The Syntax and Semantics of Purépecha Noun Phrases
and the Mass/Count Distinction

by

Violeta Vázquez Rojas Maldonado

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy

Department of Linguistics

New York University

May 2012

_________________________

Chris Collins, Advisor
Dedication

To my mother and father, Flor del Campo and Arturo.

To my darling daughter, Andrea Lily.
In episode 18 of *The Wire*, detective Bunk Moreland lays out his policing method to officer Beadie Russell along the following lines: “*A police is only as good as his informants. Meaning, we ain’t about much*”. Conscious as I am that a linguist’s job is in no way police work, and keeping everything in proportion when comparing such different types of research, I do believe that when it comes to studying a language that is not the analyst’s native, *a linguist is only as good as his consultants*: the quality and precision of the data depend substantially on their sensitivity, training and willingness to help. It is for this reason that my foremost gratitude goes to the two main consultants who made this research possible at all: Juan Bautista Ascencio and Saulina Ascencio García. At every minute of every session, they were actively engaged in providing fine-grained judgments, with the patience and readiness that only someone genuinely interested in thinking about their own language can have. I appreciate greatly their contribution to the data collected for this thesis, but also the very pleasant moments they let me spend at their house, drinking that delicious *atole blanco* with sweet fava beans that only Saulina can cook. Thank you, Juan and Saulina, for valuing my research, for understanding my insistence in asking what appeared to be the same question over and over, for your kindness and for the friendship that we developed over the course of three years.
I am extremely grateful to my adviser, Chris Collins, for every piece of knowledge he shared with me from my very first day in the program when he was teaching Syntax I to his Seminar on Imposters, his Field Methods class—the one I enjoyed the most at NYU—and every meeting and discussion we had. Chris was a most supportive adviser, a careful listener ready to help me out of a rut whenever I felt stuck. He always nudged me to go a step further in my work. I am very grateful for his trust and encouragement, his friendly mood and his occasional deep, heartfelt laugh.

There is a lot I owe to the rest of my committee: Stephanie Harves, Alec Marantz, Anna Szabolcsi and Judith Tonhauser. They were all prompt and insightful readers. I appreciate every comment and suggestion they made to improve the quality of this work. Stephanie’s remarks helped me shape the core proposal of this dissertation, and Judith’s suggestions on methodology are valuable beyond the scope of this research. I am particularly grateful to Anna Szabolcsi for more than I can mention here; she has been a great support to me in the both the academic and the personal aspects of my life during the past six years.

This work has also benefited from the comments and suggestions of Alejandra Capistrán, Claudine Chamoreau and David Chávez Rivadeneyra, who have generously shared with me their knowledge of Purépecha and provided me with valuable bibliographical materials.

A special thanks goes to Lisa Davidson and Chris Barker in their roles as DGS of the Department. Most specially, thank you for enabling my fieldwork trips. A
million thanks to Teresa Leung and Aura Holguin, the Department’s secretary and administrator, respectively, for taking care of every single detail when needed.

My experience at NYU was greatly enriched by being a teaching assistant. I learned more than I could ever teach. Thanks to the many students I had, but more than anything my thanks and admiration go to Chris Barker and Stephanie Harves for teaching me first-hand what it takes to be an excellent professor. In the same vein, thanks to John Singler and Chris Collins for giving me the opportunity to teach at the African Linguistics School in Ghana in 2009 and Benin in 2011. Thanks also to Enoch Aboh, Malte Zimmerman and the rest of the faculty and students of ALS for such wonderful days of learning and teaching among more than 40 languages.

While on fieldwork, I had the luck to meet someone truly special: Lluvia Camacho Cervantes. Thank you, Lluvia, for sharing with me your passion for the Purépecha language and culture, and for the beautiful friendship that developed from our common interests and backgrounds. Thanks also to Daniel Kaufman, from the Endangered Language Alliance, for his exemplary enthusiasm, and for letting me in on the depths of New York’s linguistic diversity strolling up and down Roosevelt Ave.

Thanks so much to my classmates, officemates and other fellow students who made every hour spent at the department more enjoyable: Eytan Zweig, Oana Săvescu Ciucivara, Marcos Rohena-Madrazo, Mike Taylor, Dan Lassiter, Laziz Nchare, Neil Myler, Salvador Mascarenhas, Amanda Dye, Cara Shousterman, Jim Wood, Timothy M. Mathes, and others whose names might be slipping my mind right now. Most specially, a million thanks to Tricia Irwin and Vincent Chanethom, who truly became
like family to me (hence the appellative, Sister). Thank you guys for every meal and “salad”, for every laugh, for everything you taught to me and for your unconditional support. To Txuss Martin, thanks for your witty sense of humor, for the good times spent and for bringing with you a number of people that will stay in my heart forever, such as Fanny Raineau, Cristina Real and Laia Balcels.

These last two names open a full new paragraph of thankfulness: to the people outside of the Department who made of New York my second home and of my days there the most endearing memories of my life: Ana Aguilar Guevara, Isis Ascobereta, Guadalupe Peraza, Andrew Silverstein, Paola Ugolini, Valeria Belloro, Meredith Arena, Roger Batson, Ivet Maturano and Vanessa Erazo.

A special thanks to my parents, Flor del Campo Maldonado and Arturo Vázquez Rojas, who never missed a Sunday phone call to let me know that they were always near. Gracias, mamá y papá, su amor es el cimiento de todo lo que emprenda.

After five wonderful years in New York, I am privileged to come back home not only with a PhD, but also with a family of my own. Thanks to my loving partner Kevin Lambert, who happens to also be the careful proofreader of this dissertation’s every page. Lastly, but most importantly, thanks to my baby daughter Andrea Lily, for making all the other projects in my life -including this one- seem feasible. Gracias bebita, for all the blessings that you brought along.
Abstract

Purépecha (isolate, central Western Mexico) nouns can be assigned to one of three classes depending on their inherent number characteristics: count nouns denote atomic units, mass nouns denote plural entities and count-mass nouns (Doetjes 1997) denote sets that contain pluralities and atomic units as well. This tri-partite distinction guides the present description of the structure and interpretation of different elements within the noun phrase related to the expression of number.

We show that in Purépecha there are two overt Number heads, one of which occurs exclusively with numerals while the other one attaches directly to nouns. Both are interpreted as sum-forming operators (Link 1983). Count-mass nouns can co-occur with numerals and with plural morphology in Purépecha, while in English they cannot (cf. *luggages; *three luggage(s)) This fact leads us to claim that the sum-forming operators introduced by plural morphology can have different definability conditions across languages.

The numeral system of Purépecha supports the idea put forth in Harbour (2008) that some languages distinguish Number heads specified as [+/- augmented]. The interpretation of this feature amounts to adding the divisibility property to the denotation of the corresponding noun phrase. Just like sum-forming operators map sets of atoms into sets of plural individuals, it is shown that classifiers map sets of
plural individuals into sets of atoms. In Purépecha, classifiers co-exist with plural markers in the same noun phrase. The mapping of a noun phrase denotation into a set of atoms is achieved by introducing a strictly distributive predicate that makes reference to the inherent shape of an object.

The occurrence of plural markers in plural contexts is obligatory for count nouns and optional for count-mass nouns. If this distinction is not drawn, the distribution of plural markers seems erratic or poorly attributable to other semantic features, like definiteness or animacy (Chamoreau 2000). In general, the semantics and syntax of number-related expressions in the Purépecha noun phrase can be better accounted for if three classes of nouns are assumed.
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>iv</td>
</tr>
<tr>
<td>Abstract</td>
<td>viii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>xiii</td>
</tr>
<tr>
<td>List of Tables</td>
<td>xiv</td>
</tr>
<tr>
<td>List of Abbreviations</td>
<td>xv</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 1. Background and Methodology</td>
<td>5</td>
</tr>
<tr>
<td>1.1 General information about Purépecha</td>
<td>5</td>
</tr>
<tr>
<td>1.1.1 Demographics, genetic affiliation and dialectal areas</td>
<td>5</td>
</tr>
<tr>
<td>1.1.2 Phonology</td>
<td>7</td>
</tr>
<tr>
<td>1.1.3 Morphology, basic word order and alignment</td>
<td>9</td>
</tr>
<tr>
<td>1.1.4 The structure of verbs</td>
<td>12</td>
</tr>
<tr>
<td>1.1.5 Previous and ongoing research</td>
<td>15</td>
</tr>
<tr>
<td>1.2 Methodology</td>
<td>17</td>
</tr>
<tr>
<td>1.2.1 Source of the data</td>
<td>17</td>
</tr>
<tr>
<td>1.2.2 Tests and tasks performed</td>
<td>18</td>
</tr>
</tbody>
</table>
Chapter 2. The mass/count distinction and its manifestation in Purépecha 28
  2.1 The mass/count distinction debate 29
    2.1.1 Semantic approaches 35
    2.1.2 Syntactic approaches 39
    2.1.3 Lexical specification vs. syntactic derivation 41
  2.2 The mass/count distinction in Purépecha 46
    2.2.1 Three denotation domains for nouns 48
    2.2.2 Semantics of plural markers as sum-forming operators 50
    2.2.3 Syntactic cues for different classes of nouns 52
    2.2.4 Summary 56

Chapter 3. Numerals and number marking 58
  3.1 Description: numerals in Purépecha are bi-morphemic 59
  3.2 Two Theories of Numerals and a proposal for Purépecha 63
    3.2.1 Numerals as quantifiers (Barwise & Cooper 1981) 63
    3.2.2 Numerals as predicates (Ionin & Matushansky 2006, Link 1983) 65
    3.2.3 Numerals as modifiers of Num\(^0\) 68
  3.3 The Syntax of Number and number features 71
    3.3.1 A feature analysis for Number (Harbour 2008, Watanabe 2010) 71
    3.3.2 Different Number Heads in Purépecha 76
  3.4 Summary 82

Chapter 4. Numeral Classifiers 85
  4.1 Inventory and distribution of Purépecha classifiers 85
    4.1.1 Classifiers are used with numerals and the interrogative ‘how many?’ 87
    4.1.2 Classifiers are not used with mass nouns or nouns of human reference 89
  4.2 The internal structure of classifier expressions 93
    4.2.1 “Classificatory” verbs (Capistrán 2000, Friedrich 1970) 95
    4.2.2 The semantics of Classificatory verbs 97
  4.3 The semantics of classifiers: individuation by strict distributivity 107
    4.3.1 Stubbornly distributive predicates (Schwarzschild 2009) 109
    4.3.2 Purépecha classifiers denote stubbornly distributive properties 111
    4.3.3 The Syntax of Purépecha Classifiers 114
    4.3.4 Noun phrase internal distributivity and collective predication 118
  4.4 Summary 120

Chapter 5. The plural suffix –icha: distribution and interpretation 125
  5.1 Reference to more than one individual (‘strong’ plural reading) 128
  5.2 Reference to one or more individuals (‘weak’ plural reading) 133
  5.3 Plural marking and the animacy hierarchy 140
List of Figures

<table>
<thead>
<tr>
<th>Picture</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture 1</td>
<td>23</td>
</tr>
<tr>
<td>Figure 1 Denotation of count nouns, count-mass nouns and mass nouns</td>
<td>50</td>
</tr>
<tr>
<td>Picture 2</td>
<td>100</td>
</tr>
<tr>
<td>Picture 3</td>
<td>101</td>
</tr>
<tr>
<td>Picture 4</td>
<td>103</td>
</tr>
<tr>
<td>Picture 5</td>
<td>128</td>
</tr>
<tr>
<td>Picture 6</td>
<td>130</td>
</tr>
<tr>
<td>Picture 7</td>
<td>158</td>
</tr>
<tr>
<td>Picture 8</td>
<td>160</td>
</tr>
<tr>
<td>Picture 9</td>
<td>165</td>
</tr>
</tbody>
</table>
List of Tables

| Table A. Purépecha Consonants            | 7 |
| Table B. Purépecha Vowels               | 7 |
| Table C. Purépecha Case Markers         | 10 |
| Table D. Main Characteristics of Count, Mass and Count-mass Nouns | 57 |
| Table E. The three numeral classifiers of Purépecha | 86 |
| Table F. Classificatory verbs and the classifiers that derive from them | 107 |
| Table G. Classificatory verbs not used in classifiers | 108 |
| Table H. Distributive and maximality morphemes | 171 |
### List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2IND</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; or 2&lt;sup&gt;nd&lt;/sup&gt; person indicative</td>
</tr>
<tr>
<td>ACT</td>
<td>Active voice</td>
</tr>
<tr>
<td>ADV</td>
<td>Adverbial clitic</td>
</tr>
<tr>
<td>APPL</td>
<td>Applicative</td>
</tr>
<tr>
<td>BACK.LOC</td>
<td>Locative suffix “back”</td>
</tr>
<tr>
<td>CAUS</td>
<td>Causative</td>
</tr>
<tr>
<td>CL</td>
<td>Classifier</td>
</tr>
<tr>
<td>DEM</td>
<td>Demonstrative</td>
</tr>
<tr>
<td>DEV</td>
<td>Deverbalizer</td>
</tr>
<tr>
<td>DIM</td>
<td>Diminutive</td>
</tr>
<tr>
<td>DIST</td>
<td>Distributive</td>
</tr>
<tr>
<td>DIST.LOC</td>
<td>Distributive Locative</td>
</tr>
<tr>
<td>DIST.OBJ</td>
<td>Distributive object marker</td>
</tr>
<tr>
<td>FOR</td>
<td>Formative</td>
</tr>
<tr>
<td>FUT</td>
<td>Future</td>
</tr>
<tr>
<td>HAB</td>
<td>Habitual aspect</td>
</tr>
<tr>
<td>HEAD.LOC</td>
<td>Locative suffix “head”</td>
</tr>
<tr>
<td>HON</td>
<td>Honorific</td>
</tr>
<tr>
<td>IMP</td>
<td>Imperative mood</td>
</tr>
<tr>
<td>IND</td>
<td>Indicative</td>
</tr>
<tr>
<td>INF</td>
<td>Infinitive</td>
</tr>
<tr>
<td>INT</td>
<td>Interrogative mood</td>
</tr>
<tr>
<td>ITER</td>
<td>Iterative</td>
</tr>
<tr>
<td>LOC</td>
<td>Locative case</td>
</tr>
<tr>
<td>MAX</td>
<td>Maximality operator</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------</td>
</tr>
<tr>
<td>MOD</td>
<td>Modality marker</td>
</tr>
<tr>
<td>NEG</td>
<td>Negation</td>
</tr>
<tr>
<td>OBJ</td>
<td>Objective case</td>
</tr>
<tr>
<td>PAST</td>
<td>Past</td>
</tr>
<tr>
<td>PATIO.LOC</td>
<td>Locative suffix “patio”</td>
</tr>
<tr>
<td>PERF</td>
<td>Perfect</td>
</tr>
<tr>
<td>PFVE</td>
<td>Perfective</td>
</tr>
<tr>
<td>PL</td>
<td>Plural</td>
</tr>
<tr>
<td>PL.AGR</td>
<td>(Object) Plural Agreement</td>
</tr>
<tr>
<td>POL</td>
<td>Polarity item</td>
</tr>
<tr>
<td>PPLE</td>
<td>Participle</td>
</tr>
<tr>
<td>PRES</td>
<td>Present</td>
</tr>
<tr>
<td>PROGR</td>
<td>Progressive</td>
</tr>
<tr>
<td>RECPH</td>
<td>Reciprocal</td>
</tr>
<tr>
<td>REFL</td>
<td>Reflexive</td>
</tr>
<tr>
<td>REL</td>
<td>Relativizer</td>
</tr>
<tr>
<td>SG</td>
<td>Singular</td>
</tr>
<tr>
<td>SUBORD</td>
<td>Subordinate marker</td>
</tr>
<tr>
<td>SUM</td>
<td>Sum-forming operator</td>
</tr>
<tr>
<td>TRSLOC</td>
<td>Translocative</td>
</tr>
</tbody>
</table>
Introduction

This dissertation is a description of Purépecha noun phrases with particular attention to the expression of number. Purépecha distinguishes three classes of nouns with respect to their inherent number properties: count nouns, which denote atomic entities; mass nouns, which include pluralities but not atoms in their denotation; and count-mass nouns (Doetjes 1997), which denote sets that contain plural and atomic entities.

The mass/count distinction is often thought of as a binary contrast between count nouns and mass nouns (or more generally, between count and non-count nouns). The latter are usually thought of as ‘inherently plural’ nouns (Chierchia 1998), irrespective of whether they make reference to singular entities alongside the pluralities they denote. We show that the class of count-mass nouns in Purépecha is not simply a sub-class of mass nouns, and is therefore not reducible to them. In some areas of the grammar, count-mass nouns behave like mass, for instance, in their ability to occur as arguments of collective predicates without taking plural inflection. In other respects, count-mass nouns behave like count nouns, e.g. they can combine with numerals. This mixed behavior suggests that count-mass nouns are not simply unspecified for their number properties; instead, we argue that they constitute a class of their own.

The first chapter presents an overview of the Purépecha language, its phonological inventory, basic word order, and dialectal variation. It also lays out some
methodological issues concerning the collection of semantic data and explains the tools employed and the tasks performed during elicitation.

The second chapter presents the theoretical background, the different approaches to the mass/count distinction prevalent in the literature, and introduces the key concepts that will be assumed in the dissertation, like Link’s (1983) approach to plurals and mass nouns. With these concepts in mind, we describe the interpretation of plural markers, classifiers, numerals and quantifiers in Purépecha.

In Chapter 3 we analyze numeral expressions and propose that some Purépecha numerals involve an overt sum-forming operator, which occupies the syntactic place of a Number head, $\text{Num}^0$. Thus, cardinality expressions are not modifiers of nouns or quantifiers, but single terms that act like arguments of these particular sum-forming operators. We also argue that the sum-forming operator involved in a numeral expression is different from the plural suffix that attaches to nouns. The former bears a feature $[+\text{augmented}]$ (Harbour 2008), which ensures that at least one proper sub-part of the plurality denoted is also a plurality. This explains why this particular sum-forming operator is absent from numerals ‘1’ and ‘2’. In contrast, the plural suffix that attaches to nouns is unspecified for the $[+/- \text{augmented}]$ feature.

In Chapter 4 we analyze the internal constitution of numeral classifiers. It is known that classifiers in Purépecha derive from positional roots (Nava 2008, Capistrán 2000). We show that these positional roots have a strict distributive semantics. This distributive semantics is preserved in the meaning of the classifier. The role of the classifier is to map a set of pluralities into a set of atoms, and
Purépecha classifiers accomplish this by intersecting the denotation of the noun with a strictly distributive (i.e. atomic) predicate.

Chapter 5 deals with the distribution of the plural marker -icha, and describes the contexts in which it is obligatory, optional or proscribed depending on the class of noun to which it attaches. We show that the presence or absence of -icha is not related to animacy features, contrary to what was proposed by Chamoreau (2000). Rather, the optionality or obligatoriness of the plural marker is related to the availability of ‘weak’ plural and ‘strong’ plural meanings (Farkas & de Swart 2010, Sauerland et al. 2005). These readings are enabled by the inherent number of the noun: count-mass nouns with a plural suffix only allow strong plural readings, while plural-inflected count nouns license a weak plural reading.

Chapter 6 describes two numeral suffixes that replace the sum-forming operator presented in Chapter 3. We show that one of these suffixes is a distributed share marker, while the other one contributes the meaning of maximality to the noun phrase.

Chapter 7 is the description of four cardinal quantifiers and the way in which they select nouns depending on their count properties. Just like English, which has the quantifiers ‘many’ and ‘much’, Purépecha has wánikwa and kánikwa. The difference between the two languages is that English count-mass nouns (e.g. luggage) behave like mass nouns by selecting ‘much’ rather than ‘many’. In Purépecha, on the other hand, count-mass nouns pattern with count nouns in that they both appear with wánikwa but not with kánikwa. This is consistent with the facts described in Chapter
3, which show that Purépecha count-mass nouns, unlike their English counterparts, can combine with numerals, thus suggesting that sum-forming operators can have different definability conditions across languages.
Chapter 1
Background and Methodology

1.1 General information about Purépecha

1.1.1 Demographics, Genetic Affiliation and Dialectal Areas

Purépecha (also known as P’orhépecha, P’orhé, Purembe or Tarascan) is a language isolate spoken in the state of Michoacán in Central Western Mexico. According to the most recent census (INEGI 2010) there are 117,221 Purépecha speakers in Michoacán, out of which 13% are monolingual. An unknown number of speakers have emigrated to the United States, concentrating mainly in the states of Washington, Oregon, California and North Carolina.

Three main dialectal varieties of Purépecha have been recognized: the Lake variety, spoken in the surroundings of the Lake of Patzcuaro; the Highlands dialect, spoken in the western mountain region or Meseta Purépecha; and the Gorge of the Eleven Towns (Cañada) dialect, spoken in a region that lies to the north of the Meseta. The Meseta variety comprises the highest number of speakers (around 62%), while the remaining 38% are divided in almost equal numbers between Cañada and Lake. According to the
judgments of speakers, all varieties are mutually intelligible (Capistrán and Nava, 1998, Foster 1969). All the data collected for this dissertation come from the Lake variety.

Given the geographical characteristics of the Purépecha highlands, access from main urban centers to this region is scarce. Not surprisingly, the *Meseta* variety preserves certain morpho-syntactic characteristics that the Lake variety has lost due to the direct influence of Spanish. The most evident characteristic that the *Meseta* variety has preserved is the SOV basic word order, which in Lake has shifted to SVO. Plural agreement and the ever more scarce use of numeral classifiers are other two areas in which the influence of Spanish is felt more evidently in the Lake variety than in its *Cañada* or *Meseta* counterparts.

The SOV basic word order is otherwise absent from the linguistic Mesoamerican region. In Mesoamerican languages, nominal possession is often expressed by suffixing a possessive morpheme to the possessed noun. The possessor usually follows this affixed possessed noun (Campbell and Smith-Stark 1986). In Purépecha, possession is marked by suffixing a genitive case marker to the possessor rather than marking the possessed noun. These are some of the reasons that have led researchers to consider Purépecha as an isolate in Mesoamerica, although claims by Swadesh (1969) and Greenberg (1987) have established a genetic link with Quechua, Zuñi, Mayan and Chibchan languages.
1.1.2 Phonology

Purépecha has 23 consonants and 6 vowels (Chamoreau 2009, Villavicencio 2006). The tables below show the phonological inventory and the characters with which we have chosen to represent them in this work. These characters are based on a practical alphabetic transcription largely borrowed from Capistrán (2002, 2010):

**Table A. Purépecha Consonants**

<table>
<thead>
<tr>
<th>Consonants</th>
<th>non-aspirated stop</th>
<th>aspirated stop</th>
<th>non-aspirated affricate</th>
<th>aspirated affricate</th>
<th>fricative</th>
<th>vibrant</th>
<th>lateral</th>
<th>retroflex flap</th>
<th>nasal</th>
<th>semi-consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>/p/ p (b)</td>
<td>/pʰ/ ph</td>
<td>/tʃ/ ts</td>
<td>/tʃʰ/ ts’</td>
<td>/s/ s</td>
<td>/t/ r</td>
<td>/l/ l</td>
<td>/tʃ/ rh</td>
<td>/m/ m</td>
<td>/w/ w</td>
</tr>
<tr>
<td></td>
<td>/t/ t (d)</td>
<td>/tʰ/ t’</td>
<td>/tʃʰ/ ts’</td>
<td>/tʃʰ/ ch’</td>
<td>/ʃ/ sh</td>
<td>/ʃ/ sh</td>
<td>/ʃ/ sh</td>
<td>/ʃ/ sh</td>
<td>/n/ n</td>
<td>/j/ i</td>
</tr>
<tr>
<td></td>
<td>/k/ k (g)</td>
<td>/kʰ/ k’</td>
<td>/kʃʰ/ kw’</td>
<td>/kʃʰ/ kw’</td>
<td>/x/ j</td>
<td>/x/ j</td>
<td>/x/ j</td>
<td>/x/ j</td>
<td>/ŋ/ nh</td>
<td>/j/ i</td>
</tr>
</tbody>
</table>

Non-aspirated stops and affricates undergo voicing after nasals. When this occurs, we will use alternative characters for stops (signaled in the above chart in parenthesis), but we will continue to use the voiceless character for affricates.

**Table B. Purépecha Vowels**

<table>
<thead>
<tr>
<th>Vowels</th>
<th>Anterior</th>
<th>Central</th>
<th>Posterior</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>/i/ i</td>
<td>/i/ ĩ</td>
<td>/u/ u</td>
</tr>
<tr>
<td>Mid</td>
<td>/e/ e</td>
<td>/e/ e</td>
<td>/o/ o</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>/a/ a</td>
<td></td>
</tr>
</tbody>
</table>
Aspirated stops and affricates in intervocalic position surface as pre-aspirated.

We will signal pre-aspiration by replacing the ’ diacritic of the aspirate consonant with an aspiration graph /h/ before the affricate sequence.

Aspirated stops and affricates after a nasal undergo de-aspiration but not voicing. Purépecha words always end in a vowel, but there is a generalized devoicing process at word-final (and sentence-final) position. Usually, vowel devoicing results in complete deletion, thus giving rise to external sandhi processes. Since final vowels carry vital morphological information, they are always reconstructed and graphically represented in the orthographic transcription used throughout this work.

When unstressed, there is free variation between /e/ and /i/ as well as between /o/ and /u/:

\[i\acute{a}m\acute{e}ndu \sim i\acute{a}m\acute{i}ndu \sim i\acute{a}m\acute{e}ndo \sim \text{‘all’}\]

The mid-central vowel /i/, /ɨ/ has a limited distribution: it occurs only after alveolar fricatives and affricates /s/, /ts/, /ts’/. When stressed, it is graphically
represented as \(i\). The rest of stressed vowels will be represented with an acute accent mark. The velar nasal has lost its phonological character in the Lake variety, and all of its occurrences are covered by an alveolar nasal or its velar counterpart when preceding a velar stop. Therefore, in this work we will not use a special character for the velar nasal.

Syllables can consist of the following templates: CV, CVC, CCV. The latter is limited and the CVC sequence is only possible word-internally. Foster (1969) provides several possible consonant clusters, of which I have only attested the sequence /tʃk/.

Words are at least bi-syllabic and bear primary stress in the first or second syllable. Long vowels (CVV(C)) are also common and always stressed.

1.1.3 Morphology, basic word order and alignment

Purépecha is considered an agglutinative language (Villavicencio 2006). Words consist of sequences of an average of 3 to 5 morphemes that are separable by clear boundaries, as exemplified in (4). The language is almost exclusively suffixal. Reduplication is also an available but limited morphological process.

(4) terhu-ngarhi-ta-phe-yara-ni
cross-face-ACT-PL..IND-MOV-INF
‘to put something in front of others upon arrival’

(Villavicencio 2006:61)

According to Villavicencio (2006), the majority of Purépecha roots are verbal, and the language has a productive set of suffixes to derive nouns, adverbs and adjectives from them. The reverse is also true, and there is a productive way to
transform almost any nominal root into a verb by suffixing the morpheme –e/-i.

Swadesh (1969) considers Purépecha roots as neutral, because they can function as nominal or verbal and take the corresponding inflections.

Purépecha is a nominative-accusative language with a case marking system. Case markers are either suffixes or post-positions undergoing grammaticalization (Villavicencio 2006:67). The following is a list of the case markers and postpositions available in the Lake variety:

**Table C. Purépecha Case Markers**

<table>
<thead>
<tr>
<th>Case</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominative</td>
<td>∅</td>
</tr>
<tr>
<td>Objective</td>
<td>-ni</td>
</tr>
<tr>
<td>Genitive</td>
<td>-eri</td>
</tr>
<tr>
<td>Locative, residential</td>
<td>-rhu, -o</td>
</tr>
<tr>
<td>Comitative</td>
<td>-ngu(ni); jingóni</td>
</tr>
<tr>
<td>Instrumental</td>
<td>-mpu; jimpó</td>
</tr>
</tbody>
</table>

The Objective Case marker –ni is used for patients, themes, recipients and benefactives. Capistrán (2010:37) classifies Purépecha as a Primary Object Language: the object of the monotransitive construction has the same characteristics as the ‘indirect’ object of a bi-transitive structure. Purépecha thus does not distinguish between direct and indirect objects, but between primary objects (themes and patients in monotransitives, recipients in bi-transitives) and secondary objects (usually the theme in bi-transitives). Primary objects get the case marker –ni, and they can be passivized. Secondary objects do not get a case marker unless they have animate or definite reference, in which case both objects are marked with –ni.
The basic word order in a Purépecha transitive sentence is still a matter of debate. Capistrán (2002), which is the only study so far that has attempted to give a methodical answer to this question, concludes that the SOV order in sentence focus contexts is possible even though the basic word order seems to be SVO. However, Capistrán’s study is limited to the Lake variety. It has also been attested that the most frequent order is SOV in the more conservative Meseta dialect, although no explicit studies on the subject have been conducted in that region. Further, Capistrán and Nava (1998) also note that Purépecha presents several features that correspond to SOV languages, like its suffixal nature and the presence of postpositions, typical of head-final languages. Complementizers, however, precede the clause they introduce, a characteristic consistent with SVO basic order. Villavicencio (2006:72) cites the genitive-noun and adjective-noun orders as properties of 16th c. Purépecha. She also notes that the total frequency of SOV sentences in a corpus from the 16th c. is 50%, while in a 20th c. corpus the frequency of that order decreases to 44% in favor of a 56% frequency of SVO sentences. The frequency data, however, do not clarify the basic word order because we lack data about the information structure of the sentences that constitute the corpus.

According to the judgments I was able to obtain in the Lake variety, SVO surfaces as the sentence-focus order, but when elicited, the SOV alternative is judged as equally grammatical and adequate as SVO. Sometimes the SOV order is used as first response to out-of-the-blue questions. The only conclusion that can be made at
this point is that the language might be undergoing a change in process from SOV to SVO, and that the order is flexible at the moment.

Flexibility in word order in Purépecha is not restricted to the sentence level. Within the noun phrase, multiple word arrangements are possible. According to my own data, numerals can precede or follow the noun. The first alternative Num > N is the one obtained from elicitation. The second possibility N > Num is only attested in texts from the Highlands dialect and considered grammatical by speakers of the Lake region if they are presented with it, but never spontaneously conveyed. Similar observations hold for the N > Adj and Adj > N orders, where the first one is preferred. Demonstratives and possessives, in comparison, are always pre-nominal.

1.1.4 The Structure of Verbs

According to Chamoreau (2009), there are two kinds of verbal roots in Purépecha: dependent and non-dependent. Non-dependent roots consist of a single morpheme and can take aspect, tense and mood markers. These inflectional markers always occur in that order (Aspect-Tense-Mood):

(5) a. eshé- ‘see’
    b. jwá- ‘bring’
    c. kw’i- ‘sleep’

(6) a. eshé-sha-∅-ka-ni
    seeprogr-pres-1/2ind-1sg
    ‘I am looking’

    b. jwá-s-p-ti
    bring-perf-past-3ind
    ‘He brought (it)’
Dependent roots cannot take inflectional morphemes unless an additional morpheme is present. Chamoreau (2009:92) calls this supportive element a ‘derivational unit’. Capistrán (2000 and elsewhere), following Foster (1969), glosses it as ‘formative’ (FOR). The formative morpheme does not carry a meaning by itself.

When it is attached to a dependent root in order to yield a well-formed base, we will signal the morpheme boundary by ‘+’ instead of ‘-’, following the glossing conventions adopted in the current literature on Purépecha (Capistrán 2010, Chamoreau 2009).

(7)  a. eró+ka- ‘wait’
     b. mi+ti- ‘know’
     c. ja+rhá ‘be’
     d. washá+ka ‘sit down’

(8)  a. eró+ka-sha-∅-ka=ksî
     wait+FOR-PROGR-PRES-1/2IND=1PL
     ‘We are waiting’

     b. *eró-sha-∅-ka=ksî
        wait-PROGR-PRES-1/2IND=1PL
        Intended: ‘We are waiting’

The formative element can often be replaced by a functional morpheme, like a causative or a spatial suffix. The choice of the suffix can convey subtle differences in meaning:

(9)  a. eró+ka-nî
     wait+FOR-INF
     ‘to wait’

     b. eró-nta-nî
     wait-ITER-INF
     ‘to await, expect’
c. eró-parha-ni
  wait-side.LOC-INF
  ‘to feel a presence from behind’ (Velásquez 1978:120)

A verbal base is well formed either by an independent root or by a dependent root with a formative. They can also be formed by adding any derivational morpheme (causative, spatial, iterative) to the root. For a detailed description of the derivational possibilities of verbal stems, see Capistrán (2010) and Monzón (2004). Once a well-formed base is obtained, a verb takes the obligatory markers of aspect, tense and mood, in that order, or the infinitival marker -ni.

Aspect and tense markers are the same for all persons, but the indicative mood morpheme changes from -ka for the 1st and 2nd person to -ti for the 3rd person. The mood morpheme thus carries information about the subject person, but not about the subject number:

\[(10)\]
\[
\begin{align*}
  a. & \text{eró+ka-sha-ka} \\
  & \text{wait+FOR-PROGR-1/2IND} \\
  & \text{‘I / you / we / you(pl) are waiting’}
\end{align*}
\]
\[
\begin{align*}
  b. & \text{eró+ka-sha-ti} \\
  & \text{wait+FOR-PROGR-3IND} \\
  & \text{‘He/they are waiting’}
\end{align*}
\]

If one wishes to be more specific about the subject number, a set of clitics can be optionally attached to the inflected verb:

\[(11)\]
\[
\begin{align*}
  a. & \text{eró+ka-sha-ka=ni} \\
  & \text{wait+FOR-PROGR-1/2IND=1SG} \\
  & \text{‘I am waiting’}
\end{align*}
\]
Explicit subjects are not obligatory and their presence usually serves some specific information function (either functioning as a topic or focus). Subject clitics are usually found in second position, that is, attached to the first element of the sentence, whether it is the main verb, an adverb, a negation or an indefinite noun phrase. However, even when the clitic appears in second position attached to a non-verbal element, it can be doubled on the verb as well:

(12) witsindikwa=ksï eró+ka-sha-p-ti=(ksï)
yesterday=3PL wait+FOR-PROGR-3IND=3PL
‘Yesterday they were waiting’

1.1.5 Previous and ongoing research

Purépecha has been an object of study and description since colonial times. The two earliest descriptions of the language are the *Arte de la Lengua de Michuacan* and a *Vocabulario*, which were written by the friar Maturino Gilberti and first
published in 1558 and 1559, respectively. According to Chamoreau (2009), a dozen other texts in Purépecha were published between 1524 and 1572. Another major colonial grammar is the *Arte y Diccionario* by Juan Bautista de Lagunas, published in 1574.

After a hiatus of more than three centuries, continuous descriptive work on Purépecha resumed only in the 1930s, due mainly to the incursion of the Summer Institute of Linguistics in Mexico. The major, albeit still introductory, descriptions of Purépecha from this time are from Maxwell Lathorp (1937). The first detailed account of the Purépecha morphology was Mary Foster’s 1969 dissertation, *The Tarascan Language*. Since then, research on Purépecha has become steadily more fruitful. To date, a number of grammars, dialectal studies and diachronic research have been published. Detailed accounts of verbal morphology can be found in Monzón 2004 and Capistrán 2010. The Case system has been thoroughly described from a diachronic perspective by Villavicencio 2006. Several articles from Capistrán account for multiple case marking, double object constructions, positional roots and derivational processes. Dialectal variation and code switching has been the subject of a number of dissertations (Chavez Rivadeneyra 2004, Meneses 1998). Research on the nominal domain is still scarce, although Chamoreau (2002, 2009) is a reference point in the study of syntax and semantics of indefinites, plural markers and differential object marking from a functional perspective. Nava (1994) presents a historical and semantic account of classifiers. To my knowledge, no study has yet been conducted on the structure of noun phrases based on the mass/count distinction.
In sum, although we must admit that much work still remains to be done, we can count on a number of general descriptions of Purépecha, as well as a body of systematic research on more specific aspects of the language.

1.2. Methodology

1.2.1 Source of the data

This is a fieldwork-based dissertation. Apart from relying on published texts and research on Purépecha, the main data for this study were collected in my own fieldwork, conducted in five trips from the Summer of 2008 to January 2011, in the village of Puácuaro, which is in the Lake dialectal area at the shore of the Lake of Patzcuaro.

The main consultants were a male and a female in their 50s. Two other regular consultants were a male and a female in their 30s. All four consultants were born and raised in Puácuaro. Some data were also collected in the surrounding villages of Ihuatzio and Santa Fe de la Laguna, which are also within the Lake dialect, but these data are seldom used in this study.

Each regular session with the consultants consisted of 45-60 minutes of elicitation, and an average of six sessions were conducted per week in each stage. Elicitation sessions were mostly based on three types of elicited data: questionnaires (truth value tasks and grammaticality judgments), semi-free narratives, and direction tasks. Semi-free narratives are short discourses that consultants provided when they were asked for a short story or a cooking recipe.
Direction tasks are brief experiments in which one speaker who was presented with an arrangement of objects in a picture gave directions to another speaker on how to reproduce the same arrangement with a set of objects that I provided to him (Seifart 2005). A small number of traditional narratives were collected. With few exceptions, all sessions were recorded and transcribed.

1.2.2 Tests and tasks performed

The empirical body of this dissertation consists of two main types of judgments: semantic and syntactic. The latter were elicited by using regular questionnaires and asking for the grammaticality of particular sentences. Positive evidence was also gathered from collecting stories and recording natural conversations.

Grammaticality judgments can be obtained from two direct sources: text collection and elicitation. If a sentence occurs in natural discourse or texts, it can be considered grammatical. Since negative evidence is not obtainable from texts, elicitation is also required. In elicitation, grammaticality judgments are not always categorical, and usually there is room for gradability. After performing these tasks for a while, consultants are much more sensitive to gradient judgments and are able to state explicitly whether a sentence is completely ill-formed or mildly unacceptable. Over the course of several weeks, consultants and analysts are capable of developing a common vocabulary that captures the two kinds of syntactic unacceptability.
Collection of semantic judgments requires controlling more variables than eliciting grammaticality judgments because one is not simply asking for the well-formedness of a certain string, but for the acceptability of a grammatical sentence paired up with a non-linguistic context. Semantic judgments cannot be collected from texts or discourse alone. While it is true that a sentence that occurs in natural speech must be interpretable, grammatical and felicitous in the given context, there is no way to access its truth conditions from its mere occurrence. Of course, one can always rely on the consultant’s translation into a meta-language, but the translation cannot be considered a full rendition of an utterance’s interpretation (see discussion in Matthewson 2004, 2011).

In order to obtain semantic judgments, we must first clearly define what kind of behavior qualifies as semantic evidence. Judgments about truth and judgments about acceptability of a sentence in a given context reflect semantic knowledge (Krifka 2011). Collection of semantic evidence thus involves collecting truth-value judgments and felicity judgments (Matthewson 2004), although it is not simple to distinguish between the two. Inquiring about truth and felicity conditions is not a simple task when the language studied is (a) not spoken natively by the analyst and (b) there is not a reliable community of language speaker/analysts who can validate the claims by consulting their own intuitions. Hence, the entire procedure of semantic data collection has to be made explicit.

A speaker might know that a sentence $S$ is not acceptable in context $C$, but there is no direct way to ask if the sentence in that given context is false or
“infelicitous”. Matthewson (2011), for instance, claims that there is only one kind of semantic judgment, which is the one that distinguishes whether a sentence is or is not acceptable in a given context. If a sentence is false at $C$, it will be considered unacceptable, although not all unacceptability comes from falsehood. According to Matthewson (2011:270), “native speakers are not qualified to give ‘judgments’ about technical concepts such as entailment, tautology, ambiguity or vagueness (...) All of those concepts can and should be tested via acceptability judgment tasks.”.

In my own field experience, however, I have found that asking simply whether sentence $S$ is acceptable or not in context $C$ fails to distinguish between different sources of possible unacceptability. A sentence might be judged ‘unacceptable’ relative to $C$ on different grounds: because it is false; its presuppositions are not met; it is socially inadequate; it is not informative enough; or even because it does not conform to a standard linguistic register (the latter is very common in a language like Purepecha, which is subject to much influence from a dominant language that is considered more prestigious). Although distinguishing between presuppositions and entailments is not a simple task, I agree with Krifka’s (2011) claim that part of a native speaker’s knowledge of a language consists in being able to distinguish a true utterance from a false one, and in turn, to distinguish falsehood from other forms of unacceptability. It remains, however, a challenge to detect whether a sentence is considered unacceptable in a certain context because its presuppositions are not met, it raises an unwelcome implicature, or because it simply depicts a situation that is contradictory with the situation at hand, and oftentimes a consultant might cover all
these possibilities under the description “false”. Here I agree with Matthewson (2011) that these fine-grained distinctions cannot be provided directly by the consultant alone, but must be obtained by formulating further hypotheses and testing them by eliciting truth-value judgments again. A simple, though not uncontroversial, way to distinguish presuppositions and implicatures from asserted content is the following: if $S$ fails to be true at a certain context, the analyst elicits the truth-value for the negation of $S$, keeping the context unaltered. If the negation of $S$ remains false, the “falsehood” claim must arise from a presupposition failure or from an unwelcome implicature, but not from what $S$ asserts.

The general sketch of the truth-value judgment elicitation method used throughout this work is as follows: once it has been shown that a sentence is grammatical, the analyst formulates a hypothesis about its possible meaning. This possible meaning consists of the conditions under which an utterance of the sentence would yield a true statement and the conditions that the discourse setting must fulfill in order for the sentence to be uttered in the first place.

Once a hypothetical truth-conditional meaning for a sentence is posited, consultants were presented with a scenario (sometimes described verbally, but whenever possible represented visually) and asked whether a certain sentence would be true in that situation. Likewise, felicity judgments were collected by asking whether a certain sentence that has already been judged grammatical can be used in a particular discourse context (e.g. discourse initially, or in a setting where certain referents have already been mentioned). Distinguishing between truth-value judgments and felicity
judgments looks simpler at first sight than it is in practice. Very often a sentence that one expects to be infelicitous in a certain context is judged simply as ‘false’. To obtain more fine-grained judgments, I first presented consultants with a scenario that could be described linguistically (as in 13) or visually (as in 14). The query was either stated as a question like, ‘If someone said ‘S’ in this situation, would he be telling the truth?’ or the consultant was asked to describe the situation himself. If a sentence $S$ was judged false in the scenario provided, the follow-up questions were ‘Why would it be false to say $S$?’ and ‘What would one need to say in order to be telling the truth?’ The answers to these questions are not considered the ultimate semantic analysis of a sentence, but they remain important data to be taken into account when formulating further hypotheses.

(13) Example of a linguistically stated scenario:
Cristina and I were making toys last night. Cristina made one toy and I made two. Would it be true to say ‘Violeta ka Cristina uahtiksï tanichani ch’anârhakwa’?
R: No, it would not be the truth. That means that you made three and Cristina made three.
V: What would be a true way to say it then?
R: Violeta ka Cristina uahtiksï tanimu ch’anarhakwa.
V: And would it be true to say ‘Violeta ka Cristina uahtiksï tanimu ch’anawhakwichani’?
R: Yes, that is true as well.

(14) Example of a visual scenario: (Picture 1 below)
V: Tell Saulina what you see in this picture.
J: Thámu anátapuru jarhahtiksî mándani pájaruicha.
V: Is it true ‘Mándani anátapuru jarhahtiksî thámu pájaruicha’?
J: No. That would need four birds on each tree, and that is not the truth.
Since Purépecha is undergoing so many changes under the influence of Spanish, eliciting judgments about sentences that have been crafted by the analyst is not sufficient to find out what the preferred forms are in certain contexts. For instance, as it will be discussed in Chapter 4, classifiers are falling out of use, to the extent that if one asks for the grammaticality of a sentence with a classifier and its exact counterpart without the classifier, both will be considered equally grammatical. Chamoreau (2009) points out the scarcity of classifiers in several corpora. However, just from looking at spontaneous discourse one cannot conclude that classifiers have fallen out of use just because they fail to show up: it might well be that the context is not adequate to prompt their use. Both direct elicitation and free discourse recording will fail to show the current state of use of classifiers. In order to know if classifiers are used at all in everyday speech, I tried to set two contexts that would bring about
the use of classifiers in semi-spontaneous speech. One of them is asking for cooking recipes, where numeral phrases and measure phrases are expected. The other one consists in setting a direction task: one consultant is simultaneously presented with a certain arrangement of objects in a picture and with the same set of objects on a table. He or she is then asked to tell his or her partner (who is not looking at the picture) to arrange the objects on the table so that they resemble the picture shown. Classifiers were used profusely in both the direction task and the recipe elicitation.

An important methodological point consists in developing tests to distinguish between the three classes of nouns that in Purépecha correspond to different syntactic patterns. Apart from identifying their syntactic differences -or similarities- which is the subject of this dissertation, we need independent semantic criteria that support the tri-partite classification we propose. There is a consistent cross-linguistic tendency to map homogeneous substances like water, liquids in general or aggregates of particles like salt, san and dirt into the denotations of mass terms (Chierchia 2009). But when it comes to the denotations of count-mass nouns and count nouns languages vary with no apparent predictable pattern (cf. Spanish cubiertos (count) and English silverware (count-mass). So, we have an intuitive guide to know whether a noun belongs to the mass class if it denotes a substance, but the same cannot apply to count-mass nouns.

As it will be explained in more detail in Chapter 2, mass nouns and count-mass nouns differ from count nouns in that the later denote exclusively atomic units, excluding sums of individuals. If \( N \) is a count noun, (e.g. English dog) then it can be used as a predicate of a certain atomic individual \( a \), (e.g. Fido) but not the sum of two
identical individuals \( a \) and \( b \) (e.g. Fido and Spot together). In contrast to atomic reference, the main semantic feature that distinguishes count-mass and mass nouns from count nouns is *cumulative reference*: if a noun \( N \) is count-mass or mass, then whenever it is true of any two individuals \( a \) and \( b \), it will also be a true description of their sum. Therefore, we applied a test to tell apart count nouns from count-mass nouns based on whether they allow cumulativity inferences. The speaker was presented with an object of a certain kind (e.g. an orange), and asked to describe what he saw in the picture, taking as a model a sentence like (15):

\[
(15) \quad \text{Jiní jarha-h-ti} \quad \text{ma} \quad \text{narasha} \\
\text{there} \quad \text{be-PFVE-3IND INDEF orange} \\
\text{‘There is an orange there’}
\]

Then the speaker was presented with two or more objects of the same kind, and asked if the same bare noun (e.g. *narasha* ‘orange’) be used to render a true description of the picture, that is, if a sentence of the form (\%) would be equally true in the new context:

\[
(16) \quad \text{Jiní jarha-h-ti} \quad \text{narasha} \\
\text{there} \quad \text{be-PFVE-3IND orange} \\
\text{‘There is an orange / oranges there’}
\]

When the answer was affirmative we deemed to be treating with a count-mass noun. When the answer was negative we considered that the noun was a count noun. In the latter cases, speakers consistently added plural inflection to the noun (e.g.
wichu-icha ‘dog-pl’) to render a truthful description of the picture that included multiple objects of the same kind.

After testing a sample of nouns for cumulativity inferences, the pattern that emerged was that most nouns that refer to raw edible goods (like corn, oranges, avocado, chile, pumpkins, etc.), belong to the count-mass class. Perhaps the motivation behind it is that these are objects that are harvested in groups of several individuals. Some man-made objects, like pots, pans and cups are also consistently mapped into denotations of count-mass nouns, but there is no predictable pattern here, since some man-made objects like hats and aprons show an erratic behavior, sometimes allowing cumulative inferences and sometimes not. Most animate individuals (dogs, humans, horses, flies, etc.) belong to the count class but there are important exceptions (fish, hens, lice), which will be the subject of Chapter 5. However, this is just a tendency and not a strict rule. What belongs to a count or a count-mass class is to a good degree subject to convention. A noun that, given the nature of its referent, was predicted to belong to a count or count-mass class but did not behave syntactically like other nouns in the same category, was tested for cumulativity inferences as described above.

In order to make the results of this research comparable to similar investigations carried out in other languages, I made use of Keenan’s Quantifier Checklist (2008). I also used Benjamin Bruening’s (2008) visual materials for research on quantifier scope and some visual aides designed by myself. As much as space
permits, the explicit stimuli used in the truth-value tasks are presented as contexts in the body of this dissertation.
Chapter 2

The mass/count distinction
and its manifestation in Purépecha

Introduction

The central object of this dissertation is to investigate how the mass/count distinction is reflected in the structure and interpretation of noun phrases in Purépecha. I will start by showing how different classes of nouns meet different restrictions of occurrence in certain morpho-syntactic environments. For instance, some nouns can combine with numerals directly, while others need the presence of a measure phrase (like in English *one cup of sugar, two pounds of sand*). Other nouns allow the presence of a classifier in counting contexts, and the classifier is selected depending on the shape of the units that are counted. However, unlike other classifier languages like Chinese or Vietnamese, in Purépecha the presence of a classifier in counting contexts is optional, a fact that must have some bearing on the semantics of nouns that combine with them. Likewise, some nouns need to mark plural reference by means of a plural marker (cf. English *boy vs. boys*), while other nouns can refer to pluralities without needing a
special suffix. I will propose that the availability of certain morpho-syntactic elements in a noun phrase is to a great extent determined by the class of the head noun and the structure of its denotation.

I will show that the morpho-syntax of Purépecha distinguishes not two, but three classes of nouns: mass nouns, like itsi ‘water’ and k’wiripita ‘meat’, count nouns like wichu ‘dog’ and anátapu ‘tree’, and a third class that I will call, following Doetjes (1997), ‘count-mass nouns’, a class of nouns which includes terms like narâsha ‘orange’, kupánta ‘avocado’ and shanini ‘corn cob’. This latter class behaves in some respects like mass nouns; for instance, they can have plural denotation without needing a plural marker. In some other respects they behave like count nouns: they select a weak quantifier wánikwa ‘many’ just as count nouns do, and reject kánikwa ‘much’, which is used exclusively with mass nouns. And yet in another respect, they conform to a pattern of their own: count-mass nouns are the ones that may co-occur with classifiers in numeral constructions (tanímu irhákwa kupánta ‘three round pieces of avocado’). In this introductory chapter, I will first outline how the mass/count distinction and its relevance to the description of natural language have been treated in the literature (Section 2.1). Then, I will explain how the data from Purépecha are consistent with various theoretical positions (Section 2.2).

2.1 The mass/count distinction debate

The debate on the relevance of the mass/count distinction for the general theory of language centers around different aspects, depending on what is (or is not)
considered evidence for the existence of this distinction and its linguistic import. Some approaches establish a distinction between classes of common nouns based on their different combinatorial possibilities with certain other elements (e.g. plural marking and numerals) (cf. Gillon 1996, Huddleston & Pullum 2002). For some others, the inference patterns triggered by the choice of certain common nouns are crucial. From the latter viewpoint, what is characterized as mass or count are the semantic values of the nouns in question (Quine 1960, Krifka 1989, Chierchia 1998, 2010, Pelletier and Schubert 2002). We could summarize the main points of concern of each approach in the following set of questions:

(i) On the nature of the distinction: Is the mass/count distinction semantic or syntactic (or both)? Are nouns ascribed to one class or other according to what they denote or is the division justified solely on the basis of their syntactic distribution? A related question is whether there are universal criteria that the referent of a noun should meet in order for the noun to be considered mass (or count), or if the distinction is language-specific and arbitrary.

(ii) On the relevant linguistic level of its manifestation: Is the mass/count distinction encoded lexically or derived syntactically by specialized functional heads? Is membership to one class or the other specified in the lexicon or is the mass/count distinction a property of projections higher than the noun?

(iii) On the number of noun classes involved: Is the distinction between mass and count nouns bi-partite and universal, or are there languages that distinguish more
than two classes of nouns based on their count properties? Are there languages that do not draw this distinction at all?

This dissertation does not aim to answer all of these questions, but it is useful to have them in mind as the main axes around which the argumentation on mass/count distinctions and their grammatical reflexes take place. The proposals in this work, however, do take a stand regarding each of the points of discussion laid out in (i)-(iii). In particular, regarding the first question (whether the distinction is semantic or syntactic or both), we will assume that it manifests in both aspects simultaneously, since in our compositional framework semantic information has syntactic reflexes and vice-versa.

Link (1983) and Landman (1991) argue that mass nouns and count nouns are not only different in their syntactic distribution, but that they in fact have different domains of denotation. The denotations of mass nouns constitute algebraic structures which do not specify the presence of minimal parts, while count nouns find their denotations in similar structures which include only atomic units. If we follow this line of thought, the syntactic classes of nouns that Purépecha recognizes do not relate one to one with semantic domains, since there are two possible semantic domains but three distinguishable syntactic classes of nouns. Accordingly, it needs to be explained why count-mass nouns in Purépecha share some distributional and interpretational properties of mass nouns as well as of count nouns.

An alternative approach to Link (1983) is the one proposed by Chierchia (2010), according to which mass nouns and count nouns find their denotations in the
same domain, the only difference being that what constitutes a minimal unit for a mass noun denotation is left vague. If this were the case, the next natural question would be what motivates the different syntactic distribution of mass, count and ‘count-mass’ nouns, if the structure of their denotations is practically the same. Our stance regarding the third class of nouns is that their denotation consists of a partially ordered set of atomic units which also includes their sums. In this respect, count-mass nouns denote the very same kind of algebraic structure that plural-marked nouns denote, except that they do not need a morphological marker for plurality. The three classes of nouns recognized by the syntactic characteristics that will be described throughout this dissertation thus correspond to three different (but related) domains of denotation, the formal characteristics of which will be presented in section 2.2 below.

The second central point of debate is whether the mass/count distinction discriminates between lexical entries or if it concerns larger segments, like noun phrases or determiner phrases. A lexicalist view (e.g. Gillon 1996, Doetjes 1997), would consider that each noun comes with a specification for mass or count status. This specification can come in their semantic description, or by way of a syntactic feature, or both. Another approach, however, considers that all nouns belong to the same class: either they are all mass nouns or they are all unspecified for the mass/count distinction, and they start exhibiting the signature properties of so-called ‘count nouns’ after merging with certain other elements, like number heads, determiners or classifiers (e.g. Borer 2005). In this dissertation we will simply assume that nouns come from the lexicon already specified for mass/count class. Nouns
denote sets of individuals, and the relations between these individuals are what give
the noun its mass/count status. Roughly, if the individuals in the set are simply a
random collection of atomic units, the noun is count; if the atomic and the sum-
individuals in question are related by a part-of-relation, then the noun is count-mass;
and if the individuals in the set are ordered by a part-of relation but none of them is
atomic, then the noun is considered mass. Once again, these formal characteristics will
be explained in section 2.2. This way, we will assume a lexicalist view, but we also
leave open the possibility that some operators can combine with nouns to yield a
different denotation structure for complex expressions. Sum-forming operators (e.g.
plural markers) and distributive predicates (e.g. classifiers) are two possible resources
to map a noun’s denotation into a different algebraic structure. These resources will be
the object of chapters 3 and 4 of this dissertation, respectively.

It is a well-known fact that whether a noun is considered mass or count varies
from language to language (e.g. English furniture is a count-mass noun, while Spanish
muebles is plural count). And even within the same language, a majority of nouns that
are usually considered count, like cat (a cat, many cats), may be used as mass nouns
(A cat was hit by a car and later there was cat all over the pavement). The same is
ture vice-versa: under specific interpretational conditions, mass nouns are able to
occur in syntactic contexts that seem exclusive of count nouns (cf: I don’t have much
coffee at home but I can buy you a coffee around the corner). Membership of a noun
to a class is thus not established once and for all, since a mass noun or count noun can
always undergo a shift (Doetjes 1997) or conversion (Gillon 1996) into the other class.
But the mere fact of talking about these changes in category as ‘shifts’ and ‘conversions’ entails a lexicalist view: one that assumes that nouns are ‘born’ in one class and later can be coerced into another class. An alternative view would be that no noun is specified for pertaining to one class or the other; instead, whether the whole projection has count properties or not is ultimately determined by the syntactic structure in which they occur (Borer 2005, de Belder 2008). Under this approach, number markers, classifiers and determiners have specialized roles in assigning count structure to the denotation of their projections, but nouns themselves have no say in that respect. The description of Purépecha noun phrases that constitutes the body of this dissertation does not deal with mass/count ‘shifts’. Although these are attested in the language, I will leave their inquiry to further studies.

Regarding question (iii) above, in this work we show that Purépecha has three classes of nouns, and that a bi-partite approach would not be sufficient to account for the data. The description of the possible noun phrase structures that I present here is organized around a three-way distinction between mass nouns, count nouns and count-

1

I have attested such shifts e.g. a count-mass noun like ichúhta ‘tortilla’, which usually takes the count quantifier namúnitu ‘few’, can also occur with the mass-quantifier sanítitu ‘little’. When elicited, speakers agreed with the grammaticality of sanítitu ichúhta ‘little tortilla’, but rushed to clarify that they would use it only if they were talking about less than one tortilla, or a small amount of pieces of tortilla. Although I did not devote time to a systematic study of mass/count shifts, it seems to me that one can recognize when they occur because speakers convey the special contexts in which the allegedly more marked construction can be used felicitously. Since this is a first description of noun-phrase structure in Purépecha with attention to mass/count distinctions, I preferred to stick to the unmarked contexts and leave the research of shifts to a later stage, when a systematic way of data collection is designed.
mass nouns. In turn, I attribute the distinction between classes of nouns to the different algebraic structures they denote, structures which will be described in section 2.2.

2.1.1 Semantic approaches

A common criterion to determine whether a certain expression $N$ pertains to the mass class consists in checking whether it licenses the following inference: if any two given objects $a$ and $b$ are in the extension of $N$ (that is, ‘$a$ is $N$’ is true and ‘$b$ is $N$’ is also true), then the sum of these objects (represented by the symbol ‘$\oplus$’) must also be in the extension of $N$. Suppose that $N$ is the common noun *ink*, that $a$ is the name of this puddle right here on my desk, and that $b$ is the name for the portion of liquid in the bottle in front of me. Since ‘$a$ is ink’ is true, and ‘$b$ is ink’ is also true, the result of joining together the portion of liquid in the bottle and the puddle on the desk will be an object $c$ of which ‘$c$ is ink’ will also be true. A mass noun $MN$ is thus characterized as follows:

$$(1) \quad \forall x \forall y \left[ [MN](x) = 1 \land [MN](y) = 1 \right] \rightarrow [MN](x \oplus y) = 1$$

This property is known as *cumulativity* (Quine 1960), and it is said to characterize mass nouns like *ink* as distinct from count nouns like *duck*. Count nouns do not support inferences like (1): if this object in front of me is a duck, and that other object there is also a duck, the sum of the two would not be accurately described as a *duck* (but as *ducks*, in the best case).
Although the cumulativity property is a necessary condition for the denotation of mass nouns, it is not a sufficient one. Plural count nouns also trigger valid inferences of the form of (1): if the entities in that pond are ducks, and the entities in that other pond are ducks as well, the result of summing all the entities together is a (plural) entity which can also be characterized as ducks. As correctly pointed out by Gillon (1992:597), cumulativity does not help to distinguish count nouns from mass nouns, but only mass nouns from singular count nouns.

Another property that has been advocated to characterize mass nouns is divisibility (Cheng 1973). A mass noun is that which, if it is true of a certain object \( a \), it is also true of any of the proper parts of \( a \).

\[
\forall x \forall y \left[ \left[ N \right](x) = 1 \land y \leq x \right] \rightarrow \left[ N \right](y) = 1
\]

Where ‘\( \leq \)’ stands for the relation ‘is a part of’.

If the puddle on my desk is ink, any part or portion of the puddle counts as ink as well. In contrast, a part of a duck is obviously not a duck. Divisibility does not apply indefinitely to plural count nouns either. If the plural entity in that pond can be said to be ducks, a part of it that consists of a single duck cannot be described by the plural ducks. The problem is that if we try to apply the criterion of divisibility to mass terms like ink indefinitely, we will find particles of matter so tiny that they would not count as ink anymore. Besides, there are nouns like English furniture, which are by all morpho-syntactic accounts mass terms, but in which the inference pattern allowed by divisibility encounters its limits soon without having to partition the referent into such
minimal parts: a set of two chairs and a table count as *furniture*, but the legs of the chairs do not. It seems that, when applying the test of divisibility, the concept of ‘proper part of’ needs to be refined and adjusted for each mass term separately, such as to allow tiny pieces of matter to count as proper parts of an object characterized by the predicate *wood* but not as proper parts of an object correctly characterized as *furniture*—even if both objects are one and the same. This imprecision concerning what counts as a relevant proper part of an object impedes the notion of divisibility to function as a common denominator for all mass terms.

Ter Meulen (1981) proposes the criterion of *homogenous reference* as a requirement on the denotation of mass terms. A noun has homogenous reference if it consists of “smaller parts of the same whole” and these parts “can be fused to form larger parts of the same whole” (1981:111). A noun $N$ has homogeneous reference if, and only if (3) holds:

$$\forall x \forall y \left[ x \leq y \rightarrow ([N](x) \leftrightarrow [N](y)) \right]$$

The property of *homogeneous reference* is equivalent to the combination of what in mereological theories is characterized as *cumulativity* and *divisibility*, defined above.\(^2\)

---

\(^2\) Equating *homogeneous reference* to *cumulativity* and *divisibility* together does not do justice to ter Meulen’s (1981) intention of providing an intensional semantics for mass terms, arguing against mereological accounts. The arguments against a mereological model for mass nouns, however, do not concern us directly in this moment. I refer the reader to ter Meulen’s paper for the relevant details.
Count nouns can be characterized by the property of *quantized reference* (Krifka 1989, Doetjes 1997), which guarantees that if an entity has a property described by a count noun, no proper part of it can bear the same property. If a certain object \(a\) is a duck, then any other object \(b\) that is a duck cannot be a proper part of \(a\). A noun \(N\) has quantized reference if, and only if (4) holds:

\[
\forall x \forall y \left[ \mathbf{[N]}(x) \land y < x \right] \rightarrow \neg \mathbf{[N]}(y)
\]

Singular count nouns thus do not have cumulative nor divisive reference. They denote a collection of individuals with no part-of relation holding between its elements.

The properties of cumulativity, divisivity and homogeneity are intended to characterize the denotation of mass nouns, just as the property of quantized reference characterizes the denotation of count nouns. Joosten (2003) points out that those who base the mass/count distinction on these criteria advocate an ontological view. However, appealing to these properties does not commit one to the claim that the mass/count distinction that we find in the grammar stems from the ontological properties of the referents. It could well be that mass nouns are those that support inferential patterns that obey divisibility, cumulativity or homogeneity, without claiming anything about the ontological properties of their referents. As pointed out above, the same portion of the world can be referred to by a mass noun (like *gold*) or a count noun (like *ring*). In using different nouns to refer to the same thing, the speaker is not claiming that the same object can have different ontological properties (e.g.
lacking minimal parts in one case, or having no proper parts in the other). Rather, the different descriptions enable different entailments: the speaker is bound to admit that any part of the object denoted by *gold* must be equally describable by the predicate *gold*, while no part of a ring can be described by the predicate *ring*. The commitment thus relates to the possible adequate descriptions of the object, and does not concern its ontological status. Hence, characterizing the denotations of nouns in terms of divisibility, cumulativity or quantized reference does not necessarily bear commitments about the structure of their referents, but merely about the way these referents are represented linguistically.

2.1.2 Syntactic approaches

It is also possible to distinguish mass nouns from count nouns on the basis of their possible syntactic environments and restrictions. For instance, Gillon (1992) and Huddleston and Pullum (2002) characterize English mass nouns (or rather, ‘non-count nouns’) as those which cannot take plural morphology (as opposed to count nouns, which can: *jacket*-s, *duck*-s, *mud*-s, *salt*-s). Mass nouns cannot combine directly with numerals (*three sand, *two mud(s)*), unless a measure expression mediates between the two (*one pound of sand, two puddles of ink*). Some quantifiers, like *much* and *little* select only mass nouns (*much sand, *much jacket(s)*), while others like *many* or *few* can only occur with count nouns (*many ducks, *few ink*). Finally, in some contexts the distinction is neutralized, and some determiners, like the definite determiner or demonstratives, can occur with any kind of noun: *(this jacket, the ink)*.
Gillon (1992) takes a radical syntactic stance on the distinction, claiming that the grammar is not sensitive to properties like cumulativity, divisivity or homogeneity. All that the grammar sees is whether a certain noun is specified with the syntactic features [+/-CT] (count) and [+/-PL] (plural). If a common noun has the [+CT] feature assigned, then it must also be assigned one of the features [+/-PL]. In contrast, a [-CT] specified noun must be assigned the [-PL] feature. These features in turn impose syntactic constraints on the interpretation of the nouns and on their morpho-syntactic distribution.

One of the problems with Gillon’s (1992) approach is that it bases the distinction between mass and count nouns merely on the lexical assignment of features which do not correlate with any independently testable semantic properties. The criteria to determine whether a noun is specified as [+/- CT, +/-PL] are strictly syntactic, e.g. a noun is [+CT +PL] if it can be combined with plural morphology and if it triggers agreement with the verb of which the noun phrase is a subject. This approach suffers from the problem of merely re-stating the distributional characteristics of a noun in terms of lexical features. We will see how a noun like *shanini* ‘corn cob’ in Purépecha can trigger plural agreement in the verb without bearing a nominal plural marker. In some nouns in Purépecha, plural morphology in the noun is not a necessary condition for plural reference. The criteria to distinguish [+CT, +PL] nouns thus might vary from language to language, which would leave us without a language-independent criterion to distinguish classes of nouns.
Furthermore, a strictly binary feature approach also encounters another problem in Purépecha: a noun like *kupánta* ‘avocado’, can combine with an interrogative quantifier *namúni* ‘how many’ but also with *na sháni* ‘how much’, just as mass terms do. It remains a challenge for binary feature analyses to account for the existence of nouns like these. We could attribute this ‘mixed pattern’ to the fact that *kupánta* ‘avocado’ is specified with the feature [-CT], and the interrogative quantifier *na sháni* ‘how much’ matches that feature. But when the quantifier is not an interrogative one, *kupánta* ‘avocado’ will combine only with those quantifiers that select count nouns: *wánikwa kupánta* ‘many avocados’, *kánikwa kupánta* ‘much avocado’. Therefore, we would have to say that the noun *kupánta* is rather unspecified for any of the features [+/-CT]. This is not true, however, because the combination *kánikwa kupánta* ‘much avocado’ is impossible, a fact not predicted by the underspecification analysis. A final solution would be to say that nouns like *kupánta* ‘avocado’, *narasha* ‘orange’, *shaníni* ‘corn cob’ are specified with [+CT] and [-CT] at the same time, a solution that would render the whole binary feature analysis unnecessary or inconsistent, at least for or the fragment of the nominal system of Purépecha that comprises count-mass nouns.

### 2.1.3 Lexical specification vs. syntactic derivation

Syntactic approaches to the mass/count distinction can be divided into two main classes. Some of them, like Gillon 1992, locate all the information in the lexical entries of nouns. Under this view, all common nouns are specified as either [+/- CT],
and the ones that have the [+CT] feature are further specified as [-/+PL]. These features are already built into the nouns from the lexicon. As we noted above, count-mass nouns in Purépecha pose a problem for this approach, since they show a hybrid syntactic behavior which does not help us determine whether they have the feature [-CT] or the feature [+CT] specified from the start. For instance, they can take plural morphology (like [+CT] nouns would do) but only optionally, as opposed to ‘real’ count nouns, for which plural morphology is obligatory when denoting pluralities.

Another approach would consider that all nouns are unspecified for count or mass properties: “mass and count represent properties of functional structures (or their absence thereof) and not properties of lexical, substantive items” (Borer 2005:88). All nouns need to combine with some functional head that provides a ‘portioning out’ that will then allow them to enter in count syntax. In languages like Chinese, classifiers fulfill the role of portioning out a mass term, while in English this would be the role of plural marking or the indefinite article. This proposal fares better than the lexicalist approach in explaining “flexible” mass/count types of nouns without postulating lexical rules for the so-called ‘conversions’ from one class to the other (Gillon 1996). Borer’s (2005) approach would also provide a viable explanation for the behavior of ‘count-mass nouns’ which will not be listed from the lexicon as such (cf. Doetjes 1997). Rather, the mass or count properties associated with them are assigned to the structures in which these kinds of nouns occur.

In a syntactic framework like Borer (2005) and de Belder (2008) all nouns are born equal in the lexicon, and it is in the domain of higher structures that one can
appropriately talk about mass and count distinctions. The difference between a ‘mass noun’ and a ‘count noun’ is that the latter, but not the former, is merged with a $Div$ head, which provides some adequate portioning of the denotation of the noun into countable units. This $Div^0$ can be realized in English by the indefinite determiner or by plural morphology. In languages with classifiers, it is the classifier which occupies $Div^0$. In other words, the cumulativity, homogeneity or quantized reference inferences described in the previous section are triggered not by the lexical specifications of a particular noun, but stem from the occurrence of a particular noun in a certain syntactic structure. In such a view, the properties ‘mass’ or ‘count’ are not properties of nouns, but of higher structures.

If we look at Purépecha count-mass nouns from the non-lexicalist view sketched above, we could explain why nouns like kupánta ‘avocado’ and narasha ‘orange’ can enter syntactic configurations of mass nouns (e.g. when combined with interrogative quantifiers) as well as of count nouns (e.g. when combining with non-numeral intersective quantifiers), since no specification in the lexicon would prohibit them from combining with either. But there would still be two problems for such an approach. One of them is that not all nouns occur in all syntactic environments (recall our earlier criticism of the feature approach, which would not explain why *kánikwa kupánta ‘much avocado’ is ungrammatical in Purépecha). A second problem is that in Purépecha classifiers and plural morphology can co-occur in the same noun phrase. If both elements were realizations of the same functional head, as claimed by Borer (2005), we would not expect them to co-occur. To this we may add that, unlike plural
markers, classifiers in Purépecha have clear lexical content: they refer to properties related to the shape (round, flat or elongated) of objects. Plural markers do not seem to correlate to any lexical description, which is one more reason to think that classifiers and plural markers must not occupy the same functional head. We will return to these arguments in Chapter 4.

The syntactic approach to mass/count distinctions stems from the undeniable fact that almost any noun can be used as mass or count, despite its alleged membership to one of the classes. Given a context that supplies an appropriate standard measure, we can use a mass noun like sugar in a count way, e.g. How many sugars do you want in your coffee? The very same noun sugar that appears as a mass noun in There’s little sugar left can occur in a count environment. Since we do not want to propose that each of these occurrences is related to a different lexical item, it makes sense to say that the noun is rather unspecified for mass or count properties at all. The underspecification approach would also spare us the need to appeal to mechanisms of coercion or ‘lexical conversion’ advocated by the lexicalist views (Doetjes 1997, Gillon 1992).

But even though a wide range of nouns can be used as ‘mass’ or ‘count’, it is also true that some nouns are more naturally found in count (or mass) environments and that the occurrence of the same noun with a mass (or count) reading requires a special context. An often-cited example (Pelletier and Schubert, 2002) is the ‘universal grinder’: suppose a machine that transforms every possible individual object into an indiscernible mass. If we made a duck pass through it, we could end up with duck all over the floor. Some nouns, however, do not seem to refer to objects easy that can be
easily fed into a universal grinder: suppose I use this piece of envelope as a bookmark. If I made it pass through the universal grinder (or the equally destructive hands of my naughty nephew), I could describe a possible resulting scenario by saying *There was paper all over the room*, but the choice of *#There was envelope/bookmark all over the room* seems, if not completely unacceptable, at least distinctively more marked.

Explaining this contrast remains a challenge to the syntactic view. In sum, the ‘universal grinder’ seems not to be that universal: it does not apply indistinctively to all nouns. The fact that, despite the possibility of shifts, some nouns are more natural in some syntactic environments than in others leads us to assume a lexicalist approach, rather than one where the mass/count distinctions are an effect of specialized functional heads.

Summing up this section: there is no consensus in the literature as to whether the evidence for the mass/count distinction –and hence the distinction itself– stems from the denotations of nouns or from some syntactic feature, which might or might not be a direct reflection of a difference in denotation. The syntactic view (Gillon 1992, 1996 Huddleston and Pullum 2002, Bunt, 1985, Ware 1979), suffers from a major drawback: since the evidence can only be language-specific, there is no way of making cross-linguistic generalizations about the phenomenon unless one posits a semantic correlate for the syntactic evidence that each language provides.

Another point of debate is whether the distinction between mass and count really partitions the lexicon into two classes of common nouns or if it is rather an effect of different syntactic heads operating on an otherwise homogeneous category of
nouns. While the lexicalist view encounters the problem of having to account for the prevalent existence of ‘mass-count shifts’ or coercion, the ‘syntax-only’ approach would equally have to deal with the fact that some nouns combine with number heads (or other indicators of count syntax) more readily than others. In this respect, the facts do not appear to speak strongly in favor of either approach. But even if we decided to place the distinction at the level of noun phrases (determiner phrases or number phrases) rather than lexical entries, languages seem to be sensitive to the distinction between count and non-count, which is reflected in the fact that different constructions (or lexical items, or phrases) license different patterns of entailment. It is worth investigating if these patterns hold cross-linguistically and if they are, whether they are tied to particular syntactic configurations or lexical items. This dissertation attempts to contribute to this aim by presenting, describing and analyzing data from Purépecha that seem to at least partially respond to these questions. We will explain how below.

2.2 The mass/count distinction in Purépecha

Given that the mass/count distinction is strongly associated with the expression of number, we would expect the distinction to have different grammatical reflexes in different languages according to the resources that the language has to express plurality and other number-related notions. For instance, English distinguishes plural reference by adding a suffix -s to the noun. The possibility of combining a noun with

\[ \text{(3)} \]
this suffix is, in turn, used as a criterion to identify count nouns, which are the only ones that can take the plural -s. It is exactly the same class of nouns that can be combined with a numeral, but this should not be surprising since in English numerals above ‘one’ require their noun complements\(^4\) to be inflected for plural. This is not the case in every language. In some languages numerals do not require or do not allow a plural noun—cf. Hungarian (Corbett 2000), Armenian (Borer 2005). It makes sense then to think of nominal plural marking and numerals as two separate criteria which can be used independently in testing for a noun’s status as mass or count. Plural marking and co-occurrence with numerals are two useful syntactic criteria to distinguish count nouns in some languages: if a noun combines with a numeral or if it can take a plural marker, the noun in question is count. Otherwise, it is a mass noun. However, it will be shown that these resources must be used with caution. In Chapter 3 of this dissertation I will show that in Purépecha numerals and plural marking can occur with nouns that do not require a plural marker to express plurality, and which thus could be considered mass terms in their own right: \textit{kupánta} ‘avocado / avocados’; \textit{kupánt-i}cha ‘avocados’. Compare this situation with English, where a count-mass noun like \textit{furniture} cannot take a plural marker: \textit{*furnitures}. The plural marking criterion in Purépecha distinguishes ‘real’ mass nouns (or substance mass

---

\(^4\) Of course, there are other possible markers of plurality in English, like zero morphology (\textit{sheep} - \textit{sheep}) or suffixes different than -\textit{s} marking (\textit{ox} - \textit{oxen}). For expository purposes, I will not go into examples with irregular morphology.

\(^4\) It will become clear in Chapter 3 why we consider that nouns are complements of numerals (more specifically, of a sum-forming operator involved in a numeral expression).
nouns) from the other two classes (count and count-mass nouns), and this dividing line between classes of nouns is quite different from the one drawn by plural morphology in English.

It is because of these reasons that one cannot rely on the syntactic distribution of nouns alone to distinguish between mass nouns and count nouns. In this dissertation we start from positing some independent semantic characterization for each class of nouns. In subsequent chapters we will test how the nouns of each class behave with respect to the means available in Purépecha to express number, individuation and quantification.

2.2.1 Three domains of denotation for nouns

Throughout this dissertation it will become clear that Purépecha does not conform to a binary mass/count distinction, but rather to a tripartite one: there are count nouns, mass nouns and a third class that we have been calling count-mass nouns, following Doetjes’s terminology (1997). We advocate a view whereby each noun class corresponds to a particular algebraic structure of the noun’s denotation. The denotation of count nouns is characterized by constituting a set of atomic individuals. That means, if \( N \) is a count noun, and \( x \) is an element of \([N]\), no proper part of \( x \) is an element of \([N]\).

(5) If \( CN \) is a count noun, then \( \forall x \forall y [(CN(x) \land CN(y)) \rightarrow \neg (x < y)] \)

Mass nouns also denote sets of individuals, except that this set does not contain atomic entities. Recall that cumulativity is defined as a characteristic of mass nouns and it must be captured in the structure of their denotation. We had given above a definition of mass nouns based solely on this property, but we also added that mass nouns are not only cumulative, but also divisive. This means that for all \( x \) in the denotation of a mass noun \( MN \), there is at least one proper part of \( x \) that also falls within the denotation of \( MN \). The denotation of mass nouns is not just a random collection of individuals, but a set of entities ordered by the part-of relation.

\[
\forall x \exists y [(MN(x) \land (y < x)) \land (\exists x \forall y [(MN(x) \land MN(y)) \rightarrow MN(x \oplus y)])
\]

Count-mass nouns have semantic properties of both count nouns and mass nouns. They include atomic units in their denotation (just like count nouns), but they are like mass nouns in being cumulative. This is because the denotation of a count-mass noun is a partially ordered set that includes atoms and the sums formed thereof. A count-mass noun \( CMN \) is thus characterized as follows:

\[
\forall x \forall y [(CMN(x) \land CMN(y)) \rightarrow CMN(x \oplus y)] \land \exists x \exists y [CMN(x) \land (y < x) \land \neg CMN(y)]
\]
The denotations of mass nouns and count-mass nouns are sets of individuals closed under the sum-operation. The structure of these sets can be thought of as lattices (Link 1983). The following diagrams illustrate graphically the relation between the elements of each denotation domain (suppose that $a$, $b$ and $c$ are atomic individuals, and the arrows signal the directionality of the part-of relation):

**Figure 1. Denotation of count, count-mass and mass nouns.**

Given the three possible domains of denotation for nouns, we will now define the contribution of sum-forming operators.

### 2.2.2 Semantics of plural markers as sum-forming operators (Link 1983)

Plural markers, like English -s, have the effect of mapping a set of atomic individuals to the set of plural individuals that can be formed from them. Link (1983:16) makes use of the operator ‘*’, which applied to a predicate $P$ generates the set of sums of elements of $P$. $*P$ is thus the closure under sum-formation of $P$. Note that $*P$ is cumulative: all sums of any two elements in $*P$ is also in $*P$. A similar operation $*P$
(proper plural) is defined as *P minus the atomic elements in P. A starred predicate *P contains all the elements in P plus their sums, while the proper plural *P contains exclusively the sum individuals generated from P but none of its atomic elements. In this dissertation we will assume that plural markers and other sum-forming operators have the effect of ‘*’, and not of ‘**’.

(8) Sum-forming operator:
\[ \lambda P \lambda x. *P(x) \]
\[ \lambda P \lambda x. x \in \{ x: \exists y \exists z P(y) \land P(z) \rightarrow x = y \oplus z \} \]

In this dissertation I argue that Purépecha has two sum-forming operators. One of them is the noun suffix -icha, which in contexts of making reference to pluralities occurs obligatorily with count nouns, optionally with count-mass nouns and never with mass nouns. The distribution of -icha is the subject of Chapter 5. In Chapter 3 I argue that, besides -icha, Purépecha has another sum-forming operator, realized by the suffix -mu that occurs as the ending of indefinite numeral expressions. Numerals in Purépecha can co-occur with count nouns and count-mass nouns only. The two sum-forming operators (-mu and -icha) thus occur with the same classes of nouns: those whose denotation contains atomic units. Note that this situation is different from English, where count nouns are the only ones that occur with numerals and with plural markers. English count-mass nouns, despite including atomic units in their denotation, never occur with plural markers or numeral expressions (*three furniture(s), *luggage-s).
The different distribution of plural markers and numerals in English and Purépecha is explained by the different definability conditions for sum-forming operators that hold in each language. By means of example, compare the definition of the English plural marker -s and the Purépecha plural marker -icha (I leave the definition of the second Purépecha sum-forming operator -mu for Chapter 3):

(9) a. Definition of English Plural marker -s:
\[ \lambda P \lambda x. *P(x) \land \forall x[P(x) \rightarrow \text{Atomic}(x)] \]

b. Definition of Purépecha Plural marker -icha:
\[ \lambda P \lambda x. *P(x) \land \exists x[P(x) \rightarrow \text{Atomic}(x)] \]

English requires that its sum-forming operators apply only to sets all of whose elements are atomic individuals. Purépecha has a weaker condition for sum-formation: it is sufficient that the set \( P \) contains some atomic individuals. Hence count-mass nouns may take plural markers in Purépecha, but not in English.

2.2.3 Syntactic cues for different classes of nouns

In Chapter 4 we will argue against the identification of the role of plural markers and classifiers. Chapter 5 presents the distribution of plural markers: while Purépecha has a number marking system that distinguishes between plural and non-plural, not all nouns need the plural suffix to express plurality. We take this optionality as a reflection of the mass status of the noun, although for what will be shown in Chapter 3, in Purépecha ‘mass’ is not interchangeable with ‘non-count’: some nouns can be mass and count at the same time, showing that the distinction is not universally
bi-partite. We will show that numerals do not always combine with plural-marked nouns, and in Purépecha this is due to the fact that numeral expressions bear themselves a marker of plurality. The arguments in favor of this analysis of numerals will be reinforced in Chapter 6, where we will present other possible suffixes for numeral expressions that can signal distributivity or maximality. Chapter 7 presents the selection of different non-numeral quantifiers depending on the mass/count status of the noun.

Consider a language like Chinese, which does not express a plural/singular distinction by grammatical means. In such a language, the plural inflection criterion will no longer be valid to differentiate between mass and count nouns. After all, the definition of a mass noun should not be ‘that which cannot be pluralized’, but rather it should be cast in terms of properties like divisibility, cumulativity or homogeneous reference, as defined above. Chinese does have numerals, though, so we could look at the possible nouns that combine with numerals to single out a class of count nouns. Here we will encounter again a problem, since numerals do not combine directly with any noun at all, and they require the presence of a classifier to mediate between them and the noun. Evidence like this suggests that Chinese does not have a mass/count distinction: to the extent that it still makes sense to use the term, one would say that in Chinese ‘all nouns are mass’ (e.g. Chierchia 1998). However, this view has not gone uncontested: Doetjes (1997), Cheng & Sybesma (1999) distinguish a class of nouns that can only take massifiers or measure expressions instead of classifiers. It looks like, even if ‘all nouns are mass’ (in the narrow sense where ‘mass’ simply means they
cannot combine with a numeral expression or plural), some are more ‘mass’ than others: Chinese does distinguish between substance-mass (or mass-mass, Doetjes 1997) nouns and count-mass nouns (‘fake mass’, Chierchia 2009). Languages like Chinese are a good example of why one cannot establish the distinction between mass and count based solely on grammatical cues because cues that are relevant for one language might not be applicable to another language.

Chinese has no plural markers; instead, it makes generalized use of numeral classifiers. English has no classifiers properly speaking, but it does have plural marking. A generalization attributed to Sanchez & Slobin (1972) and Greenberg (1972) establishes a correlation between the use of classifiers and the lack of plural marking and vice-versa. In its weakest form, the generalization predicts that classifiers and plural marking do not co-occur in a noun phrase. Borer (2005) draws from this mutual exclusiveness that plural markers and classifiers must fulfill the same function, which she proposes is the role of mapping a mass denotation into a set of countable units. In this respect, the data from Purépecha are revealing: Purépecha has a number marking system as well as a classifier system, and often the two (classifiers and plural markers) co-occur in the same noun phrase. This calls for a rejection of Borer’s (2005) claims. We show in Chapter 4 that classifiers are semi-lexical elements that map a noun denotation into a set of atoms, while plural markers have the opposite effect of mapping a set that contains atomic units into a set of sums (Link 1983).

English can also distinguish two classes of nouns based on the opposition between the determiners many and few, which only combine with count nouns, and
much and little, which take mass nouns. Other languages do not have different sets of quantifiers for different nouns. For instance, Spanish only has the corresponding determiners mucho and poco, which when combined with a count noun agree in number with them (muchos patos ‘many ducks’; pocos patos ‘few ducks’), but when appearing with a mass noun do not take a plural marker (mucho alcohol ‘much alcohol’, poco alcohol ‘little alcohol’). In Chapter 7, we will show that Purépecha resembles English in that it distinguishes two sets of quantifiers: kānikwa ‘much’ combines only with mass nouns and signals large amount, while wánikwa ‘many’ appears with count nouns and count-mass nouns and signals great quantity. Correspondingly, sanítitu combines with mass nouns and is thus the correlate of English little, while namúunitu takes count nouns and is the correlate of English few. Despite the similarities, the Purépecha quantifiers sensitive to the mass-count distinction are not the exact equivalents of English: while in English a count-mass noun like furniture would not take the quantifier many, in Purépecha count-mass nouns like narásha ‘orange’ combine with wánikwa ‘many’ and not with kānikwa ‘much’. This shows that count-mass nouns do not always conform to the generalization of being ‘syntactically count, but semantically mass’ as Doetjes (1997) characterizes them. Rather, the syntactic status of count-mass nouns can vary greatly from one syntactic environment to another. In some respects, they pattern along mass nouns, in some others they behave like count nouns. And in showing this hybrid behavior they seem to form a class of their own.
2.2.4 Summary

The following table summarizes what we have been saying about the three classes of nouns in Purépecha. We distinguish each of these classes based on the structure of the noun’s denotation. This should remain constant across languages. In contrast, the syntactic distribution and combinatorial possibilities that each class of nouns presents with respect to plural markers, numerals, quantifiers and other grammatical resources might vary from one language to the other. We list the main criteria that would allow us to see how the semantic distinction made in the first column manifests in the grammar of Purépecha.
Table D. Main characteristics of count, mass and count-mass nouns

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Count-mass</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domain of denotation</strong></td>
<td>Set of atomic units</td>
<td>Set of atomic units and their sums (pluralities)</td>
<td>Set of sums, with no atomic units.</td>
</tr>
<tr>
<td><strong>Co-occurrence with numerals</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>No (unless a measure phrase mediates between numeral and noun)</td>
</tr>
<tr>
<td><strong>Obligatory plural marking when referring to multiple individuals</strong></td>
<td>Yes</td>
<td>No (marking is optional)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Co-occurrence with classifiers</strong></td>
<td>Yes (rare)</td>
<td>Yes (usual)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Co-occurrence with wànikwa ‘many’ and namùnitu ‘few’</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Co-occurrence with kànikwa ‘much’ and sanùtitu ‘little’</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Chapter 3

Numerals and number marking

Introduction

Purépecha numeral roots can take different suffixes corresponding to different interpretations of the noun phrase: indefinite, maximal and distributive, shown below in examples (1)-(4). The possibility of combining the same numeral root with different suffixes reveals that numeral words in this language are at least bi-morphemic, even when they are used as indefinites. In this chapter I propose an analysis by which one of the elements involved in indefinite numerals is a sum-forming operator, while the numeral root expresses a quantity. The numeral root then acts as an argument of the sum-forming operator and not as a direct modifier of the noun. Section 3.1 presents the descriptive data. In 3.2 we explore two theories of numerals and how they fail to account for the data, and then we introduce the claim that numerals are arguments of Number heads. The third section lays out an analysis based on features (Harbour 2008) and justifies the presence of different Number heads in Purépecha.
3.1 Numerals in Purépecha are bi-morphemic

The four different endings for numeral expressions are exemplified in (24)-(27):

(1) Pégru arhá-h-∅-ti thá-mu tiriápu
   P. eat-PFVE-PRES-3IND 4-SUM corncob
   ‘Pedro ate four corn cobs / four of the corncobs’

(2) Pégru arhá-h-∅-ti thé-peráriansiy tiriápu
   P. eat-PFVE-PRES-3IND 4-MAX corncob
   ‘Pedro ate the four corncobs’

(3) Pegru ka Pabluy arhá-h-∅-ti thá-chani tiriapu
   P. conj P. eat-PFVE-PRES-3IND 4-DIST corncob
   ‘Each one of Pedro and Pablo ate four corn cobs’

(4) Eshé-s-ka-ni thé-porhú yurhíri
    see-PFVE-1/2IND-1SG 4-DIST.LOC blood
    ‘I saw blood in four places / I saw four stains of blood’

Cardinal numerals in Purépecha share the ending -mu as in (1): tani-mu ‘three’; thá-mu ‘four’; yú-mu ‘five’, kwí-mu ‘six’. This ending enables the indefinite reading of the noun phrase: it can introduce referents for the first time in discourse, and scope under or over other scope-taking elements in the clause. Numerals ending in -mu also allow a partitive interpretation, selecting the specified number of elements from a previously introduced set of entities. The accompanying noun must have a plural marker -icha if it denotes an animate entity as in (5a), or a ‘highly individuated inanimate’ like anátapu ‘tree’, or tróki ‘car’ (5b). Not all of these nouns can be

5

In order not to digress in the argumentation of this chapter, which concerns indefinite numerals exclusively, I will show the contrast between indefinite, maximal and distributive by providing only free translations of each sentence. The semantic evidence that supports the analysis of distributive and maximal numerals will be presented in Chapter 6.
considered animate; hence, the feature that triggers obligatory plural marking in numeral constructions is not animacy. We claim that these nouns constitute the class that we have identified as count nouns in Chapter 2.

(5)  a. Taní-mu acháati*(-icha)
     3-mu man-PL
     ‘Three men’

     b. Taní-mu urhíkwa*(-icha)
     3-mu oak tree-PL
     ‘Three oak trees’

Nouns denoting other inanimate entities, like man-made objects and edible things, as well as some animates like birds, fish and lice, which we classified under the category of count-mass nouns, do not require the plural marker when they combine with a numeral.⁶

(6)  a. Taní-mu tsúntsu(-icha) bárru-iri
     3-SUM cup-PL clay-GEN
     ‘Three clay cups’

     b. Taní-mu kurhúcha(-icha)
     3-SUM fish-PL
     ‘Three fish’

The nominal plural suffix -icha is obligatory with count nouns, optional with count-mass nouns and impossible with mass nouns. Simple cardinal numerals above

⁶ If the noun is a measure phrase, –icha cannot be affixed to the noun:
   (i) Taní-mu tsuntsu-(*icha) kamata
     3-mu cup-pl atole (corn beverage)
     ‘Three cups of atole’
‘2’ occur with the ending -mu regardless of the kind of noun with which they combine. Some nouns allow the presence of a classifier when they combine with a numeral, but the classifier is never obligatory. Therefore, we will concentrate on the form without it and will leave the description and analysis of classifiers for Chapter 4.

Since in all indefinite numeral constructions in Purépecha what remains constant is the presence of -mu attached to the numeral root, we propose that this suffix is indeed the sum-forming operator that maps the denotation of the noun into a set of pluralities. The numeral root (tha- ‘4’, tani- ‘3’, etc.) specifies the cardinality of each of these pluralities, determining how many atoms there are in each plural individual yielded by the application of -mu to a noun. (7) is a formal account of the semantics of a numeral phrase like tanimu tiriapu ‘three corncobs’; the noun tiriapu ‘corn cob’ belongs to the count-mass class:

(7) a. \[\text{[tiriapu]} = \{x: \forall y (\text{atom}(y) \land y \leq x) \rightarrow \text{corncob}(y)\}\]
(A set of entities whose atomic parts are ears of corn)

b. \[\text{[-mu]} = \lambda P \lambda n \lambda x. \ast P(x) \land |x|=n\]
(A function that takes a set of plural or atomic entities and a quantity \(n\), and yields a set of plural individuals with \(n\) atoms)

c. \[\text{[taní]} = 3\]
(A singular term, the quantity 3)

We assume from Link (1983) that plural markers denote sum-forming operators (i.e. functions that map a set of individuals into a set of plural individuals). In Purépecha, there are two morphemes that denote sum-forming operators. One of them is the nominal suffix -icha, which maps the denotation of a count noun into a set
of pluralities, and whose distribution and interpretation will be the subject of Chapter 5. The other one is the marker -mu, which has the same effect of mapping the denotation of the noun into a set of plural individuals, and further imposes the requirement that a quantity expression specify the number of atoms involved in each plural individual in the set.

Summing up, a language like English has a single sum-forming operator marker -s that can occur with a quantity expression (three pig-s) or without it (pigs). Purépecha has two such operators: a monadic marker -icha (achaati-icha ‘men’) and a dyadic one, -mu (yú-mu acháati-icha ‘five men’). The latter requires the presence of a quantity expression, which is why -mu is only found attached to numeral roots.

The other numeral suffixes (-perárani and -ichani) are described in Chapter 6 of this dissertation. Meanwhile, the evidence presented in (1)-(4) is meant to show that numeral expressions are composed by at least two different morphemes. In the following sections I present two different theories of numeral expressions: the Generalized Quantifier Theory approach (Barwise & Cooper 1981) and the Predicate approach defended in Link (1983) and Ionin & Matushansky (2006). Both theories share the assumption that numerals combine directly with nouns, either as quantifiers or as modifiers. I will argue that an analysis of numeral roots as quantity arguments of sum-forming operators has better empirical coverage than the other two theories examined.
3.2 Two Theories of Numerals and a proposal for Purépecha

3.2.1 Numerals as quantifiers

In the traditional approach of Generalized Quantifier Theory (e.g. Barwise & Cooper, 1981), numerals are considered quantificational determiners of type \(<<e,t>,<<e,t>,t>>\). A noun phrase headed by a numeral has the semantics of a generalized quantifier. An informal account of the interpretation of (1), repeated as (8a), would be as in (8b). The contribution of the numeral word as a quantificational expression would be (8c):

(8)  

a. Pégru arhá-h-∅-ti thá-mu tiriápu  
P. eat-PFVE-PRES-3IND 4-SUM corncob  
‘Pedro ate four corn cobs / four of the corncobs’

b. There are at least three elements in the intersection of the sets \(\{x: \text{Pedro ate } (x)\}\) and \(\{y: \text{corncob}(y)\}\).

c. \([[\text{tanímu}]] = \lambda P \lambda Q. |P \cap Q| = 3\)

Although the informal rendering of the interpretation of (8a) in terms of relations between sets seems to capture correctly its truth conditions, a challenge for a Generalized Quantifier approach is to explain why the class of quantificational determiners is so syntactically and morhologically heterogeneous. For instance, in English, a striking difference between ‘true’ quantificational words (e.g. every, some) and numerals is that only the latter can be preceded by a determiner or demonstrative. This contrast reveals that, while every and some might occupy the syntactic slot of a determiner, the same does not hold for numerals:
(9)  a. *The every corncob was ripe.
    b. *These some corncobs were ripe.
    c. The(se) three corncobs were ripe.

Purépecha numerals can be preceded by demonstratives as well, although this fact does not establish a clear contrast with other quantificational expressions like \textit{iámindu} ‘all’, which can also co-occur with demonstratives. However, the quantifier \textit{máru} ‘some’ may not be preceded by a demonstrative, and this argues in favor of there being at least two different classes of quantificational expressions in Purépecha:

(10)  a. \texttt{ihtsí iámindu juát-icha júkska-kata jarha-h-ti}  
      \texttt{DEM.PL all hill-PL sow-PPLE be-PFVE-3IND}  
      ‘All these hills are sown (with corn)’

    b. *\texttt{ihtsí maru juát-icha júkska-kata jarha-h-ti}  
       \texttt{DEM.PL some hill-PL sow-PPLE be-PFVE-3IND}

    c. \texttt{ihtsí tanímu juát-icha júkska-kata jarha-h-ti}  
       \texttt{DEM.PL three hill-PL sow-PPLE be-PFVE-3IND}  
       ‘These three hills are sown (with corn)’

The examples in (10) reveal that, at least in English, numerals and quantifiers like \textit{some} and \textit{every} do not belong to the same syntactic category; hence, they are possibly not even of the same semantic type. Ideally, a semantic account of Purépecha numerals should be compatible with the semantics of English numerals, unless we want to abandon the idea that numerals must have similar semantic types cross-linguistically. Numerals can be shown not to be quantificational determiners in English, and as they can also co-occur with demonstratives, we have reason to think that Purépecha numerals are not determiner-quantifiers either.
Another weak point of the analysis of Purépecha numerals as quantifiers is their bi-morphemic composition. Even though it is not a problem for Generalized Quantifier theory to have morphologically or syntactically complex quantifiers, one must ideally account for the semantic contribution of each segmentable part of the quantificational expression to implement a compositional analysis. If the semantics of a numeral like \textit{tani-mu} is the one given in (8c), it remains a challenge to determine which part of the relation thus expressed is contributed by which part of the quantificational word.

### 3.2.2 Numerals as predicates

Link (1983) and Ionin & Matushansky (2006) propose an analysis of numerals as modifiers of type \textlangle \textit{e}, \textit{t}\textrangle, \textlangle \textit{e}, \textit{t}\textrangle in which numerals are predicates of plural individuals. Just as an adjective like \textit{red} denotes the set of red entities, the predicate \textit{three} denotes the set of entities that consist of three atomic parts. The semantics of (8a) under this account is informally given in (11). The existential force of the sentence does not come from the numeral itself, but from elsewhere, e.g. by existential closure:

\begin{equation}
\text{(11) } \text{There is an } X \text{ such that } |X| \geq 3, \text{ and for every } x \in X, \text{ corn-cob}'(x) \text{ and Pedro ate } X
\end{equation}

On this account, numerals are not predicates of atomic individuals, but cardinality predicates of plural individuals. The role of the numeral as a modifier is to
provide the cardinality description of the set \( X \). Numerals differ from predicates like \textit{chair} or \textit{red} in that they can never be true of atomic entities, but only of pluralities.\(^7\)

However, if numerals act as restrictive modifiers on sets of pluralities, there is no semantic reason why they would not combine with a lexical plural like \textit{furniture}, whose denotation contains individual pieces of furniture as well as sums of them.

Recall from the characterization of count-mass nouns laid out in Chapter 2 that nouns like \textit{furniture} or \textit{luggage} denote pluralities as well as atomic units, which is why they can admit collective predicates like (12a) or strictly distributive predicates like (13a).

In principle, they should be able to be modified by a predicate like \textit{three}, but they are not, as seen in (14):

(12)  
\begin{enumerate}
  \item a. The furniture is spread around the room.
  \item b. #The chair is spread around the room.
\end{enumerate}

(13)  
\begin{enumerate}
  \item a. The luggage is round
  \item b. #The blood is round
\end{enumerate}

(14)  
\begin{enumerate}
  \item a. *Three furniture are broken
  \item b. *I carried five luggage.
\end{enumerate}

The analysis of numerals as predicates of plural entities thus would not be able to rule out an interpretation for unwanted sentences like (14a) and (14b). In the next section we will propose a solution to this problem where numerals combine first with sum-forming operators, and not directly with nouns. If we wanted to block sentences like (14a) and (14b) from getting an interpretation under a modifier approach like

\[^7\] Exception made of the numeral ‘one’, which, not surprisingly, has a peculiar syntactic behavior cross-linguistically (see Zweig 2005).
Ionin & Matushansky’s (2006), that could only be done by positing an independent restriction on syntactically marked plurals, like the following:

(15) Numerals can only modify plurality-denoting nouns that are syntactically marked as plural.

Doetjes (1997:35) takes such an approach, arguing that nouns can only take numerals if they bear a ‘syntactic marker of countability’. This syntactic marker would be the plural marker -s in English. Since lexical plural nouns (count-mass nouns) like luggage and furniture are already plural, they reject the marker -s, and their countability is not made visible.

A stipulation like (15) does not follow directly from the semantics of numerals or nouns, and it soon encounters counterexamples in a language like Purépecha, which allows numerals (with or without classifiers) to occur with number neutral nouns like tiriapu ‘ear of corn’, even if the noun does not bear a plural suffix. Therefore, (15) could at most be a language-specific stipulation about English and similar languages. We will go into the Purépecha details in the next section.

In a language like Spanish, which allows pre-nominal as well as post-nominal modification, a numeral can never be post-posed to the noun: tres famosos actores ~ tres actores famosos ‘three famous actors’ vs. *famosos actores tres. The strictly pre-nominal position of numerals in Spanish supports a non-adjectival analysis like the one sketched in section (3.2.1) But if we want to maintain that numerals have the same semantic type cross-linguistically, Purépecha poses a counterexample to our claim: in
some dialects of Purépecha, numerals -unlike determiners- can be post-posed to the noun: *tsikata tsimáni ~ tsimáni tsikata* ‘two hens’.

In sum, the approach to numeral expressions as modifiers of plural entities suffers from two drawbacks: it does not provide a principled reason why in English they cannot combine with nouns like *furniture* (which denote atoms as well as pluralities), and it does not account for the syntactic contrasts between numerals and other modifiers, which is evident in languages like English, Spanish or Purépecha. One evident syntactic contrast between numerals and adjectival modifiers in Spanish is that the former are exclusively pre-nominal, while adjectives are usually post-nominal. A similar situation holds for Purépecha: in the unmarked word order, numerals tend to precede the noun, while adjectives usually follow the noun.

### 3.2.3 Numerals as arguments of $\text{Num}^0$

Our proposal is similar to Ionin & Matushansky (2006) in that we do not regard numerals as determiner heads, but rather as complex forms comprising a noun-like expression (a quantity) and a functional element $\text{Num}^0$ that denotes a sum-forming operator. We propose that instead of modifying a plural noun, the numeral root (e.g. *taní- ‘3’ thá- ‘4’) supplies an argument for the sum-forming operator introduced by *-mu* in $\text{Num}^0$. Strictly speaking, numerals as quantity expressions do not combine directly with nouns, but only with a functional head that in turn takes the noun as an argument. The following diagram illustrates how the relation between the two morphemes of Purépecha numerals and their position within DP:
The structure in (16) accounts for why numerals do not behave like adjectival modifiers for plural individuals. In Purépecha, while adjectives are post-nominal in the unmarked word order, numerals almost always precede the noun. This follows directly from the syntactic position of Num\(^0\) with respect to the noun, which has nothing to do with the relative order between adjectives and nouns. An adjective can be an adjunct to an NP, while Num\(^0\) must take the NP obligatorily as its complement.

If we apply the same analysis to English we can also explain why numerals in English cannot combine with semantically plural nouns like *furniture*. To the extent that such nouns cannot be the complements of Number heads,\(^8\) they cannot occur with a numeral, which in turn is only licensed by Num\(^0\). Considering that plural markers like English *-s* or Purépecha *-icha* are Number heads\(^9\) or their agreement reflexes, it

---

8 As we explained in Chapter 2, plural markers can be restricted to count nouns in some languages (like English), while in languages like Purépecha they can occur with count-mass nouns as well. We attributed this variation to different definability conditions of the sum-forming operators available in each language.

9 It is considered that Plural markers occupy Num\(^0\), the locus of sum-formation, but we
follows that in English a noun that does not combine with a plural marker does not occur with a numeral either, since the presence of a numeral entails the presence of a Number head.

Taking Link’s (1983) analysis of plural markers, we are able to assign a syntactic position to sum-forming operators: Num⁰. Now we need to explain why in Purépecha there seem to be at least two such functional heads: on the one hand, -mu, which denotes a sum-forming operator that occurs with numeral roots exclusively; and on the other hand, the nominal suffix -icha, which attaches to nouns independently of the presence of a numeral. We need to explore if these two seemingly different Number heads also possess different semantics, which would in turn raise the question of whether there can be different sorts of sum-forming operators and if so, how they might differ. Furthermore, numeral words for ‘one’ and ‘two’ in Purépecha do not have the ending -mu, which again raises the question of whether they present a counterexample to the claim that numeral roots are complements of Number heads. The following section is devoted to explain these facts, based on proposals by Harbour (2008) and Watanabe (2010).

will see shortly that they can also be triggered by agreement with the presence of a null Num⁰. In any case, the presence of a plural marker entails the presence of a sum-forming operator somewhere in the structure, whether it corresponds directly to the plural morpheme or not.
3.3 The Syntax of Number and Number features

3.3.1 A feature analysis of Number

We assume with Watanabe (2010) and Harbour (2008) that Number heads are specified for the following features: [-/+ singular] and [-/+ augmented]. Roughly, a positive value for these two features corresponds to the properties of being atomic and being divisive, respectively (Harbour 2008:63). Recall from the definitions presented in Chapter 2 that divisibility and atomicity are properties of predicates. The following are the definitions of the [+singular] and [+augmented] features, based on Harbour (2008:61).

(17) Feature definitions:
   a. [+singular] = $\lambda x.\text{atom}(x)$
   b. [+augmented] = $\lambda P \lambda x.\exists y [P(x) \land P(y) \land y \subseteq x]$

A predicate $P$ is atomic if, and only if, all the individuals that have that property are atomic entities (i.e. they have no proper sub-parts to which the same predicate $P$ applies). Expressed in terms of features, this corresponds to $P$ having a positive value [+singular]. When a noun that denotes a property $P$ combines with a

10 The original definitions in Harbour (2008:63) are as follows:
   a. [+singular] = $\text{atom}(x)$
   b. [+augmented] = $\lambda P \lambda x.\exists y [P(x) \land P(y) \land y \subseteq x]$

where $x$ is a free variable. These definitions, however, are hard to accommodate in a truth-compositional semantics of the Numeral Phrase, as it was pointed out by Judith Tonhauser (p.c.) The value of the feature [+singular] is a truth value, but the semantics of the feature [+augmented] needs to combine first with a property. This property is usually the property of being (or not) atomic (i.e. the effect of combining the feature [+/-singular] with a noun), hence the definition of [+singular] had to be revised to avoid a type mismatch. See also Watanabe (2010:49) for a discussion of alternative, but equivalent, ways to define [+augmented].
Number head marked as [+singular], the property of being atomic (i.e. the semantic content of the feature [+singular]) is added to the interpretation of the noun by Predicate Modification. Let us illustrate this point by means of the following example:

(18) a. General Schema of a [+sg] NumP:

```
NumP
   Num^0
       [+singular] NP
            tiriapu
```

b. Interpretation:

```
λx.\text{corn}(x) \land \text{atom}(x) \quad (\text{by Predicate Modification})
```

The property of divisibility as defined in Chapter 2 holds of a predicate $P$ if, and only if, once it applies to an entity $x$, it also applies to all sub-parts of that entity. The version of this property that Harbour has in mind when defining the [+augmented] feature is weaker. For a noun phrase $NP$ to be specified as [+augmented], all that is required is that every entity in the denotation of $NP$ has at least one proper sub-part that also falls within the extension of $NP$. Note that under these definitions, all noun phrases specified as [+singular] must be [-augmented]: atomic predicates are not divisive, not even ‘weakly’ divisive. If a noun phrase is specified with the feature [-singular], it does not follow automatically that it will be [+augmented], otherwise the two features would simply be the opposite of each other and we could do away with only one of them. We will explain the mechanics of feature combining in the lines below.
Before we proceed, we must point out that the advantage of casting the properties of atomicity and divisibility in terms of syntactic features is that they do not need to be exclusively specified in the lexical entry of the noun itself: they can be assigned to a noun or noun phrase by an operator introduced by Num\(^0\). The role of Number heads in the syntax is thus to provide the denotation of a noun phrase with the semantic properties of being divisive or atomic—although that does not preclude the possibility that a noun has one or two of these features specified from the lexicon.

Let us exemplify how the [+singular] and [+/-augmented] features work together by means of an example. Suppose a noun phrase \(NP\) combines with a Num Head marked as [-singular]: this entails that the denotation of the NumP includes entities that in turn have at least a proper part of which \(NP\) is true as well.\(^{11}\)

(19) a. General Schema of a [-sg] NumP:

\[
\begin{array}{c}
\text{NumP} \\
\text{Num}^- [\text{-singular}] \\
\text{NP} \quad \text{tiriapu}
\end{array}
\]

b. Interpretation:

\[
\lambda x. \text{corn}(x) \land \neg \text{atom}(x) \quad \text{(by Predicate Modification)}
\]

\[
\lambda x. \neg \text{atom}(x) \\
\lambda x. \text{corn}(x)
\]

---

Harbour (2008:68) defines feature negation as \([-F] = \neg [+F]\). If that is the case, a [-singular] marked predicate \(P\) lacks atomic units in its denotation. In this respect, having the feature [+singular] is different from having the property of being atomic. A non-atomic predicate is one that applies to non-atomic entities, but which may or may not apply to atomic entities as well. The feature [-singular] \(P\), according to Harbour’s definition, categorically states that \(P\) does not apply to atoms. Likewise, the feature [-augmented] \(P\) entails that if \(P\) applies to an entity \(x\), there is no subpart of \(x\) to which \(P\) applies.

73
Now suppose that the Number Head is also specified as [+augmented]. This feature, by definition, acts upon the property of being atomic (or not). The resulting Number Phrase denotes a set of entities $x$ which have at least one proper part that is [-singular]. That is, the feature [+augmented] scopes over the feature [-singular] specified in the same Number Head, and not directly over the descriptive content provided by NP.

(20) a. General Schema of a [+aug],[-sg] NumP:

```
NumP
   /
/      \
[+augmented][-singular]  NP
tiriapu
```

b. Interpretation:

\[
\lambda x. \text{corn}(x) \land \exists y [\neg \text{atom}(x) \land \neg \text{atom}(y) \land y \sqsubseteq x] \quad \text{(Predicate Modification)}
\]

\[
\lambda x \lambda P. \exists y [P(x) \land P(y) \land y \sqsubseteq x] (\lambda x. \neg \text{atom}(x)) \quad \lambda x. \text{corn}(x)
\]

\[
= \lambda x. \exists y [\neg \text{atom}(x) \land \neg \text{atom}(y) \land y \sqsubseteq x] \quad \text{(Function Application)}
\]

A noun phrase combined with a [+augmented],[-singular] Number Head denotes then a set of non-atomic individuals that have at least one proper sub-part that is non-atomic as well.

Now imagine a different scenario, where the Number Head has a [-singular] feature and also the feature [-augmented]. As a result, the Number Head would denote
entities which do not have proper parts that bear the property [-singular]. In other words, the denotation of would be a set of non-atomic elements that have only atomic subparts. It is easy to see that the denotation of such phrase would contain sums of two individuals: these are non-atomic entities which have only atoms as subparts.

(21) a. General Schema of a [-aug],[-sg] NumP:

\[ 
\text{NumP} \\
\text{NP} \\
\text{tiriapu} \\
\]

b. Interpretation:
\[ 
\lambda x. \text{corn} (x) \land \neg \exists y [\neg \text{atom}(x) \land \neg \text{atom} (y) \land y \sqsubseteq x] \quad \text{(Predicate Modification)} \\
\lambda x \lambda P. \neg \exists y [P(x) \land P(y) \land y \sqsubseteq x] (\lambda x. \neg \text{atom}(x)) \quad \lambda x. \text{corn}(x) \\
= \lambda x. \neg \exists y [\neg \text{atom}(x) \land \neg \text{atom} (y) \land y \sqsubseteq x] \quad \text{(Function Application)} 
\]

One of the main points in Harbour (2008) is to show that the grammar is sensitive to the distinction between these two basic number features. This sensitivity is reflected in the fact that some grammatical processes target noun phrases exclusively with singleton and dual denotations to the exclusion of plurals, thus revealing that the grammar distinguishes [+/-augmented] features besides the more known contrast involving [+/-singular] features. In the following section we will show how Purépecha numerals also reflect the contrast between these two number features.
3.3.2 Different number heads in Purépecha

Purépecha numerals choose markings for numerals *ma* ‘1’ and *tsimáni* ‘2’ that contrast overtly with the marking of cardinalities 3 and beyond. The numeral suffixes -*mu*, -*perárani* and -*ichani* take a different form when they are attached to these numerals roots. The correlates of examples (1)-(3) would be (22)-(24), if the numerals involved are ‘one’ or ‘two’:

(22) a. Pégru arhá-h-∅-ti *ma(-mu) tiriápu*  
P. eat-PFVE-PRES-3IND 1-SUM corncob  
‘Pedro ate one corncob / a corncob’

b. Pégru arhá-h-∅-ti *tsimáni(-mu) tiriápu*  
P. eat-PFVE-PRES-3IND 2-SUM ear.of.corn  
‘Pedro ate two ears of corn / two of the ears of corn’

(23) a. Pégru arhá-h-∅-ti *tiriápu-ni*  
P. eat-PFVE-PRES-3IND ear.of.corn-obj  
‘Pedro ate the ear of corn’

b. Pégru arhá-h-∅-ti *tsimá-rani / *tsimá-perarani tiriápu*  
P. eat-PFVE-PRES-3IND 2-MAX 2-MAX ear.of.corn  
‘Pedro ate the two ears of corn’

(24) a. Pegru ka Pablu arhá-h-∅-ti *má-nta-ni / *má-chani tiriápu*  
P. conj P. eat-PFVE-PRES-3IND 1-ITER-FOR / 1-DIST ear.of.corn  
‘Each one of Pedro and Pablo ate one ear of corn’

b. Pegru ka Pablu arhá-h-∅-ti *tsimá-nta-ni / *tsimá-chani tiriápu*  
P. conj P. eat-PFVE-PRES-3IND 2-ITER-FOR 2-DIST corncob  
‘Each one of Pedro and Pablo ate two ears of corn’

The details of the alternation between the maximality suffix from -*perárani* to -*rani*, as well as the suppletion between the distributive -*ichani* and -*ntani*, will be described in detail in Chapter 6. These examples merely attempt to show that numerals
"ma ‘one’ and tsimáni ‘two’ share morphological similarities that set them apart from the cardinal expressions from ‘3’ and above. For the time being, I will draw attention to the fact that the suffix -mu, which is found in indefinite numerals from ‘3’ and beyond, is conspicuously absent from numerals ‘1’ and ‘2’. The feature that the cardinalities ‘1’ and ‘2’ have in common is obviously not [+/-singular] (ma ‘one’ is [+singular] while tsimáni ‘two’ is not), but the feature [-augmented].

(25)  
  a. [ma tiriapu] [-augmented] [+singular] ‘one corncob’
  b. [tsimani tiriapu] [-augmented] [-singular] ‘two corncobs’
  c. [tanímu tiriapu] [+augmented] [-singular] ‘three corncobs’

Following the feature analysis of Harbour (2008), Watanabe (2010:49) argues that Number heads bearing the feature [+/-augmented] require a numeral in their specifier and conversely, that numerals are only licensed by Number heads marked as [+/-augmented]. His proposal is based on the fact that in some languages, like Turkish and Japanese, numerals do not need to co-occur with plural marking, as he shows in the following example he cites from Kornfilt (1996:119)

(26)  
iki ögrenci-(*1er)  
2   student-PL  
‘Two students’

Further, as Kayne (2005) has observed, in some cases plural morphology is incompatible with the occurrence of a numeral. This incompatibility is evident in Vague Quantity Expressions, like the ones in (27) (Watanabe 2010:38):
The singular/plural distinction marked by plural affixes in English or Turkish is thus neither necessary nor sufficient to license the presence of numeral expressions. The hypothesis that Watanabe puts forward is that “numerals are licensed only when the # head is marked for [±augmented]” (2010:49). Thus, the absence of plural marking in (26) is explained “not just (as) a matter of morphological realization. We need to assume that the [-singular] feature itself is absent, given that the subject with a numeral fails to trigger subject–verb agreement”. Watanabe’s proposal thus makes room for different Number projections, depending on the features they specify.

Purépecha numerals and Number heads show a case that supports Watanabe’s proposal, since in this language different overt expressions correspond to different number heads: one of them is the suffix -icha, which attaches to nouns and distinguishes plural denotations from singular (or number neutral) ones. The semantics and distribution of the -icha suffix will be the subject of Chapter 5. The other Number head is i-mu. This is the suffix that we find in indefinite numeral expressions like taní-mu ‘three’, thá-mu ‘four’, described in (19), but which is absent in má ‘one’ and tsimáni ‘two’.

As we showed at the beginning of this chapter, numeral expressions in Purépecha can be segmented in at least two morphemes, one which specifies a quantity (‘3’, ‘4’, ‘5’, etc.) and another one which introduces what we have been calling a sum-forming operator. The latter function is the role of the suffix -mu. We
propose that this suffix is a [+augmented] Number head that acts upon a [-singular] feature to yield the values of cardinalities higher than 3. The resulting configuration of a noun combined with a numeral expression would be as follows:

(28)  *Tani*-mu *tiriápu* ‘three ears of corn’

\[
\begin{array}{c}
\text{DP} \\
\text{D} \\
\text{NumP} \\
\text{NP} \\
\text{tani} \\
\text{Num}^0 \\
[+aug][-sg] \\
\text{mu} \\
\text{NP} \\
\text{tiriapu}
\end{array}
\]

In (28), Num\(^0\) introduces the features [+augmented] [-singular], and it requires a quantity in its specifier. This requirement is fulfilled by *tani* ‘3’. The plural marker -icha on the noun is not required because *tiriápu* ‘ear of corn’ is the class of noun that does not require such marker when it combines with a numeral. These nouns (count-mass nouns) have the property of being number neutral in other contexts (see Chapter 5): their denotation contains sums as well as atoms.

However, we need to allow for the possibility of the suffix -icha co-occurring with the numeral, as it happens optionally with nouns like *tiriápu* ‘ear of corn’ and obligatorily with nouns like *anátapu* ‘tree’, when a plural interpretation is intended. In those cases we would be dealing with two Number heads: one expressed by -mu and the other one reflected in the presence of –icha. We propose that the suffix -icha is not
itself a Number head, but rather an agreement marker that is required by a null head marked as [-singular]:

(29) ‘Double’ number marking: taní-mu wichu-icha ‘three dogs’

Since there are two Number heads, there are two Number projections. The lower one simply bears the feature [-singular], and it is expressed by a null element which imposes agreement within the noun (marked by the suffix -icha). The upper head bears the feature [+augmented, -singular], thus requiring the numeral root in its specifier, just as in (29).\(^ {12} \)

When a Number head is marked as [-augmented, +/-singular], it still requires a numeral in its specifier. The only cardinalities consistent with those features would be *ma* ‘one’ and *tsimani* ‘two’. As we can see from the lack of *-mu* ending in these two

\(^{12}\) I am assuming that only [-sg] marked Number heads impose agreement in the noun. Number heads marked as [-/+aug] do not impose the presence of -icha. Thus in (28) *tanímu tiriápu* ‘three ears of corn’, the noun does not bear the suffix, because the only Number head present is specified as [+aug], and this kind of head does not trigger obligatory -icha agreement. I must admit though that the obligatory agreement with [-sg] marked heads is only a syntactic stipulation with no independent semantic motivation.
cardinality expressions, a [-augmented] head in Purépecha is marked by a null Number head, instead of -mu:

(30)  *Tsimáni tiriápu* ‘two ears of corn’

\[
\text{DP} \rightarrow \text{D} - \text{NumP} \rightarrow \text{NP} tsi\tilde{m}áni \rightarrow \text{Num'} 0 \rightarrow \text{Num}^0 [-\text{aug}]-[-\text{sg}] \rightarrow \text{NP} \rightarrow \text{tiriapu} \rightarrow \emptyset
\]

The configuration in (30) is still consistent with the fact that tiriapu can optionally bear the nominal plural suffix -icha. The ungrammatical sequence *ma tiriapu-icha* ‘one ear of corn-pl’ is ruled out by a clash between the [+singular] feature introduced by the upper number head and the [-singular] feature carried by the null head that triggers -icha agreement:

(31)  *Tsimani tiriápu-icha* ‘two ears of corn’

\[
\text{DP} \rightarrow \text{D} - \text{NumP}_2 \rightarrow \text{NP} tsi\tilde{m}áni \rightarrow \text{Num'}^0_2 \rightarrow \text{Num}^0_2 [-\text{aug}]-[-\text{sg}] \rightarrow \text{NumP}_1 \rightarrow \text{Num}^0_1 [-\text{sg}] \rightarrow \text{NP} \rightarrow \text{tiriapu-icha} \rightarrow \emptyset
\]
(32)  *Ma tiriápu-icha ‘one ear of corn-pl’

3.4 Summary

Number heads are occupied by functional elements responsible for assigning a noun the properties of atomicity and divisibility. A functional element that maps a predicate (expressed by a noun) into a set of atoms is recognized in the syntax for introducing the feature [+singular]. A functional element that maps a predicate into a set of atoms and sums is syntactically characterized by the features [-singular] or [+augmented]. These two features and the semantic properties they introduce are indistinguishable from each other, unless they are ‘stacked’ on one another.

The effect of adding the feature [-augmented] to a property already marked as [-singular] yields a denotation that includes dyads only, while the feature [+augmented] acting upon [-singular] yields sets of plural individuals with cardinalities equal to or greater than 3.

Number heads can be specified for [+/- augmented] or not. They also can be specified for [+/- singular]. In this chapter we have been assuming that every Num$^0$ with a value assigned for [+/-augmented] also has a value for [+/- singular], but this is
a stipulation with no theoretical consequences. It could well be the case that one Number head is specified for [+/-singular] only, while the other one exclusively bears the feature [+/- augmented]\textsuperscript{13}. The central fact that we derive from the Purépecha data is that there are indeed two Number heads. The one bearing the [+/-augmented] feature is \textit{-mu} (or \emptyset when it has a negative value for this feature), while the Number head that is not specified for [+/-augmented] manifests in the presence of the agreement suffix \textit{-icha}.

A final note: we have been glossing the Number head \textit{-mu} as ‘\textsc{sum}’ – for sum-forming operator – and \textit{-icha} as ‘\textsc{pl}’ (for plural). We have also been assuming that plural markers are sum-forming operators, in the spirit of Link (1983). Therefore we could have glossed both \textit{-mu} and \textit{-icha} as ‘\textsc{pl}’ (or ‘\textsc{sum}’). However, I wanted to draw a distinction between a plural marker that maps a set of individuals into a join semilattice with no specification about the inclusion of atomic elements, which is the case of \textit{-icha}, and a marker that maps a set of plural entities into a join semilattice that excludes atomic elements, which is the effect of \textit{-mu} (see Chapter 2 for a brief introduction to these background notions).

Instead of ‘sum-forming operator’, we could have chosen the name ‘anti-atomic operator’ to stress that whenever \textit{-mu} occurs, atomic elements are excluded

\textsuperscript{13} Thanks to Stephanie Harves for this suggestion. Another possibility, also suggested by her, is that one of the NumPs is an Augmented P, while the one labeled NumP is specified for [+/-singular] only. I don’t have a problem with such an approach, although using an independent Augmented projection obscures the fact that both atomicity and divisibility are Number properties.
from the denotation of the noun phrase. But instead of doing so, I preferred to leave that effect to the action of feature composition. Rather than proposing a new operator, we let \(-mu\) to introduce the property of divisibility upon a set under the condition that the set in question includes non-atoms in its denotation. The latter condition can be achieved in Purépecha by two means: either the noun itself is number-neutral (i.e. it is a count-mass noun) or it is marked with \(-icha\), which entails it bears the feature [-singular], and thus including non-atoms in its denotation.
Chapter 4

Numeral Classifiers

Introduction

The role of classifiers in the languages of the world has been associated with the semantic function of “individuation” (Simpson 2005, Cheng and Sybesma 1999). As in other languages, classifiers in Purépecha are used when referring to individual entities in a counting context (Friedrich 1970). I show in this chapter that the individuation strategy of Purépecha classifiers consists in restricting the denotation of the noun by means of a strictly distributive predicate: the classifier root denotes a shape-related property that can only be true of atomic entities. Combining such a predicate with a lexically plural or mass-like noun narrows the denotation of the original noun to a set that contains only atomic elements, and which excludes the sum-individuals that were originally the noun’s extension.

4.1 Inventory and distribution of Purépecha classifiers

There are three classifiers in Purépecha: *ichúkwa* occurs with nouns denoting flat objects, *ichákwa* occurs with nouns denoting elongated objects, and *erhákwa*
combines with nouns that denote round things. Table (E) summarizes the three classifiers and examples of their distribution:

**Table E. The three numeral classifiers of Purépecha**

<table>
<thead>
<tr>
<th>Classifier</th>
<th>Selects</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ichákwa</td>
<td>round objects</td>
<td>Wichu-icha tusku-h-ti-ksi tsimáni ichákwa úni-cha-ni. dog-PL bury-PFVE-3IND-3PL two CL.long bone-PL-OBJ ‘The dogs buried two bones’</td>
</tr>
<tr>
<td>b. ichúkwa</td>
<td>flat objects</td>
<td>Juanu chunúku-a-h-ti tsimáni ichúkwa súranda. J. wrinkle-DIST-PFVE-3IND two CL.flat paper ‘Juan rumpled two sheets of paper’</td>
</tr>
<tr>
<td>c. erhákwa</td>
<td>round objects</td>
<td>Aw-á-s-ka-ni tanímu erhákwa t’atsíni tsípiti. eat-DIST-PFVE-1/2IND-1SG three CL.round bean raw ‘I ate three raw beans’</td>
</tr>
</tbody>
</table>

The classifier system of Purépecha is falling out of use. Currently, younger speakers can combine numerals directly with almost any noun (as long as it is not a

---

Nava (1994) hypothesizes the existence of up to 18 classifiers according to records from XVI c. grammars (Gilberti 1559, Lagunas 1574). Out of those 18, only the three classifiers described in this paper are still in use. We will examine Nava’s hypothesis later on and conclude that there are principled semantic reasons for several of those 18 hypothetical classifiers to have never emerged at all. It is true, however, that the three classifiers that are still found are subject to much variation. Younger speakers prefer not to use them at all, and their use by the older generation seems to be optional. Friedrich (1970) reports that classifiers are virtually obligatory in an anaphoric function (in a response to a question like ‘how many tortillas did you buy?’), but no context other than that seems to force their presence. Chamoreau (p.c.) asserts that classifiers are seldom used in spontaneous speech. I have been able to record some occurrences of classifiers in semi-free discourse, although they always alternate with similar constructions that lack classifiers. When prompted to choose between the relevant numeral constructions with and without a classifier, speakers consistently associate the presence of the classifier with a more “correct” or “proper” form of speech, a judgment that suggests that the use of classifiers might have been more stable in the past, and is now considered a conservative register.
mass noun), and while older speakers prefer to use classifiers in counting contexts, they do not judge the absence of classifiers as ungrammatical. The analysis presented here is based on the data produced by two speakers (53 and 56 y.o.), which were judged grammatical by a speaker of the younger generation (32 y.o.).

4.1.1 Classifiers are used with numerals and the interrogative ‘how many?’

A classifier can only occur in the presence of a numeral or an interrogative quantifier. The numeral in turn can be modified by taru ‘more’, so that both ma ‘one’ and ‘ma-taru’¹⁶ ‘one more / another one’ can occur with classifiers. The contexts that allow classifiers (numeral, interrogative numeral and numeral with taru ‘other’) are exemplified in (52a-c). The noun phrase that contains a classifier can appear in any syntactic position available for a noun phrase (as subject, object, adjunct, etc).

---

¹⁵ The data shown here come from mostly from elicitation. As explained in Chapter 1, there are three types of elicited data: questionnaires (truth value tasks and grammaticality judgments), semi-free narratives, and direction tasks. Semi-free narratives are short discourses that consultants provided when they were asked for a short story or a cooking recipe. Direction tasks are brief experiments in which one speaker who was presented with an arrangement of objects in a picture gave directions to another speaker on how to reproduce the same arrangement with a set of objects that I provided to him (Seifart 2005).

¹⁶ I thank Claudine Chamoreau (p.c.) for pointing out that ma-taru ‘one more / another one’ is a modified numeral and not an indefinite determiner, as I had supposed before (Vázquez-Rojas 2010).
(1) a. Paku-a-s-ka-ni=ya *tanimu ichákwa* chkari naná Cameri-ni
take-DIST-PFVE-1/2IND-1SG=ADV three CL.long wood HON Camerina-OBJ
‘I already took three logs to Camerina’

b. *Na-múni erhákwa*=ksi jarha-s-ki apopu-icha mesa-rhu?
how.many CL.round=3PL be-PFVE-INT squash-PL table-LOC
‘How many chayotes are there on the table?’

c. Ji juá-s-ka-ni má taru ichukwa parhé.
I bring-PFVE-1/2IND-1SG one other CL.flat cactus
‘I brought one more cactus leaf’

Classifiers cannot be preceded directly by possessives or demonstratives (2),
the universal quantifier *iamíndu* (3), or non-numeral cardinal quantifiers, (4)-(5).

take-DIST-PFVE-1/2IND-1SG=ADV DEM.PL CL.long wood HON Camerina-OBJ
   Intended: ‘I already took those logs to Camerina’

take-DIST-PFVE-1/2IND-1SG=ADV DEM.PL WOOD-PL-OBJ HON Camerina-OBJ
   ‘I already took those logs to Camerina’

take-DIST-PFVE-1/2IND-1SG=ADV DEM.PL two WOOD-PL-OBJ HON Camerina-OBJ
   ‘I already took those two logs to Camerina’

(3) a. *Pedro aw-á-h-tí* *iámindu ichákwa* kurucha-(ni)
P. eat-DIST-PFVE-3IND all CL.long fish-OBJ
   Intended: ‘Pedro ate all the fish’

b. Pedro aw-á-h-tí *iámindu* kuruch-icha-ni
P. eat-DIST-PFVE-3IND all fish-pl-OBJ
   ‘Pedro ate all the fish’

(4) a. Ji juá-s-ka-ni máru ichukwa parhé.
I bring-PFVE-1/2IND-1SG some CL.flat cactus
   Intended: ‘I brought some cactus leaves’
b. Ji juáskani máru (taru) parhé.
   I bring-PFVE-1/2IND-1SG some other cactus
   ‘I brought some (more) cactus leaves’

(5) a. *Juanu chapa-h-ti wánikwa ichákwa anátapu
   J. cut-PFVE-3IND many CL.long tree
   Intended: ‘Juan cut a lot of trees’

b. Juanu chapa-h-ti wánikwa anátapu-icha-ni
   J. cut-PFVE-3IND many tree-PL-OBJ
   ‘Juan cut a lot of trees’

Although in Purépecha bare nouns can occupy argumental positions, they
cannot do so if they are preceded only by a classifier, because classifiers require a
numeral, as show in (6b).

   P. eat-DIST-PFVE-3IND fish-OBJ
   ‘Pedro ate the fish’

   P. eat-DIST-PFVE-3IND CL.long fish-OBJ
   Intended ‘Pedro ate the / some fish’

   P. eat-DIST-PFVE-3IND one-CL.long fish-OBJ
   ‘Pedro ate one fish’

4.1.2 Classifiers are not used with mass nouns or nouns of human reference

Depending on the speaker, the presence of classifiers is more or less optional. The
two older speakers consulted for this research use classifiers spontaneously, while the
younger speaker omits them, even though he judges their presence grammatical.

Because of the variability in the use of classifiers, it is simpler to list the nouns with
which classifiers are ruled out. These include all mass nouns denoting liquid
substances (7) –with or without measure phrases or ‘massifiers’; nouns of human reference (8) and most nouns of animate reference (9).

    there  be-PFVE-3IND one cup  corn.beverage
    ‘There is a cup of corn beverage there’

    b. Jimíni jarhá-h-ti má erhákwa tsuntsu
        there  be-PFVE-3IND one  CL.round  cup
        ‘There is a cup there’

    c. *Jimíni jarhá-h-ti má erhákwa tsuntsu kamáta
        there  be-PFVE-3IND one  CL.round  cup  corn.beverage
        Intended: ‘There is a cup of corn beverage there’

    d. *Jimíni jarhá-h-ti má erhákwa kamáta
        there  be-PFVE-3IND one  CL.round corn.beverage
        Intended: ‘There is a cup of corn beverage there’

(8) a. Jurá-h-ti=rini phorémbi-ni má warhiiti
    come-PFVE-3IND=1SG.OBJ visit-INF  one woman
    ‘A woman came to visit me’

    b. *Jurá-h-ti=rini phorémbi-ni má erhákwa warhiiti
        come-PFVE-3IND=1SG.OBJ visit-INF  one  CL.round  woman
        Intended: ‘A woman came to visit me’

(9) Context: Three wasps are flying around near to us.

        be.around-PROGR-3IND=3PL three  wasp-PL
        ‘There are three wasps flying around’

        be.around-PROGR-3IND=3PL three  CL.long / CL.round  wasp-PL
        Intended: ‘There are three wasps flying around’
Context: A coyote is coming to the village at night. We wake up to find one hen missing. It is likely that the coyote took it away.

c. Jiwátsí pa-h-tí má (érhákwa) tsíkata-ní
cyote take-PFVE-3IND one (CL.round) hen-OBJ
‘The coyote took away a hen’

Some animates, like tsíkata ‘hen’, and nouns for birds in general, take classifiers optionally. An obvious reason for the constraint on using classifiers with mass nouns is that these kinds of nouns do not have an inherent and stable shape. Count nouns usually have distinctive shapes, but if this shape does not fall within one of the three possibilities -flat, round and elongated-, then a classifier will not co-occur with it.\textsuperscript{17}

In sum, most animate nouns (those denoting humans and animals) disallow the presence of classifiers. Classifiers are more commonly found with nouns denoting inanimate objects with stable shape properties that fall into one of the three classes: long, flat or round.\textsuperscript{18} The animate/inanimate distinction, however, does not function as

\textsuperscript{17} Friedrich (1970:385) reports the use of the classifier \textit{ichákwa} ‘long object’ with nouns referring to animals. Nouns of human reference in Friedrich’s description are also capable, “under particular conditions”, to take classifiers: “Since rational things are usually human in Tarascan (...), and since humans are saliently long, and often have round bottoms, some of the nouns in the rational set may be replaced by numeral classifiers” (1970:383). Foster (1969) reports the use of the classifier \textit{erhákwa} ‘round object’ with nouns denoting female humans, and \textit{ichákwa} used with nouns denoting male humans. In the dialect of Puácuar, none of these situations hold. With some exceptions in the animal domain (birds, fish), all nouns of animate reference (humans and animals) disallow the use of classifiers.

\textsuperscript{18} I find this characterization of shapes more accurate than Friedrich’s (1970), according to which the criteria used in numeral classifiers refers to the number of dimensions an object has: one dimensional objects take \textit{ichákwa}, two-dimensional objects combine with \textit{ichúkwa} and three-dimensional objects take \textit{erhákwa}. However, several objects that are evidently tri-dimensional (e.g. chairs, horses) do not take any of the classifiers.
a sufficient dividing line between nouns that can take classifiers and those that cannot.
The concept of animacy is not a primitive, and it can be used ambiguously to refer to a
property of real-world entities as well as to the manifestations of this distinction in the
grammar. If the first usage is assumed, it is obvious that not all nouns that take
classifiers are inanimate. Nouns like karasī ‘worm’, tsikata ‘hen’, or kurúcha ‘fish’
can take classifiers in Purépecha despite having animate referents. Hence, some
referentially animate entities are denoted by nouns that co-occur with classifiers.
Likewise, not all referentially inanimate nouns take classifiers (e.g. washândikwa
‘chair’ or atáchi ‘shawl’) most likely because they do not fall into any of the three
shape classes. There is yet another set of nouns whose referents are inanimate but
which pattern along nouns of human reference in several areas of the grammar. For
instance, despite denoting inanimate entities, japónda ‘lake’, juáta ‘mountain’,
phukúri ‘pine tree’ or mótsitarhakwa ‘car’ take obligatory case marking and also occur
obligatorily with the nominal plural suffix –icha when denoting plural entities
(discussed in Chapter 5), and they never occur with classifiers.

The possibility of taking a numeral classifier does not correlate sharply with the
animate or inanimate reference of the noun. Not all nouns of inanimate reference take
classifiers and not all nouns of animate reference reject classifiers either. Furthermore,
some characteristics that have long been considered to be triggered by an animacy
feature in the noun (obligatory case marking, plural marking) seem to apply equally to

Hence the dimension criterion is not enough and reference needs to be made to more
specific properties of physical shape.
some selected nouns of inanimate reference. The facts suggest that some other semantic feature, related but not completely reducible to animacy, is at stake in determining whether a noun can occur with a numeral classifier. In some cases this feature may even take precedence over the animacy feature, leading to the “animate-like” behavior of certain inanimates. In this dissertation I will show that this semantic feature can be identified with number and plurality as encoded in the lexical noun.

4.2 The internal structure of classifier expressions

All three classifiers share the ending -kwa, which is described as a participial or nominalizer (Foster 1969, Chamoreau 2009), since it usually occurs in nouns derived from verbal roots, as in the examples in (10):

(10)  a. t’iré-ni   b. t’iré-kwa
      eat-INF       eat-DEV
      ‘to eat’      ‘that which is eaten’ (food)

c. mí-ta-ni   d. mí-ta-kwa
      open-CAUS-INF open-CAUS-DEV
      ‘to open’     ‘that which opens’ (key)

While -kwa is highly productive as a suffix that derives nouns from verbs, not all expressions with this ending can be called nouns in their own right. Some quantifiers, like the ones in (11) also end in -kwa, and although they can be argued to belong to the nominal domain, they are usually not heads of noun phrases -they mostly occur preceding a noun, which would be the head. The semantic relation between the root and the derived form in (11) is not clear, since -kwa does not seem to contribute any change from the meaning of the root:
In (12) I show that the roots *kani-* and *wani-* can be used predicatively, and they can even occur with a causative suffix yielding the meaning ‘to increase, to accumulate’. Thus, we agree with Capistrán (p.c.) in considering -*kwa* more generally as a de-verbal marker.

(12) Context: You poured milk in my glass. It is much more than what I wanted.

a. í       itsúkwa ju-ká-ri                   káni-h-ti
   DEM    milk     bring-SUBORD-2SG   much-PFVE-3IND
   ‘This milk you poured is a lot’

Context: Example from someone explaining the meaning of the word *ambusí* at an online Purépecha forum19

b. ambusí wane-ra-ni
   louse   many-CAUS-INF
   ‘To accumulate lice’

Despite the fact that the mere ending -*kwa* does not provide enough information about the syntactic category to which classifier expressions belong, it is clear that classifiers are morphologically complex and that they are derived from a

19 The example comes from http://www.purhepecha.com.mx/p-ichpiri-en-p-urhepecha-significa-amigo-en-espanol-vf51-vt1554-vp6049.html. The gloss ‘SUBORD’ stands for subordinate mood. All dependent clauses (relative or complement clauses) take mood marker –*ka* for all three subject persons, unlike independent clauses, which take –*ka* for 1st and 2nd person and –*ti* for the 3rd. The latter are glossed as ‘IND’ for ‘indicative mood’, although I am aware that the terminology might not be the most accurate.
verbal root. Nava (1994) argues for the morphological connection between the three classifiers presented here and three correspondent “classificatory verbs”. This class of verbs in Purépecha has more elements than the three that give rise to classifiers. Nava (1994) suggests that at an earlier stage, Purépecha must have had as many as 18 classifiers, which were derived from each one of the classificatory verbs that we will describe below. However, there is no record in c.16th grammars and texts of any other classifiers than the three described in this chapter, hence Nava’s claims are only a hypothesis. In the next sections, I present a sketch of the morpho-syntax and semantics of the classificatory verbs from which classifiers derive (for a complete description of classificatory verbs in Purépecha and their morphological characteristics see Capistrán 2000). The description provided below will also give a principled reason for the fact that only three roots out of the 18 classificatory verbs described by Nava gave rise to the three existing classifiers in this language, while the remaining 15 cannot be derived into a classifier expression.

4.2.1 “Classificatory” verbs (Capistrán 2000, Friedrich 1970)

Purépecha has a whole paradigm of positional roots of so-called ‘classificatory verbs’ (Friedrich 1970) that codify different positions or arrangements of objects and that select the object of predication depending on its referential properties, like inherent shape (round, flat, elongated) or disposition (vertical, horizontal, inclined, etc.). I will only concentrate on the semantics of three such classificatory roots: ichú-, ‘a flat
object is in certain location’; *kirhá*- ‘a round object is in certain location’, and *ichá*, ‘an elongated object is in certain location’.

According to Capistrán (2000), classificatory verbs are dependent roots, that is, they need to take a spatial suffix in order to take inflection. Once they are suffixed with a spatial morpheme, they can take further causative affixes (-*ta*), applicatives (-*ku*) or reflexives (*kurhi*). The following examples from Capistrán (2000) show how these complexes of verbal positional root plus spatial suffix are formed:

(13) a. Tsúntsu **kirhá**-nu-s-ti.  
    pot round.object-patio-PFVE-3IND  
    ‘The pot is (lying) on the patio’ (Capistrán 2000:329)

b. Jwánu **kirhá**-nu-ta-s-ti tsúntsu-ni  
    J. round.object-patio-CAUS-PFVE-3IND pot-OBJ  
    ‘Juan put/has the pot in the patio’ (Capistrán 2000:330)

c. Jwanu **kirhá**-parha-ta-s-ti tsúntsu Mariá-ni.  
    J. round.object-back-CAUS-PFVE-3IND pot Maria-OBJ  
    ‘Juan put the/a pot on Maria’s back’ (Capistrán 2000:330)

Classificatory verbs select their arguments -their only argument, if they are intransitive as in (64a), or their object argument if they are transitive as in (64b-c)- depending on its inherent shape, arrangement or position. The root *kirhá*- can be used only when the subject of the intransitive construction or the object of the transitive one

Spatial suffixes in Purépecha are morphemes that signal locations (e.g. –*nu*, ‘patio’) or body parts (e.g. –*ruhu* ‘nose’, –*parha*, ‘back’). If the morpheme relates to a body part, it usually allows the expression of the possessor of such body part as an argument of the predicate, as in (14c); thus some spatial morphemes are directly involved increasing the valency of the verb (see Monzón 2004 for more on the topic).
is a round object. *ichá-* only allows an object (or intransitive subject) argument that has an elongated shape, and the root *ichú-* is reserved for flat objects:21

(14)  
   a. Pirímu *ichá*-nu-s-ti.  
        stick long.object-patio-PFVE-3IND  
        ‘The stick is (lying) on the patio’  
        (Capistrán 2000:334)
   b. K’wirhakwa *ichú*-nu-s-ti.  
        mat flat.object-patio-PFVE-3IND  
        ‘The mat is (lying on) the patio’  
        (Capistrán 2000:334)

(15)  
        pot long.object-patio-PFVE-3IND  
        Intended: The pot is lying on the patio.
   b. Tsúnstu kirhá-nu-h-ti.  
        pot round.object-patio-PFVE-3IND  
        The pot is lying on the patio.

(16)  
   Context: There are snakes in the patio, coiled up.
   
        snake-PL round.object-patio-PFVE-3IND  
        Intended: ‘The snakes are coiled on the patio’
   c. Akwítsï-ch a apó-nu-h-ti.  
        snake-PL lie-patio-PFVE-3IND  
        ‘The snakes are lying on the patio’

4.2.2 The semantics of classificatory verbs

The roots *kirhá-* ‘round object in a certain location’, *ichá-* ‘elongated object in a certain location’ and *ichú-* ‘flat object in a certain location’ described in the previous

21 I will keep Capistrán’s notation, although with slight variations in the terminology used in the glosses. For instance, I gloss the allomorphs -s / -h as the perfective marker (PFVE), while she glosses them as perfect (PRF) and represents them uniformly as -s. I use -h to represent the allophonic variant [h] when the perfective marker [s] precedes a palatal stop.
section are characterized as taking an obligatory spatial morpheme in order to receive inflection, and for selecting their internal argument (subject of intransitive construction or direct object of the transitive one) based on its inherent shape. The fact that the shape is inherent to the object referred and not just the result of a temporary position is attested in (17). Since dogs are not round, they cannot be the argument of the verb ‘kirhánuni’ ‘round object lying on the patio’, even if the dog is curled up forming a circle or ‘ball’:

(17) Context: The dog is lying on the patio. In Spanish it’s hecho bolita ‘curled up, in the shape of a little ball’

   a. *Wíchu kirhá-nu-h-ti
      dog round.object-patio-PFVE-3IND
   Intended: ‘The dog is lying on the patio, curled up’

   b. Wíchu winchú-nu-h-ti
      dog lay.round-patio-PFVE-3IND
   ‘The dog is lying on the patio, curled up’

When elicited, some nouns of human reference, like warhíiti ‘woman’ in (13) or a proper name, were acceptable with kirhánuni ‘round object on the patio’. But speakers immediately added that washánuni ‘to sit on the patio’ would be a more correct form to use.22

22 Although they do not take classifiers in enumeration contexts, certain nouns of human reference can be the argument of a classificatory verb. This is the case of warhíiti kirhánuhti ‘the woman is lying round on the patio’. Similarly, Foster (1969:158) describes the classifier irhákwa as “used in the enumeration of more or less round, bulky objects, and including women and girls”, while ichákwa ‘elongated object’ is “used in the enumeration of objects of that shape and including sons (but not daughters) and dogs”. The situation described by Foster no longer holds in
(18) Context: A woman is sitting on the ground in the patio.

a. Warhíiti kirhá-nu-h-ti
   woman round.object-patio-PFVE-3IND
   ‘The woman is sitting in the patio’

b. Warhíiti washá-nu-h-ti
   woman sit-patio-PFVE-3IND
   ‘The woman is sitting in the patio’

A crucial semantic characteristic of these three classificatory roots is that they are strictly distributive, that is, they can only be true of the atomic units denoted by their internal argument. If the internal argument is plural, the only interpretation available is that each of the atoms in the plurality has the inherent shape described by the verb and the spatial location specified by the spatial morpheme.

For instance, sentence (19) is true when trying to describe Picture (2), but it is false when trying to describe Picture (3), because in this last picture only two of the pots are on the table, while one of them is on top of another pot.23

When the internal argument of the classificatory verb is a plurality, two morphemic changes are noted: (i) a suffix –rha is added directly to the root and before the spatial suffix, and (ii) another, identical suffix is added after the applicative morpheme, if the choice of the spatial suffix (usually a possessed location) triggers the presence of one:

(i) a. Ichú-mu-ku-h-ti ma erokšì tsùntsu-ni.
   flat.object-mouth-APPL-PFVE-3IND one pan pot-OBJ
   ‘A pan is (lying flat) on top of the pot’

   flat.object-PL.AGR-mouth-APPL-PL.AGR-PFVE-3IND pan-PL pot-OBJ
   ‘Some pans are (lying flat) on top of the pot’

It is out of the scope if this section to explain this double agreement fact, which I have so far only found with these positional roots. In Purépecha, there is an ‘object
(19) Tanímu tsúngstu-icha **kirhá**-rha-ts’i-kurha-h-ti=ksì
three pot-PL round.obj-PL-top-APPL-PL-PFVE-3IND=3PL
‘Three pots are lying on the table’

24 The noun phrase ‘three pot’ can optionally take a classifier. Classifiers and classificatory verbs are not mutually exclusive.

agreement’ marker –a- that occurs optionally when the object (direct or indirect) has a plural form (ending in -icha) or has a plural denotation, even if it is not overtly marked. I follow Capistrán (2010) in considering -a- a marker of distributivity and not just of plurality of the object. However, there is still no conclusive data to show that the suffix -rhá is an allomorph of -a-, and there are reasons to believe that it is actually a different morpheme. For the time being, I will continue glossing -a- as DIST (distributive) and rha as PL.AGR (plural agreement with the internal argument).
Likewise, a sentence like (71a) is only true if each of the pans are lying on the table, but it is not true in a situation where the pans are on the table forming a pile. In the latter case, sentences (72a) and (72b) are uttered truthfully.

(20) Context: There are some pans are on the table, one next to the other.

   pan-PL flat.object-PL.AGR-top-APPL-PL.AGR-PFVE-3IND
   ‘The pans are (each one of them) lying on the table’

Context: César put some pans on the table, one next to the other.

b. Césari ichú-rha-htsï-ta-h-ti eróksì-cha mésa-rhu
   C. flat.object-PL.AGR-top-CAUS-PFVE-3IND pan-PL table-LOC
   ‘César put the pans (lying flat) on the table’

(21) Context: Some pans are on the table, one on top of the other.

a. Eróksì-cha chunwirha-h-ti=ksî
   pan-PL be.piled.up-PFVE-3IND=3PL
   ‘The pans are piled up’
Context: César put some pans on the table, one on top of the other.

b. Cesari chunwirhá-htsí-ta-h-ti eroksí-cha-ni
   pan-PL be.piled.up-table-CAUS-PFVE-3IND pan-PL-OBJ
   ‘Cesar piled up the pans on the table’

When presented with a situation where the pans were piled up on one another, the consultant judged sentences (71a-b) as false, and then placed each pan on the table in order to present a situation were the sentence would be true.

Classificatory verbs thus require that the position/location they predicate be distributed over each atom of the plurality denoted by their internal argument. The roots are distributive in another sense as well: they require that the shape characteristic (flat, round, elongated) that they select for their objects be a property of atomic entities, and not of a collectivity. For instance, sentence (73a) is infelicitous because necklaces do not select the root -kirhá ‘round object in a certain location’, since they are not round objects (even though their sub-parts may be). To depict the situation where a necklace like the one shown in Picture (4) is lying on the table, sentence (73a) -and its singular counterpart (73b)- are unacceptable, and only the general locative root ja-rha- ‘to be at’ renders a felicitous and true sentence:

(22) Context: A necklace with round beads is lying on the table.

a. # Wékach’akwa kirha-rha-ts’ï-kurha-h-ti mésa-rhu
   necklace round.object-PL-top-APPL.PL-PFVE-3IND table-LOC
   Intended: ‘The necklace is on the table’

b. # Wékach’akwa kirhá-ts’ï-ku-h-ti mésa-rhu
   necklace round.object-top-PFVE-3IND table-LOC
   Intended: ‘The necklace is on the table’
If the necklace is broken and its round beads are lying separately on the table, then the classificatory verb *kirhâ-* (with plural marking of its theme argument) yields a true and felicitous sentence:

(23) Context: The necklace is broken and the beads are on the table.

\[
\text{Wékach’akwa kirha-rha-ts’i-kurha-h-ti mésa-rhu}
\]

\[
\text{necklace round.object-PL-top-APPL.PL-PFVE-3IND table-LOC}
\]

‘The necklace is lying on the table’

Consistent with their distributive properties, classificatory verbs cannot take substance mass nouns as arguments (75a, b). This is so because there are no atomic entities of which to predicate the location specified by the verb, or that could satisfy the shape requirements it imposes.
(24) Context: I found some drops of blood on the patio.

a. *Yurhirhi ichú-nu-h-ti.
   blood flat.object-patio-PFVE-3IND
   Intended: ‘There are drops of blood lying on the patio’
   /‘There is blood on the patio’

Context: The patio is supposed to be clean, but I found some lumps of dirt here and there.

   earth round.object-patio-PFVE-3IND
   Intended: ‘There are lumps of dirt lying on the patio’
   /‘There is dirt on the patio’

Mass nouns can be used with classificatory verbs only if they are introduced by a measure phrase or massifier like in (76a), in which case the verb selected is consistent with the properties of the container (‘bucket’ in that example). Mass nouns can be substituted for a noun denoting a count correlate of them, like terroni in (76b) ‘lump(s) of dirt’. Another possibility is to use a locative verb that selects plural arguments, like umbánuni ‘to be lumped up in the patio’ (76c), or the general locative existential ja-(rha)-ni ‘to be at’ / janúni ‘to be in the patio’. The root ja- does not carry selectional restrictions based on shape, as seen in (76d):

(25) a. Ma kubéta echéri parhá-nu-h-ti
   one bucket dirt be.standing-patio-PFVE-3IND
   ‘A bucket of dirt is in the patio’ / ‘There is a bucket of dirt in the patio’

b. Terróni kirhá-rhá-nu-rha-h-ti
   lump round.object-PL.AGR-patio-PL.AGR-PFVE-3IND
   ‘There are lumps of dirt are lying (round) on the patio’

c. Echéri umbá-nu-h-ti
   dirt lumped.up-patio-PFVE-3IND
   ‘The dirt is lumped in the patio’
d. Shu terónukwa jánurha-h-ti yurhíri
   here patio be.at-PFVE-3IND blood
   ‘There is blood here on the patio’

In contrast with substance mass nouns, a noun that denotes an aggregate of
atomic entities, like tsíri ‘corn’ is acceptable as the argument of a predicate formed
with the root kirhá-, ‘round object’ as in (77a-b). If the verb has the plural morpheme-
rha as in (77c), the noun tsíri ‘corn’, even without plural inflection is fine, but the
sentence then would not be acceptable in the context described, since a multiplicity of
corn kernels would be involved.

(26)   Context: There is a single kernel of corn dropped on the patio.

   a. Tsíri kirhá-nu-h-ti.
      corn round.object-patio-PFVE-3IND
      ‘The/ a kernel of corn is lying on the patio’

   b. Má erhákwa tsíri kirhá-nu-h-ti.
      one CL.round corn round.object-patio-PFVE-3IND
      ‘One kernel of corn is lying on the patio’

   c. # Tsíri kirhá-rha-nu-rha-h-ti.
      corn round.object-PL.AGR-patio-PL.AGR-PFVE-3IND
      ‘The corn is lying on the patio’

Sentence (77a) can only be interpreted as true if one single kernel of corn is
lying on the patio, and in that sense it conveys a meaning similar to (78b), except that
(78b) does not have a definite interpretation. (78c) is felicitous only in a situation in
which more than one kernel of corn is lying on the patio -but crucially only as many
kernels as can be counted, even if no enumeration is actually expressed. For this
sentence to be true, the corn referred to has to be off the cob, so that the verb *kirhá-‘round object’ can be used. If a pile of corncobs are lying on the patio, then the verb *kirhá+(rha)+nu ‘round object(s) is/are in a the patio’ cannot be used, and instead a predicate like *etsá+nu+kurhá- ‘to be spread on the patio’ is appropriate. Note that like *etsá+nu+kurhá- ‘to be spread on the patio’ is a collective predicate, hence it rejects a subject like *má erhákwa tsíri ‘one kernel of corn’:

(27)   Context: There is a pile of corn drying up under the sun. The children have been playing with the corn, and now some of it has spread all over the patio.

      corn spread-patio-REFL-FOR-PROGR-3IND
      ‘(The) corn is spread on the patio’

   b. *Ma erhákwa tsíri etsá-nu-kurha-ti-sha-ti
      one CL.round corn spread-patio-REFL-FOR -PROGR-3IND
      Intended: ‘One kernel of corn is lying on the patio’

In sum, classificatory verbs have a stringent distributional requirement, concerning two aspects: (i) each of the atomic individuals about which the position/location is predicated needs to have the property of shape selected by the root (round, flat, elongated) and (ii) the position/location itself (e.g. on the top of the table, on the patio, on the street) has to be true of each of the atomic entities denoted by the internal argument. If the argument denotes a singular entity, this requirement is

25 I haven’t found an appropriate gloss for the particle -ti that precedes the progressive marker in some contexts (cf. also example 83c). It appears only before -sha (PROGR) and although it is obligatory, it does not seem to make any semantic contribution. I gloss it as FOR (FORMATIVE), assuming it is a support syllable that appears merely for prosodic reasons, much as the semantically vacuous formatives that need to occur with some dependent roots.
satisfied by default. A noun that potentially denotes a plurality of atoms, like *tsíri* ‘corn’/ ‘kernel of corn’, is a possible argument for a classificatory verb. If the classificatory verb takes its plural agreement form, the noun is interpreted as a sum of atoms, every one of which has the location/position described by the verb. If the verb does not have plural markers, the noun denotes a single atomic unit.

### 4.3 The semantics of classifiers: individuation by strict distributivity

I have shown in the previous section that classificatory verbs in Purépecha are strictly distributive: they apply felicitously only to atomic entities and never to whole sums or collections of individuals. The morphological connection between the three classificatory roots discussed above and the classifier expressions introduced in 1.1. is fairly transparent, but I will summarize it in Table (F) for ease of exposition:

**Table F. Classificatory verbs and the classifiers that derive from them**

<table>
<thead>
<tr>
<th>Classificatory verb</th>
<th>Classifier</th>
<th>Characteristic of the object selected</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>kirhā</em>+LOC</td>
<td><em>irhā</em>-kwa</td>
<td>round shape</td>
</tr>
<tr>
<td><em>ichá</em>+LOC</td>
<td><em>ichá</em>-kwa</td>
<td>elongated shape</td>
</tr>
<tr>
<td><em>ichū</em>+LOC</td>
<td><em>ichū</em>-kwa</td>
<td>flat shape</td>
</tr>
</tbody>
</table>
As can be seen in Table (F), classifiers in Purépecha are derived from positional classificatory roots by affixing the de-verbal marker -kwa.\textsuperscript{26} It is important to note that although suffixation of -kwa is productive, other positional roots of the classificatory paradigm (Capistrán 2000), like umbá- ‘to pile up’, aná- ‘to lie horizontally’, or parhá- ‘to stand’, do not give rise to a correspondent classifier by -kwa suffixation. Some of the expected –but nonexistent- classifiers are listed in the following table:

**Table G. Classificatory verbs not used in classifiers**

<table>
<thead>
<tr>
<th>Classificatory verb</th>
<th>Expected Classifier</th>
<th>Characteristic of the object selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>umbá+LOC</td>
<td>* umbá-kwa</td>
<td>plurality</td>
</tr>
<tr>
<td>aná+LOC</td>
<td>*aná-kwa</td>
<td>horizontal orientation</td>
</tr>
<tr>
<td>parhá+LOC</td>
<td>* parhá-kwa</td>
<td>vertical orientation</td>
</tr>
</tbody>
</table>

Nava (1994) hypothesizes that such expected classifiers might have existed at some point in the history of the language, but I argue that there is a principled reason why the classifier forms in Table (G) were never derived in the first place. Purépecha classifiers achieve their function of individuation by intersecting the denotation of a noun with a strictly distributive property. Note that the characteristic of the object

\textsuperscript{26} The connection between the root kirhá- and the classifier irhákwa / erhákwa is not as transparent as the other two cases (ichú- $\rightarrow$ ichúkwa, ichá- $\rightarrow$ ichákwa), but in colonial texts, the existence of a classifier kirhákwa, is reported in free variation with a classifier irhákwa. (Chamoreau 1999, Nava 1994, Maturini 1559).
selected in Table (F) always refers to a permanent and strictly atomic property. By contrast, the semantic requirements of the classificatory verbs in Table (G) are either temporary spatial dispositions or a number requirement of collectivity (plurality). Obviously, if a predicate applies only to pluralities of individuals, then it is not distributive. For some reason that I have not explored, temporary dispositions, as opposed to inherent shapes, are not criteria for classifiers in Purépecha.

4.3.1 Stubbornly distributive predicates (Schwarzschild 2009)

In English there is a class of predicates that never apply to pluralities, but to atomic entities only. A predicate like ‘heavy’ in (79a) can apply to a plurality as well as to its atomic parts, therefore yielding the two readings presented in (79b-c). A predicate like ‘round’, in contrast, does not carry such ambiguity. The collective reading is ruled out, and instead the predicate can only be applied truthfully to the atomic entities that constitute the plurality being referred to. Hence sentence (80a) only has one reading, the one in (80b). Predicates like ‘round’, as opposed to predicates like ‘heavy’ are what Schwarzchild (2009) calls stubbornly distributive predicates.

(28)  a. The boxes are heavy.
   b. Each one of the boxes is heavy.
   c. The total sum of boxes is heavy, each individual box is not necessarily heavy.

(29)  a. The boxes are round.
   b. Each one of the boxes is round.
   c. # The total sum of boxes is round, each individual box is not necessarily round.
Stubbornly distributive predicates denote events that consist only of single participants. Pluralities are thus excluded from their extension. Mass nouns are not suitable arguments for these predicates, because mass nouns are inherently plural. If one wishes to express that a certain portion of substance has a ‘round’ disposition, one could use a sentence like (30b), but not (30a):

(30)  
a. *The blood was round  
b. The blood formed a circle.

Some mass nouns, however, can occur as arguments of stubbornly distributive predicates. This is the case of nouns that, despite having mass syntax, contain atomic units in their denotation (hence the term ‘fake mass nouns’ used by Chierchia 2009, which in the terminology employed in this paper is equivalent to count-mass). The sentences in (31), to the extent that they are acceptable, are interpreted as if each atomic unit of the aggregate has the property expressed by the predicate:

(31)  
a. ? The rice is long  
b. ? The furniture is round.  
c. ? My luggage is round.

Let us assume, with Schwarzchild (2009), that stubbornly distributive predicates come with a lexical specification that requires the events they denote to have single participants only. The reason why predicates of shape are usually stubbornly distributive across languages is an important research question, but we will not try to answer it for the time being. What we want to stress here is that it is not a
mere coincidence that Purépecha classifiers make reference to shapes of objects. In general, the cross-linguistic role of classifiers is that of ‘portioning out’ a mass into countable units (Chierchia 1998, Borer 2005). Some mass nouns, however, already include atomic units in their denotation (like *luggage or *rice), and therefore they can, with more or less acceptability, combine with stubbornly distributive predicates, as shown in (31). However, these nouns are still considered mass nouns in English due to their inability to combine directly with numerals and take plural inflection (*three luggages, *two rices). In other words, nouns like luggage or furniture contain atomic units as well as plural individuals in their denotation, whereas ‘real’ mass nouns, like blood or oxygen only denote sets of plural entities, rendering it impossible for them to occur with stubbornly distributive predicates.

4.3.2 Purépecha classifiers denote stubbornly distributive properties

The proposal I want to defend here is that Purépecha classifiers denote stubbornly distributive properties. Their role is not to create portions of a given mass denotation: the extension of the noun already includes atomic entities as well as pluralities. The classifier only restricts the denotation of these nouns to the set of its atomic units, discarding the pluralities contained therein.

The fact that classifier roots denote stubbornly distributive predicates is reinforced by the strictly distributive semantics of the positional roots from which they derive, as shown in section 4.2.1. In their noun-phrase internal position, classifiers are also strictly distributive, a fact reflected in their selectional restrictions. For instance, if
three stars are arranged in a line, the classifier used with the noun \textit{jóska} ‘star’ is not \textit{ichákwa} ‘CL.long’, despite the elongated disposition of the sum of stars denoted by \textit{jóswicha} ‘stars’. In its stead, the noun can combine only with the classifier \textit{erhákwa}, used for round objects:

(32) Context: The night sky is clear, only the three stars of Orion’s belt are visible. They are forming a line.

a. Awánda-rhu erha-nchi-kurhi-sha-ti tanímu \textbf{erhákwa jóskw-icha=hku} sky-LOC see-up-REFL-PROGR-3IND three \textit{CL.round} star-PL=only ‘Only three stars are visible in the sky’

b. *Awánda-rhu erha-nchi-kurhi-sha-ti tanímu \textbf{ichákwa jóskw-icha=hku} sky-LOC see-up-REFL-PROGR-3IND three \textit{CL.long} star-PL=only Intended: ‘Only three stars are visible in the sky, forming a line’

c. Tanímu \textbf{erhákwa jóskw-icha pír-pera-ti-sha-ti}. three \textit{round} star-PL next-RECIPR-FOR-PROGR-3ind ‘(The)Three stars are next to each other’

Classifiers are expressions of type \texttt{<<e,t>, <e,t>>}. The semantic result of combining a classifier with a noun is the intersection of the set denoted by the noun and the set that satisfies the property encoded in the classifier root. Since the classifier denotes a stubbornly distributive property, the resulting set contains only atomic units, regardless of whether the noun used to include pluralities before the restriction provided by the classifier:

(33) a. $[\textbf{erhakwa}] = \lambda Q. \lambda x. [\text{round'(x)} \land Q(x)]$
b. $[\textbf{ichákwa}] = \lambda Q. \lambda x. [\text{elongated'(x)} \land Q(x)]$
c. $[\textbf{ichúkwa}] = \lambda Q. \lambda x. [\text{flat'(x)} \land Q(x)]$
For instance, a classifier like *ichákwa* ‘CL.elongated’ when combined with a property-denoting noun like *shaníni* ‘corncob’, will restrict the denotation of the latter to the set of entities that are both corn and elongated. This set contains only atomic entities, since those are the only ones that can be selected by the predicate root *ichá*- ‘elongated object’, as shown above.

\[(34)\]  
\[
\text{[ichákwa]} ([\text{shaníni}]) = \lambda x. [\text{elongated’}(x) \land \text{corncob’}(x)]
\]

A numeral is necessary for the occurrence of a classifier, but in the current state of the language, the opposite is not the case. Numerals like *taní-mu* ‘three’, *thá-mu* ‘four’ etc., are morphologically complex expressions, as we saw in Chapter 3. They are composed by two morphemes: one of them, -mu, denotes a sum-forming operator (one that maps sets of individuals into sets of pluralities), and the other one provides a numeral specification of the cardinality of each plurality thus formed (i.e. the number of atoms in each plurality). Since classifiers always occur in the presence of numeral expressions, we want to be able to express this condition in their semantics as well as in their syntax. Purépecha is no exception to the general tendency for classifiers to be syntactically closer to the numeral expression than to the head noun (Simpson 2005). We can thus consider that the numeral expression (which involves a quantity and a sum-forming operator’) is required by classifier, and not vice-versa.

There are two ways of capturing the classifier requirement of co-occurring with a numeral. One would be to consider classifiers as binary functions. Their first argument would be a modified sum-forming operator, expressed by the numeral. Their
second argument is a first-order predicate, provided by the noun. The problem with this approach is that we have already established that the sum-forming operator that we find in Purépecha numerals is itself a binary function, one of whose arguments is a quantity (expressed by the numeral root) and the other one a first-order predicate (provided by the noun). There is no way to consistently claim that classifiers require numeral expressions and nouns as arguments while at the same time numerals require nouns as one of their arguments.

To explain the need of classifiers to co-occur with numerals, I thus restore to a feature approach. Classifiers only need the argument provided by the noun, and their role is to restrict its denotation to a set of atomic units. On the other hand, classifiers involve a head that has an uninterpretable feature [+/- augmented], which in turn is checked with the [+/- augmented] feature of some Number head. Since Number heads specified as [+/- augmented] in Purépecha require quantity expressions, classifiers occur obligatorily with numerals. The following section presents the details of this feature checking of classifiers in the syntax.

4.3.3 The syntax of Purépecha Classifiers

Classifiers are complex expressions consisting of a predicative root and a deverbalizer suffix -kwa. Recall that the root present in classifiers is one of the set of so-called ‘classificatory verbs’ (Friedrich 1970), and one of their characteristics is to be dependent, that is, they need a locative suffix in order to take inflection. But when they occur in a classifier expression, these roots no longer need the locative suffix. In
the classifier word, the de-verbalizer suffix -\textit{kwa} is sufficient and it cancels the need for the locative argument.

Given the predicative nature of the classifier root, I propose that classifier and noun start out in a small clause configuration or Relator Phrase (RelP), with the noun as the subject of the predication expressed by the classifier root.

(35) The positional predicate and the noun start out in a Small Clause configuration:

\begin{verbatim}
[purhú erhá]
[round.object pumpkin]
\end{verbatim}

Recall that positional roots in Purépecha need a spatial locative suffix to take inflection. It is for this reason that they are considered ‘dependent’ (Capistrán 2000). When they occur in a classifier expression, the spatial suffix is no longer needed. The de-verbalizing morpheme \textit{-kwa} is sufficient to license the dependent classifier root in the syntax. I propose that this is accomplished by moving the positional predicate out of the small clause to the specifier of a YP projection, where it surfaces with the ending \textit{-kwa}, glossed here as ‘deverbalizer’ (\textit{DEV}):
(36) Move \([XP \text{ erha}]\) out of RelP:
\[[\text{erhá-kwa purhú}]
[\text{round.object-DEV pumpkin}]

After the complex Classifier + Noun structure has been built, the Numeral is merged. We explained in Chapter 3 that numeral words in Purépecha are complex, with one morpheme (-\text{mu}) introducing a sum forming operator and the other morpheme expressing the cardinality of the resulting pluralities.

(37) Merge Numeral \(\text{tanímu} \text{ ‘three’}\):
\[[\text{taní-mu erhá-kwa purhú}]
[\text{3-SUM round.object-DEV pumpkin}]

116
The structure in (37) gives the right word order, but it does not reflect the fact that the numeral is obligatory in the presence of the classifier. In this configuration, the phrase that contains the classifier and the noun (YP) appears instead as the complement of the Number Head. The solution we propose involves resorting to the number features that we presented in Chapter 3: [+/-singular] and [+/-augmented] (Harbour 2008). What makes the presence of the numeral obligatory is the need for Y^0 to check its [+/-augmented] feature. It therefore needs to merge with a number head that has this feature specified (either as + or -). We can go back to adopting the structure in (37) -repeated below as (38)- now making explicit the feature checking requirements Y^0:

(38) Merge Numeral taní-mu ‘three’ and check Y^0 u-feature:

\[
\begin{array}{c}
[tani-mu \ [erhá-kwa \ purhú]] \\
[3-SUM \ [\text{round.object-DEV \ pumpkin}]] \\
\end{array}
\]

```
NumP
  NP taní
    Num’
      Num^0
        mu
          [+aug]
          XP erha-kwa
            Y’
              Y^0
                RelP
                  Rel’
                    NP purhú
                      Rel^0
                        XP ∅ <erha>
```

117
The -mu Number head checks the [+/--augmented] uninterpretable feature of $Y^0$. If instead of *tanimu* ‘three’, YP had merged with a [-augmented] numeral like *tsimani*, the result would be that YP ends up with an uninterpretable [-augmented]. The checking of features thus justifies the need for a numeral to occur with a classifier in Purépecha, while at the same time allowing Number Heads to take predicate-denoting constituents as complements.

4.3.4 Noun phrase internal distributivity and collective predication

Classifiers impose a distributive requirement by which each atomic unit in the denotation of their noun argument must have the shape property expressed by them. We saw that this distributive requirement comes from the positional root from which the classifier derives. Once a classifier has in this way restricted the denotation of a noun to the set of its atomic entities, the numeral (or ‘modified sum-forming operator’) maps this set into a set of pluralities of the specified cardinality. The resulting plurality then can be the argument of a distributive predicate, as in (39), or of a collective one, as in the first reading of (40a) and the only reading of (40b):$^{27}$

____________________

27 In Purépecha, classifiers can co-occur with the plural marker –icha, revealing that the two make different semantic contributions, against the common claim that classifiers and plural markers are in complementary distribution (Greenberg 1989), and hence must contribute the same operation of ‘portioning out’ an otherwise non-individuated denotation (Chierchia 1998, Doetjes 1997, Borer 2005). Chamoreau (p.c.) suggests that the co-occurrence of classifiers with the plural marker yields a definite interpretation of the noun phrase. According to my tests, although these noun phrases do bear familiarity implications, they do not trigger the maximality presuppositions typical of definite descriptions (Sharvy 1980). I present an analysis of the plural marker –icha (with and without classifiers) in Chapter 5 of this dissertation.
(39) Context: There are four individual beans on the patio, they fell off from the table.

Thámu erhákwa thatsíni kirhá-rhá-nu-rha-h-ti=ksí.

four CL.round bean round.object-AGR-patio-PFVE-3IND=3PL

‘Four beans are lying on the patio’

(40) a. Ihtsí tanímu erhakwa purhu-icha k’wetsapi-i-h-ti=ksí ma kilu.

DEM.PL three CL.round pumpkin-PL heavy-PRED-PFVE-3IND=3PL one kilo

‘These three pumpkins weigh one kilogram’

Reading (i): These three pumpkins weigh one kilogram all together.
Reading (ii): These three pumpkins weigh one kilogram each.


three round star-PL next-RECIPR-FOR-PROGR-3IND

‘(The) three stars are next to each other’

In sum, once a classifier occurs in a numeral phrase, the resulting denotation is a plurality of individuals of the cardinality expressed by the numeral (if the numeral is higher than one), or a singleton (if the numeral happens to be ‘one’). Each of the individuals that constitute the plurality must have the property specified by the positional root involved in the classifier, and it is this distributivity condition of the classifier that acts as an ‘individuating function’. Once the numeral-plus-classifier

There is a numeral context that does not allow the presence of a classifier. As I will explain in subsequent chapters, numerals in Purépecha can take inflection. A numeral suffixed with –icha+ni has a ‘group’ interpretation (cf. tanimu wichu-icha ‘three dogs’ and taní-chani wichu-icha ‘dogs three by three’). Classifiers are admitted with these group-denoting numerals (taní-chani erhkáwa purhú ‘pumpkins three by three’). Numerals can also take the suffix –perá+rani, which allows collective interpretations and has maximality implications (cf. taní-peráraní wichu-icha ‘the three dogs’). The suffix complex -perá+rani is in complementary distribution both with –icha+ni (*taníchaní perárani) as well as with classifiers (*taniperáraní erhákwa purhú).
phrase yields a plurality of individuals, this plurality can be selected by a distributive or a collective predicate.

### 4.4 Summary

In the literature on numeral classifiers across languages, we often read that one of their defining properties is to fulfill an ‘individualizing role’ (Simpson 2005, Cheng and Sybesma 2009, Grinevald 2000, among others). In English, a noun like *dog* denotes a set of individual dogs, while a noun like *rice* does not denote a set of individual grains of rice, but instead a set of pluralities of grains of rice without any cardinality specifications. Because *rice* does not denote individual entities, the noun cannot be combined with a numeral (*three rices*). An expression like *grain (of rice)* has the effect of narrowing down the denotation of *rice* to only atomic pieces (grains) that can be subject to counting. Hence, an expression like *grain* would function as a classifier, individualizing the potentially plural denotation of the noun to a set of atomic units of rice.

The term ‘classifier’ is often confusing, since individuating expressions like ‘*grain of rice*’, ‘*kernel of corn*’, do not denote classes of rice and corn, respectively. *A grain or rice* obviously does not denote a class of rice, but a (minimal) portion of rice. If we take words like *grain* or *kernel* as classifiers, it is clear that their role is to map the denotation of a mass noun into a count noun by establishing countable units of the substance denoted by the noun.
In Purépecha, a common strategy to individuate a count-mass denotation is to add a modifier-like expression to a noun. This expression denotes a predicate which, by lexical specification, can only be true of atomic units. Modifying a mass noun with an atomic predicate like this one will result in ruling out the pluralities from the denotation of the noun. A mass noun like *shanini* ‘corn cob’ denotes atomic units of corn as well as all the pluralities formed by them. But if a predicate like *ichákwa* ‘long’ is added, the denotation of (numeral)-*ichákwa shanini* is restricted to those objects that are at the same time corn and elongated, and these objects can only be atomic units of corn, that is, individual corncobs.

The difference between expressions like *grain, kernel* and *log* in English and *irhákwa* ‘CL.round’, *ichákwa* ‘CL. elongated’ or *ichúkwa* ‘CL.flat’ in Purépecha is that the English expressions are nouns in their own right, while Purépecha classifiers are not. This was noted above when we presented the distributional restrictions on Purépecha classifiers, which are confined to enumeration contexts. These contexts include numerals (*tsimáni* ‘two’, *tanímu* ‘three’, etc), and the interrogative quantifier *namúni* ‘how many’. If not preceded immediately by one of these elements, a classifier cannot occur in a noun phrase. And while nouns like *grain* or *kernel* in English can be modified (*a big kernel of corn*), in Purépecha classifiers do not admit modification. The canonical position of Purépecha adjectives is postnominal, although they can also precede the noun. However, an adjective can never precede a classifier, making it clear that the classifier itself does not admit modification, and that the
prenominal adjective in (41b) is a modifier of *apopu* ‘squash’ and not of *erhákwa* ‘CL.round’.

(41) a. Taní-mu erhákwa apopu-icha *tsípit-icha* mesa-rhu jarha-h-ti 
    1-SUM CL.round squash-PL raw-PL table-LOC be.at-PFVE-3IND
    ‘Three uncooked chayotes are on the table’

b. Tani-mu erhákwa *tsípit-icha* apopu-icha mesa-rhu jarha-h-ti 
    3-SUM CL.round raw-PL squash-PL table-LOC be.at-PFVE-3IND
    ‘Three uncooked chayotes are on the table’

c. *Tani-mu *tsípit-icha* erhákwa apopu-icha mesa-rhu jarha-h-ti 
    3-SUM raw-PL CL.round squash-PL table-LOC be.at-PFVE-3IND
    Intended: ‘Three uncooked chayotes are on the table’

Finally, in an English noun phrase with a classifier-like expression like *grain* or *piece*, the preposition ‘of’ is required to license the occurrence of the second noun (*two grains of rice / *two grains rice*), revealing that the expression *grain* by itself does not have an argumental position for the mass noun, since the latter is not licensed directly. In Purépecha the head noun does not need any extra-licensing to occur with the classifier, which combines with the noun like any modifier would do, with the exception that, unlike adjectival modifiers, the classifier can never be postnominal.

Another obvious contrast between English expressions used in counting and Purépecha classifiers is that in the latter reference to the shape of objects is crucial (see Friedrich 1970 for the overall phenomenon of the grammatical reflexes of shape in Purépecha), while the English expressions *grain* or *piece* make no specifications about the inherent shape of the atomic units to which they refer.
Although classifiers as such cannot be used predicatively (*eroksi ichúkwa-h-ti, intended: ‘the pan is flat’), they derive from roots that, suffixed with an obligatory spatial morpheme, express the location of an individual entity. This individual entity is selected depending on its shape characteristics. The root kirhá- selects round objects, ichá- is used with elongated objects and ichú- can only be used to predicate a location for flat objects. These roots, plus the spatial morpheme attached to them, constitute strictly distributive predicates, and they cannot be applied to collections or groups of individuals. If a pile of tortillas is lying on the table, it is not felicitous to use ichúhta ichú-rha-htsí-kurha-h-ti ‘the tortillas are lying flat on the table’. A sentence like this can only be used truthfully if each one of the tortillas is lying on the table.

I have shown that classifiers in Purépecha fulfill their individualizing role by denoting a distributive predicate. This is supported by the fact that the truth conditions of the verbal roots they derive from are also strictly distributive. The distributive character of Purépecha classifiers also reveals that the nouns they combine with already include atomic entities in their denotation; otherwise, a distributive predication over them would not be possible. This in turn explains why Purépecha classifiers can never occur with mass nouns denoting substances, like yurhirhi ‘blood’ or kamáta ‘corn beverage’, but only with nouns that denote countable units like jóskwa ‘star’, eroksi ‘pan’, anátapu, ‘tree’, or sums and their atoms, like tsíri ‘corn’, t’atsíni ‘bean/s’, parhé ‘cactus’, ichúkwa ‘tortilla’. The use of classifiers with nouns of human reference has fallen out of use, even though it was reported by Foster (1969). Nouns that reject the presence of classifiers cannot occur either as the theme argument of the
corresponding classificatory verbs *ichú-LOC* ‘flat object is in LOC’, *ichá-LOC* ‘elongated object is in LOC’, or *kirhá-LOC* ‘round object is in LOC’.

An important theoretical question is why predicates that refer to shape (like English *round*, Spanish *redondo* or the Purépecha classifier *erhákwa*) are ‘stubbornly distributive’ (Schwarzchild 2009). Some predicates referring to volume are stubbornly distributive in several languages as well (Eng. *large*, Sp. *grande*, Pur. *khéri*), showing that stubborn distributivity is not restricted to predicates of inherent shape. The answer to the question of why individual level properties seem to be stubbornly distributive is beyond of the scope of this dissertation, so we will leave it open for further research.
Chapter 5

The plural suffix –icha: distribution and interpretation

Introduction

Purépecha has a nominal suffix -icha that attaches to nouns or noun phrases and signals plurality of the head noun. -icha can be suffixed to the final element in the noun phrase (1a) or to the head noun and the end of the noun phrase (1b). If the suffix occurs only on the head noun and not at the end of the phrase, the sentence is not fully acceptable (1c).

(1) Context: We have black hens and white hens. The black hens have been fed.

a. Tsíkata turhípiti-icha t’irhe-h-ti=ia
   hen       black-PL   eat-PFVE-3IND=ADV
   ‘The black hens have already eaten’

b. Tsikat-icha turhipiti-cha t’irhe-h-ti=ia
   hen-PL    black-PL   eat-PFVE-3IND=ADV
   ‘The black hens have already eaten’

c. ?? Tsikat-icha turhipiti t’irhe-h-ti=ia
   hen-PL    black     eat-PFVE-3IND=ADV
   Intended: ‘The black hens have already eaten’
The Purépecha plural marker -icha differs from its English counterpart -s in many respects. First, -icha attaches obligatorily to count nouns and only optionally to count-mass nouns (unlike the English plural marker, which will never be found with count-mass nouns like furniture /*furnitures):

(2) Tsíkat*(-icha) t’irhe-h-ti=ksí=ia
   hen-PL   eat-PFVE-3IND=3PL=ADV
   ‘The hens have already eaten’

(3) Ichúht(-icha) karhí-h-ti=ksí
   tortilla(PL)   dry-PERF-3IND-3PL
   ‘The tortillas dried out’

Likewise, if the noun is preceded by a numeral, the presence of -icha is obligatory only if the noun is count, and optional if the noun is mass-count. Substance mass nouns, however, never take the -icha plural marker and thus will be left out of the present description.

(4) Tsimáni tsíkat*(-icha) t’irhe-h-ti=ksí=ia
   two hen-PL   eat-PFVE-3IND=3PL=ADV
   ‘Two hens have already eaten’

(5) Tsimáni ichúht(-icha) karhí-h-ti=ksí
   two tortilla(PL)   dry-PERF-3IND-3PL
   ‘Two tortillas dried out’

Regarding its possible interpretations, the Purépecha plural marker can have a ‘strong’ interpretation (entailing reference to more than one entity of the set described by the noun) or a ‘weak’ interpretation (roughly interpretable as ‘one or more’). But this indeterminacy depends on the class of noun to which it is attached. Count nouns
marked with -icha can have a weak or a strong plural interpretation, while count-mass nouns with the suffix allow strong interpretations only.

The split in the obligatory marking of nominal plurality has been associated with a dividing point in an animacy hierarchy, both cross-linguistically and for Purépecha in particular (Chamoreau 2004, Smith-Stark 1974, Corbett 2000). Chamoreau (2004) attributes the exceptions in this correlation to definiteness and specificity. In this chapter I will show that the distribution of the plural marker -icha is not consistent with a simple animacy hierarchy, and that definiteness is not an intervening factor in the obligatory or optional marking of plurality. Ultimately, the distribution of the plural marker is explained in terms of the count status of the noun; the relation between number marking and animacy is an epiphenomenon derived from it.

In section 5.1 I describe the distribution of -icha in contexts that require reference to multiple individuals, like collective verbs (e.g. verbs similar to English gather or spread). I will show that in such contexts -icha is obligatory with most (but not all) animates, and optional with most inanimates, although some inanimates require -icha in these contexts as well. Then, in 5.2 I describe the obligatory presence of -icha with these same classes of nouns in negative environments and interrogatives, which favor a ‘weak’ reading of the plural. We will see that the nouns that allow a plural marker in ‘multiplicity’ contexts disallow it in downward entailing environments. Section 5.3 outlines an explanation of these facts based on the Animacy Hierarchy (Corbett 2000, Smith-Stark 1974). Pondering the downsides of such an
explanation, we will argue that the distribution of -icha is better explained in terms of the count status of the noun rather than its animacy features.

5.1 Reference to more than one individual (‘strong’ plural reading)

Certain predicates require one of their arguments to denote more than one atomic unit (e.g. English *The demonstrators dispersed after the shootings* vs. *The demonstrator dispersed after the shootings*). In Purépecha the verbal root winí- ‘to fill up’ requires a plural subject. A mass noun in subject position would also be acceptable, but we are leaving mass nouns out of the discussion for now. A singular count noun, in contrast, is ruled out of this position; hence, (6b) is unacceptable, while its counterpart with -icha is grammatical:

(6) Context:
indé-ni vásu-ni jurháku-s-p-ti=ksi wérakwa sánititu refresk jingóni,
DEM-OBJ cup-OBJ leave-PFVE-PST-3IND=3PL outside little soda POSTP
‘They left that cup outside with soda leftovers in it’
What (6b) shows is that the reference of the count noun *sîruki* ‘ant’ by itself is not enough to denote the multiplicity of entities that are required as the theme participant of the verb *winîminî* ‘to fill up some liquid space’. The suffix -*icha* maps the denotation of *sîruki* into a set of pluralities of ants, a domain from which it is possible to pick an argument for the predicate in question.

A similar verb is *etsákurihîni* ‘to spread, disperse’. The theme participant must involve a multiplicity of entities\(^{29}\). When the theme argument is an inanimate count-mass noun like *shanîni* ‘corncob’, the plural marker -*icha* is optional. The bare noun without plural marking would be enough to convey the multiplicity of objects required as the theme:

\(\text{(7) Context:}\)

\(\text{A pile of corncobs is in the patio, drying up under the sun. As children walk by it and mess with the pile, some of the corncobs start spreading on the patio.}\)

\[\text{**Shanîni**(-*icha*) etsákurihî-sha-ti} \]
\[\text{corncob-PL  spread-PROGR-3IND} \]
\[\text{‘The corncobs are spreading’}\]

\(^{29}\) Unlike *winîminî*, mass nouns referring to substances or liquids are not good themes for *etsákurihîni*. The meaning of *etsákurihîni* is thus more similar to ‘scatter’ or ‘disperse’ than to Eng. *spread*, which does admit substance mass nouns as themes (e.g. *I spread butter on the bagel*).

\[129\]
A difference between a noun like sïruki ‘ant’ and one like shanini ‘corncob’ is that the former requires -icha marking when it is the theme of a collective predicate, while the latter can take the marker optionally.

Even in the absence of a collective predicate, some contexts show a clear reference to a multiplicity of objects. For instance, when shown picture 6, speakers rejected the use of the unmarked form parhákata ‘butterfly’ in (101b) and recognized only (8a) as true (# signals that the sentence is false if uttered in this context):

(8) Context:
Multiple butterflies are stuck to the trunk of a tree (shown in picture).
Question: ‘What do you see in this picture?’

a. Anátapu-rhu má-parha-ku-h-ti=ð(ksï) parhákat-icha
   tree-LOC stick-BACK.LOC-TRSLOC-PFVE-3IND=3PL butterfly-PL
   ‘There are butterflies stuck to the trunk of the tree’

b. #Anátapu-rhu má-parha-ku-h-ti parhákata
   tree-LOC stick-BACK.LOC-TRSLOC-PFVE-3IND butterfly
   Intended: ‘There are butterflies stuck to the trunk of the tree’

Picture 6
When presented with a linguistic context in which a child is scratching his head a lot—a common sign of lice infestation—speakers were equally comfortable with
(9a) or (9b), despite the fact that the context pragmatically favors reference to multiple lice rather than to just one louse:

(9)  Context:
This child is scratching his head a lot. We suspect he has lice.

   a. Indé tatáka sapí juka-htsí-h-ti ambusí
      DEM man little have-HEAD.LOC-PFVE-3IND louse/lice
      ‘This child has lice on his head’

   b. Indé tatáka sapí juka-htsí-h- ti ambusí-cha-ni³⁰
      DEM man little have-HEAD.LOC-PFVE-3IND louse-PL-OBJ
      ‘This child has lice on his head’

In Purépecha an optional plural clitic =ksí can be attached to the verb only when the subject is plural. Some nouns can occur with a =ksí marked verb even if they bear no suffix -icha, for instance, marisí ‘sapodilla fruit’ in (10). Other nouns, like sapí ‘child’, can only occur with a plural agreeing verb if they bear the -icha suffix, as shown in (11):

---
³⁰ Plural-marked nouns in direct or indirect object position obligatorily bear the suffix -ni. Purépecha is said to have differential object marking (Chamoreau 2000), so that the -ni suffix is obligatory with definite objects but optional with indefinites, obligatory with animates and optional with inanimates, and obligatory with overtly marked plurals. I have argued elsewhere (Vázquez-Rojas 2009) that the pattern of Purépecha object marking can be better explained as having obligatory case marking, and the object noun phrases that do not bear the case suffix have undergone semantic incorporation. The generalization would be that overtly marked plurals do not undergo semantic incorporation; hence the object suffix appears obligatorily.
(10) Context:
It is that time of the year when sapodilla fruit is ripe and starts falling from the tree.

**Marisì-(icha)** wekóri-sha-ti=ksi
sapodilla-PL fall-PROGR-3IND=3PL
‘Sapodilla fruit is falling from the tree’

(11) Context:
The road was paved recently but it is bumpy. We can hear how children who run by trip and fall to the ground:

**Sapi-(*icha)** wekóri-sha-ti=ksi
child-PL fall-PROGR-3IND=3PL
‘Children are falling to the ground’

Summing up what we have described so far: the occurrence of *icha* is not obligatory with every noun. In contexts that make reference to multiplicities (either because the verb requires a multiple participant, the particular situation involves more than one entity or the verb bears a marker of agreement with a plural subject), nouns like sîruki ‘ant’, sapi ‘child’ and parhákata ‘butterfly’ require the presence of *icha* to make reference to multiple entities, while nouns like marisì ‘sapodilla fruit’, ambusi ‘louse’, and shanini ‘corn cob’ can occur in the same contexts with or without the plural marker.

Chamoreau (2004) explains the distribution of the plural marker in terms of animacy. Roughly, the generalization is that nouns of animate reference take plural markers obligatorily when they denote multiple entities, while inanimate nouns can take the plural marker optionally. The data presented in this section are consistent with Chamoreau’s claims, with the exception of nouns like ambusi ‘louse’, which have
animate reference yet can refer to multiple individuals without requiring a plural marker. Other animate nouns displaying a similar behavior are tsikata ‘hen’, kurucha ‘fish’ and tsiri ‘flea’. The correlation between animacy and obligatory plural marking thus finds some exceptions in these nouns. These exceptions could be accounted for simplistically by saying that entities like birds, fish or tiny insects are not considered animate in the Purépecha culture. However, we will see in the next section that a related implicational pattern does not hold without exceptions either: some inanimate nouns require the presence of plural marking even when the rest of inanimates disallow it it.

5.2 Reference to one or more individuals (‘weak’ plural reading)

The English plural marker -s occurs obligatorily in all count nouns when the intention is to make reference to more than one atomic unit. Count-mass nouns are the exception to this rule, since they can denote sums of atoms but they disallow the presence of -s. Further, the nouns that require the plural -s in contexts involving multiplicity still take the plural marker when no reference is being made to more than

-----------------------------

31 I am obviating for now the existence of irregular plurals (sheep / sheep; ox / oxen). Even when there is no overt marker of plurality in the noun, one can tell that a noun is plural because it triggers obligatory plural agreement in the verb: The sheep bleats vs. The sheep bleat. This is not the case for count-mass nouns: The furniture is broken vs. *The furniture are broken. One can talk about a zero plural marker in the case of sheep, while furniture simply disallows any plural marker at all.
one entity. Let us call the reading exemplified in (12) the ‘weak’ reading of plural nouns (Sauerland et al. 2005, Farkas and de Swart 2010):

(12)  
   a. I found no skunks in the backyard.  
   b. Did you find skunks in the backyard?  
   c. If you find skunks in the backyard, call the exterminator.32

Sentence (12a) is true only if I did not find a single skunk in the backyard. If I had found one skunk in the backyard, I could not use (12a) truthfully, even under the argument that I didn’t find more than one of them. Similarly, (12b) requires an affirmative answer even if I found only one skunk, and a reply like, ‘No, I found one skunk’ would be infelicitous. In (12c), the addressee is required to call the exterminator if she finds one skunk or more, and she could not get away from her duty by saying, ‘I didn’t call the exterminator because I saw just one skunk’.

In these contexts the plural noun *skunks* is not interpreted as ‘more than one skunk’ but as ‘one skunk or more’. There is much debate in the literature as to whether the weak reading constitutes the core semantic value of the English plural, while the ‘strong’ reading is derived by a scalar implicature (Schwarzchild 1996, Sauerland et al. 2005, Spector 2007, Zweig 2005), if the English plural is ambiguous (Farkas and de Swart 2010), or if its core meaning is actually the strong reading that denotes sum-individuals and excludes atomic units (Landman 1995, Chierchia 1998). In this

32

One more piece of evidence that the plural marker does not entail reference to more than one individual is that it is obligatorily present even with cardinalities lower than one, if they are expressed numerically: *There is an average of .75 skunks per inhabitant in New York*. I will not discuss fraction expressions in this work.
dissertation we will not argue in favor of any of these positions with respect to the English plural, and we will limit ourselves to describing whether the weak and strong readings are equally available for the plural marker -icha in Purépecha.

Let us look at interrogative sentences first. In (13) the absence of -icha is unacceptable in a context in which the speaker’s intention is to find out whether there are any lakes in North Carolina. A sentence like (13b) could only be interpreted as a question about whether a particular lake is in North Carolina (‘Is the lake in N.C?’). But in the situation described below, (103b) is infelicitous.

(13) Context: The speaker wants to know if there are any lakes in North Carolina.

a. Jarha-s-ki japón-d-icha Carolina?
   be.at-PFVE-INT lake-PL C.
   Are there lakes in North Carolina?

b. # Jarha-s-ki japónda Carolina?
   be.at-PFVE-INT lake C.
   Intended: Are there lakes in North Carolina?
   (Possible reading: ‘Is the Lake in North Carolina?’)

(14) Context: The other speaker replies that there are no lakes in North Carolina.

a. No, no jarha-h-ti japón-d-icha Carolina.
   NEG NEG be.at-PFVE-3IND lake-PL C.
   ‘No, there are no lakes in North Carolina’

b. # No, no jarha-h-ti japónda Carolina.
   NEG NEG be.at-PFVE-3IND lake C.
   Intended: ‘No, there are no lakes in North Carolina’

The situation is similar with a noun like anátapu ‘tree’, which requires plural marking even when the noun falls under the scope of negation:
(15)  Context: The speaker conveys that there are no trees in the city of Tijuana:

   there T. NEG-POL be-MOD tree-PL town-LOC
   ‘Up there in Tijuana there are no trees in the city’

b. # Jiní Tijuana no-mpi ja-ki anatapu irheta-rhu.\(^{33}\)
   there T. NEG-POL be-MOD tree town-LOC
   Intended: ‘Up there in Tijuana there are no trees in the city’

The presence of -icha is also obligatory with some nouns with the interrogative quantifier namùni ‘how many’. Note that a possible answer for (16a) can be ‘none’ or ‘just one’; that is, the presence of -icha does not require that the children involved must be more than one.

(16)  Context: The speaker wants to know how many children the listener has.

a. Namún-ti ka-a-sín-ni sapí-chá-ni
   how.many-2INT have-DIST.OBJ-HAB-2INT child-PL-OBJ
   ‘How many children do you have?’

There are two types of negation in Purépecha: one that I will call ‘free negation’ and another one that I will call ‘dependent negation’. Free negation consists in preposing the negation adverb no ‘not’ before the inflected verb, and everything else in the sentence remains like its non-negated counterpart. The other type of negation involves suffixing –mpe (a short form of ambé ‘thing’) to the negator no-. I gloss –mpe as ‘POL’ for ‘polarity element’. This kind of negation forces the verb to take a suffix –ki, which I will only gloss as ‘MOD’ for the lack of a better term. In some cases, not shown here, even –ki can be absent while the main verb root appears uninflected. Compare main verb jarha-h-ti ‘there is’ in (14a) with main verb ja-ki ‘there is’ in (15a). They both share the root ja- of existential, presentational and locative verbs. But the second one does not take the usual aspect and mood markers that appear in affirmative sentences and independent negation. Also, note that –ki is the termination of interrogative verbs, like (13). While in (15a) –ki clearly does not function as an interrogative, it may be a marker of irrealis mood or, more generally, ‘non-assertive’ mood.

\(^{33}\)
b. *Namúnti ka-a-sín-ni sapí-(ni)
   how-many-2INT have-DIST.OBJ-2INT child-OBJ
   Intended: ‘How many children do you have?’

Summing up: nouns like japónda ‘lake’, anátapu ‘tree’ and sapí ‘child’ show a plural marker in downward entailing contexts, where the interpretation of the noun does not necessarily make reference to more than one individual.

Some other nouns do not need an -icha marker in interrogative contexts. The presence of -icha with some nouns might even give rise to an unwelcome ambiguity, to the extent that the absence of -icha is preferred:

(17)  Context: We are preparing atole (a corn beverage) with boysenberries. The speaker asks how many boysenberries she is supposed to add to the atole:

   a. Namúni jatsí-kw-a sítúni kamata-rhu?
      how-many put-APPL-FUT boysenberry atole-LOC
      ‘How many boysenberries will I add to the atole?’

   b. # Namúni jatsí-kw-a sítúni-cha-ni kamata-rhu?
      how-many put-APPL-FUT boysenberry-PL-OBJ atole-LOC
      Intended: ‘How many boysenberries will I add to the atole?’
      Possible reading: ‘How many boysenberry bushes will I add to the atole?’

   c. Namúni erhákwa jatsí-kw-a sítúni-(cha-ni) kamata-rhu?
      how-many CL.round put-APPL-FUT boysenberry-PL-OBJ atole-LOC
      ‘How many boysenberries will I add to the atole?’

The interpretational possibilities for sítuni as boysenberry fruit or boysenberry bush reduce to one when a classifier for round objects is present, as in (17c). In that case, sítuni can only mean ‘boysenberry fruit’ and the -icha marker is optional. Contrasting the interrogative sentences (17) and (16) we realize that plural marking in a noun like sapí ‘child’ is obligatory while in a noun like sítuni ‘boysenberry’ it is
optional in the same context. Thus the ‘one or more x’ interpretation is available for count-mass nouns like sïtuni ‘boysenberry’ but it is not available for count nouns like sapí ‘child’, unless it takes an explicit plural marker.

There are contexts in which marking a noun with -icha gives rise to pragmatic infelicity or oddity. For instance, as it is known that each man in the village wears one hat at a time, it would be inadequate to use the inflected count-mass noun kats’ïkwicha ‘hats’:

(18)  Context: in the town of Puácuaro, all men wear hats, women wear shawls.

   here Puacuaro man-PL wear-HAB-3IND hat
   ‘Here in Puacuaro, men wear hats’

b. # Shu Puákwaro achaati-cha juka-sïn-di kats’ïkw-ichani
   here Puacuaro man-PL wear-HAB-3IND hat-PL
   Intended: ‘Here in Puacuaro, men wear hats’

Consultant’s comment: “That would mean that each man wears more than one hat, and that’s not true”

Plural marking on kâts’ïkwa ‘hat’ only allows a strong plural interpretation, hence (18b) is interpreted as ‘the men wear one or more hats’. In a language like English a similar context would enable a dependent plurality reading (Zweig 2005). The sentence Men wear hats is true even if each man wears a single hat, thus not necessarily involving a multiplicity of hats worn by every man. The bare plural hats can be interpreted as a singular under the scope of the plural men, with the only requirement that a multiplicity of hats is involved overall. The dependent plural reading that we found in the English counterpart of (18) is not available for the
Purépecha sentence involving the plural noun *káts’îkw-icha* ‘hats’. Before jumping to the conclusion that Purépecha lacks dependent plurals, one must take into account the following example:

    Woman-PL wear-HAB-3IND apron-PL-OBJ
    ‘Women wear aprons’

Although the situation is pragmatically similar to the context in (18) -each woman wears only one apron, and a multiplicity of aprons is involved overall-; in (19) the use of the plural form *tatsúnarikwa-icha* ‘apron-PL’ is perfectly acceptable, and it does not give rise to the unwelcome inference that each woman wears more than one apron. I would like to suggest that in Purépecha dependent plural readings are available only when the low-scope taking plural is a count noun inflected with -icha. Count-mass nouns with -icha do not allow dependent plural readings, because the plural marker in these nouns entails a strong interpretation that is not only the effect of a scalar implicature. Count nouns with -icha, on the other hand, enable the strong interpretation ‘more than one x’ via scalar implicature, hence in downward entailing contexts, where the implicature does not arise, the noun must bear the plural marker all the same. However, data are missing to prove this hypothesis conclusive. Among other things, one would first need to prove that *tatsúnarikwa* ‘apron’ patterns with count nouns in other respects (e.g. takes obligatory plural marking when combined with numerals, combines with count classifiers *wánikwa* ‘many’ and *namúni* ‘how many’, etc.) and that it takes the plural marker in downward entailing contexts. Similar
tests must be applied to a wider sample of count nouns vs. count-mass nouns. For the time being, I will leave the question open as to whether there can be languages where dependent plural readings are available for certain classes of nouns exclusively.

Summarizing this section: in contexts that favor or require a ‘weak’ reading for the plural marker, i.e., where a plural marker adds the meaning ‘one or more $N$’ to a noun, we attest a split between nouns that require the presence of -icha and nouns that disallow this suffix. Nouns like sapi ‘child’ are in the first category (requiring -icha in weak plural contexts), but so are some inanimates like japóna ‘lake’ and anátapu ‘tree’. Other nouns that belong to this category of obligatory -icha marking are juáta ‘mountain’, names that refer to temporal units, like jurhiata ‘day’, and according to Lagunas (1574 apud Chamoreau 2004:113) tsipárati ‘morning’. In contrast, nouns that disallow -icha marking in weak plurality contexts are mostly inanimates like sïtuni ‘boysenberry’ and almost all edible goods (e.g. shaníni ‘corncob’, apópu ‘squash’, jasi ‘fava beans’), but also inanimates of human manufacture, like kâts’ikwa ‘hat’ and atáachi ‘shawl’.

5.3 Plural marking and the animacy hierarchy

We have seen that plural marking in Purépecha is not homogeneous for all classes of nouns that include atomic units in their denotation, neither in the obligatoriness of its presence nor in the possible interpretations (‘weak’ or ‘strong’) that the plural-marked noun can have. The following generalizations capture the facts described in sections 5.1 and 5.2:
a. Nouns that take obligatory plural marking in multiplicity contexts also take obligatory marking in downward entailing contexts.

b. Nouns that take optional plural marking in multiplicity contexts do not allow the marker in downward entailing contexts.

Put another way: obligatory plural marking is compatible with weak and strong readings of the plural; optional plural marking is only compatible with strong readings.

The heterogeneous distribution of -icha has been correlated with an animacy hierarchy (Chamoreau 2004, 2009). The idea put forth by Smith-Stark (1974) and Corbett (2000) is that in languages that have a ‘plurality split’, if the plural marker occurs with a certain kind of nouns obligatorily, it will also be mandatory with all the classes of nouns to its left in the following scale: (Corbett 2000:56).

Speaker > Addressee > 3rd person > Kin > Human > Animate > Inanimate

The cross-linguistic prediction is that if a language marks plurality at any point in this scale, it would mark plurality in all the noun classes to the left of it. For instance, no language would require a plural marker in humans and inanimates while leaving the non-human animates unmarked.

Let us concentrate on the non-pronominal section of the scale in (105). A language like English requires plural marking in all of its count nouns, irrespective of animacy or human reference (see footnote 2). Plural-marked nouns can have a weak or a strong reading (which meaning is basic and which one is derived by implicature is not a discussion that we will go into here). Corbett (2000:57) reports that Slave
(Athabaskan) attaches the suffix -ke to nouns that refer to humans and dogs to mark plurality, but the rest of animates and inanimates do not need the -ke suffix in plural contexts. This language thus ‘splits’ its number marking system between nouns of human reference and the rest (conventionally including dogs in the first category).

Purépecha does not seem to respect the animacy scale in (22). While it is true that the majority of nouns that require plural marking in multiplicity contexts have human reference or animate reference, some nouns referring to inanimates, like japónda ‘lake’, anátapu ‘tree’ and wéshurini ‘year’, belong to that category as well.

To this point we can still imagine a correlation between animacy and plural marking where the inanimate category is divided between ‘high’ inanimates and ‘low’ inanimates. ‘High’ inanimates would refer to clearly individuated entities with delimited boundaries, or those which would usually be found in singletons. In that case, the correlation would run as follows (the dashed line represents the areas where plural marking is obligatory in multiplicity contexts):

\[
\text{(22) \quad Human} > \text{Animate} > \text{‘High’ Inanimate} > \text{‘Low’ Inanimate} \\
\text{------------------------------------------} \\
\text{obligatory marking} \quad \text{optional marking}
\]

But if we recall the examples presented in section (5.1), it soon becomes evident that we would have to split the animate category as well, since some nouns of animate reference do not need -icha when referring to multiple individuals. We could thus draw a distinction between ‘high’ and ‘low’ animates: ambusí ‘louse’, tsíri ‘flea’
and tsikata ‘hen’ would then fall into the ‘low’ animate category, which can dispense with plural marking:

(23) Human > ‘High’ Animate > ‘Low’ Animate > ‘High’ Inanimate > ‘Low’ Inanimate

<table>
<thead>
<tr>
<th>obligatory</th>
<th>optional</th>
<th>obligatory</th>
<th>optional</th>
</tr>
</thead>
</table>

Supposing that we had valid criteria to divide the animate and inanimate categories into ‘high’ and ‘low’ subclasses, the correlation between animacy and number marking would take the pattern depicted in (23), which is predicted to be impossible because number marking does not respect the animacy hierarchy (Corbett 2000:57).

Further, the criteria upon which we would have to base any sensible distinction between ‘low’ and ‘high’ animates would necessarily include notions like individuation, boundedness or, for short, countability. Chamoreau (2004) ultimately explains the exceptions to the correlation between animacy and number marking by appealing to a countability criterion: whether the noun refers to a single atom or to aggregates of atomic units will determine in the obligatory presence of -icha.

A simpler account of the distribution of -icha described here consists in establishing a two-way distinction between count nouns and count-mass nouns (substance mass nouns do not enter the picture because they never take -icha in the first place). (24) shows how count nouns can be human, animate or inanimate; count-mass nouns contain nouns of animate and inanimate reference (although so far I have
not found human reference nouns in this category); and mass nouns seem restricted to denote inanimates only.

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Count-mass</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>Animate &gt;</td>
<td>Animate &gt;</td>
<td>Inanimate</td>
</tr>
<tr>
<td></td>
<td>Inanimate</td>
<td>Inanimate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>obligatory</td>
<td>optional</td>
<td>n.a. / not possible</td>
</tr>
</tbody>
</table>

Thus, the determining factor for the distribution of *icha* is countability and not animacy, although it is true that animacy distinctions are more fine-grained in the count category. The classification of nouns and its correlation with number marking in (24) is convenient in that it does not force us to include lakes, trees and temporal units in the class of animates. The fact that some animates like *ambusi* ‘louse’ and *tsikata* ‘hen’ are classified as count-mass nouns rather than count nouns (cf. their English or Spanish correlates: *piojo*-s, *gallina*-s) is still left to arbitrariness, but this arbitrariness is by far more acceptable than an odd convention that would force us to consider such nouns inanimate just in order to comply with the animacy scale.
Chapter 6

The numeral suffixes –perárani and –icha

Introduction

Purépecha numerals in their regular cardinal use show a suffix -mu, which we have described in Chapter 3 as a sum-forming operator. This suffix attaches to numeral roots from ‘3’ to ‘6’, and to the complex numerals formed from them (‘7’, ‘8’ and ‘9’). In current spoken Purépecha, cardinalities higher than five are usually expressed by Spanish loan words, which do not take the affix -mu. Numerals ma ‘one’ and tsimáni ‘two’ do not have this ending either. We have proposed an analysis of -mu as a Number head with the features [+augmented, -singular], which by definition exclude reference to cardinalities ‘1’ and ‘2’. (118) presents a list of Purépecha numerals and their corresponding Spanish loan alternatives.
In this chapter we will describe two other morphemes that can replace the -mu suffix: -perárani and -ichani. While numeral phrases with -mu have indefinite interpretations, these two morphemes (or morpheme complexes) occur in definite and distributive contexts respectively:

(2) **Context:**
Juan and Nelo sell brooms. Between the two of them, they sold three brooms today.

Juan ka Nelo atáranta-h-ti=ksî **tani-mu** phángua.
J. **CONJ** N. **sell-PFVE-3IND=3PL 3-SUM** broom
‘Juan and Nelo sold three brooms’

(3) **Context:**
Juan and Nelo sell brooms. Today each of them sold three brooms.

Juan ka Nelo atáranta-h-ti=ksî **tani-chani** phángua.
J. **CONJ** N. **sell-PFVE-3IND=3PL 3-DIST** broom
‘Each of Juan and Nelo sold three brooms’
We will present the syntactic distribution of the two numeral suffixes -perárani and -ichani. Next, we will describe their semantic contribution by presenting the truth and felicity conditions of the sentences in which they occur. We will show that -perárani introduces a maximality operator while -ichani attaches to noun phrases that constitute the distributed share in a distributive relation (Choe 1987). The description presented in this chapter aims to strengthen the claim made in Chapter 3 that numerals in Purépecha are bi-morphemic by showing that the sum-forming operator present in indefinite numerals can be replaced by a marker of number dependency (Choe 1987) or by a maximality operator.

6.1 The distributive suffixes -ichani and -ntani

6.1.1 Allomorphic variation and distribution

As we described in Chapter 3, the suffix -mu occurs with numeral expressions from three to nine (see (1) and (2) above). Cardinals with -mu contribute an indefinite interpretation. In colloquial Purépecha, speakers use Spanish loan words for numerals above five—séys ‘six’, syéte ‘seven’, etc.—which do not bear the suffix -mu.
(5)  
   a. Séys jiwašši-icha / kuš-mu jiwašši-cha  
      6 coyote-PL / 6-SUM coyote-PL  
      ‘Six coyotes’

   b. *Séys-mu jiwašši-cha  
      6-SUM coyote-PL  
      Intended: six coyotes.

As we described in Chapters 3 and 5, numerals above ‘1’ require that the noun
to which they attach bear a plural suffix -icha if it is a count noun. If the noun is
count-mass, the presence of -icha is optional, and -icha must not occur if it is a
measure phrase:

(6)  
   a. Taní-mu phángua(-icha)  
      3-SUM broom-PL  
      ‘Three brooms’

   b. Taní-mu jiwašši*(-icha)  
      3-SUM coyote-PL  
      ‘Three coyotes’

   c. Taní-mu tsuntu*(-icha) kamáta  
      3-SUM cup-PL corn.beverage  
      ‘Three cups of atole (corn beverage)’

The nominal plural suffix -icha can appear in multiple elements of the noun
phrase (e.g. the universal quantifier and adjectives) as a form of optional agreement.

As an agreement marker, however, -icha never occurs in numerals:

(7)  
   a. Iámindu-icha tsíkata-icha turhipit-icha tirhe-h-ti=ia.  
      all-PL hen-PL black-PL eat-PFVE-3IND=yet  
      ‘All the black hens have eaten already’
b. Tha-mu-(icha) tsikata-(icha) turhipit-icha tirhe-h-ti=ia.
4-SUM-PL hen-PL black-PL eat-PFVE-3IND=yet
‘Four of the black hens have eaten already’ / 
‘Four black hens have eaten already’

Even though -icha itself does not occur with numeral roots, a very similar
suffix -ichani can be attached to the bare numeral root, thus resulting in a distributive
interpretation of the numeral phrase. This is exemplified in (3), and repeated below for
clarity:

(8)  Context:
Juan and Nelo sell brooms. Today each of them sold three brooms.

   J. CONJ N. sell-PFVE-3IND=3PL 3-DIST broom
   ‘Each of Juan and Nelo sold three brooms’

b. Juan ka Nelo atáranta-h-ti=ksī  taní-mu phángua.
   J. CONJ N. sell-PFVE-3IND=3PL 3-SUM broom
   ‘Juan and Nelo sold three brooms’

The indefinite ‘three brooms’ in (8b) can have a distributive interpretation, as it
is clear from the fact that (8b) is a true sentence in the context provided. The same
sentence also allows a wide-scope indefinite reading, and it can be true in a context
where a single set of three brooms was sold collectively by Juan and Nelo. This
reading is absent from a sentence in which -ichani is attached to the numeral. When a
sentence argument is introduced by a numeral with -ichani, the only possible reading
is one like (8a), where a number of individuals (in the above example, brooms) are
distributed to each member of another set.
In Choe’s (1987) terms, the noun accompanying the *Num+ichani* complex (in this case *taní-chani phàngua* ‘three-DIST brooms’) introduces the *distributed share*, i.e. the set of entities distributed to each of the individuals or events that constitute the *sorting key*.

The sorting key is in its turn introduced by another participant in the event (in the example above, *Juan and Nelo*). It can also be supplied contextually and interpreted as a set of event time intervals. In this respect, distributive numerals in Purépecha differ from the binomial *each* construction in English, which only allows a participant-key reading (cf. *Juan and Nelo sold three brooms each*). Their possible readings remind us instead of Telugu reduplicated numerals (Balusu 2005), in which the reduplicated numeral phrase can be distributed over a set of participants, a set of time intervals or a set of spatial locations.

The distributive relation between the sorting key (*Juan and Nelo*) and the distributed share is one where the number of elements in the latter depends on the number of elements in the former. In (8a), the number of brooms involved in the overall selling event is not supplied by the numeral, but is derived as a function of the number of elements in the sorting key (in this case, two). What the numeral root *taní-* ‘three’ provides in (8a) is the specification of how many brooms there are per individual in the sorting key, but not how many brooms there are involved in the event in total.
When -ichani is attached to the numeral, the plural suffix -icha may or may not occur in the head noun as well, depending on the semantic class of the noun, as shown for indefinite numerals in example (9).

(9) a. Juan ka Nelo atáranta-h-ti=ksï taní-chani phángua-(icha-ni)
J. CONJ N. sell-PFVE-3IND=3PL 3-DIST broom-PL-OBJ
‘Juan and Nelo sold three brooms each’

b. Tsï kubéticha jatá-h-ti=ksï thá-cha-ni litru(-*icha-ni) itsúkwa
DEM.PL bucket-PL contain-PFVE-3IND=3PL 4-DIST liter-PL-OBJ milk
‘These buckets contain four liters of milk each’

The suffix -ichani is present in numerals above three, including Spanish loan words, which are used from numbers five or six and above. The two numerals that do not take the suffix -mu, i.e. ma ‘one’ and tsimáni ‘two’, do not occur with the allomorph -ichani in distributive contexts; instead, they occur with a variety of it, -ntani. The forms -ntani and -ichani are in complementary distribution. Note that the two numeral roots that take the allomorph -ntani are precisely those that in indefinite contexts do not occur with the sum-forming operator -mu, and which have been characterized in Chapter 3 as specified with the feature [-augmented].

(10) a. Tsï purhu-icha khwetsapi-h-ti má-nndani kilu / *má-chani kilu
DEM.PL pumpkin-PL weigh-PFVE-3IND 1-DIST kilo / *1-PL kilo
‘These pumpkins weigh one kilo each’

b. Tsï purhu-icha khwetsapi-h-ti tsimá-nndani kilu / *tsimáni-chani kilu
DEM.PL pumpkin-PL weigh-PFVE-3IND 2-DIST kilo / *1-PL kilo
‘These pumpkins weigh two kilos each’

c. Tsï purhu-icha khwetsapi-h-ti taní-cha-ni kilu / *taní-ndani kilu
DEM.PL pumpkin-PL weigh-PFVE-3IND 3-PL kilo / *one-PL kilo
‘These pumpkins weigh three kilos each’
Choe (1987:91) states that one of the requirements in a distributive relation is that the distributed share has “an explicit quantity marker of its own”. This quantity can be as specific as provided by the numeral root or it can remain non-specific. It is thus not surprising that the distributed share marker -ichani in Purépecha can also attach to non-numeral cardinal quantifiers like namúni ‘few’ and wánikwa ‘many’, and to mass quantifiers like saní- ‘little’ and kánikwa ‘much’.

(11) Context:
Saulina sells milk. Every day she sells a lot of it.

Mén-ki=sī ataranta-sín-ti itsúkwa kán-gi-chani / *káni-kwa-ichani
time-ki=FOC sell-HAB-3IND milk much-ki-DIST / much-DEV-DIST
(S/he) sells a lot of milk every day°

(12) Context:
How much milk do you sell every day?
Jí ataranta-sín-ga-ni sán-gi-chani-tu: men-cha-ni ma litru,
I sell-HAB-1/2IND-1SG little-ki-DIST-DIM time-PL-ADV one liter

men-cha-ni tsimáni litru...
time-PL-ADV two liter
‘(S)he sells a little milk each day: sometimes one liter, sometimes two liters...’

---

I do not have a plausible gloss for the morpheme -ki. It appears in combination with the focus clitic =sī in some temporal adverbial quantifiers, like mén-ki=sī ‘every day’, but also in adverbial expressions of intensity, like sán-ki-si ‘a little’. It also occurs in other quantificational expressions, like the interrogative na-ki ‘which (one)’ and the free-choice quantifier na-ki-ntari ‘whichever’. In (11)-(14) we see it after the nominal quantifier roots before they take distributive morphemes. A well-known morpheme -ki occurs in the complementizers es-ki and en-ki, and also replaces indicative inflection in negative contexts: cf. jatsíni sentábu ‘I have money’ vs. Nompi ja-ki sentábu ‘I don’t have money’. I do not know to what extent all these occurrences of -ki are related to a single morpheme, and to my knowledge, no research has been undertaken in this regard.
In the examples in (11) the sorting key is a set of event times provided by the adverbial quantifier *menkisï* ‘every day’. To each of the time intervals there corresponds a quantity of milk sold, namely, ‘a lot’ (*kangichanî*). A similar situation is exemplified in the first sentence in (12), except that in this case there is no explicit adverbial expression providing the temporal sorting key. The set of relevant intervals is provided contextually. The quantifier *sângchanîtu* refers to the amount of milk that is sold at each of the contextually provided time intervals. Sentence (13) exemplifies a case where the sorting key is not explicitly present in the sentence; instead, it is recovered from the context and corresponds to the set of selling events. The sentence conveys that there is a small number of plums per plum-selling event:

(13) Context:
I am looking for a place where I can buy a few plums but everyplace around here sells plums wholesale. Then someone informs me that I can buy plums retail at the market.

*Kópikwa-rhu atâranta-sîn-tî=ksî shêngua namú-chani-tu / namûn-gi-chani-tu square-LOC sell-HAB-3IND=3PL plum few-DIST-DIM / few-ki-DIST-DIM ‘At the square, they sell plums in small bunches’*

Distribution over a temporal key is also exemplified in the context in (14). Sentence (14a) is true in a situation where the total number of butterflies that arrive in the village of Angangeo is a big number (*wânikwa* ‘many’). Its counterpart with the *-ichani* suffix can only convey that there is a large number of butterflies per arriving event. In the situation described, where butterflies arrive in small numbers, (14b) is false:
(15)  Context:
Butterflies arrive in Angangeo one by one or in small numbers, until there are many of them after a few days.

a. Angangeo=ksï niára-sín-ti wáni-kwa parhákata-icha.   (True)
   Angangeo=3PL come-HAB-3IND many-DEV butterfly-PL
   ‘A lot of butterflies arrive to Angangeo’

b. Angangeo=ksï niár-sín-ti wán-gi-chani parhákata-icha   (False)
   Angangeo=3PL come-HAB-3IND many-ki-DIST butterfly-PL
   ‘Butterflies arrive in big swarms to Angangeo’

Sentence (15b) also exemplifies a case where the -ichani numeral phrase is in subject position. It is worth noting that even in this case the distributive marker is -ichani and not simply -icha, as one would expect if the ending -ni corresponded to the object marker in the previous examples.

The distributive marker -ichani never attaches to a universal quantifier. This is consistent with the requirement that the distributed share must be an indefinite noun phrase (Choe 1987:32). A universal quantificational phrase can provide a sorting key, but it cannot correspond to the distributed share. When the plural suffix -ichani occurs affixed to iámindu ‘all’, it is only an agreement marker, and it does not impose a distributive meaning to the sentence.35 In other words, the presence or absence of -ichani in the universal quantifier iámindu in (15) does not alter the truth conditions of the sentence—apart from the fact that iámindu alone can have an adverbial use as well, providing a meaning like ‘completely’.

35 Furthermore, iámindu-icha-ni is the plural form of the universal quantifier only in object position. Since the nominative marker is $\emptyset$, a universal quantifier in subject position can only be iámindu-icha ‘all-pl’, not iámindu-ichani.
César ka Nelo jupákuri-h-ti úde-ři shukúparhakwa-ni
C. CONJ N. wash-PFVE-3IND all-PL-OBJ DEM.PL-GEN clothes-OBJ
‘César and Nelo washed all of their clothes’.

The sum-forming suffix -mu is also present in the interrogative expression namúni ‘how many’. The -ichani distributive suffix can be attached to this interrogative expression, again yielding a distributive reading: na-mú-chani ‘how many each’. This is the only environment where -mu and -ichani co-occur.

(16) a. Na-mú-ni=ksï chanárakw-icha jehá-s-ki=ksï mésa-rhu?
WH-SUM-FOR=3PL toy-PL be-PFVE-INT=3PL table-LOC
‘How many toys are there on the table?’

b. ?? Na-mú-chani chanárakw-icha jehá-s-ki=ksï mésa-rhu?
WH-SUM-DIST toy-PL be-PFVE-INT=3PL table-LOC
Intended ‘How many toys are there on each table?’

c. Na-mú-chani chanárakw-icha jehá-s-ki=ksï méši-cha-rhu?
WH-SUM-DIST toy-PL be-PFVE-INT=3PL table-PL-LOC
‘How many toys are there on each of the tables?’

Sentence (16b) is odd because the sorting key is intended to be a set of locations provided by mesa-rhu ‘table-LOC’. But since it is not inflected for plural, it can only have a singular meaning, and the sorting key must refer to a plurality for the distributive dependency to hold.

Just as the distributive -ichani resembles the nominal plural suffix -icha, the suffix -ntani that occurs as its suppletive variant in numerals ‘1’ and ‘2’ has a form similar to the iterative suffix -nta. The difference between -icha and -nta is that the former is a nominal plural suffix while the latter only attaches to verbal roots in order to contribute an iterative or pluractional meaning. The following examples from Foster
(1969:142) show the “temporal repetitive meaning” of -nta (which in Foster transcribed as -nt’a):

(17)  a. kwaká-ra-ni
      wet-CAUS-INF
      ‘To dampen’   (Velázquez 1978:148)

b. kwaká-ra-nta-ni
      wet-CAUS-ITER-INF
      ‘To dampen again’ (Foster 1969:142)

c. putsú-ni
      tear-INF
      ‘To tear apart’

d. putsú-nta-ni
      tear-ITER-INF
      ‘To take off pieces’ (‘To tear repeatedly’) (Foster 1969:142)

Summing up: there are two different suffixes that, when attached to a numeral base, yield distributive meanings. One of the suffixes is -ichani, and it occurs with non-numeral cardinal quantifiers and with all numerals except for ‘1’ and ‘2’ and Spanish loan words. The other suffix is -ntani, which occurs exclusively with numerals ma ‘one’ and tsimáni ‘two’. For each of these suffixes there is a corresponding identical plural marker without the -ni ending: -icha is the plural marker for nouns, and -nta is a repetitive or iterative suffix which, when attached to verbal roots, signals event plurality. The relation between the distributive numeral suffixes and the (nominal or verbal) plural suffixes is not only formal. As Balusu (2005) points out, numeral reduplication in Telugu has the effect of pluralizing the numeral phrase, much in the same way as noun reduplication in other languages (e.g.
Malay, according to his example) is a means for pluralizing the noun. We can thus think of Purépecha as one more case where a plural marker attached to a numeral phrase yields a distributive reading. The plural marker employed can be a nominal plural marker -icha-ni or the verbal pluractional marker -nta-ni.\(^\text{36}\) The fact that an explicitly pluractional suffix is involved in marking distributive relations supports a possible generalization of Balusu’s (2005) claim that the sorting key in a reduplicated numeral construction in Telugu is always an event or an event aspect, and that the participant-key reading is only a sub-case of event-key readings. Although I will not present a detailed formalization of the meanings of distributive constructions in Purépecha, the next section presents the interpretation of the distributive suffixes and explains exactly to which part of the distributive relation they correspond.

\section*{6.1.2 Truth conditions and contexts of use for -ichani / -ntani.}

For ease of exposition, I will call numeral phrases with the -ichani / -ntani suffix in the numeral ‘distributive numeral phrases’. A distributive numeral phrase is headed by a numeral ending in -ichani or -ntani. Unlike regular numeral phrases, these ones are felicitously used only if there is a multiplicity of groups of elements of the sort denoted by the head noun, each group containing as many elements as signaled by

\(^{\text{36}}\) There remains, of course, the question of what is the semantic or syntactic contribution of the suffix -ni in both distributive markers. Even though I do not have a definite answer for now, I would like to suggest, in line with the proposal in Beghelli & Stowell (1997), that -ni is the head of ShareP. Low-scope taking quantifying phrases in a distributive relation are supposed to occupy the specifier of this projection. One must recall that -ni in Purépecha has several homophones, e.g. the objective case marker and the infinitival suffix.

157
the numeral base. This set of groups constitutes the distributed share (Choe 1987), and each one of its elements is mapped to one element of another set individuals (the *sorting key*).

The sorting key is typically introduced by another participant of the event, (expressed as an argument in the sentence), but in some cases it can be recovered contextually (cf. example 14). In Choe’s (1987) relational theory of distributivity, a distributive dependence can be established between two sets only if two conditions hold: (i) The sorting key is semantically plural, and (ii) the distributed share is indefinite. Take for instance a situation like the one depicted in Picture (7), where the sorting key is intended to be provided by *ma achaati* ‘one man’. This situation renders the Num-*ichani* construction in (18a) infelicitous:

![Picture 7 (Bruening 2008)](image)

(18)  
\[ \text{a.} \quad \text{Ma achaati kaa-sha-ti} \quad \text{tani-chani botêy-icha-ni} \]  
one man have-IMPFVE-3IND 3-DIST bottle-PL-OBJ  
‘One man has three bottles each/at a time’
b. Ma acháati kaa-sha-tí  
   taní-mu  botéy-icha-ni
   one man      have-IMPFVE-3IND 3-SUM  bottle-PL-OBJ
   ‘One man has three bottles’

The only possible reading for (18a) would be one where there are three bottles that the man holds per time interval. However, the situation presented in Picture (7) does not favor this reading, since it depicts a single event of holding bottles, hence with a unique time and location. Therefore, the context fails to provide a salient set that could work as a sorting key.

A numeral phrase ending in -mu does not establish a dependency between the number of groups of three bottles and another participant of the event, hence the numeral phrase tanímu botéyichani ‘three bottles’ yields a felicitous and true sentence in the same context.

Sentence (19a) is felicitous in the situation represented in Picture (8). (19b) is also felicitous in that situation because the distributed share contains multiple elements. However, the sentence is false because they do not have the cardinality specified by thá- ‘four’. The distributivity entailment triggered by -ichani is confirmed by the fact that, despite there being four bottles in situation B, (19b) fails to be true.
Distributive numeral phrases can be described as indefinites obligatorily
scoping under another quantificational element in the sentence. This quantificational
element is a universal quantifier whose domain is provided by the sorting key. In
(19b), the sorting key is the set of men in the situation, denoted by acháaticha ‘men’.
In some cases it is possible that the sorting key is a set of events or times. A simple
logical form for (19b) is presented in (20). Recall from Chapter 2 the definition of
Link’s (1983) ‘*’ operator, which maps a predicate $P$ into the set of sums formed with
the elements of $P$: 

(19)  a. Acháati-cha kaa-sha-tí=ksi ma-ndani botéy-icha-ni
    men-PL have-IMPFVE-3IND=3SUF 1-DIST bottle-PL-OBJ
    ‘The men have one bottle each’ (True in 8)

b. Acháaticha kaa-sha-tí=ksi thá-chani botéy-icha-ni
    men-PL have-IMPFVE-3IND=3SUF 4-DIST bottle-PL-OBJ
    ‘The men have four bottles each’ (False in 8)
∀x∃y [∗bottle(y) ∧ ∗man(x) → have(x,y) ∧ |y| = 4]]

The distributed share provides a set of sums of four bottles (*tah-chani botey-ichani*), which amounts to an indefinite taking obligatory narrow scope under the universal quantifier whose restrictor is the set of men (*achaaticha*). As a result, each individual in the set of men is assigned a different sum of four bottles. Since the distributive reading is obligatory due to the presence of the morpheme -ichani, the sentence fails to be true in the situation in Picture (8).

Summing up, the affix -ichani and its allomorph -ntani are distributed share markers. They occur attached to a numeral root to signal number dependency of their noun phrase upon another scope-taking element in the sentence. This scope-taking element is a universal quantifier whose restriction is a set provided by another participant in the event -which is expressed overtly as an argument of the verb-, or by a set of event-times or locations recoverable from context. The suffix is the Purépecha counterpart of markers common in other languages, like the Korean suffix -ssik (Choe 1987). The Purépecha suffix also closely resembles the Quechua distributive marker -nka (Faller 2001) and the reduplicated numeral constructions in Telugu (Balusu 2006).

### 6.2 The maximality suffix -peráraní

#### 6.2.1 Allomorphic variation and distribution

Aside from the distributive marker, Purépecha numerals also take an ending that entails that the maximal number of elements denoted by the noun has the
cardinality expressed by the numeral root. This use is exemplified in sentence (4), and repeated below for clarity:

(21)  Context:
Saulina gave three brooms to Juan and Nelo for them to sell. They sold all three of them.

Juan ka Nelo atáranta-h-ti=ksī **taní-perárani** phángua.
J.  CONJ  N.  sell-PFVE-3IND=3PL 3-MAX broom
‘Juan and Nelo sold the three brooms’

Just like the distributive suffix *-ichani*, the maximality suffix *-perárani* has a different form when it attaches to the numeral tsimáni ‘two’. This form consists of the mere ending *-rani*. Unlike the distributive suffix, there is no form of the maximality operator that co-occurs with the numeral ‘one’.

(22)  Context:
There are only two children in the house. Both of them went to bed already.

a. **Tsimá-arani** sapí-icha nira-h-ti-ia k’ui-ni
   2-MAX small-PL go-PFVE-3IND-ADV sleep-INF
   ‘The two children went to bed already’

b. *Tsimá-perárani* sapí-icha nira-h-ti-ia k’ui-ni
   2-MAX small-PL go-PFVE-3IND-ADV sleep-INF
   Intended: ‘The two children went to bed already’

(23)  Context:
There are only three children in the house. The three of them went to bed already.

a. **Taní-perárani** sapí-icha nira-h-ti-ia k’ui-ni
   3-MAX small-PL go-PFVE-3IND-ADV sleep-INF
   ‘The three children went to bed already’
b. *Taní-rani sapi-icha nira-h-ti-ia k’ui-ni
   3-MAX small-PL go-PFVE-3IND-ADV sleep-INF
   Intended: ‘The three children went to bed already’

c. *Taní-mu-rani sapi-icha nira-h-ti-ia k’ui-ni
   3-SUM-MAX small-PL go-PFVE-3IND-ADV sleep-INF
   Intended: ‘The three children went to bed already’

As (23c) shows, the maximality suffix does not co-occur with the sum-forming
operator -mu. The following examples illustrate the impossibility of attaching -peráraní/-rani to the numeral ‘one’. This is explainable by the fact that combining the
numeral ‘one’ with a maximality operator would not result in a meaning different than
that of the definite article, which in Purépecha happens to be null; hence, a bare noun
is sufficient to convey uniqueness.

(24) Context:
There is only one child in the house. He went to sleep already.

   a. *Má-peráraní sapi nira-h-ti-ia k’ui-ni
      3-MAX small go-PFVE-3IND-ADV sleep-INF
      Intended: ‘The child went to sleep already’

   b. *Má-arani sapi nira-h-ti-ia k’ui-ni
      3-MAX small go-PFVE-3IND-ADV sleep-INF
      Intended: ‘The child went to sleep already’

   c. Sapí nira-h-ti-ia k’ui-ni
      small go-PFVE-3IND-ADV sleep-INF
      ‘The child went to sleep already’

37 In English, the numeral ‘one’ and the definite article can co-occur in certain
contexts where ‘one’ has an adjectival use: The one/ only child I have. In Purépecha,
on the other hand, ma ‘one’ cannot occur with this adjectival use. Instead, the
expression jandíaq’u conveys the meaning of ‘only’, ‘single’, as in the following
example:
Unlike the distributive suffix -ichani, the maximality suffix -perárani does not attach to quantificational elements other than numeral roots:

(25)  Context:
There are a lot of pots in the house. All of them are on the table.

a. Iámindu-icha tsúntsu-icha jarha-h-ti mésa-rhu
   all-PL pot-PL be-PFVE-3IND table-LOC
   ‘All the pots are on the table’

b. Wáni-kwa tsúntsu-icha jarha-h-ti mésa-rhu
   many-DEV pot-PL be-PFVE-3IND table-LOC
   ‘There are many pots on the table’

c.*Iámindu-perárani tsúntsu-icha jarha-h-ti mésa-rhu
   all-MAX pot-PL be-PFVE-3IND table-LOC
   Intended: ‘All the pots are on the table’

d. *Wáni-(kwa)-perárani tsúntsu-icha jarha-h-ti mésa-rhu
   many-DEV-MAX pot-PL be-PFVE-3IND table-LOC
   Intended: ‘The numerous pots are on the table’

6.2.2 Truth conditions and contexts of use of -perárani / -rani

Numeral phrases with the suffix -perárani presuppose that, in a given discourse context, the maximal set denoted by the associated noun has the cardinality expressed by the numeral. This maximality presupposition makes maximal numeral phrases in Purépecha similar to definites (Roberts 2003, Kadmon 1990, Sharvy 1980). Sentence (26a) is infelicitous in the situation depicted in (9) because the maximal number of girs is not two. As conveyed by the consultant, for (26a) to be adequate, “there would...
need to be just one pair of girls”. Note that distributive numerals do not carry any such presupposition, since (26b) is not only felicitous, but also true in the context depicted in (9):

![Image](Bruening 2008)

**Picture 9 (Bruening 2008)**

(26)  

a # Tsimáa-rani nanak-sapi-cha washáka-ti-sha-ti=ksí washándikwa-rhu  
two-MAX girl-little-PL sit-FOR-IMPFV-3IND-3PL chair-LOC  
‘The two little girls are sitting on a chair’

b. Tsimándani nanák-sapi-cha washáka-ti-sha-ti=ksí washándikwa-rhu.  
two-DIST girl-little-PL sit-FOR-IMPFV-3IND-3PL chair-LOC  
‘Two little girls are sitting on each chair’  
(TRUE IN 9)

Numerals with -peráraní also can fulfill anaphoric functions, as in (27b), where taní-peráraní ‘the three’ refers back to the ears of corn introduced in the preceding sentence. If the indefinite cardinal taní-mu ‘three’ (or taní-m-ichákwa ‘three CL.LONG’) were used instead of taní-peráraní, the sentence would be infelicitous unless there were some other ears of corn that Juan ate:
The maximality suffix has a similar semantics to a definiteness marker both in its maximality condition and in its possibilities to make anaphoric reference to a previously introduced entity. But it is different from definite articles in languages like English or Spanish because it can co-occur with demonstratives and pronouns:

(28)  Tsï  *tha-peráran* sapii-cha ́nstk-k-h-ti  Irépani-ni má-ndan-erhakwa narasha.  
      DEM.PL 4-MAX  child-PL  give-PFVE-4IND 1-OBJ 1-DIST-CL.ROUND  orange 
      ‘These four children gave an orange each to Irépani’

(29)  *Juchá taní-peráran* taráta-sha-ka=ksï  jáchki-cha-ni  
      1PL  3-MAX  raise-PROGR-1/2IND=1PL  hand-PL-OBJ  
      ‘The three of us are raising our hands’

Purépecha does not have a definite determiner like English the or Spanish el/los. Instead, bare noun phrases can have definite interpretations (Villavicencio 2006). The suffix -peráran never attaches to anything that is not a numeral root. It cannot be suffixed to nouns or adjectives to provide a definite reading (there are no expressions like *wíchu-peráran* ‘dog-MAX’ or *turhípiti-peráran* ‘black-MAX’ to
make reference to the maximal set of dogs or the maximal set of black objects in the context). There is, however, a similar suffix -\textit{perá} which when attached to a verbal root contributes the meaning of reciprocity. The following examples from Foster (1969:115) show this use:

(30) a. \textit{pa-perá-\text{-ni}}
   carry-RECIP-INF
   ‘To be friends, to carry it together’

   b. \textit{pá-\text{-ni}}
   carry-INF
   ‘To carry it elsewhere’

   c. \textit{ché-perá-\text{-ni}}
   fear-RECIP-INF
   ‘To fear each other’

   d. \textit{ché-\text{-ni}}
   fear-INF
   ‘To be afraid’

(31) Ihtsï      tsimá-arani ch’anari-cha kamá-nari-\textit{pera-ti-sha-\text{-ti}=ksï}
   DEM.PL  2-MAX player-PL hold-front-RECIP-FOR-PROGR-3IND=3SUJ
   ‘The two players are hugging each other’

Faller (2007) shows that Cuzco Quechua expresses reciprocity compositionally by means of two suffixes: a pluractional -\textit{na} and the reflexive marker -\textit{ku}. The pluractional marker ensures reference to multiple events, i.e. a large sum-event consisting of more than one sub-event. The reflexive marker signals co-reference between the sum-agent and the sum-theme of the total sum-event. Plurality of events entails that each sub-event differs from other sub-events alongside some dimension (e.g. each sub-event has a distinct temporal or spatial location, or involves different
participants than the rest of sub-events) (Lasersohn 1995). This condition on pluractionality ensures that even though the agent and the theme of each sub-event are drawn from the same set, they remain distinct at some level. In other words, reciprocals are reflexive only at the level of the whole plural event. At the level of the atomic events that constitute them, on the other hand, they entail distinctness of co-arguments.

    (s)he-pl amongst give-pa-refl-prog-3-pl
    ‘They are giving each other (things)’. (Faller 2007:259)

The sentence in (32) is true if, and only if, there is a plurality of events of giving, signaled by -na, that involves the same sum-individual as agent and recipient (hence the reflexive marker -ku), such that for every atomic individual a that is part of A there is at least some other atomic individual b which is also part of A among whom the relation ‘give-things(a,b)’ holds. Conversely, for every individual b in A there is at least one individual a in A such that ‘give-things(a,b)’ is the case. In every case, a and b need to be distinct, even though they belong to the same plural individual A.

One of Faller’s (2007:285) cross-linguistic generalizations from the analysis of the Cuzco Quechua data is that reciprocity is derivable from several semantic components, one of which is plurality. In Cuzco Quechua, the expression or reciprocity entails direct marking of verbal plurality, and the same might be the case in other languages. Another semantic ingredient of a reciprocal relation is distinctness of arguments at the level of sub-atomic events. This condition is not expressed overtly in
Cuzco Quechua, but derived indirectly by an application of Condition B. English, on the other hand, expresses the distinctness condition overtly by the presence of *other* in the reciprocal *each other*. One more ingredient for reciprocity is that, even though reciprocal events have distinct participants at the atomic level, at the sum-level they share a same sum-individual as agent and theme (or agent and recipient, or whichever thematic roles are directly involved in the reciprocal relation). Again, Cuzco Quechua expresses this condition overtly by means of a reflexive marker, and Romance languages also encode reflexivity in the reciprocal relation overtly. In sum, each of the ‘ingredients of reciprocity’ might be expressed separately, therefore allowing that what is overtly expressed in some languages might not be morpho-syntactically realized in others.

Without going into a detailed analysis of reciprocal constructions in Purépecha, it seems plausible that the maximality suffix *-peraráni* and the reciprocal marker *-perá* share some semantic content. Unlike Cuzco Quechua, Purépecha does not show the reflexive marker *-kurhí* in its reciprocal constructions. A possibility is that *-perá* contributes the meaning of plurality and uniqueness. The suffix *-ra* by itself has been described as a marker of plurality (Foster 1969:114, Capistrán 2010:91 fn 34). As

--------------------------------------

Without elaborating further, Capistrán (2010:91 fn 34) suggests that the reciprocal suffix *-perá* might be composed of this plural marker plus the morpheme for indefinite object. I have not found any other instances of *pe*- as an indefinite object marker, and Foster (1969:110) describes a similar form with the meaning of ‘reversal, change or substitution of one object for another’. The examples provided, though, do not bring enough evidence for a definite analysis of the semantics of this morpheme.
such, it is restricted to verbal environments and to my knowledge never functions as a plural marker on nouns. If we follow Faller’s (2007) generalizations, we need to find among the semantic ingredients for reciprocity a possible meaning for pe- which fulfills the maximality function that it serves when attached to numeral roots. A possibility is that the meaning of this suffix is *uniqueness*. As a verbal complex suffix, the presence of -*perá* in (31) ensures that there is a plurality of events of hugging, and at the same time it requires that this sum-event is the only hugging event in the context. As in Faller’s (2007) analysis, we assume that for two events to be distinct they must vary along some dimension. If this dimension is distinctiveness or participants, the same plurational suffix -*ra* carries the entailment that each of the sub-events has two different individuals as agent and theme. However, the overall sum-event of hugging is a single one, therefore entailing that there is a single sum-agent and a single sum-theme.

If the morpheme complex -*perá-rani* is attached to a numeral root, the plurality entailment now applies to the individuals that fulfill the descriptive content of the noun. The uniqueness requirement is still at work, thus bringing the presupposition of maximality that we described above. A difference between -*perá* and -*perárani* is that the latter must attach to a quantity expression. Note that, unlike the distributed share marker -*ichani*, -*perárani* never attaches to unspecified quantities. As a numeral suffix, -*perárani* requires a numeral expression: e.g. *taní-* ‘three’, *thá-* ‘four’. The
result expresses the quantity of atomic individuals that constitute the unique sum that fulfills the descriptive content of the associated noun in the relevant context.

6.3 Summary

The distributive and maximal suffixes of Purépecha share something with the sum-forming marker -mu that we described in Chapter 3 of this dissertation: they show allomorphic variation depending on the cardinality of the numeral root to which they attach. The -ichani distributive marker does not occur with numerals ‘1’ and ‘2’. The alternative form -ntani occurs in its stead. The maximality suffix -perárani does not attach either to ‘1’ or ‘2’. The numeral ‘1’ simply does not take this suffix at all while the numeral ‘2’ only occurs with the allomorph -rani. Table H summarizes this variation.

Table H. Distributive and maximality morphemes and their numeral roots

<table>
<thead>
<tr>
<th>numeral root</th>
<th>Sum forming</th>
<th>Distributive</th>
<th>Maximal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. má</td>
<td>-∅</td>
<td>-ndani</td>
<td>none</td>
</tr>
<tr>
<td>2. tsimáni-</td>
<td>-∅</td>
<td>-ndani</td>
<td>-árani</td>
</tr>
<tr>
<td>3. tani-</td>
<td>-mu</td>
<td>-(i)chani</td>
<td>-perárani</td>
</tr>
<tr>
<td>4. thá-</td>
<td>-mu</td>
<td>-(i)chani</td>
<td>-perárani</td>
</tr>
<tr>
<td>5. iũ- / sinku-</td>
<td>-mu / -∅</td>
<td>-ichani</td>
<td>-perárani</td>
</tr>
<tr>
<td>6. séys</td>
<td>-∅</td>
<td>-ichani</td>
<td>-perárani</td>
</tr>
<tr>
<td>7. syete</td>
<td>-∅</td>
<td>-ichani</td>
<td>-perárani</td>
</tr>
<tr>
<td>10. dyes</td>
<td>-∅</td>
<td>-ichani</td>
<td>-perárani</td>
</tr>
</tbody>
</table>

As we explained in Chapter 3, what numerals ‘1’ and ‘2’ have in common is obviously not the number feature [+/-singular]: ‘1’ is evidently singular while ‘2’ is
not. However, they can fall within the same natural class once we consider that the feature [-/+augmented] scopes over their [+/-singular] feature. Being marked as [+augmented]\(P\) translates into having subsets (sub-parts) to which \(P\) applies. Being marked as [-augmented]\(P\) equates to lacking subsets (sub-parts) to which \(P\) applies. Take \(P\) to be the [+/-singular] feature that corresponds to the semantic property of having atomic reference. The numeral \( ma \) ‘one’ is [+singular], meaning that whatever falls under the denotation of \( ma \ washándikwa \) ‘one chair’ is atomic and does not have subparts that fall under the denotation of \( washándikwa \) ‘chair’. The feature [+singular] by definition excludes [+augmented], hence if \( ma \) ‘one’ bears any of the features [+/-augmented], it would have to be the negative one. Numeral phrases with \( tsimáni \) ‘two’ are [-singular] since at least some subparts of \( tsimáni \ washándikwa \) ‘two chairs’ fall under the denotation of \( washándikwa \) ‘chair’. That is, \( tsimáni \ washándikwa \) ‘two chairs’ does not have atomic reference. The numeral \( tsimáni \) also has a [-augmented] feature, which ensures that the non-singularity property does not carry over to further subparts. Even though the denotation of \( tsimáni \ washándikwa \) ‘two chairs’ is non-atomic, no subpart of \( tsimáni \ washándikwa \) is non-atomic as well (i.e. all of its subparts are atomic).

The numeral phrases \( má \ washándikwa \) ‘one chair’ and \( tsimáni \ washándikwa \) ‘two chairs’ contrast in that the former is [+singular] while the latter is [-singular]. However, they share the feature [-augmented]. The rest of the numerals are [-singular] and contain subsets that are [-singular] as well. They are thus marked as
[+augmented], a feature specification that sets them apart from the numerals ‘one’ and ‘two’.

Purépecha seems to be sensitive to the distinction [+/-augmented] in a way that is reflected in the morphology of its numeral expressions. Numerals with the [-augmented] feature do not take the sum-forming operator -mu; instead, they take an alternative form of the distributive -ntani and either no maximality suffix or an allomorph of it, -rani. Numerals from ‘3’ and beyond, which are marked as [+augmented], take a sum-forming operator suffix -mu in cardinal constructions, form their distributive meanings by suffixing -ichani, and mark maximality by the suffix -perárani.

Although we still lack a detailed analysis of the relation of -perárani and the reciprocal marker -perá, as well as of the relation between the distributive -ichani /-ntani and the plural marker -icha and the pluractional -nta, in this section we have presented the arguments to identify two numeral morphemes that have clear maximal and distributive interpretations. We also showed how these morphemes replace the sum-forming operator -mu, described in Chapter 3. The distributive marker establishes a number dependency upon some other participant in the sentence or some spatio-temporal aspect of the event, and the maximal suffix seems to have a direct connection with pluractionality. All these morphemes bear a patent relation to number, and call for a deeper investigation of all the possible ways that Purépecha has to express several concepts that fall under the cover term ‘plurality’.
Chapter 7

Mass and count quantifiers

Introduction

One of the aspects of Purépecha grammar in which the mass-count distinction is more clearly reflected is the selection of cardinal quantifiers. There is a set of non-numeral cardinal quantifiers that combine exclusively with mass terms, and a different set that occurs with count and count-mass nouns only.

The two paradigms of quantificational expressions share some morphological material. The quantifiers kánikwa ‘much’ and wánikwa ‘many’ share the ending -kwa that we have identified earlier as a deverbalizer: -kwa attaches to verbal roots and yields expressions of different syntactic categories: nouns, classifiers, adverbs and quantifiers. The quantifiers namúnitu ‘few’ and sanítitu ‘little’ only have in common the diminutive ending -itu, a morphological borrowing from Spanish that is otherwise not productive in the language.

The distinction between mass and count nouns is only valid for cardinal quantifiers. The universal quantifier iamíndu ‘all’ does not select a particular class of noun, although it can optionally take plural inflection only with count nouns: iamíndu-
ichā ‘all-pl’. Demonstratives like i- ‘proximal’ and indē- ‘distal’, and their plural forms tsī / ihtsī and tsā / chá respectively, do not select one or other class of nouns.

The importance of describing the system of non-numeral cardinal quantifiers resides in the fact that their opposition shows the mass/count distinction clearly, based upon sharp grammaticality judgments. It also shows how, even though count-mass nouns behave like mass nouns in other areas of the grammar (e.g. in occurring as arguments of collective predicates), they pattern along count nouns with respect to quantifier selection.

In English, some quantifiers combine only with singular count nouns (a, every), but not with count plurals or mass nouns. Other determiners combine only with plural nouns (several, few, many), but not with singular or mass nouns. Yet a third class selects mass nouns only: much, little. And a fourth category of determiners selects mass nouns and plurals, but not singular nouns: more, less, a lot. Doetjes (2010) points out that quantifiers that indistinctively take singulars and plurals also combine with mass nouns (some, any, the), hence they are more appropriately described as simply non-sensitive to the mass/count distinction. Given these facts, Doetjes proposes a generalization: “There do not seem to be any determiners that combine with all count nouns (singular and plural) and not with mass nouns” (2010:6).

The Purépecha cardinal quantifiers described below accommodate only partially to this generalization. The quantifiers wānikwa and namúñitu, which we have decided to translate here (for expository purposes only) as many and few, respectively, are better described as cardinality expressions that are sensitive to the presence of
atoms in the noun’s denotation. They can take plural count nouns as well as plural and non-plural (i.e. number-neutral) count-mass nouns. However, they cannot combine with substance mass nouns. ‘Real’ mass nouns very clearly take only the quantifiers *kánikwa* ‘much’ and *sanítitu* ‘little’.

### 7.1 *Kánikwa*, ‘much’ and *wánikwa*, ‘many’:

**noun selection and morphology**

*Kánikwa* ‘much’ is used only with mass nouns. Exactly those nouns that can be combined directly with numerals (with or without classifiers) are the ones that reject the use of *kánikwa*. Nouns that do not combine with *kánikwa* select the quantifier *wánikwa* ‘many’. Note that the noun and the quantifier do not need to be strictly adjacent to each other:

(1) a. Churhipu *kánikwa/*wánikwa juka-h-ti itúkwa-(*icha) soup much / many have-PFVE-3IND salt-PL
   ‘The soup has a lot of salt’ (mass)

   b. Wíchu *wánikwa/*kánikwa jukarha-h-ti tsiri-(icha) dog many / much have-PFVE-3IND flea-PL
   ‘The dog has a lot of fleas’ (count-mass)

   c. Eróka-sha-p-ka *wánikwa/*kánikwa k’wirípu-icha-ni wait-IMPFVE-PST-1/2IND many / much person-PL-OBJ
   ‘I was expecting a lot of people’ (count)

The count quantifier *wánikwa* ‘many’ does not force the presence of a plural marker in all nouns. Nouns that are obligatorily marked with -*icha* in plural contexts and in the presence of a numeral will remain obligatorily marked with -*icha* when *wánikwa* occurs (1c). Number neutral nouns (count-mass nouns) have optional plural
marking when combining with \textit{wánikwa} (1b). In contrast, \textit{kánikwa} ‘much’ and the plural marker -\textit{icha} are mutually exclusive, since the mass quantifier selects only those nouns that precisely cannot take plural inflection.

Both quantifiers share the ending -\textit{kwa}, glossed here as a deverbalizer. The roots \textit{wáni-} and \textit{káni-} can be found as predicates (2a, b) and even can take causative suffixes, suggesting that they are predicative in nature:

\begin{enumerate}
\item[(2)]
\begin{enumerate}
\item a. í itúsúkwa ju-ká=ri \textbf{káni-}h-ti
\begin{itemize}
\item \textit{DEM milk bring-SUB-2SUBJ much-PFVE-3IND}
\end{itemize}
\begin{itemize}
\item ‘This milk you served to me is a lot’
\end{itemize}
\item b. í narásha ingí=rini \textbf{wáni-}h-ti
\begin{itemize}
\item \textit{DEM orange REL=2SUBJ OBJ give-SUB bring-SUB-2SUBJ many-PFVE-3IND}
\end{itemize}
\begin{itemize}
\item ‘These oranges you gave me are a lot’
\end{itemize}
\end{enumerate}
\item[(3)]
\begin{enumerate}
\item a. César ka Nelo piá-h-ti=ksí sán-ki-chani-itu itúsúkwa...
\begin{itemize}
\item \textit{C. conj N. buy-PFVE-3IND=3PL.SUBJ little-\textit{ki}-DIST-DIM salt}
\end{itemize}
\begin{itemize}
\item ‘Each of César and Nelo bought a little salt...
\end{itemize}
\item b. ...ka ísi=ksí kúndanta-h-ti entre tsimáa-rani
\begin{itemize}
\item \textit{CONJ so=3PL.SUBJ gather-PFVE-3IND between two-MAX}
\end{itemize}
\begin{itemize}
\item ka \textbf{káni-}rha-nta-h-ti=ksí=ia
\begin{itemize}
\item \textit{conj much-CAUS-ITER-PFVE-3IND=3PL.SUBJ=ADV}
\end{itemize}
\begin{itemize}
\item ‘...and that way they gathered it between the two and accumulated a lot of it’
\end{itemize}
\end{enumerate}
\end{enumerate}
\end{enumerate}

Contrasting with positional roots, which require a locative suffix to take verbal inflection (see Chapter 4), the roots \textit{wáni-} and \textit{káni-} can be inflected directly, as shown in (4). They can also appear in their full quantificational form \textit{kánikwa} and \textit{wánikwa} in predicative position, but in that case they take a predicativizer suffix \textit{i-} before taking verbal inflectional suffixes:
(4) a. í itsúkwa ju-ká=ri kání-kw-i-h-ti
dem milk bring-SUB-2SUBJ much-DEV-PRED-PFVE-3IND
‘This milk you served to me is a lot’

b. í narásha ingí=rini ínstku-ka ju-ka-ri wání-kw-i-h-ti
dem orange REL=2SUBJ.1OBJ give-SUB bring-SUB-2SUBJ many-DEV-PRED-PFVE 3IND
‘These oranges you gave me are a lot’

7.2 Namúni-tu ‘few’ and sanítitu ‘little’:
noun selection and morphology

The other two cardinal non-numeral quantifiers of Purépecha that distinguish
between mass and count are namúni-tu ‘few’ and sanítitu ‘little’. They usually occur
with the suffix -(ti)tu, a borrowing from Spanish diminutive -ito (Chamoreau, p.c.).
Mass nouns occur only with sanítitu (5a), while count nouns and count-mass nouns
pattern together in occurring with namúni-tu (5b,c):

(5) a. Jatsi-ku-∅ saní-titu /*namúni-itu itúkwa (churípu-ni)
have-APPL-IMP little-DIM / few-DIM salt soup-OBJ
‘Put a little salt in the soup’ (mass)

b. í wéshurin=ksï namúni-tu /*saní-titu p’iku-s-ka shaníni-(icha-ni)
dem year few-DIM / little-DIM harvest-PFVE-1/2IND corn.cob-PL-OBJ
‘This year I harvested few corncobs’ (count-mass)

c. Jam-sín-di=ksï namúni-tu /*sání-titu tindi-cha cosina-rhu
be.around-IMPFVE-3IND=3P.SUBJ few-DIM / little-DIM fly-PL kitchen-LOC
‘There are a few flies in the kitchen’ (count)

Nouns that combine with sanítitu ‘little’ do not take plural inflection because
they are mass terms. Nouns that combine with namúni-tu ‘few’ take obligatory plural
inflection if they are count nouns (5c), and only optionally if they are count-mass
nouns (5b).
Unlike their ‘much/many’ counterparts, the ‘few/little’ quantifiers do not have roots that can take the predicative suffix -i. Whenever namúni ‘few’ and sanítitu ‘little’ occur in predicative position, it is the whole quantificational word, including its diminutive suffix, that takes the copula –i. That is, the only possible predicative structure they occur in is parallel to the ones in (4), but not to the ones in (3):

(6) í itsúkwa ju-ká-ri sani-titu-i-h-ti /*sani-h-ti
DEM milk bring-SUB-2SG little-DIM-PRED-PFVE-3IND / little-PFVE-3IND
‘This milk you brought is (just) a little’

In his 1559 vocabulary, Gilberti (1559:113) registers the word namúni with the meaning ‘some’. In current use there is an interrogative form namúni, clearly related to namúni-tu ‘few’, which is the interrogative expression equivalent to ‘how many’. Like its non-interrogative counterpart, namúni ‘how many’ is only used with count nouns and mass-count nouns:

(7) a. Na-mú-n=ti wek-sín-di kaa-ni Lupe sapí-cha-ni?
      WH-SUM-FOR=2/3SG want-IMPFVE-3IND have-INF L. child-PL-OBJ
      ‘How many children does Lupe want to have?’

b. Na-mú-n=ksí jasi jarhá-s-ki kubéta-rhu?
      WH-SUM-FOR=3PL fava.bean be-PFVE-INT bucket-LOC
      ‘How many fava beans are there in the bucket?’

c. *Na-mú-n=ti jatsí-ku-s-ki itúkwa churhípu-ni?
      WH-SUM-FOR-2/3SG have-APPL-PFVE-INT salt soup-OBJ
      Intended: How much salt did you put in the soup?
d. Na-shán-kani jatsí-ku-s-ki itúkwa churhipu-ni?
WH-shan-much have-APPL-PFVE-INT salt soup-OBJ
‘How much salt did you put in the soup?’

Note that the interrogative namúni differs from the cardinal quantifier namúnitu in two respects: (a) the interrogative never takes the diminutive suffix -itu (8), and (b) the cardinal quantifier cannot co-occur with a classifier, while the interrogative optionally can:

(8) *Na-mú-ni-itu-ti wek-sīn-di kaa-ni Lupe sapí-cha-ni?
wh-mu-FOR-DIM-2/3SG want-IMPFVE-3IND have-INF L. child-PL-OBJ
‘How many children does Lupe want to have?’

(9) a. Na-mú-ni erhákwa jași jarhá-s-ki kubéta-rhu?
wh-mu-FOR CL.round fava.bean be-PFVE-INT bucket-LOC
‘How many fava beans are there in the bucket?’

b. *Jiní jarhá-h-ti namúnitu erhákwa jași
there be-PFVE-3IND few-DIM CL.round fava.bean
Intended: ‘There are few fava beans there’

The interrogative namúni ‘how many’ has the same distribution that the cardinal namúnitu ‘few’. Both combine only with count nouns and count-mass nouns. Recall that these are also the nouns that take numerals like taní-mu ‘three’ and thá-mu ‘four’, with or without the presence of a classifier. The interrogative namúni ‘how many’ and the numerals described in Ch.3 share the morpheme mu-, which we have

39 The form shan(i) appears in non-count interrogatives (including mass nouns and count-mass nouns), either by itself as in na-sháni ‘how much’ or followed by wáni- or káni-. Ná-shan-wani only combines with count-mass nouns, while ná-shan-kani takes only mass nouns. This distribution is evidently mandated by wáni and káni. Since we haven’t discussed -shan(i) before, I will here gloss it simply as -shan, but I will show later on that it is the non-count equivalent of the sum-forming operator -mu.
analyzed as a Number head (a sum-forming operator) that requires a quantity expression, which is introduced by the rest of the numeral word. The interrogative quantifier replaces this cardinality expression with the interrogative variable *na*, and we assume that the remaining material (*-ni*) is a formative affix present for prosodic reasons.

If this is right, it suggests that the count and count-mass quantifier *namúnitu* ‘few’ consists of a sum-forming operator *-mu* plus an indeterminate quantity expressed by *na*-. Its distribution, not surprisingly, is the same as that of numerals, which also involve the number head *-mu*. The indeterminate quantity expressed by *na*- justifies the use of *namúni* with the meaning of ‘some’, as attested in Gilberti (1559).

### 7.3 Adverbial uses

The mass quantifier root *sáni*- can be modified by *-táru* ‘more’. *Sán-daru* has simply the meaning ‘more’, and not necessarily ‘(a) little more’. It can be used as a superlative adverb, as in (10b), or as a comparative, like in (11). In the latter case, it can co-occur with *wánikwa*, ‘many’:

(10) a. Saulina ts’érta-h-ti má-ndani erhákwa purhú-icha-ni...
    S. weigh-PFVE-3IND 1-DIST CL.ROUND pumpkin-PL-OBJ
    ‘Saulina weighed the pumpkins one by one....

    ...para she-ni na-ki san-daru k’wetsapi
    for see-INF WH-ki little-more heavy
    ... to see which one was the heaviest.

b. Jiwátsí paa-h-ti ma san-daru tepaari-ni tsikata-ni
coyote take-PFVE-3IND one little-more fat-OBJ hen-OBJ
    ‘The coyote took away a fatter hen’
Pegru san-daru wánikwa jatsi-a-h-ti ermanu-impi-cha-ni keske Marcelino P. little-more many have-DIST-PFVE-3IND brother-POSS-PL-OBJ COMP M. ‘Pedro has more brothers than Marcelino’

There is no correspondent namúinitu quantifier with -taru—i.e. something like *namúni-taru is not possible. The closest expression is máru-taru, ‘some more’, which is used only with count nouns and does not have the adverbial use of san-daru.

Maru-taru=ksí kurhi-h-ti juat-icha
some-more=3PL.SBJ burn-PFVE-3IND hill-PL
‘Some more hills have burned’
NOT: ‘The hills have burned some more’

Apart from sani—‘little’ in the form san-daru ‘more’, the other three roots of cardinal quantifiers described in this chapter do not have adverbial uses. Doetjes’s (2010) formulates a cross-linguistic generalization according to which quantifiers that take only mass nouns also can occur as adverbial expressions of degree (like English I don’t have much money and I don’t like it much). The quantificational expression saní-titu seems to comply with this general fact, although the generalization does not hold for káni-(kwa), which combines exclusively with mass nouns but fails to occur as an adverbial expression of degree:

a. *Churhipu káni-(kwa) itúmi-i-h-ti.
   soup much-dev salty-pred-pfve-3ind
   Intended: ‘The soup is very/too salty’

b. Churhipu shamá itúmi-i-h-ti.
   soup much salty-pred-pfve-3ind
   ‘The soup is very/too salty’
7.4 Syntax for cardinal quantifiers

Given the predicative nature of their roots, we propose that wáni-kwa ‘many’ and káni-kwa ‘much’ are derived from a predicative structure, where the predicates kani- ‘much’ and wani- ‘many’ and the subject noun are related via a null relator head. We exemplify our point with the quantifier káni-kwa, ‘much’, but a similar structure would derive wáni-kwa ‘many’.

(14) Kánikwa itúkwa: ‘much salt’

(a) Merge káni- and itúkwa, where káni- is a predicate and itúkwa its argument:

```
NP
  RelP
    Rel
      NP
        Rel
          Rel^0
            Ø
            XP
              káni
              Rel
```

(b) Merge the deverbalizer (Y^0). This head in turn triggers the presence of -kwa on its specifier.

```
YP
  -kwa
    Y'
      Y^0
        RelP
          Rel
            NP
              Rel^0
                Ø
                XP
                  káni
```

183
(c) Move \([XP \text{káni}]\) to Spec, YP, where it surfaces as \text{kánikwa}:

The XP \text{káni-kwa} can occupy the specifier position of a quantificational phrase, (either by moving it further to a Spec, QP dominating YP or by assuming that YP itself is the quantificational phrase). The reason why we need the intermediate process of moving \text{káni-} to Spec,YP instead of assuming that it lands directly in Spec,QP is because -\text{kwa} can be found in several expressions that are not quantificational (nouns and some non-quantificational adverbs). Thus, we assume that the process of the predicate \text{kani} surfacing as \text{kani-kwa} must have taken place in an intermediate stage.
(d) Move \([xp \text{kání-kwa}]\) to Spec,QP:

Two facts merit explanation. One of them is the obligatory plural marking that occurs with wáni-kwa ‘many’ and count nouns, and the optional plural marker, which is present in count-mass nouns with the same quantifier. The second one is the possibility that the quantifier wáni-kwa ‘many’ or kani-kwa ‘much’ are split from their associated nouns by a verb, as in (13a-b). I will address the first of these facts first by proposing that wáni- is a predicate on plural entities.

The complement of the predicate wáni- ‘much’ can be either a NumP or a NP, since both categories have the same semantic type. A plural suffix in the noun reflects the presence of a null Number head that has been merged with NP. The arrow in the below diagram represents the agreement relation:
(15)  \textit{Wánikwa tindi-icha}: ‘many flies’

The locus of plurality is the null Number head and not the \textit{-icha} suffix itself. The main point here is that \textit{wáni}- is a predicate of plural entities. It therefore selects either a noun that already denotes pluralities, like \textit{tsirí} ‘flea’, or a plural count noun, like \textit{tíndicha} ‘flies’. To prevent a semantic clash, the [-singular] Number head is optional in the former case, but obligatory in the latter case (for an overview of the denotations of plural markers, please refer to Chapter 2).

I will repeat the example in (1a) as (16) for ease of exposition:

(16)  Churhipu \textbf{kání}kwa juka-h-ti itúkwa
soup much have-PFVE-3IND salt
‘The soup has a lot of salt’

The split between the quantifier \textit{káni}-\textit{kwa} and the associated noun phrase \textit{itúkwa} ‘salt’ can be explained by a series of successive movements that are undergone by \textit{kání}kwa ‘much’ alone to a focus position. To obtain the sequence in (16), we started out with a structure like (17a), repeated as (17b) in an abbreviated form.

(17) a. [IP Churhipu juka-h-ti [QP káníkwa [YP \textit{kání}kwa[YP \langle káníkwa \rangle][RelP[NP itúkwa][XP\langle kání\rangle]]]]]
b. [IP Churhipu juka-h-ti [QP káníkwa [NP itúkwa]]]
A focus head is later merged, and the quantifier kánikwa moves by itself to its specifier position (167), leaving its associated NP stranded:

(18) \[[\text{FocP } \text{churhipu}] \text{ Foc'} \emptyset [\text{IP } \text{churhipu} \text{ juka-h-ti} [\text{QP } <\text{kánikwa}> [\text{NP } \text{itúkwa}]])\]

Lastly, the subject churhipu ‘soup’ moves to the specifier of TopP, yielding the desired word order in (19):

(19) \[[\text{TopP } \text{churhipu} \text{ Top'} \emptyset [\text{FocP } \text{kánikwa} \text{ Foc'} \emptyset [\text{IP } <\text{churhipu}> \text{ juka-h-ti} [\text{QP } <\text{kánikwa}> [\text{NP } \text{itúkwa}]])]\]

In contrast with káni-kwa ‘much’ and wáni-kwa ‘many’, the quantifiers sanítitu ‘little’ and namúnitu ‘few’ do not derive from predicative roots. I assume simply that they are regular quantifiers. Their diminutive affix -itu, as noted above, is a borrowing from Spanish, and it seems to be a frozen form that is not productive elsewhere. The only detail worth mentioning is that namúnitu ‘few’, just like wáni- ‘many’ selects plural entities. Therefore, its complement must be either a number neutral NP (i.e. one whose head is a count-mass noun) or a [-singular] NumP.

Summing up, Purépecha has two sets of cardinal non-numeral quantifiers. One set comprises the pair káni-kwa ‘much’ and sanítitu ‘little’. These quantifiers can only combine with mass nouns that lack atomic units in their denotation. The other pair of quantifiers, wáni-kwa ‘many’ and namúnitu ‘few’, only occur with nouns phrases whose denotation contains pluralities and, crucially, also atomic entities. Unlike their English counterparts, these two Purépecha quantifiers can combine with count-mass nouns (cf. Engl. *many furniture).
The four quantifiers described here also differ from each other in that two of them (káni-kwa ‘much’ and wáni-kwa ‘many’) are composed from predicative roots. The other two quantifiers sanítitu ‘little’ and namúnitu ‘few’ are true quantifiers, possibly derived from the simple indefinites sanì and namúni, as attested in Gilberti (1559).
Conclusions

Purépecha shows a clear argument in favor of the existence of two Number heads. One of them bears the feature \([+/\text{- augmented}]\). Number heads that bear this feature require a quantity expression in their specifier (Watanabe 2010). In Purépecha, when this Number head has the \([+\text{augmented}]\) feature, it corresponds to the suffix \(-\text{mu}\) that occurs in simple numerals above ‘three’. Numerals ‘one’ and ‘two’ do not show this suffix. We assumed that the Number head specified as \(-\text{augmented}\) is null, though it is still present in numerals \(ma\) ‘one’ and \(tsimáni\) ‘two’. A Number head with the \([+\text{augmented}]\) feature adds the property of divisibility to the NP under its scope. That is to say, if the denotation of such NP is a set of plural individuals, then at least one of the proper sub-parts of these individuals must be a plural individual as well. The \([+\text{augmented}]\) (or divisibility) property sets apart numerals above ‘three’ from the numeral ‘two’ (Harbour 2008). A noun phrase formed with the numeral ‘two’ denotes a set of plural individuals, but in this denotation we fail to find individuals whose proper parts are also plural individuals. Therefore, the Number head involved in the numeral ‘two’ must be marked as \(-\text{augmented}\), and the same applies to numeral ‘one’.
Purépecha numerals support the idea, put forth in Harbour (2008), that some languages are sensitive to a number distinction between [+singular] and [-singular], while others seem to distinguish [+augmented] from [-augmented]. In the latter case, we would expect, for instance, singular and dual pronouns patterning together in opposition to plural pronouns, as it is the case in Kiowa (Harbour 2008). What the singular and the dual have in common is the feature [-augmented], while the plural is specified as [+augmented]. In Purépecha, we see that the [+augmented] numerals take an ending -mu, which we glossed as a sum-forming operator, while numerals with the [-augmented] do not have this ending. We also showed that [+augmented] numerals take the distributive morpheme -ichani, while the [-augmented] numerals occur with the allomorph -ntani. Likewise, numerals ‘three’ and greater occur with a maximality suffix -perárani, whereas the [-augmented] ‘two’ takes the alternative form -rání. In sum, Purépecha seems to be sensitive to the [+/-augmented] distinction, and it reflects this sensitivity in its numeral system. Whether the opposition between [+augmented] and [-augmented] can explain other patterns in the grammar is a question that might guide future inquiries.

We provided a description of the distributive and maximality suffixes that attach to numerals in Purépecha, showing that the distributive suffix -ichani and its allomorph -ntani are related, not only formally, but also in meaning, to the nominal plural -icha and the pluractional -nt’a. The distributive numeral suffix occurs in the noun phrases that function as the distributed share. The distributed share ought to have a multiplicity of elements, i.e. it needs to be plural even if its members are assigned
one by one to the elements in the sorting key (Choe 1987). We also described the interpretation of distributive numerals in Purépecha and concluded that the sorting key can be another participant in the event, but that temporal and spatial distributive interpretations are also available, paralleling the interpretation of Telugu reduplicated numerals (Balusu 2005). The question was left open as to whether distributive numerals in Purépecha can be analyzed like their Telugu counterparts. Another open question is the role of the -ni part of the distributive allomorphs, which also seems to be present in the maximality allomorphs -perárani and -rani.

Regarding these last two suffixes, we pointed out the formal resemblance between the former and the reciprocity verbal suffix -perá. Without arriving to any conclusive analysis, we suggested the possibility that the two morphemes might share some interpretive content. In other words, the maximality operator introduced by -perárani might be one ingredient in the complex semantics of reciprocal relations (Faller 2007).

We also described the plural nominal suffix -icha, showing that its distribution depends on the inherent number of the noun, and that it does not hinge on animacy distinctions (cf. Chamoreau 2000, Grinevald 2000). Count nouns take the suffix obligatorily in contexts that involve reference to a multiplicity of entities and in downward entailing contexts. Count-mass nouns, on the other hand, never take the suffix in downward entailing contexts, though they can occur with the suffix optionally when they make reference to multiple entities. We also saw a case where the suffix -icha would not allow a dependent plural interpretation of the sentence, and
another case where the dependent plural reading was available. Without drawing any conclusions, we hinted at the possibility that the dependent plural reading was available for count nouns but not for count-mass nouns. Count-mass nouns with -icha would not allow a dependent plural meaning, while count nouns with this suffix could do so. More data needs to be collected to confirm this claim. In any case, given that distributive relations like the one triggered by -ichani/-ntani can be analyzed as dependent plurals (Szabolcsi 2010), it is worth solving the question of whether dependent plurals are available at all in Purépecha, since as Zweig (2008) points out, not all languages allow them.

We also showed that plural markers and numeral classifiers in Purépecha can co-occur in the same noun phrase. This is unexpected under the assumption that classifiers take the role that plural markers occupy in other languages, i.e. providing a noun with a syntactic marker of countability (Doetjes 1997) or divisibility (Borer 2005). We showed that classifiers and plural markers have opposite semantics: while the latter map a set of atomic units into a set of pluralities, classifiers map a set of pluralities into a set of atomic units. In Purépecha classifiers do so by introducing a predicate that makes reference to shapes like round, long and flat. Since shape is a strictly distributive property, the result of intersecting a shape predicate with a noun is a set of atomic entities, to the exclusion of pluralities, which cannot be round, flat or elongated.

In sum, we provided a description of some phenomena related to number oppositions in the Purépecha noun phrase. Our guiding line was the distinction
between mass nouns, count nouns and count-mass nouns. We showed that this three-way distinction, rather than a binary one, provides good empirical coverage in the explanation of the distribution and interpretation of plural markers, numerals, classifiers, distributive morphemes and, in general, the different expressions of number in Purépecha.
References


Barwise, Jon and Robin Cooper, 1981. Generalized Quantifiers and Natural Language. Linguistics and Philosophy. 4, pp. 159-219


Bruening, Benjamin, 2008. The Scope Fieldwork Project http://ling.udel.edu/bruening/scopeproject


194


195


