of the sentences. For example:

\begin{equation}
\text{(109) Topic}
\end{equation}

\begin{itemize}
\item[a.] \textit{Ch’íich’-o’ob-e’ chen x-k’ook’-o’ob u k’ajóol.}
\begin{itemize}
\item bird-PL-TOP only F-nightingale-PL A.3 know
\end{itemize}
‘As concerns birds, he only knows nightingales.’
\text{(Skopeteas and Verhoeven 2009b)}
\item[b.] \textit{Ch’íich’-e’ chen x-k’ook’-o’ob u k’ajóol.}
\begin{itemize}
\item bird-TOP only F-nightingale-PL A.3 know
\end{itemize}
‘As concerns birds, he only knows nightingales.’
\end{itemize}

\begin{equation}
\text{(110) Focus}\textsuperscript{16}
\end{equation}

\begin{itemize}
\item[a.] \textit{Bu’ul k-u jaan-t-ik María.}
\begin{itemize}
\item bean HAB-A.3 eat-TR-IND María
\end{itemize}
‘Beans is what María eats.’
\text{(Tonhauser 2003a)}
\item[b.] \textit{Bu’ul-o’ob k-u jaan-t-ik María.}
\begin{itemize}
\item bean-PL HAB-A.3 eat-TR-IND María
\end{itemize}
‘Beans is what María eats.’
\end{itemize}

Therefore, argument structure is again not a factor that conditions the speaker’s choice of an explicit grammatical expression of plurality in Yucatec Maya.

\textsuperscript{16}Recall that the foci in Yucatec Maya appear directly left adjacent to the auxiliary, or, in case the auxiliary is absent, to the main verbal component of the sentence, cf. section 2.5.3.


5.3.5 Constraints of Numerical Quantification

As discussed in 4.2.7, some languages prohibit the co-occurrence of number marking and numerical expressions (Yu 2003).

The data from Yucatec Maya shows, however, that the display of plural marking is independent from the occurrence of numerals, i.e. the morphological plural marking on the noun remains optional irrespective of the presence of numerical quantification. Compare (111) and (112):

(111) ka’á túul nukuch tso’

two CLF big turkey

‘two big turkeys’

(NM-139)

(112) le in ka’á túul w-úts’í-n-o’ob-a’

DET A.1SG two CLF EP-younger.sibling-PL-CL

‘these two younger siblings of mine’

(Briceño Chel 1996: 101)

Therefore, the presence of numerical quantification is not a factor that restrains the speaker’s choice of explicit grammatical expression of plurality in Yucatec Maya either.

5.3.6 Language Change

Above, I have considered four language-internal conditions that might play a role in the speaker’s choice of morphological marking of plurality in Yucatec Maya. I have concluded that none of them are decisive parameters for the phenomenon in question. Before I move on to contemplate other possibilities that are in play within the language in regard to plural marking, let us take a brief look at some of the language-external factors in this section.
Pfeiler (2009) observes that there is a significant distinction between child and adult speech with respect to their marking of nouns for plurality. Children mark nouns that are semantically plural with the plural suffix -o’ob in a more frequent manner than adults; moreover, children extend the plural marking onto non-possessed inanimate nouns, which are usually morphologically unmarked for number in adult speech. There are two obvious implications of this observation. First, generation or age group is a factor that affects the overt morphological plural marking of nouns. Second, the change of plural marking is one-directional, in that the distribution of the plural suffix extends further down on the animacy hierarchy over time. These two implications are in line with what I have mentioned in section 5.3.3, especially in footnote 13, that researchers from earlier times always report a more restricted range of distribution of the plural marking.

Three salient cultural factors that contribute to the explanation of this ongoing change in Yucatec Maya with respect to plural marking are pointed out by Pfeiler (2009), with all of them directing at an influence that Spanish has on Yucatec Maya. First, due to early school education of Spanish, Mayan children are likely to apply Spanish grammar to both Spanish and Yucatec Maya. Hence, when these children speak Yucatec Maya, chances are that they use the Yucatec plural suffix in a manner that resembles the plural markers in Spanish. Second, some Mayan children learn to read and write in Yucatec Maya, but the textbooks available are strongly influenced by Spanish grammar to the extent that plural marking is taught as obligatory. As a result, unmarked plural nouns are perceived by these Mayan children as incorrect because they deviate from the norm that they were taught. Third, the social condition around the Mayan children also plays a significant role in their language behavior. Mayan children usually grow up in extended families, and thus have more frequent contact with other children than with adults from older generations. This leads to a possible acquisitive pattern that younger children acquire the language structure from the older children, rather than from their adult relatives.
In other words, these three language-external factors are three pathways through which the impact of language contact between Spanish and Yucatec Maya is manifested. Reinforcingly, Uth and Gutiérrez Bravo (2018) draw a conclusion in the exact same vein from a corpus study on the plural marking on Spanish loanwords in Yucatec Maya. The high rate of overt plural marking as well as the diminishing restriction on the range of overt plural marking together point to a structural change in Yucatec Maya which is the result of language contact with Spanish.

Whether the phenomenon of the extension of overt morphological plural marking in Yucatec Maya is purely the result of language contact remains unsettled. Lehmann (2010), for instance, argues that numeral classifier is a grammatical category that exists in a certain phase of the grammaticalization process cross-linguistically, and that the universal grammaticalization of the numeral classifier follows a particular path, which is primarily characterized by the degree of independence of the substantivizing grammatical forms from their dependent components. He further argues that in Yucatec Maya, specifically, the numeral classifier is an operator that converts a Yucatec numeral into a nominal word; hence, if grammatical changes take place in the category of numeral classifier, the category of numeral as well as the category of number marking will change accordingly. More precisely, the grammaticalization of the numeral classifiers strengthens their grammatical function as numeral nominalizers; as a result, the numerals that are obligatorily combined with these classifiers may be reduced to mere lower numerals (i.e. numerals that express relatively small numbers; cf. Greenberg 1972: 6); this may, in turn, result in a more nominal-like feature of the higher numerals, which may trigger overt morphological number marking on nouns. Indeed, all these three tiers of changes are observed in Yucatec Maya: In the classifier category, the commonly used numeral classifiers are reduced from a wide range of depiction of unit, form and arrangement (Lucy 1992: 48-52) to a binary contrast between animate and inanimate (Schumann 1990: 54; Briceño 1993: 8-9). In the
numeral category, most of the original Yucatec numerals have been replaced by Spanish loanwords; these numerals (i.e., higher numerals) do not allow the combination with classifiers; the only remaining Yucatec numerals are from 1 to 4, these numerals (i.e., lower numerals) must combine with classifiers. In the category of number marking, plural marking, which is essentially optional elsewhere in Yucatec Maya, is obligatory for Spanish loanwords when it is preceded by a higher numeral (Gutiérrez Bravo and Uth 2020). That being said, these phenomena are more complex than above described, in that they all involve a combination of factors such as diachronic change and language contact, neither of which can be resolved within a few words. In that regard, I will leave the answer open to the question whether the changes in Yucatec number category are the pure result of language contact, and await future investigation.

To summarize, the behavior of plural marking in Yucatec Maya is changing over time in two main ways: (i) the plural marker -o’ob is used more frequently and with more nouns, and (ii) the optionality of plural marking has extended to all nouns of all animacy levels. Although the optional nature of plural marking in Yucatec Maya is consistent, the restriction on the range of optional plural marking diminishes over time. In other words, the speaker’s choice of overt plural marking is correlated to the phenomenon of language change. The on-going change in Yucatec Maya, of which number marking is merely one facet, is the result of language contact with Spanish, and possibly also of an intrinsic grammaticalization process.

5.3.7 Free Variation?

Given the above data points, one might be tempted to the fast conclusion that the marking of plurality with the Yucatec plural marker -o’ob may be an instance of free variation in the language system, i.e. a variation that is not restricted by any linguistic conditions. I will sketch out this reasoning below.

First, the morphosyntactic analysis proposed by Butler (2011, 2012, 2013) and
Butler et al. (2014) indicates that the plural suffix in Yucatec Maya is merged as an adjunct modifier of the DP but the condition of this type of adjunction is unknown. This implies that the optionality of plural marking in Yucatec Maya results in a variation that is either free or has conditions that are still unknown.

Second, the examination of a few parameters that have been typologically attested to correlate with number marking, namely, the degree of animacy, argument structure, and numerical quantification, shows that none of the aforementioned parameters are effective in licensing the occurrence of the Yucatec plural suffix. If the variation in plural marking in Yucatec Maya is conditioned, one would expect that the occurrence of -o’ob is banned under certain conditions; however, since this is not the case, it seems that the variation in plural marking in Yucatec Maya is not conditioned.

Lastly, the evidence drawn from the language-external factors suggests that these factors may contribute to a non-homogeneous state in a language system in which temporary free variations are likely to occur.

In the coming sections, however, I will provide evidence that argues against a free-variation account of plural marking in Yucatec Maya. I argue instead that the optional plural marking in Yucatec Maya is conditioned by a number-interpretation inducing element within the Yucatec nouns at the stem level. To achieve an analysis like this, I will first need to spell out some of the formal details as a working hypothesis for further analysis.

5.4 Working Hypothesis

5.4.1 Recap

So far, we have drawn the following conclusions on the nominal plurality and the properties of Yucatec nouns:

(113)  

a. The nominal plural marking is completely optional in Yucatec Maya,
i.e. the optionality is not determined by the syntax or the semantics of the language.

b. The number contrast between plurally marked and unmarked Yucatec nouns is plural versus general.

5.4.2 Clausal Structure

Based on Aissen’s (1992: 46) model of the syntactic structure of Mayan languages, I assume that a Yucatec clause has a rough structure as represented in (114):

\[(114)\]

```
CP
  Spec
  C'
  Comp
    AM-P
      Aux
        AGR-P
          Set A clitic
            VP
              V'
                V
                  NP
                    (Subject)
                      NP
                        (Object)
```

I made minor changes on Aissen’s tree based on the specific linguistic facts of Yucatec Maya. For example, instead of an IP, I assume that there are two functional projections above the VP, namely, AGR-P (agreement phrase) and AM-P (aspect-mood phrase). AGR-P is headed by a set A proclitic, which contains ergative agreement features. AM-P is headed by an auxiliary, which contains features of aspect and mood\(^{17}\). The labels of these functional projections, namely, AGR and AM, are used due to pure illustrative considerations and are hence open to further debate.

\(^{17}\)For the sake of simplicity, I follow Gutiérrez Bravo (2015: 23-33) in this dissertation in calling these auxiliaries aspect auxiliaries, rather than aspect-mood auxiliaries. Cf. section 2.4.3.
In this model, a verb is the head of a VP. A VP can be c-selected by a proclitic from the set A, heading an AGR-P. An AGR-P can be c-selected by an aspect-mood auxiliary, which is the head of an AM-P. An AM-P can be c-selected by a complementizer, which heads a CP. Both subject and direct object of the clause are under the VP, but the Spec-CP position enables them to be topicalized and fronted.

5.4.3 Plural Suffix

The observation (113a) can be accounted for by a syntactic analysis in which the Yucatec plural suffix -o’ob is an adjunct. Deviating from Butler (2011, 2012, 2013) and Butler et al. (2014), which is the syntactic analysis presented in section 5.3.2 of this dissertation, I assume that -o’ob is adjoined foremost but not restricted to NP, rather than adjoined and restricted to DP.

I choose an NP-analysis over a DP-analysis for the following reasons: First, my current investigation does not concern the comparison of NP versus DP analysis in Yucatec Maya. Second, so far there are no arguments that favor a DP-analysis over an NP-analysis for Yucatec Maya. Third, an NP-analysis presents more simplicity in the semantics than a DP-analysis in this case (see section 5.5.2). Following this adaptation, I no longer hold the same claim as Butler (ibid.) in assuming that -o’ob is adjoined to DP, but only assume that it is adjoined to a phrase-level nominal projection higher than nP/N, which is represented as XP in the following syntactic structures whenever X is unclear. The assumed syntactic structure of plural marking in Yucatec Maya is presented in (115):

\[
\begin{array}{c}
\text{XP} \\
\text{nP/N} \\
\text{-o’ob} \\
\text{(adjunct)}
\end{array}
\]

In addition, I assume noun formation as in (116). As discussed in sections 2.4.1 and 1.3.2, I assume that all roots in Yucatec Maya are non-categorial and
undetermined for their interpretation; the categorial feature is settled after the root has merged with the categorial head, the interpretation of the stem is also determined at this level:

(116) \[ \text{nP} \]  
\[ \text{n} \]  
\[ \text{\sqrt{} } \]  
(head)  

In consequence, an NP in Yucatec Maya has the following structure (compare with (95)):

(117)  
\[ a. \text{le áak’-o’ob-o’} \]  
DET liana-PL-CL  
‘the lianas’  
\[ b. \]  
\[ \text{XP} \]  
\[ \text{NP} \]  
\[ \text{CL} \]  
\[ \text{NP} \]  
\[ \text{PL} \]  
\[ D \]  
\[ \text{nP} \]  
\[ n \]  
\[ \sqrt{} \]  
\[ \text{le áak’-o’ob-o’} \]  
DET liana PL CL  
\[ c. \]  
\[ \text{XP} \]  
\[ \text{NP} \]  
\[ \text{CL} \]  
\[ D \]  
\[ \text{nP} \]  
\[ n \]  
\[ \sqrt{} \]  
\[ \text{le áak’-o’ob-o’} \]  
DET liana PL CL  

As shown above in (117b-c), there are two possible structures of a Yucatec NP, depending on whether -o’ob is adjoined before or after the D. The discussion
in the remainder of this chapter does not concern cases where a D is present, hence I leave the choice open for future investigation, although the analysis in the coming section slightly favors (117c).

Either way, the structure of a Yucatec NP without D remains identical. The semantic types on the relevant nodes in an NP are shown below in (118). The C-Operator renders cumulative closure on an initially formed stem (cf. (2b) in section 1.3.2):

\[(118)\]

As is shown above, the Yucatec plural marker -o’ob is of type \(<e,t>,<e,t>\). Therefore, the denotation of -o’ob is:

\[(119)\]  
\[[-o'ob] = \lambda P_{<e,t>}. \lambda x_e. N_{pl}\]  
(pending)

As (119) indicates, the denotation of -o’ob relies on the denotation of plural nouns in Yucatec Maya, to which we now turn.

**5.4.4 Yucatec Nouns**

The observation (113b) can be accounted for by a semantic analysis in which the unmarked Yucatec nouns systematically receive mass interpretation (i.e. they denote cumulatively closed sets of entities) and the pluraly marked Yucatec nouns receive pure plural reading (i.e. they denote sets of non-atomic entities). Note that I use the term *mass* here in the semantic sense, rather than the morphological sense.
In English, count nouns have the number opposition of singular and plural: unmarked count nouns denote singularity, whereas marked count nouns denote plurality. I adopt here the so-called inclusive view of plural count nouns (Cham-pollion 2010a: 43; cf. also Krifka 1986; Sauerland 2003; Sauerland; Anderssen and Yatsushiro 2005; Chierchia 2010), which assumes that a plural count noun denotes the algebraic closure of its singular counterpart:

(120) English count nouns: singular-plural

a. \[ [\text{house}] = \{a, b, c\} \]

b. \[ [\text{house-s}] = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\} \]

c. \[ [N_{\text{sg}}] = \lambda x. P(x) \]

d. \[ [N_{\text{pl}}] = \lambda x. * P(x) \]

In Yucatec Maya, Yucatec nouns\(^{18}\) have the number opposition of general and plural: the unmarked Yucatec nouns have general number, whereas the marked Yucatec nouns denote pure plurality.

General number can be understood as number unspecified, which shares similar semantic interpretations with mass nouns in languages like English. English mass nouns denote cumulatively closed sets of entities; similarly, Yucatec nouns also denote cumulatively closed sets of entities. I will make the assumption that Yucatec nouns systematically behave like English mass nouns, because all number unmarked Yucatec nouns have the number value of general, regardless of their other properties (cf. section 5.2).

Yucatec nouns that are marked by the Yucatec plural marker -o’ob receive pure plural interpretation. This is different from English plural count nouns, because a set that denotes a Yucatec plural noun excludes all the elements that are atomic, whereas a set that denotes an English plural noun does not.

\(^{18}\)I intentionally avoid the discussion of Spanish loanwords in Yucatec Maya, for the lexical borrowing from Spanish into Yucatec Maya is not restricted to the lexicon, cf. Gutiérrez Bravo and Uth (2020).
And since Yucatec nouns are mass in their extensions, the above denotation of the Yucatec nouns can be further simplified as:

\[(122)\]
\[\begin{align*}
\text{a. } [naj] & = \{a, b, c, a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\} \\
\text{b. } [naj-o’ob] & = \{a \oplus b, a \oplus c, b \oplus c, a \oplus b \oplus c\} \\
\text{c. } [N_{gm}] & = \lambda x. *P(x) \\
\text{d. } [N_{ps}] & = \lambda x. [P(x) \land \neg atom(x)]
\end{align*}\]

Now that we have determined the denotation of Yucatec plural nouns, the denotation of the Yucatec plural marker -o’ob can be derived as follows:

\[(123)\]
\[\begin{align*}
\text{a. } [N_{gm}] & = \lambda x. \ast P(x) = \lambda x.P(x) \\
\text{b. } [N_{ps}] & = \lambda x. [P(x) \land \neg atom(x)] = \lambda x. [P(x) \land \neg atom(x)]
\end{align*}\]

5.5 Conditioned Variation

5.5.1 Evidence against a Free-Variation Account

Evidence from the previous sections seems to favor a free-variation explanation of the optionality of plural marking in Yucatec Maya, because none of the common conditioning factors of variation in number marking can effectively license the occurrence of the Yucatec plural suffix. However, statistical evidence from corpora seems to suggest otherwise.

Although the plural suffix can uniformly and freely occur in all of the conditions examined in section 5.3, the frequency of its occurrence does in fact vary. Nominal expressions higher on the animacy hierarchy show plural morphology more frequently than the ones that are lower on the hierarchy (human terms...
When in subject position, Spanish loanwords, in contrast to Yucatec nouns, display plural morphology with -o’ob more frequently (45% vs. 14%, Uth and Gutiérrez Bravo 2018). In addition, my own preliminary corpus study shows that constructions in the form of NUMERAL+CLASSIFIER+ NOUN+-o’ob are significantly less frequent (15% occurrence frequency in all plural numeral constructions) and more restricted (22% text range, 17% lexeme range) than other numeral constructions in Yucatec Maya. Whether these statistic data are representative and conclusive remains refutable due to the type and size of the corpus being examined by the individual author and the methodologies they employed; nevertheless, the conclusion I intend to draw from these data is that the optional plural marking in Yucatec Maya is not an entirely free variation, because systematic deviation does exist for the use of the Yucatec plural marker -o’ob across contexts.

If the plural marking in Yucatec Maya is not free, as argued above, one would thus expect that the plural marking is strongly disfavored in certain discourse contexts or readings. This is exactly the case. The following example from a casual elicitation shows that there is a clear preference of (124a) over (124b) in the discourse context in which a kind-referring reading is called upon:

(124) a. In p’óok-e’ chuup yéetel ja’.
A.1SG hat-TOP full  with  water

b. ??In p’óok-e’ chuup yéetel ja’-ob.
A.1SG hat-TOP full  with  water-PL

‘My hat is full of water.’

The difference in frequency and preference of the display of the Yucatec plural suffix -o’ob, as shown above, suggests that the variation in plural marking in Yucatec Maya should not be analyzed as entirely unconditioned. In other words,

---

19The two percentages cited from Schellenbach (2018) represent the statistical results from literate and illiterate Yucatec speakers respectively.
unlike previously assumed, this optionality is an unexplained variation. As a result, I will explore the condition of this variation in the remainder of this section. I approach such an explanation by digging into the generic interpretations of the NPs in which the marking of plurality with -o’ob is clearly disfavored.

5.5.2 Genericity, Individuation and (Pseudo-)Partitivity

Associated with the general number is the generic usage of NPs, which are also called kind-referring NPs in the literature, as opposed to object-referring NPs (Krifka et al. 1995; Deal and Nee 2018; Chierchia 1998a; Dayal 2004). In English, generic NPs can take the following forms: definite singular count nouns (125a), bare plural count nouns (125b) and bare mass nouns (125c).

(125) a. The dinosaur is extinct.
   b. Dinosaurs are extinct.
   c. Water is precious.

However, these three forms of generic terms should not be considered interchangeable, because they render different interpretations concerning genericity when involved in different types of predications. A definite singular count noun combined with a generic predicate would render a kind-referring reading for the entire sentence (126a); but when combined with a stage predicate (in the sense of Carlson 1977), it can render a kind-referring reading (126b) or a definite object-referring reading (126c-d).

(126) a. The cat is common.
       b. The cat purrs. (reading 1)
       c. The cat purrs. (reading 2)
       d. The cat is purring.

A bare plural count noun combined with a generic predicate would render a kind-referring reading for the entire sentence (127a); but when combined with
a stage predicate, it can render either still a kind-referring reading (127b) or an indefinite object-referring reading (127c).

(127)  a.  Cats are common.
       b.  Cats purr.
       c.  Cats are purring.

The case of bare mass nouns is similar to the bare plural nouns. A bare mass noun combined with a generic predicate would render a kind-referring reading for the entire sentence (128a); but when combined with a stage predicate, it can render either still a kind-referring reading (128b) or an indefinite object-referring reading (128c).

(128)  a.  Water is precious.
       b.  Water leaks.
       c.  Water is leaking.

The differences in the interpretation of these sentences suggest that both the number feature and the definiteness feature of the NPs are relevant for genericity.

In Yucatec Maya, nouns can be morphologically bare or plural. Bare nouns can constitute bare NPs (129a), definite NPs (129b)\(^{20}\) and indefinite NPs (129c). Plural nouns can constitute bare plural NPs (130a), definite plural NPs (130b) and, in certain cases\(^{21}\), indefinite NPs (130c).

\(^{20}\)I follow the semantic analysis in Vázquez-Rojas Maldonado et al. (2018) in assuming that le...o’ constructions introduce definite descriptions.

\(^{21}\)Most cases of the indefinite plural nouns are of the form NUMERAL+CLASSIFIER+MODIFIER+NOUN, only in very rare cases does a plural noun combine directly with a NUMERAL+CLASSIFIER.
(129) a. ... utia’al u chan man-ik-∅ máak ba’al u jaan-t-∅
   for A.3 DIM buy-IND-B.3SG person thing A.3 eat-TR-B.3SG
   bey-o’.
thus-CL

   ‘... for people to buy a little thing to eat like that.’
   (NM-102)

b. Le máak ts’o’on-∅-o’.
   DET person shoot.PASS-B.3SG-CL

   ‘The person that was shot.’
   (Vázquez-Rojas Maldonado et al. 2018: 12)

c. Sáansamal-e’ jun-túul máak k-u sa’at-al t-u
   everyday-TOP one-CLF person HAB-A.3 lose.PASS-IND LOC-A.3
   y-otoch.
   EP-house

   ‘Everyday a person would disappear from his house.’
   (NMC-18)

(130) a. yaan síutuk-o’ob k-u tu’ub-ul in w-iik’
   EX moment-PL HAB-A.3 forget-IND A.1SG EP-air

   ‘there are moments when my memory is going.’
   (Verhoeven 2007: 210)

b. ... káa xi’ik kin-s-bil le máak-o’ob j
   CNJ go.IMP die-CAUS-GRD DET person-PL COMPL
   suu-n-aj-o’ob-o’
   turn-ANTIP-PFV-B.3PL-CL

   ‘... to go and kill the people who had returned.’
   (Bohnemeyer 2002: 211)
(TM-ka’tuul_01)

Among these possible constructions, only bare nouns, both with and without morphological plural marking, can have a kind-referring interpretation. This seems to be similar to the kind-referring interpretation of the bare singular and plural nouns in Hindi (Dayal 1992); however, data from Yucatec Maya differ from Hindi in that, unlike Hindi, Yucatec bare nouns with and without morphological plural marking are not equally likely to have a kind-referring interpretation. As already mentioned previously, the bare version is clearly favored over the plural version when a kind-referring interpretation of the NP is called upon in the given context (124).

Since the use of plural marking in such contexts is not forbidden, but rather disfavored, we have good reasons to assume that there is an additional linguistic information which does not concern plurality that is added to the sentence when plural marking is utilized, and this piece of additional information is not obligatory in the syntax. In other words, there is something anchored in the plural form of the Yucatec nouns that contributes to the above variation.

The present question is, which linguistic unit is the carrier of this additional information: the noun, the plural marker or both? Previous literature has pointed out that variation in the noun denotation in a language can result in a difference in the number interpretation in the language (Chierchia 1998a,b; Lima 2014), I argue that this is exactly where the carrier lies.

Yucatec nouns have the number opposition of general-plural, and this opposition is available throughout the entire nominal spectrum (cf. section 5.2). This observation supports the radical hypothesis that all noun extensions are mass ty-
pologically (e.g. Borer 2005), which renders a formal representation of the Yucatec nouns in (122a), repeated below in (131):

\[
[\text{N}_n] = \lambda x. * P(x) = \lambda x. P(x)
\]

Moreover, the threefold meanings of the bare form of Yucatec nouns like *lu’um* ‘earth, soil’ in table 5.4 of section 5.2, repeated below in (132), suggest that the overt display of the plural suffix in Yucatec Maya implies covert apportionment.

\[
\begin{align*}
\text{a.} & \quad \text{lu’um} \\
& \quad \text{earth} \\
& \quad \text{‘one piece of soil/pieces of soil/(uncountable) soil’}
\end{align*}
\]

\[
\begin{align*}
\text{b.} & \quad \text{lu’um-o’ob} \\
& \quad \text{earth-PL} \\
& \quad \text{‘pieces of soil’}
\end{align*}
\]

This covert apportionment can be accounted for by proposing that there is a hidden pseudo-partitive operator (Selkirk 1977; Higginbotham 1994) which is built intrinsically into the Yucatec nouns (133), rendering a variation in the noun denotation of the Yucatec nouns:

\[
[\alpha_n]^g = \lambda P. \lambda x. \alpha_n[*P(x)]
\]

In words: the pseudo-partitive operator \( \alpha_n \) takes a cumulative \( *P(x) \) (i.e. \( \text{N}_n \)) and (re-)divides it into \( n \) portions according to the apportionment method defined in \( g \).

Crucially, the hidden pseudo-partitive operator proposed here is not the same as a functional projection in the morphosyntax that is responsible for the assignment of divisions of stuff, as suggested in Borer (2005), but rather, an intrinsic categorial property embodied in the Yucatec nouns. Given the denotation of Yucatec nouns (131), the conditions required in order for the proposed pseudo-partitive operator to surface can be spelled out in (134):
(134)  

a. All bare nouns in Yucatec Maya have the ability to combine with the pseudo-partitive operator $\alpha_n$.

b. The combination with the pseudo-partitive operator $\alpha_n$ is non-reversible.

c. The combination with the pseudo-partitive operator $\alpha_n$ is obligatory. The only exception is when the noun is not subject to number interpretation whatsoever in later syntactic projections (e.g. under generic reading).

(134a) allows all Yucatec nouns to undergo the pseudo-partitive operation. Formally, this is made possible because $\alpha_n$ must take a cumulative set as argument, and all Yucatec nouns have cumulative denotations. (134b) forbids any Yucatec noun with plural morphology to undergo the pseudo-partitive operation. Formally, this ban is achieved through the incompatibility of the non-cumulative denotations of plural nouns to the requirement of a cumulative argument of $\alpha_n$. (134c) further restricts (134a) in specifying the circumstances when the pseudo-partitive operation is obligatory, namely, when the Yucatec noun is subject to number interpretation such as counting in the semantic interpretation of the higher projections. Note that (134c) says that the pseudo-partitive operation is not obligatory if the Yucatec noun is not subject to number interpretation. Due to the principle of economy in languages (Martinet 1955), however, nouns under generic reading most often do not combine with $\alpha_n$ in real practices.

The syntactic structure of a Yucatec NP is therefore as follows (compare with (118)):

(135)
In what follows, I will leave out the node for stem formation (i.e. the C-Operator) for the purpose of simplicity, as my analysis only concerns Yucatec nouns above the stem-level.

5.5.3 Compositionality

Yucatec NPs have the following possible compositionalities. Now I elaborate them in turn.

Firstly, kind-referring bare nouns. As shown below in (136), Yucatec nouns of this usage can combine with the pseudo-partitive operator, but do not have to:

(136) a. j’a’ab ‘year’

b. Under generic interpretation:

\[ [j’a’ab] = \lambda x. *year'(x) = \lambda x. year'(x) \]

c. Under number-significant interpretation (apportionment):

\[ [j’a’ab_{ap}] = [\alpha_n]^*[ [j’a’ab] ] \]

\[ = \lambda P. \lambda x. \alpha_n [*P(x)](\lambda y. year'(y)) \]

\[ = \lambda x. \alpha_n [*\lambda y. year'(y)(x)] \]

\[ = \lambda x. \alpha_n [*year'(x)] \]

\[ = \lambda x. \alpha_n [year'(x)] \]

(136c) on a tree:
Secondly, nouns with plural morphology. As shown below in (139), Yucatec nouns must first be apportioned by combining with the pseudo-partitive operator, before combining with the plural marker -o’ob. In this analysis, the denotation of the plural marker -o’ob is no longer the non-atomic elements of the closed-sets *P(x) [= P(x)], but rather, the evaluator of the result of the apportionment; in other words, in the current analysis, -o’ob denotes the apportionment that has more than two portions as the result of the apportionment (138) (compare with (119) and (123))\(^{22}\):

\[(138) \quad [\text{o’ob}] = \lambda P_{<e,t>}.\lambda x.e.[P(x) \land n \geq 2], \text{ where } n \text{ is the number of portions relative to } \alpha_n \text{ and } g \quad \text{(final)}\]

The above denotation of -o’ob requires that \(n\) is defined through \(\lambda P_{<e,t>}\). This endorses my proposal that all morphologically plural nouns in Yucatec Maya must include covert apportionment, which is formally represented by the merging of a Yucatec noun with the pseudo-partitive operator, the latter of which providing sufficient information in order to define \(n\).

As a result, the interpretation of Yucatec nouns with plural morphology is the following:

\[(139) \quad \text{a. } ja’ab-o’ob \quad ‘\text{year-PL’} \]

\[(139) \quad \text{b. } [ja’abo’ob] = [\text{o’ob}([ja’ab_{ap}])] = \lambda P.\lambda x.[P(x) \land n \geq 2](\lambda y.\alpha_n[\text{year’}(y)])\]

\(^{22}\)Following Kratzer (2008), I assume that the counting is only available for atomic elements. Hence

\[
|x| = \begin{cases} 
\{y : y \leq x \land \text{atom}(y)\} & \text{if there is a set of atomic individuals that } x \text{ is the sum of;} \\
\text{undefined} & \text{otherwise.}
\end{cases}
\]
= \lambda x.[\lambda y.\alpha_n[\text{year}'(y)](x) \land n \geq 2] \\
= \lambda x.\alpha_n[\text{year}'(x)] \land n \geq 2]

(140)  
\begin{tikzpicture}[baseline=(current bounding box.center)]  
  \node (ja'abo'ob) {ja'abo'ob}  
  child {node (ja'abnp) {ja'abnp}}  
  child {node (o'ob) {-o'ob}}  
  edge from parent node[above] {}  
  \end{tikzpicture}

Thirdly, bare nouns preceded by the construction of NUMERAL+CLASSIFIER. Here, I assume that NUMERAL+CLASSIFIER is the head of a QP, which c-selects an nP or an NP (see below for the difference between these two options), hence the structure of a construction in the form of NUMERAL+CLASSIFIER+BARE NOUN would be (141):

(141)  
\begin{itemize}  
  \item[(a)]  
  \begin{tikzpicture}[baseline=(current bounding box.center)]  
    \node (QP) {QP}  
    child {node (Q) {Q}}  
    child {node (nP) {nP}}  
    edge from parent node[above] {\langle e, t \rangle}  
    \end{tikzpicture}  
  \begin{tikzpicture}[baseline=(current bounding box.center)]  
    \node (Q) {Q}  
    child {node (nP) {nP}}  
    edge from parent node[above] {\langle e, t \rangle}  
    \end{tikzpicture}  
  \begin{tikzpicture}[baseline=(current bounding box.center)]  
    \node (nP) {nP}  
    child {node (na) {\langle e, t \rangle}}  
    child {node (n) {n}}  
    edge from parent node[above] {\langle e, t \rangle}  
    \end{tikzpicture}  

  \item[(b)]  
  \begin{tikzpicture}[baseline=(current bounding box.center)]  
    \node (QP) {QP}  
    child {node (Q) {Q}}  
    child {node (NP) {NP}}  
    edge from parent node[above] {\langle e, t \rangle}  
    \end{tikzpicture}  
  \begin{tikzpicture}[baseline=(current bounding box.center)]  
    \node (Q) {Q}  
    child {node (nP) {nP}}  
    edge from parent node[above] {\langle e, t \rangle}  
    \end{tikzpicture}  
  \begin{tikzpicture}[baseline=(current bounding box.center)]  
    \node (nP) {nP}  
    child {node (na) {\langle e, t \rangle}}  
    child {node (n) {n}}  
    edge from parent node[above] {\langle e, t \rangle}  
    \end{tikzpicture}  
\end{itemize}
For the purpose of simplicity, NUMERAL+CLASSIFIER is understood in this analysis as denoting the result of the apportionment which has exactly the number of portions of the object in question as denoted by the numeral (142):

\[
(142) \quad \text{NUM+CLF} = \lambda P_{<e,t>}. \lambda x. [P(x) \land \ n \ | = i], \text{where } i \text{ corresponds to the integer denoted by the numeral, and } n \text{ is the number of portions relative to } \alpha_n \text{ and } g.
\]

Again, the denotation of NUMBER+CLASSIFIER requires that \( n \) is defined through \( \lambda P_{<e,t>} \), which endorses my proposal that all Yucatec NPs with number-significant reading must include covert apportionment in the nouns. The covert apportionment is formally represented by the merging of a Yucatec noun with the pseudo-partitive operator, which provides sufficient information to define \( n \).

As a result, constructions in the form of NUMERAL+CLASSIFIER+BARE NOUN receives the following interpretation (143). Yucatec nouns involved in this type of construction must first be apportioned in order to receive number interpretation in QP:

\[
(143) \quad \begin{align*}
\text{a. } & \text{óox-péel ja’ab} \quad \text{‘three-CLF.INAN year’} \\
\text{b. } & \text{[óoxpéel ja’ab]} = \text{[óoxpéel]}(\text{[ja’ab} \, \text{ap}]) \\
& = \lambda P. \lambda x. [P(x) \land \ n \ | = 3](\lambda y. \alpha_n[\text{year’}(y)]) \\
& = \lambda x. [\lambda y. \alpha_n[\text{year’}(y)](x) \land \ n \ | = 3] \\
& = \lambda x. [\alpha_n[\text{year’}(x)] \land \ n \ | = 3]
\end{align*}
\]

\[
(144) \quad \text{óoxpéel ja’ab}
\]

\[
\text{óoxpéel} \quad \text{ja’ab}_{\text{ap}}
\]

\[
\alpha_n \quad \text{ja’ab}
\]

\[
\text{n} \quad \sqrt{\text{ja’ab}}
\]

Lastly, in very rare cases can morphologically plural nouns appear in a QP, as in (130c). Recall that I have stayed agnostic with respect to whether a QP
c-selects an nP or an NP in the previous analysis, because these two options do not make a difference in my analysis thus far. Yet in the current case, the two options make different predictions with respect to the syntactic position of the plural marker -o’ob. As shown below, -o’ob must adjoin above Q (145a) if QP c-selects an nP, but -o’ob can adjoin beneath Q (145b) if QP c-selects an NP:

(145)  a. 

\[
\begin{array}{c}
\text{QP} \\
< e, t > \\
\text{QP} \\
< e, t > \\
\text{-o’ob} \\
<< e, t >, < e, t >> \\
\text{Q} \\
<< e, t >, < e, t >> \\
\text{nP} \\
< e, t > \\
(\alpha_n) \\
<< e, t >, < e, t >> \\
n \wedge \\
\text{n} \sqrt{\text{\textbackslash}}
\end{array}
\]

b. 

\[
\begin{array}{c}
\text{QP} \\
< e, t > \\
\text{Q} \\
<< e, t >, < e, t >> \\
\text{NP} \\
< e, t > \\
\text{nP} \\
<< e, t >, < e, t >> \\
\text{-o’ob} \\
<< e, t >, < e, t >> \\
(\alpha_n) \\
<< e, t >, < e, t >> \\
n \wedge \\
\text{n} \sqrt{\text{\textbackslash}}
\end{array}
\]

My analysis neither favors nor rules out either of these two syntactic structures, hence I will remain agnostic to the details of the constituent c-selected by the QP in Yucatec Maya in my following analysis.

The interpretation of the last type of construction is thus the following. If the plural marker -o’ob adjoins above Q, the entire constituent receives the interpretation in (146b); if -o’ob adjoins beneath Q, the entire constituent receives the
interpretation in (146c):

(146) a. óoxpéel ja’ab-o’ob ‘three-CLF.INAN year-PL’

b. \[
\begin{align*}
\text{[óoxpéel ja’abo’ob]} & = \text{[o’ob]}(\text{[óoxpéel ja’ab]}) \\
& = \lambda P.\lambda x.[P(x) \land n \geq 2](\lambda y.[\alpha_n[\text{year’}(y)] \land n \geq 3]) \\
& = \lambda x.[\lambda y.[\alpha_n[\text{year’}(y)] \land n \geq 3](x) \land n \geq 2] \\
& = \lambda x.[\alpha_n[\text{year’}(x)] \land n \geq 3 \land n \geq 2] \\
& = \lambda x.[\alpha_n[\text{year’}(x)] \land n \geq 3]
\end{align*}
\]

c. \[
\begin{align*}
\text{[óoxpéel ja’abo’ob]} & = \text{[óoxpéel]}(\text{[ja’abo’ob]}) \\
& = \lambda P.\lambda x.[P(x) \land n \geq 3](\lambda y.[\alpha_n[\text{year’}(y)] \land n \geq 2]) \\
& = \lambda x.[\lambda y.[\alpha_n[\text{year’}(y)] \land n \geq 2](x) \land n \geq 3] \\
& = \lambda x.[\alpha_n[\text{year’}(x)] \land n \geq 2 \land n \geq 3] \\
& = \lambda x.[\alpha_n[\text{year’}(x)] \land n \geq 3]
\end{align*}
\]

(146b) on a tree:

(147)

(146c) on a tree:
The above composition also provides an insight from a semantic perspective as to why constructions of the form NUMERAL+CLASSIFIER+PLURAL NOUN are disfavored. The reason is that it provides redundant number information of the object in question, which violates the Gricean maxims.

5.5.4 Interim Summary

The optionality in Yucatec plural marking is resulted from a pseudo-partitive operator $\alpha_n$ which optionally combines with the nominal stem at the final phase of noun formation. The Yucatec nouns that undergo the pseudo-partitive operation receive apportionable interpretation. This type of interpretation is associated with explicit number expressions, and hence nouns with apportionable interpretation can be morphologically marked for plurality. In contrast, the Yucatec nouns that do not undergo the pseudo-partitive operation receive generic interpretation. This type of interpretation is not associated with explicit number expressions, and hence nouns with generic interpretation cannot be marked for plurality morphologically.

Consequently, the variation of plural marking on Yucatec nouns is then attributed to the variation in noun interpretations, which is further attributed to the variation whether the pseudo-partitive operator is present at the final stage of the noun formation. The conditions for the pseudo-partitive operator to surface are therefore the same conditions that determine whether a Yucatec noun receives plural marking.

The compositionality of two types of Yucatec bare nouns which have ap-
portionable and generic interpretations respectively, nouns with plural marking, nouns without plural marking that appear within the NUMERAL+CLASSIFIER constructions, and nouns with plural marking that appear within the NUMERAL-CLASSIFIER constructions, as demonstrated in 5.5.3, shows that the analysis proposed here gives correct predictions about the language.

5.5.5 Further Discussion

There are two questions still left to be addressed. First, can we extend this treatment to also account for the variation in plural marking of the Spanish loanwords with the Yucatec plural suffix -o’ob in Yucatec Maya? The simplest solution here is to treat the Spanish loanwords as exhibiting a double-state characteristic: one that resembles the Spanish nouns in Spanish, and another that resembles the Yucatec nouns in Yucatec Maya. This solution is beneficial in three ways: (i) it helps retain a unified system; (ii) it successfully accounts for the observation that the double plural marking on Spanish loanwords is allowed only in the sequence of -o’ob-s, but not -s-o’ob; (iii) a double-state analysis is compatible with the observation of language change that is happening in Yucatec Maya due to language contact (Pfeiler 2009).

Second, the above analysis implies that the triggering factor of a combination with the pseudo-partitive operator is that the noun in question is subject to a number interpretation; in this regard, can we exhaust the circumstances in which a number interpretation emerges? I provide four aspects that correlate with these circumstances, the examination of which will be the subject of future researches: (i) individual speaker’s preference; (ii) dialectal variation; (iii) diachronic layers overlapped in today’s usage; (iv) stylistic reasons, for instance, to disambiguate two discourse referents.
5.6 Summary

In this chapter, I first discussed how the grammatical number of entities is expressed in Yucatec Maya. With respect to Yucatec nouns, number can be marked through suffixation. I have determined that there are three values, namely singular, general and plural, and two types of contrast, namely singular-plural and general-plural, in the number category in Yucatec Maya, and that different types of value and contrast are available for different groups of nouns and pronouns. Further, I have resolved that the number value system of Yucatec is threefold.

I then proceeded to the discussion of the optionality in Yucatec plural marking. After a thorough description of the phenomenon, I examined a few typologically relevant parameters that may contribute to the optionality in number marking, but concluded that none of these parameters determine the overt plural marking in Yucatec Maya. Although a syntactic analysis can successfully account for the optionality of the plural marking, it nevertheless cannot answer the question when an overt plural marking will surface. This led me to approach an answer from the semantic perspective. Following this direction, I then proposed that the optionality in Yucatec plural marking is resulted from a pseudo-partitive operation at the final stage of the Yucatec noun formation which is optional. This operation results in two types of noun interpretations: apportionable and generic. Only nouns with apportionable interpretation can be overtly marked for plurality.

As a result, the variation of plural marking on Yucatec nouns is attributed to the variation in noun interpretations, which is further attributed to the variation whether the pseudo-partitive operation is present at the final stage of the noun formation. The conditions for the pseudo-partitive operation are hence the same conditions that determine whether a Yucatec noun receives plural marking. Consequently, this semantic proposal provides a clear response to the question when an overt plural marking will surface, a question all previous analyses fail to answer.

I further presented the semantic details of this analysis, and went composi-
tional to demonstrate the efficacy of this semantics in yielding the desired interpretations in all possible number constructions in Yucatec Maya. Before I close this chapter, a brief discussion on further issues related to the Yucatec phenomenon of optional plural marking was also included.
Part III

The Plurality of Events
Chapter 6

Pluractionality

6.1 Introduction

This part of the dissertation addresses the linguistic phenomenon of event plurality. Chapter 6 outlines the general aspects of the study of event plurality, and chapter 7 discusses the pluractionality in Yucatec Maya in particular.

In contrast to the well-studied phenomenon of nominal plurality, the phenomenon of verbal plurality has received marginal attention in the studies of the linguistic category of number. Traditionally, multiple terms have been adopted in order to describe this phenomenon in the languages of the world, including intensive, iterative, habitual, durative, frequentative, distributive, plural verb and their variations. However, these terms sometimes cause confusions, and are therefore not adequate as a general term. Plural verb, for instance, is used indistinguishably for verbal forms that indicate event plurality and for those that reflect plural subject-verb agreement; the morphological forms that encode verbal plurality in different languages are described using varies terms, which makes the phenomenon of event plurality hard to be generalized cross-linguistically; and some terms are applied relatively intuitive that they are sometimes befuddled with terms from other verbal categories, such as habitual and durative aspect.

The term “pluractional” was coined by Newman (1980) based on the phrase
“plurality of action”. This term contributes primarily to differentiate the verbal morphological forms that encode the plurality of events from those that serve to reflect agreement of the plural subject on the verb. Moreover, it helps bring together similar linguistic phenomena from languages of the world and makes it possible for further cross-linguistic comparison and generalization. In this dissertation, I use the term pluractional to denote the specific morphological form that encodes the meaning of event plurality, I use pluractionality as a synonym of the grammatical expression of event plurality in languages of the world, and accordingly, I use unmodified plurality in its restricted sense to only denote the plurality of entities.

This chapter is structured as follows. After the introduction, section 6.2 presents the study of pluractionality from a typological perspective. 6.2.1 discusses the morphology of pluractionals cross-linguistically. 6.2.2 discusses the semantic typology of pluractionality and how the cross-linguistic distinction between event-internal and event-external pluractionals is drawn from a series of semantic properties. 6.2.3 compares pluractionals and nominal plurals with respect to their functions and meanings. Section 6.3 reviews previous literature on the study of pluractionality and outlines the development in this field throughout the years. And finally, section 6.4 wraps up the chapter.

6.2 Typology of Pluractionality

6.2.1 Pluractional Forms

Entities can be singular or plural: I can have one book on the shelf, and I can have many books on the shelf. Likewise, events can also be singular or plural: the knocking on the door can happen only once (say, if the person quickly realizes that it is a wrong address), and it can also happen multiple times (if the door is closed but the person really wants to get in). In most modern Indo-European languages, the plurality of events can only be expressed through lexical means.
For example, languages like English often use adverbial expressions to indicate multiple instances of the event (149).

(149) John knocked repeatedly on the door.

In many of the world languages, however, verbal morphological strategies dedicated solely to the marking of event plurality are found. These strategies commonly appear in the forms of reduplication and affixation. As we will see in the next chapter, both of these two strategies are employed in Yucatec Maya when verbal plural meanings are involved (150). Other strategies such as serial constructions, verb chaining or repetition, internal modification and tone changes are also utilized, though in less frequency (Corbett 2000: 258-260).

(150) a. Pedro-e’ k-u xo’oxot-ik le páak’al-o’ob-o’.

   Pedro-TOP HAB-A.3 cut.RED-IND DET plant-PL-CL

   ‘Pedro cuts the plants several times.’

b. K-u xo’ot-la’aj-al le páak’al-o’ob-o’.

   HAB-A.3 cut.PASS-PLR-IND DET plant-PL-CL

   ‘The plants are cut down one after another.’

It is worth noting that, unlike nominal plurality which can be marked either directly on the nominal constituent or through agreement on the verb, event plurality can only be marked on the verb (Corbett 2000: 251-252). In other words, if a plural morphology is found on a NP, it must mark nominal plurality, but if a plural morphology is found on a verb, it can be a pluractional marker, a nominal plurality agreement marker or both. As a result, it is not always clear whether a plural morphology on the verb marks nominal or verbal plurality, or both, hence a much more careful scrutiny is called forth when dealing with number morphology on the verbs. As the following example from Huichol (Uto-Aztecan; Mexico) showcases, when the number morphology on the verb varies according to the number of the direct object, it is very difficult to determine solely on the basis of these
data whether the number morphology on the verb simply agrees with the direct object or actually marks the event number, hence further data are needed in order to differentiate nominal and verbal number morphology on the verb.

(151) a. *nee waakana ne-mec-*um*i?ii*-ri eeki*  

1.SG chicken.SG 1SG.SUBJ-2SG.OBJ-kill.SG-BNF 2.SG  

‘I killed the chicken for you.’

b. *nee waakana-ari ne-mec-*uqi?ii*-ri eeki*  

1.SG chicken-PL 1SG.SUBJ-2SG.OBJ-kill.PL-BNF 2.SG  

‘I killed the chickens for you.’  

(Comrie 1982: 113)

As we have seen in Part 2 of this dissertation, it is common for languages to develop grammatical strategies to encode the plurality of entities. This invites the question of how common is the phenomenon of pluractionality in the world’s languages. According to Veselinova (2013), only 34 out of 193 languages have pluractionality as a grammatical category (i.e. less common than nominal plurality). Wood (2007) reports a more frequent appearance of grammatical pluractionality: 36 out of the 43 languages of the author’s choice\(^1\) have pluractionality as a grammatical category. Geographically speaking, both of the aforementioned sources report that pluractionality is very common in North America (cf. also Corbett 2000: 245; Mithun 1988: 231), although the said phenomenon is found in all of the geographical areas. Newman (2012) lists the areal linguistics in which the term *pluractional* has been adopted, and the author’s list covers most of the geographical areas that have been linguistically examined: African languages (especially Chadic/Afroasiatic), languages of the Americas, Asia, Australia, and the Pacific.

\(^1\)Wood (2007: 30-33) claims that the language selection exhibits a balanced geographical and genetic coverage.
6.2.2 Pluractional Meaning

Previous studies on pluractionals in specific languages and on the types of meaning variation they have identified have resulted in a few different typologies of pluractional meaning. Below, I present a list of relevant parameters that are vital to establishing variations of pluractional meaning. The selection of these parameters is based on previous work on pluractionals in specific languages and on the typology of pluractionality (Dressler 1968; Cusic 1981; Xrakovskij 1997a; Corbett 2000; Wood 2006, 2007; Henderson 2012, 2017, among others).

6.2.2.1 Repetition on Single or Multiple Occasions

Pluractionals can be distributed over a single occasion or multiple occasions. The following examples from Central Alaskan Yup’ik (Eskimo-Aleut; United States) illustrate these two types of pluractional meanings. (152) shows pluractional verbs that refer to one occasion; the effect of the pluractional morpheme (%ur-2) is to indicate that a complex event consists of a repetition of the original action which is denoted by the verb. (153) exemplifies pluractional verbs that involve multiple occasions; the pluractional morpheme (-qaqe-) indicates multiple distinct occasions of the original action which is denoted by the verb; (153b) shows, specifically, that the occasions can be distinguished by time and space.

(152) a. *kaleg*- *kalguraa*  
   ‘to brush against’  ‘he is strumming it’  

   b. *naveg*- *navguraa*  
   ‘to break’  ‘he is wrecking it’  

   (Jacobson 1984: 581)

(153) a. *nere*- *nerqaqluniq*  
   ‘to eat’  ‘eating now and then’  

   2% indicates that weak final consonants are dropped before this affix.
b. *ayag- ayakaqlani*

‘to go’  ‘moving now and then from place to place’

(Jacobson 1984: 535)

The key observation that pluractionals can be split into two types, depending on the relation between repetitions and event structure, was first illustrated by Cusic (1981). Cusic (ibid.) proposed that events have a hierarchical structure, namely the phase level, the event level, and the occasion level, and that event plurality can occur at any of these three different levels of the hierarchy. At phase level, a plural event consists of multiple repeated phases; at event level, a plural event is the recurrence of the same event on the same occasion; and at occasion level, a plural event is the recurrence of the same event over multiple occasions. According to the examples given in Cusic’s (ibid.) proposal, I follow Wood (2007) and take both phase-level and event-level repetitions to be what we will call *event-internal pluractionality*, and occasion-level repetition to be *event-external pluractionality* in what follows. The two terms, *event-internal* and *event-external pluractionality*, were first coined by Garrett (2001). The distinction between these two types of pluractionals is further elaborated by Wood (2007).

Apart from the different requirements of event plurality with respect to event structure, there are more fine-grained features that distinguish event-internal and event-external pluractionality, as is discussed in detail in Wood (2007) and Henderson (2017). I will turn to these distinctions at the very end of this section, after having discussed other parameters that are important to shape pluractional features.

### 6.2.2.2 Contiguity

The temporal and spatial distance between the repetitions may vary, depending on the type of pluractionality. The variations in contiguity of repetitions can be classified as contiguous, noncontiguous, or unspecified. The following examples are from Kaqchikel (Mayan; Guatemala). (154) exemplifies a plurational that
indicates contiguous repetitions, and (155) shows another pluractional that indicates noncontiguous repetitions. We can also see from (155) that pluractionals that indicate clearly distinct repetitions can give rise to habitual readings.

(154) *Jun xti moy r-onojel q’ij n-Ø-u-tzin-itz’a’*  
Kaqchikel  
*a little blind A.3SG-all day ICP-B.3SG-A.3SG-sound(music)-PLR1*  
*ri ru-q’ojon pa k’ayb’äl.*  
the A.3SG-guitar PREP market  
‘A blind person strums his guitar all day in the market.’  
(Cojti et al. 1998: 371)

(155) *(Ojër kan) x-i-ch’ar-alöj.*  
Kaqchikel  
*(before) COMPL-B.1SG-split.wood-PLR2*  
‘I used to split wood.’  
(Henderson 2017:369, (27))

The pluractionals that fall into the third class (unspecified contiguity) indicate repetitions on either one or more than one occasions, and usually exhibit a strong correlation with the categorization of the verbs. For example, the iterative pluractional infix -eg- in Yurok (Algic; United States) can indicate reversal of direction within one single occasion with certain motion verbs, as is shown in (156); but with other kinds of verbs, it can have an intermittent meaning, as in (157).

(156) *yohpen-i kegepoyur-ek’*  
Yurok  
*drift.in.a.circle-ATTR swim.PL-1SG*  
‘I swim around it several times.’  
(Wood 2007:147, (6a))

(157) *kich pegpegoh ku ’yohlkoych’*  
Yurok  
*PFV split.PL-ART log*  
‘I made the log into kindling (split it multiple times).’  
(Wood 2007:148, (7a))
6.2.2.3 Habitual Reading and Genericity

This is a feature that is closely related to the previous two. As is shown in (155), pluractionals that have noncontiguous repetitions and especially those that involve repetitions on multiple occasions can receive habitual or generic readings. This means, these pluractionals are often used when the speakers want to talk about their professions, habits, things that reoccur seasonally, or what people used to do.

6.2.2.4 Downtime

The amount of downtime between repeated actions is also variable according to the type of pluractional. This is a related parameter to the previous one in that only when the repetitions are noncontiguous can we talk about the amount of downtime between repetitions. The amount of downtime can vary from less than a second to years. Compare (155) with (158), the former has a much longer period of downtime (a few seasons) than the latter (a few seconds).

(158) \textit{X-ø-chin-ilöj} \textit{ri} kanpana. \footnotesize{Kaqchikel}
\textit{compl-A.3s-ring-PLR2 the bell}

‘The bell rang repeatedly.’ \small{(Henderson 2012:66, (87))}

6.2.2.5 Cardinality of Repetitions

In most cases, the number of repetitions are not counted. Hence, the number value contrast of the pluractionally unmarked verb (i.e. bare verb) and its marked counterpart (i.e. marked verb) is almost always singular-plural or general-plural (compare with the number value contrast of nouns). In some cases, however, the pluractional meaning of \textit{two} repetitions is distinguished from \textit{many}, which renders an interpretation of either duplicative or reversative; the number value contrast in this case is parallel to a contrast of singular-dual-plural in the nominal domain.
(159) is an example from Slave (Na-Dene; Canada) duplicative morpheme \( na- \), where \( dá+na→dō \) in the morphology:

(159) \[ \text{gohdākāʔedachu} \quad \text{gōhđəkāʔedachů} \quad \text{Slave} \]

's/he opened the door' \quad 's/he opened the door again'

(Rice 1989: 734)

Hence, it is interesting for linguistic typology to see whether the pluractional in question requires plural events with large cardinalities (i.e. uncountable many) or it can be satisfied by events of simple plurality (i.e. two or a few).

6.2.2.6 Aspectual Selection of the Verbs

As mentioned above, there is a correlation between the verb type and the interpretation of the pluractional that is affixed to the verb. It is not surprising to that the combination ability of pluractionals is also largely restricted by the verb type. More specifically, one crucial feature of the pluractionals is their ability to target predicates of various lexical aspect classes (aka. Aktionsarten).

Despite the numerous discussions on Aktionsarten or lexical aspects of verbs, I follow a five-way classification of the lexical aspects of verbs: the four-way classification of states, activities, achievements and accomplishments adopted from Vendler (1957) plus one additional class of semelfactives taken from Smith (1991). Examples of English verbs and predicates from each class are listed in (160) (cf. Dowty 1979; Smith 1991; Rothstein 2004, among others):

(160) a. States: know, believe, have, desire, love, understand, be happy

b. Activities: run, walk, swim, push a cart, drive a car

c. Achievements: recognize, spot, notice, find, lose, reach, die, tear, break

d. Accomplishments: paint a picture, make a chair, deliver a sermon, draw a circle, recover from an illness, build a house

e. Semelfactives: kick, wink, cough, knock, flash, jump, flap a wing
Note that these verbs are only used as a guideline when it comes to determining the Aktionsart of a specific verb in a specific language, because essentially it is the behavior of the verb, rather than the interpretation of the verb, that is vital to the classification of the verbs in a language. I will not go into detail about the considerations of the properties that distinguish the various Aktionsarten due to space limitations, but cf. Moens and Steedman (1988) and Rothstein (2004) for discussions in this regard.

6.2.2.7 Telicity

In her discussion of Cusic’s (1981) distinction between event-internal and external pluractionality, Wood (2007: 74-76) notes that two major types of event-internal pluractional predicates that do not denote plural events which equalize the mere sum of their constituting sub-events can be found cross-linguistically. The first type is when a semelfactive base verb turns into an achievement plural verb. In this type, the base predicates are atelic and punctual, and hence can be repeated on one or multiple occasions; on the other hand, the pluractional predicates are telic and punctual, and hence they cannot be the simple addition of their sub-events and they are restricted to one single occasion. An example of this type is (152a) of Yup’ik (Eskimo-Aleut; United States), repeated below in (161):

(161) 

<table>
<thead>
<tr>
<th>Yup’ik</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>kaleg-</td>
<td>‘to brush against’</td>
</tr>
<tr>
<td>kalquraa</td>
<td>‘he is strumming it’</td>
</tr>
</tbody>
</table>

(Y Jacobson 1984: 581)

The second type is when an achievement base verb turns into a related achievement plural verb that signals some kind of completion. An example of this type is given below in (162), in which case the base predicate undergoes a change of state which can be repeated, whereas the pluractional predicate undergoes the change of state repetitively towards a point of completion.
In both of the above cases, the event-internal pluractional predicates have shared telos, i.e. the repetitions of the complex event share common causes, goals or results (Wood 2007: 84). As a result, Wood (2007: 87) includes telicity as one of the characteristics of the event-internal pluractional meaning cross-linguistically. In contrast to the event-internal pluractionality, event-external pluractional predicates do not necessarily require their sub-events to have shared telos.

6.2.2.8 Argument Pluralization and Distributivity

Associated with the verbal number is also the number of arguments. In some languages, verbal plurality only indicates the pluralization of the event, but not the event participant (e.g. several knocks done by the same agent); in other languages, verbal plurality only indicates the pluralization of the event participant, rather than the event (e.g. one single knock done jointly by several agents); in still other languages, verbal plurality indicates a combination of the pluralization of both (e.g. several knocks done by several agents). In fact, it is quite common for languages to pluralize arguments when verbal plurality is involved, as noted by Durie (1986) who compared cross-linguistic evidence and discovered that verb pairs that seem to only aim at differentiating the singularity and plurality of the transitive object or intransitive subject (i.e. argument) are prevalent.

The question is how we should treat argument pluralization in relation to pluractionality. Should we treat them as different aspects of the same phenomenon of verbal plurality, or should we treat them as separate phenomena? Previous literature is unfortunately not homogeneous in their answers to this matter. Corbett (2000) and Collins (2001), for example, deal the issues of argument pluralization and pluractionality as one, and view argument pluralization as one of the verbal plural meanings. The main argumentation of authors with this view is that
argument pluralization is not just related to the verbal number but is in fact a sub-type of the verbal number. Durie (ibid.) and Wood (2007), on the other hand, regard argument pluralization as a separate although not entirely unrelated issue of pluractionality. The main argumentation of authors with this view is that the common morphological formation of a pluractional verb and a plural-argument verb from the original verb is different, the former being reduplication, while the latter being suppletion.

While I agree with Durie (ibid.), Wood (ibid.) and others that typologically speaking plural-argument verbs and pluractional verbs are two distinct verbal phenomena, it nevertheless does not rule out the possibility that plural-argument verbs and pluractional verbs are within the same category or even identical in a specific language. Data from Wood’s typological study show that there are a number of languages that form both plural-argument verbs and pluractional verbs by means of affixation, this data point suggests that it is theoretically possible that there are languages that have morphologically indistinguishable plural-argument verbs and pluractional verbs, hence for these languages, it is unnecessary to make a distinction between these two types of plural verbs and treat them separately. As a result, in my analysis of the pluractional morpheme in Yucatec Maya in the next chapter, I scrutinize the verbal behavior of the pluractional verb carefully without committing myself to whether this verb form belongs exclusively to plural-argument verbs or pluractional verbs.

Another related linguistic phenomenon is the distributivity of event participants. As Wood (2007: 9) argues, distributive markers link argument plurality to event plurality and necessarily indicate the plurality of events. This was probably one case that Corbett (2000: 247) had in mind when he was talking about participant number as a type of verbal number. The question is, should we treat distributivity as a separate phenomenon, or should we treat it as a subclass of pluractionality, as did Wood (2007)? The critical factor here is whether event plurality and participants distributivity always entail each other. Since distributivity
requires that there are multiple participants who are at least spatially distinguishable involved in the event, distributivity must always entail event plurality; however, it is not necessarily the case the other way around. As we will see in the analysis of the Yucatec data in the next chapter, event plurality does not always entail distributivity. As a result, I am careful in my way of dealing with the Yucatec data and treat distributivity and pluractionality independently before drawing lines between them.

6.2.2.9 Other Common Meanings

Apart from the parameters discussed above, pluractional predicates also have other additional meanings that are common cross-linguistically, such as augmentation and diminution, degree of effort, direction of action and so forth (Wood 2007: 55). Cusic (1981: 74-75) lists a range of readings exhibited by pluractional markers in all languages, which does not include cumulative result, intensity, conation, celerativity, retardativity, augmentation and diminution. Many other previous authors have also mentioned meanings that are related to event plurality that result from pluractional markers in their descriptions of specific languages. The question is whether these meanings are inherently encoded by the pluractional marker (i.e. semantic meaning) or implied from the usage and the context (i.e. conventional implicature or other types of pragmatic meaning). The answer to this question should be language-specific. In the next chapter, I will include the examination of these additional meanings of the pluractional predicates in Yucatec Maya, and try to answer this question from there.

6.2.2.10 Event-Internal and Event-External Pluractionality

So far, we have seen a number of parameters that determine the meaning of pluractional predicates. Depending on the semantic behavior of the pluractional markers within each parameter, a distinction between event-internal and event-external pluractional marker can be drawn. A summary of this distinction is

\[
\begin{array}{|l|c|c|}
\hline
\text{Semantic parameters} & \text{Event-internal} & \text{Event-external} \\
\hline
\text{verbal aspectual (Aktionsarten) selection} & \checkmark & \text{n.r.} \\
\text{event contiguity in time and space} & \checkmark & \text{n.r.} \\
\text{possibility of generic reading} & \times & \checkmark \\
\text{minimal cardinality of the plural events} & \times & \checkmark \\
\text{shared telos of the pluractional predicates} & \checkmark & \text{n.r.} \\
\text{ability of entailment of the non-pluractional event counterpart} & \times & \checkmark \\
\hline
\end{array}
\]

Table 6.1: Event-internal and external pluractionals

It is worth noting that, although not all pluractional markers fit into these two types exactly as described in the typological pattern as presented above, data has proven that this contrast exists in most languages that utilize pluractional markers. I take this as a point of departure in my investigation of the pluractional morphology in Yucatec Maya, assuming that it must pattern either with the event-internal pluractionals or the event-external pluractionals alone by its coarse meaning.

6.2.3 Pluractionals vs. Noun Plurals

While nominal plurality has been relatively well studied in the literature, pluractionality (i.e. verbal plurality) has received less attention, not only in the study of grammatical number in general, but also in the study of linguistic phenomena in the verbal category. As a result, not only is there relatively few literature on pluractionality from a typological or formal linguistic perspective, in comparison with literature on nominal number, there are also relatively few theoretical attempts that try to account for the phenomenon of pluractionality within the theoretical, especially the semantic, framework of plurality of events, which are relatively well

\[3\text{n.r. stands for no restrictions.}\]
developed at this point. The status quo of the study of pluractionality will be outlined in the next section.

Despite the fact that pluractionality is less studied than the phenomenon of nominal plurality, previous literature has pointed out that pluractionality and nominal plurality are closely related in their functions and meanings. Wood (2007: 38-44), for example, lists the following aspects in which nominal and verbal plurality intertwine: first, the number interpretation of the verb can be affected by the number of the arguments; second, plurality of events often entails plurality of event participants; third, there is some sort of functional overlap between nominal and verbal plurality in some languages, which serves as alternative ways of indicating plurality of arguments. The last point is also testified by typologists in many languages (e.g. Comrie 1979; Croft 1990) with the striking revelation that, contrary to nominal plurality which is more frequently marked higher on the animacy hierarchy (cf. section 4.2.3), verbal plurality mainly pluralizes arguments that are of low animacy. Accordingly, the core usage of the two types of plural marking mechanism (i.e. nominal and verbal plural marking) tend to indicate plurality of different types of arguments, thus having functional complimentary distribution. We will turn to this interesting point in chapter 8 where I investigate the interplay of nominal and verbal plurality in Yucatec Maya.

As previously mentioned, both nominal and verbal plurality can be marked on the verb, the question therefore arises as how nominal and verbal plural markers can be disentangled when both marked on the verb. Corbett (2000: 252-257) provides three potential diagnostics for the disentanglement (cf. also Durie 1986: 357-362). First, since pluractionality operates on an ergative basis, it usually indicates plurality of the subject of intransitive verbs or the direct object of transitive verbs; in contrast, plural agreement can have controllers that are not restricted to these two syntactic positions, hence it can indicate plurality of the subject, the object, or both. Second, since nominal and verbal plural markers are controlled by different phrases and hence assign different values, by stipulating the syntactic
structure of the sentences it is possible to find a construction that makes the difference transparent that nominal plural agreement marker agrees in number with the controller while the verbal number marker indicates the plurality of events. Third, nominal and verbal number can have distinct values and oppositions (cf. section 4.2.2) in a language system, hence one can distinguish one marker from the other by examining the exact number value and oppositions of the specific marker on the verb.

An additional remark worth noting here concerns the more fine-grained distinction between number marking and agreement. In some languages, plural marking and agreement need to be distinguished as two different phenomena because they tend to exhibit different syntactic and pragmatic behaviors. For example, in Mayan languages, plural marking on nouns is argued to be distinguished from plural agreement marking on verbs (England 2011). The former can be either obligatory, as for high animacy nouns (e.g. human nouns) in some Mayan languages, or optional, as for most other nouns (e.g. inanimate nouns, or nouns of all animacy level for some languages, such as Yucatec Maya); both cases are conditioned primarily by pragmatic factors (cf. chapter 5 for other conditioning factors beyond pragmatic in my analysis of optional plural marking in Yucatec Maya). Hence, for languages with optional plural marking, the absence of the plural marker results in unmarkedness (i.e. number-uns specified) rather than the marking of the opposite value (i.e. singular). On the other hand, plural agreement marking can be obligatory, meaning that the absence of the plural agreement marker equalizes the marking of the opposite value (i.e. singular); contrary to plural marking, plural agreement is conditioned primarily by syntactic factors. Back to the topic of this subsection, we now have a more precise picture that it is the syntactically conditioned plural agreement marking on the verbs, instead of the plural marking on the nouns, that needs to be disentangled from pluractional markers.

Finally, from a formal semantic perspective, the many similarities of the ab-
abstract interpretation of pluractional predicates and plural nouns invite some kind of analogous treatment. For example, both pluractional predicates and plural nouns indicate plurality of atomic and non-atomic subparts; the internal structure of a series of events is analogous to that of the grouping of scattered individuals, and the resulting pluractional event is parallel to the result of the grouping; some pluractional predicates require their participants to have certain characterizing features that can successfully distinguish them from the non-participants, which is analogous to the requirement of plural participants of a single event. Many previous researchers have already noticed some of these analogues in nominal and verbal plurality, but it is not until Lasersohn’s (1995) seminal work that pluractionals and nominal plurals received parallel formal treatment for the first time. Lasersohn’s (ibid.) central ideas have already been sketched out in section 1.3.6, the succeeding work on the formal treatment of pluractionals and the parallel phenomena in the nominal domain will be outlined in the coming subsection.

6.3 Research on Pluractionality

Pluractionality is not an entirely new linguistic phenomenon that has only been discovered by researchers in the past few decades. In his very brief synopsis, Plural of the Verbal Idea, Jespersen (1924: 210-211) discussed several important issues regarding plural number in verbs as a parallel phenomenon of numbers in nouns, and correctly distinguished the phenomenon of verbal plurality from relating phenomena such as plural agreement, in which case “the necessary plural idea is not in the verb as such, but in the subject” (Jespersen 1924: 210), whereas verbal plurality are “cases in which it is really the verbal idea itself that is made plural” (Jespersen ibid.). Aside from language philosophical works that built their ideas mainly upon observations drawn from Indo-European languages, pluractional markers have also been widely documented in many descriptive works on languages from other language families, though under various and often nonuniform names,
such as frequentative, iterative, distributive and intensive affixes; these works include the study of complex verb forms of languages of Africa (e.g. Frajzyngier 1979 on wider Semitic; Vycichl 1970 on Coptic, both belong to the Afro-Asiatic family), south Asia (e.g. Winfield 1928 on Kui; Steever 1987 on Manda, both belong to the Dravidian family) and the Americas (e.g. Barker 1964 on Klamath; Broadbent 1964 on Southern Sierra Miwok; Moshinsky 1974 on Southeastern Pomo. Cf. Sapir and Swadesh 1946; Mithun 1988 for relative researches on Native American languages). The first monograph that treats the cross-linguistic phenomenon of verbal plurality as a unified subject of study is Dressler (1968), which sets a milestone for the study of verbal plurality and its typological features.

The invention of the term *pluractional*, based on the phrase “plurality of action”, as mentioned in previous sections, was nevertheless not done until Newman (1980: 13) when he scrutinized certain verb forms of Chadic languages. Newman (1990) further explores the phenomenon of pluractionality and defines its core semantic characteristic as “plurality or multiplicity of the verb’s action” (Newman 1990: 53-54). Although many researchers have already done extensive descriptive and diachronic work on this phenomenon for decades, as mentioned above, it was not until then that the study of pluractionality, as a phenomenon independent from agreement or some other sort of morphology, has received clarification terminology-wise. Two decades later, Newman (2012) reviews the adoption of the term over the years and the development of the study of this phenomenon from both descriptive and typological perspectives.

The discussion of pluractionality was never intended to be restricted to specific languages; quite the opposite, many researchers attempt at portraying this phenomenon from a typological perspective. After Dressler (1968), the typology of pluractionality has been discussed in some details in Cusic’s (1981) widely acknowledged dissertation, which marks the starting point of verbal plurality as a field of study for modern theoretical linguistic interest. Shortly after, a series of publications in the same vein appeared, including Bybee (1984, 1985), Frajzyngier
(1985), Durie (1986), Mithun (1988), among others, which enriched the researches in this novel area. Following the typological tradition, Xrakovskij (1997a) is another important work on universal pluractional meanings; the author distinguishes four categories of pluractional meanings based on two binary semantic features, and provides evidence from various language families, which are listed as individual contributions in the same collection (Xrakovskij 1997b). Wood (2007) adds on the typological tradition and presents a semantic typological framework of pluractionality from both broad cross-linguistic comparison and narrow study of individual languages. The 2008 issue of *Recherches Linguistiques de Vincennes* (Tovena 2008) presents a collection of novel researches on the topic of event plurality from both cross-linguistic and theoretical perspectives. Another edited volume that brings together empirical and theoretical researches on verbal plurality and distributivity was published in 2012 (Cabredo Hofherr and Laca 2012). Veselinova (2013) is a well-balanced introductory work on verbal number from a typological perspective. And more recently, the typology of pluractionality and pluractional constructions has received a more in-depth analysis in Mattiola (2019).

The first formal attempt at an analysis of the phenomenon of pluractionality is in Lasersohn (1995: 238-266). Although the author claims to have drawn inspirations from earlier works of Blevins and Levin (1986) and Blevins et al. (1990), these are two unpublished manuscripts that I unfortunately do not have the chance to consult. As a result, Lasersohn (1995) can be viewed as the first formal and universal treatment of pluractionality in the existing linguistic literature. After that, Ojeda (1998), Yu (2003) and Van Geenhoven (2004, 2005) are among the influential works in the semantic literature that formally accounted for pluractional markers in their respective under-studied languages; however, these works are not frequently cited until about a decade later. Wood (2007), based on the author’s original semantic typology of a binary contrast between event-internal and external pluractional meaning, presents the next universal formal treatment of pluractionality, which is built upon the skeleton of Lasersohn’s (1995) analysis plus an
extension of Landman’s (1996, 2000) theory of plurality incorporating the notion of grouping. Adaption, extension and further refinement of the universal formal analysis of pluractionality have been incorporated in language-specific researches, starting in Wood (2007) where the author examines her formal analysis in the case studies of Yurok (Algie; United States) and Chechen (Nakh-Daghestanian; Russia), and subsequently in Tovena and Kihm (2008) on Italian and French (Indo-European), Bar-el (2008) on Skwxwú7mesh (Salishan; Canada), Součková (2011) on Hausa (Afro-Asiatic; Nigeria, Niger), Henderson (2012) on Kaqchikel (Mayan; Guatemala), Pasquereau and Cabredo Hofherr (2020) on Seri (Hokan; Mexico), among others. These works inspired further contributions on pluractionality that combine the study of formal semantics with linguistic fieldworks, and have hence brought the study of pluractionality to new heights, in terms of both the depth of formal details and the width of empirical investigations. The linguistic activities involved in these works have also concomitantly contributed to the wider movement of language preservation and documentation.

On the one hand, the development of the formal treatment of verbal plurality enables researchers to delve into more intricate problems that involve pluractionality; on the other hand, the multitude of new empirical data collected from the field presents novel theoretical challenges that invite alternations in the already established formal inventory. As a result, many researchers abandoned the idea of treating pluractionality in isolation, instead, in order to account for pluractionality, they draw relevance from relating linguistic phenomena, such as distributivity (i.e. plural arguments), nominal plurality, quantification, eventuality and aspectuality. These novel perspectives have resulted in several recent collections, among others, Verkuyl, De Swart and Van Hout (2005), Vogeleer and Tasmowski (2006) and Cabredo Hofherr and Laca (2012).

In sum, although the study of pluractionality is still among the minor topics of modern linguistics, it has received increasing attention and theoretical interest in the last decades, especially by researchers of formal semantics and fieldwork.
linguistics backgrounds. Contrary to its status as a relatively young area of study, pluractionality has already been widely and elaborately documented for as long as at least a century. As a result, while new empirical data are being gathered from the field, the rediscovery of old-timers can also be beneficial in the theoreticalization of the phenomenon of pluractionality. In the meantime, inspirations drawn from other topics in the formal semantics can also enrich the accountability of the analyses tailored for the phenomenon of pluractionality.

6.4 Summary

Pluractionality is a widespread phenomenon. In this chapter, I first presented the typology of pluractionality, with the emphasis on the semantic interpretation of the pluractionals cross-linguistically. Two types of pluractionals are typologically distinguished: event-external and event-internal pluractionals; these two opposite types of pluractionality are found universally in languages that utilize morphological means to express event plurality, and they exhibit saliently distinguishable semantic properties. Since plural event oftentimes correlate with plural arguments, I then discussed the correlation of nominal and verbal plurality. In addition, I reviewed existing literature on the study of pluractionality and sketched out the development in the field, especially the development of the formal linguistic study of pluractionality.

In the next chapter, I will turn to the examination of pluractionality in Yucatec Maya.
Chapter 7

Pluractionality in Yucatec Maya

7.1 Introduction

Like many languages in the world, Yucatec Maya also utilizes grammatical strategies to express pluractionality. Still similar to many of the world languages, the plurationalss in Yucatec Maya covers the range from event-internal to event-external.

Event-internal pluractionality is expressed by the grammatical strategy of root reduplication. For instance, in (163), the transitive root \textit{xot} ‘cut’ is reduplicated, in order to express multiple quick and continuous cutting events within a short period of observing time:

\begin{verbatim}
(163) Pedro-e’ k-u xo’oxot-ik le pāak’al-o’ob-o’.
\end{verbatim}

\text{Pedro-TOP HAB-A.3 cut.RED-IND DET plant-PL-CL}

‘Pedro cuts the plants several times.’

These cuts must be done by the same person on the objects, and sometimes may result in an intensified result (for example, the plants are cut down).

Event-internal pluractionality in Yucatec Maya will not be the focus of this dissertation, because the main strategy of expressing event-internal pluractionality is root modification, which is done on the root, rather than suffixation, which is
done on the stem. Nevertheless, a brief morphological description of the event-
internal pluractional in Yucatec Maya will be given in the next section, and some
eamples will be given throughout this chapter when necessary, for instance when
we contrast it against the event-external pluractional.

On the other hand, event-external pluractionality is expressed by the gram-
matical strategy of suffixation on the verbal stems in Yucatec Maya. There are
two allomorphs that function as pluractional suffix in Yucatec Maya: in transitive
environment, it is -la’an, as in (164); and in intransitive environment, it is -la’aj,
as in (165).

(164) Ka jo’op’ u wach’-la’an-t-ik le áak’-o’ob-o’.

and INCEP A.3 untie-PLR-TR-IND DET liana-PL-CL

‘And he started to disentangle the lianas one after another.’

(TM-hnaz_054.1)

(165) Ka je-b-la’aj-∅ le caja-’ob-o’.

and open-PASS-PLR-PFV DET coffin-PL-CL

‘Then the coffins were opened one by one.’

(NMC-158)

The above examples show typical event-external pluractional semantics. For
instance, wach’ ‘untie’ in (164) is a verb that belongs to the Aktionsarten class of
accomplishments, je’ ‘open’ in (165) belongs to the Aktionsarten class of achieve-
ments, and as we will see in section 7.3.1, the event-external pluractional in Yu-
catec Maya can be combined with all of the Aktionsarten classes of the verbs;
hence, there is no specific aspectual selection of this suffix. Both the action of
disentangling the lianas one after another in (164) and the action of opening the
coffins one by one in (165) are plural events that take place in a designated area
without significant pauses; this thus shows that the plural events denoted by the
resulting predicates are contiguous in time and space. Both (164) and (165) are
still felicitous sentences even if the events take place for merely a couple of times;
this indicates, that it suffices for the pluraclional predicate to have simple event plurality\(^1\).

The current chapter is structured as follows: section 7.2 starts by describing the morpho-syntactic properties of the two pluraclional strategies in Yucatec Maya, with the emphasis on the event-external pluraclional. By examining the distribution and the basic meaning of this pluraclional, I will conclude in 7.2.3 that there is only one (event-external) pluraclional suffix in Yucatec Maya, contra Andrade (1955), which is manifested in two complementary allomorphs. The rest of section 7.2 presents two observations with respect to the usage of the pluraclional morpheme, namely the repetitive suffixation on the same verb and the speaker’s insensitivity towards the coda of the allomorphs; a tentative analysis of these observations is given at the end of the section.

Section 7.3 analyzes the semantic properties of the Yucatec event-external pluraclional on the basis of the semantic typology of verbal plurality established by Wood (2007), following Cusic (1981), and the augmentation in Henderson (2012, 2017). More specifically, 7.3.1-7.3.5 discusses the following topics in turn: verbal aspectual selection, event contiguity in time and space, possibility of generic reading, cardinality of the plural events, telicity of the pluraclional predicates, and the ability of entailment of the non-pluraclional event counterpart; 7.3.6 summarizes the general properties of the Yucatec event-external pluraclional within the framework of the semantic typology of pluraclionality.

On top of that, section 7.4 discusses three language-specific characteristic of the Yucatec event-external pluraclional: distributivity, iteration\(^2\), and intensification. 7.4.1 determines that distributivity is an additional and independent property of the Yucatec event-external pluraclional; 7.4.2 further scrutinizes the property of distributivity by putting forth a distinction between distributive pred-

\(^1\)Simple plurality means that the plurality is low in its cardinality, for instance, two or more (events).

\(^2\)I use *iteration* as a distinct term from *repetition* which has the additional meaning that plural events happen in sequence. This meaning can be roughly translated into English as ‘one by one’ or ‘one after another’.
ication and distributive quantification; 7.4.3 goes on to discuss another characteristic of the pluractional predicate in Yucatec Maya, namely, the iterative nature of the plural events; 7.4.4 discusses the usually intensified results of the pluractional predicates. 7.4.5 summarizes the semantic properties of the event-external pluractional in Yucatec Maya, which will serve as the descriptive basis of a formal modeling in the coming section.

Section 7.5 provides a formal analysis of the event-external pluractional in Yucatec Maya. 7.5.1-7.5.2 demonstrate the building blocks that eventually lead to a semantic analysis of the pluractional suffix in Yucatec Maya; 7.5.3-7.5.4 show how this analysis can successfully account for all of the semantic properties of the Yucatec event-external pluractional that are listed in the description in the previous sections. Finally, 7.6 concludes the current chapter.

### 7.2 Morphology of Pluractionals in Yucatec Maya

This section will show that there are two morpho-syntactic strategies that exist in Yucatec Maya that are utilized to express pluractional meanings. Root reduplication is used to express event-internal pluractional meaning, and affixation is used to express event-external pluractional meaning.

#### 7.2.1 Reduplication

Root reduplication is widely mentioned in traditional grammars and descriptions but rarely described in details beyond its morphological shapes. Tozzer (1921: 33-34) lists five cases in which reduplication is utilized, two of which are verbal meanings: iterative or frequentative verbs and plural with participles; four morphological shapes of reduplication are described: $VC$ to $VCVC$ for inflectional suffixes, $CV$ to $CVCV$, $C_1VC_2$ to $C_1VC_1VC_2$ and $C_1VC_2$ to $C_1VC_2-Vn-C_1VC_2$. McQuown (1967: 208), based on the Motul dictionary, described two types of reduplication: the rare type, $C(V)$ (with vowel syncope), which reduplicates $CVX$ to
C(V)CVX, and the common type, CV (without vowel syncope), which reduplicates CVX to CVCVX; it is interesting and worth noting that McQuown is the only author who thinks that the roots reduplicate themselves to the left, instead of to the right. McQuown seems to have believed that reduplication is not commonly observed in language usage, hence does not need lengthy descriptions; as a result, it is only mentioned that the CV-type reduplication occasionally occurs in the beginning of the verb root (ibid.: 233), and that it frequently combines with the deverbative suffix -an (ibid.: 234). Owen (1968) also mentions a few cases of root reduplication in his description of middle-voice intransitive verb stem formation: CVC to C1VC1VC2-k-il, which specifies that a relevant property of an object is the potentiality for the event to occur (ibid.: 40); CVC to C1VVC2-en-C1VVC2 and C1VVC2-man-C1VVC2, which specifies that an event is distributed over temporal or spatial domains (ibid.: 45-46).

The three more detailed descriptions are from Andrade (1955), Blair (1964) and Bricker (1998). Andrade (1955: 4.69) contrasts reduplication with duplication, the former being partially repeating the root shape3, whereas the latter being repeating the entire root. For reduplication, C1VC2 reduplicates to C1VC1VC2, where C2 is not nasal; for duplication, two cases are distinguished: C1VC2 to C1VC2C1VC2 for when C2 is nasal, and CV to CVCV for non-CVC roots. Reduplication and duplication both contribute to similar meanings in verbal constructions: they signify “a more or less rapid repetition” (ibid.: 4.69), and sometimes “distribution” (ibid.) as well as “considerable magnitude” (ibid.). Moreover, both reduplication and duplication express “frequent instances of monochronic references” (ibid.: 4.6), i.e. plural events on a single occasion, and they usually refer to “a more or less rapid repetition of an action by a single individual, or by each of a number of individuals, aiming in either case to accomplish a single result” (ibid.). This very much describes some of the core semantic features of the event-internal pluractionality, as discussed in the previous chapter, especially, the plural events

3Andrade (1955) calls them stems.
take place on a single occasion, they have shared telos, and large cardinality of
the plural events is required. Finally, reduplication is also used in the intransitive
construction with the suffix -ki and signifies properties and changes of objects
that are usually plants or inanimate (ibid.: 4.63); this probably corresponds to
the \( C_1VC_1VC_2-k-il \) shape in Owen’s (1968) description.

Blair (1964: 38-39) lists eight what he calls “reduplication operators”, which
are further divided into fortitive, sequentive and groups of operators; they have
in total seven shapes: \( C_1VC_2 \) to \( C_1V(C_2)C_1VC_2 \), \( C_1VC_2 \) to \( C_1VC_1VC_2 \), \( C_1VC_2 \) to
\( C_1V'C_1VC_2 \), \( C_1VC_2 \) to \( C_1V'V(C_2)C_1VC_2 \), \( C_1VC_2 \) to \( C_1V'V'C_1V'VC_2 \),
\( C_1VC_2 \) to \( C_1VC_2-en-C_1VC_2 \) and \( C_1VC_2 \) to \( C_1VC_2-al-C_1VC_2 \). If we ignore the dif-
f erent shapes of vowels, Blair’s description of the possible morphological shapes is
actually very similar to that of Andrade’s, except the last two where -en and -al
are used to link the two \( CVC \) clusters. Blair distinguishes between complete redu-
plication and partial reduplication, which corresponds to Andrade’s reduplication
and duplication, respectively; the condition of the choice of these two alternants is
also similarly described, with “[t]he alternant of complete reduplication occur[ing]
with mono-syllabic stems whose final consonant is \( n \)” and “[t]he alternant with par-
tial reduplication occurs with polysyllabic stems and mono-syllabic stems whose
final consonant is not \( n \)” (ibid.: 86). Four of the eight reduplication operators
described by Blair can occur in verbal constructions, they contribute to meanings
of “emphasis or fortitiveness” (ibid.: 86) as well as repetition and distributivity
(ibid.: 88). The examples listed by in Blair (ibid.: 86-88) show additionally that
verbal constructions with reduplication usually indicate plural events with large
cardinality, the plural events are usually rapidly done on one occasion, and these
events usually have common goals that constitute a sum telic event. All these
features pattern with event-internal pluractionality in the typology.

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4Blair (1964) takes roots, or in his terms, “stems”, with rearticulated vowels \( V'V \) as poly-
syllabic, and roots with other types of vowels as mono-syllabic; partial reduplication of the poly-
syllabic roots only reduplicates the initial consonant and syllabic, e.g. \( CVVC \) to \( CV'VVCVC \)
(ibid.: 86). This is also mentioned by Andrade that in case of diphtongs, only the first vowel is
repeated, e.g. \( Cay \) to \( CaCay \) (Andrade 1955: 4.69).
And finally, Bricker (1998:340-342, 374-376) lists eight reduplication patterns, four of which form derived transitives: $CVl \rightarrow CVCl$, $C_{1}VC_{2} \rightarrow C_{1}VVC_{1}VC_{2}$, $C_{1}VVC_{2} \rightarrow C_{1}VVV_{1}C_{1}C_{2}$, and $CVn \rightarrow CVV_{n}CVn$, and the other four form particles: $C_{1}VC_{2} \rightarrow C_{1}VVV_{1}C_{1}V'V_{1}C_{1}V_{2}$, $CVn \rightarrow CVV_{n}CVV_{n}$, $C_{1}VC_{2} \rightarrow C_{1}VVV_{1}C_{1}C_{2}$-en/un-$C_{1}VVV_{2}$, and $C_{1}VC_{2} \rightarrow C_{1}VVV_{2}$-man-$C_{1}VVV_{2}$. The meaning of the reduplicated particles are said to be related to the meaning of the derived transitives that are of similar shapes. With respect to the morphological shapes of the reduplication process, Bricker notes, “[t]hese patterns indicate that the initial consonant of the root is always repeated, and the initial vowel is almost always part of the reduplication” (ibid.: 340), which effectively summarizes the morphological description of the complete and partial reduplication or the duplication and reduplication of Blair and Andrade. Verbal constructions that involve reduplication receive interpretation of event plurality, usually with the same agent (ibid.: 341-342), and sometimes the plural events are distributed over spatial domains (ibid.: 374-376). In addition, three sets of verbal constructions are distinguished with respect to the number of events and internal arguments: base verb signifies single event with single internal argument, reduplication signifies plural events with single internal argument, and suffixation with -la’ant$^{5}$ signifies plural events with plural internal arguments (ibid.: 334-335). The distinction between the two event plurality constructions (i.e. reduplication and suffixation) manifests the contrast between reduplication and suffixation, which corresponds to event-internal and event-external pluractionality, respectively.

To summarize, we can learn from the previous descriptive literature on Yucatec Maya that root reduplication usually takes the rough shape of $C_{1}VC_{2}$ to $C_{1}VC_{2}(C_{1})VC_{2}$, where the initial consonant and some defining parts of the vowel are always repeated, regardless of the exact quality and shape of the consonants and the vowel(s) in the original root. Semantically, verbal constructions that involve reduplication usually express event plurality with large cardinality of the

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$^{5}$The exact shape of this suffix will be discussed below.
plural events, the plural events usually are rapid and contiguous in time, they usually happen on a single occasion, they are usually done by the same agent, aiming in achieving a shared goal, and the sum event is often telic, being distinguishable from the constituting plural events. All these semantic features fit better with event-internal plurality in the typology, as opposed to event-external pluractionality:

<table>
<thead>
<tr>
<th>Semantic parameters</th>
<th>E-internal</th>
<th>E-external</th>
<th>RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbal aspectual (Aktionsarten) selection</td>
<td>✓</td>
<td>n.r.</td>
<td>?</td>
</tr>
<tr>
<td>event contiguity in time and space</td>
<td>✓</td>
<td>n.r.</td>
<td>✓</td>
</tr>
<tr>
<td>possibility of generic reading</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>minimal cardinality of the plural events</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>shared telos of the pluractional predicates</td>
<td>✓</td>
<td>n.r.</td>
<td>✓</td>
</tr>
<tr>
<td>ability of entailment of the non-pluratical event counterpart</td>
<td>✗</td>
<td>✓</td>
<td>?</td>
</tr>
</tbody>
</table>

Table 7.1: Root reduplication signifies event-internal pluractionality

Root reduplication is not the focus of this dissertation, hence I will leave it here for the time being. In what follows, I assume that root reduplication is another morphological means in Yucatec Maya besides suffixation that expresses event plurality meaning, and the event plurality that is related to root reduplication is a different type from the one that is related to suffixation.

### 7.2.2 Suffixation

The second strategy that is utilized in Yucatec Maya in order to express the grammatical meaning of pluractionality is affixation, and more specifically, suffixation. As I will argue in this and the next sections, there are two forms of suffix as such that function as plurational, they are allomorphs of the one and same morpheme. In transitive environment, the morpheme -la’an is used to indicate pluractional meaning; it is observed that -la’an is always followed by the transitivizer -t. In intransitive environment, the morpheme -la’aj is instead utilized.

The plurational suffix in Yucatec Maya is scarcely discussed in previous literature, probably due to its infrequent occurrence and its unobtrusive manner.
In the very rare literature where such descriptions occur, however, more puzzling perplexities rather than explanatory settlements arise.

Bricker (Bricker et al. 1998: 334-335) describes -la’aj as the intransitive counterpart of -la’ant:

(166) Táan u p’e’ej-la’an-t-ik.
PROG A.3 chip-PLR-TR-IND

‘He is chipping them one after another.’

(167) Táan u p’e’ej-la’aj-al.
PROG A.3 chip.PASS-PLR-IND

‘They are being chipped one after another.’

The implications of the author’s description are the following: -la’an only appears with transitive verb stems, or intransitive verb stems that have gone through morphological operations of valence increase, and it is obligatorily followed by the suffix -t, which is a transitivizer; in contrast, -la’aj always co-occurs with intransitive verb stems, or transitive verb stems that have gone through morphological processes of valence reduction; -la’an and -la’aj never occur in the same type of morpho-syntactic environment.

However, Andrade (1955) provides examples in which both morphemes are able to appear in the same type of environment, i.e. the passive environment. This fact seems to reject the transitivity-based description by Bricker et al. (1998):

(168) K-u jook’-s-la’an-t-a’a-l.
HAB-A.3 come.out-CAUS-PLR-TR-PASS-IND

‘They are brought out one after another.’

6Bricker considers -la’ant to be one single suffix. The re-analyzation of the morpheme as -la’an-t is my own.
More confusions arise due to the morphological and phonological similarities of the pluractional suffix to other verbal suffixes. For instance, -la’aj can be abbreviated as -a’aj, or even -a’a, in certain environment; -a’aj is sometimes confused with the perfective mood suffix -aj (170b), or with the intransitivizer of the class 2 transitive verbs -aj (171b); -a’a is sometimes confused with the passivizer -a’a (171c); these misconceptions come about because the suffixes in question are identical in form and share the ability to occupy the same slot in a given verbal complex. On the other hand, -la’an is sometimes confused with the colloquial marker for the participle -a’an (172), which is also due to the similarities of the two suffixes in form and slot-occupying ability:

(170) Áalkabnajo’ob óoxpéel k’iin.
   a. *Áalkab-n-a’aj-o’ob óox-péel k’iin.
      run-ANTIP-PLR-B.3PL three-CLF.INAN day
      ‘They ran for three days.’
   b. Áalkab-n-aj-o’ob óox-péel k’iin.
      run-ANTIP-PFV-B.3PL three-CLF.INAN day
      ‘They ran for three days.’

7 More to this morpheme cf. Tozzer (1921: 88-89); Bricker et al. (1998: 332); INALI (2014: 300-301), among others.

8 I have double checked all of the pluractional data that I elicited with the consultants, and this is exactly how the discussion in this paragraph arises. The method I used is the following: After each elicitation session, I would ask the consultant to translate the elicited Yucatec pluractional sentences into Spanish. Then, I would ask the consultant to say the sentences which invite further inquiry again, but this time, in the way that people from her village would speak (¿Cómo se diría esta frase en su idioma en su pueblo?). I would then compare the two versions of the same sentence. This way, I was able to find out whether the consultant had used the pluralactional suffix or another verbal suffix. If it were the case that another verbal suffix was used, I would exclude the sentence in question from my pluractional data corpus.
(171) Táan in wilaj.

a. *Táan in w-il-a’aj.

PROG A.1SG EP-see-PLR

‘I am seeing them.’

b. Táan in w-il-aj.

PROG A.1SG EP-see-INTR

‘I am seeing.’

c. Táan in w-il-a’a-j.

PROG A.1SG EP-see-PASS-PFV

‘I am being watched.’

(172) Táan in xuuxubla’antik.

a. Táan in xuuxub-la’an-t-ik.

PROG A.1SG whistle-PLR-TR-IND

‘I am whistling to them.’

b. Táan in xuuxub-t-a’an-ik.

PROG A.1SG whistle-TR-PTCP-IND

‘I am whistling.’

Of course, these entanglements are not completely unexpected and can be accounted for by several language-inherent factors. For instance, the pluractional suffix and other bound verbal suffixes share similar post-root positions; this positional proximity naturally bundles together suffixes that are of different groups but share similar phonological characteristics. In fast speech, reduction of vowels and contraction of syllables or clusters are likely to take place (cf. Bricker et al. 1998: XIII, 331); this may result in the rearticulated vowel being reduced or shortened, and therefore sounding similar to the other vowels of the same value (e.g. a’a
→ áa/aa/a); another result may be that the suffix in question loses a part of its boundary consonant due to neighboring phonological environment (e.g. la’aj → la’a/a’aj). In complex verbal components, which are usually relatively long and therefore unfavored in natural speech environment, some morphemes will not be fully articulated; hence, the parts of the morphemes that are in fact being articulated may appear in similar forms. All of these factors lead to such a condition which requires special care when eliciting sentences with pluractional morphemes.

In the next section, I will argue that -la’aj and -la’an are allomorphs of one and same pluractional suffix. I will also spell out the conditions of their occurrence. These morpho-syntactic analyses will serve as the foundation for further semantic analyses in this chapter.

### 7.2.3 Two Allomorphs, One Suffix

In the previous section, I have sketched out the seemingly contradictory descriptions of Andrade (1955) and Bricker et al. (1998). Andrade (1955) describes -la’an and -la’aj as two independent morphemes with non-correlated distributions. Bricker et al. (1988), on the contrary, describe -la’aj as the intransitive counterpart of -la’an.

Whether -la’an and -la’aj are two independent morphemes or two allomorphs of the same morpheme is the question we are going to settle in this section. The safest way to start with is to treat them as two independent morphemes first and

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9 The transcription of the two morphemes by the author is -lan and -lah, respectively. It is worth noting that the author describes that both of these two morphemes are suffixed directly to the verbal stem, which is defined by the author as “the lexical element remaining when in the process of analysis identifiable suffixes are removed from a form” (Andrade 1955: 2.1), before any other verbal suffixation takes place. As we will see later, however, this description is not entirely true. Nonetheless, whether or not the plurational is suffixed immediately to the verbal stem is a far more complicated question than it seems here, because it invites further discussions on, for instance, the definition and classification of root and stem in Mayan languages, and the word-formation process in Mayan languages, or further, the scope of inquiry of morphology and syntax in general. As a result, this topic will not be dealt with in depth in this dissertation, but cf. Haviland (1994); Lois and Vapnarsky (2003, 2006); Lois (2011); Coon (2004), among others.

10 The author considers -la’ant to be one single suffix. I reanalyze it as -la’an-t, where -t is a transitivizer, an independent suffix from another group, rather than a part of the plurational suffix. Cf. footnote 6 of the current chapter.
then see if we could further simplify them into one.

If -la’an and -la’aj were two independent pluractional suffixes, then at least one of the following statements should be true:

(173) a. The distribution of -la’an and -la’aj overlaps.

b. The semantic interpretation differs for -la’an and -la’aj.

(173a) is a morpho-syntactic criterion, while (173b) is a semantic criterion.

We will start with the examination of the morpho-syntactic criterion.

As is already mentioned in the previous section, Bricker et al. (1998) assume that transitivity plays a major role in the distribution of the two morphemes: -la’an only appears in transitive verbal environment, -la’aj only appears in single-valence verbal environment, which includes intransitive and passive verbal environment; the two types of environment (i.e. transitive and single-valence) are mutually exclusive, hence -la’an and -la’aj have complementary distribution, in other words, they cannot both occur in the same type of environment. Compare this with the description of the two morphemes in Andrade (1955), we see that the major divergence lies in their description with respect to the passive environment. According to Bricker et al. (1998), only -la’aj can occur in the passive environment, whereas Andrade (1955) shows that both -la’an and -la’aj can occur in this environment (168-169, repeated below in 174-175).

(174) K-u jook’-s-la’an-t-a’a-l.

HAB-A.3 come.out-CAUS-PLR-TR-PASS-IND

‘They are brought out one after another.’

(Andrade 1955: 4.65-1)

(175) ka ma’an-la’aj-ak u nook’-il-o’ob.

SBJV buy.PASS-PLR-IRR A.3 clothes-REL-PL

‘... that all her clothes should be bought.’

(Ibid.: 4.64-4)
There is a subtle difference with respect to the way the condition of environment is perceived by these authors, which, as we will see in the following analyses, plays a major role in diverging these two descriptive accounts. For Bricker et al. (1998), *transitive* and *intransitive* are properties of the *root* (ibid.: 329), they are determined before a root goes into the morphological process of forming a stem; on the other hand, *passive* is a property of the *stem* (ibid.: 333), it is the result of the morphological process of passivization which takes place on the stem level. In contrast, Andrade (1955) assigns all three properties (i.e. *transitive*, *intransitive* and *passive*) to the level of *verbal construction*\(^\text{11}\) (ibid.: 3.1, 3.35, 3.36, 4.64, 4.65).

In other words, the *environment* that Bricker et al. (1998) describe is in fact the *local* environment, the position within a verbal component to which the morphemes in question are able to attach; this is distinguished from the *environment* that Andrade (1955) describes, which is the *universal* environment of the entire verbal component.

With this in mind, let us go back to the sentences in which both *-la’an* and *-la’aj* occur in passive environment (174-175). At a first glance, the felicity of both sentences seems to argue in favor of (173a), which is partial evidence to treating *-la’an* and *-la’aj* as two independent suffixes. However, a closer examination shows that it is not the case. Indeed, both verbal components in (174) and (175) consist of roots that are first specified into transitive stems, then gone through passivization, then suffixed by mood suffixes; however, the post-root position to which the pluractional morphemes are suffixed is different. In (174), the intransitive verbal stem *jook’* ‘come out’ is suffixed by the causative morpheme *-s*, which results in a transitive local environment; and it is in this transitive local environment that the pluractional morpheme *-la’an* occurs. In (175), the transitive verbal stem *man* ‘buy’ is passivized into *ma’an*, which results in an intransitive local environment; and it is in this intransitive local environment that the pluractional morpheme

\(^{11}\)Although in Andrade (1955), *transitive* and *intransitive* are also properties of the *stem* (ibid.: 3.1), it is the transitivity of the entire *verbal construction* that the author concerns when describing the environment of the specific suffix under investigation.
-la’aj occurs.

In other words, it is indeed transitivity that splits the distribution of -la’an and -la’aj; nevertheless, it is the transitivity of the local environment, i.e. the post-root position to which the pluractional morpheme is suffixed, that actually matters, rather than the transitivity of the universal environment, i.e. the entire verbal component. Therefore, the seeming counter-evidence from Andrade (1955) does not in fact undermine the transitivity-based description in Bricker et al. (1998), because in these examples (174-175) the exact slot in which -la’an and -la’aj are able to occur is indeed strictly determined by the transitivity of the preceding verbal stem, even though both -la’an and -la’aj can occur in a verbal component that has a passive voice.

To summarize, there is no evidence that (173a) is the case, i.e. the distribution of -la’an and -la’aj does not overlap. -la’an only appears in transitive local environment, -la’aj only appears in intransitive local environment. Local environment is determined by the property of the verbal stem which immediately precedes the morphemes under investigation, even when the stem formation process is not completed until that position; it is opposed to universal environment, which indicates the property of the entire verbal component. The parameter transitivity is evaluated directly at the position to which the morphemes under investigation are suffixed (i.e. local environment), rather than at the end of the entire verbal component (i.e. universal environment).

Now that we have determined that -la’an and -la’aj have complementary distribution, we turn to the semantic criterion (173b). Below, I will argue that both -la’an and -la’aj express pluractional (i.e. verbal plural) meaning. More specifically, the following two basic plural meanings that are associated with the verbal category will be taken into consideration:

(176) a. There are multiple events of the same kind.
     b. There are multiple internal participants of the event(s).
(177) is an example of a -la’ian modified sentence. In this sentence, the event of dish washing takes place multiple times, and the internal argument of the verb (i.e. the dishes) is plural:

(177) T-in p’o’o-la’an-t-ik u nu’ukul-o’ob.

PROG-A.1 wash-PLR-TR-IND A.3 tool-PL

‘I would be washing their dishes.’

(NM-28)

(178) is an example of a -la’aj modified sentence. In this sentence, the event of things happening takes place multiple times, and the internal argument of the verb (i.e. the things) is plural:

(178) Bey le ba’al-o’ob úuch-la’aj-Ø-o’ob úuch-o’.

thus DET thing-PL happen.AF-PLR-PFV-B.3PL long.ago-CL

‘So this was the way things happened a very long time ago.’

(NMC-159)

More examples along the same lines:

(179) T-u máan u tóok-la’an-t-o’ob u y-otoch y-éet


wínik-il-o’ob.

man-REL-PL

‘They went burning down the houses of the fellow men.’

(NM-134)

(180) Ma’ u xík-la’a-l-o’ob.

NEG A.3 burst.ANTICAUS-PLR-IND-PL

‘They don’t burst.’

(NM-16)
In (179), there are multiple burning events, and the houses that are being burnt down are plural; in (180), there are multiple events of bursting, and there are multiple objects (in this particular context: the watermelons) that burst. So far, we have presented evidence that both -la’an and -la’aj express the basic verbal plural meaning listed in (176a-b). More details of the semantics of -la’an and -la’aj will be examined and elaborated in the coming sections, but for now, it suffices to say that (173b) is not the case, i.e. the semantic interpretation of -la’an and -la’aj does not differ.

To summarize, we have argued above that neither (173a) nor (173b) is the case. This implies, that -la’an and -la’aj are not two independent pluractional suffixes, i.e. -la’an and -la’aj are allomorphs of the one and same pluractional suffix. This result is in line with Bricker et al. (1998), but contra Andrade (1955).

### 7.2.4 Multiple Pluractional Suffixation

The coming two subsections are dedicated to some additional remarks on the pluractional suffix in Yucatec Maya. Since the linguistic judgements that will be reported below are not shared by all of my consultants, but only some of them, I await further investigation to determine the significance of these observations.

Pluractional suffix can occur multiple times in a verb without interfering with the interpretation of the verb. Sentences (181) and (182) are self-constructed sentences which incorporate more than one pluractional of various forms in the verb. Some consultants judge these sentences as felicitous, and interpret them the same way as they would if there is only one pluractional suffixation:

(181) \textit{k-u} \ w-il-la’an-t-aj-la’aj-Ø

HAB-A.3 EP-see-PLR-TR-INTR-PLR-IND

‘They see repeatedly.’
A follow-up discussion with these consultants shows that, though the usage of multiple pluractional suffixation can be understood among Yucatec speakers, the preferred formulation of the intended interpretation is always the respective shorter form, in which only one pluractional occurs.

7.2.5 Insensitivity of the Coda

We have determined in section 7.2.3 that -la’an and -la’aj are allomorphs of the one and same pluractional suffix. This implies, if a PLR-sentence is felicitous, then the minimally different PLR-sentence in which the allomorph is replaced by the other variant should not be felicitous. Contrary to our prediction, however, this is not always the case.

Some (but not all) consultants show insensitivity towards the occurrence condition of -la’an and -la’aj; in other words, these consultants would judge both sentences in the set as equally good:

(183) a. k-u k’él-(l)a’n-t-a’a-l le ixo’im-o’
      HAB-A.3 toast-PLR-TR-PASS-IND DET corn-CL
      ‘The corn used to be toasted multiple times.’

b. k-u k’él-(l)a’aj-t-a’a-l le ixo’im-o’
      HAB-A.3 toast-PLR-TR-PASS-IND DET corn-CL
      ‘The corn used to be toasted multiple times.’

This observation shows that, at least for a group of speakers, the coda of the pluractional suffix /n/ and /j/ is perceived as less significant an indicator of the transitivity of the verb than the transitivizer -t that immediately follows the
pluractional suffix. A possible explanation for this observation is that the coda
variants of the pluractional suffix /n/ and /j/ arise merely due to different phonetic
environment in which they occur. More specifically, the consonant /t/ assimilates
the consonant that immediately precedes it to the same place of articulation,
namely alveolar, and hence, the coda of the pluractional suffix turns into an /n/
in this particular environment; in environment in which /t/ does not follow, the
coda of the pluractional suffix remains velar /j/.

In other words, the occurrence condition of the allomorphs of the pluractional
suffix -la’an and -la’aj can be restated in pure phonological terms as follows:

(184) The pluractional suffix in Yucatec Maya takes the form of

a. -la’an, whenever it immediately precedes the consonant /t/;

b. -la’aj, otherwise.

The pure phonetic explanation above assumes that -la’aj is the more primary
form of the pluractional suffix in Yucatec Maya than -la’an, because the latter is
the result of phonetic assimilation. There is evidence from the literature that sup-
ports this assumption. Tozzer (1921: 105-106) describes a particle that expresses
meaning of totality, la or laj 12, which is likely derived from the word tuláakal ‘all’.
According to the author, there are two usages of this particle. The most dominant
usage is to be placed between the auxiliary and the verbal core to modify either
the subject or the object of the verb. The second and less common usage is to be
place in a post-root position where la is part of the verb stem preceding the mood
suffix. In the latter usage, if it occurs with a transitive verb, la would change into
lan and would be directly followed by the transitivizer -t. The above grammatical
description provides evidence that (i) the form laj is older than lan 13 and (ii) the

---

12Here, in discussion of the materials from Tozzer (1921), I temporarily follow the transcriptive
convention in the same book to avoid confusion and unnecessary mistakes.

13My tentative hypothesis with respect to the diachronic development of the particle is as
follows:

The original particle is la, which is derived from the word tuláakal; it bears the grammati-
calized meaning of the original word meaning of totality. Since la can be used independently and
consonant /n/ in lan is the result of phonetic assimilation.

More work needs to be done in order to validate the phonetic account sketched above. I leave this for future work.

### 7.3 Pluractional Meaning I

In chapter 5, I have sketched out the framework of the semantic typology of pluractionality, which is established by Wood (2007), following Cusic (1981), and augmented by Henderson (2012, 2017). In this typology, all languages that utilize grammatical means to express pluractionality have pluractionals of both event-internal and event-external types. This is also the case in Yucatec Maya. In Yucatec Maya, event-internal pluractional is marked by root reduplication (below RED), event-external pluractional is marked by the pluractional suffix (below PLR).

In this section, I will provide a semantic analysis to the PLR that we have identified in the previous section. The analysis will be done within the framework of the semantic typology of pluractionality (Wood 2007; Henderson 2017). More precisely, I will argue within this framework, that the PLR is an event-external pluractional, and that it exhibits the salient characteristics that manifest typical event-external pluractional meanings cross-linguistically. The semantic parameters under investigation are: verbal aspectual selection, event contiguity in time and space, possibility of generic reading, cardinality of the plural events, telicity of the pluractional predicates, and the ability of entailment of the non-pluractional event counterpart; these parameters will be discussed in turn throughout the en-

---

often occurs before the set A clitics whose syllables mostly start with vowels, a glide consonant /j/ is developed in order to distinguish the syllable boundary; as a result, la and laj are both in use. Since most set A clitics have vowel initials, laj occurs more frequently than la, making it the more common variant of the particle; as a result, it wins over la even in the post-root usage. The post-root usage is a further grammaticalization of the particle la; when it precedes a suffix that starts with /t/ such as the transitivizer -t, the boundary consonant is assimilated by /t/ and becomes or developed to an alveolar consonant /n/. As a result, in post-root (i.e. suffixation) usage of the particle, when it immediately precedes /t/, it takes the form of lan, otherwise the forms laj and la compete with each other; since laj occurs more frequently than la, as mentioned above, the trend is that laj gradually takes over la and become the most frequent variant of the suffix in the post-root usage where the consonant /t/ does not follow.

The validation and solidification of this tentative hypothesis awaits future investigation.
tire section. Finally, 7.3.7 summarizes the general properties of the PLR, the event-external plurational in Yucatec Maya, within the framework of the semantic typology of plurationality.

The RED, the event-internal plurational in Yucatec Maya, will not be dealt with in details in this section, because expressing plurality through root modification is not within the scope of inquiry of this dissertation. Proof that the RED expresses event-internal plurational meanings may require a separate article, but for the time being, we will assume that the RED is the Yucatec event-internal plurational, because a minimally different RED-predicate contrasts against a PLR-predicate with respect to the way repeated occurrences are construed. This point will be elaborated later, when discussions on necessary conditions of plurational predication come along (cf. section 7.4.1).

### 7.3.1 Aspectual Selection

The PLR can be combined with verbs from all of the 5 Aktionsarten (i.e. lexical aspect) classes\textsuperscript{14} 15:

(185) States

\[
K-u \quad w{-}ojel{-}la'an{-}t{-}ik \quad in \quad paal{-}al{-}o'o'ob.
\]

HAB-A.3 EP-know-PLR-TR-IND A.1SG child-REL\textsuperscript{17}-PL

‘He knows my children.’

\textsuperscript{14}For this study, I chose one verb from each Aktionsart to be tested, namely, ojel ‘know’ (states), áalkab ‘run’ (activities), kiin ‘die’ (achievements), meen ‘do’ (accomplishments), and k’oop ‘knock’ (semelfactives). For the consultants who do not use k’oop regularly in their speech, I substituted it with p’it ‘jump’. Cf. section 3.6.

\textsuperscript{15}The intransitive counterparts of these examples are not listed due to space limit.

\textsuperscript{17}-al is analyzed as a relationalizer (REL) here, following Lehmann (2003: 48-75).
Typologically speaking, event-internal pluractionals usually have a stricter lexical aspectual restriction on the verbs, whereas event-external pluractionals usually don’t have such restrictions. As we have seen from the above examples, there is no restriction on the PLR in Yucatec Maya with respect to its ability to combine with verbs from various lexical aspect classes. Therefore, in this particular regard, the Yucatec PLR behaves like a typical event-external plurational.

Moreover, as we can see from the above data, the repetitions of the complex events denoted by the pluractional predicates do not always require their sub-events to share common causes, goals or results. This behavior patterns with the
typological feature of event-external pluractionals, which do not have restrictions on the telicity of the repetitions of the resulting plural event.

7.3.2 Contiguity

Let us observe the following PLR-sentences with their utterance contexts:

(190)  
\[ T-in \quad p’o’o-la’an-t-ik. \]
PROG-A.1SG  wash-PLR-TR-IND

‘I am washing...’

a. Context 1: There is a huge pile of dirty dishes and I have promised my mom to finish doing all the dishes before 5 o’clock, so I keep washing dishes none-stopped for a long time.

b. Context 2: My mom asked me to help with the chores. I am an obedient child, so I wash the dishes everyday at 5 o’clock.

(191)  
\[ Táan \ u \ ch’ak-la’an-t-ik. \]
PROG A.3  cut-PLR-TR-IND

‘He is cutting...’

a. Context 1: The axe is extremely heavy and dull, so he has been cutting the trees for a very long time non-stopped.

b. Context 2: He cuts the first tree, then takes a break, then he cuts the second tree, then takes another break, then the third...

(192)  
\[ Bin-la’aj le \ señor-a’-ob-o’ te’... \]
go-PLR  DET woman-PL-CL  LOC

‘The women go to...’
a. Context 1: The place that the women have in mind is very far from where they dwell, so they have to walk a very long time in order to get to that place. Now they are on their way to the place in question.

b. Context 2: Many women are going to the place in question one after another.

c. Context 3: Many women are trying to get into the room in question, so they lined up in a queue. The rule is, once the preceding person has entered the room, the next person has to wait a little bit before she is allowed to enter. Now they are entering the room one by one.

(190-192) are grammatical PLR-sentences. (190a) is a context where the event is contiguous and lasts a long time, (190b) is a context where the action is carried out with pauses; the sentence is felicitous in (190a) but not in (190b). (191a) is a context where the event is contiguous and lasts a long time, (191b) is a context where the action is carried out with pauses; the sentence is again felicitous in (191a) but not in (191b). These two examples show that, in order to make a PLR-sentence felicitous, the plural events must be contiguous in time (i.e. without pauses).

In addition to the condition of contiguity in time (i.e. whether the event is carried out with or without pauses) that we have discussed in the last paragraph, the three contexts in (192) add the condition of contiguity in space (i.e. whether the event participants act together or individually) onto the way in which situations are construed. For (192a), the event is contiguous in time and lasts a long time, and the event participants act together; for (192b), the event is contiguous in time, but the event participants do not act simultaneously; for (192c), the event is not contiguous in time, and the event participants do not act simultaneously either. The fact that the sentence is felicitous in (192a) and (192b) but not in (192c) indicates, that in order to make a PLR-sentence felicitous, it is necessary to have events that are contiguous in time, but contiguity in space is not necessary.

It is worth noting that the above PLR-sentences are uniformly felicitous in the
contexts in (190a, 191a, 192a) where all three contexts imply that the events last a long time. The consultant also commented that the actions denoted by the PLR-predicates are usually done rapidly, or in a hasty fashion, in comparison to their non-PLR counterparts. Given what we have observed, I suggest that these two aspects of the event (i.e. last a long time, done rapidly) should be understood as two separate characteristics of the plural events that require further investigation. We will come back to this point in section 7.4.4.

To summarize, we have discussed above four characteristics that are related to the plural events which PLR-sentences denote: contiguity in time (i.e. without pauses), contiguity in space (i.e. togetherness), intensity of the action (i.e. rapidness), as well as the quantity of time required by the event (i.e. last a long time). We have concluded, that the plural events that the PLR-resulting predicates denote must be contiguous in time; contiguity in space, the intensity of the action, and the quantity of time required by the event are also characteristics that can be found in these plural events, though not necessary.

7.3.3 Genericity

PLR-sentences allow both single occasion reading and habitual reading. For example:

(193)  \textit{u xuux-t-la'an-t-\textemdash ik}  \\
A.3 whistle-TR-PLR-TR-IND  \\

‘He whistles to...’

a. Context 1: He is whistling to his dogs now.

b. Context 2: He has the habit of whistling to my dogs whenever he walks pass my house.
A.1SG wash-PLR-TR-IND

‘I wash...’

a. Context 1: I am washing the dishes now.

b. Context 2: I help my mother wash the dishes everyday.

(193a) and (194a) are contexts of a single occasion, (193b) and (194b) are contexts that are habitual. As we can see from the felicity of the above sentences, the PLR-constructions allow both single occasion reading as well as habitual reading.

As an implication of the habitual reading, PLR-sentences can also be used to describe an occupation. For example:

(195) K-u xo’ot-la’aj-al le páak’al-o’ob-o’.

HAB-A.3 cut.PASS-PLR-IND DET plant-PL-CL

‘The plants are cut down.’

Comment: It describes a carpenter.

The consultant commented that (195) can be used to describe the occupation of a carpenter. This reinforces our finding that a PLR-sentence allows habitual reading.

The fact that PLR-sentences in Yucatec Maya allow habitual reading, apart from single occasion reading, conforms with the semantic behavior of event-external pluractionals cross-linguistically.

7.3.4 Cardinality

PLR-sentences do not require large cardinality of the plural events. The plural events denoted by a PLR-predicate can be satisfied by simple plurality (i.e. more than one event). Below is one of the most salient evidence for our purpose, for the cardinality in this case is two:
(196) Pedro-e’ t-u tak-la’an-t-aj u xanab.
Pedro-TOP COMPL-A.3 put-PLR-TR-PFV A.3 shoe

‘Pedro put on his shoes.’

Usually, the action of putting on one’s shoes consists of two individual events of putting on a shoe, because a pair of shoes normally consists of two individual shoes. (196) shows that a PLR-predicate can be satisfied as long as the cardinality of the plural events is more than one.

Typologically speaking, event-external pluractional predicates can be satisfied by plural events that are low in cardinality. This is in line with what we have observed in the PLR-predicates in Yucatec Maya. In contrast, event-internal pluractional predicates require that the plural events have large cardinalities. Below is an example of such in Yucatec Maya:

(197) Pedro-e’ t-u tatak-aj u xanab.
Pedro-TOP COMPL-A.3 put.RED-PFV A.3 shoe

‘Pedro put on his shoes.’

(197) is felicitous only when Pedro put on many shoes in a row: for instance, he has been trying on all of the shoes that he owns in his closet. Compare (197) with (196), which differs only in the type of pluractional it possesses, we can conclude that the cross-linguistic distinction between event-internal and event-external plural events denoted by the corresponding pluractionals holds for Yucatec Maya as well. Specifically, the PLR-predicates denote event-external plural events that can be satisfied by simple plurality, whereas the RED-predicates denote event-internal plural events that must have large cardinalities.

7.3.5 Base-Predicate Entailment

PLR-predicates entail their minimally different non-PLR counterparts (i.e. base-predicates). For example:
The following table shows the truth value judgement of the above two constructions in various contexts:

<table>
<thead>
<tr>
<th>I wash...</th>
<th>(198)</th>
<th>(199)</th>
</tr>
</thead>
<tbody>
<tr>
<td>one dish, once</td>
<td>❌</td>
<td>✔</td>
</tr>
<tr>
<td>multiple dishes, each once</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>one dish, multiple times</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>multiple dishes, each multiple times</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Table 7.2: Base-predicate entailment

As we can see from table 7.2 above, whenever the PLR-statement (198) is true for a given context, its minimally different non-PLR-statement (199) is also true for the same context. This implies, that the PLR-predicates entail their corresponding base-predicates.

The characteristic of base-predicate entailment that we have determined for the PLR in Yucatec Maya also conforms with the cross-linguistic semantic behavior of event-external pluractionals.

### 7.3.6 Interim Summary

Yucatec Maya has only one suffix that marks event plurality, the PLR (i.e. pluralactional suffix). It has two allomorphs, -la’an and -la’aj, they have complementary distribution.

In this section, we have determined that the PLR is an event-external pluractional, as opposed to an event-internal pluractional, because its semantic charac-
teristics pattern with the salient semantic characteristics of event-external pluractionals cross-linguistically:

<table>
<thead>
<tr>
<th>Semantic parameters</th>
<th>E-internal</th>
<th>E-external</th>
<th>PLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbal aspectual (<em>Aktionsarten</em>) selection</td>
<td>✓</td>
<td>n.r.</td>
<td>✗</td>
</tr>
<tr>
<td>event contiguity in time and space</td>
<td>✓</td>
<td>n.r.</td>
<td>✓</td>
</tr>
<tr>
<td>possibility of generic reading</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>minimal cardinality of the plural events</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>shared telos of the pluractional predicates</td>
<td>✓</td>
<td>n.r.</td>
<td>✗</td>
</tr>
<tr>
<td>ability of entailment of the non-pluractional event</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 7.3: PLR signifies event-external pluractionality

Specifically, the Yucatec PLR exhibits the following properties:

(200) Semantic Properties of the PLR (to be updated in (225)):

a. PLR-sentences denote plural events.

b. The PLR targets verbs of all *Aktionsarten* classes.

c. The plural events denoted by the PLR-predicates must be contiguous in time, but not necessarily in space.

d. The PLR-predicates can have both habitual reading and single occasion reading.

e. The plural events denoted by the PLR-predicates can be satisfied by simple plurality, e.g. two events.

f. PLR-sentences entail their minimally different non-PLR-sentences.

### 7.4 Pluractional Meaning II

The semantic properties that we have determined thus far are the ones that are predicted for event-external pluractionals in general by the semantic typology of pluractionality (Wood 2007; Henderson 2017). As we have found out, the PLR
in Yucatec Maya conforms with the salient characteristics that are shared by the event-external pluractionals in the world languages.

In this section, we will discuss some of the language-specific characteristics of the PLR. These characteristics are implied and scattered in various traditional descriptive works of Yucatec Maya. We will unveil the exact content of these characteristics, evaluate whether they are directly and exclusively signified by the PLR, and determine their validity of being independent semantic characteristics of the PLR. At the end of this section, a complete list of the semantic properties of the PLR will be presented. Consequently, these semantic properties will serve as the descriptive basis of a further formal modeling of the PLR, which will be presented in section 6.3.

The specific characteristics that we are about to explore in this section are: distributivity (7.4.1-7.4.2), iteration (7.4.3), and intensification (7.4.4).

### 7.4.1 Distributivity

Recall in section 7.2.3, we have argued that (176b) (*there are multiple internal participants of the event(s)*) is a salient semantic characteristic of PLR-sentences. This characteristic is called *Distributivum* by old-time grammarians, for it requires the distribution of repeated actions over participants. In other words, the characteristic of distributivity requires that the internal event participants of a plural event to be plural. In still other words, plural events that are of the type *Distributivum* always have plural internal event participants.

Sentences (166-167), which are recapitulated below in (201-202), exemplify the above described distributive characteristic. In these PLR-sentences, (201) requires the direct object of the sentence to be plural, because in this case the direct object of the verb denotes the internal participants of the plural events denoted by the PLR-verb; (202) requires the subject of the verb to be plural, because in this case the subject of the verb denotes the internal participants of the plural events denoted by the PLR-verb:
Two questions arise. First, is the characteristic of distributivity (i.e. plural event internal participants) dependent on the characteristic of pluractionality (i.e. plural events)? In other words, we need to determine whether distributivity is merely an implication of plural events. Second, if distributivity is indeed independent from pluractionality (i.e. distributivity and pluractionality are two separate properties), is there a hierarchical parameter that decides when it is sufficient for a PLR-sentence to be felicitous? In other words, we need to determine whether it suffices for a PLR-sentence to be felicitous as long as the primary property, rather than both properties, is satisfied.

Let us examine the first question first. If distributivity is a characteristic of the PLR independent from event plurality, then distributivity is not an implication of plural event. This means, we would expect for PLR-sentences that:

(203) a. Event plurality and distributivity are satisfied separately.

b. In order to make a PLR-sentence felicitous, both event plurality and distributivity must be satisfied.

For (203a) to be the case, we need to find PLR-sentences that only satisfy event plurality but not distributivity. For (203b) to be the case, we need all PLR-sentences that does not satisfy both event plurality and distributivity to be infelicitous.
Now let us take a look at the data from Yucatec Maya. (204) is a context which satisfies event plurality but not distributivity. (204a) is infelicitous in this context, this indicates that the PLR-sentences which do not satisfy both event plurality and distributivity are infelicitous. (204b) is felicitous, this indicates that there are other non-PLR pluractional sentences which only satisfy event plurality but not distributivity. (204c) is also felicitous, this indicates that there are non-pluractional sentences that can satisfy event plurality, though not necessary:

(204) There is only one tree and your brother cuts it many times.

a. $\# k-u \quad ch’ak-la’an-t-ik \quad che’$
   HAB-A.3 cut-PLR-TR-IND tree
   ‘He cuts tree many times.’

b. $k-u \quad ch’a’ach’ak-ik \quad che’$
   HAB-A.3 cut.RED-IND tree
   ‘He cuts tree many times.’

c. $k-u \quad ch’ak-ik \quad che’$
   HAB-A.3 cut-IND tree
   ‘He cuts tree.’

(205) is a context where both event plurality and distributivity are satisfied. (205a) is felicitous in this context, this shows that PLR-sentences which satisfy both event plurality and distributivity are felicitous. (205b) is also felicitous in this context; compare (205b) with (204b), we see that it suffices for a RED-sentence to be felicitous as long as event plurality is satisfied. (205c) is also felicitous in this context; similar as in (204c), the non-pluractional sentence can have plural events, but it is not necessary; this shows that it suffices for a non-pluractional sentence to be felicitous as long as the denotation of the predicate is satisfied:

(205) There are many trees and your brother cuts them.
a.  \(k-u\)  \(ch’ak-la’an-t-ik\)  \(che’\)

HAB-A.3 cut-PLR-TR-IND tree

‘He cuts trees one after another.’

b.  \(k-u\)  \(ch’a’ach’ak-ik\)  \(che’\)

HAB-A.3 cut.RED-IND tree

‘He cuts trees many times.’

c.  \(k-u\)  \(ch’ak-ik\)  \(che’\)

HAB-A.3 cut-IND tree

‘He cuts trees.’

(206) is a context where neither event plurality nor distributivity are satisfied. Both (206a) and (206b) are infelicitous in this context, this means that pluractional sentences, regardless of type, require event plurality. (206c) is felicitous in this context, this means that non-pluractional sentences do not require event plurality:

(206) There is only one trees and your brother cuts it once.

a.\#  \(k-u\)  \(ch’ak-la’an-t-ik\)  \(che’\)

HAB-A.3 cut-PLR-TR-IND tree

‘He cuts tree many times.’

b.\#  \(k-u\)  \(ch’a’ach’ak-ik\)  \(che’\)

HAB-A.3 cut.RED-IND tree

‘He cuts tree many times.’

c.  \(k-u\)  \(ch’ak-ik\)  \(che’\)

HAB-A.3 cut-IND tree

‘He cuts tree.’

A downward entailment relation can be drawn from these data:
To elaborate the relation in (207), whenever one property is satisfied, the property that is left to it must also be satisfied, but not vice versa: whenever distributivity (i.e. plural event internal participants) is satisfied, both event plurality and the event denoted by the verb must also be satisfied; whenever event plurality is satisfied, the event denoted by the verb must be satisfied, but not distributivity; whenever the event denoted by the verb is satisfied, neither event plurality nor distributivity have to be satisfied.

Table 7.4 below can help us understand the relation of the three types of verbal expressions that can be used to express plural events:

<table>
<thead>
<tr>
<th>Semantic Properties</th>
<th>Verbal Expressions</th>
<th>Base-predicate (non-pluractional)</th>
<th>RED-predicate (event-internal pluractional)</th>
<th>PLR-predicate (event-external pluractional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>True</td>
<td>True</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>Event plurality</td>
<td>Not evaluated</td>
<td>True</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>Distributivity</td>
<td>Not evaluated</td>
<td>Not evaluated</td>
<td>True</td>
<td>True</td>
</tr>
</tbody>
</table>

Table 7.4: Three types of verbal expressions

As a result, we can conclude that (203a-b) are true, i.e. event plurality and distributivity are satisfied separately, and in order to make a PLR-sentence felicitous, both properties have to be satisfied. Therefore, distributivity is not merely an implication of the property of event plurality, but rather, it is an independent characteristic of the PLR.

So far, we have determined that distributivity and event plurality are two different characteristics of the PLR, and that only when both characteristics are satisfied is a PLR-sentence felicitous. Now we turn to the second question on whether one of these two characteristics is primary, and whether it is possible for
a PLR-sentence to be satisfied only by the primary characteristic. The answer is no. There is no primary and secondary characteristic, both properties have to be satisfied simultaneously in order to make the PLR-sentences felicitous. It does not suffice for a PLR-sentence to be felicitous, if event plurality is satisfied but not distributivity (204a); nor does it suffice for a PLR-sentence to be felicitous, if distributivity is satisfied but not event plurality (it does not make sense, hence there is no example of such); only when both event plurality and distributivity are satisfied simultaneously is a PLR-sentence felicitous (205a). In other words, there is no hierarchical parameter that determines when a PLR-sentence can be felicitous; both distributivity and event plurality are necessary in order to make a PLR-sentence felicitous.

To summarize, in this section we have determined that distributivity is another independent characteristic of the PLR, in addition to event plurality, rather than an implication of the characteristic of event plurality. Moreover, only when both characteristics are simultaneously satisfied is a PLR-sentence felicitous.

7.4.2 Distributive Predication and Quantification

The following generalizations on the distinction between distributive predication and distributive quantification are made by Henderson (2012: 79) based on the examination of the behavior of event-external pluralactional -lōj in Kaqchikel (Mayan, Mexico):

(208)  a. Individuals distributively predicated of an event-external pluralactional need not participate in a plural event.

b. Individuals applied to an event-external pluralactional under distributive quantification must participate in a plural event.

If (208a-b) is a generalization that applies universally, we would expect the PLR in Yucatec Maya to exhibit similar behaviors. Let us look at distributive predication first.
The following sentences have predicates that can only happen once for one individual. Hence, if the following sentences are felicitous, then under a distributive reading, each individual in the denotation of a plural subject does not have to participate in a plural event:

(209) $T$-u $jóok$-s-la’an-t-aj-i’ $tia’al$ u $tsool$-ik.
      COMPL-A.3 come.out-CAUS-PLR-TR-PFV-CL for A.3 tidy.up-IND

‘He has taken them out to make them in order.’

(210) $Bün$ u $kíim$-la’aj-ak $jujunp$’út.
      INFUT A.3 die-PLR-IRR little.by.little

‘They will be dying little by little.’

(211) $K$-u $meen$-t-a’a-la’aj-al te $naj$-o’ob-o’.
      HAB-A.3 do-TR-PASS-PLR-IND DET house-CL

‘The houses are being built.’

And this is indeed the case. (209-211) are felicitous sentences, hence (208a) is true for the PLR in Yucatec Maya.

Now, let us turn to the interaction between event-external pluractional and distributive quantification in Yucatec Maya.

Distributive quantification arises through the application of distributive operators that assign nuclear scope to each element of their restrictors. (212) is an example of a distributive quantified sentence in English:

(212) Each student lifted the carton.

In (212), *each* is a distributive quantifier, and by applying this quantifier to the elements of its restrictor *student*, it gives back an interpretation that each individual that belongs to the students that are referred to in the given context
participates in the event that is denoted by the predicate, i.e. it gives back a
distributive reading.

A distributive reading contrasts with a collective reading. In English, for
instance, the collective-reading counterpart of (212) would be:

(213) The students lifted the carton together.

In (213), it has to be the case that all of the individual students form a
group and it is the group that participates in the event denoted by the predicate;
none of the individual student satisfies the predicate. Note that (212) can only
have distributive reading, but not collective reading, whereas (213) can only have
collective reading, but not distributive reading.

There is another sentence along this line in English that is ambiguous, i.e. a
sentence that can have both distributive and collective interpretations:

(214) The students lifted the carton.

There are two readings available for (214). The first reading is a distributive
reading, which roughly equals to (212); the second reading is a collective reading,
which roughly equals to (213); no other readings are possible without further
contexts.

In Yucatec Maya, there is also a type of sentence that is ambiguous in its
collective and distributive reading:

(215) \text{Le \, kaanbal-o’ob’-o’ \, t-u \, li’is-aj-o’ob \, le \, máaben-o’}.  
DET student-PL-CL COMPL-A.3 lift-PFV-PL DET box-CL

‘The students lifted the carton.’

Comment: It could be that the students lifted the carton together, or they
lifted the carton one by one, or only a part of the students from the group
lifted the carton.

Unlike in English, this sentence has three readings, with two similar to English
and one distinct from English. The first reading is a distributive reading. Like
(212), in this reading, each individual must satisfy the predicate separately. This reading roughly equals to the following sentence:

(216)  \textit{Jujuntúul-il le kaanbal-o'ob-o' t-u li'is-aj-o'ob le máaben-o'.}  
\text{one.by.one-REL DET student-PL-CL COMPL-A.3 lift-PFV-PL DET box-CL}  

‘The students lifted the carton one by one.’

Comment: It can only be the case that they lifted the carton one by one, because of \textit{jujuntúulil}.

The second reading is a collective reading. Like (213), all of the individual as a group must satisfy the predicate, but none of the individual satisfies the predicate. This reading roughly equals to the following sentence:

(217)  \textit{Le kaanbal-o'ob-o' t-u múuch' li'is-aj-o'ob le máaben-o'.}  
\text{DET student-PL-CL COMPL-A.3 together lift-PFV-PL DET box-CL}  

‘The students lifted the carton together.’

Comment: It can only be the case that they lifted the carton only once, together, because of \textit{múuch’}.

The third reading is a partial participation reading. This reading is a Yucatec Maya specific reading, it suffices for the sentence to be felicitous as long as part of the individuals that belong to the denotation of the NP\textsuperscript{18} satisfy the predicate.

More specifically, in this reading, multiple restrictions must be applied to the NP prior to its application to the predicate. Due to this complication, it is difficult to find a sentence of equivalence of this interpretation in Yucatec Maya.

\textsuperscript{18}I continue to adopt the NP-analysis as I did in my discussion of the nominal plurality in chapter 5. The description of the Yucatec le-phrases with respect to the syntactic category of determiner has been controversial in existing literature, for instance, (i) demonstrative accounts, cf. Blair (1964); Briceño Chel (1996); (ii) definite accounts, cf. Bricker et al. (1998); Hanks (1984, 1990, 2005); Vázquez-Rojas Maldonado et al. (2018); (iii) mixed accounts, cf. Andrade (1955); Bohnemeyer (2012); among others.
Now that we have introduced the established distributive quantification in English and the possible Yucatec Maya equivalence, let us resume our previous discussion. The question remains whether it is the case for Yucatec Maya that under distributive quantification all individuals of the plural events *per se* must participate in plural events. We assume at this point that *jujuntúul*\(^{19}\) ‘each, one by one’ works the same way as its English equivalence *each* in that it is a distributive quantifier.

Recall that sentences (209-211) have predicates that denote events which can only happen once for each individual of the internal arguments of the predicate. If (208b) is the case for Yucatec Maya, i.e. if under distributive quantification all individual participants of the plural events must participate in plural events, we would expect the sentences to be infelicitous if they have predicates that denote events which can only happen once for one individual, and, at the same time, have distributive quantification over the internal arguments of these predicates. This is due to the contradiction that the predicates forbid the event participants to participate in multiple events, while the distributive quantification requires that the event participants to participate in plural events. Below are sentences adapted from (209-211), which have predicates that forbid multiple participations of one single individual, while having distributive quantification over the event internal arguments:

(218) \[ T-u \quad jóók'-s-la'an-t-aj-i' \quad jujuntúul-il \quad le \quad máak-o'. \]

COMPL-A.3 come.out-CAUS-PLR-TR-PFV-CL each.AN-REL DET man-CL

‘The person has taken them out one by one.’

---

\(^{19}\) *Jujujntúul* is used solely for animate nouns. For inanimate nouns, *jujunpéel* is used. This is because *túul* is a classifier for animate nouns, and *péel* is a classifier for inanimate nouns, cf. INALI (2014: 221-225); Lehmann (2010).
(219) *Jujuntúul-il bún u kíim-la’aj-ak.*

Each.AN-REL INFUT A.3 Die-PLR-IRR

‘One by one they are going to die.’

(220) *K-u meen-t-a’a-la’aj-al jujunpéel-il le naj-o’ob-o’.*

HAB-A.3 Do-TR-PASS-PLR-IND Each.INAN-REL DET House-PL-CL

‘The houses are being built one after another.’

Contrary to our predication, sentences (218-220) are felicitous. Take (220) for an example. Following from our assumption, *jujunpéel ‘each’* is a distributive quantifier which takes scope over the NP *le naj-o’obo’ ‘the houses’; the quantified NP will then serve as an argument of the predicate function, allowing it to apply to the argument. The computational process is as follows: first, through the usage of the distributive quantifier, a nuclear scope formula is applied to each of the individual elements within the denotation of the NP, which gives back atomic parts of the plural subject; second, the atomic parts of the plural subject are applied individually to the PLR-predicate functions, which are consisted of multiple functions that characterize the behaviors of the PLR modified predicates. If this is the case, then each individual atomic parts of the subject (i.e. ‘house’) can be applied to the PLR modified predicate (i.e. ‘be built multiple times’) and renders a felicitous interpretation; but since each house can only be built once, this cannot logically be the case. As a result, there are two possibilities that can account for this contradiction:

(221) a. *Jujuntúul (or jujunpéel) ‘each’* is not a distributive quantifier in Yucatec Maya, and hence it does not have the ability to split up the NP into atomic parts.

b. *Jujuntúul (or jujunpéel) ‘each’* is indeed a distributive quantifier, but contra (208b), the PLR-predicates in Yucatec Maya do not require all
individuals under distributive quantification to participate in plural events.

Either (221a) or (221b) is true. The following evidence argues in favor of (221a):

\[(222)\]  
\[\text{Jujuntúul wínik t-u k'ax-aj-o'ob naj.}\]

\[\text{each.AN man COMPL-A.3 tie.up-PFV-PL house}\]

‘Each man built houses.’

(222) is a felicitous non-PLR sentence. If \textit{jujuntúul} ‘each’ is a distributive quantifier, then it takes scope over \textit{wínik} ‘man’, then the argument that is applied to the predicate function should be each atomic ‘man’. However, the nominal plurality is marked on the predicate through agreement (-o’ob)\textsuperscript{20}, which would result in a contradiction if we keep assuming that the variable that is applied to the predicate function must be atomic due to distributive quantification. In other words, if \([jujuntúul'(wínik')]\] gives back atomic parts of \textit{wínik}, as is expected from the operation of distributive quantification, (222) should be infelicitous. Since (222) is a felicitous sentence, \([jujuntúul'(wínik')]\] must not be atomic, and hence \textit{jujuntúul} in (222) should not be treated as a distributive quantifier.

To summarize, in this section we have further examined the semantic behavior of the PLR in Yucatec Maya with respect to distributivity. We have proved that individual participants of the plural event under distributive predication do not need to participate in plural events. Further more, we have argued that there is no distributive quantifier in Yucatec Maya that is similar to \textit{each} in English.

7.4.3 Iteration, Rather than Simple Repetition

Traditionally, pluactionals are described as being \textit{iterative} (Sapir 1921: 114). Here, I use the term \textit{iteration} to signify the related meaning of plural events that

\textsuperscript{20}Cf. chapter 4.
these events take place distinctly and sequentially one after another. This usage of the term is in line with Dressler (1968: 62-65) which proposes that clearly distinct repetitions of the plural events is one of the most salient characteristics of the pluractional type of Iterativum.

Iteration is distinguished from simple repetition. Iteration requires that each individual event of which the plural events are comprised is distinct; in other words, none of the composing events of the iterative plural events are identical. In contrast, simple repetition does not have such requirement on the plural events; in other words, the composing events of the simple repeated plural events can be roughly the same. The data of PLR-sentences that we have examined so far show that all PLR-sentences signify plural events that comprise of non-identical composing events (i.e. iteration). This is due to the characteristic of distributivity (i.e. plural event internal participants) that is required by the PLR, as is pointed out in section 7.4.1. In order for a PLR-sentence to be felicitous, distributivity must be satisfied; as a result, each composing event of the plural events has a distinct event internal participant, which makes each composing event distinct from one another.

In light of this, I would argue that iteration is an implication of distributivity, hence, it is not an independent characteristic of the PLR.

### 7.4.4 Intensification

The usage of the PLR after the root is described by traditional grammarians to be intensifying the meaning of the root.\footnote{For example, cf. Tozzer (1921: 106).} This is in line with the data that I collected, for example:
a.  tun  k’oop
    PROG.A.3  knock

‘He is knocking...’

Comment: Like knocking on your head with the knuckles of your fingers.

b.  t-u  k’oop-la’an-t-ik
    PROG-A.3  knock-PLR-TR-IND

‘He is knocking...’

Comment: Like banging on the door or something specific.

The same intensifying effect is also observed in RED-sentences, as well as other reduplicated forms that are not related to verbal plurality. For example:

a.  K-in  buj-ik  che’
    HAB-A.1SG  split-IND  tree

‘I split trees.’

Comment: Like trying to part them.

b.  K-in  bu’ubuj-ik  che’
    HAB-A.1SG  split.RED-IND  tree

‘I split trees.’

Comment: Like cutting them into smaller parts.

Dressler (1968: 77-84) classifies grammatical expressions that express verbal plurality with meanings of intensification or exaggeration as Intensivum, a term that goes back to traditional grammars. For the author, intensification is a separate property that is independent from other pluractional properties that we have discussed throughout this section, for instance, event plurality, distributivity, event repetitions, and so forth. However, as is pointed out by Wood (2007: 15), the meaning of intensified action is a common secondary meaning for categories
that indicate repetition or verbal plurality, hence intensification *per se* does not qualify as an independent pluractional property.

For the current purpose, in particular, I would argue that intensification is an implication of event plurality, and hence it is not an independent characteristic of the PLR.

### 7.4.5 Summary

Above, we have discussed the semantic properties of the PLR (i.e. *pluractional suffix*), the event-external pluractional in Yucatec Maya. In addition to the properties listed in (200) which are shared by event-external pluractionals cross-linguistically, we have discussed some of the language-specific characteristics of the PLR in the current section.

We have determined that distributivity is another property of the PLR that is independent from the property of event plurality. In addition, we have proved that an individual event participant of a PLR-sentence does not need to participate in multiple events, but the sum of the individuals participating in the events must be plural. Furthermore, we have examined two traditionally emphasized aspects of the Yucatec PLR, namely, iteration and intensification. We have then drawn the conclusion that neither is an independent characteristic of the PLR: iteration is an implication of distributivity, and intensification is an implication of event plurality.

Now, we are able to assemble all the relevant properties together and present a final version of the semantic properties of the PLR in Yucatec Maya:

(225) Semantic Properties of PLR (final):

- PLR-sentences denote plural events.
- The PLR targets verbs of all *Aktionsarten* classes.
- The plural events denoted by the PLR-predicates must be contiguous in time, but not necessarily in space.
d. The PLR-predicates can have both habitual reading and single occasion reading.

e. The plural events denoted by the PLR-predicates can be satisfied by simple plurality, e.g. two events.

f. PLR-sentences entail their minimally different non-PLR-sentences.

g. PLR-sentences requires distributivity, i.e. plural internal event participants.

h. The plural internal event participants do not need to each participate in a plural event.

In the next section, I will formalize the PLR in Yucatec Maya on the basis of the semantic properties listed above.

### 7.5 Formal Analysis

#### 7.5.1 Yucatec Verbs

Yucatec verbs have more complexed internal structures than Yucatec nouns. As we have seen in sections 122 and 5.5.2, the formation of a Yucatec noun is done once the nominal stem is closed and the hidden apportionment is determined; in other words, any further suffixation of the Yucatec noun belongs to higher projections above the nP. On the other hand, the formation of a Yucatec verb is not necessarily done at the closure of the stem; in fact, in most cases, further suffixation must follow in order to provide information on person, number, aspect and mood, which are crucial for higher projections beyond the VP, namely for AGR-P and AM-P (cf. (114) in section 5.4.2).

The morphosyntactic structure of Yucatec verbs is thus the following (compare with the structure of Yucatec nouns in (118) and (148)):

(226)
For example, the verb in (227), *p’o’ola’antik*, has the morphosyntactic structure in (228):

(227)  \[ T-in \quad p’o’o-la’an-t-ik \quad u \quad nu’ukul-o’ob. \]

\text{PROG-A.1} \quad \text{wash-PLR-TR-IND} \quad \text{A.3} \quad \text{tool-PL}  

‘I would be washing their dishes.’

(NM-28)

(228)
7.5.2 Plurational Suffix

The previous subsection shows that PLR is of type $<< v, t >>>$. Now, we can finally give this suffix a formal representation.

The formal representation of the Yucatec plurational suffix presented below is built upon Lasersohn’s (1995: 238-266) ideas, as illustrated in details in section 1.3.6. To recap, all plurational markers can be formally represented as a conjunction of the following two parts: The first part represents the most basic and salient plurational meaning, which is shared by all languages. In this part, two clauses are used: the first clause indicates that the denotation of a plurational verb is the set of events that are each denoted by the verb; the second clause makes the prediction that the cardinality of the set (i.e. the number of events in the set) must exceed a certain number. The second part of the conjunction represents the more fine-grained and language-specific plurational meanings, which are represented as additional clauses that each correspond to a specific plurational meaning. Depending on the description of the plurational marker, this part can have as many clauses as needed.

For the purpose of my formal analysis, I adopt Lasersohn’s (ibid.) formal conception in general with a few alternations. First, instead of making the assertion that all events within the set of plural events satisfy a certain characterizing property, I adopt the Linkean star operation, which works on one-place predicates and generates all the individual sums of the members of the extensions of the predicates (Link 1983). This alternation is advantageous in that, firstly, it integrates the semantics of pluractionality into the semantics of plurality in general, and secondly, it circumvents the problematic assumption made by Lasersohn (ibid.) that the interpretation of a sub-event must be associated with the interpretation of the plural event (i.e. the stipulation of $P$ with respect to $V$, cf. the last paragraph of section 1.3.6)\textsuperscript{22}.

\textsuperscript{22}This is also the treatment proposed in Wood (2007: 119-128), where the author places pluractionality in parallel with nominal plurality and adopts the treatment of group NPs and plural NPs in Landman (1996, 2000) for the treatment of pluractionality.
Second, by introducing the Linkean star operation into the system, I have taken a different stance from Lasersohn (ibid.) in terms of how one views plural events and their composing events. Lasersohn (ibid.) takes the composing events each as an individual event and the plural events as sets of individual events; plural events and their composing events are mediated through the stipulation of $P$: $\forall e \in X[P(e)]$, where $P$ receives its value according to the type of pluractionality (i.e. event-internal or external), the base verb meaning and the lexical specifications of the verb. As Wood (2007: 116-119) has already argued, this is not always the case in the data cross-linguistically. In addition, not all plural events are constituted of multiple atomic individual events, as a set theory representation would suggest, hence the conception of a plural event being composed of multiple atomic individual events of the same kind is problematic. A possible remedy is already mentioned in Link (1983), where an analysis in terms of mereology is proposed. Landman (1996, 2000), following Link (ibid.), adopts mereological assumptions and presents a theory of plurality and grouping which is successful in accounting for the collective-distributive distinction in NPs. The similarity in event plurality with the plural and group NPs enables an analogous treatment for pluractionals, which views event plurality not as a set of atomic events, but as an event which consists of proper subparts (cf. the treatment proposed in Wood 2007: 119-128). In my analysis, plural events are treated as a sum event $e$ which has many proper subparts $e'$, $e''$, ... Hence, the same set of operations can be applied indiscriminately on sum and parts. This alternation is crucial for my representation because it enables targeted stipulation in the form of additional clauses for both plural events as a whole and parts or phases of plural events. Take the temporal relation of the pluractional event for an example. Lasersohn’s (ibid.) analysis can only specify the temporal relation between two sub-events, but my treatment makes it possible to specify a temporal relation not only among sub-events, but also between the pluractional event and its sub-events.

Third, I define two functions for the purpose of my representation: $\mu(x)$ and
argi(e, x). $\mu(x)$ is a similar function to Lasersohn’s (ibid.) $\text{card}(x)$ but with two major differences: Firstly, $\text{card}(x)$ takes a set of events and returns a number (i.e. the cardinality of the set), whereas $\mu(x)$ is able to take either an event or a set of events and returns a number (i.e. the value measured by $\mu$). Secondly, while $\text{card}(x)$ can only return a non-negative integer (because the number of elements in a given set must be a non-negative integer), $\mu(x)$ is able to return any real number. These two changes with $\mu(x)$ are crucial because they make the correct predictions with respect to plurational events and their internal parts.

\begin{equation}
[\mu] = \lambda x . R
\end{equation}

In words: $\mu$ is a measuring function of type $<x, n>$, where the $x$ type can vary from $e, v, <e, t>$ and $<v, t>$; it is a function from individuals, events and sets of individuals or events to real numbers.

argi(e, x) is analogous to Lasersohn’s (ibid.) $\theta(e)$, which can be flattened to a relational function of an event and an individual that looks like argi(e, x): $\theta(e, x)$. In the neo-Davidsonian theory of thematic roles (Dowty 1989), verbs are analyzed as one-place predicates of events which do not take individual arguments directly, but rather, the semantic composition of verbs and their arguments is mediated by thematic role relations: $\exists e[V(e) \land \theta(e, x)]$, where $\theta$ can be further specified into AGENT, PATIENT, THEME, ... etc, which are assigned by the verb (Parsons 1980, 1985, 1990; Carlson 1984; Krifka 1986, 1989; Schein 1986, 1993, among others). Hence, in Lasersohn’s (ibid.) analysis, $\theta(e)$ contributes to the semantic composition of the plurational verb and its plural argument, and enables clauses being asserted directly on the semantic behavior of the event participants.

Similar to Lasersohn’s (ibid.) idea, I also intend to use a function to mediate the predicates and their arguments, so that I am able to make direct assertions on the semantic behaviors of the arguments of the predicates. However, I do not want to commit myself yet to the answers of the questions which thematic role(s) do

\footnote{To integrate nominal and verbal plurality, I assume in (229) that $\mu$ can also take an individual or a set of individuals as argument.}
internal arguments have and whether all internal arguments of the verbs always have the same thematic role(s), because these are beyond the scope of inquiry of this dissertation. As a result, I define a relational function \( \text{argi}(e, x) \) which evaluates the syntactic relation of the two elements in a given ordered pair of event and individual with respect to whether the NP that denotes the individual is the internal argument of the verb that denotes the event. This function is crucial because it allows me to make assertions on event participants directly without defining their semantic relations to the predicates in the first place; the linkage is made solely through the syntactic relation.

(230) \[ \text{argi} = \lambda e_v. \lambda x_e. x \text{ is the internal argument of the verb that denotes } e \]

In words: \( \text{argi} \) is a two-place relational function of type \(<v, <e, t>>\), which evaluates whether the given event and individual translate to the internal argument of the verb in the syntax.

Now we turn to the formal representation of the pluractional suffix in Yucatec Maya:

(231) \[ \text{PLR} = \lambda P_{<v, t>}. \lambda e_v. [\star P(e) \& \mu(e) \geq 2 \quad \& \forall e', e'' [\text{atom}(e') \land \text{atom}(e'') \land e' \leq e \land e'' \leq e \rightarrow \neg[\tau(e') \circ \tau(e'')]] \quad \& \forall t_i \leq \tau(e) \exists e' [e' \leq e \land t \circ \tau(e')] \quad \& \forall x_e [\text{argi}(e, x) \rightarrow \neg \text{atom}(x)] \quad \& \forall e' [e' \leq e \land \text{atom}(e') \rightarrow \exists x [\text{argi}(e', x)]]] \quad \& \forall e'' [e'' \leq e \land \text{atom}(e'') \rightarrow \exists x [\text{argi}(e'', x)]]] \]

Both \& and \( \land \) represent the logical conjunction. I use these two symbols to differentiate the logical conjunction between clauses and within a clause: \& is used for the conjunction of two clauses that specify two different conditions, whereas \( \land \) is used for the conjunction within a clause.

The denotation in (231) can be broken down to five parts, each accounting for some of the semantic properties of the PLR determined in the previous section (cf. (225)): 
(i) says that the result is a plural event, and there are at least 2 events within the plural event. This clause accounts for the properties (225a,e).

(ii) says that the plural events are each non-overlapping and hence distinguishable from one another. This clause rules out the reading in which the plural sub-events add up to one single prolonged event.

(iii) says that there is at least one event that occupies any random time intervals of the plural event; in other words, the plural event is contiguous in time. This clause accounts for the property (225c).

(iv) says that the internal argument of the plural event is plural. This clause accounts for the property of distributivity (225g).

(v) says that each individual event within the plural event has at least one participant as its internal argument. This implies, the plural event internal participants do not necessarily need to each participate in a plural event, which accounts for the property (225h).

In addition, the fact that the denotation in (231) has no restriction on the predicate and the event it can combine with, accounts for the property that this suffix is unselective in terms of lexical aspects (Arktionsarten) (225b).

7.5.3 Single Occasion Reading and Habitual Reading

So far, I have formally accounted for the facts of the pluractional suffix except for (225d) and (225f), to which we now turn.

(225d) says that PLR sentences can have both single occasion reading and habitual reading. Single occasion reading requires that there is no gap among the temporal traces of the subparts of the sum event, whereas habitual reading requires that there are gaps between groups of temporal traces of the subparts of the sum event which are contiguous yet distinguishable within each group.

Note that (225c) and (225d) are not contradictory. (225c) requires that the plural events denoted by the PLR-predicate must be contiguous in time, in other words, it is required that there is no gap in the temporal traces of all of the
subparts \((e', e'', \ldots)\) of the sum event \((e)\). This is exactly what clause (iii) in (231) predicts, namely, that for any random temporal interval \((t)\) within the temporal trace of the sum event \((\tau(e))\), there is a (not necessarily atomic) subpart of the sum event \((e')\) whose temporal trace \((\tau(e'))\) overlaps with the sliced out temporal interval \((t)\). This, however, does not make any prediction of the internal structure of the sum event \((e)\) and its temporal trace \((\tau(e))\). As a consequence, it is allowed that the sum event comprises of subparts whose temporal traces are contiguous, as illustrated in (232a) where there is no gap between \(\tau_1\), \(\tau_2\) and \(\tau_3\), and it is also allowed that the sum event comprises of subparts whose temporal traces are non-contiguous, as illustrated in (232b) where there are gaps between \(\tau_1\), \(\tau_2\) and \(\tau_3\).

The latter case (232b) can be explained in the following example. If we have a hypothetical sum event which take takes place from 7 a.m. to 10 a.m. (7-10), then from 1 p.m. to 4 p.m. (13-16), and then from 5 p.m. to 10 p.m. (17-22), then \(\tau(e)\) is the sum of the time intervals of 7 a.m. to 10 a.m. (7-10), 1 p.m. to 4 p.m. (13-16), and 5 p.m. to 10 p.m. (17-22), rather than 7 a.m. to 10 p.m. (7-22). As a result, if \(t \leq \tau(e)\), then \(t\) can be located in the time intervals of 7 a.m. to 10 a.m. (7-10), 1 p.m. to 4 p.m. (13-16), and 5 p.m. to 10 p.m. (17-22), but not in the time intervals of 10 a.m. to 1 p.m. (10-13) and 4 p.m. to 5 p.m. (16-17) (i.e. the gaps), even though these last two intervals are situated within the interval from 7 a.m. to 10 p.m. (7-22) which the sum event seems to have covered.

\begin{itemize}
  \item[(232) a.]
  \begin{align*}
    \tau(e) \\
    \tau_1 \quad \tau_2 \quad \tau_3 \\
    \hline
    t \\
    \tau(e')
  \end{align*}
\end{itemize}
c. A case where $t \preceq \tau(e)$:

Now, this is crucial for understanding (225c) and (225d). (225c) requires that the temporal traces of the subparts of the sum event must be contiguous, in other words, the temporal intervals that comprise the temporal trace of the sum event must have no gaps within them (i.e. there must be no gaps within $\tau_1$, $\tau_2$ and $\tau_3$, respectively). This fact is well accounted for by clause (iii) in (231). On the other hand, (225d) requires that the denotation stands regardless whether there are gaps between intervals (e.g. (232b)) or not (e.g. (232a)). This fact is also well accounted for by (231) because there is no prediction made on the gap between temporal intervals by the formula$^{24}$.

### 7.5.4 Accounting for Base-Predicate Entailment

(225f) says that sentences with PLR predicates entail sentences with their base form. For example, a sentence in the form of (233a) entails (233b) in Yucatec Maya.

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$^{24}$The two temporal clauses in (231), (ii) and (iii), predict respectively: that the temporal traces of the atomic subparts of the sum event are distinguishable from one another, and that a random subpart of the temporal trace of the sum event overlaps with the temporal trace of at least one subpart of the sum event. There is no prediction made about the size of the interval between groups of temporal traces.
(233) a. John knocked-PLR.
   b. John knocked.

Let us define (233a) as $S$, and (233b) as $Q$. We want to prove (234) is always true:

(234) $(S \rightarrow Q) = 1$

(235) $S \rightarrow Q \iff \neg(S \land \neg Q)$

Given (235), we want to prove that it is not the case that $S$ is true but $Q$ is false. In other words, (234) is false if we can find a case where $Q = 0 \land S = 1$, true otherwise.

Let $Q = 0$. Then (236) = 0, hence $\exists e[P(e)] = 0$, hence $\neg \exists e[P(e)]$. In consequence, $\neg \exists e[\ast P(e)]$, hence (237) = 0, and hence $S = 0$. In other words, we cannot find a case where $Q = 0 \land S = 1$, therefore (234) is true. QED.

(236) $\lbrack V \rbrack = \exists e[P(e)]$

(237) $\lbrack V-PLR \rbrack = \exists e[\ast P(e) \land \mu(e) \geq 2]$

   $\land \forall e', e''[\text{atom}(e') \land \text{atom}(e'') \land e' \leq e \land e'' \leq e \rightarrow \neg \tau(e') \circ \tau(e'')]$ (ii)

   $\land \forall t_i \leq \tau(e) \exists e'[e' \leq e \land t \circ \tau(e')]$ (iii)

   $\land \forall x_e[\text{argi}(e, x) \rightarrow \neg \text{atom}(x)]$ (iv)

   $\land \forall e'[e' \leq e \land \text{atom}(e') \rightarrow \exists x[\text{argi}(e', x)]]$ (v)

In plain words, sentences with PLR predicates always entail sentences with their base form verb in Yucatec Maya. The formal analysis conforms with the empirical fact in (225f).

7.6 Summary

Pluractionality in Yucatec Maya has not received much attention in previous literature. In this chapter, I first described the morpho-syntactic properties of the
two pluractional strategies in Yucatec Maya, namely, reduplication and suffixation. I then focused on the pluractional suffix and examined its morphological forms as well as its semantic properties. After comparing its semantic properties with the typology of pluractionality, I concluded that the pluractional suffix in Yucatec Maya corresponds to an event-external pluractional in the typology. In addition, I examined a few language-specific semantic properties of the Yucatec pluractional suffix and concluded that it is a distributive pluractional. On top of the morphological and semantic description of the Yucatec pluractional suffix, I further presented a formal analysis of this suffix. Moreover, I demonstrated how this analysis is effective in accounting for all the descriptive details. This chapter is not only the first work that focuses on the description of pluractionality in Yucatec Maya, but also the first formal linguistic study of the event-external pluractional in Yucatec Maya.
Part IV

Pluralizing Entities and Events
Chapter 8

Number and Lexical Categories

8.1 Introduction

Number marking operates in both nominal and verbal categories in Yucatec Maya, but independently, as we have discussed in the previous chapters. In the nominal category, plural number can be, though not obligatorily, marked with the suffix -o’ob, indicating simple plurality (i.e. more than one); unmarked nominal phrases are number-unspecified (i.e. general number). In the verbal category, verbal plurality is marked on the verb, indicating either simple plurality or greater plurality (in the sense of Corbett 2000: 30), depending on the marking strategy (i.e. suffixation with PLR and root reduplication, respectively); unmarked verbal phrases are number-unspecified. Both nominal and verbal number can be marked on the verb: nominal number can be marked directly on the noun as well as through agreement on the verb, while verbal number is marked solely on the verb. The disentanglement of nominal and verbal number markers on the verb can be difficult for some languages, but there are a few typologically attested diagnostics available, as discussed in section 6.2.3 in the previous chapter. Further, the phenomena of number marking on the nouns and number agreement on the verbs should be treated as two separate phenomena, as argued in England (2011), even in the cases where both phenomena exhibit similar surface behaviors, as it is the
case in some Mayan languages where both plural marking on the nouns and the plural agreement on the verbs are optional and utilize the same morpheme (e.g. Yucatec Maya, as described in the earlier chapters in this dissertation; Tz’utujil, as discussed in Levin, Lyskawa and Ranero 2020).

There are two questions directly arising therefrom. The smaller one: so far, we have analyzed unmarkedness in nominal number as indicating the number value of general; given the parallelism between nominal and verbal number marking in Yucatec Maya, should we also analyze the unmarkedness in verbal number as indicating the number value of general? In other words, should we also assume that the number opposition in the verbal number system in Yucatec Maya is general versus plural, rather than singular versus plural? In still other words, are the number systems in nominal and verbal categories in Yucatec Maya identical or different? The larger one: since number marking operates independently in nominal and verbal categories in Yucatec Maya, how do they associate with or affect each other? More specifically, how does Yucatec Maya utilize both marking mechanisms to express possible grammatical number, both nominal and verbal, that is encoded in the language?

This chapter aims to answer the aforementioned questions and, while doing so, to put forward a few deliberations regarding future investigations. The chapter is structured as follows. After the introduction, section 8.2 discusses the verbal number system in Yucatec Maya. Instead of the commonly assumed singular-plural opposition, I will show in 8.2.3-8.2.4 that the number opposition in verbal number is in fact general-plural. This analysis provides a unified number system cross-categorically. In addition, 8.2.5 discusses the question whether the singular number value can be reduced to [-plural] in the system. Section 8.3 discusses the interplay between nominal and verbal plurality. Following a brief review of the descriptions of the interaction between nominal and verbal plural marking in the world’s languages in previous literature in 8.3.2, I will present data from Yucatec narratives in 8.3.3.1-8.3.3.2 and argue that such interaction also exists in Yucatec
Maya. The findings from the data close reading will be summarized in 8.3.4. Curiously, as a language whose nominal plural marking is essentially optional, Yucatec Maya poses several obligations on the expression of grammatical number when both nominal and verbal categories are taken into consideration. These findings will be summarized in 8.3.5. Finally, section 8.4 summarizes the chapter.

8.2 Verbal Number System

8.2.1 Recap 1: Yucatec Nominal Number System

Discussed in detail in section 5.2.2, we have reached the following conclusions for the nominal number system in Yucatec Maya. First, there are three number values in the number category in Yucatec Maya: singular, general and plural; the value singular is available for first and second person free and bound pronouns, the value general is available for third person free and bound pronouns as well as nouns, and the value plural is available for all nouns and pronouns. Second, there are two number oppositions in the number category in Yucatec Maya: singular-plural and general-plural; the opposition singular-plural is available for first and second person free and bound pronouns, and the opposition general-plural is available for third person free and bound pronouns as well as all Yucatec nouns. Third, the number value system of Yucatec Maya is threefold: the top system covers first and second person free and bound pronouns, with the available number contrast of singular-plural; the second system covers the segments from third person free and bound pronoun to inanimate discrete nouns, with the available number contrast of general-plural; the bottom system covers inanimate indiscrete nouns, with the available number contrast of general-plural; the bottom system is discerned from the second system because it is possible to include non-apportioned interpretation in the general value in the bottom system, while it is impossible to do so in the second system. And finally, the optionality of number marking with the Yucatec plural marker -o’ob only affects the second and bottom system, hence the
markedness results in a number interpretation of (simple) plurality, whereas the unmarkedness results in an interpretation of general number.

8.2.2 Recap 2: Representation of Yucatec Nouns and Verbs

Discussed in detail in section 5.4.4, we have reached the following conclusion with respect to the formal representation of Yucatec nouns. First, all Yucatec bare nouns have mass-like extensions, as a result, they denote cumulatively closed sets of entities. Second, all Yucatec nouns that are suffixed by the Yucatec plural marker -o’ob receive simple plurality interpretation, as a result, they denote sets of non-atomic entities. The denotation of Yucatec nouns are listed in (122), repeated below in (238).

\[(238)\]

\[a. \quad \left[ N_{gn} \right] = \lambda x. \star P(x) = \lambda x.P(x) \]

\[b. \quad \left[ N_{pl} \right] = \lambda x.\left[ \star P(x) \land \neg\text{atom}(x) \right] = \lambda x.\left[ P(x) \land \neg\text{atom}(x) \right] \]

The following positions with respect to the formal representation of Yucatec verbs are adopted in the discussion thus far. First, as mentioned in section 3.4, I adopt the neo-Davidsonian framework of event semantics and assume that Yucatec verbs, like English verbs, denote sets of events (i.e. \( \lambda e.[P(e)] \)), and Yucatec sentences, like English sentences, existentially quantify over events (i.e. \( \exists e[P(e)] \)), and that the interpretation of the verb or the sentence in relation to the arguments is mediated through constraints on thematic roles (i.e. \( \lambda e.[P(e) \land th(e, a)] \) or \( \exists e[P(e) \land th(e, a)] \)). Second, as mentioned in sections 3.2 and 3.5, I follow the somewhat standard view (e.g. Krifka 1998) in assuming that events are ordered in a mereological structure, in other words, they are closed under sum formation (i.e. the sum of any two events is also an event in itself). Third, as can be extracted from my formal representation of the pluractional suffix PLR in Yucatec Maya discussed in section 7.5.2, I stand with Landman (1996, 2000), but contra Krifka (1998), in assuming that singular events are atomic in the mereology. The denotation of Yucatec verbs are listed in (236-237) in section 7.5.4, repeated below.
Comparing (238) and (239), the parallelism is obvious: despite the difference in the semantic type of the λ-abstracted variables, both bare forms denote simple predicates, whereas both “pluralized forms”\(^1\) denote non-atomic (or non-singular\(^2\)) cumulative predicates with additional restrictions, depending on the semantic interpretation of the respective plural morphology. This parallelism suggests that the number system can be trans-categorial, and hence what is proposed for the nominal number system may as well apply for the verbal number system. This invites a unified treatment of the nominal and verbal number systems in Yucatec Maya.

Note that the above mentioned parallelism relies largely on the fact that Yucatec nouns have mass-like extensions, i.e. (238a) holds, hence there is a parallelism between the bare forms of Yucatec nouns and verbs ((238a) and (239a)). Now I want to pursue a stronger argumentation for why the nominal and verbal number system in Yucatec Maya can be unified, namely, that Yucatec verbs, just like Yucatec nouns, also have cumulative denotations. I will turn to this point in the next subsection, before I present the unified treatment of the Yucatec number system in subsection 8.2.4.

### 8.2.3 Lexical Cumulativity

So far, I have taken it for granted in previous analysis that Yucatec verbs without pluractional modification have singular denotations. This position will be chal-

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\(^1\)The term “pluralized form” is not used in an exhaustive sense. Here, by “pluralized form” I mean solely the plural morphology -o’ob with nouns and the pluractional morphology of -PLR with verbs, but not anything else.

\(^2\)Until now, the concept of atomic and singular elements are interchangeable.
lenged now in this subsection. Kratzer (2008: 8) notes, “[a]greement phenomena show that there is a tight connection between nominal and verbal number, and if there is no nominal [singular], it seems safe to conclude that there is no verbal [singular] either.” Setting aside the question of whether there is a real number value of singular in Yucatec Maya (see below), the cumulativity of the Yucatec noun denotations at least invites a closer scrutiny of the potential of the cumulative denotations of the Yucatec verbs.

The position, following Krifka (1992) and subsequent research, in particular Landman (1996, 2000), which assumes a universal cumulativity for simple predicates is termed as *lexical cumulativity* by Kratzer (2008). Under this hypothesis, the denotation of both verbs and thematic role predicates are cumulative. In other words, whenever two events are in the denotation of a verb, so is their sum, and whenever two individuals both have the same thematic relation with an event, so does their sum. Following Kratzer’s (ibid.) terminology, *lexical cumulativity* is distinguished from *phrasal cumulativity*, the latter summarizes the claim in Landman (1989) that the distributive interpretation of a verbal predicate with a plural DP is derived by pluralizing the sister constituent of the DP. Whether the multifold distributive readings in Yucatec Maya can be accounted for by a similar operation as phrasal cumulativity is a question that I leave for future research; for now, I concentrate on the assumption of lexical cumulativity in what follows.

Following the assumption of lexical cumulativity, every basic verb has a cumulative denotation which is the result of the Linkean *-operator taking scope over the denotation of the said verb; the *-operator maps sets onto their smallest cumulative superset. (240a) shows an example of a simple verbal clause in English, (240b) shows the interpretation of this example:

(240)  a. A girl eats an apple.

   b. $\exists e \exists y \exists x [\star girl(x) \land \star agent(e, x) \land \star apple(y) \land \star eat(e) \land \star argi(e, y)]$

---

3The internal argument operator, argi, is defined in (241) in chapter 7 section 7.5.2. The tense morphology is ignored here for simplicity.
Note that in (240b) the cumulative interpretations of ‘a girl’ and ‘an apple’ are trivial. The cumulative effect is clearer if the arguments have numerals in them (241):

(241)  
  a. Two girls eat five apples.
  b. \[\exists e \exists x [\text{girl}(x) \land |x| = 2 \land \text{agent}(e, x) \land \text{apple}(y) \land |y| = 5 \land \text{eat}(e) \land \text{argi}(e, y)]\]

It is evident that the denotation in (241b) is effective in accounting for both the collective interpretation (i.e. two girls together eat in total five apples) and the distributive reading (i.e. each of the two girls eats five apples): regardless of the number of the girls and apples involved in a specific event, as long as the total number of girls adds up to two and the total number of apples adds up to five, the sentence holds true.

The above examples show that the assumption of lexical cumulativity is at least well motivated for languages like English. In other words, it is reasonable to assume that verbs in these languages have cumulative denotations (242a). Within the framework of event semantics, the two sides of the equation in (242a) can further derive (242b-c), and hence (242d) holds:

(242)  
  a. \([V] = *[V]\)
  b. \([V] = \lambda e. [P(e)]\)
  c. \(*[V] = *\lambda e. [*P(e)] = \lambda e. [*P(e)]\)
  d. \([V] = \lambda e. [*P(e)]\)

Does lexical cumulativity apply to Yucatec verbs? Recall the ambiguous sentence (215) from the previous chapter, repeated below in (243):

\[|x| = \begin{cases} \{|y : y \leq x \land \text{atom}(y)|\} & \text{if there is a set of atomic individuals that } x \text{ is the sum of;} \\ \text{undefined} & \text{otherwise.} \end{cases}\]

\footnote{Following Kratzer (2008), I assume that the counting is only available for atomic elements. Hence}
(243) Le kaanbal-o’ob’-o’ t-u li’is-o’ob le máaben-o’.

DET student-PL-CL COMPL-A.3 lift-PFV-PL DET box-CL

‘The students lifted the carton.’

Comment: It could be that the students lifted the carton together, or they lifted the carton one by one, or only a part of the students from the group lifted the carton.

The three possible interpretations commented by the speaker can be very well accounted for by a unified formula in the shape of (240) and (241):

(244) \( \exists e \exists y \exists x [\star \text{stud}(x) \land |x| = n \land n \geq 2 \land \star \text{agent}(e, x) \land \star \text{box}(y) \land |y| = 1 \land \star \text{lift}(e) \land \star \text{argi}(e, y)] \)

(244) does not require a specific number of students or carton-parts involved in a specific event; as long as the total number of the students adds up to \( n \) and the total number of carton-parts adds up to 1, the sentence is true. Hence, all of the three interpretations of the sentence can be accounted for by this formula. In other words, the fact that ambiguous sentences like (243) can be accounted for by formulas like (244) speaks in favor of lexical cumulativity for both nominal and verbal predicates. Since there is no direct evidence that Yucatec bare verbs must have singular denotations, I take advantage of the above argumentation and assume in what follows that Yucatec verbs have cumulative denotations.

8.2.4 Unified System of Nominal and Verbal Number

Going back to the first question raised at the beginning of this chapter: Should we analyze the unmarkedness in Yucatec verbs as indicating the number value of general, just as in Yucatec nouns? The answer is positive. As is argued in the previous section, Yucatec verbs can be analyzed as having cumulative denotations, hence the number value of singular is not needed in the verbal domain. The number value opposition in the verbal category is thus general versus plural, and

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this opposition is available for all Yucatec verbs. The verbal number system is therefore analogous to the second and bottom nominal number system:

<table>
<thead>
<tr>
<th>Number Contrast</th>
<th>Nominal</th>
<th>Nom. System</th>
<th>Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>singular-plural</td>
<td>1.+2. pronominals</td>
<td>Top</td>
<td></td>
</tr>
<tr>
<td>general-plural</td>
<td>3. pronominals</td>
<td>Second</td>
<td>verbs</td>
</tr>
<tr>
<td></td>
<td>nouns</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(inanimate, indiscrete)</td>
<td>Bottom</td>
<td>(?)</td>
</tr>
<tr>
<td>general</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8.1: Number System in Yucatec Maya

As is argued in the previous subsection, Yucatec verbs have cumulative denotations. As a result, (242), which is true for verbs in languages like English, holds for Yucatec verbs as well. The denotation of Yucatec bare verbs is given in (239a), repeated below in (245a). Given (242d), the denotation of Yucatec bare verbs can be reformulated as (245b). The denotation of Yucatec PLR-verbs is given in (239a), repeated below in (245c):

(245) a. \([V] = \lambda e.[P(e)]\)

b. \([V] = \lambda e.[*P(e)]\)

c. \([V-PLR] = \lambda e.[*P(e) \land \mu(e) \geq 2 \land ...]\)

(I omit further clauses of this formula for the sake of simplicity)

Compare the denotations of Yucatec nouns (238) and verbs (245), which are summarized below in a more palatable manner (246-247):

(246) Without pluralization:

a. \([N] = \lambda x.[*P(x)]\)

b. \([V] = \lambda e.[*P(e)]\)

5The explanation of the additional number contrast general and the placement of the question marks see later.
With pluralization:

a. \[ [N\text-}o\text{'ob}] = \lambda x.\{*P(x) \land \neg \text{atom}(x)\}\]

b. \[ [V\text-}\text{PLR}] = \lambda e.\{*P(e) \land \mu(e) \geq 2 \land \ldots\}\]

(I omit further clauses of this formula for the sake of simplicity)

The parallelism is obvious. For bare nouns and verbs, the process of cumulative predication is the same, the only difference lies in the semantic type of the \(\lambda\)-abstracts. For pluralized nouns and verbs, the pluralization results in further restrictions on the respective formulas, the difference lies in both the semantic type of the \(\lambda\)-abstracts and the spell-out of the additional restrictions.

Two additional questions are left for future research. First, whether there is also a similar split in the verbal number system like the one in the nominal domain between the second and bottom systems (see table 8.1, the two positions where the question marks are placed). Without intending anything, I want to point out that we have good grounds to assume that it would be the case after all types of verbal pluralizations are taken into consideration. Kaqchikel, a K'ichean language belonging to the Eastern Branch Mayan, for instance, is reported to be sensitive to the \(\text{Aktionsarten}\) of the verbs: the event-external pluractional -\(l\text{öj}\) cannot pluralize verbs from the class \(\text{states}\) (Henderson 2012: 71), whereas the event-internal pluractional -\(Ca'\) prefers to pluralize verbs from the class \(\text{semelfactives}\) (ibid.:132-137). The Kaqchikel data shows that there is indeed a split of the verbal number system in some Mayan languages. Given the present data, however, I stay completely agnostic for Yucatec Maya with respect to this matter.

Second, whether we still need the singular number value in the nominal number system, given that the range of this value is merely restricted to the first and second person free and bound pronouns and cannot be found anywhere else. In other words, is it possible to re-interpret the singular number value as the result of an absence of plural feature, hence eliminate the singular value from the system altogether, as argued in Kratzer (2008) for English? I will turn to this question in the next subsection.
8.2.5 Do We Still Need the Singular Number?

In Kratzer’s (2008) argumentation, there is not a number feature [singular] in languages like English. As a nominal number, the so-called ‘singular’ is the result of the absence of plural in both morphology and semantics. Nouns consist of a root and a piece of nominal inflection. The denotations of noun roots are cumulative, i.e. they denote the set that consists of atomics and their sums. The nominal inflection maps the denotations of noun roots onto sets of individuals or portions. There is an obligatory incorporated non-overt classifier for the nouns in languages like English so that the denotations of the noun roots are mapped onto a set that is subject to pluralization. The reason that there seem to be ‘singular’ nouns in these languages is that the [plural] feature can be absent in later projection:

(248)

\[
\begin{array}{c}
\text{n} \\
\ \ \\
\text{([plural])} \\
\ \ \\
\text{classifier} \\
\ \ \\
\sqrt{\text{n}}
\end{array}
\]

For Yucatec nouns, I have eliminated the [singular] feature both in the morphology and in the semantics. I have proposed that the hidden pseudo-partitive operator that combines with the nominal lexical items is responsible for the plural interpretations of the nouns. The syntactic position of the hidden pseudo-partitive operator is given in (148) in chapter 5 section 5.5.2, simplified below in (249):

(249)

\[
\begin{array}{c}
\text{XP} \\
\ \ \\
\text{nP} \\
\ \ \\
\ (\alpha_n) \\
\ \ \\
\text{nP} \\
\ \ \\
\ (\ldots) \\
\ \ \\
\text{n-stem}
\end{array}
\]
Compare (249) and (248). It is interesting to see that Yucatec and English nouns share similar internal structures, though not the way it is proposed in, for example, Borer (2005). Though being a classifier language, Yucatec Maya does not use classifiers, which are the head of a higher projection, to individuate and apportion; the function of individuating and portioning is carried by the pseudo-partitive operator, which is combined with the nominal stems whenever the noun is supposed to be subject to later number interpretation semantically. This is the first difference of the pseudo-partitive operator in languages like Yucatec Maya and the classifier in languages like English: the pseudo-partitive operator is not incorporated in the Yucatec nouns, hence not all Yucatec nouns are combined with the pseudo-partitive operator; on the other hand, the English classifier is incorporated in the English nouns, hence all English nouns have a built-in classifier. The pluralization of Yucatec nouns happens much later, in a higher nominal projection (e.g. an NP); only when the nominal stem combines with the pseudo-partitive operator within the Yucatec noun projection is it eligible for pluralization in the higher nominal projection. This is the second difference of the pseudo-partitive operator in languages like Yucatec Maya and the classifier in languages like English: the pseudo-partitive operator maps mass denotations to sets that can be subject to counting, but whether the result of the counting will be overtly expressed through plural marking depends on the semantics; in other words, the noun that has combined with the pseudo-partitive operator but does not later show plural morphology does not indicate [-plural], but rather, [general]. On the other hand, the English classifier maps kinds to sets of individuals or portions that can be pluralized; since all English nouns have an incorporated classifier, a lack of plural morphology or semantics results in [-plural].

In sum, we are not able to eliminate the singular number value from the Yucatec number system for two reasons. First, not all Yucatec nouns found in the syntax have the options between [+plural] and [-plural], as it is the case for

\begin{itemize}
  \item Recall, [general]=|plural|+other; in this case, [general]=|plural|+[-plural].
\end{itemize}
English. This is because some Yucatec nouns do not combine with the pseudo-partitive operator at the final stage of noun formation (e.g. nouns with generic interpretation) and hence can only have the number feature of [general] in the syntax. As a consequence, the absence of plural feature in Yucatec Maya does not necessarily result in [-plural], which is the value in place of singular in English, but rather, the sum of [-plural] and [general]. Second, even for the Yucatec nouns that have the options between [+plural] and [-plural], the absence of plural marking does not directly result in [-plural], but rather, [general]. Unlike English, [-plural] is not the direct consequence of the absence of [plural] in Yucatec Maya, but the consequence of some additional feature that indicates non-plurality.

8.3 Interaction Between Plurals and Pluractionals

8.3.1 Point of Departure

Bricker (Bricker et al. 1998: 334-335) mentioned the interplay of plurals and pluractional marker in Yucatec Maya. “We can infer [...] that an expression like táan u p’ejiko’ob is more likely to refer to a plural subject than to a plural object because the latter can be specified by suffixing -la’ant to the verb stem.” (ibid.: 335) In other words, the functions of -o’ob and PLR may overlap when it comes to indicating the number of the event participants.

In addition, data show that nominal plurality must be marked using one of these two grammatical strategies when the pluractional marker is present (cf. section 8.3.3 below).

8.3.2 Detour Into the Literature

A brief detour into the existing literature can help us better understand the close relation between the phenomena of pluractionality and nominal plurality.

As mentioned above, Wood (2007: 38-44) lists three aspects in which nominal and verbal plurality intertwine. First, the number interpretation of the verb can
be affected by the number of the arguments. Second, plurality of events often entails plurality of event participants. Third, there is some sort of functional overlap between nominal and verbal plurality in some languages, which serves as alternative ways of indicating plurality of arguments. As already argued, the last point of Wood’s statement is also testified by typologists in many languages (eg. Comrie 1979; Croft 1990): nominal plurality is more frequently marked higher on the animacy hierarchy whereas verbal plurality mainly marks the plurality of arguments that are of lower animacy.

In her article on the evolution of number marking, Mithun (1988) discusses number marking with different lexical categories and the grammaticalization of number in the languages in North America. By going through a large range of data, some interesting statements are made about the number category of the languages in North America, which may benefit our insights on number category in Mayan. First, in the majority of North American languages, only certain nouns, usually the ones that refer to human beings or kin terms, have plural forms, yet these plural forms are not necessarily used, even when the associated verbs overtly indicate that the nominal constituents should be plural in number. Second, contrary to the scarcity of number marking on nouns, North American verbs have a variety of number markers, such as bound pronouns, stem alternations and various derivational processes; the identical activity carried out by different numbers of agents can result in the usage of various lexical entries, hence the number of the objects involved is important for the lexical classification of the verbs; in addition, most North American languages have derivational verbal morphology that primarily reflects number. Third, the difference in number marking in nominal and verbal categories reflects the fact that North American languages are predominantly verb centered, hence number in these languages is primarily a verbal category, rather than a nominal one; with respect to the grammaticalization of number marking, it is usually the case in these languages that the verbal number markers and distinctions are extended to nouns, rather than the other way round; the plurality
of nouns is hence in many cases a reinterpretation of the verbal number function that is extended to nouns.

Cusic (1981) observes that “[m]ost languages with morphologically signalled plurality in the verb have optional or no number marking in the noun, while the distributive or collective plurality of the noun is often implied by the verbal plurality.” (ibid.:111-112) This is similar to Mithun’s (1988) claim that the verbal number morphology is more predominant in the vast majority of North American languages.

Corbett (2000: 255-257) discusses the possibility that verbal number can develop into nominal number. The diachronic development of the plural marker –en– in Georgian provides a piece of evidence for this dissertation. In the discussion of the number category in Common Kartvelian (below CK, proto-Georgian) in his dissertation, Tuite (1988: 85-99) argues that the Georgian pluralizer –en– is a number agreement morpheme (i.e. marking nominal number) which descends from a Common Georgian-Zan (below CGZ, ancestor of Georgian) verbal plurality morpheme *en (i.e. marking verbal number). With respect to the number opposition in CGZ and CK, a three-way opposition is proposed with the same sets of number morphemes: unspecified/singular vs. ‘true’ plural vs. collective for nominal, and unspecified/punctiliar vs. distributive-iterative vs. durative for verbal (ibid.:97). With respect to nominals in CK, only certain nouns are regularly marked for plural, and in the majority of cases, the number information of the nouns is “inferred from context, quantifiers, or the presence of a plural verb” (ibid.:98). These analyses are in line with the discussion in Mithun (1988: 228-231) on the functional shift of dericational affixes in North American languages over time. The main point of Mithun’s (ibid.) argumentation is likewise that the verbal pluractional morphemes can, due to mainly positional reasons, appear on nominals and change their core meanings to the ones that are more salient for nominals. For example, the functions of verbal number markers shift after they have become bound to nouns from marking distribution to pluralization.
As pointed out by England (2011), number marking and number agreement should be treated as two distinct though related phenomena. Within the Mayan family, the former can be either obligatory, as for high animate nouns (e.g. human nouns) in some Mayan languages, or optional, as for most other nouns (e.g. inanimate nouns, or nouns of all animacy level for some languages, such as Yucatec Maya); both cases are conditioned primarily by pragmatic factors (cf. chapter 5 for other conditioning factors beyond pragmatic in my analysis of optional plural marking in Yucatec Maya). Hence, for languages with optional plural marking, the absence of the plural marker results in unmarkedness (i.e. number-unspecified) rather than the marking of the opposite value (i.e. singular). On the other hand, the plural agreement is obligatory, meaning that the absence of the plural agreement marker equalizes the marking of the opposite value (i.e. singular); contrary to plural marking, plural agreement is conditioned primarily by syntactic factors.

In the discussion of the pluractional marking in Klamath (Penutian; United States) as described in Barker (1964), Lasersohn (1995: 257-264) notes:

For the most part, Klamath nouns are neutral between singular and plural readings. The result is that most sentences containing the pluractional marker admit either a temporal or a participant-based reading. However, a few exceptional nouns are lexically marked for number. These can be used to force one reading or another for the pluractional marker. If the agent argument is singular, for example, no possibility exists of a (non-contradictory) reading indicating action by multiple agents. Instead, a temporal reading (for example) is forced. Conversely, the use of lexically plural nouns may make participant-based readings more prominent. (Lasersohn 1995: 259-260)

In other words, Lasersohn (ibid.) argues that the primary function of the nominal number marker in Klamath is to disentangle the various verbal readings of the sentence, rather than to indicate the number of the noun. This is a piece of evidence that number marking on nouns restricts the interpretation of number marking on verbs.

Lasersohn (ibid.) further remarks:
Barker notes that “when the idea of ‘singleness’ or ‘groupness’ of action is meant,” the pluractional marker does not appear. . . . This point is reinforced by the lack of reduplicated forms for intrinsically collective predicates. . . . [S]ome of Barker’s comments suggest that the pluractional marker is in fact incompatible with lexically collective predicates.

(Lasersohn ibid.:260)

Here, Lasersohn (ibid.) argues that predicates with collective reading in Klamath, either due to the number marking of the event participants or due to the lexical meaning of the predicates, cannot be marked for pluractional. This is a piece of evidence that number marking on verbs is restricted by the number interpretation of nouns.

Further, Lasersohn (ibid.) writes:

When an action is performed by inanimate or non-rational entities, the pluractional marker is optional, and, in Barker’s words, “it occurs then only as a strongly emphatic marker of ‘distributiveness’.” . . . Barker’s stipulation that the pluractional marker is optional with inanimate agents suggests very strongly . . . that it is obligatory in cases of multiple action involving animate agents.

(Lasersohn ibid.:261)

Given the evidence that pluractional marking is optional with event participants of lower animacy, Lasersohn (ibid.) argues that plural events with event participants that are higher on the animacy hierarchy must be marked for pluractional.

Lasersohn’s (ibid.) arguments in the above mentioned discussion on Klamath can shed some light on the phenomenon of number in languages. First, nominal and verbal plural markers can be viewed as two sets of tools with different weight in a language; for verb-centered languages, this would mean that the use of verbal plural marker is primary in marking the plurality of events and event participants, the use of nominal plural marker is only necessarily when it comes to disambiguate interpretations. Second, the occurrence of verbal and nominal plural markers can be dependent on each other, hence these two sets of marking tools are related,
though they operate independently. Third, the marking of plurality of events and event participants also conforms with the animacy hierarchy of nouns. These arguments seem to indicate that, for verb-centered languages, the main function of both nominal and verbal plural markers is to indicate verbal plurality, and the reason that there are two sets of tools, instead of one, is that it helps with disambiguating the interpretations of the sentence.

8.3.3 Data Close Reading

A close reading of the entire list of plurational data extracted from the two series of *Narraciones Mayas* as well as the online corpus *Textos mayas* (250-263) suggests that the plurality of both the internal and external arguments in PLR-sentences must be overtly marked by at least one number marking strategy. Further, these data support a stronger claim then what is said in Bricker et al. (1998: 334-335): the plural agreement morphology *-o’ob* in a PLR-clause must refer to an ergative argument, unless ergative agreement is banned in the clause.

8.3.3.1 Transitives

Let us look at the sentences with transitive verbs first. Recall that for events denoted by transitive PLR-predicates, the event must be plural, the direct object (i.e. the internal event participant) must also be plural, but there is no restrictions on the number of the subject (cf. section 7.4.1).

(250-257) are sentences of verbal plurality with distributivity, hence the objects in these sentences must be plural, but the subject can be plural or non-plural. We now take a look at these sentences in turn and see how the number of the subjects and objects is made overt.

In (250), the subject is singular which is marked by the ergative proclitic *in*; the direct object of the verb is present, and the plurality of the object is marked by the nominal plural marker *-o’ob* directly on the object noun *nu’ukul*: 
(250) T-in p’o’o-la’an-t-ik u nu’ukul-o’ob.

PROG-A.1 wash-PLR-TR-IND A.3 tool-PL

‘I would be washing their dishes.’

(251) is a verbal complement clause (cf. Gutiérrez Bravo 2010, 2015: 72-75) with a fronted sentential topic, the pluractional morpheme is within the bracketed clause. In this subordinate clause, the transitive subject is plural, since the subject noun is absent in this clause, the plurality of the subject is shown on the verb through ergative agreement u ...-o’ob; the transitive object in this clause is plural and present, the plurality of the object is marked with the nominal plural marker -o’ob on the right phrase boundary of the object NP:

(251) Le Nenelá’-o’, t-u máan [u tóok-la’an-t-o’ob u y-otoch


y-éet wiínik-il-o’ob].

EP-union man-REL-PL

‘As to Nenelá, they went burning down the houses of the fellow men.’

(NM-134)

In (252), the pluractional morphology is within the bracketed clause. Recall that the agent focus form is a verbal form that lacks ergative agreement and any types of auxiliary (cf. section 2.4.6). Due to the agent focus morphology in this clause, the number of the subject is unclear; the object noun is absent in this clause, the plurality of the object is shown on the verb via absolutive agreement:

(252) Pues le semillero, pues ts’o’ok u nuk-t-a-l [k’a’ana’an

so DET seedbed so TRM A.3 grow-TR-PASS-IND necessary

xak’-la’an-t-ik-o’ob te’ lu’um-o’ob-o’].

jumble.AF-PLR-TR-IND-PL LOC earth-PL-CL

‘So the seeds have grown, it is necessary to transplant them to the earth.’

247
In (253), the subject is singular, it is expressed through the use of the ergative proclitic *in*; the direct object of the verb is present, the plurality of the object is marked with the nominal plural marker *-o’ob* directly on the object noun *k’áax*:

(253) *Je’ in kach-la’an-t-ik le k’áax-o’ob-a’.*

ASV A.1 split-PLR-TR-IND DET forest-PL-CL

‘I would certainly cut these shrubs one after another.’

(TM-hnaz_053.2)

(254) is similar to (253). The subject is singular, it is expressed through the use of ergative proclitic *u*; the direct object of the verb is present, the plurality of the object is marked with the nominal plural marker *-o’ob* directly on the object noun *áak’*:

(254) *Ka jo’op’ u wach’-la’an-t-ik le áak’-o’ob-o’.*

and INCEP A.3 untie-PLR-TR-IND DET liana-PL-CL

‘And he started to disentangle the lianas one after another.’

(TM-hnaz_054.1)

The bracketed clause in (255) is another case of pluractional construction with agent focus morphology (compare with (252)). The plural *-o’ob* on the verb in this clause therefore signifies absolutive agreement with the object number:

(255) *K-in súj-ik teech, [bis-la’an-t-o’ob].*

HAB-A.1 give.as.present-IND 2.SG take.AF-PLR-TR-PL

‘I give them to you as a present, take them with you.’

(TM-kolkaab_39.3)

The following two examples are from the same text, *Ka’atúul suku’uno’ob yéetel jt’uup* ‘Two older brothers and the youngest brother’. Though they share the same verb *t’oxla’antik* (cf. section 2.5.1), the contexts are a bit different.
In (256), the subject is singular, the event of distributing the tortillas is plural. Now, the direct object of the distributing event is not the bundle itself but some mereological parts of the entire entity that is referred to by *le to' je'ela’* ‘this bundle (of tortillas)’, hence the direct object of the pluractional verb is in fact plural. Since the lexical item “part” or the like is not overtly present in the sentence, the plural cannot be marked on the noun; nor can it be marked through agreement on the verb due to a lack of controller of the plural agreement. As a result, the singular subject is marked with the singular ergative proclitic *a*, the plurality of the event is marked with the pluractional marker, which simultaneously indicates the plurality of the covert direct object:

(256)  
\[
\text{Le to’ je’el-a’ k-a t’ox-la’an-t-ik-Ø t-a}
\]

\[
\text{DET bundle ASV-CL HAB-A.2 distribute-PLR-TR-IND-B.3SG LOC-A.2}
\]

\[
\text{baatsil-e’ex.}
\]

\[
\text{among.themselves-B.2PL}
\]

‘This bundle (of tortillas), you share it among yourselves.’

(TM-ka’tuul_05)

Likewise, in (257), the direct object of the distributing event is not *le k’áak’bil kaaxa’* ‘this grilled chicken’ which is mentioned in the previous sentence, but some mereological parts of this chicken, hence the direct object of the pluractional verb is also plural. Due to a lack of lexical controller, the plurality of the direct object cannot be marked neither on the noun nor through agreement on the verb. Consequently, in this sentence, the plural subject is marked with the plural ergative proclitic *k*, the plurality of the event is marked with the pluractional marker, which simultaneously indicates the plurality of the covert direct object:

(257)  
\[
\text{K’abéét k t’ox-la’an-t-ik-Ø.}
\]

\[
\text{OBL A.1PL distribute-PLR-TR-IND-B.3SG}
\]

‘We have to share it.’

(TM-ka’tuul_10)
The plural marking of the subjects and objects in the above data is summarized in the following tables (8.1-8.2):

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Table 8.2: Plural marking of transitive subjects in pluractional environment

We can see from the above table that plural subjects in transitive pluractional sentences are always marked for plurality ((251) and (257)). Since none of the subject nouns are present in the above data, all plural subjects are marked through ergative agreement using the respective set A clitics. Note that singular subjects (as opposed to general subjects) are also obligatorily marked for number ((250), (253), (254) and (256)); in these cases, the number is marked through ergative agreement using the respective set A clitics.

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Table 8.3: Plural marking of transitive objects in pluractional environment

We can see from the above table that the transitive objects of pluractional sentences are always plural. The plural objects are always marked: (i) through the use of the distributive pluractional morpheme \(-la’an\), (ii) through direct number
marking on the noun, or (iii) through absolutive agreement on the verb. Marking strategy (i) is always present; marking strategy (ii) is used when the object noun is present. Now, alone from the data above, there are two ways to assume when to use marking strategy (iii): either it is used whenever the object noun is omitted, as a complementary marking strategy for (ii); or it is used only in clauses that lack ergative agreement, in which case there will be no ambiguity as whether the plural agreement on the verb agrees with the ergative subject or with the absolutive object. However, data from other sources (e.g. the examples cited in chapter 7) show that there are pluractional sentences in which the plural object nouns are omitted but there is no absolutive agreement on the verb, which serves as a piece of negative evidence that argues against the assumption that marking strategy (iii) has to be used whenever the object noun is absent. (256) and (257) are peculiar for the reasons already discussed above, hence we are going to leave them aside for now.

We now have a clear pattern with respect to the plural marking of subjects and objects in transitive PLR-sentences in front of us. In these sentences, the presence of the PLR morpheme indicates plural objects; if the object noun is present, the plurality of the object is marked additionally on the object noun with the nominal plural marker -o’ob; if the sentence forbids ergative agreement (e.g. agent focus, imperative) and the object noun is also not present, then the number of the plural object can be shown on the verb through absolutive agreement. In regards to plural subjects, they must be marked through ergative agreement on the verb. This pattern supports Bricker’s conjecture (Bricker et al. 1998: 334-335) mentioned at the beginning of the current section.

8.3.3.2 Intransitives

Let us now turn to intransitive verbs. Recall that for events denoted by intransitive PLR-predicates, the event must be plural and the subject (i.e. the internal event participants) must also be plural (cf. section 7.4.1). (258-263) are intransitive
PLR-sentences, hence the subjects in these sentences must be plural.

In (258), the pluractional morpheme is within the first matrix clause (see the bracketed segment below for a simplified version). The subject of this intransitive clause is a collective noun *gente* ‘people’. Similar with (256) and (257), it is not *gente* as a whole, but parts of *gente* that carries out the plural action, hence the internal argument of the plural event should be plural, even though the lexical item “part” or the like is not present:

(258) *Pero* [je’ k-u  bin-la’aj le  *gente*] te’  t-u  vez  uti’al u

but  ASV  HAB-A.3  go-PLR  DET  people  LOC  PROG-A.3  time  for  A.3

bin u  jóok’-ol  tak  Ts’íitbalché’,  t-u  pívuts’-ul-o’ob.

*go*  A.3  leave-IND  until  Dzitbalché  PROG-A.3  escape-IND-PL

‘But there went the people, they were going to Dzitbalché, they were escaping.’

(NMC-156)

In (259), the subject is plural, and the subject noun is marked by -o’ob:

(259) *Ka*  bin-la’aj le  *señora*-o’ob-o’  te’  le  sala.

and  go-PLR  DET  woman-PL-CL  LOC  DET  living.room

‘And the women went into the living room.’

(NMC-158)

Likewise, in (260), the subject is plural, and the subject noun is marked by -o’ob:

(260) *Ka*  je-b-la’aj-∅  le  caja-’ob-o’.

and  open-PASS-PLR-PFV  DET  coffin-PL-CL

‘Then the coffins were opened one by one.’

(NMC-158)

(261) is an intransitive case of pronominal relative clause (cf. Gutiérrez Bravo 2012, 2013), the head of the relative clause is underlined whereas the relative clause
itself is enclosed in the brackets. The pluractional morpheme appears within the relative clause, the intransitive subject of the relative clause is plural, but the subject noun is absent, hence the plural number of the intransitive subject within the relative clause is shown on the verb through absolutive agreement (cf. section 2.4.4 on split ergativity):

(261)  
\[ \text{Bey le } \text{ba'al-}o'ob \ [\text{úuch-la'}aj-}o'ob \ \text{úuch}]^{-o'}. \]

Thus DET thing-PL happen-PLR-PFV-B.3PL long.ago-CL

‘So this was the way things happened a very long time ago.’

(NMC-159)

In (262), the subject is plural, but the subject noun is absent; the plurality of the intransitive subject is shown on the verb through ergative agreement (cf. section 2.4.4 on split ergativity):

(262)  
\[ \text{Ma' u } \text{seeb te'ej-la'}-o'ob. \]

NEG A.3 quickly crack.PASS-PLR-IND-PL

‘They don’t crack quickly.’

(NM-16)

Likewise, the subject is plural in (263), but the subject noun is not present; the plurality of the intransitive subject is shown on the verb through ergative agreement:

(263)  
\[ \text{Ma' u } \text{xik-la'}-o'ob. \]

NEG A.3 burst.ANTICAUS-PLR-IND-PL

‘They don’t burst.’

(NM-16)

The plural marking of the intransitive subjects in the above data is summarized in the following table (8.3):
Table 8.4: Plural marking of intransitive subjects in pluractional environment

We can see from the above table that intransitive subjects in pluractional sentences are always marked for plurality. If the subject noun is present, the plurality is marked directly on the noun with -"obo; if the subject noun is absent, subject plurality is shown on the verb via agreement. Additionally, the plurality of the intransitive subjects is indicated by the pluractional morpheme -la’aj. (258) is peculiar among these data because the noun used for the intransitive subject is a collective term, hence we are going to leave it aside for now.

8.3.4 Findings

Now, let me summarize the empirical findings from the above data close reading in this subsection.

First, PLR-clauses always indicate plurality of both the events and the internal arguments.

Second, the plurality of the internal argument is often marked additionally by means of nominal plural marking. This is done either directly on the noun in cases where the internal argument nouns are present, or via agreement morphology on the verb in cases where no ambiguity concerning the agreement controller would arise.

Third, the plurality and the singularity (but not the generality) of the external arguments of the PLR-clauses (i.e. the transitive subjects) must be marked. This is done either directly on the noun in cases where the subject nouns are present, or via ergative agreement on the verb when otherwise. The latter therefore predicts
that the plural agreement morphology -o’ob on the verb of a PLR-clause must agree with the number of the ergative argument, unless ergative agreement is impossible for the given clause (e.g. agent focus, irrealis and perfective mood of intransitive clauses). This finding is in line with Bricker’s claim (Bricker et al. 1998: 334-335) that the plural agreement morphology -o’ob on the transitive verb is more likely to refer to a plural subject than to a plural object because the latter can be specified by suffixing PLR to the verb stem. Nevertheless, the finding presented above supports a stronger claim: the plural agreement morphology -o’ob on the transitive verb must refer to a plural subject unless ergative agreement is banned; on the other hand, the plural agreement morphology -o’ob on the intransitive verb must always refer to a plural subject.

Finally, the data above also seem to suggest that the NPs in the PLR-clauses, as long as they are present, must be obligatorily marked by the nominal plural marker -o’ob whenever they have plural referents, regardless of whether they are internal or external arguments of the verbs. If this is true, it will be a fascinating data point because it is then a case of obligatory plural marking in Yucatec Maya, a language in which nominal plural marking is essentially optional. However, more data will be needed to make a certain claim of this sort. I leave this for future research.

### 8.3.5 Obligatoriness in Yucatec Plural Marking

Before closing this chapter, I want to add a few words to the highlight of the above data close reading, namely, the discovery of obligatoriness in number marking in Yucatec Maya. While the optionality of number marking has been widely reported in the previous literature (cf. section 5.2-5.3), few have mentioned the obligatoriness in number marking, and none has mentioned the obligatoriness in

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7Exceptions are when collective terms are used or when part-whole relation is implied, as discussed above. I do not have a good explanation other than what is said above for these exceptions for the time being.

8As far as I know, only Uth and Gutiérrez Bravo (2018) and Gutiérrez Bravo and Uth (2020) have concerned the problem of obligatoriness in number marking in Yucatec Maya. However,
number marking without loanwords or loan structures. In this regard, the spotting of obligatoriness in number marking in pure Yucatec words and structures is worth noting.

Three aspects of obligatory number marking in Yucatec Maya are spotted. First, the grammatical indication of plurality of the internal arguments (i.e. the transitive objects and the intransitive subjects) under the discourse context of event plurality and distributivity is obligatory. The grammatical indication of plurality must be done with at least one of the following morphological means: (i) nominal plural marking on the noun with \(-o'ob\); (ii) plural actional marking on the verb with PLR; (iii) plural agreement on the verb.

Second, the grammatical indication of plurality and singularity (but not generality) of the external arguments (i.e. the transitive subjects) of the PLR-clauses is obligatory. If the subject noun is present, then the noun must receive plural marking with \(-o'ob\); if the subject noun is absent, then the grammatical number must be indicated through agreement morphology on the verb.

Third, the nominal plural marking of the NPs with \(-o'ob\) in the PLR-clauses is obligatory, irrespective of the syntactic positions of the NPs. However, since data of PLR-clauses with present NPs are rare in the corpus, I leave it for future research to determine whether this is an over-generalization of my corpus study, or it is indeed a case of obligatoriness.

8.4 Summary

In this chapter, I have brought together the phenomenon of number and plurality in both nominal and verbal categories in Yucatec Maya. By comparing the verbal number system with the nominal, I argued that the number opposition in verbal number system is general-plural, rather than the commonly assumed singular-plural. As a consequence, I proposed a unified number system for both nominal

their work only discusses the obligatory number marking in loan structures with loan morphology.
and verbal categories in Yucatec Maya. In addition, I discussed why the singular number value is indispensable in Yucatec Maya, contrary to languages like English.

I then investigated the overt grammatical marking of plural arguments in plural events in Yucatec Maya under the discourse context of event plurality and distributivity. Drawing evidence from a close reading of the corpus data, I argued that there are a few cases of obligatoriness in number marking in Yucatec Maya, a language which is reported to have optional plural marking and plural agreement. These findings invite closer examinations on the exact conditions of the grammatical expression of number in Yucatec Maya in future researches.
Chapter 9

Conclusion

In this chapter, I will briefly recap the major results of this dissertation and mention several directions for future research.

9.1 Main Results

In this dissertation, I investigated the grammatical category of number in both nominal and verbal domains in Yucatec Maya, a Mayan language spoken in Yucatán Peninsula in Mexico. There are many ways to express grammatical number in Yucatec Maya, I focused on the suffixes that mark plurality, that is, in the nominal category I looked mainly at the suffix -o’ob, and in the verbal category I looked mainly at the suffix PLR, which has two allomorphs, -la’an and -la’aj.

As the structure of this dissertation manifests, three main research questions were concerned:

- How to understand the optionality in plural marking in Yucatec Maya, and what are the underlying factors that contribute to this optionality?
- Are there grammatical expressions of pluractionality in Yucatec Maya, and how should the pluralactional morpheme(s) be understood, both language-specifically and cross-linguistically?
• Are there any parallelism between the nominal and verbal number categories, and how do they interact with each other?

Part II through Part IV of this dissertation scrutinized these questions in turn. The answers to these questions can also be grouped into four major themes, which is the way I will present the summary of the main results in this section.

Theme 1: Optionality in Yucatec plural marking revisit

The optionality of plural marking in Yucatec has been widely reported (Andrade 1955; Lehmann 1998; Lucy 1992; Briceño Chel 2002) and experimentally and statistically attested (Butler 2011, 2012, 2013; Butler et al. 2014; Schellenbach 2018). While the syntactic analysis proposed by Butler (2011, 2012, 2013) is effective in accounting for the optionality, other related issues such as when and why the plural morphology surfaces remain unanswered. In Part II of this dissertation, I revisited the phenomenon of optional plural marking in Yucatec Maya. The main claim is that the systematic optionality of the nominal plural marking in Yucatec Maya is the result of the variation in noun denotations (Borer 2005; Chierchia 1998a,b) that varies between apportionable and generic. These two variations are the consequence of an optional pseudo-partitive operation (Selkirk 1977; Higginbotham 1994) available at the final stage of the interpretation of the nouns in the semantics.

Theme 2: Pluractionality in Yucatec Maya

Pluractionality in Yucatec Maya has not received much attention in previous literature. In Part III of this dissertation, I focused on the investigation of the pluractional suffix in Yucatec Maya. I first determined the morphological form of the pluractional suffix in Yucatec Maya by examining the morphological distribution of the potential morphs. After a preliminary survey and comparing its semantic properties with the semantic typology of pluractionality (Wood 2007;
Henderson 2017), I concluded that the pluractional suffix in Yucatec Maya corresponds to an event-external pluractional in the typology. I further examined a few language-specific semantic properties of the Yucatec pluractional suffix and concluded that it is a distributive pluractional. On top of the morphological and semantic description of the Yucatec pluractional suffix, I further presented a formal analysis of this suffix. Moreover, I demonstrated how this analysis is effective in accounting for all the descriptive details of the pluractional suffix in Yucatec Maya.

Theme 3: Interaction between nominal and verbal number

While the optionality of number marking has been widely reported in the previous literature, none has observed the obligatoriness in number marking in Yucatec Maya. In part IV of this dissertation, I brought together the related linguistic phenomena of number in both nominal and verbal categories and investigated the overt grammatical marking of plural arguments and/or plural events under the discourse context of event plurality and distributivity in Yucatec Maya. Drawing empirical evidence from a corpus study, I spotted several cases of obligatoriness in plural marking and agreement: (i) the grammatical indication of plurality of the internal arguments under the discourse context of event plurality and distributivity; (ii) the grammatical indication of plurality and singularity of the external arguments of the \( plr \)-clauses; (iii) the nominal plural marking of the NPs in the \( plr \)-clauses.

Theme 4: Number system of Yucatec Maya

The first step before any claim can be made about the puzzles of number in any given language is the determination of meaning distinctions in the number system (Corbett 2000: 9). As a result, this last theme has been present throughout the entire dissertation. In Part II, I have determined that the number opposition in the nominal number system is exclusive plural versus general. In Part IV, I have
argued that the number opposition in the verbal number system is also exclusive plural versus general, as opposed to the commonly assumed plural versus singular. As a consequence, I proposed a unified number system for both nominal and verbal categories in Yucatec Maya.

9.2 Future Research

In this final section, I would like to point out two of the many possible directions for future research building on the results presented in this dissertation.

Direction 1: Pseudo-partitive operation and universality

My proposal of the pseudo-partitive operation in chapter 5 is effective in accounting for the optionality of number marking as well as the co-occurrence of the classifiers and the plural marker in Yucatec Maya, as demonstrated from 5.5.2 to 5.5.4. Now, since this account is delimited to the treatment of Yucatec nouns, is it possible to extend the account so that it can also include the treatment of Spanish loanwords?

As mentioned in 5.2.1.1, in addition to the traditional Yucatec plural marking, Spanish loan nouns in Yucatec Maya can be pluralized by the Spanish plural suffix -s (264). These Spanish loan nouns also allow double plural marking -s-o’ob (Uth and Gutiérrez Bravo 2018) (265). Moreover, the Spanish loan nouns in Yucatec Maya that are preceded by Spanish numerals receive obligatory plural marking -s, which is the same way plural marking works in Spanish (Uth and Gutiérrez Bravo 2018; Gutiérrez Bravo and Uth 2020) (264).

(264)  ocho  u  tūul-ul  señora-s
     eight A.3  CLF.AN-REL  woman-PL

‘eight women’

(NM-273)
A tentative answer to the above question is yes, though below I will only outline the solution and leave the formal details for future research.

The proposal of the pseudo-partitive operation can be extended to also account for Spanish loan nouns in Yucatec Maya. The simplest solution to this extension is to treat the Spanish loanwords as doppelgängers: depending on the particular syntactic setting, a Spanish loan noun can enter a syntactic projection either as a Spanish noun with all its features borrowed from Spanish, or as a Yucatec noun. The latter case is already accounted for by the proposed analysis. For the former case, if a Spanish numeral heads a QP in the syntax and c-selects a NumP, then the Spanish loan noun merged within the NumP must carry features of a Spanish noun and is therefore obligatorily pluralized by the Spanish plural marker -s (cf. the syntactic analysis of this construction in Gutiérrez Bravo and Uth 2020). The semantic computation of these projections follows accordingly.

I think the solution sketched out above is on the right track, given the empirical evidence available thus far. There are several apparent advantages of this solution. First, it retains a unified nominal system. Second, it can successfully account for the observation that the double plural marking on Spanish loan nouns is only in the sequence of -o’ob-s, but not other way round. Third, a doppelgänger analysis is compatible with the observation of language change that is happening in Yucatec due to language contact (e.g. Pfeiler 2009).

Further, it would be interesting to pursue the question of whether the proposal of the pseudo-partitive operation is applicable cross-linguistically. Since one of the obvious advantages of introducing such an operation is that it provides an account for languages that allow the co-occurrence of both classifiers and number markers, a phenomenon that previous proposals such as Chierchia (1998) or Borer (2005)
fail to account for, it would be interesting to look into languages of this specific type and see whether my proposal applies analogously there.

**Direction 2: Event-internal pluractionality in Yucatec Maya**

I have mentioned in 7.2.1 that root reduplication is another morphological strategy to express pluractionality in Yucatec Maya, on top of the pluractional suffixation discussed in length in this dissertation. Moreover, the preliminary study of the data suggests that root reduplication expresses event-internal pluractionality (cf. table 7.1). It would of course be another interesting research direction to scrutinize the morphological forms and the semantic contribution of root reduplication in Yucatec Maya.

The investigation of root reduplication in Yucatec Maya would be trickier than the investigation of pluractional suffixation as presented in this dissertation. Yucatec Maya, like many other Mayan languages, is argued to have roots that cannot be classified into rigid root classes (e.g. Lois and Vapnarsky 2003 for Yucatecan branch; Coon 2004 for Cholan branch; see also the summary of literature on Mayan root classification in 2.4.1). As a result, it would require great meticulousness in order to determine the exact semantic contribution of one morphology (among many) at the root level, that is, before the stem is formed and the categorial and lexical information is fixed. In addition, the pluractional verb formed from root reduplication is oftentimes related to an adjective form that is of a similar shape, which makes it difficult to determine whether the pluractional meaning is primary or secondary. For example, (266a) is a verb and (266b) is an adjective; it is not easy to determine which one is first derived from the root *p’ej*.

(266)  
\[a. \quad p’e’ep’ej \quad \text{‘chip several time’} \]
\[b. \quad p’e’ep’e’ej \quad \text{‘chipped in several places’} \quad \text{(Bricker et al. 1998: 334)} \]

I will leave these difficult yet fascinating questions for future research.
Appendix A

Consultants

The detailed information of the consultants with whom I have worked during the fieldwork from 2018 to 2020 is given below. I am grateful for the knowledge of language they shared with me.
<table>
<thead>
<tr>
<th>Consultant</th>
<th>Age</th>
<th>Gender</th>
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<th>Origin</th>
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</thead>
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<td>Popolá, Yucatán</td>
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<tr>
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<td>Sisbichén, Yucatán</td>
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<td>F</td>
<td>Valladolid, Yucatán</td>
<td>Santa Rosa, Quintana Roo</td>
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<td>Popolá, Yucatán</td>
</tr>
<tr>
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<td>19</td>
<td>M</td>
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<td>Santa Rita, Yucatán</td>
</tr>
<tr>
<td>06 CIN</td>
<td>18</td>
<td>F</td>
<td>Valladolid, Yucatán</td>
<td>Dzitnup, Yucatán</td>
</tr>
<tr>
<td>07 JOS</td>
<td>19</td>
<td>M</td>
<td>Valladolid, Yucatán</td>
<td>X'Tul, Yucatán</td>
</tr>
<tr>
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<td>19</td>
<td>F</td>
<td>San Francisco de Campeche</td>
<td>San Francisco de Quito Roo, Campeche</td>
</tr>
<tr>
<td>09 ALE</td>
<td>59</td>
<td>M</td>
<td>San Francisco de Campeche</td>
<td>Calkini, Campeche</td>
</tr>
<tr>
<td>10 ROM</td>
<td>44</td>
<td>M</td>
<td>San Francisco de Campeche</td>
<td>Ukum, Hopelchen, Campeche</td>
</tr>
<tr>
<td>11 IRE</td>
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<td>F</td>
<td>Felipe Carrillo Puerto, Quintana Roo</td>
<td>Yaxley, Quintana Roo</td>
</tr>
<tr>
<td>12 AME</td>
<td>47</td>
<td>F</td>
<td>Mérida, Yucatán</td>
<td>Timucuy, Yucatán</td>
</tr>
<tr>
<td>13 FLO</td>
<td>40</td>
<td>F</td>
<td>Mérida, Yucatán</td>
<td>Timucuy, Yucatán</td>
</tr>
</tbody>
</table>

1Place of the interview.
2The person’s place of origin.

**268**
<table>
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<tr>
<th>Consultant</th>
<th>First Language</th>
<th>Bilingualism</th>
<th>Literacy</th>
<th>Occupation</th>
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<td>02 WEN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
<tr>
<td>03 KAT</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
<tr>
<td>04 MAR</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
<tr>
<td>05 EDW</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
<tr>
<td>06 CIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
<tr>
<td>07 JOS</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
<tr>
<td>08 ANG</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Student</td>
</tr>
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<td>09 ALE</td>
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<td>Yes</td>
<td>Teacher</td>
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<td>Yes</td>
<td>Yes</td>
<td>Teacher</td>
</tr>
<tr>
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<td>Yes</td>
<td>Yes</td>
<td>Teacher</td>
</tr>
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<td>Yes</td>
<td>Yes</td>
<td>Teacher, author</td>
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<tr>
<td>13 FLO</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Teacher, researcher</td>
</tr>
</tbody>
</table>

3 Is Yucatec the person’s first acquired language or, in case of multilingualism, one of the first acquired languages?
4 Is the person Yucatec-Spanish bilingual?
5 Can the person read and write in Yucatec?
Appendix B

Questionnaires

The following questionnaires are mentioned in section 3.6. They were used the way described in section 3.6. These questionnaires were designed for the elicitation of the plurational morphs in Yucatec Maya, namely, -la’an and -la’aj, as well as for the determination of the semantic properties of these plurational morphs under the discourse context of event plurality and distributivity.

Questionnaire 1: Transitivity and Distribution

Session 1

¿Puedes decir las siguientes frases?

A.

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<tr>
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<tr>
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<td>ku ts’onla’antik le máako’</td>
</tr>
<tr>
<td>2 (T2)</td>
<td>táan u willa’antik</td>
</tr>
<tr>
<td>3 (T3-1)</td>
<td>jo’op’ u xóobla’antik</td>
</tr>
<tr>
<td>4 (T3-2)</td>
<td>jo’op’ u xóobla’ajtik</td>
</tr>
<tr>
<td>5 (T4-1)</td>
<td>bíin u kiinsla’ant</td>
</tr>
<tr>
<td>6 (T4-2)</td>
<td>bíin u kiinla’ajs</td>
</tr>
<tr>
<td>7 (N1-1)</td>
<td>ka áalkabna’ajajo’obi’</td>
</tr>
</tbody>
</table>
B.

<table>
<thead>
<tr>
<th>T1</th>
<th>ku ts'onla'ajik le máako'</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>táan u willa'ajik</td>
</tr>
<tr>
<td>T3-1</td>
<td>jo'op' u xóobtl'a'ajik</td>
</tr>
<tr>
<td>T3-2</td>
<td>jo'op' u xóobl'a'antik</td>
</tr>
<tr>
<td>T4-1</td>
<td>bíin u kiinsla'aj</td>
</tr>
<tr>
<td>T4-2</td>
<td>bíin u kiinla'ans</td>
</tr>
</tbody>
</table>

C.

<table>
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<tr>
<th>T1</th>
<th>ku ts'onla'ajtik le máako'</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>táan u willa'ajtik</td>
</tr>
<tr>
<td>T3-1</td>
<td>jo'op' u xóobtl'a'ajtik</td>
</tr>
<tr>
<td>T3-2</td>
<td>jo'op' u xóobl'a'antik</td>
</tr>
<tr>
<td>T4-1</td>
<td>bíin u kiinsla'ajt</td>
</tr>
<tr>
<td>T4-2</td>
<td>bíin u kiinla'ans</td>
</tr>
<tr>
<td>N1-1</td>
<td>ka áalkablna'anajo'obi'</td>
</tr>
<tr>
<td>N1-2</td>
<td>ka áalkabla'annajo'obi'</td>
</tr>
<tr>
<td>N2</td>
<td>bíin kfiimla'anik</td>
</tr>
<tr>
<td>N3</td>
<td>ku xo'otla'antal</td>
</tr>
<tr>
<td>(N1-2)</td>
<td>ka áalkabla’annajo’obi’</td>
</tr>
<tr>
<td>(N2)</td>
<td>bín kímla’anik</td>
</tr>
<tr>
<td>(N3)</td>
<td>ku xo’otla’anal</td>
</tr>
</tbody>
</table>

**Session 2**

¿Puedes decir las siguientes frases?

**A.**

| (N4-1) | ku k’éela’ala’ajal le ixi’imo’ |
| (N4-2) | ku k’éella’anta’al le ixi’imo’ |
| (N5)   | táan u ts’oonla’aj          |
| (N6-1) | táan in wilajla’aj         |
| (N6-2) | táan in willa’antaj        |
| (N6-3) | táan u wilajla’aj          |
| (N6-4) | táan u willa’antaj         |
| (N6-5) | ku wilajla’aj              |
| (N6-6) | ku willa’antaj             |
| (N7)   | ka’aj p’éejla’ajak         |

**B.**

<p>| (N4-1) | ku k’éela’ala’anal le ixi’imo’ |
| (N4-2) | ku k’éella’ajta’al le ixi’imo’ |
| (N5)   | táan u ts’oonla’antik       |
| (N6-1) | táan in wilajla’antik       |</p>
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<td></td>
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<td>18 (N6-5)</td>
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<tr>
<td>19 (N6-6)</td>
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<td></td>
</tr>
<tr>
<td>20 (N7)</td>
<td>ka’aj p’eelja’antak</td>
<td></td>
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</table>

### C.

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<td>ku k’éela’ajta’al le ixi’imo’</td>
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<tr>
<td>13 (N5)</td>
<td>táan u ts’oonla’an</td>
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</tr>
<tr>
<td>14 (N6-1)</td>
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</tr>
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<td>15 (N6-2)</td>
<td>táan in willa’ajtaj</td>
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</tr>
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<td>16 (N6-3)</td>
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</table>

### Session 3

¿Puedes decir las siguientes frases?

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<td>kāa ts‘íibtl’a’anta’ak</td>
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<td>kāa ts‘íibla’ajta’ak</td>
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<td>25 (N9-2)</td>
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<td>jo’op u xuuxla’ajtajik</td>
</tr>
<tr>
<td>30 (N11-1)</td>
<td>bíín u kiinsajla’aj</td>
</tr>
</tbody>
</table>

**B.**

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<td>kāa ts‘íibtl’a’aja’ak</td>
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<td>25 (N9-2)</td>
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<td>26 (N9-3)</td>
<td>ti’ u kiinla’antsa’ab</td>
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<td>bíín u kiinsajla’antik</td>
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**C.**

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### Session 4

¿Puedes decir las siguientes frases?

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<tr>
<td>34 (N12-2)</td>
<td>ts’oonlá’ajnaji’</td>
</tr>
<tr>
<td>35 (N13-1)</td>
<td>ku wilajnla’aajaj</td>
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<td>36 (N13-2)</td>
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<tr>
<td>37 (N13-3)</td>
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**B.**

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</tr>
<tr>
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</tr>
<tr>
<td>32 (N11-1)</td>
<td>bíín u kiinla’antsaj</td>
</tr>
<tr>
<td>33 (N12-1)</td>
<td>ts’oonla’antaj</td>
</tr>
<tr>
<td>34 (N12-2)</td>
<td>ts’oonla’antnaj</td>
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<tr>
<td>35 (N13-1)</td>
<td>ilajnla’antaj</td>
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<tr>
<td>36 (N13-2)</td>
<td>ilajla’antnaj</td>
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<td>37 (N13-3)</td>
<td>illa’ajajnaj</td>
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<thead>
<tr>
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<tbody>
<tr>
<td>31 (N11-1)</td>
<td>bíín u kiinsla’ajtaj</td>
</tr>
<tr>
<td>32 (N11-1)</td>
<td>bíín u kiinla’ansaj</td>
</tr>
<tr>
<td>33 (N12-1)</td>
<td>ts’oonnla’anaj</td>
</tr>
<tr>
<td>34 (N12-2)</td>
<td>ts’oonla’annaji’</td>
</tr>
<tr>
<td>35 (N13-1)</td>
<td>ku wilajnla’anaj</td>
</tr>
<tr>
<td>36 (N13-2)</td>
<td>ilajla’annaj</td>
</tr>
<tr>
<td>37 (N13-3)</td>
<td>ila’ajtajnaj</td>
</tr>
<tr>
<td>38 (N6-7)</td>
<td>ku wila’antajla’aj</td>
</tr>
<tr>
<td>39 (N8-4)</td>
<td>ka ts’íbla’ajtlal’a’ak</td>
</tr>
</tbody>
</table>

**Questionnaire 2: Aspectual Selection and Atelicity**

**Task 1**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>ku wojella’antik le máako’</td>
</tr>
<tr>
<td>(2)</td>
<td>ku wojela’ala’ajel</td>
</tr>
<tr>
<td>(3)</td>
<td>Tu áalkabsla’antaji’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>(4)</td>
<td>Tu áalkabla’ajnaji’</td>
</tr>
<tr>
<td>(5)</td>
<td>bín u kiinsla’antej</td>
</tr>
<tr>
<td>(6)</td>
<td>bín u kímla’ajik</td>
</tr>
<tr>
<td>(7)</td>
<td>ku meentla’antik u naj</td>
</tr>
<tr>
<td>(8)</td>
<td>ku meenta’ala’ajel u najo’ob</td>
</tr>
<tr>
<td>(9)</td>
<td>ku p’itla’antik le peek’o’</td>
</tr>
<tr>
<td>(10)</td>
<td>ku p’iitla’aj le peek’o’obo’</td>
</tr>
</tbody>
</table>

Task 2

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>ku wojella’antik le máako’ jump’éele hora</td>
</tr>
<tr>
<td>(2)</td>
<td>ku wojela’ala’ajel jump’éele hora</td>
</tr>
<tr>
<td>(3)</td>
<td>Tu áalkabsla’antaji’ jump’éele hora</td>
</tr>
<tr>
<td>(4)</td>
<td>Tu áalkabla’ajnaji’ jump’éele hora</td>
</tr>
<tr>
<td>(5)</td>
<td>bín u kiinsla’antej jump’éele hora</td>
</tr>
<tr>
<td>(6)</td>
<td>bín u kímla’ajik jump’éele hora</td>
</tr>
<tr>
<td>(7)</td>
<td>ku meentla’antik u naj jump’éele hora</td>
</tr>
<tr>
<td>(8)</td>
<td>ku meenta’ala’ajel u najo’ob jump’éele hora</td>
</tr>
<tr>
<td>(9)</td>
<td>ku p’itla’antik le peek’o’ jump’éele hora</td>
</tr>
<tr>
<td>(10)</td>
<td>ku p’iitla’aj le peek’o’obo’ jump’éele hora</td>
</tr>
</tbody>
</table>
### Questionnaire 3: Contiguity, Downtime and Genericity

**Tasks 1-2**

¿Puede decir las siguientes frases en el contexto dado?

<table>
<thead>
<tr>
<th></th>
<th>Frase 1</th>
<th>Contexto 1</th>
<th>Contexto 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tin p’o’ola’antik</td>
<td>Contexto 1: Hay un montón de platos sucios y tengo que terminar de lavar todos los platos antes de las 5, así que sigo lavando platos sin parar durante mucho tiempo.</td>
<td>Contexto 2: Mi madre me pide que le ayude a lavar los platos todos los días a las 5. Soy una buena niña, así que esta semana, lavo los platos todos los días a las 5 en punto.</td>
</tr>
<tr>
<td>2</td>
<td>Táan u p’ejla’antik</td>
<td>Contexto 1: El hacha es muy pesada y aburrida, por lo que está astillando los árboles durante mucho tiempo sin parar.</td>
<td>Contexto 2: Astilla el primer árbol, se toma un descanso, luego el segundo, luego otro descanso, luego el tercero...</td>
</tr>
<tr>
<td>3</td>
<td>Ka binla’aj le señora’obo’ te’ le sala</td>
<td>Contexto 1: La sala está muy leja, por lo que las mujeres tienen que caminar mucho para entrar en la sala.</td>
<td>Contexto 2: Hay muchas mujeres, entran en la sala una tras otra.</td>
</tr>
</tbody>
</table>

### Task 3

**A.**

¿Puede decir las siguientes frases en el contexto dado?
Contexto 1: Sigue silbando a sus perros ahora.
Contexto 2: Tiene la costumbre de silbar a sus perros cuando pasa por mi casa.

Contexto 1: Estoy lavando los trastes ahora.
Contexto 2: Ayudo a mi madre a lavar los trastes todos los días. Mi madre se lava más rápido que yo, así que tengo que lavar un traste todos los días.

B.
¿Puede usar las siguientes tres frases para describir un hábito o una profesión o un ritual que ocurre regularmente?

<table>
<thead>
<tr>
<th></th>
<th>kin p’o’ola’antik u nu’ukulo’ob</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2)</td>
<td>ku xóotla’ajal le páak’alo’obo’</td>
</tr>
<tr>
<td>(3)</td>
<td>binla’aj le señora’obo’ tak Ts’itbalche’</td>
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Questionnaire 4: Distributivity

Task 1
¿Puede decir las siguientes frases?

<table>
<thead>
<tr>
<th></th>
<th>tu jóok’sla’antaji’</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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</tr>
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</table>
Task 2

¿Puede traducir las siguientes frases a maya? Si hay más de una forma de traducir, por favor da todas las posibilidades.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>(1)</td>
<td>Los estudiantes levantaron la caja juntos.</td>
</tr>
<tr>
<td>(2)</td>
<td>Cada estudiante levantó la caja.</td>
</tr>
<tr>
<td>(3)</td>
<td>Los estudiantes levantaron la caja.</td>
</tr>
</tbody>
</table>

Task 3

¿Puede decir las siguientes frases?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>tu jóok’sla’antaji’ jujuntúulil le máako’</td>
</tr>
<tr>
<td>(2)</td>
<td>jujuntúulil bún u kíimla’ajak</td>
</tr>
<tr>
<td>(3)</td>
<td>ku meenta’ala’ajal jujunpéelil le najo’obo’</td>
</tr>
<tr>
<td>(4)</td>
<td>tu jóok’sla’antaji’ chen tu jun</td>
</tr>
<tr>
<td>(5)</td>
<td>bún u kíimla’ajak chen tu juno’ob</td>
</tr>
<tr>
<td>(6)</td>
<td>le najo’obe’ ku meenta’ala’ajal chen tu juno’ob</td>
</tr>
<tr>
<td>(7)</td>
<td>jujuntúulil ku ts’oonlaj</td>
</tr>
<tr>
<td>(8)</td>
<td>ku ts’oonlaj chen tu jun</td>
</tr>
<tr>
<td>(9)</td>
<td>jujuntúulil ku meentla’antik le najo’obo’</td>
</tr>
<tr>
<td>(10)</td>
<td>ku meentla’antik le najo’obo’ chen tu jun</td>
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</table>
### Task 4

¿Puede traducir las siguientes frases a maya? Si hay más de una forma de traducir, por favor da todas las posibilidades.

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Todo hombre construyó casas.</td>
</tr>
<tr>
<td>(2)</td>
<td>Todos los hombres construyeron casas.</td>
</tr>
<tr>
<td>(3)</td>
<td>Cada uno de los hombres construyó casas.</td>
</tr>
<tr>
<td>(4)</td>
<td>Los hombres construyeron casas individualmente.</td>
</tr>
<tr>
<td>(5)</td>
<td>Los hombres construyeron casas.</td>
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### Task 5

¿Puede decir las siguientes frases? si...

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Contexto 1</td>
<td>Contexto 2</td>
</tr>
<tr>
<td>(1)</td>
<td>tuláakal wíinik tu k’axaj naj</td>
</tr>
<tr>
<td>(2)</td>
<td>tuláakal wíinik tu k’axo’ob naj</td>
</tr>
<tr>
<td>(3)</td>
<td>jujuntúul wíinik tu k’axaj naj</td>
</tr>
</tbody>
</table>
(4) jujuntául wínike’ tu k’axaj naj

(5) wíniko’obe’ tu k’axajo’ob naj
### Abbreviations

<table>
<thead>
<tr>
<th>1</th>
<th>first person</th>
<th>INCH</th>
<th>inchoative</th>
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<td>2</td>
<td>second person</td>
<td>IND</td>
<td>indicative</td>
</tr>
<tr>
<td>3</td>
<td>third person</td>
<td>INFUT</td>
<td>indefinite future</td>
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<tr>
<td>A</td>
<td>set A clitic</td>
<td>INTR</td>
<td>intransitive</td>
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<td>agent focus</td>
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<td>irrealis</td>
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<td>animate</td>
<td>LOC</td>
<td>locative</td>
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<tr>
<td>ANTICAUS</td>
<td>anticausative</td>
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<td>masculine</td>
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<td>antipassive</td>
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<td>passive</td>
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<td>perfective</td>
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<td>benefactive</td>
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<td>causative</td>
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<td>clitic</td>
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<td>preposition</td>
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<td>completive</td>
<td>PROG</td>
<td>progressive</td>
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<td>compulsive</td>
<td>PTCP</td>
<td>participle</td>
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<tr>
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<td>dual</td>
<td>Q</td>
<td>interrogative</td>
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<td>determiner</td>
<td>QUOT</td>
<td>quotative</td>
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<td>epenthesis</td>
<td>RED</td>
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<tr>
<td>EX</td>
<td>existential</td>
<td>REFL</td>
<td>reflexive</td>
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<td>F</td>
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<td>REL</td>
<td>relationalizer</td>
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<td>focus</td>
<td>SBJV</td>
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<td>gerundive</td>
<td>SBS</td>
<td>substantivizer</td>
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<tr>
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<td>general</td>
<td>SUBJ</td>
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<td>SG</td>
<td>singular</td>
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<td>TR</td>
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<td>inanimate</td>
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<td>terminative</td>
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<tr>
<td>INCEP</td>
<td>inceptive</td>
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Bibliography


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