Title
Choguita Rarámuri (Tarahumara) Phonology and Morphology

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Publication Date
2008

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by

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Licenciatura (Universidad de Sonora) 2002
M.A. (University of California, Berkeley) 2004

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy
in

Linguistics

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, BERKELEY

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Fall 2008

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Abstract

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This dissertation provides a detailed description and analysis of the phonology and morphology of Choguita Rarámuri, a previously undocumented Uto-Aztecan language, and investigates the interaction between these two components of the grammar in patterns that are of special typological and theoretical relevance. Based on a corpus of original data obtained through field research, this thesis presents phonological and morphotactic evidence for a hierarchical structure of the verb, consisting of six verbal domains. It is shown that this particular morphological configuration is pivotal in understanding the complexities of the morphophonological processes of this agglutinating language.

This dissertation aims to fulfill two goals. The first goal, addressed in the first part of this dissertation (Chapters 2 and 3), is to make an empirical contribution and describe an endangered language without employing theoretical formalisms. These chapters contain the details of regular morphological and phonological patterns, while also

addressing some of the widespread inter- and intra-speaker patterns of variation found in the data.

The second part of this dissertation (Chapters 4-7) is devoted to a second goal, which is to shed light on how Choguita Rarámuri fits into the larger, cross-linguistic picture. In this second part, I analyze four phenomena that have significant implications for developing theories of the phonology-morphology interface: i) the morphologically conditioned stress system (which features an initial three-syllable window); ii) morphophonologically conditioned multiple exponence of derivational morphology; iii) outwardly conditioned allomorph selection; and iv) patterns of variable suffix ordering. These topics are analyzed under two main assumptions: i) morphophonological processes are intimately related to the word's hierarchical structure; and ii) languages may contain several phonological sub-grammars pertaining to lexical class, morphological categories, or particular morphological constructions (Cophonology theory).

Each particular topic is analyzed as part of a coherent whole, taking into account both the detailed analysis of the language and the adequacy of the formal tools provided by specific theoretical frameworks. The proposed nested structure of the morphology is exploited to understand the constraints on stress assignment, allomorph selection, and the limited appearance of multiple exponence and variable suffix order.

Professor Andrew Garrett, Dissertation Committee Chair

For my grandparents,

Carmen & Aristeo

Choguita Rarámuri (Tarahumara) Phonology and Morphology

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Abbreviations

1	First person
2	Second person
3	Third person
A	agent-like argument of canonical transitive verb
A	Accusative
ADJ	Adjective
AFF	Affirmative
APPL	Applicative
CAUS	Causative
CAUS:I	Indirect Causative
CER	Certainty
CL	Final clitic
COM	Comitative
COMP	Complementizer
COND	Conditional
COP	Copula
DEM	Demonstrative
DESID	Desiderative
DIST	Distal
DUB	Dubitative
ELICIT	Elicitation
EMPH	Emphatic
EV	Evidential
EXH	Exhortative
FUT	Future
GER	Gerund
IMP	Imperative
INCH	Inchoative
INF	Infinitive
INST	Instrumental
INTR	Intransitive
INT	Intensive
INTERV	Interview
IMPF	Imperfective
IRR	Irrealis
LOC	Locative
M	Masculine
MOT	Associated motion
MOT:IMP	Motion imperative
MPASS	Medio-Passive
NEG	Negation, negative

NMLZ	Nominalizer
N	Nominative
P	Patient-like argument of canonical transitive verb
PASS	Passive
PERF	Perfective
PL	Plural
POS	Positional
POSS	Possessive
POT	Potential
PROG	Progressive
PROX	Proximal
PST	Past
PTCP	Participle
PURP	Purposive
Q	Question particle
REFL	Reflexive
REV	Reversive
REL	Relativizer
REP	Reportative
S	Single argument of canonical intransitive verb
SG	Singular
TEMP	Temporal
TR	Transitive
TR:PL	Transitive pluractional
VBLZ	Verbalizer
VOC	Vocative

Acknowledgements

I have many people in different communities to thank for their contribution to this dissertation. I am immensely grateful to all the people in Choguita who have taught me their language and culture with great generosity during these past years. Though not possible to name them individually, I am deeply grateful to all the members of the community of Choguita. In particular, I wish to thank Ma. Guadalupe Diaz, José Ma. Fuentes, Rosa Fuentes, Santos Fuentes, Giltro Fuentes Palma, Javier Holguín, Alicia Holguín, and Federico León, for their patience and good humor. I owe a special thanks to Sebastián Fuentes Holguín, Bertha Fuentes Loya, and Luz Elena León Ramírez, for their endless enthusiasm, linguistic talents, friendship and patience. I am also grateful to the Bustillos-León, Fuentes-Diaz and Fuentes-Loya families for their friendship and support during my time in Choguita. Ma. Dolores Holguín and Morales Fuentes, my Rarámuri parents and primary language teachers, have been a constant source of affection, good humor, generosity, strength and inspiration. Michael Casaus first introduced me to the community of Choguita, and shared local knowledge, advice and maps. I have learned a great deal from his high standards in his work, and benefited from the strong ties he developed in Choguita.

At Berkeley, I owe my deepest gratitude and respect to my thesis committee members. Andrew Garrett has been the best mentor I could have wished for, and I cannot thank him enough for all the time and support he has generously given me during these years. Andrew has been an inspiration and a role model as a linguist, teacher and adviser.

Thank you, Andrew, for challenging, motivating, engaging, and inspiring me. I am also greatly indebted to Sharon Inkelas, whom I consider my unofficial second adviser. Sharon has influenced my work in so many ways, and has been a constant source of support and guidance. Johanna Nichols has always been extremely enthusiastic, supportive, and generous and her work has been extremely influential to me ever since my years as a Linguistics undergraduate.

In addition to the members of my committee, I am grateful to all the faculty at Berkeley, who have given excellent instruction and a stimulating intellectual environment. I am especially grateful to Leanne Hinton and Larry Hyman, who have been very influential and supportive, and from whom I have learned a lot. I also wish to thank the linguistics staff members, Belén Flores, Paula Floro and Ron Sprouse, who have always been helpful. Belén in particular has helped me survive the bureaucracies of being an international graduate student, and has been a supportive friend.

I should also thank my graduate student colleagues and friends, including Christian DiCanio, Thera Crane, Marc Ettlinger, Nick Fleisher, Yuni Kim, Wesley Leonard, Jenny Lederer, David Mortensen, Lindsey Newbold, Marta Piqueras-Brunet, Anne Pycha, Alysoun Quinby, Ruth Rouvier, and Bill Weigel. Teresa McFarland, Mary Paster and Alan Yu have been great friends and senior graduate students, who have patiently read many drafts of work and progress and have been very supportive.

My studies at Berkeley were possible through fellowships and travel grants from Mexico's Consejo Nacional de Ciencia y Tecnología (CONACYT), Fulbright, the University of California Institute for Mexico and the United States (UCMEXUS), the

Linguistics Department, the Survey of California and Other Indian Languages and the Berkeley Graduate Division. My dissertation research was supported through grants by the Hans Rausing Endangered Languages Project housed at SOAS and UCMEXUS.

Finally, I want to thank my family and friends. Among my friends, Jorge Esteban Moreno, Esperanza Barrón, Roshni Kasad, Teresa McFarland, Ilse Ruiz, and Corey Yoquelet have always been there for me. I am also grateful to my partner, Zoran Vukadinovic, for his love and support. And to the person who has always made everything possible for me with unending love and strength, gracias árbol de la esperanza.

Chapter 1: Introduction

1.1 The phonology and morphology of Choguita Rarámuri

Despite the relevance of the Uto-Aztecan language family in terms of its geographical extension, number of languages, number of speakers and its descriptive tradition (spanning over four centuries), there are still many important gaps in our knowledge of this language family. This dissertation provides the first description and analysis of the phonology and morphology of Choguita Rarámuri, an agglutinating Uto-Aztecan language spoken in Mexico that has not been previously documented, and considers the implications of this system for developing theories of the phonology-morphology interface.

This dissertation aims to fulfill two goals. The first goal, addressed most specifically in the first part of this dissertation (Chapters 2 and 3), is to make an empirical contribution and describe an endangered language in its own terms. While linguistic description is not atheoretical (Dryer 2006, Gaby 2006), I sought to present the complexity of Choguita Rarámuri phonology and morphology without employing theoretical formalisms that might make this work less broadly useful. Based on a corpus assembled through a documentation project, the description presented here aims to characterize regular morphological and phonological patterns, while also documenting some of the widespread inter- and intra-speaker variation patterns found in the corpus. This first part of the dissertation also contains an important proposal regarding the morphological structure of this language. Specifically, in Chapter 3, I provide detailed phonological and morphotactic evidence for positing a hierarchical structure of the verb, consisting of six verbal domains.

The second part of this dissertation (Chapters 4-7) is devoted to a second goal, which is to shed light on how Choguita Rarámuri fits into the larger, cross-linguistic picture. In this second part, I analyze four phenomena of the phonology-morphology interface that have significant typological and theoretical implications: i) the morphologically conditioned stress system, ii) morphophonologically conditioned multiple exponence of derivational morphology, iii) outwardly conditioned allomorph selection, and iv) patterns of variable suffix ordering. The typological challenges posed by each phenomenon, I argue, are related to the complex interaction between phonological processes and the morphological structure proposed in the first part of the dissertation.

In the remainder of this introductory Chapter, I outline some basic theoretical assumptions underlying the analysis (§1.2), I provide background on the language (§1.3) and sociolinguistic situation (§1.4) and I give an overview of previous descriptions of related Rarámuri varieties (§1.5). Finally, I describe the source and organization of the data (§1.6), and provide an outline of this dissertation (§1.7).

1.2 Some theoretical assumptions

Each chapter in the second part of the dissertation discusses in detail the theoretical assumptions and arguments made in each case. I will nonetheless outline some basic assumptions I make across the board. The analysis of Choguita Rarámuri morphology and phonology presented in this dissertation assumes a construction-based theory of morphology and phonology, and follows the assumption that morphophonological processes are intimately related to the word's hierarchical structure. This is a critical assumption in light of the evidence for a nested structure of the morphology of this language, a structure which is exploited to understand the constraints on stress assignment, patterns of allomorph selection, and the limited appearance of multiple exponence and variable suffix order.

The analysis is compatible with any framework in which different domains or morphological subconstituents within the word may have different rankings (Stratal OT/ Lexical Phonology Morphology – OT (LPM-OT (Kiparsky (2000, 2003)), Optimal Construction Morphology (OCM; Inkelas et al. 2006). This type of approach contrasts with models of the phonology-morphology interface which adopt the parallelist hypothesis (Prince & Smolensky 1993), where morphological operations precede phonological ones, and the phonology evaluates the word as a whole (e.g., monostratal OT).

This analysis also assumes that languages may contain several phonological sub-grammars pertaining to lexical class, morphological categories, or particular morphological constructions (Cophonology theory (Orgun (1996, 1998, 1999); Anttila (1997, 2000); Inkelas (1998); Orgun & Inkelas (2002); Inkelas & Zoll (2005, 2007)). Cophonology theory builds on the general framework of Lexical Phonology and Morphology (LPM; Kiparsky (1982a, b), Mohanan (1982, 1986)), but departs in several important ways from it. Crucially, Cophonology theory abandons the Stratum Domain Hypothesis (Mohanan 1986) (which states that phonological constraintsr/rules are ordered in contiguous blocks), and the assumption that there is a fixed set of constituent types for phonological generalizations (i.e., Stem and Word level). Choguita Rarámuri provides empirical support for Cophonology theory and the abandonment of both of these assumptions.

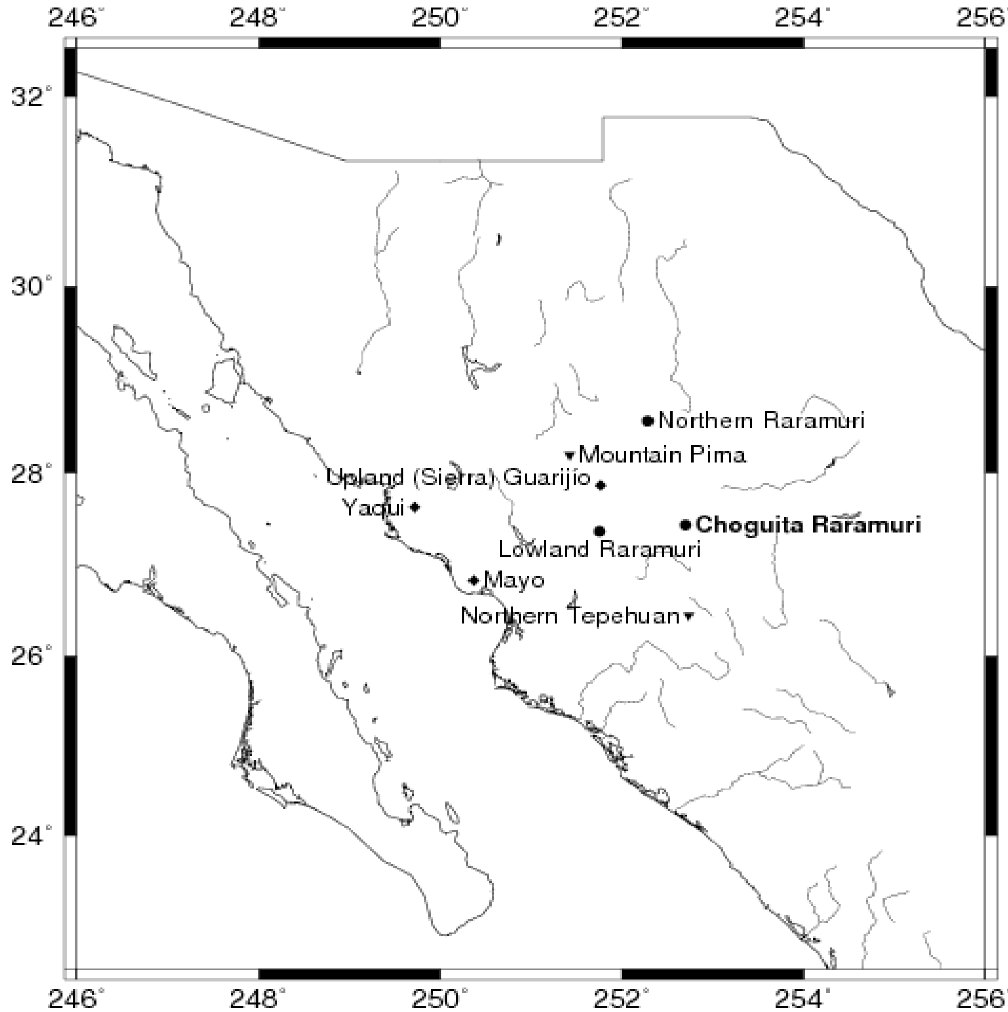
Phonological subgrammars in this case are formalized in Optimality Theory (OT; McCarthy & Prince 1993; Prince & Smolensky 1993): each cophonology consists of a hierarchy of violable markedness, faithfulness and alignment constraints. In the analysis proposed here, morphemes are specified as items in the input for phonological evaluation, but assuming morphemes to be realizational would not affect the arguments in each case.

1.3 The Rarámuri language

1.3.1 Geographic location

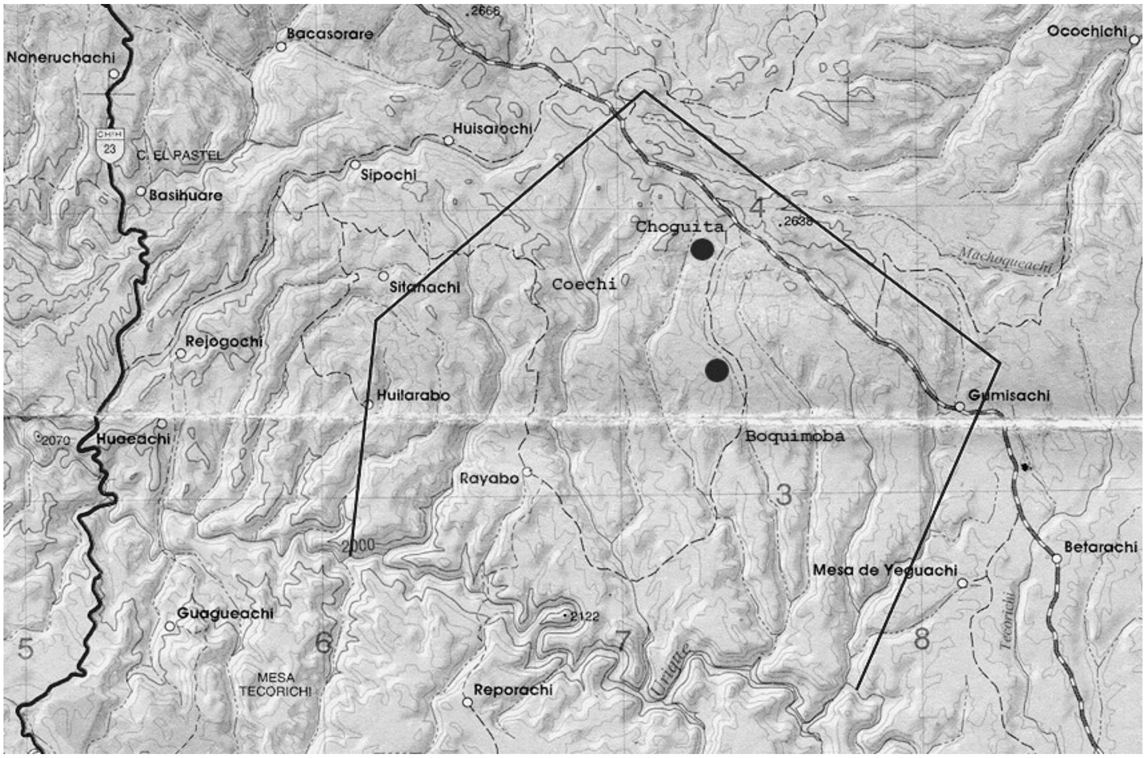
Rarámuri, also known as Tarahumara, is a Uto-Aztecan language spoken in the southwestern part of the Mexican State of Chihuahua, in the Sierra Tarahumara. The

Sierra Tarahumara is part of the Sierra Madre Occidental, a mountain range that extends from the Southwest United States to Central Mexico, with an area of approximately 50,000 square kilometers (Pintado-Cortina 2008). This dissertation describes the Rarámuri variety spoken in the community of Choguita (also known as 'Choguita de Guachochi' or 'Choguita de Norogachi'), in the municipality of Guachochi. Geographically adjacent Uto-Aztecan languages include Guarijío (or Warihó), Yaqui (or Hiaki), Mayo, Northern Tepehuan and O'ob Nook Pima. The location of Choguita Rarámuri and neighboring Uto-Aztecan languages in the Mexican Northwest is shown in Map 1.



Map 1: Location of Choguita Rarámuri and neighboring Uto-Aztecan languages

The community of Choguita is part of the *ejido* system, a Mexican land usage system where rural land plots are devoted for collective use by community members (*ejidatarios*). Choguita is the head community of the *ejido* of Choguita, one of the largest *ejidos* in the Sierra with a total surface area of 285.6 km^2 (28,560 hectares, 110.3 miles^2) (Casaus in prep.). Map 2 shows the boundaries of the ejido of Choguita, which includes the communities of Bokimoba, Huichachi, Capochi, Basigochi, Coechi, Rayabó, Cochirachi, Ireachi, Rorichi, Rochibo, Upachi, Sehuarachi and Cocohuichi.



Map 2: Boundary of the ejido of Choguita (Topographic map) (Casaus in prep)

According to the Mexican 2000 national census, the community of Choguita has 234 inhabitants, and the entire population of the *ejido* is approximately 1050 (Casaus in prep.). With the exception of Catholic nuns, secondary school teachers and Protestant missionaries, the community is native Rarámuri.

1.3.2 Genetic affiliation

Rarámuri (or Tarahumara) belongs to the Uto-Aztecan (UA) language family, one of the largest language families in the Americas in terms of geographical extension (from Oregon to Panama), number of languages and number of speakers (Campbell 1997:133). Rarámuri belongs to the Taracahitic (Taracahitan) branch of UA, a group of languages spoken in the northwestern Mexican states of Sonora and Chihuahua. Taracahitan languages, together with Tepiman, Corachol and Aztecan languages, form Southern UA.

Subgrouping of UA languages has been controversial since the establishment of the family in 1859 (Campbell 1997), and there is no consensus as to the higher level grouping of the subbranches. While Northern UA has been generally recognized as a genetic unit, there is still debate regarding the status of the southern languages as an equivalent valid unit within UA (for discussion, see Campbell & Langacker 1977, Heath 1978, Hill 2001, inter alia). Figures 1 and 2 illustrate the language families within UA and the languages within Taracahitan, respectively.

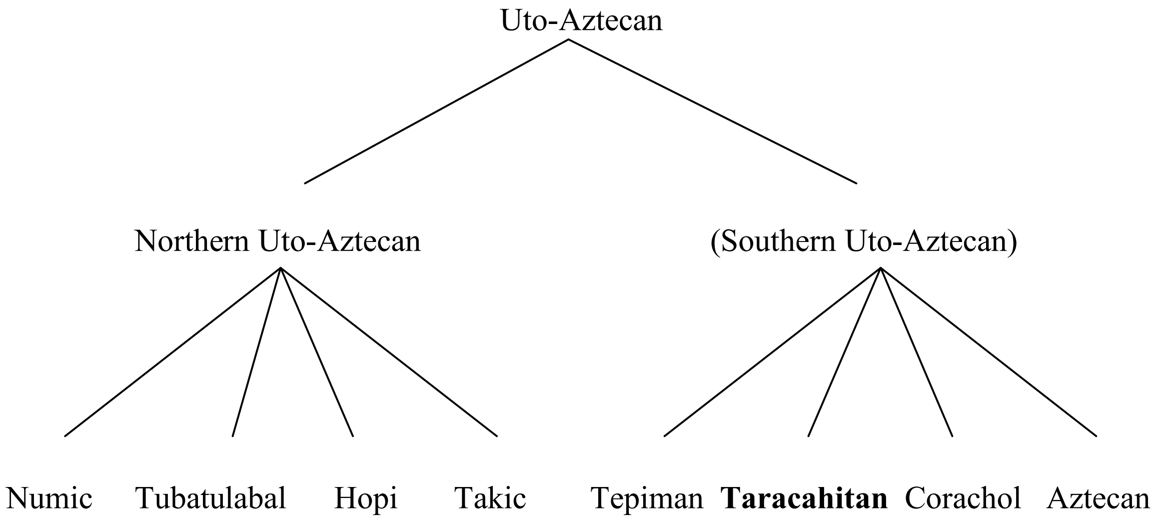


Figure 1: Uto-Aztecan language family (adapted from Langacker 1977, Campbell 1997 and Mithun 1999)

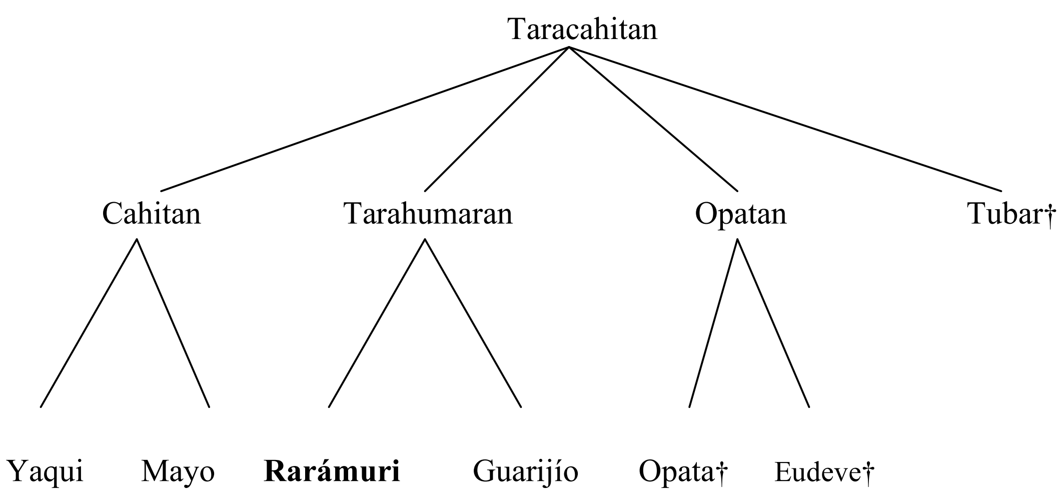


Figure 2: Taracahitan branch (adapted from Campbell 1997)

1.3.3 Speakers and variation

A Mexican government census conducted in 2002 reports that there are 70,000 Rarámuri speakers (CNP/INI 2002), but there are no in-depth assessments of the degree of variation between the different Rarámuri dialects. It is widely accepted that there are two major sets of dialects, the Rarámuri spoken in the highlands ("Tarahumara de la Alta") and the Rarámuri spoken in the lowlands ("Tarahumara de la Baja", or *Rarómari*), which comprise mutually unintelligible variants of a dialect continuum (Valiñas 2001).

Both the Ethnologue (Gordon 2005) and a local government office (Coordinación Estatal de la Tarahumara (CET) 1992, 1997) report five major dialects of Rarámuri. The CET assessed variation of lexical, phonological and syntactic parameters in order to determine dialect areas. Some of the phonological parameters include: use of word-initial [g], [k] or zero; initial syllable truncation; word final vowel deletion; height neutralization of /e/; and preaspiration of voiceless stops (Valiñas 2001:122). Table 1 presents the two classifications:

Table 1: Rarámuri (Tarahumara) varieties

Ethnologue (Gordon (2005))	**CET 1992, 1997**
Lowland Tarahumara [tac]	Western Tarahumara (*Oeste*)
Central Tarahumara [tar]	Central Tarahumara (*Centro*)
Southeastern Tarahumara [tcu]	Highland Tarahumara (*Cumbre*)
Northern Tarahumara [thh]	Northern Tarahumara (*Norte*)
Southwestern Tarahumara [twr]	Southern Tarahumara (*Sur*)

The classifications coincide in some of the areas they cover, but do not match up completely. For instance, the Ethnologue's Central Tarahumara dialect corresponds to an area occupied by two dialects in CET's survey, Central Tarahumara and Northern Tarahumara. Choguita Rarámuri belongs to the Ethnologue's Central Tarahumara variety, but is in a transitional area between the Central Tarahumara and Northern Tarahumara dialects in CET's classification. More comprehensive assessments are necessary to determine the number and location of all varieties of Rarámuri, degrees of intelligibility amongst these, and number of speakers per variety.

Choguita Rarámuri is spoken by approximately 250 people, the inhabitants of the community of Choguita, according to the 2000 Mexican census. There are no records of second-language speakers of Rarámuri. Speakers are aware of dialect differences, but view all Rarámuri varieties as a single language, different from the neighboring languages.

1.3.4 Alternative names

Rarámuri is better known as *Tarahumara* in mass media and previous descriptions and depictions of the language (including the Ethnologue, where the name code of the language is 'TAR'). The term 'Tarahumara' was first used in the seventeenth century in the correspondence of Catholic missionaries and the first published works about the language, Tomás de Guadalajara's 1683 grammar and Matthäus Steffel's 1791 dictionary. The term "Rarámuri" was not used in published materials until Miguel de Tellechea's 1826 *Compendio gramatical para la inteligencia del idioma tarahumar* (where the spelling used for the language was 'rarámari') (Merrill 2001:77).

Government and mass media refer to the people and their language as Tarahumara, but Rarámuri people use the term *Rarámuri*. The term is used to refer to themselves (the 'people', as opposed to mestizo (Mexican) and other non-Indigenous people) and their language, *rarámuri ra'ícha*.[1] I chose this term since it is the self denomination term of the communities in the Sierras.

The term *Rarámuri* is one of several spellings found in school text books and other texts written in Rarámuri. The variation in the spelling of the language name might reflect lack of consensus as to how to represent a 'lateral flap' sound, which auditorily resembles both a flap and a lateral. This has led to orthographic representations of this sound as either 'r' or 'l' (e.g., the name of the language is spelled *Ra**r**ámu**r**i*, with word-medial 'r', or *Ra**l**ámu**l**i*, with word-medial 'l'). It is possible that in other Rarámuri varieties the lateral flap has been replaced with a lateral approximant altogether.[2]

1.4 Sociolinguistic situation

1.4.1 Endangerement and sociopolitical context

There are several factors that suggest that the domains of usage of Choguita Rarámuri are contracting, threatening the inter-generational transmission of the language of one of the indigenous groups often misrepresented in mass media as one of the most culturally and linguistically conservative and vital of Mexico.

Since the seventeenth century the Rarámuri have faced great pressures to assimilate to mainstream society, and their land has been slowly reduced to half its original size (Paciotto 1996). Some of the main factors currently threatening their cultural

[1] Merrill identifies four levels of self denomination of the term 'Rarámuri': i) all human beings; ii) indigenous people (vs. *mestizo* and white, non-indigenous people); iii) Rarámuri people (vs. other indigenous people); iv) Rarámuri men (vs. Rarámuri women) (2001:88).

[2] This seems to be the case, for instance, in the Rarámuri variety spoken in Coyachique, in the Urique municipality (Ana Paula Pintado, p.c.).

autonomy are: (i) doubling of the mestizo population in the Sierra over the last century (Merrill 1983), (ii) increasing forest exploitation, (iii) depletion of water resources, (iv) expansion of road construction, and (v) recurrent violations of indigenous land property, to name only a few. The Rarámuri have opposed the dramatic encroaching of mestizos in their land, and have retreated to mountainous, isolated areas in order to avoid conflict with the growing new population. This displacement into areas highly adverse for maize agriculture is one of the main factors behind the severe marginalization of the Rarámuri (Merrill 1983:41). Most recently, Choguita has had many young people migrating to urban centers (to mestizo towns in the sierras, and also to the state's capital, Chihuahua, and border city, Cd. Juárez) and to agricultural fields in the region.

Language decline has been documented in varying degrees in the Sierras. Some communities display interrupted intergenerational transmission of the language, while some others remain completely monolingual. Most communities present an intermediate situation with varying levels of bilingualism (Paccioto 1996). In Choguita, Rarámuri is being learnt by children, who remain monolingual until they attend primary school. Some primary school teachers are native Rarámuri speakers (most of whom speak non-local varieties of the language), but none of the secondary school teachers even know Rarámuri as a second language. In school, Rarámuri is marginally used between first and forth grade in order to gradually introduce children to Spanish, but children are exposed exclusively to Spanish in the classroom after fifth grade (Severiano González (Choguita primary school director), p.c.). Choguita has also undergone increasing contact with the mestizo population for the past few years due to the improvement of roads that connect

Choguita with mestizo enclaves in the Sierra. In their interactions with health promoters, government officials, traders, and religious missionaries, native Rarámuri speakers must switch to Spanish. Rarámuri is used in local administration, traditional ritual contexts, and spoken communication in joint community agricultural activities and drinking parties. Recently, however, Rarámuri speakers often switch to Spanish to communicate with each other in these spaces as well, as speakers themselves note and as I have been able to assess during the time I have spent in the community. The advancement of Spanish, thus, can be felt in every sphere of Rarámuri life, and older members of the community express their concern about the proficiency in Rarámuri by younger speakers.

In sum, like many other minority languages of Mexico, the Rarámuri spoken in Choguita is increasingly vulnerable to escalating pressures imposed by the Spanish speaking population. The marginalization factors mentioned above have already triggered contraction of domains of usage of the language, and it is possible that language shift will occur within a generation or two.

1.4.2 Literacy

In 1989, a Chihuahua local-state office attempted to create a standarized orthographical system for Rarámuri, but the project was never completed (Pintado-Cortina 2004), and the existing published materials display a great amount of variation. In Choguita written materials play a very limited role. The only written materials in Rarámuri are some sections of the official textbooks used in school. The official schooling process is mainly devoted to promoting literacy in Spanish, as has been observed to occur in other indigenous communities in Mexico (Lastra 2001). The official "bilingual/bicultural program", designed by the Mexican Government to reflect local cultural characteristics, in actual practice has served only to increase Spanish proficiency among the indigenous population. The schooling process, alien to community interests and reality, reinforces stigmatization of native languages.

Half of the Rarámuri are estimated to be illiterate (CNP/INI 2000). In Choguita there is poor literacy in Spanish amongst community members, but literacy in Rarámuri is even more marginal.

1.5 Previous description and documentation

The different Rarámuri varieties have been described since the seventeenth century in the form of grammars, dictionaries, vocabularies and texts. The first description is Tomás de Guadalajara's 1683 *Compendio del arte de la lengua de los tarahvmares y guazapares*, a brief grammatical description. This small grammar was followed more than one hundred years later by Matthäus Steffel's 1791 *Taraumarisches Wörterbuch,* a German-Tarahumara dictionary based on German orthography. From subsequent descriptions, the most comprehensive is David Brambila's Rarámuri grammar (1953) and dictionaries (1976, 1983) (Rarámuri-Spanish and Spanish-Rarámuri, respectively), which describe the dialect of Norogachi (Center dialect (Valiñas 2001)). While it provides a fair amount of data, and each description has many examples, Brambila's grammar does not present a linguistically sophisticated analysis of the language and, in the spirit of grammars produced by missionaries, it introduces categories from Latin grammar that do not apply to a linguistic analysis of Rarámuri (such as the discussion of genitive and other nominal cases that Rarámuri lacks). After Brambila's grammar and dictionaries, several linguistic articles, grammars and short manuscripts about diverse aspects of different dialects of the language have been published. None of these documents, however, provides a detailed linguistic description and analysis of any of the varieties of Rarámuri.

Other records of Rarámuri are found in ethnographic studies that have documented ethnobotanical and historical knowledge (Bennet & Zingg 1935, Bye et al. 1975, Bye 1976, Casaus in prep., inter alia), as well as audio recordings of language and traditional music. Audio recordings are housed at the government-owned regional radio station, Radio XETAR, where they have been broadcast since 1982 in Rarámuri, Northern Tepehuan and Pima.[3] To the best of my knowledge, many of the audio recordings that document speech are scripted and do not constitute a representative sample of patterns of language use.

1.6 Source data for this study

1.6.1 Corpus and methodology

The data presented in this dissertation were obtained through my field research in the community of Choguita, lasting eleven months in all, between 2003 and 2008. The corpus, assembled in collaboration with community members, amounts to approximately 100 hours of digital audio recordings. This corpus comprises a representative sample of different speech genres with different degrees of planning (including conversations,

[3] The Radio XETAR ispart of a government office program of indigenous radio stations. The governemnt office is the National Comission for the Development of Indigenous Peoples (*Comisión Nacional para el Desarrollo de los Pueblos Indígenas*, or CDI).

monologues, narratives, myths, ceremonial speeches (*nawésari*), interviews of elders by native speakers, and ritualistic chants and prayers (healing ceremonies)). The corpus also includes recordings of elicitation sessions where speakers undertake the role of language teachers, which allows for a great deal of contextualization of the data elicited. Other kinds of elicitation conducted included contextualized- and text-based elicitation, translation, metalinguistic judgements, and elicitation prompted by culturally relevant visual props, as well as participant observation.

Much of the data used in the dissertation comes from elicitation of morphological paradigms, compounds, and other kinds of morphological constructions that allowed me to gauge the level of complexity of the verbal morphology and test the domains and properties of morphologically conditioned phonology. In order to assess the limits of the system (for instance, to determine with precision the meanings of each suffix permutation pattern and if all logically possible suffix combinations are attested), extensive elicitation with three adult speakers was carried out. While desirable to consider the examples from the corpus where speech events had a lower degree of planning (such as monologues or conversations), such examples are rarely found due to the highly specific semantic contexts they involve. Elicitation was thus critical in assessing the nature of the morphophonological system of this language.

One type of elicitation included giving speakers sentences in Spanish that would elicit a particular morphological context, after a context was set up, either through text-based elicitation or a lengthy discussion of a possible scenario for each of the forms asked. Each consultant was asked, over several days and interspersed with other elicitation and transcription, for the translation of these sentences and discussion of their meanings. Discussion of the meanings of the forms provided included discussing contextual clues that would unambiguously indicate that a particular meaning was intended. This methodology also enabled me to verify that speakers were consistent in the forms given for specific meanings and that none of the patterns documented would correlate with any idiolect.

This research program also included conducting elicitation using prompted forms in Rarámuri in order to obtain grammaticality-judgment responses to different orderings offered. The offered forms were either constructed forms with logically possible affix orderings or forms produced by other speakers. I would ask speakers to assess the grammaticality of the offered forms and, if judged grammatical, to discuss their meanings in detail. I have avoided exemplifying any given pattern with this kind of evidence, and resort to all spontaneously produced data, except for cases where negative evidence (i.e., the ungrammaticality of a particular suffix sequence) is relevant in the discussion. Prompted responses are marked as "[pr.]" in the transcription line.

1.6.2 Examples and contributors

The data presented in this dissertation is organized as follows. Each example minimally gives a phonemic transcription, glosses, an English translation, a Spanish translation (the language of elicitation of the examples), and information about the source of that particular example. The Spanish translation reflects the translation given by consultants, which is not necessarily the same as the prompted sentence. The source information (in square brackets at the right corner of the Spanish translation line) indicates the contributor's initials, year the example was recorded, book and page number (if source example is taken from fieldnotes) or electronic document identifier. Finally, each example identifies the type of document where the data comes from: elicitation (Elicit), text, interview (Interv), conversations (Conv), etc. Highly common phrases or expressions are given without a source. Examples may also include a phonetic transcription and the underlying phonological representation where relevant. A sample example is illustrated next:

1) Sample example form

[pórə-ki]
/póli̱-ki/
cover-Pst:1
'I covered it'
'Lo tapé' [AH 05 1:125/Elicit]

When example forms are repeated they receive a new number, but a cross-reference indicates the first place where the example was provided.

Each example provided in this dissertation contains the initials of the particular contributor who uttered the form in question. All of the forms presented were obtained with explicit permission of each participant. In addition, all speakers requested to be acknowledged. The list of initials and corresponding names is given below in Table 2:

Table 2: Names and initials of contributors

Alicia Holguin Fuentes	AH
Bertha Fuentes Loya	BF
Federico León	FL
Giltro Fuentes Palma	GF
Javier Holguin Fuentes	JH
Luz Elena León Ramírez	LEL
Maria Guadalupe Diaz	MGD
Rosa Fuentes	RF
Sebastián Fuentes Holguín	SF
Santos Fuentes	SaF

I should clarify that, since most examples come from elicitation, it should not be assumed that particular examples reflect speakers' personal lives or backgrounds, as many of the example sentences come from constructed contexts, and from the translation of a Spanish stimulus. I am solely responsible for any potential misanalysis or erroneous translation.

1.7 Overview of the dissertation

The rest of this dissertation is organized as follows. In Chapter, 2 I describe the phonological system and general phonological processes, including the stress system, developing tone system and complex patterns of allophonic variation. In Chapter 3, I address the verbal morphological system, root classes, morphologically conditioned phonology and give evidence for the layered, hierarchical structure of the verb. These two chapters give an overview that can be considered as the first half of a grammar of the language, a resource for cross-linguistic research and comparative Uto-Aztecan studies.

In Chapter 4, I provide a detailed description of the complex patterns of morphologically conditioned stress and evidence for positing an initial three-syllable stress window. I propose an analysis -formalized in Cophonology theory - in which there are two default stress patterns, second and third syllable stress, and where stress is assigned in a Stem level.

In Chapter 5, I describe the patterns of multiple exponence of derivational morphology which are exclusively found in two verbal domains. I analyze these patterns as stemming from morphophonological conditions holding between the Stem level (motivated in Chapter 4) and the rest of the agglutinating verb.

In Chapter 6, I tackle a third typologically relevant phenomenon, namely the patterns of (lexical) allomorph distribution. I attribute the outward conditioning on allomorph distribution to alignment constraints which enforce different types of allomorphs to create different stem types. Allomorph selection patterns provide a morphophonological right-edge restriction on words, which, coupled with the initial three-syllable window, effectively restricts the typology of possible word shapes in this language.

In Chapter 7, I address the general principles governing suffix order, and focus on the conditions behind variable ordering of exponents. Suffix permutations arise from phonological, semantic or templatic conditions, but are crucially restricted to a verbal domain within the word.

Finally, in Chapter 8 I conclude by summarizing the language-specific and typological generalizations of the analysis of Choguita Rarámuri phonology and morphology, discuss some further theoretical and typological implications, and pose questions for further research.

Chapter 2: Phonology

2.1 Introduction

In this chapter I present the sound system and major phonological alternations of Choguita Rarámuri. While many phonological alternations in the language are morphologically conditioned, in this chapter I treat only those alternations that are strictly phonological.

The phonological system of Choguita Rarámuri is characterized both by a small phoneme inventory (with only fourteen consonants, five contrastive vowels and no contrastive vowel length) and a simple syllable structure in underlying representations (with no elaborate onsets and only glottal stop as a possible coda). While displaying low elaboration of the consonant inventory and a low level of complexity of syllabic structure (a correlation expected according to Maddieson (2005)), Choguita Rarámuri displays a complex system of allophonic variation. For instance, historically related pairs of segments (p ~ b, k ~ g, t ~ r), some of which have a phonemic status synchronically, can also display allophonic variation; this variation can be phonologically, morphologically or lexically conditioned. Many instances of allophonic variation are optional and display different degrees of inter- and intra-speaker variation. Some widespread patterns of phonological variation and optionality are addressed in the analyses presented in subsequent chapters. The potential sociolinguistic factors conditioning variation in Choguita Rarámuri phonology, however, are not part of the scope of this dissertation.

Choguita Rarámuri possesses a robust stress-accent system and a two-tone system marked in stressed syllables with a low functional load (lexically encoded in a few free morphemes). While the development of tonal contrasts has been documented for a number of Uto-Aztecan languages (Northern Tepehuan (Tepiman; Woo 1970), Hopi (Manaster-Ramer 1986), Huichol (Corachol; Grimes 1959), Yaqui (Taracahitan; Demers et al. 1999), and Balsas Nahuatl (Guion et al., n.d.)), no variety of Rarámuri, to my knowledge, has been described as featuring a tonal contrast.

Stress and a floating feature of constricted glottis (realized as a glottal stop) are restricted to left-edged windows: an initial three-syllable window for stress and a disyllabic window for the glottal prosody. The latter has also been documented in the closely related Taracahitan language Guarijío (Miller 1996, Haugen 2004). Stress conditions optional vowel reduction and deletion. There are three different patterns of vowel reduction targeting different vowel qualities, with more reduction occuring posttonically than pre-tonically. Syncope yields derived heterosyllabic consonant clusters in coda position word-medially. Surface forms, thus, display a moderate level of complexity of syllabic structure.

The chapter is laid out as follows. In §2.2, I introduce the phonemic inventory of the language and allophonic variation. I illustrate the phonemic status of most segments with minimal pairs and then turn to the allophonic variation displayed by obstruents, nasals, rhotics, stops and vowels. Next, in §2.3, I address suprasegmental phonological processes, including stress and stress-dependant phenomena (§2.3.1), syllabic processes (§2.3.2), and the phonological status of glottal stop (§2.3.3). Finally, in §2.3.4, I introduce the novel data that shows that Choguita Rarámuri makes lexical distinctions based on tone.

2.2 Phonological inventory and allophonic variation

In this section I present the consonant and vowel inventories of Choguita Rarámuri. I illustrate these with minimal pairs, and discuss the distributional restrictions of certain segments. Some historical factors come in play in the conditioning of lexically suppletive allophones (these factors will be discussed in relation to other Uto-Aztecan languages when pertinent).

2.2.1 Consonants

Choguita Rarámuri has a relatively small consonant inventory and a high degree of allophonic variation. The phonemic consonant inventory, presented in Table 3, is significantly similar to proposed reconstructions for the Proto-Uto-Aztecan consonant system (Voegelin et al. 1962, Miller 1967, Langacker 1977).

Table 3: Phonemic Inventory of Choguita Raramuri Consonants

	Bilabial	Alveolar	Alveo-palatal	Retroflex	Palatal	Velar	Glottal
Plosive	p b	t				k	' [ʔ]
Affricate			č [tʃ]				
Nasal	m	n					
Flap		r [ɾ]		l [ɽ]			
Fricative		s					h
Approximant	<w>				j	w	

A broad phonemic transcription is used, and the characters used in this table will be used throughout this dissertation to represent these segments. The labio-velar approximant is doubly assigned in the bilabial place of articulation column (with angled brackets) and in the velar place of articulation column. This notation indicates that the approximant is both velar and bilabial.

The consonant inventory presented in Table 1 includes a retroflex flap that can be characterized as a 'lateral flap', as defined by Ladefoged & Maddieson (1996:243). This segment is articulated by making a ballistic contact with the tongue tip in the post-alveolar region, but the sides of the tongue allow air to flow laterally, resulting in a sound that auditorily resembles both a lateral approximant and an alveolar (or, in the case of Choguita Rarámuri, slightly retroflexed) flap. The environments that favor the production/perception of the lateral variant are discussed in §2.2.3.3.

In the rest of this section I will present minimal pairs that demonstrate the phonemic status of most segments. Allophonic variation and patterns of neutralization will be the topic of §2.2.3.

The minimal pairs in (1) show the phonemic contrast between voiced and voiceless bilabial stops.

1) /p/ vs. /b/

a.	**p**ačí	‘corn’/‘maiz’	[BF 07 el316/Elicit]
b.	**b**ačí	‘squash’/‘calabaza’	[BF 07 el316/Elicit]
c.	**p**ačá	‘inside’/‘adentro’	[BF 07 el317/Elicit]
d.	**b**ačá	‘first’/‘primero’	[BF 07 el317/Elicit]

The voiced bilabial stop also contrasts with the labio-velar semi-vowel, as shown in (2).

2) /w/ vs. /b/

a.	**w**asa-čí	‘field-Loc’/’tierra-Loc’	[BF 07 el328/Elicit]
b.	**b**asačí	‘coyote’	[BF 07 el328/Elicit]
c.	**b**i’ri-bá-ma	‘clean-Inch-Fut:sg’/ ‘limpiar-Inch-Fut:sg’	[BF 08 1:21/Elicit]
d.	**w**iri-bá-ma	‘stand-Inch-Fut:sg’ ‘pararse-Inch-Fut:sg’	[BF 08 1:21/Elicit]

The contrast between voiced bilabial stop and labiovelar semi-vowel is shown in (3a-b). The contrast between presence and absence of glottal stop before a consonant is shown in (3b-c) and also in (4) (where the contrast distinguishes the verb roots *niwí* ‘marry’ and *ni***’***wí* ‘to be lightning’).

3) /b/ vs. /’/ vs. /w/

a.	ka**bí**	‘to roll something’/‘enrollar’	[BF 07 el321/Elicit]
b.	ka**w**í	‘sunrise’/‘amanecer’	[BF 07 el321/Elicit]
c.	ka**’**wí	‘bring wood’/‘traer leña’	[BF 07 el321/Elicit]

4) /’/ vs. Ø

a.	niwí	‘marry’/‘casarse’	[BF 07 cas_rel/Elicit]
b.	ni**’**wí	‘to be lightning’/‘relampaguear’	[BF 07 cas_rel/Elicit]
c.	rané	‘have children’/ ‘tener hijos’	[AH 05 1:125/Elicit]
d.	ra**’**né	‘shoot at’/ ‘disparar’	[SF 05 1:81/Elicit]

The contrast between the bilabial nasal phoneme and the alveolar nasal phoneme is evidenced in the contrasts depicted in the verbal stems in (5).

5) /m/ vs. /n/

a.	**m**ihí	‘cook.mezcal’/‘cocinar mezcal’	[SF 07 2:12/Elicit]
b.	**n**ihí	‘give away’/‘regalar’	[RF 04 1:67/Elicit]
c.	**m**ará-ra	‘daughter:(male ego)-Poss’/ ‘hija (ego masculino)-Poss’	[BF 05 1:155/Elicit]
d.	**n**ará-ra	‘cry-Pot’/‘llorar-Pot’	[SF 05 1:69/Elicit]

The next examples show that the alveolar fricative (6a, c) contrasts with the alveo-palatal affricate (6b, d).

6) /s/ vs. /č/

a.	**s**imí	‘go:sg’/‘ir:sg’	[SF 04 1:103/Elicit]
b.	**č**imí	‘over there’/‘allá’	[BF 07 el325/Elicit]
c.	i**s**í	‘urinate’/‘orinar’	[SF 05 1:80/Elicit]
d.	i**č**í	‘plant’/‘sembrar’	[BF 05 1:162/Elicit]

The next set examples show the contrast between the glottal stop and (optionally pre-aspirated) voiceless velar stops (7).[4]

7) /k/ vs. /'/

a.	a^{h}ká	'sweet/salty'/'dulce/salado'	[BF 07 el324/Elicit]
b.	a**'**ká	'sandal'/'huarache'	[BF 07 el324/Elicit]
c.	o^{h}kó	'pine'/'pino'	[BF 07 el323/Elicit]
d.	o**'**kó	'pain/hurt'/'dolor/doler'	[BF 07 el323/Elicit]

Choguita Rarámuri possesses only two semi-vowels: voiced labio-velar /w/ and palatal approximant /j/. I have already shown the phonemic status of the labio-velar semi-vowel (in (2) and (3) above). The examples in (3) are repeated below in (8), where the voiced bilabial stop (8a, c) contrasts with the labio-velar semi-vowel (8b, d).

8) /b/ vs. /w/

a.	ka**bí**	'to roll something'/'enrollar'	[BF 07 el321/Elicit]
b.	ka**wí**	'sunrise'/'amanecer'	[BF 07 el321/Elicit]
c.	**b**i'ri-bá-ma	'clean-Inch-Fut:sg'/ 'limpiar-Inch-Fut:sg'	[BF 08 1:21/Elicit]
d.	**w**iri-bá-ma	'stand-Inch-Fut:sg'/ 'pararse-Inch-Fut:sg'	[BF 08 1:21/Elicit]

The phonemic status of the palatal semi-vowel, on the other hand, is evidenced in the minimal pairs in (9), where /j/ (9a, c) contrasts word-medially with a glottal stop (9b, d).

[4] I have also documented a few alveolar pre-aspirated voiceless stops, such as *ri^{h}tú* 'ice', *ra^{h}tá* 'heat', but no pre-aspirated voiceless bilabial stops.

9) /č/ vs. /j/

a.	čo**j**á	'shrink'/'encogerse'	[BF 06 5:44/Elicit]
b.	čo**'**á	'extinguish (fire)'/'apagarse'	[SF 04 1:71/Elicit]
c.	ko**j**á	'squat'/'ponerse en cuclillas'	[BF 05 1:186/Elicit]
d.	ko**'**á	'eat'/'comer'	[SF 04 1:69/Elicit]

More about the phonemic status of labio-velar and palatal semi-vowels, as well as processes related to these segments, will be discussed in §2.3.2.5.

2.2.2 Vowels

Choguita Rarámuri makes a phonemic distinction among five cardinal vowels in stressed position. There is no contrastive vowel length. Mid vowels are phonetically open-mid and the only back vowels are rounded. The vocalic inventory is given in Table 4.

Table 4: Choguita Rarámuri Monophthong Vowel System

	Front	Central	Back
High	i		u
Mid	e [ɛ]		o [ɔ]
Low		a	

All other Rarámuri varieties are reported as having five cardinal vowels, the qualities of which mostly match the inventory given for Choguita Rarámuri (Brambila 1953, Lionnet 1972, Servín 2002, inter alia).[5]

The examples in (10) show a minimal pair involving high vowels (the contrasting vowels are indicated with boldface).

[5] Servín (2002) reports that Ojachichi Rarámuri has a high, back, *unrounded* vowel (ɯ).

10) /i/ vs. /u/

a.	č**i**kúri	‘mouse’/‘ratón’	[BF 07 el336/Elicit]
b.	č**u**kú-li	‘be.bent-Pst’/‘agachar-Pst’	[BF 07 el336/Elicit]
c.	h**i**rá	‘bet’/‘apostar’	[SF 05 1:97/Elicit]
d.	h**u**rá	‘send’/‘mandar’	[SF 05 1:68/Elicit]

Minimal pairs involving back vowels are shown in (11).

11) /o/ vs. /u/

a.	t**ó**	‘bury’/‘enterrar’	[BF 07 el336/Elicit]
b.	t**ú**	‘down’/‘abajo’	[BF 07 el336/Elicit]
c.	k**ó**	‘Emph’	[BF 06 tr48/Text]
d.	k**ú**	‘wood’/‘leña’	[LEL 06 el47/Elicit]

Front vowels also create phonemic contrasts, as shown in (12).

12) /i/ and /e/

a.	w**í**	‘harvest’/‘cosechar’	[BF 07 el336/Elicit]
b.	w**é**	‘Int’	[BF 07 el336/Elicit]
c.	t**i**	‘Det’	[LEL 06 tx32/Text]
d.	t**é**	‘lice’/‘piojos’	[SF 04 1:17/Elicit]

Below, the contrast between (13a) (with the verb *biti,* ‘go up’) and (13b) (with the verb *bete*, ‘stay overnight’) shows that the contrast between front vowels is not restricted to stressed position (although there is a widespread vowel reduction process that targets unstressed vowels (discussed in §3.1.2)).

13) /i/ vs. /e/ in pre-tonic position

a.	b**i**t**i**-bá-ma	'go.up-Inch-Fut:sg' 'subir-Inch-Fut:sg'	[SF & GD 07 2:114/Elicit]
b.	b**e**t**e**-bá-sa	'stay-Inch-Imp:sg' 'quedarse-Inch-Imp:sg'	[SF & GD 07 2:114/Elicit]

Finally, the examples in (14-15) show contrasts between [-high] vowels.

14) /e/ vs. /a/

a.	**é**	'take away'/'quitar'	[BF 07 el336/Elicit]
b.	**á**	'give'/'dar'	[BF 07 el336/Elicit]
c.	ir**é-**ri	'lock-Pst'/ 'cerrar-Pst'	[BF 07 VDB/Elicit]
d.	ir**á**ri	'godfather'/ 'padrino'	[participant observation]

15) /o/ vs. /e/ vs. /a/

a.	m**ó**	'go up (sg)'/'subir'	[BF 07 el337/Elicit]
b.	m**é**	'win'/'ganar'	[BF 07 el337/Elicit]
c.	m**á**	'run'/'correr'	[BF 07 el337/Elicit]
d.	t**o**!	'give me!'/'dame!'	
e.	t**e**	'lice'/'piojo'	[SF 04 1:17/Elicit]
f.	t**a**	'small'/'chico'	

The next section lays out the allophonic variation of both consonantal and vocalic segments.

2.2.3 Allophonic variation

2.2.3.1 Labio-velar semi-vowel and voiced bilabial stop

Word-medially, voiced bilabial stops may be optionally lenited and realized as: i) voiced bilabial approximants intervocalically, or ii) a labio-velar semi-vowel pre-consonantally after further weakening. The lenition rule is schematized in (16a), where the bilabial approximant is represented phonetically as [β̞]. The pre-consonantal gliding of bilabial stops is schematized in (16b). This process is fed by posttonic vowel deletion.

16) Voiced bilabial stop lenition

a.	/b/ →	[β̞] / V __ V
b.	/b/ →	[w] / _C

The examples in (17) show the lenition of word-medial underlying /b/ to [β̞] intervocalically (in (17a,c) and to [w] post-consonantally after posttonic syncope (in (17b,d)).

17) Word-medial lenition of /b/

	Forms	*UR*	*Gloss*	
a.	[éβ̞ə-ma]	/é**b**i-ma/	'bring-Fut:sg'/ 'traer-Fut:sg'	[BF 06 6:73/Elicit]
b.	[é**w**-ti-ki]	/é**b**i-ti-ki/	'bring-Caus-Pst:1'/ 'traer-Caus-Pst:1'	[BF 06 6:73/Elicit]
c.	[mutʃí-β̞a-ri]	/mučí-**b**a-li/	'be.sit:pl-Inch-Pst' 'estar.sentado:pl-Inch-Pst'	[BF 06 6:73/Elicit]
d.	[mutʃí-**w**-po]	/mučí-**b**a-po/	'be.sit:pl-Inch-Fut:pl' 'estar.sentado:pl-Inch-Fut:pl'	[BF 06 6:73/Elicit]

More examples of the word-medial labio-velar semi-vowel allophone of /b/ are provided in (18).

18) Word-medial allophones of /b/

	Forms	*UR*	*Gloss*	
a.	[i**w**-ma]	/í**b**i-ma/	‘bring-Fut:sg’/ ‘traer-Fut:sg’	[BF 06 6:75/Elicit]
b.	[í**w**-ki]	/í**b**i-ki/	‘bring-Pst:1’/ ‘traer-Pst:1’	[BF 06 6:75/Elicit]
c.	[atʃí-**w**-ma]	/ačí-**b**a-ma/	‘sit.tr-Inch-Fut.sg’/ ‘sentar-Inch-Fut:sg’	[BF 06 6:146-148/Elicit]

Word-initial underlying voiced bilabial stops undergo lenition and are spirantized for most speakers. For some speakers, however, these word-initial underlying /b/ undergo gliding (surfacing as [w]), thus neutralizing the phonemic contrast between /w/ and /b/ in word-initial position. Some examples are given in (19).

19) Word-initial neutralization of /w/ and /b/

	Forms	*UR*	*Gloss*	
a.	[**w**akótʃi]	/**b**akóči/	‘river’/‘rio’	[SF 04 1:17/Elicit]
b.	[**w**aʔwí]	/**b**a’wí/	‘water’/‘agua’	[SF 04 1:17/Elicit]
c.	[**w**arámi-sa]	/**b**arámi-sa/	‘thirsty-Cond’ ‘tener.sed-Cond’	[LEL 06 6:121/Text]
d.	[**w**aʔwéra]	/**b**a’wéra/	‘water pot’/ ‘olla p/agua’	[SF 07 6:163-175/Elicit]
e.	[**w**isaró]	/**b**isaró/	‘plant’	[SF 07 6:163-175/Elicit]
f.	[**w**arásiri]	/**b**arásiri/	‘strong rain’/ ‘lluvia fuerte’	[SF 07 1:163-175/Elicit]
g.	[**w**aʔwíwa]	/**b**a’wíwa/	‘icy rain’/ ‘agua-nieve’	[SF 06 6:74/Elicit]

As these examples show, this neutralization is prevalent before low, central vowels, and marginally attested before high, front vowels (cf. (19e)). There are no examples of this neutralization in word-initial position before mid, front vowels or round, back vowels. For the speakers that display this neutralization, the word initial underlying stop is produced as either a full-fledged labio-velar semi-vowel or a bilabial approximant; when asked to give a careful pronunciation of these words, these speakers produce a bilabial stop.

Underlying labio-velar semi-vowels, on the other hand, may be neutralized and have surface realizations as voiced bilabial approximants intervocalically. As the examples in (20) show, the neutralization is favored before /a/ (20a-b) and /i/ (20c-d). These are the same environments that favor velarization of /b/ in word initial position (cf. (19)).

20) Optional word-medial neutralization of /b/ and /w/

	Forms	*UR*	*Gloss*	
a.	[rotʃíβ̞ari]	/roč**í**w**ari/	'quelite'	[SF 07 6:163-175/Elicit]
b.	[saβ̞aróame]	/sa**w**aróame/	'yellow'/'amarillo'	[SF 07 6:163-175/Elicit]
c.	[wikáβ̞i]	/wiká**wi**/	'forgive'/'perdonar'	[SF 07 1: 183/Elicit]
d.	[reróβ̞i]	/reró**wi**/	'potato'/'papa'	[FL 06 in61/Interv]

This neutralization is optional and is not attested with the onsets of stressed syllables. This is shown in (21).

21) No occlusivization of /w/ in stressed syllables

	Forms	*UR*	*Gloss*	
a.	[baʔ**wí**β̞a]	/ba'**wí**wa/	'icy rain'/'agua nieve'	[SF 06 6:74/Elicit]
b.	[lo**wá**]	/lo**wá**/	'stir'/'revolver'	[SF 04 1:71/Elicit]
c.	[i**wé**pi]	/i**wé**pi/	'wrestle'/'luchar'	[SF 04 1:96/Elicit]
d.	[ri**wé**]	/re**wé**/	'leave'/'dejar'	[AF 05 1:181/Elicit]

2.2.3.2 Alveopalatal affricate

Alveopalatal affricates can optionally depalatalize before low, central vowels and can be produced as alveolar affricates, as schematized in the rule in (22). This allophonic variation is exemplified in (23), where alveopalatal affricates are optionally deaffricated root-internally (23a-c) or as onsets of suffixes (23d-f). The second row in (23) gives the alternative pronunciations with the alveo-palatal africate.

22) Depalatalization of alveopalatal affricates

tʃ → ts / __ a

23) Optional depalatalization of alveopalatal affricate

	Alveolar	*Alveopalatal*	*Gloss*	
a.	[aká**ts**a-ra]	~ [aká**tʃ**a-la]	‘grandmother-Poss’/	
			‘abuela.paterna-Poss’	[FL 07 in243/Text]
b.	[a**ts**á-sa]	~ [a**tʃ**á-sa]	‘sit:sg:tr-Cond’/	
			‘sentar:sg-Cond’	[SF 04 1:38/Elicit]
c.	[nó**ts**ari]	~ [nó**tʃ**ari]	‘work’/‘trabajar’	[AADB(292)/Elicit]
d.	[kusú-**ts**ani]	~ [kusú-**tʃ**ani]	‘animal.noise-Ev’	[SF 05 1:81/Elicit]
			‘hacer.ruido.animal-Ev’	
e.	[osí-**ts**an-a]	~ [osí-**tʃ**an-a]	‘write-Ev-Prog’	
			‘escribir-Ev-Prog’	[SF 05 1:88/Elicit]
f.	[tʃiwá-**ts**a]	~ [tʃiwá-**tʃ**a]	‘tear-Tr:Pl’	
			‘rasgar-Tr:Pl’	[RF 04 1:59/Elicit]

In fast speech, alveopalatal affricates may depalatalize and deaffricate in a high frequency word combination: the distal demonstrative *éči* and a following adjective, are pronounced as a single word within nominal phrases, with stress in the second syllable. This involves the deletion of an underlying high vowel, as shown in the examples from text provided in (24).

24) Depalatalization and deaffrication of *č*

a.

e**s**	tá	čérami	ko	ba
/éči	tá	čérami	ko	ba/
Dist	Det	old.man	Emph	Cl

‘That old man’
‘Ese viejo’ [LEL 06 6:141-162/Text]

b.

ne	ko	ani-mé	orá	he	na	e**s**	tá
/ne	ko	ani-méa	orá	he	na	é**č**i	tá
1sgN	Emph	say-Fut:sg	Cer	Dem	Prox	Dist	Det

ra’íči-ri
ra’íča-ri/
speak-Nmlz
‘I am going to say these words’
‘Yo voy a decir esta plática’ [BF 07 frog story_2/Text]

c.

we	kaní-ram	čo	ní-ra	ré	e**s**	kúči
/we	kaní-rame	čo	ní-ra	aré	é**č**i	kúči
Int	love-Ptcp	also	Cop-Pot	Dub	Dist	small

okuáka
okuáka/
two
‘They loved each other those two, I think’
‘Se querían mucho también, yo creo, ellos dos’ [BF 07 frog story_2/Text]

As will be discussed in §3.2.2, the depalatalization process exemplified in (24) can be analyzed as a reinterpretation of a phonetically ambiguous form, a consonant cluster with an alveopalatal affricate followed by an alveolar voiceless stop. This consonant sequence would arise across word boundaries in these forms in an intermediate representation after posttonic deletion ({éč tá}, {éč kúči}). The same analysis can be extended to other contexts of depalatalization of affricates: in (25) (below) the alveolpalatal affricate undergoes anticipatory assimilation with the following alveolar stop. The posttonic front, high vowel that intervenes between the alveopalatal affricate and the alveolar stop is extra short and can be deleted altogether in fast speech.

25) Depalatalization and deaffrication of *č*

má	káru-a	kú**t**i	torí,
/ma	kára-a	kú**č**i	torí/
already	cackle-Prog	small	chicken

'The chickens already cackled'
'Ya cacaraquearon las gallinas' [SF 07 el170 (12:25)/Elicit]

2.2.3.3 Alveolar fricative

While affricates depalatalize in several environments, alveolar fricatives palatalize before high vowels. The fricative palatalization rule is schematized in (26).

26) Fricative palatalization rule

s → ʃ / __ [+ high] V

The degree of palatalization is subject to speaker variation: for many speakers, the allophone is realized as a slightly retroflexed sibilant. Some speakers, however, produce a full-fledged alveopalatal fricative. The following examples show palatalized fricatives in word-medial (27a-c) and word-initial position (27d-f).

27) Fricative palatalization before high vowels

	Forms	*UR*	*Gloss*	
a.	[kaʃí]	/kasí/	'shatter'/'quebrar'	[RF 04 1:59/Elicit]
b.	[oʃí]	/osi/	'write'/'escribir'	[JH 04 1:5/Elicit]
c.	[buʃuré]	/busuré/	'wake up'/ 'despertarse'	[BF 05 1:133/Elicit]
d.	[ʃutubéči]	/sutubéči/	'to trip'/'tropezarse'	[BF 05 1:187/Elicit]
e.	[ʃuní]	/suní/	'finish'/'terminar'	[BF 06 tx1(18)/Text]
f.	[ʃi-méa]	/si-méa/	'go:sg-Fut:sg'/ 'ir:sg-Fut:sg'	[BF 06 tx48(24)/Text]

The rule of fricative palatalization is counterbled by posttonic vowel deletion. In (28), palatalization overapplies since the trigger high vowel from the underlying representation has been deleted.

28) Opaque fricative palatalization

	Forms	*UR*	*Gloss*	
a.	[atíʃ-ri]	/atísi-li/	‘sneeze-Pst’/ ‘estornudar-Pst’	[BF 05 1:111/Elicit]
b.	[mi’á-ʃ-nura]	/mi’á-si-nura/	‘kill-Mot-Caus:I’/ ‘matar-Mot-Caus:I’	[BF 06 4:145/Elicit]
c.	[nuré-ʃ-ti-]	/nuré-si-ti-/	‘oblige-Mot-Caus-’/ ‘obligar-Mot-Caus-’	[BF 06 4:145/Elicit]
d.	[wiri-bá-ʃ-nira]	/wiri-bá-si-nura/	‘stand-Inch-Mot-Caus:I’ ‘estar.parado-Inch-Mot-Caus:I’	[BF 06 1:10/Elicit]

The overapplication is schematized in (29):

29) Counterbleeding

Underlying Representation	/atísi-ri/
s → ʃ / __ [+high] V	[atíʃi-ri]
V → Ø / σ __	[atíʃ-ri]
Surface Representation	[atíʃ-ri]

There are thus many palatalized fricatives with no surface-apparent conditioning environment.

2.2.3.4 Nasals

Nasal phonemes in Choguita Rarámuri display very little allophonic variation. Alveolar nasals display optional nasal place assimilation when preceding bilabial stops. This process, as shown in (30), is fed by posttonic vowel deletion.

30) Optional nasal place assimilation

	Forms	*UR*	*Gloss*	
a.	ée**m**-pi	/éna-pi/	'go:pl-Irr:Fut:Pl'/ 'ir:pl-Irr:Fut:Pl'	[BF 07 el35/Elicit]
b.	mikáa-**m**-po	/miká-ni-po/	'far-Appl-Fut:Pl'/ 'lejos-Appl-Fut:Pl'	[AH 05 1:149/Elicit]
c.	súu-**m**-po	/sú-ni-po/	'sew-Appl-Fut:pl'/ 'coser-Appl-Fut:Pl'	[SF 05 1:80/Elicit]
d.	rapáa-**m**-po	/rapá-na-po/	'split:Appl-Tr-Fut:Pl'/ 'partir:Appl-Tr-Fut:Pl'	[AH 05 1:131/Elicit]

The optionality of nasal place assimilation is evident from examples like (31), where an underlying alveolar nasal does not assimilate to a following bilabial stop after posttonic vowel deletion (the stressed vowels undergo compensatory lengthening (cf. §3.5.2.2)).

31) No nasal place assimilation

	Forms	*UR*	*Gloss*	*Unattested*
a.	čóo**n**-po	/čó**n**i-po/	'step-Fut:pl'/ 'pisar-Fut:Pl'	*čóo**m**-po [BF 07 VDB/Elicit]
b.	jóo**n**-po	/jó**n**i-po/	'nag-Fut:pl'/ 'regañar-Fut:Pl'	*jóo**m**-po [BF 07 VDB/Elicit]
c.	láa**n**-po	/lá**n**i-po/	'bleed-Fut:pl' 'sangrar-Fut:Pl'	*láa**m**-po [RF 04 1:82/Elicit]
d.	romíi-**n**-po	/romí-**n**a-po/	'fold-Tr-Fut:pl'/ 'doblar-Tr-Fut:Pl'	*romíi-**m**-po [AH 05 1:126/Elicit]

I have found no evidence that alveolar and bilabial nasals assimilate in place of articulation to other following segments. Some relevant examples are shown in (32).

32) No nasal place assimilation

	Forms	*UR*	*Gloss*	
a.	táa-**n**-k-o	/tá-ni-ki-o/	'ask-Appl-Appl-Ep'/ 'pedir-Appl-Appl-Ep'	[BF 07 1:31/Elicit]
b.	ča'i-búu-**n**-ki	/ča'i-bú-ni-ki/	'stuck-Tr-Appl-Appl'/ 'atorarse-Tr-Appl-Appl'	[BF 07 1:32/Elicit]
c.	murubée-**n**-ki	/murubé-ni-ki/	'get.close-Appl-Pst:1'/ 'acercarse-Appl-Pst:1'	[BF 06 6:146/Elicit]
d.	náa**m**-tu	/námi-ru/	'hear-Nmlz'/ 'escuchar-Nmlz'	[SF 04 1:112/Elicit]
e.	baráa**m**-ki	/barámi-ki/	'be.thirsty-Pst:1'/ 'tener.sed-Pst:1'	[BF 05 1:132/Elicit]
f.	bačíi**m**-ti-po	/bačími-ti-po/	'sprinkle-Caus-Fut:pl'/ 'rociar-Caus-Fut:pl'	[BF 05 1:135/Elicit]

In (32a-c) posttonic deletion yields a heterosyllabic cluster with a nasal followed by a voiceless velar; the alveolar nasals, however, are not velarized. Bilabial nasals do not assimilate in place of articulation to following alveolar or velar stops either (as shown in (32d-f)).

Finally, there is no place assimilation when an alveolar nasal preceedes a bilabial nasal, as exemplified in (33).

33) No place assimilation of alveolar nasal

Form	*UR*	*Gloss*	
rajé**n**-ma	/rajéni-ma/	'be.sunny-Fut:sg'/ 'estar.soleado-Fut:sg'	[SF 06 1:128/Elicit]

There are no cases in the corpus where an alveolar nasal assimilates in place of articulation to a following bilabial nasal.

2.2.3.5 Rhotics

Recall from §2.2.1 above that there are two rhotics in Choguita Rarámuri, and alveolar flap (/r/) and a lateral flap (/l/). The alveolar flap is realized as an alveolar trill word-initially. The rule in (34) represents this exceptionless generalization.

34) Word-initial allophone of /ɾ/

/ɾ/ → [r] / #__

The examples in (35) include an IPA notation (where [r] represents the alveolar trill and [ɾ] stands for the alveolar flap in the underlying representation). Since alveolar trills and flaps are in complementary distribution, I will represent these sounds with *r* outside of this section in the rest of the dissertation.

35) Word-initial trill

	Forms	*UR*	*Gloss*	
a.	[**r**aʔɾá]	/ɾaʔɾá/	'buy'/'comprar'	[AH 07 1:74/Elicit]
b.	[**r**oʔnó]	/ɾoʔnó/	'boil'/'hervir'	[SF 04 1:81/Elicit]
c.	[**r**eká]	/ɾeká/	'lay down'/'acostarse'	[SF 04 1:67/Elicit]
d.	[**r**itiwá]	/ɾitiwá/	'watch'/'ver'	[JH 04 1:2/Elicit]
e.	[**r**uhí]	/ɾuhí/	'to hail'/'granizar'	[SF 04 1:123/Elicit]

Alveolar trills are not uncommon in word-medial position in loanwords from Spanish: [ba**r**íkatʃi], 'bucket', from *barrica*, and [mo**r**áltʃi], 'bag', from *morral*, are just a couple of examples.[6]

[6] There are some speakers who also have a trill in word-medial position rather than a flap in native words: [ha**r**é], 'some' [LEL 06 5:100/Elicit, BF 06 rec48/Text], and [wasa**r**á-ma] 'plow-Fut:sg' [BF 06 tx48 nururía/Text] are just a couple of examples.

The lateral flap, as discussed in §2.2.1, is a sound that is auditorily both like a lateral approximant and like an alveolar (or retroflex) flap. Choguita Rarámuri back vowels following the flap condition its perception/production as a lateral.[7] While the perceptual salience of the lateral quality of the segment is stronger in word-initial position (36a-e), there are many examples of the lateral flap being unambiguously produced as a lateral word-medially (36f-i).

36) Lateral allophone of the lateral flap

	Forms	*UR*	*Gloss*	
a.	[**l**ána]	/lána/	‘bleed’/‘sangrar’	[RF 04 1:82/Elicit]
b.	[**l**oká]	/loká/	‘drink pinole’/ ‘tomar pinole’	[LEL 06 tx19/Text]
c.	[**l**owá]	/lowá/	‘stir’/‘revolver’	[SF 04 1:71/Elicit]
d.	[**l**aké]	/laké/	‘carve (wood)’/ ‘labrar’	[BF 04 1:111/Elicit]
e.	[**l**očé]	/ločé/	‘be hungry’/ ‘tener hambre’	[BF 04 1:94/Elicit]
f.	[ritú-r-**l**-o]	/ritú-ri-li-o/	‘freeze-Caus-Pst-Ep’/ ‘congelarse-Caus-Pst-Ep’	[BF 05 1:112/Elicit]
g.	[wa**l**ó]	/waló/	‘dry’/‘secar’	[SF 04 1:110/Elicit]
h.	[či**l**ó]	/čiló/	‘sizzle’	[BF 05 1:154/Elicit]
i.	[basa**l**ów-i]	/basalówa-i/[8]	‘stroll-Impf’/ ‘pasear-Impf’	[BF 05 1:162/Elicit]

The flap is also optionally realized as a lateral in cluster with another consonant (after posttonic syncope), including other rhotics (37a-b), voiceless stops (37c-e), fricatives (37f-g) and nasals (37h).

[7] The same conditioning environment is reported to favor the lateral production of the lateral flap in Naasioi (East Papuan), Barasana (Tucanoan) and Tucano (Tucanoan) (Ladefoged & Maddieson 1996:243). Lionnet (1972) identified the same conditioning enviroment for the lateral perception of the flap in Norogachi Rarámuri.

[8] A loan from Spanish *pasear*.

37) Pre- and postconsonantal allophone of /l/

	Forms	*UR*	*Gloss*	
a.	[nár-**l**i]	/nári-li/	'ask-Pst'/ 'preguntar-Pst'	[BF 05 1:152/Elicit]
b.	[kó**l**-ri]	/kóli-li/	'visit-Pst'/ 'visitar-Pst'	[BF 04 1:111/Elicit]
c.	[čikó**l**-ti-a]	/čikóli-ti-a/	'tickle-Caus-Prog'/ 'hacer.cosquillas-Caus-Prog'	[AH 05 1:146/Elicit]
d.	[kapó**l**-ti-a]	/kapóli-ti-a/	'spherical-Caus-Prog'/ 'ser.esférico-Caus-Prog'	[AH 05 1:149/Elicit]
f.	[kó**l**-si-a]	/kóli-si-a/	'be.spicy-Mot-Prog'/ 'ser.enchiloso-Mot-Prog'	[RF 04 1:82/Elicit]
h.	[kawé**l**-nare-]	/kawéli-nale-/	'reject-Desid-'/ 'rechazar-Desid'	[BF 07 1:155/Elicit]

In all of the examples above, the lateral flap forms a heterosyllabic consonant cluster with a preceding or following rhotic or oral stop after posttonic vowel deletion.

The following examples show the environments which favor the flap (non-lateral) variant of this phoneme. These environments, as shown in (38), overwhelmingly involve front vowels.

38) Flap allophone of /l/

	Forms	*UR*	*Gloss*	
a.	[nawá-**ɾ**i]	/nawá-li/	'arrive-Pst'/ 'llegar-Pst'	[JH 04 1:1/Elicit]
b.	[ko**ɾ**í]	/kolí/	'chile'	[SF 07 NDB(253)/Elicit]
c.	[čikó**ɾ**i-a]	/čikóli-a/	'itch-Prog'/ 'tener.comezón-Prog'	[AH 05 1:146/Elicit]
d.	[kapó**ɾ**i-ti-a]	/kapóli-ti-a/	'be.round-Caus-Prog'/ 'ser.redondo-Caus-Prog'	[AH 05 1:149/Elicit]
e.	[kó**ɾ**i]	/kóli/	'visit'/'visitar'	[BF 05 1:111/Elicit]

f.	[nakawéɾi]	/nakawéli/	‘reject’/‘rechazar’	[BF 07 1:155/Elicit]
g.	[mé-niɾi]	/mé-nale/	‘win-Desid’/ ‘ganar-Desid’	[RF 04 1:81/Elicit]
h.	[simi-náɾe]	/simi-nale/	‘go:sg-Desid’/ ‘ir:sg-Desid’	[SF 05 1:86/Elicit]

The flap allophones are produced slightly retroflexed for some speakers. For other speakers, however, the flap allophone is indistinguishable from the alveolar flap phoneme. For each example in (38), however, there is evidence that the flap has a related form with the lateral allophone. For instance, the past suffix /-li/ is realized with a flap allophone in (38a), but with a lateral allophone in (37a) above after posttonic syncope.

2.2.4 The distribution of voiceless/fortis and voiced/lenis stops

Choguita Rarámuri stops display striking alternations. The alternants are: [p ~ b], [t ~ r], and [k ~ g]. Many of these alternations show up synchronically as suppletive allomorphy:[9] roots and suffixes with these segments have a phonetic shape that cannot be predicted from an underlying form, but are idiosyncratic. In (39-41) I provide examples of the stop alternations in the bilabial, alveolar and velar places of articulation, respectively.

[9] It has been proposed that this unpredictable, idiosyncratic variation is a remnant of historical alternations involving voiceless/fortis stops and voiced/lenis stops, a phenomenon present in the Numic branch of Uto-Aztecan (cf. Southern Paiute (Sapir 1931), Kawaiisu (Zigmond, Booth & Munro 1991)). For Numic, the voicing alternations have been attributed to once productive phonological processes of gemination, spirantization, and pre-nasalization (Sapir 1931). For Taracahitic, on the other hand, the voicing alternations have been argued to be conditioned by stress position, a process that has been documented as still productive in languages like River Guarijío (Miller 1996:52). In his analysis, Miller proposes that voiceless bilabial and velar stops voice in intervocalic position followed by an atonic vowel, and voiceless alveolar stops rhotacize intervocalically in posttonic position.

39) p ~ b alternations

a.	wičó-**b**o	‘wash(clothes)-Fut:pl’/ ‘lavar(ropa)-Fut:pl’	[SF 04 1:69/Elicit]
b.	pakó-**p**o	‘wash(dishes)-Fut:pl’/ ‘lavar(trastes)-Fut:pl’	[SF 04 1:69/Elicit]
c.	**p**ewá	‘smoke:sg’/‘fumar:sg’	[RF 04 1:122/Elicit]
d.	i-**b**éwa	‘pl-smoke:pl’/‘pl-fumar:pl’	[SF 05 VDB/Elicit]

40) t ~ r alternations

a.	napá-**t**i-ma	‘hug-Caus-Fut:sg’/ ‘abrazar-Caus-Fut:sg’	[BF VDB/Elicit]
b.	pewá-**r**i-ma	‘smoke-Caus-Fut:sg’/ ‘fumar-Caus-Fut:sg’	[RF 04 1:122/Elicit]
c.	i-**t**iwé	‘pl-allow’/‘pl-dejar’	[SF 06 in61/Interv]
d.	**r**iwé	‘leave:sg’/‘dejar:sg’	[SF 05 1:176/Elicit]

41) k ~ g alternations

a.	či**k**órame	‘thief’/‘ladrón’	[SF 08 1:102/Elicit]
b.	či**g**órame	‘thief’/‘ladrón’	[SF 08 1:125/Elicit]
c.	**k**o	‘Emph’	[LEL 07 tx223 /Text]
d.	**g**o	‘Emph’	[LEL 07 tx223/Text]

The *p ~ b* alternation is exemplified with the productive future plural suffix. This suffix can have either a voiced bilabial stop onset (42a-c) or a voiceless bilabial onset (42d-f) post-vocalically.

42) p ~ b in future plural suffix allomorphs

a.	wičó-**bo**	‘wash(clothes)-Fut:pl’/ ‘lavar(ropa)-Fut:pl’	[AH 04 1:69/Elicit]
b.	newá-**bo**	‘make-Fut:pl’/‘hacer-Fut:pl’	[SF 04 1:67/Elicit]
c.	wí-**bo**	‘harvest-Fut:pl’/‘pizcar-Fut:pl’	[SF 04 1:69/Elicit]
d.	pakó-**po**	‘wash(dishes)-Fut:pl’/ ‘lavar(trastes)-Fut:pl’	[SF 04 1:69/Elicit]
e.	nará-**po**	‘cry-Fut:pl’/‘llorar-Fut:pl’	[BF 04 1:74/Elicit]
f.	tečí-**po**	‘comb-Fut:pl’/‘peinar-Fut:pl’	[SF 04 1:69/Elicit]

These examples show how the voicing of the future plural suffix onset is not rule governed, but is instead lexically suppletive: voicing of the bilabial stop onsets in the future plural suffixes in (42) cannot be predicted by their intervocalic position, the quality of the preceding vowel, nor stress position; the allomorphy must thus be assumed to be lexically determined by each root. There is also speaker variation as to the choice of the allomorph.[10]

An example of the *t* ~ *r* alternation is found in the distribution of potential and causative suffix allomorphs: both an allomorph with an alveolar flap onset (43a-b) and an alveolar stop onset (43c-d) can be found in intervocalic environments.

43) t ~ r in potential and causative suffix allomorphs

a.	mahá-**r**a	'scare-Pot'/'asustar-Pot'	[05 1:154/Elicit]
b.	ko'á-**r**i-a	'eat-Caus-Prog'/'comer-Caus-Prog'	[RF 04 1:109/Elicit]
c.	tú-**t**a	'bring-Pot'/'traer-Pot'	[BF 07 2:21/Elicit]
d.	napá-**t**i-ma	'hug-Caus-Fut:sg'/ 'abrazar-Caus-Fut:sg'	[BF VDB/Elicit]

There are no suffixes with velar stop onsets that display the alternations described above. Velar stops, however, are optionally voiceless or voiced in fast speech as the onsets of functional words. For instance, the expression *ho' u nu **k**o!,* 'you've got it!' (Sp. 'órale!'), is optionally pronounced *ho' u nu **g**o!*, with the emphatic particle *ko* pronounced with a voiced velar onset; the same occurs with the expression *ču re **k**o!,* 'no

[10] For example, one consultant strongly rejected **pá-**bo**,*'throw-Fut:pl' and corrected it to *pá-**po***, with a voiceless onset for the future plural suffix. Another speaker gave precisely the form *pá-**bo***, with a voiced onset for the future plural, spontaneously during elicitation. For some speakers, the lexically suppletive allophonic alternations might be the subject of a change in progress, where the allomorphy is reinterpreted as dependent on the quality of the preceding vowel. For these speakers, the distribution of voiced and voiceless plosives seems to be dependent on vowel height, and prefer voiced/lenis stops after [–high] vowels.

kidding!/how come!' (Sp. 'a poco!'), optionally pronounced as *ču re **go**!*, with a voiced velar stop.[11]

The stop alternations are not restricted to suffix or function word allomorphy, but they are also present in non-derived environments. For instance, the word for 'thief', with a word-medial velar stop, is optionally pronounced with a voiceless velar stop *(či**k**órame)* or a voiced velar stop (*či**g**órame*).

Furthermore, stop alternations are morphologically conditioned in two contexts. First, mid-stem stop alternations are characteristic of pluractional stems. In pluractional constructions, as exemplified in (44), a word-medial stop is voiced if underlyingly voiceless and devoiced if underlyingly voiced, a voicing toggle that in some contexts is the only marker for the pluractional (other constructions have simultaneous prefixation). These constructions are discussed in more detail in Chapters 3 (§3.4.1.2) and 5 (§5.3.1).

44) k ~ g in pluractional marking

	Forms	*Gloss*	
a.	pa**k**ótami	'good person (baptized)'/ 'buena gente (bautizado)'	[SF 06 in61/Interv]
b.	pa**g**ótami	'good people', 'people'/ 'buena gente', 'gente'	[FL 06 in61/Interv]

[11] Voiced velar stops have a more restricted distribution than voiced bilabial stops and alveolar flaps. There are no examples of allophones with word-initial voiced velar allophones. Speakers identify the pronounciation for the word meaning 'house' with a word-initial voiced velar stop, ***g**arí*, as particular to other dialects of Rarámuri. In the following examples, the voiceless velar stop is present in the word for a plant (a), and the word with the voiced velar stop is present in the toponimic (b) (derived from the plant name in (a)). The form in (c), with the voiceless velar stop plus the locative suffix, would literally mean 'in the (plant) *basikó*'

a.	basi**k**ó	'plant'
b.	basi**g**óči	'Basigóchi, place where *basikó* grows' (toponymic)
c.	basi**k**ó-či	'basikó-Loc'

The example above shows that the plural of participle *pa**k**ótami* (44a), with a word-medial voiceless velar stop, is *pa**g**ótami*, with a voiced word-medial velar stop (44b). (45) shows more examples of stop alternations in pluractional constructions.

45) Stop alternations in pluractional constructions

	Singular	*Pluractional*	*Gloss*	
a.	**b**i**t**é	i-**p**i**r**é	'dwell'/'habitar'	[BF 05 1:186/Elicit]
b.	**b**ahí	a-**p**ahí	'drink'/'tomar'	[BF 05 2:23/Elicit]
c.	ka**p**órame	ka**b**órame	'round thing(s)'/ 'cosas redondas'	[BF 05 1:155/Elicit]
d.	ki**p**á	i-ki**b**á	'snow'/'nevar'	[SF 05 2:8/Elicit]
e.	si**t**ákame	i-si**r**ákame	'red thing(s)'/ 'cosas rojas'	[BF 05 1:157/Elicit]
f.	**p**iwá	i-**b**éwa	'smoke'/'fumar'	[BF 05 2:24/Elicit]

A second set of morphologically conditioned plosive alternations are found in body-part incorporation. In (46), the verb /pakó/ 'to wash' has a voiced bilabial stop onset on its first syllable in incorporation.

46) Stop alternations in incorporated verbs

	Forms	*UR*	*Gloss*	
a.	rono+**b**áki-	/ronó+**p**akó-/	'feet+wash-'/ 'pies+lavar'	[SF 04 CS/Elicit]
b.	rame+**b**áki-	/ramé+**p**akó-/	'teeth+wash-'/ 'dientes+lavar'	[SF 04 CS/Elicit]
c.	kupa+**b**áki-	/kupá+**p**akó-/	'hair+wash-'/ 'cabello+lavar'	[SF 04 CS/Elicit]

Finally, oral stops are also subject to a general phonological rule: without exception, stops devoice post-consonantally. In (47) posttonic vowel deletion yields an environment in which the onset of the future plural is necessarily voiceless. For instance, as shown in (47a), *náar-**p**o,* but not **náar-**b**o,* is unattested after posttonic deletion. There are no examples in my data with a voiced/lenis allophone appearing post-consonantally.

47) Post-consonantal voiceless oral stops

	Attested	*Gloss*	*Unattested*	
a.	náar-**p**o	‘ask-Fut:pl’/ ‘preguntar-Fut:pl’	*náar-**b**o	[SF 07 in243/Interv]
b.	desfilár-**p**a	‘parade-Fut:pl’/ ‘desfilar-Fut:pl’	*desfilár-**b**a	[LEL 06 Nov5/Elicit]
c.	bam-**p**á-sa	‘year-Inch-Cond’/ ‘año-Inch-Cond’	*bam-**b**á-sa	[SF 06 tx12/Text]
d.	sam-**p**á	‘be.wet-Inch’/ ‘estar.mojado-Inch’	*sam-**b**á	[SF 04 1:113/Elicit]

There is evidence that the onsets of the causative, future plural, and inchoative in (47) have voiced onsets with the same roots in other morphological contexts. The examples in (48) show that the voiceless allomorphs in (48b) and (48e) are not lexically determined, but phonologically conditioned. The root *bami* has an inchoative suffix allomorph with a voiced onset in (48a) and a voiceless allomorph in (48b) after pre-tonic vowel deletion; the transitive stem *rapa-na,* ‘split-Tr’ (*‘partir*-Tr’), has a future plural suffix allomorph with a voiced onset in (48d) and a voiceless allomorph in (48e) after posttonic vowel deletion.

48) Phonologically conditioned devoicing

	Form	*Gloss*	
a.	bamí-**b**a-ri	‘year-Inch-Pst’/‘año-Inch-Pst’	
b.	bam-**p**á-sa	‘year-Inch-Cond’/‘año-Inch-Cond’	[SF 06 tx12/Text]
c.	*bam-**b**á-sa		
d.	rapa-ná-**b**o	‘split-Tr-Fut:pl’/‘partir-Tr-Fut:pl’	[AH 05 1:131/Elicit]
e.	rapá-m-**p**o	‘split:Appl-Tr-Fut:pl’/ ‘partir:Appl-Tr-Fut:pl’	[AH 05 1:131/Elicit]
f.	*rapá-m-**b**o		

We can thus posit the rule in (49), which is fed by pre- or posttonic vowel deletion.

49) Post-consonantal stop devoicing

[+ voice] stop → [-voice] / C__

In sum, stop alternations in Choguita Rarámuri are pervasive and found in different contexts, where they are either: (i) marking phonemic constrasts, (ii) lexically conditioned (as in the case of several suffixes), (iii) morphologically conditioned (as in incorporation and pluractional constructions), (iv) phonologically conditioned (devoicing occurs post-consonantally), or (v) the outcome of optional, gradient voicing alternations in fast speech.[12]

2.3 Suprasegmental phonology

2.3.1 Stress and stress-dependant phenomena

2.3.1.1 Acoustic correlates and distributional properties of stress

Choguita Rarámuri exhibits phonetic and phonological properties of stress languages. First, all content words have only one stressed syllable per word. Second, there is only one syllable in the word with the highest degree of prominence (the 'culminativity' parameter (Hyman 1977, 1978; Beckman 1986; Hayes 1995)). These two criteria are ambiguous between stress and pitch-accent, but Choguita Rarámuri displays three further phonetic properties that are unique to stress systems: i) increased phonetic duration of accented vowels, ii) reduction of unaccented vowels (the details of which will be discussed in §3.1.2), and iii) augmentation of onsets in accented syllables. For general

[12] Some lexical items have variable pronounciations with bilabial stop and bilabial nasal alternants. The positional verbal predicate for liquids /maná/, for instance, has alternative pronunciations with a bilabial nasal stop (***m**aná*) and with a voiced bilabial oral stop (***b**aná*).

discussion of the distinction between stress and pitch-accent systems, see Poser 1984, Hyman & Wilson 1991, Hyman 1977, 2001, and Inkelas & Zec 1988.

Stressed syllables in Choguita Rarámuri are characterized by increased duration. Preliminary examination of the duration of stressed and unstressed vowels in open syllables shows that stressed vowels (in (50)) tend to be approximately twice as long as unstressed vowels (in (51)). Intramorphemic vowels were measured from vowel onset (beginning of relatively high amplitude) to vowel offset. Measured vowels are in boldface.

50) Duration of stressed syllables in open syllables

	Form	*Gloss*	*Ms*	
a.	korim**é**ni	‘bee, honey’/ ‘abeja, miel’	130	[SF 03 VM01/Elicit]
b.	nap**á**ča	‘shirt’/‘camisa’	150	[SF 03 VM02/Elicit]
c.	sup**á**niri	‘adobe’	150	[SF 03 VM03/Elicit]
d.	k**á**wi	‘horse’/‘caballo’	150	[SF 03 VM04/Elicit]
e.	pič**í**ra	‘broom’/‘escoba’	160	[SF 03 VM05/Elicit]
f.	nar**á**kuri	‘snail’/‘caracol’	150	[SF 03 VM06/Elicit]
g.	k**ó**či	‘pig’/‘cochino’	170	[SF 03 VM07/Elicit]
h.	č**í**ba	‘goat’/‘chiva’	150	[SF 03 VM08/Elicit]
i.	kor**á**či	‘crow’/‘cuervo’	150	[SF 03 VM09/Elicit]
j.	č**é**r-ami	‘be.old-Ptcp’ ‘ser.viejo-Ptcp’	160	[SF 03 VM10/Elicit]

51) Duration of unstressed syllables in open syllables

	Form	*Gloss*	*Ms*	
a.	kor**i**méni	'bee/honey'/ 'abeja, miel'	80	[SF 03 VM11/Elicit]
b.	p**i**číra	'broom'/'escoba'	90	[SF 03 VM12/Elicit]
c.	č**e**rewáka	'sweat'/'sudor'	80	[SF 03 VM13/Elicit]
d.	bot**o**ná-ma	'untie-Fut:sg'/ 'desamarrar-Fut:sg'	70	[SF 03 VM14/Elicit]
e.	s**i**ká-ra	'hand-Poss'/ 'mano-Poss'	70	[SF 03 VM15/Elicit]
f.	t**u**río	'wheat'/'trigo'	110	[SF 03 VM16/Elicit]
g.	r**o**kó	'night'/'noche'	90	[SF 03 VM17/Elicit]
h.	narúč**i**ri	'spider'/'araña'	70	[SF 03 VM18/Elicit]
i.	s**i**púča	'skirt'/'falda'	80	[SF 03 VM19/Elicit]
j.	ropokók**i**ri	'scorpion'/ 'alacrán'	80	[SF 03 VM20/Elicit]

Measurements of vowel durations show that stressed vowels range between 130 to 170 ms, and unstressed vowels range between only 70 to 110 ms.

Another correlate of stress is related to augmentation of onset consonants in stressed syllables: voiceless plosives display slight aspiration. This phenomenon does not affect the onsets of stressless syllables. The degree of aspiration is greater in word-initial position, but is attested word-medially as well. Examples are given in (52).

52) Onset augmentation of stressed syllables

	Forms	*Gloss*	
a.	[p^{h}á]	'throw'/'tirar'	[BF 05 1:112/Elicit]
b.	[t^{h}óo-ru]	'bury-Pst:Pass'/'enterrar-Pst:Pass'	[SF 07 el417/Elicit]
c.	[nap^{h}á]	'hug'/'abrazar'	[BF VDB/Elicit]
d.	[sup^{h}ániri]	'adobe'	[SF 03 VM03/Elicit]

In terms of its distribution, stress is underlyingly present for at least some morphemes, and can create lexical contrasts. The examples in (53) show stress minimal pairs.

53) Stress minimal pairs

	1st syllable stress			*2nd syllable stress*	
a.	múri	'basket'/'canasta'	b.	murí	'turtle'/'tortuga'
c.	éka	'close it!'/'cierra!'	d.	eká	'wind'/'viento'
e.	múči	'baby'/'bebé'	f.	mučí	'vagina'
g.	kóči	'pig'/'cerdo'[13]	h.	kočí	'dog'/'perro'

As will be discussed in Chapter 3, stress in Choguita Rarámuri is also used to derive applicative stems or mark imperative stems. Like all lexical stress systems, the stress system of Choguita Rarámuri is in part rhythmically assigned and morphologically conditioned. Stress can be either in the first, second or third syllable of the prosodic word, but never beyond the third syllable from the left edge. This left-edge restriction is due to an initial three-syllable window. The morphological conditions for stress, as well as the evidence for positing a left edge window, will be the focus of Chapter 4.

The next section addresses a phonological correlate of the stress system, namely vowel reduction and deletion in unstressed syllables.

2.3.1.2 Vowel reduction and deletion

As we have seen in §2.2, Choguita Rarámuri contrasts five cardinal vowel qualities in stressed syllables ([a, e, i o, u]). In unstressed syllables, however, these vowel quality contrasts are often collapsed, reflecting a reduction of the phonetic space. Specifically,

[13] This is a loan from Northern Mexican Spanish *cochi* 'pig' (which in turn derives from standard Mexican Spanish *cochino* 'pig').

vowel height contrasts are neutralized, where mid-front and low-central vowels raise to [i]. Neutralization of vowel height contrasts in unstressed syllables as attested in Choguita Rarámuri is the most common crosslingustic pattern of unstressed vowel reduction (cf. Barnes 2002, 2004).

There are three distinct patterns or degrees of vowel reduction. In the first pattern, /e/ raises to [i] both pre-tonically and posttonically. In the second pattern, non-final posttonic /a/ optionally raises to [i]. In the third pattern, high vowels optionally reduce to schwa posttonically. These patterns are schematized in (54).

54) Unstressed vowel reduction patterns

a.	/e/	→	[i] in pre-tonic and posttonic syllables
b.	/a/, /o/	→	[i] in non-final, posttonic syllables
c.	/i/, /u/	→	[ə] in non-final, posttonic syllables

Table 5 lays out the surface realization of underlying vowels in pre-tonic, posttonic non-final and posttonic final position. Since all vowel qualities are licensed in stressed position, this chart only consideres unstressed vowels.

Table 5: Surface realization of unstressed vowels

	Pre-tonic	**Posttonic Non-final**	**Posttonic Final**
/i/	I	ə / i	i
/e/	i / e	i / e	i / e
/a/	A	i / a	a
/o/	O	i / o	o
/u/	U	ə / u	u

These patterns of untrsessed vowel reduction are addressed below in §2.3.1.2.1, §2.3.1.2.2, and §2.3.1.2.3.

2.3.1.2.1 Unstressed mid front vowel reduction to [i]

The first pattern of unstressed vowel reduction in Choguita Rarámuri involves mid front vowels reducing both pre-tonically and posttonically. Pre-tonic vowel reduction of mid front vowels is robust. Forms with surface pre-tonic *e* are attested, but these are infrequent. Some examples are presented in (55), where alternative forms with pretonic *i* and pretonic *e* are given. Relevant vowels are in bold face.[14]

[14] Older speakers seem to use less mid-vowel neutralization than younger speakers. The examples below are part of a conversational interaction where SF, a 35-year old male, uses the verbal stem /bete-/ with pretonic vowel raising (in (A)); FL, an 80-year old male, responds using the same verbal form with no pretonic mid vowel neutralization (in (B)). The contrast between the younger speaker's neutralization and lack of neutralization in the older speaker's speech remains constant along the conversation.

A:	siné	rokó	**biti**-bá-sa?			
	/siné	rokó	bete-bá-sa/			
	one	night	stay.overnight-Inch-Cond			
	'He would stay up all night?'					
	'quedándose una noche?'					[SF 07 in243/Interv]
B:	siné	rokó	**bete**-bá-sa	ra	ba	
	/siné	rokó	bete-bá-sa	ra	ba/	
	one	night	stay.overnight-Inch-Cond	Rep	Cl	
	'One whole night he would stay up'					
	'toda la noche hasta que cumpliera (se quedó sin dormir)'					[FL 07 in243/Interv]

55) Optional pretonic mid, front vowel height neutralization

	Surface forms		UR	Gloss	
a.	n**i**hé	~ n**e**hé	/n**e**hé/	‘I’/‘yo’	[SF 07 2:63/Elicit]
b.	r**i**pópa	~ r**e**pópa	/r**e**pópa/	‘back’/ ‘espalda’	[SF 07 2:65/Elicit]
c.	b**i**né	~ b**e**né	/b**e**né/	‘learn’/ ‘aprender’	[RF 04 1:9/Elicit]
d.	č**i**wá	~ č**e**wá	/č**e**wá/	‘hit’/ ‘pegar’	[RF 1:67/Elicit]
e.	m**i**hí	~ m**e**hí	/m**e**hí/	‘cook mezcal’/ ‘cocer mezcal’	[SF 07 2:12/Elicit]
f.	m**i**tá	~ m**e**tá	/m**e**tá/	‘crumble’/ ‘desmoronarse’	[RF 04 1:60/Elicit]
g.	m**i**’á	~ m**e**’á	/m**e**’á/	‘kill’/‘matar’	[JH 04 1:1/Elicit]
h.	n**i**ká	~ n**e**ká	/n**e**ká/	‘bark’/‘ladrar’	[SF 04 1:80/Elicit]

Other vowel contrasts are preserved pretonically. The examples below show the constrasts licensed: central, front vowels (56a-c); back, high vowels (56d-e); and back, mid vowels (56f-g). The unattested forms listed in (56) show hypothetical forms with pre-tonic, non-initial neutralized vowels. These hypothetical forms would be expected if pretonic vowel reduction would target all vowel qualities.

56) Pre-tonic vowel contrasts

	Attested	Gloss	Unattested	
a.	akabó	‘nose’/‘nariz’	*ak**i**bó	[GD 06 1:108/Elicit]
b.	aka-rá	‘sandal-Vblz’/ ‘huarache-Vblz’	*ak**i**-rá	[SF 05 1:103/Elicit]
c.	amačí	‘pray’/‘rezar’	*am**i**čí	[SF 04 1:133/Elicit]
d.	bahuré	‘invite’/‘invitar’	*bah**i**ré	[BF 05 1:134/Elicit]
e.	bururúči	‘tamales’	*bururúči	[SF 07 DB/Elicit]
f.	bohoní	‘cross(river)’/ ‘cruzar(rio)’	*boh**i**ní	[SF 04 1:122/Elicit]
g.	bokowí	‘dusk’/‘atardecer’	*bok**i**wí	[SF 07 6:170/Elicit]

As will be discussed in Chapter 3 (§3.3), there are particular pretonic vowel alternations that are specific of a group of verbal stems. These stems have a root final stressed *a* and a final unstressed, pretonic *i* in specific morphological constructions (e.g. *rar**á**-ri*, 'buy-Pst', and *rar**i**-méa*, 'buy-Fut:sg'). These vocalic alternations are characteristic of a group of stems where the alternations are morphologically conditioned (§3.3), and are not related to the vowel reductin patterns described in this section.

Mid front vowels may also be raised to *i* posttonically. Some examples are shown in (57).

57) Posttonic front vowel height neutralization

	Forms	*UR*	*Gloss*	
a.	biné-ri-am**i**	/bené-ri-am**e**/	'learn-Caus-Ptcp'/ 'aprender-Caus-Ptcp'	[BF 06 4:168/Elicit]
b.	rasí-am**i**	/rasí-am**e**/	'misbehave-Ptcp'/ 'portarse.mal-Ptcp'	[BF 04 1:90/Elicit]
c.	ko'á-**i**	/ko'á-**e**/	'eat-Impf'/ 'comer-Impf'	[RF 04 1:109/Elicit]
d.	osá-**i**	/osá-**e**/	'write-Impf'/ 'escribir-Impf'	[AH 05 1:127/Elicit]

Pre-tonic and posttonic raising of unstressed *e* is subject to some speaker variation, but it the unstressed vowel reduction pattern displaying the least amount of variation.

2.3.1.2.2 [-high] Unstressed posttonic vowel reduction

A second unstressed vowel reduction pattern in Choguita Rarámuri involves /a/ and /o/ rising to *i* posttonically. This reduction process does not take place in word-final position.

Some examples are provided in (58). Each vowel reduction example is followed by a related form with no vowel reduction.

58) Posttonic reduction of low vowels

	Forms	*UR*	*Gloss*	
a.	čót**i**-ri	/čot**a**-li/	‘begin-Pst’/ ‘comenzar-Pst’	[SF 07 in243/Interv]
b.	čot**á**-ma	/čot**a**-ma/	‘begin-Fut:sg’/ ‘comenzar-Fut:sg’	[LEL 06 5:36/Elicit]
c.	čihá-n**i**-ri	/čiha-n**a**-li/	‘scatter-Tr-Pst’/ ‘desparramarse-Tr-Pst’	[SF 07 1:17/Elicit]
d.	čiha-n**á**-sa	/čiha-n**a**-sa/	‘scatter-Tr-Cond’/ ‘desparramarse-Tr-Cond’	[SF 07 1:17/Elicit]
e.	sutubéči-n**i**ri	/sutubeči-n**a**le/	‘trip-Desid’/ ‘tropezarse-Desid’	[BF 07 1:138/Elicit]
f.	šimi-n**á**l-	/simi-n**a**le-/	‘go:sg-Desid’/ ‘ir:sg-Desid’	[BF 06 EDCW/Elicit]
g.	tiyóp**i**-či	/tiyop**a**-či/	‘church-Loc’/ ‘iglesia-Loc’	[SF 06 tx12/Text]
h.	tiyóp**a**	/tiyop**a**/	‘church’/‘iglesia’	[LEL 07 tx223/Elicit]
i.	čón**i**-ri	/čon**a**-li/	‘get.dirty-Pst’/ ‘ensuciarse-Pst’	[LEL 06 6:78/Elicit]
j.	čón**a**	**/**čon**a/**	‘get dirty’/ ‘ensuciarse’	[RF 04 1:65/Elicit]

In (58a-b), (58c-d)[15] and (58e-f), the reduced forms can be contrasted with their stressed, non-reduced counterparts; in (58h) and (58j), on the other hand, reduction does not take place because the vowels in question are in word-final position.

[15] The forms in (55a,b) involve a stress shift that is morphologically conditioned, but the posttonic reduction is subject to speaker variation; this contrasts with the morphologically conditioned vocalic alternations to be discussed in Chapter 3 (§3.3), since these do not display speaker variation.

Unstressed vowel reduction is attested in incorporated forms as well. In incorporated forms stress is assigned in the first syllable of the morphological head of the incorporated verb (this morphological stress rule is discussed in Chapter 4 (§4.3.2)). In the examples in (59), the stress shifts one syllable to the left, yielding reduction of underlying /o/ (59a) and /a/ (59c).

59) Posttonic vowel reduction in incorporated verbs

	Form	*UR*	*Gloss*
a.	rono+bák**i**-ma	/ronó+pak**ó**-ma/	'feet+wash-Fut:sg'/ 'pies+lavar-Fut:sg'
b.	pakó-ma	/pakó-ma/	'wash-Fut:sg'/ 'lavar-Fut:sg'
c.	siwa+bót**i**-ma	/siwá+bot**á**-ma/	'guts+loosen-Fut:sg'/ 'tripas+soltarse-Fut:sg'
d.	botá-ma	/botá-ma/	'loosen-Fut:sg'/ 'soltarse-Fut:sg'

Not all pre-final, posttonic underlying /a/ raise to [i]. The potential targets for reduction in (60) share the characteristic of being the first vowel of a vowel-initial suffix. These suffix vowels do not undergo reduction, and hypothetical forms with reduced posttonic vowels (exemplified in the second column in (60)) are unattested.

60) Blocked vowel reduction

	Attested	*Unattested*	*Gloss*	
a.	šú-**a**mi	*šú-**i**mi	'sew-Ptcp'/ 'coser-Ptcp'	[BF 06 4:168/Elicit]
b.	sawé-r-**a**mi	*sawé-r-**i**mi	'cure-Pst:Pass-Ptcp'/ 'curarse-Pst:Pass-Ptcp'	[BF 06 4:168/Elicit]
c.	bayé-**a**-či	*bayé-**i**-či	'call.out- Prog-Loc'/ 'llamar-Prog-Loc'	[BF 05 2:56/Elicit]
d.	lamú-**a**mi	*lamú-**i**mi	'purple-Ptcp'/ 'morado-Ptcp'	[LEL 06 6:79/Elicit]
e.	pó-**a**-ra	*pó-**i**-ra	'cover-Prog-Purp'/ 'tapar-Prog-Purp'	[SF 07 in242/Interv]

Reduction, thus, can be blocked due to morphological restrictions.

2.3.1.2.3 Unstressed high vowel reduction to schwa

Choguita Rarámuri has a third process of unstressed vowel reduction, where high vowels may reduce to schwa posttonically. The examples below show the target vowels, /i/ (61a-d) and /u/ (61e-f).[16]

[16] I found one example where the target of reduction is an underlying low, central vowel: iná-n**ə̠**r-o (/iná-n**a**le-o/),'walk-Caus:I-Ep' [BF 06 DECW/ Elicit].

61) Optional posttonic reduction to schwa

	Forms	*UR*	*Gloss*	
a.	čipó-r**ə**-ma	/čipó-r**i**-ma/	‘bounce-Caus-Fut:sg’/ ‘botar-Caus-Fut:sg’	[LEL 07 Caus_ME/Elicit]
b.	šú-n**ə**-po	/sú-n**i**-po/	‘sew-Appl-Fut:pl’/ ‘coser-Appl-Fut:pl’	[BF Applicatives/Elicit]
c.	tó-p**ə**-ma	/tó-p**i**-ma/	‘bury-Rev-Fut:sg’/ ‘enterrar-Rev-Fut:sg’	[BF 05 1:113/Elicit]
d.	pór**ə**-ki	/pór**i**-ki/	‘cover-Pst:1’/ ‘tapar-Pst:1’	[AH 05 1:125/Elicit]
e.	nawí-n**ə**ra	/nawí-n**u**ra/	‘sing-Caus:I’/ ‘cantar-Caus:I’	[BF 07 VDB/Elicit]
f.	tò-n**ə**ra	/tò-n**u**ra/	‘take-Caus:I’/ ‘llevar-Caus:I’	[LEL 07 Ind_Caus/Elicit]

High vowel reduction to schwa is gradient, and favored when preceding or following a back, round vowel or *a*. I have not documented any cases of unstressed high vowel reduction to schwa in pre-tonic position with open class lexical items or in word-final position.[17]

2.3.1.2.4 Stressed-conditioned vowel deletion

Unstressed vowels may also undergo posttonic syncope. In (62), the deleted vowel is in bold face in the underlying representation. Deletion does not target word-final unstressed vowels.

[17] But it is common to find function words with pre-tonic vowels reducing to schwa in fast speech, e.g. adverb *birá*, ‘really’, is often realized as [b**ə**rá].

62) Posttonic vowel deletion

	Forms	*UR*	*Gloss*	
a.	na-kúr-nir-	/na-kúr**i**-nale-/	‘pl-help-Desid-’/ ‘pl-ayudar-Desid’	[BF 07 Desid/Elicit]
b.	na-kúri	/na-kúri/	‘pl-help’/‘pl-ayudar’	[SF 05 1:102/Elicit]
c.	murubé-n-ti-	/murubé-n**i**-ti-/	‘get.close-Appl-Caus’/ ‘acercarse-Appl-Caus’	[BF 07 applicatives/Elicit]
d.	wató-n-ki-	/wató-n**a**-ki-/	‘stretch-Tr-Appl’/ ‘estirarse-Tr-Appl’	[SF 07 Caus,_ME/Elicit]
e.	wató-ni-ri	/wató-na-li/	‘stretch-Tr-Pst’/ ‘estirarse-Tr-Pst’	[SF 06 6:73-77/Elicit]
f.	to-nál-čin-	/to-nál**e**-čane-/	‘take-Desid-Ev-Ep’/ ‘llevar-Desid-Ev-Ep’	[BF 06 5:148-150/Elicit]
g.	to-nári	/to-nále/	‘take-Desid’/ ‘llevar-Desid’	[BF 06 5:148-150/Elicit]
h.	ko’-nál-ti-	/ko’-nál**e**-ti-/	‘eat-Desid-Caus’/ ‘comer-Desid-Caus’	[SF 06 6:75-76/Elicit]
i.	ko’-nári	/ko’-náre/	‘eat-Desid’/ ‘comer-Desid’	[SF 06 6:75-76/Elicit]

As the examples above show, posttonic vowel deletion targets underlying high (62a, 62c), low (62d), and mid (62f, 62h) vowels.

Deletion does not target pretonic vowels as a general phonological process, but instances of pretonic deletion can be found in morphologically specific contexts. The forms in (63) involve pretonic deletion with root-inchoative sequences. (63b, d, f) show a corresponding form with the same root with no deletion. Other pretonic effects which are stress-conditioned (such as syllable truncation in morphologically specific contexts) will be discussed in Chapters 4 (§4.2.4) and 6 (§6.4).

63) Morphologically conditioned pretonic deletion

	Forms	*UR*	*Gloss*
a.	bam-pá-sa	/bam**i**-bá-sa/	'year-Inch-Cond'/'años-Inch-Cond' [SF 06 tx12/Text]
b.	bam**í**-bi-ri	/bamí-ba-li/	'year-Inch-Pst'/'años-Inch-Pst' [SF 04 escuela/Text]
c.	sam-pá-ma	/sam**i**-bá-ma/	'get.wet-Inch'/'mojarse-Inch' [SF 04 1:113/Elicit]
d.	sam**í**-ri	/samí-li/	'get.wet-Pst'/'mojarse-Pst'
e.	om-pá	/ome-bá/	'be.able-Inch'/'poder-Inch' [RF 04 1:117/Elicit]
f.	om**é**-ri	/omé-li/	'be.able-Pst'/'poder-Pst' [RF 04 1:115/Elicit]

Posttonic vowels may reduce or delete, as part of a gradient process that is favored in certain contexts.

2.3.2 Syllables

In this section I describe the syllabification patterns of Choguita Rarámuri. Native speakers segment words into syllables in careful speech pronunciation, and several suprasegmental processes make crucial reference to the syllabic structure of words, such as stress assignment (described above in §3.1) and glottal stop prosody (described below in §3.3).

2.3.2.1 Underlying syllable structure

The underlying syllable in Choguita Rarámuri is an open syllable, CV. Onsets are optional, and never elaborate to a cluster. As in the closely related Taracahitic language, Guarijío (Miller 1996), the only possible (underlying) coda is glottal stop. CV, V, CV', and V’ syllables in word-initial position are illustrated in (64). These syllable types are exemplified in monomorphemic words.

64) Word-initial syllable types

	CV		
a.	ta.kí	‘instrumental violin piece’/ ‘pieza instrumental de violin’	[SF 06 6:73/Elicit]
b.	pa.kó	‘wash(dishes)’/‘lavar(trastes)’	[JH 04 1:3/Elicit]
c.	ra.pá	‘split’/‘partir’	[AH 05 1:131/Elicit]
d.	ba.kí	‘go.in:sg’/‘entrar:sg’	[BF 05 1:133/Elicit]
	Onsetless V syllables		
e.	o.se.rí	‘paper, letter’/‘papel, carta’	[SF 06 6:74/Elicit]
f.	i.wí	‘breathe’/‘respirar’	[JH 04 1:1/Elicit]
g.	u.čú	‘sting (a bug)’/‘picar’	[LEL 07 1:6/Elicit]
h.	a.čí	‘laugh’/‘reirse’	[SF 05 1:98/Elicit]
	CV’ syllables		
i.	sa’.pá	‘meat’/‘carne’	[MGD 06 6:73/Elicit]
j.	bi’.wá	‘clean’/‘limpiar’	[BF 04 1:112/Elicit]
k.	wa’.kó	‘grunt’/‘gruñir’	[AH 05 1:147/Elicit]
l.	ra’.rá	‘buy’/‘comprar’	[SF 04 1:74/Elicit]
	V’ syllables		
m.	u’.ká	‘choose’/‘escoger’	[SF 07 DB/Elicit]
n.	a’.tá	‘arch’/‘arco’	[SF 07 DB/Elicit]
o.	i’.pé	‘gather small things’/ ‘juntar cosas pequeñas’	[BF 06 4:189/Elicit]
p.	o’.té.ri	‘burp’/‘eruptar’	[SF 05 1:177/Elicit]

The only types of syllables found word-medially in monomorphemic words are CV syllables. These are exemplified in (65). There are no word-medial CV’ syllables with glottal stop coda, since glottal stop is restricted to appear between the first and second syllable of the word (cf. §2.3.3).

65) Word-medial CV syllables

a.	a.ké	‘hear, listen’/‘escuchar, oir’	[GD 06 6:107/Elicit]
b.	ko.ri.mé.ni	‘bees, honey’/‘abejas, miel’	[SF 07 NDB/Elicit]
c.	na.ha.rá.pa	‘wrestle’/‘luchar’	[BF 07 VDB/Elicit]
d.	su.tu.bé.či	‘to trip’/’tropezarse’	[LEL 06 5:35/Elicit]

Word-medial onsetless (V) syllables are not attested in monomorphemic verbal roots, but can be found in polysyllabic nouns. Some of these nominal roots (e.g. (66a) and (66c)) are lexicalized compounds.

66) Word-medial V syllables

a.	a.wa.kó.**a.**ni	‘scorpion’/’alacrán’	[SF NDB/Elicit]
b.	ki**.o.**rí	‘esquiate (corn drink)’	[LEL 04 5:127/Elicit]
c.	čo.ké**.a.**ri	‘toasted beans’/ ‘frijoles tostados’	[SF NDB/Elicit]
d.	ko**.a.**-rá	‘forehead-Poss’/‘frente-Poss’	[MGD 06 1:107/Elicit]

Word-medial onsetless (V) syllables are found after morpheme boundaries in morphologically complex words. A few examples are given in (67).

67) Word-medial V syllables in morpheme boundaries

a.	wi.pi.só**-.a**	‘hit-Prog’/‘apalear-Prog’	[BF 04 1:112/Elicit]
b.	bu.su.ré**-.a**	‘wake.up-Prog’/‘despertar-Prog’	[AH 05 1:79/Elicit]
c.	su.rí-**.a**	‘fight.over.sth-Prog’/ ‘disputar-Prog’	[SF 05 1:100/Elicit]
d.	na.kí**-.o**	‘want-Ep’/‘querer-Ep’	[BF 04 1:91/Elicit]
e.	no.ká**-.o**	‘move:tr-Ep’/‘mover:tr-Ep’	[BF 05 1:114/Elicit]
f.	pi.ré**-.o**	‘dwell:pl-Ep’/ ‘habitar:pl-Ep’	[BF 05 1:161/Elicit]

All phonemic consonants can be onsets, except for glottal stop (which has a limited distribution and is never found word-initially). There are no complex onsets.

Table 6 summarizes the types of syllables in Choguita Rarámuri and examples of each syllable type in word-initial and word-medial position.

Table 6: Syllable types and their distribution in Choguita Rarámuri

Type	**Word-initial position**	**Word-medial position**
V	**i.**wí 'breathe'	a.wa.kó.**a**.ni 'scorpion'
CV	**pa.**kó 'wash dishes'	o.**se.**rí 'paper/letter'
CV'	**sa'.**pá 'meat'	
V'	**o'.**kó 'pain'	

Taking onset complexity (singleton vs. CC onsets) and presence and elaboration of codas as indices of syllable structure complexity (following Maddieson 2005), we can conclude that Choguita Rarámuri has a simple syllable structure in underlying representations: there are no elaborate onsets beyond a single consonant and no codas, except for glottal stop.

In surface forms, however, posttonic deletion gives rise to heterosyllabic consonant clusters, yielding a moderate level of syllable complexity in surface realizations. This is discussed next.

2.3.2.2 Consonant sequences

2.3.2.2.1 Consonant clusters

There are very few restrictions as to the types of derived clusters that are possible. One of these restrictions involves voiced oral stops. As noted in §2.2.4, there is a productive rule of oral stop devoicing in post-consonantal position, fed by posttonic vowel deletion.

There are, thus, no surface sequences involving a voiced stop following a voiceless consonant in a consonant cluster. This is schematized in (68).

68) Stop devoicing

*[-voice] C – [+voice] stop

Bilabial oral stops in general form heterosyllabic clusters with other voiceless stops and with nasal stops. Nasal stops can form consonant clusters with all other consonants except for other sonorants (although some CC sequences involving identical sonorants are discussed below in §3.2.2.2).

Alveopalatal affricates, on the other hand, may form a heterosyllabic cluster with a following nasal stop (69a-b) or a velar stop (69c).

69) čN derived clusters

	Forms	*UR*	*Gloss*
a.	samé**č-m**a	/saméča-ma/	'soak-Fut:sg'/'remojar-Fut:sg' [BF 05 1:135/Elicit]
b.	rata-bá-**č-n**i	/rata-bá-ča-ni/	'heat-Inch-Tr:Pl-Appl'/ 'calentar-Inch-Tr:Pl-Appl' [SF 05:123/Elicit]
c.	rata-bá-**č-k**i	/rata-bá-ča-ki/	'heat-Inch-Tr:Pl-Appl'/ 'calentar-Inch-Tr:Pl-Appl' [SF 05:123/Elicit]

Another restriction on derived consonant clusters in Choguita Rarámuri involves alveopalatal affricates: a sequence of an alveopalatal affricate followed by an alveolar stop forms an illicit consonant cluster. Repairs include metathesis (70a-b), and progressive, assimilatory deaffrication of the to the alvepalatal stop (70c):

70) Repair of *čt* cluster

	Forms	*UR*	*Gloss*
a.	sutubé<-**t**i>-**č**i-ri	/sutubéči-ti-li/	'trip-Caus-Pst'/ 'tropezarse-Caus-Pst' [SF 09-05-07/Elicit]
b.	sutubé**t**-**č**i-ma	/sutubéči-ti-ma/	'trip-Caus-Fut:sg'/ 'tropezarse-Caus-Fut:sg' [SF 07 1:183/Elicit]
c.	sutubé**t**-ti-ri	/sutubéči-ti-li/	'trip-Caus-Pst'/ 'tropezarse-Caus-Pst' [SF 07 1:183/Elicit]

Table 7 exemplifies some of the derived consonant clusters attested in the corpus.

Table 7: Derived CC clusters

C1	C2	Example words *Form*	*Gloss*
p	K	tó-**p-k**i	'bury-Rev-Pst:1'/'enterrar-Rev-Pst:1'
p	M	čabó-**p-m**a	'beard-Rev-Fut:sg'/'barba-Rev-Fut:sg'
p	T	rarahí**p-t**i-čane	'run.race-Caus-Ev'/'correr.carrera-Caus-Ev'
p	Č	rono-rée**p-č**in-o	'leg+cut-Ev-Ep'/'pierna+cortar-Ev-Ep'
b	T	čukú-**b-t**i-si-a	'be.bent-Inch-Caus-Mot-Prog'/ 'estar.doblado-Inch-Caus-Mot-Prog'
t	Č	nará-**t-č**ane	'cry-Caus-Ev'/'llorar-Caus-Ev'
t	K	ubá-**t-k**i	'bathe-Caus-Pst:1'/'bañarse-Caus-Pst:1'
k	T	tičí**k-t**i-ma	'comb-Caus-Fut:sg'/'peinarse-Caus-Fut:sg'
k	Č	tičí**k-č**ane	'comb-Ev'/'peinarse-Ev'
k	M	mičí-**k-m**a	'carve-Appl-Fut:sg'/'labrar-Appl-Fut:sg'
m	T	bačí**m-t**i-po	'sprinkle-Caus-Fut:pl'/'rociar-Caus-Fut:pl'
m	P	bahí**m-p**o	'sprinkle-Fut:pl'/'rociar-Fut:pl'
n	K	láa**n-k**i	'bleed-Pst:1'/'sangrar-Pst:1'
n	M	bahí**n-m**a	'swell-Fut:sg'/'hincharse-Fut:sg'
n	Č	sú-**n-č**ane	'sew-Appl-Ev'/'coser-Appl-Ev'
n	S	ikí-**n-s**i-o	'bite-Desid-Mot-Ep'/'morder-Desid-Mot-Ep'
r	S	ko'-ná**r-s**a	'eat-Desid-Cond'/'comer-Desid-Cond'
r	M	bené-**r-m**a	'learn-Caus-Fut:sg'/'aprender-Caus-Fut:sg'
r	N	na-kú**r-n**ir-o	'Pl-help-Desid-Ep'/'pl-ayudar-Desid-Ep'
r	P	wa'rú-**r-p**o	'be.big-Caus-Fut:pl'/'grande-Caus-Fut:pl'
r	T	táa**r-t**i-ma	'count-Caus-Fut:sg'/'contar-Caus-Fut:sg'
r	Č	kočí-**r-č**ane	'sleep-Caus-Ev'/'dormir-Caus-Ev'
l	Č	ru-náa**l-č**in-o	'say-Desid-Ev-Ep'/'decir-Desid-Ev-Ep'
s	P	ikí-**s-p**o	'happen-Mot-Fut:pl'/'pasar-Mot-Fut:pl'

s	Č	opé**s-č**ani	‘vomit-Ev’/‘vomitar-Ev’
s	T	opé**s-t**i-nil-mo	‘vomit-Caus-Desid-Fut:sg’/ ‘vomitar-Caus-Desid-Fut:sg’
s	N	ikí-**s-n**iri	‘happen-Mot-Desid’/‘pasar-Mot-Desid’
w	Č	rarí-**w-č**ane	‘buy-Appl-Ev’/‘comprar-Appl-Ev’
w	N	asá-**w-n**are	‘sit-Appl-Desid’/‘sentarse-Appl-Desid’

There are thus almost no restrictions as to possible derived consonant clusters in Choguita Rarámuri, except for sequences involving alveopalatal affricates and voiceless stops.

2.3.2.2.2 Derived geminates

Posttonic vowel deletion also yields sequences of identical stops in morphologically derived environments. The most common type of derived geminates in Choguita Rarámuri involves both oral (71) and nasal (72) stops at the bilabial place of articulation.

71) Bilabial oral stop geminates

	Forms	*UR*	*Gloss*	
a.	naté**p-p**o	/natépi-po/	‘meet.up-Fut:pl’/ ‘encontrarse-Fut:pl’	[BF 07 el339/Elicit]
b.	čomaí**p-p**o	/čomaípi-po/	‘cover.face-Fut:pl’/ ‘cubrirse-cara-Fut:pl’	[BF 07 1:181/Elicit]
c.	tó-**p-p**o	/tó-pi-po/	‘bury-Rev-Fut:pl’/ ‘enterrar-Rev-Fut:pl’	[BF 05 1:113/Elicit]
d.	moté**p-p**o	/motépi-po/	‘make.braids-Fut:pl’/ ‘trenzar-Fut:pl’	[BF 05 1:113/Elicit]
e.	čabó-**p-p**o	/čabó-pi-po/	‘beard-Rev-Fut:pl’/ ‘barba-Rev-Fut:pl’	[BF 05 1:113/Elicit]

72) Bilabial nasal stop geminates

	Forms	*UR*	*Gloss*	
a.	kuná-**m-m**a	/kuná-mi-ma/	'husband-Die-Fut:sg'/ 'marido-morir-Fut:sg'	[BF 04 1:37/Elicit]
b.	bará**m-m**a	/barámi-ma/	'be.thirsty-Fut:sg'/ 'tener.sed-Fut:sg'	[BF 05 1:132/Elicit]
c.	bačí**m-m**a	/bačími-ma/	'sprinkle-Fut:sg'/ 'rociar-Fut:sg'	[BF 05 1:135/Elicit]
d.	ú**m-m**a	/húmi-ma/	'run:pl-Fut:sg'/ 'correr:pl-Fut:sg'	[JH 04 1:19/Elicit]

Marginally attested are oral stop geminates are shown in (73). These geminates involve alveolars (73a), velars (73b), and alveolar nasal stop geminates (73c).

73) Marginal types of geminates

	Forms	*UR*	*Gloss*	
a.	nahí**t-t**i-po	/nahíti-ti-po/	'become-Caus-Fut:pl'/ 'convertirse-Caus-Fut:pl'	[BF 07 el339/Elicit]
b.	yó**k-k**i	/yóki-ki/	'paint-Pst:1'/ 'pintar-Pst:1'	[BF 07 el339/Elicit]
c.	pičí-**n-n**il-ma	/pičí-ni-nale-/	'sweep-Appl-Desid'/ 'barrer-Appl-Desid'	[BF 06 4:145/Elicit]

Fricative geminates ([ss]) and alveopalatal affricate geminates ([čč]) are not attested.

This process is subject to speaker variation, as there are sequences of syllables with identical onsets that undergo haplology (cf. §3.7.2.2). The choice between derived geminates and haplology seems to be correlated with idiolects, although I have documented both phenomena with all speakers.

2.3.2.3 Vowel sequences

2.3.2.3.1 Derived long vowels

While vowel length is not contrastive in Choguita Rarámuri, there are different morphophological and phonological sources for derived long vowels. Two of these sources, compensatory lengthening and passive-induced lengthening, will be discussed in Chapter 3. A third source for derived long vowels is found at morpheme boundaries: in (74), the vowel initial progressive *–a* suffix creates a long vowel sequence with roots with final, stressed *a*.

74) Derived long low, central vowels

	Form	*Gloss*	
a.	hur**á-a**	'send-Prog'/'mandar-Prog'	[BF 05 1:151/Elicit]
b.	bi'w**á-a**	'clean-Prog'/'limpiar-Prog'	[BF 05 1:112/Elicit]
c.	os**á-a**	'read/write-Prog'/'leer/escribir-Prog'	[AH 05 1:127/Elicit]
d.	čiw**á-a**	'rip-Prog'/'trozar-Prog'	[RF 04 1:104/Elicit]

The imperfective suffix *–e* undergoes vowel reduction, and yields a long vowel sequence with roots with final, stressed *i*, as shown in (75).

75) Derived long high, front vowels

	Form	*Gloss*	
a.	suw**í-i**	'eat.up-Impf'/'acabarse-Impf'	[SF 04 1:119/Elicit]
b.	is**í-i**	'urinate-Impf'/'orinar-Impf'	[SF 05 1:80/Elicit]
c.	aw**í-i**	'dance-Impf'/'bailar-Impf'	[RF 04 1:93/Elicit]
d.	ča'**í-i**	'grab-Impf'/'agarrar-Impf'	[SF 05 1:100/Elicit]

Finally, there are also minimal pairs developed through h deletion (76) and labio-velar semi-vowel deletion (77) in word-medial position. Both of these processes (exemplified in (76b) and (77b) below) yield a long vowel sequence.

76) h deletion

	Forms	UR	Gloss	Optional
a.	náta	/náta/	'think'/'pensar'	
b.	n**áa**ta	/na**h**áta/	'follow'/'seguir'	~ naháta

77) Labio-velar semi-vowel deletion

	Forms	UR	Gloss	Optional
a.	nár-ma	/nári-ma/	'ask-Fut:sg'/ 'preguntar-Fut:sg'	
b.	n**áa**r-ma	/na**w**áru-ma/	'send-Fut:sg'/ 'mandar-Fut:sg'	~ nawáru-ma

Forms with derived long vowels in (76b) and (77b) coexist with forms with no *h*-deletion and labio-velar semi-vowel deletion. These forms are subject to a great deal of speaker variation, and are likely to represent a change in progress.

2.3.2.3.2 Diphthongs

Other vowel sequences involve diphthongs. Attested diphthongs in Choguita Rarámuri include falling diphthongs (Vi). These are exemplified in (78).

78) Falling diphthongs

	Rhymes	Examples	Gloss	
a.	ei	sem**é-i**	'play.violin-Impf'/ 'tocar.violin-Impf'	[SF 05 1:85/Elicit]
b.	oi	mak**ói**	'ten'/'diez'	[SF 07 in243/Text]
c.	ui	sik**úi**	'ant'/'hormiga'	[SF 05 *láchimi*/Text]
d.	ai	k**ai**ná-niri	'yield.harvest-Desid'/ 'darse.cosecha-Desid'	[SF 05 1:180/Elicit]

These falling diphthongs occur morpheme internally and accross morpheme boundaries. As the examples in (78) show, in these V_1V_2 sequences V_1 is often but not necessarily stressed.

High front vowels are also attested in rising diphthongs with low central vowel offglides (79a) and mid back vowel offglides (79b).

79) Rising diphthongs

	Rhymes	*Examples*	*Gloss*	
a.	ia	či.wá-.n**i-a**	'rip:Appl-Tr-Prog'/ 'trozar:Appl-Tr-Prog'	[RF 04 1:104/Elicit]
		a.tí.s**i-a**	'sneeze-Prog'/ 'estornudar-Prog'	[BF 05 1:111/Elicit]
		wičó-s**i-a**	'wash-Mot-Prog'/ 'lavar-Mot-Prog'	[RF 04 1:81/Elicit]
b.	io	čo.í-.s**i-o**	'turn.off-Mot-Ep'/ 'apagarse-Mot-Ep'	[BF 05 1:112/Elicit]
		si.rú-n.-s**i-o**	'hunt-Appl-Mot-Ep'/ 'cazar-Appl-Mot-Ep'	[BF 05 1:112/Elicit]

Rising diphthongs are unstressed and word-final.

Finally, labio-velar onset semi-vowelss turn into labio-velar offglides after posttonic vowel deletion targets the nucleus of the labio-velar semi-vowel onset. This is shown in (80).

80) Diphthongization of labio-velar semi-vowels

	w onset	*diphthong*	*Gloss*	
a.	í.**w**i.ri	í**w**-ri	'bring.for-Pst'/ 'traerle-Pst'	[BF 06 5:75/Elicit]
b.	kučí.**w**i.-ma	ku.čí**w**.-ma	'have.kids-Fut:sg'/ 'tener.hijos-Fut:sg'	[BF 06 6:74/Elicit]
c.	winomí.**w**i.pi	wi.no.mí**w**-.pi	'have.money-Irr:pl'/ 'tener.dinero-Irr:pl'	[BF 06 6:74/Elicit]

As will be shown in §3.2.4.2, these labio-velar offglides can be weakened and monophthongized with its nucleus.

2.3.2.3.3 Vowel hiatus

Choguita Rarámuri has a series of heterosyllabic vowel sequences. Attested hiatus sequences across morpheme boundaries involve a stressed vowel followed by a low central vowel (81), and followed by mid back vowels, as exemplified in (82).

81) Hiatus sequences with low central vowels

	Form	*Gloss*	
a.	m**é.-a**	'bring-Prog'/'traer-Prog'	[SF 04 1:73/Elicit]
b.	re.t**é.-a**	'play-Prog'/'jugar-Prog'	[SF 04 1:76-78/Elicit]
c.	wi.pi.s**ó.-a**	'hit-Prog'/'apalear-Prog'	[BF 04 1:112/Elicit]
d.	bi.t**ó.-a**	'twist-Prog'/'torcer-Prog'	[SF 04 1:109/Elicit]
e.	ča'.**í.-a**	'grab-Prog'/'agarrar-Prog'	[BF 05 1:133/Elicit]
f.	ti.č**í.-a**	'comb-Prog'/'peinar-Prog'	[RF 04 1:116/Elicit]
g.	ri.m**ú.-a**	'dream-Prog'/'soñar-Prog'	[RF 04 1:107/Elicit]
h.	š**ú.-a**	'sew-Prog'/'coser-Prog'	[RF 04 1:81-82/Elicit]

82) Hiatus sequences with mid, back vowels

	Form	*Gloss*	
a.	ni.k**á.-o**	'bark-Ep'/'ladrar-Ep'	[BF 05 1:114/Elicit]
b.	p**á.-o**	'throw-Ep'/'tirar-Ep'	[BF 04 VDB/Elicit]
c.	ni.k**é.-o**	'bark.Appl-Ep'/'ladrar:Appl-Ep'	[BF 07 VDB(53)/Elicit]
d.	pir**é.-o**	'dwell:pl-Ep'/'habitar:pl-Ep'	[BF 05 1:161/Elicit]
e.	na.k**í.-o**	'want-Ep'/'querer-Ep'	[BF 04 1:91/Elicit]
f.	bo.ti.w**í.-o**	'sink-Ep'/'hundirse-Ep'	[SF 05 1:120/Elicit]
g.	ši.r**ú.-o**	'trap/hunt-Ep'/'atrapar/cazar-Ep'	[SF 05 1:136/Elicit]
h.	na.r**ú.-o**	'exist-Ep'/'existir-Ep'	[BF 04 1:93/Elicit]

So far, the examples presented show verbal roots with final stress followed by the progressive suffix *–a* (81) or by the epistemic suffix *–o* (82). There are no underlying monomorphemic hiatus sequences with verbal roots (although semi-vowel deletion yields vowel hiatus sequences, As will be discussed in §3.2.4.1). Root-internal vowel hiatus, however, is attested with nominal roots (83). These root-internal hiatus sequences are only attested with stressed vowels followed by mid, central vowels. I did not record any monomorphemic hiatus sequences with final mid back vowels.

83) Nominal root-internal hiatus

	Form	*Gloss*	
a.	čo.k**é.a**.ri	'mountain dove'/'paloma de monte'	[SF NDB/ Elicit]
b.	ko.č**í.a**-ra	'eyebrow-Poss'/'ceja-Poss'	[MGD 06 1:107/Elicit]
c.	w**í.a**	'rope'/'mecate'	[JH 04 1:17/ Elicit]
d.	a.wa.k**ó.a**.ni	'scorpion'/'alacrán'	[SF NDB/Elicit]

Hiatus sequences, thus, show an interesting assymmetry in the phonological behavior of words of different lexical categories: hiatus sequences are licensed with nominal roots, but are only attested across morpheme boundaries with verbal roots.[18]

2.3.2.4 Semi-vowels

2.3.2.4.1 Semi-vowel deletion

Choguita Rarámuri has word-medial palatal and labio-velar semi-vowels. Example words in (84-85) show that semi-vowels occur independent of any particular vowel quality.

84) Word-medial palatal semi-vowels

	Form	*Gloss*	
a.	ki**j**óči	'fox'/'zorra'	[SF 08 1:103/Elicit]
b.	ko**j**á	'squat'/'estar en cuclillas'	[SF 08 1:103/Elicit]
c.	na**j**ú	'be sick'/'estar enfermo'	[RF 04 1:121 /Elicit]
d.	hi**j**é	'follow trace'/'seguir la huella'[19]	[SF 05 1:98/Elicit]

[18] In Chapter 6, I discuss how vocalic (onsetless) suffixes may induce deletion of the precedeing morpheme's vowel in a morphologically defined context (§6.5).

85) Labio-velar semi-vowels

	Form	*Gloss*	
a.	ku**w**é	'dry season'/'tiempo de secas'	[NDB/Elicit]
b.	arí**w**i	'set dusk' / 'atardecer'	[NDB/Elicit]
c.	ma**w**éči	'cultivating field'/'campo de cultivo'[20]	[NDB/Elicit]
d.	ka**w**í	'hill'/'cerro'	[NDB/Elicit]

Word-medial semi-vowels are optionally deleted. The palatal semi-vowel, for instance, is optional when preceded by a low central vowel and followed by stressed, front mid vowel. This is shown in (86).

86) Optional deletion of palatal semi-vowels

	Form 1	*Form 2*	*Gloss*	
a.	ra**j**éniri	~ raéniri	'sun'/'sol'	[SF 06 in61/Interv]
b.	ma**j**é	~ maé	'think'/'pensar'	[BF 07 el326/Elicit]
c.	ka**j**éni-ri	~ kaéni-ri	'harvest-Pst'/ 'cosechar-Pst'	[SF 07 el327/Elicit]
d.	pa**j**éri	~ paéri	'dance sutubúri'/ 'bailar sutubúri'	[SF 07 2:34/Elicit]

I have also found examples of optional labio-velar semi-vowels. The examples in (87) involve a stressed mid, back vowel and a high, front vowel flanking the labio-velar semi-vowel. Optionally, these words are produced with a falling diphthong.

87) Optional labio-velar semi-vowels

	Medial w	*No medial w*	*Gloss*	
a.	sinó**w**i	~ sin**ói**	'snake'/'víbora'	[SF 04 1:17/Elicit]
b.	reró**w**i	~ rer**ói**	'potato'/'papa'	[SF 07 NDB(200)/Elicit]

[19] Tarnslated as *'huellar'* by Rarámuri speakers.
[20] This refers to the burnt field where beans are sown.

In (88), I show examples where there is no palatal (88a-c) or labio-velar (88d-f) semi-vowel deletion word-medially. The unattested forms in the second column in (88) show hypothetical forms with no word-medial semi-vowel.

88) No semi-vowel deletion

	Medial G	*Unattested*	*Gloss*	
a.	i**j**óni	*ióni	'nag'/'regañar'	[SF 05 1:83/Elicit]
b.	ni**j**ú	*niú	'escape'/'escaparse'	[RF 04 1:118/Elicit]
c.	ko**j**éra	*koéra	'headband'/'koyéra'	[LEL 06 5:127/Elicit]
d.	ne**w**á	*neá	'make'/'hacer'	[SF 04 1:67/Elicit]
e.	ruru**w**á	*ruruá	'be cold'/'tener frio'	[BF 05 1:112/Elicit]
f.	na**w**á	*naá	'arrive'/'llegar'	[SF 05 1:73/Elicit]

While semi-vowels delete productively, there is no evidence of productive semi-vowel epenthesis in Choguita Rarámuri. The only forms with epenthetic semi-vowels are shown in (89). In these examples a monosyllabic root adds the applicative suffix *–é*.

89) Lexicalized cases of semi-vowel epenthesis

	Forms	*UR*	*Gloss*	
a.	ru-**j**é	/ru-é/	'tell-Appl'	[BF 07 el340/Elicit]
b.	ru-**w**é	/ru-é/	'tell-Appl' 'contar-Appl'	[BF 07 el340/Elicit]
c.	bu-**j**é	/bu-é/	'wait-Appl'	[RF 04 1:67/Elicit]
d.	bu-**w**é	/bu-é/	'wait-Appl'/ 'esperar-Appl'	[RF 04 1:67/Elicit]

Other instances of applicative –é suffixation do not involve optional palatal and labio-velar semi-vowel epenthesis, and so these cases seem to be lexicalized. There is thus no evidence for a productive, general semi-vowel epenthesis process in the language.

2.3.2.4.2 Semi-vowel monophthongization

As shown in §2.3.2.3.2, labio-velar onset semi-vowels turn into labio-velar offglides after posttonic vowel deletion. Some examples are provided again in (90).

90) Diphthongization of labio-velar semi-vowels

	w onset	*diphthong*	*Gloss*	
a.	í.**wi**.ri	í**w**-ri	'bring.for-Pst'/ 'traerle-Pst'	[BF 06 5:75/Elicit]
b.	kučí.**wi**.-ma	ku.čí**w**.-ma	'have.children-Fut:sg'/ 'tener.hijos-Fut:sg'	[BF 06 6:74/Elicit]
c.	winomí.**wi**.pi	wi.no.mí**w**-.pi	'have.money-Irr:pl'/ 'tener.dinero-Irr:pl'	[BF 06 6:74/Elicit]

There is a gradient semi-vowel weakening process: after posttonic vowel deletion, labio-velar semi-vowels can range from a fully diphthongal velar rhyme to a completely monphthongized variant. This gradient process is schematized in (91):

91) Semi-vowel weakening and monophthongization

a. $_{\sigma}[\mathrm{w} \dashrightarrow \mathrm{Vw}]_{\sigma}$
b. $\mathrm{Vw}]_{\sigma} \dashrightarrow \mathrm{V^{w}}]_{\sigma}$
c. $\mathrm{V^{w}}]_{\sigma} \dashrightarrow \mathrm{V_1V_1}$

What this scheme illustrates is a process whereby a labio-velar semi-vowel in onset position is resyllabified as a coda after posttonic deletion (91b); this coda labio-velar semi-vowel may optionally be weakened to a short offglide of the nucleus vowel (91b); the short offglide may be further weakened by undergoing monophthongization with the nucleus vowel host, yielding a long vowel sequence (91c).

This weakening process is exemplified in (92). The segments in question are in bold face. The labio-velar semi-vowel in (92b) is an underlying voiced, bilabial stop (realized as a voiced bilabial approximant in (92a)). (92d) and (92f) have underlying labio-velar semi-vowels.

92) Gradient weakening and monophthongization of /w/

	Forms	*Gloss*	
a.	[ruɾučíβ̞ i-a]	‘sprinkle-Prog’/‘rociar-Prog’	[SF 07 el170/Elicit]
b.	[ruɾučí**w**-ma]	‘sprinkle-Fut:sg’/‘rociar-Fut:sg’	[SF 07 el170/Elicit]
c.	[ruɾuč**íi**-ma]	‘sprinkle-Fut:sg’/‘rociar-Fut:sg’	[SF 07 el170/Elicit]
d.	[tilú**w**i]	‘gargle!’/‘haz gárgaras!’	[BF 07 1:43/Elicit]
e.	[til**úu**-ma]	‘gargle-Fut:sg’/ ‘hacer.gárgaras-Fut:sg’	[BF 07 1:43/Elicit]
f.	[binihí-**w**-ma]	‘accuse-Appl-Fut:sg’/ ‘acusar-Appl-Fut:sg’	[BF 07 2:48/Elicit]
g.	[binih**í-i**-ma]	‘accuse-Appl-Fut:sg’/ ‘acusar-Appl-Fut:sg’	[BF 07 2:48/Elicit]
h.	[napí**w**iri]	‘nixtamal’	[08 1:34/Conv, Elicit]
i.	[napí**w**i-po]	‘make.nixtamal-Fut:pl’/ ‘hacer.nixtamal-Fut:pl’	[08 1:34/Conv, Elicit]
j.	[nap**íi**-po]	‘make.nixtamal-Fut:pl’/ ‘hacer.nixtamal-Fut:pl’	[LEL 08 1:34/Elicit]

This process is not subject to speaker variation, and the choice between the labio-velar offglide and monophthongization seems to be correlated with rate of speech and care of pronunciation.

2.3.3 Glottal stop: an initial disyllabic window

As discussed in §2.3.2.1, Choguita Rarámuri syllables are basically CV in shape, with no codas, except for glottal stop. This glottal stop displays strict restrictions on its distribution: glottal stop can only occur between the first and second syllable, either intervocalically (93) or pre-consonantally (94).

93) Intervocalic glottal stop

	Form	*Gloss*	
a.	ko’á	‘eat’/‘comer’	[BF 04 1:13/Elicit]
b.	ra’íča	‘speak’/‘hablar’	[RF 04 1:78/Elicit]
c.	ba’urá	‘brand livestock’/ ‘marcar con fierro los animales’	[SF VDB/Elicit]
d.	bo’a-rá	‘feathers, fur’/‘plumas, pelaje’	[LEL 5:127-142/Elicit]
e.	mo’é	‘weave’/‘tejer’	[SF 05 1:143/Elicit]

94) Pre-consonantal glottal stop

	Form	*Gloss*	
a.	bi’wá	‘clean’/‘limpiar’	[SF 04 1:73/Elicit]
b.	ra’ná	‘explode’/‘tronar’	[SF 04 1:81/Elicit]
c.	a’tá	‘arch’/‘arco’	[SF NDB/Elicit]
d.	ba’čiwí	‘sound of water dripping’/ ‘sonido de goteo’	[BF 07 2:31/Elicit]
e.	bi’rí	‘twist’/ ‘torcerse’	[SF 04 1:114/Elicit]

The examples in (95) show that glottal stop is associated with the initial syllable, as opposed to immediately pretonic, position. Each one of the following examples has a CV’VCV structure with stress in the third syllable.

95) Glottal stop is not immediately pre-tonic

	Form	*Gloss*	*Translation*	
a.	bo’o-bú	‘unpluck-Tr’	‘unpluck it!’/ ‘desplúmalo!’	[SF 08 1:51/Elicit]
b.	ra’amá	‘endure.Imp’	‘endure it!’/ ‘aguanta!’	[RF 04 1:64/Elicit]
c.	ra’ičá	‘speak.Imp’	‘speak!’/‘habla!’	[SF 04 1:98/Elicit]

On the other hand, there are no roots with both first syllable stress and glottal stop, nor monosyllabic roots with glottal stop (CV’) attested in the corpus.

Finally, when roots bearing a glottal stop (such as *bi'wá*, 'clean'), incorporate a body-part nominal root, the glottal stop underlying to the verbal root is deleted in the surface form, as in (96).

96) Glottal stop deletion in incorporation

	Forms	*UR*	*Gloss*	
a.	kuta+bíri	/kutá+bi'rí/	'neck+twist'/ 'cuello+torcer'	[BF 07 1:163/Elicit]
b.	čoma+bíwa	/čomá+bi'wá/	'mucus+clean'/ 'mocos+limpiar'	[SF 07 VDB/Elicit]
c.	wita+bíwa	/wita+bi'wá/	'excrement+clean'/ 'excremento+limpiar'	[SF 07 1:187/Elicit]

This suggests that glottal stop must not only emerge within an initial disyllabic window (after the first vowel of the prosodic word), but it must also emerge associated to the lexical root to which it is associated.

Haugen 2004 describes identical restrictions in the distribution of glottal stop in the closely related Taracahitan language, Guarijío, and proposes that the glottal stop in this language is not a consonant segment, but rather a floating feature of some roots that is linked to the vowel of the first syllable of the prosodic word. I have followed Haugen's analysis for Guarijío, and argued that Guarijío's glottal stop can be analyzed as floating feature of constricted glottis ([+c.g.]) (Caballero 2006).

The floating feature analysis of glottal stop in Guarijío can be extended to Choguita Rarámuri's glottal stop. Following Zoll 1998, Choguita Rarámuri glottal prosody can be analyzed as a floating feature of [+constricted glottis] ([+c.g.]) that is underlying in some roots and docks in the first syllable of the prosodic word associated with that root. Examples are given in (97).

97) Roots with associated glottal prosody

	UR	Surface form	Gloss
a.	/[+c.g.], koa/	[koʔá]	‘eat’/‘comer’
b.	/[+c.g.], raiča/	[raʔíča]	‘speak’/‘hablar’
c.	/[+c.g.], ata/	[aʔtá]	‘arch’/‘arco’
d.	/[+c.g.], biwa/	[biʔwá]	‘clean’/‘limpiar’
e.	/[+c.g.], biri/	[biʔrí]	‘twist’/‘torcer’

There are no glottalized consonants in Choguita Rarámuri, and this leaves the leftmost vowel as the optimal place for the feature [+c.g.] to emerge (excluding forms like **k’oá* and **b’iwá*).

The segmental materialization of the glottal prosody does not emerge in incorporated forms, given that the glottal prosody bearing root is not aligned with the left edge of the prosodic word. The lexical entry of a bare root and its derivation in an incorporated counterpart are exemplified in (98).

98) Glottal stop deletion in incorporated forms

	UR		Surface form	Gloss
a.	/[+c.g.], biri/	→	[biʔrí]	‘twist’/‘torcer’
b.	/kuta+biri [+c.g.]/	→	[kuta+bíri]	‘neck+twist’/ ‘cuello+torcer’
c.	/[+c.g.], biwa/	→	[biʔwá]	‘clean’/‘limpiar’
d.	/wita+biwa [+c.g.]/	→	[wita+bíwa]	‘excrement+clean’/ ‘excremento+limpiar’

The limited distribution of glottal stop, taken together with the comparative evidence, point to the floating feature nature of glottal stop.

2.3.4 Minimal word size

There is evidence in Choguita Rarámuri for a minimal word size for verbal roots. Verbal categories like recent past, present and the imperative singular are realized by the bare verbal stem. An impressionistic assessment of these unsuffixed, monosyllabic verbs reveals they involve significanly longer vocalic nuclei than their unsuffixed counterparts. In (99), I present examples of these monosyllabic verb roots when inflected for imperative singular (realized as the lengthened, bare stem), which contrast with suffixed forms that do not involve lengthening (shown in the second column).

99) Vowel lengthening of monosyllabic roots

	Imperative	*Gloss*	*Future sg*	*Gloss*
a.	páa	'throw!'/ 'tiralo!'	pá-ma	'throw-Fut:sg'/ 'tirar-Fut:sg' [RF 04 1:82/Elicit]
b.	máa	'run!'/ 'corre!'	má-ma	'run-Fut:sg'/ [BF 06 el14/Elicit]
c.	nóo	'look!'/ 'mira!'	nó-ma	'look-Fut:sg'/ 'mirar-Fut:sg' [BF 06 el38/Elicit]
d.	áa	'find it!'/ 'encuéntralo!'	á-ma	'find-Fut:sg'/ 'encontrar-Fut:sg' [BF 05 1:112/Elicit]

Precise measurements of vowel length of a small sample of monosyllabic roots (seven roots in unsuffixed and suffixed contexts) confirms there is a difference between the vowel durations of unsufixed, monosyllabic (imperative or present inflected) words and their suffixed (disyllabic) counterparts (100). Vowel duration was measured from vowel onset to vowel offset.

100) Vowel duration of monosyllabic verbal roots

	Unsuff.	*Gloss*	*Ms*	*Suffixed*	*Gloss*	*Ms*
a.	mée	'win!'/ 'gana!'	170	mé-ma	'win-Fut:sg'/ 'ganar-Fut:sg'	100
b.	páa	'throw it!'/ 'tíralo!'	140	pá-ma	'throw-Fut:sg'/ 'tirar-Fut:sg'	60
c.	-			pá-ri	'bring-Pst'/ 'tirar-Pst'	120
d.	máa	'run!'/ 'corre!'	200	má-sa	'run-Imp:sg'/ 'correr-Imp:sg'	110
e.	áa	'find it!'/ 'encuéntralo!'	200	á-mi	'find-Mot:Imp' 'encontrar-Mot:Imp'	120
f.	áa	'give it!'/ 'dalo!'	170	á-ki	'give-Pst:1'/ 'dar-Pst:1'	110

The vowel duration of unsuffixed monosyllabic verbs ranges between 140-200ms, while the vowel duration of the suffixed counterpart ranges between 60-120ms. There are no open class verbs with the (C)V shape in the corpus. Vowel duration of monosyllabic nouns, on the other hand, is not longer in unsuffixed contexts. Measurements of vocalic durations of monosyllabic nouns in unsuffixed and suffixed contexts shows that unsuffixed nouns have comparable durations to the suffixed vowels of monosyllabic verbs. Thus, there is no evidence that monosyllabic nouns undergo lengthening in unsuffixed contexts like verbal monosyllables do.

101) Vowel duration of monosyllabic nominal roots

	Unsuff.	*Gloss*	*Ms*	*Suffixed*	*Gloss*	*Ms*
a.	kú	'wood'/ 'leña'	90	kú-riri	'wood-Loc'/ 'leña-Loc'	60
b.	té	'lice'/ 'piojos'	80	-		
c.	lá	'blood'/ 'sangre'	90	lá-riri	'blood-Loc'/ 'sangre-Loc'	70
d.	mé	'mezcal'	100	mé-riri	'mezcal-Loc'/ 'mezcal-Loc'	60
e.	wá	'arrows'/ 'flechas'	110	wá-ti	'arrows-Inst' 'flechas-Loc'	100

I propose, then, that there is a minimal word constraint which targets open class verbs. This constraint is defined in (102):

102) Choguita Rarámuri minimal word constraint for verbs

Minimal word (X_0) = $[\mu\mu]_\Sigma$

According to this definition, all open class verbs in Choguta Rarámuri are at least two moras (Hyman 1985, Hayes 1986), where consonants are non-moraic.

While vowel length is not contrastive in Choguita Rarámuri, long vowels are derived to satisfy a minimal word constraint, as proposed in this section. Long vowel sequences can also be found after semi-vowel deletion (§2.3.2.4.1) and *h* deletion (§2.3.2.3.1), and in morphologically restricted contexts (addressed in Chapter 3), such as compensatory lengthening (§3.5.2.2), and lengthening triggered by a dominant suffix (§3.5.2.3).

2.3.5 Distinctive pitch

While there is robust evidence that Choguita Rarámuri has a stress system (cf. Chapter 2 (§2.3.1), Chapter 4 (§4.2.1)), there is also evidence that in this language tone is part of the lexical realization of at least a few morphemes. So far, I have only been able to identify the tonal minimal pairs listed in (103). In these minimal pairs, there is a contrast between a high tone (marked with an acute accent) and a low tone (marked with a grave accent), where tone is associated with stress (i.e., I have only detected tonal contrasts in stressed syllables).

103) Tonal minimal pairs

	Forms	*Gloss*	
	Monosyllables		
a.	tó	‘bury’/‘enterrar’	[SF 07 dejar_enterrar/Elicit]
b.	tò	‘take’/‘llevar’	[SF 07 dejar_enterrar/Elicit]
c.	pá	‘throw’/‘tirar’	[BF 07 tirar_llevar/Elicit]
d.	pà	‘bring’/‘traer’	[BF 07 tirar_llevar/Elicit]
e.	á	‘look for’/‘buscar’	[BF 07 busque_di/Elicit]
f.	à	‘give’/‘dar’	[BF 07 busque_di/Elicit]
	Disyllables		
g.	isí	‘urinate’/‘orinar’	[BF 07 orinar_hacer/Elicit]
h.	isì	‘make’/‘hacer’	[BF 07 orinar_hacer/Elicit]
i.	ričí	‘edge of cliff’/‘orilla de barranco’	[BF 07 tio_barranco/Elicit]
j.	rihčì	‘uncle’/‘tío’	[BF 07 tio_barranco/Elicit]
k.	korí	‘chile’/‘chile’	[BF 07 1:127/Elicit]
l.	korì	‘over there’/‘allá’	[BF 07 1:127/Elicit]
m.	wí-a	‘harvest-Prog’/‘pizcar-Prog’	[BF 07 el338/Elicit]
n.	wìa	‘string’/‘mecate’	[BF 07 el338/Elicit]
o.	awé	‘grill’/‘asar’	[BF 08 1:129/Elicit]
p.	awè	‘dance:Appl’/‘bailar:Appl’	[BF 08 1:129/Elicit]

q.	napó	‘plow’/‘escardar’	[SF 08 1:97/Elicit]
l.	napò	‘break’/‘quebrar’	[SF 08 1:97/Elicit]
m.	nóča	‘to be pretentious’/‘creerse’	[SF 081:139/Elicit]
n.	nòča	‘work’/‘trabajar’	[SF 08:139/Elicit]

The tonal contrasts of these roots persist even when these roots appear in morphologically complex constructions. I have not identified any effect of the preceding consonant or any difference in phonation type between the high and low toned words, nor any effect of any morphological construction into the realization of the tonal contrast.

Most of the roots in (103) are underlyingly stressed, and hence do not shift stress (or change their tonal make up) following the pattern of morphologically conditioned stress of the language (discussed in detail in Chapters 3 and 4). There are only two unstressed roots that shift stress in morphologically complex words: tò ‘take’ (102b) and nòča ‘work’ (102n). When stress shifts off of these roots (and onto a following suffix), then the tonal contrasts are lost.

No tonal distinctions have been reported to play any role in any Rarámuri dialect, although lexical tonal contrasts have been reported in other Taracahitic languages (Yaqui (Demers et al. 1999) and Mayo (Hagberg 1989)). Outside Taracahitic, tone has developed in other Uto-Aztecan languages: Northern Tepehuan (Tepiman) (Woo 1970), Hopi (Manaster-Ramer 1986), Huichol (Corachol) (Grimes 1959), and Balsas Nahuatl (Aztecan) (Guion et al. to appear).

It is likely that Choguita Rarámuri’s tonal contrasts evidence tonogenesis in progress. The fact that words may receive tone in addition to stress (at least in the words identified above), suggests that the stress system and the developing tone system are independent components. Investigating the robustness of the tone system, its interaction with the stress system and its historical origins will be the focus of future research.

2.4 Summary

As we have seen in this chapter, Choguita Rarámuri possesses a small phonological inventory and a simple syllable structure in underlying forms (with no onset ellaboration and only one possible coda, glottal stop), but a great amount of variation. Stop alternations are perhaps the hallmark example of this intra-linguistic variation, by displaying phonologically, morphologically and lexically conditioned variation (as well as free, speech-rate dependent gradient voicing). Anoher source of complexity in the phonological system is found in the stress system and the stress-dependent phenomena that yields gradient, optional surface patterns (such as three distinct patterns of unstressed vowel reduction); stress-conditioned vowel deletion, on the other hand, produces derived consonant clusters and geminates, giving Choguita Rarámuri a moderate syllable structure on the surface level, which contrasts with the simple syllable structure at the underlying representation level.

In addition, the prosodic level of Choguita Rarámuri presents several analytical and typological challenges. First, stress, whether lexically or morphologically conditioned, is restricted to emerge in the first three syllables of the word, instantiating a system that has only been documented in four other languages of the world (the details of this system will be the focus of Chapter 4). Second, a constricted glottis prosody (realized as glottal stop) is a feature associated with certain roots and restricted to emerge in an initial disyllabic window. Third, while tone has been described as part of the lexical representation of morphemes in several Southern UA languages, no variety of Rarámuri has been described as having a tonal contrast. This dissertation, thus, provides the first data showing a two-tone system in a Rarámuri variety.

Chapter 3: Verbal Morphology

3.1 Introduction

In this chapter I present an overview of the verbal morphology and morphologically conditioned phonological processes of Choguita Rarámuri and propose a hierarchical structure of the verb. Choguita Rarámuri verbal morphology is highly agglutinating with a structure that does not instantiate a position-class system (as defined in Simpson & Withgott 1986 and Inkelas 1993), but is rather arranged in verbal zones, in concentric layers that are evidenced by the degrees of morphophonolgical fusion displayed by verbal suffixes. This chapter provides evidence for twelve suffix positions that are grouped into six verbal zones or layers: an inner stem (the input to suffixation), a derived stem, a syntactic stem, an aspectual stem, a finite verb level, and finally the subordinate verb level. Each of these levels is semantically, morphotactically, and morphophonologically motivated, with suffixes closer to the inner stem displaying a higher degree of phonological fusion.

The first suffixation layer, the “derived stem”, is composed of semantically restricted, unproductive derivational suffixes. Morphophonologically, this stem level is characterized by: i) marking the non-concatenative imperative singular as final stress of this level; ii) vowel lengthening induced by the past passive suffix; and iii) morphologically induced stress shifts. The “syntactic stem” is comprised of valence-increasing suffixes that display variable ordering and multiple exponence. Morphophonologically, these suffixes form a coherent zone since they are stress-neutral and part of the domain of round harmony. The next verbal zone, the “aspectual stem”, is composed of disyllabic modal and aspectual suffixes that are transparently related to independent verbs in the language. Morphophonologically, these suffixes also display variable ordering and round harmony. In addition, these suffixes have short allomorphs in morphologically and prosodically defined environments. Finally, the “finite verb” stem level adds mood, voice, tense, and aspect suffixes which close verbs used in non-subordinate clauses. Optionally, verbs can add suffixes from a final, “subordinate verb” layer when used in subordinate clauses. Suffixes in these last two layers are separable and not subject to much morphophonological fusion with the root. Finally, inflected verbal forms are part of a larger unit, a “verbal complex”, which includes person enclitics and epistemic modality marking particles. This organization of the morphology is critical in understanding the patterns of morphologically conditioned phonology and variable affix ordering that will be the focus of the later chapters of this dissertation.

This chapter is organized in two parts, which address the verb from the inside-out. The first part is concerned with root classes and processes taking place at the inner stem (in §3.2, §3.3, and §3.4). The second part of the chapter is concerned with the suffixation domain and the clitics and modal particles that occur in the verbal complex. Topics addessed in this second half include the morphotactic evidence for positing different positions in the verbal template (§3.5.1), and the morphophonological evidence for positing verbal domains (§3.5.2), including the distribution of stress-shifting and stress-neutral suffixes in the verbal stem. Basic phonological and morphosyntactic information of verbal suffixes, as well as examples from context, can be found in Appendix 2.

3.2 Canonical roots and suffixes

Most roots in Choguita Rarámuri are disyllabic or trisyllabic: from a corpus of 1,004 nominal and verbal roots, 47% percent are disyllabic and 40% trisyllabic. There are tetrasyllabic roots (10%), but most of these are, with different degrees of transparency, internally complex, so a maximally tetrasyllabic prosodic size cannot be established. Finally, there are also monosyllabic roots. While a mere 3% of the corpus, the existence of these roots make it impossible to establish a disyllabic minimality restriction for open class lexical morphemes.[21]

As for suffixes, most are monosyllabic, but there are a few disyllabic suffixes: Desiderative *-nale*, Associated Motion *-simi*, Habitual Passive *-riwa*, Future Singular *-méa*,[22] Auditory Evidential *-čane*, and Indirect Causative *-nura*. Almost all of these

[21] When considering the proportions of roots separately for nouns and verbs, there are some differences: most monosyllables are verbs (5% of verbs are monosyllabic and only 2% of nouns are monosyllabic), and most tetrasyllables are nouns (19% of nouns are tetrasyllabic, while only 5% of verbs are tetrasyllabic).
[22] Miller 1996 has proposed that the disyllabic future singular suffix *–méa*, also present in Guarijío, derives from the reconstructed verb **mi(l)a* 'run, go' (Miller 1996:133) from "Proto-Sonoran". Miller defines "Sonoran" as a sub-branch of Uto-Aztecan located in Mexico's northwest which would include Tepiman and Taracahitic languages.

disyllabic suffixes are related to synchronically active free lexical morphemes with varying degrees of transparency (Desiderative *–nale* and the verb *naki,* 'want'; Associated Motion *–simi* and the verb *simi*, 'go sg.'; Auditory Evidential *–čane* and the verb *čane*, 'make noise, say'). Suffixes, like roots, are thus not restricted to a canonical prosodic shape.[23]

While no generalizations in terms of minimal or maximal size apply to roots or suffixes, there are certain formal characteristics that usually apply to roots vs. suffixes. Given the stress properties of roots (with mainly second or third syllable stress) and the posttonic vocalic reduction and deletion proceses operating in the language (described above in §2.3) the boundaries between roots and suffixes are often the target of posttonic syncope. This, in turn, yields derived stems with shared formal properties, such as final consonants. Roots derived with the productive causative suffix *–ti* are a good example of this, since posttonic syncope often targets the vowel of the causative suffix, generating a class of causative stems ending in a lateral flap. These causative stems are then recursively suffixed with the allomorph *–ti* of the causative suffix, as shown in (1):

1) Final-r Causative Stems

a. ne <u>ubá-**r**</u>-ti-po
1sgN bathe-**Caus-**Caus-Fut:Pass
'I'll be forced to bathe'
'Van a hacer que me bañe' [LEL 05 ECME(40)/Elicit]

b. ne mi <u>mé-**r**</u>-ti-ma orá
1sgN 2sgA win-**Caus**-Caus-Fut:sg Cer
'I will make you win'
'Te voy a hacer ganar' [LEL 05 ECME(3)/Elicit]

[23] Although, as will be discussed in Chapter 6, all disylabic suffixes have monosyllabic allomorphs.

c. <u>ko’á-**r**</u>-ti-nare
eat-**Caus**-Caus-Desid
‘She wants to make him eat’
‘Quiere hacerlo comer’ [BF 06 ECDW(55)/Elicit]

Syncope, thus, participates in the creation of a new paradigm of causative stems with particular word-internal (stem-delimiting) codas. Evidence of this, as well as discussion of the morphological effects of these new phonologically defined stems will be discussed in detail in Chapter 5.

3.3 Verbal root classes

3.3.1 The contrast between stressed and unstressed roots

Choguita Rarámuri verbal roots can be divided in three classes depending on their underlying stress and vowel specifications. Membership in these classes is manifested through presence or absence of stress shifts and vowel quality differences, triggered by specific morphological processes.

Roots can be first characterized as either underlyingly stressed or unstressed. Stressed roots do not display any stress shifts or vocalic alternations in any morphological context (as exemplified in (2)). All unstressed roots, on the other hand, shift stress one syllable to the right in certain morphological contexts (as exemplified in (3)). Stress syllables are in bold face.

2) Stressed roots

	Form	Gloss	Stress
a.	ri**mú**-ri	'dream-Pst'/'soñar-Pst'	2nd syllable
b.	ri**mú**-ra	'dream-Rep'/'soñar-Rep'	2nd syllable
c.	ri**mú**-bo	'dream-Fut:pl'/'soñar-Fut:pl'	2nd syllable
d.	ri**mú**-sa	'dream-Cond'/'soñar-Cond'	2nd syllable

3) Unstressed roots

	Form	Gloss	Stress
a.	su**kú**-ri	'scratch-Pst'/'rasguñar-Pst'	2nd syllable
b.	su**kú**-ra	'scratch-Rep'	2nd syllable
c.	suku-**bó**	'scratch-Fut:pl'	3rd syllable
d.	suku-**sá**	'scratch-Cond'	3rd syllable

A list of some of the suffixes that trigger stress shifts with unstressed roots is given in Table 8. I will refer to these as stress-shifting suffixes.

Table 8: Stress-shifting suffixes

Suffix	**Example with root *suku* 'scratch' ('rasguñar')**
Potential *–ta*	suku-**tá**
Future sg. *–méa* /-ma	suku-**mé**a
Motion imperative *–me*	suku-**mé**
Desiderative *–nare*	suku-**ná**re
Past passive *–ru*	suku-**rú**

These suffixes contrast with another class of suffixes that do not trigger any stress shifts on any class of roots. These are exemplified in Table 9. I will refer to these suffixes as stress-neutral.

Table 9: Stress-neutral suffixes

Suffix	**Example with root *suku* 'scratch' ('rasguñar')**
Past, 1st person *–ki*	su**kú**-ki
Evidential *–čane*	su**kú**-čane
Imperfective *–e*	su**kú-**i
Associated Motion *–simi*	su**kú-**simi
Irrealis pl. *–pi*	su**kú-**pi

Stress-shifting suffixes, with their morphophonological properties on unstressed roots, form what I will refer to as "strong" morphological constructions. Stress-neutral suffixes, on the other hand, do not trigger any morphophonological alternations, and form "weak" morphological constructions. 'Morphological constructiosn' are any morphological process or pattern that combines two sisters into a single constitutent to form a complex word (Inkelas and Zoll 2005:12). Each individual affix, incorporation, reduplication or non-concatenative process thus involves a unique morphological construction. By grouping morphological constructions into "strong" and "weak" sets, I suggest that groups of constructions share phonological properties. The details of the phonological properties of particular morphological constructions will be discussed in Chapter 4, the chapter that deals with the morphologically conditioned stress system of this language.

Unstressed roots can be further subdivided in two classes: i) unstressed roots with fully specified vowels (exemplified in (4)); and ii) unstressed roots with root final unspecified vowels (exemplified in (5)). While the former class of roots (which I will refer to as Class 2) has vowels that are fully specified in their underlying representation, I assume that the latter class of roots (which I will refer to as Class 3) have a final V slot, whose features are dependent on the morphological construction in which the root takes place. Class 2 roots display no vocalic alternations in both strong and weak constructions, and Class 3 roots have final root vowel raising concomitant to the stress shift in strong constructions. Stressed roots, with no morphophonological changes, are the third type of roots in Choguita Rarámuri (Class 1).

4) Unstressed roots with specified vowels (Class 2)

	Form	*Gloss*	*Strong construction*	*Weak construction*
a.	čo'i	'extinguish, intr'/ 'extinguirse'	čo'**i**	čo'**í**
b.	ro'no	'boil'/'hervir'	ro'n**o**	ro'n**ó**
c.	kuru	'become thick'/ 'espesarse'	kur**u**	kur**ú**
d.	rana	'give birth'/ 'dar a luz'	ran**a**	ran**á**

5) Unstressed roots with final unspecified vowels (Class 3)

	Form	*Gloss*	*Strong construction*	*Weak construction*
a.	čonV	'hit with fist'/ 'golpear con el puño'	čon**i**	čon**á**
b.	ra'rV	'buy'/'comprar'	ra'r**i**	ra'r**á**
c.	rewV	'find'/'encontrar'	rew**i**	rew**á**
d.	ičV	'sow'/'sembrar'	ič**i**	ič**á**

The difference between Choguita Rarámuri verbal root classes is summarized in Table 10.

Table 10: Choguita Rarámuri root classes

	Class 1 *Stressed*	***Class 2*** *Unstressed fully specified V*	***Class 3*** *unspecified final V*	
Pst	bené-ri	sukú-ri	rará-ri	
Prog	bené-a	sukú-a	rará-a	*Weak*
Impf	bené-i	sukú-i	rará-i	*Constructions*
Fut.sg	bené-ma	suku-méa	rari-méa	
Cond	bené-sa	suku-sá	rari-sá	*Strong*
Desid	bené-nare	suku-náre	rari-náre	*Constructions*

Class 3 roots have a final stressed low vowel in weak constructions. There are Class 2 roots that have a final low vowel, but these roots do not undergo final stem vowel raising in strong constructions. As shown in (6), there are Class 2 roots with final specified *o* (6a-b), *i* (6c-d), *u* (6e-f) and *a* (6g-h).

6) Class 2 roots' final specified vowels

	Strong Constructions	*Weak Constructions*	*Gloss*	*Related Noun*	
a.	ron**o**-méa	ron**ó**-ri	'boil'/'hervir'		
b.	mor**o**-méa	mor**ó**-ri	'to be smoke'/ 'humear'	morí	'smoke'/ 'humo'
c.	wi'r**i**-méa	wi'r**í**-ri	'stand:sg'/'pararse:sg'		
d.	ča'**i**-méa	ča'**í**-ri	'grab'/'agarrar'		
e.	uk**u**-méa	uk**ú**-ri	'to rain'/'llover'	ukí	'rain'/'lluvia'
f.	muk**u**-méa	muk**ú**-ri	'die'/'morirse'		
g.	ran**a**-méa	ran**á**-ri	'give birth'/ 'dar a luz'	raná	'offspring'/ 'crías'
h.	ik**a**-méa	ik**á**-ri	'to be windy' 'hacer viento'	iká	'wind'/ 'viento'

Most Class 3 roots, on the other hand, end in high, front vowels in strong constructions (but can also end in back, mid vowels (e.g., noko-méa in (7d)). Without exception, these roots end in *a* in weak constructions. Some examples of these roots with alternating final vowels are provided in (7):

7) Class 3 roots' final specified vowels

	Strong Constructions	*Weak Constructions*	*Gloss*	
a.	os**i**-méa	os**á**-ri	'write'/'escribir'	[AH 05 1:127/Elicit]
b.	ič**i**-méa	ič**á**-ri	'sow'/'sembrar'	[SF 05 1:78/Elicit]
c.	rah**i**-méa	rah**á**-ri	'light up'/'encender'	[RF 04 1:62/Elicit]
d.	nok**o**-méa	nok**á**-ri	'move'/'moverse'	[BF 05 1:114/Elicit]

The generalization is that roots with final *a* are split between Class 2 roots (with no vowel alternation in strong constructions (as in (6g-h)), and Class 3 roots (with vowel alternations in weak constructions (as in (7)).

3.3.1.1 Semantic accounts of strong and weak constructions in Uto-Aztecan

Some descriptive and comparative/historical works on Uto-Aztecan languages treat the stress shifts and vocalic alternations of roots just described, present in other Uto-Aztecan languages, as stem suppletive allomorphy, where roots with no stress shifts or vocalic alternations index non-future meanings (like past, perfective, and imperfective), and roots with stress shifts and vocalic alternations index a future or "unrealized" stem meaning (like irrealis, counterfactual, imperative, and potential) (Langacker 1977:133). Although it is useful to take the future construction as an indicative of the stress behavior of Choguita Rarámuri unstressed roots, there are shortcomings to a classification of strong and weak constructions along a future/irrealis scale. Specifically, many of the categories in either strong or weak constructions cannot be characterized as having either a non-future or an “unrealized” meaning (such as the valence-increasing categories). In addition, the past passive patterns along with the ‘unrealized’ or future forms, contrary to the semantically-based stem allomorphy proposal.

In Choguita Rarámuri, then, the constructions that trigger a stress shift with certain roots do not themselves index any constant morphosyntactic features or properties, but rather are a heterogenous class of morphological constructions. This fits in the definition given for *morphomic* stems by Aronoff 1994, where ‘the mapping from morphosyntax to phonological realization is not direct, but rather passes through an intermediate level’ (1994:25), which is purely morphological (see also Blevins 2003). The two sets of morphological constructions identified (strong and weak constructions) cannot be characterized morphosyntactically or semantically, but only phonologically.

3.3.1.2 Conjugational class analysis alternative

There is an alternative analysis for Choguita Rarámuri verbal roots, and that is to treat the alternations as indexing conjugational classes (as Brambila 1953 and Lionnet 1972 do for other Rarámuri varieties). Under such analysis, Choguita Rarámuri roots’ stress and vocalic alternation properties would index an arbitrary division of the lexicon; that is, the lexically conditioned stem allomorphy would be expressed through item-based alternations (stress shifts and vocalic alternations) when inflected for certain morphological categories.

Under the conjugation class analysis, there would also be three root classes in Choguita Rarámuri.[24] Class 1 roots would not display any stress shift or vocalic alternation when inflected for any morphological category. Class 2 roots would have a "primary stem" and a "secondary stem". For two-syllable stems, the primary stem will have second-syllable stress, while the secondary stem will have third-syllable stress, on a suffix adjacent to the root. Finally, Class 3 roots also have a primary stem and a secondary stem marked by a stress shift and a concomitant vowel alternation: the primary stem has a stem final low vowel (usually *a*, but also *o*), while the secondary stem has a stem final high, front high vowel (*i*). Table 11 exemplifies these conjugational classes.

Table 11: Choguita Rarámuri inflectional classes

	Class 1 bené 'learn'/ 'enseñar'	**Class 2** sukú 'scratch'/ 'rasguñar'	**Class 3** rará/rari 'buy'/ 'comprar'	
Pst	bené-ri	sukú-ri	rará-ri	Primary
Prog	bené-a	sukú-a	rará-a	stem
Impf	bené-i	sukú-i	rará-i	
Fut	bené-ma	suku-méa	rari-méa	
Cond	bené-sa	suku-sá	rari-sá	Secondary
Pst:Pass	bené-ru	suku-rú	rari-rú	stem

Conjugational classes, as flexive formatives in general, are characterized by displaying item-based variation; this variation, however, is lexically, not morphophonologically, conditioned (Bickel and Nichols 2007). A diagnosis in favor of the conjugational class analysis would be the existence of other phenomena that would correlate with the stem types of Choguita Rarámuri besides the stress shift and vocalic

[24] Brambila (1953) and Lionnet (1972) propose three and four conjugation classes, respectively. Lionnet includes irregular forms as additional verbal classes in his classification.

alternations identified above. That is, in order to argue that a conjugational class analysis is the correct one for the stem alternations in Choguita Rarámuri, there should be other phenomena correlating with the arbitrary division of the lexicon that could not be explained as arising from morphophonological alternations. There are two phenomena in Choguita Rarámuri that could potentially fit this definition. First, Class 2 and Class 3 stems (unstressed stems) pattern together in participating in a valence stem allomorphy system (described in §3.3.2). However, this valence marking system does not distinguish between any subgroup of the unstressed stems, so there would not be evidence for the distinction between Class 2 and Class 3 stems. Second, there is an apparently lexically-conditioned allomorph of a habitual passive suffix: *-riwa* for Class 1 stems and *–wa* for the rest (cf. Appendix 1 for more information about this suffix, its meaning and allomorphy). However, the allomorphs are better explained on an unstressed-stressed basis (stressed roots taking *–wa* and unstressed roots taking *–ríwa*).

The evidence for conjugation classes in Choguita Rarámuri is therefore weak. Stress shifts and vocalic alternations of Choguita Rarámuri stems will be assumed to arise from regular morphophonological processes and the existence of two phonological kinds of stems and suffixes: roots with underlying, lexically pre-specified stress, and roots without it; and strong, or stress-perturbing suffixes, and weak, or stress-neutral suffixes. These two kinds of suffixes would be associated with two kinds of morphological constructions. Stress shifts result from regular morphophonological principles that apply to the interactions of the different roots and affixes, rather than from an arbitrary classification of the lexicon into conjugation classes.[25]

3.3.1.3 The interaction of strong and weak morphological constructions

The agglutinating nature of the Choguita Rarámuri verbal template allows for the interaction of different kinds of suffixes (i.e., stress-neutral and stress-shifting) in the same word. Given the phonological effects of each type of suffix with unstressed roots, it is necessary to look at unstressed roots that undergo multiple afixation to determine what suffix imposes its phonological properties on the whole word, i.e., which phonological effects percolate up to the word level.

As we have seen in the previous section, Class 3 roots have a primary stem (second syllable stress and final *a*) when attaching a stress neutral suffix and a secondary stem (third syllable stress and final unstressed *i*) when attaching a stress shifting suffix. In cases of multiple affixation, the stress properties of the word are invariably defined by the first suffix added: in each form exemplified in (8), words have third syllable stress when the suffix is stress shifting (8a-d), and second syllable stress when the first suffix is stress neutral (8e-l), regardless of the stress type of outer suffixes. Multiply suffixed forms where the root is immediately followed by a stress neutral suffix, are, however, split with respect to their vocalic qualities. These roots can either have a final stressed *i* (e.g., (8e-f) and (8i-j)) or a final stressed *a* (e.g., (8g-h) and (8k-l)).

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[25] While this morphophonological analysis of Choguita Rarámuri roots has implications for the analysis of the morphologically conditioned stress, (as we will see in Chapter 4) the conjugational class analysis might be used as a simplified notational device for lexicographic and pedagogical works. Specifically, it is crucial to distinguish form three classes of verbal roots in this language in order to predict the roots' behavior in morphological constructions.

8) Multiply affixed Class 3 roots

	Form	Gloss	
	Verb + stress shifting suffix + stress shifting suffix		
a.	osi-nár-sa	'write/read-Desid-Cond'/ 'escribir/leer-Desid-Cond'	[BF 08 1:18/Elicit]
b.	riwi-bó-si	'find/see-Fut:pl-Imp:pl'/ 'encontrar/ver-Fut:pl-Imp:pl'	[BF 08 1:16/Elicit]
	Verb + stress shifting suffix + stress neutral suffix		
c.	osi-nári-ki	'write/read-Desid-Pst:1'	[BF 08 1:18/Elicit]
d.	riwi-wá-i	'find/see-MPass-Impf'	[BF 08 1:16/Elicit]
	Verb+stress neutral suffix + stress shifting suffix		
e.	os**í**-si-ma	'write/read-Mot-Fut:sg'	[SF 05 1:88/ Elicit]
f.	riw**í**-w-ki-ma	'find/see-Appl-Appl-Fut:sg'	[BF 08 1:16/Elicit]
g.	os**á**-r-ma	'write/read-Caus-Fut:sg'	[BF 08 1:10/Elicit]
h.	rar**á**-r-ti-ma	'buy-Caus-Caus-Fut:sg'	[BF 08 1:10/Elicit]
	Verb+stress neutral suffix + stress neutral suffix		
i.	os**í**-ri-ri	'write/read-Caus-Pst'	[SF 08 1:41/ Elicit]
j.	riw**í**-si-o	'find/see-Mot-Ep'	[BF 08 1:16/Elicit]
k.	os**á**-r-ki	'write/find-Caus-Pst:1'	[BF 08 1:10/Elicit]
l.	rar**á**-r-ti-ki	'buy-Caus-Caus-Pst:1'	[BF 08 1:10/Elicit]

Irrespective of the stress type of the suffixes added, then, words built from Class 3 roots will have a stress make-up dependent on the first suffix added, but either a primary stem vowel or a secondary stem vowel.[26] The fact that there is variation of stem shape in constructions with multiple suffixes could suggest a 'look-ahead' effect of morphology, where variation in vocalic quality is dependent on having multiple suffixation (i.e., the outer suffixes "see" inside the preceeding morphological structure (a violation of bracket erasure)). An alternative is to assume that variation in stem selection is exclusively found when class 3 roots add suffixes of inner layers (e.g., the Syntactic and Aspectual stem

[26] There is evidence for priming effects in choice of stem type in elicitation, but I will leave discussion of these effects for future research. I have documented this type of priming effect in choice of variable suffix ordern patterns (cf. Chapter 7, §7.5.1).

levels defined below). Given the hierarchical structure of the verb proposed in this dissertation, suffixes belong to different verbal domains. The phonological features of certain domains will thus percolate up to the word level and impose its phonological properties to the word form.

3.3.2 Valence stem allomorphy

In the previous section, we have seen that there are three identifiable verbal root classes in Choguita Rarámuri, which have characteristic stress and vowel alternation properties in morphologically defined contexts. Unstressed roots (Class 2 and 3 roots) can, in addition, participate in a stem allomorphy system that marks the valence of the predicate.

In the valence stem allomorphy system, there are three kinds of stems: intransitive, transitive and applicative stems. Intransitive stems end in an unstressed vowel (9a-b), transitive stems end in a stressed, low mid vowel (9c),[27] amd applicative stems end in a stressed front vowel (9d-f).[28]

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[27] Heath 1978 argues that an intransitive-transitive contrast marked by *i* for intransitive and *a* for transitive goes back to Proto-Uto-Aztecan.

[28] There is only one example that shows a semantic difference between an applicative stem formed with a final stressed high front vowel and an applicative stem with a final stressed mid front vowel: the verb *rará/rari-* 'to buy', has two applicative bases: *raré* 'buy from' (i), and *rarí* 'buy for' (ii).

i) muhé tamí sapato raré-ma
/muhé tamí sapato rare-ma/
2sgN 1sgA shoes buy.from-Fut:sg
'You'll buy shoes from me'
'Me vas a comprar zapatos (a mi)' [SF 05 1:74/ Elicit]

ii) muhé tamí sapato rarí-i-ma
/muhé tamí sapato rari-i-ma/
2sgN 1sgA shoes buy-Appl-Fut:sg
'You will buy me shoes '
'Me vas a comprar zapatos (para mi)' [SF 05 1:74/ Elicit]

There are no other examples where two applicative stems have been lexicalized with different meanings.

9) Valence stem allomorphy

Intransitive

a.

nihé	ma	nok**o**-méa
1sgN	already	move:Intr-Fut:sg

‘I will move’
‘Ya me voy a mover’ [SF 05 1:80/Elicit]

b.

uk**u**-méa
rain:Intr-Fut:sg
‘It will rain’
‘Va a llover’ [SF 05 1:82/Elicit]

Transitive

c.

ma	rar**á**-ki
already	buy:Tr-Pst:1

‘(He) already bought it’
‘Ya lo compró’ [AH 05 1:130/Elicit]

Applicative

d.

nihé	mi	troka	nok**é**-ri
1sgN	2sgA	truck	move:Appl-Pst

‘I will move the truck for you’
‘Te voy a mover la troca’ [SF 05 1:80/Elicit]

e.

á=mi	tamí	rar**é**-ma
Aff=2sgN	1sgA	buy:Appl-Fut:sg

‘Will you buy (it) from me?’
‘Me lo compras (yo lo vendo)?’ [SF 05 1:75/Elicit]

f.

mi	uk**é**-ri
Dem	rain:Appl-Pst

‘It rained for (him)’
‘Le llovió’ [SF 05 1:84/Elicit]

As the examples in (9a-b) show, the final unstressed vowel of a stem may harmonize with the first stem vowel (the noun *ukí* ‘rain’, has a final high front vowel, and the stressed alternant of *noko-méa* is *nok**í***, with a final , stressed ***i***).[29] Table 12

[29] The cognate verbal stem in Guarijío does not undergo harmony (*uk**i**-má* ‘it will rain’) (Miller 1996).

schematizes the three-way contrast of these stems (syntactic/semantic gaps are symbolized by dashes).

Table 12: Valence stem allomorphy

	Intransitive	*Transitive*	*Applicative*	*Gloss*
a.	suwí	suwá	suwé	'run out/finish up'
b.	sawí	-	sawé	'cure, heal'
c.	-	rará	raré	'buy'
d.	noko	-	noké	'move'
e.	-	ičá	ičí	'plant'
f.	uku	-	uké	'rain'
g.	wiri	wirá	wiré	'stand'
h.	čo'i	čo'á	čo'í	'extinguish'
i.	-	osá	osé	'write'
j.	-	kimá	kimé	'cover with blanket'

An interesting feature about this valence stem allomorphy system is that stems marked for a valence value do not necessarily block the affixation of a more productive suffix marking the same category. The examples in (10) shows how the applicative is redundantly marked: there are two markers of applicative in (10b,d,f) but only one benefactive or malefactive argument introduced. These forms are equivalent to their counterparts with only one applicative exponent (10a,c,e), and speakers use the two types of forms intercheangably.

10) Optional applicative sufixation of applicative stems

a. ma=ne mi **suwé**-ri remé
already=1sgN 2sgA **finish:Appl**-Pst tortillas
'I already finished (ate) up your tortillas'
'Ya me acabé tus tortillas' [SF 05 1:119/Elicit]

b. ma=ni mi **suwé-ki**-ri remé
already=1sgN 2sgA **finish:Appl-Appl**-Pst tortillas
'I already finished (ate) up your tortillas'
'Ya me acabé tus tortillas' [LEL 06 5:123/Elicit]

c. **oší**-ma
write:Appl-Fut:sg
'She will write him (a letter)'
'Le va a escribir (una carta)' [BF 06 2:98/Elicit]

d. **oší-ki**-ma
write:**Appl-Appl**-Fut:sg
'She will write him (a letter)'
'Le va a escribir (una carta)' [BF 06 2:98/Elicit]

e. **roné**-ma
boil:**Appl**-Fut:sg
'He will boil it for her'
'Se la va a hervir' [BF 06 2:101/Elicit]

f**.** **roné-ki**-ma
boil.**Appl-Appl**-Fut:sg
'He will boil it for her'
'Se la va a hervir' [BF 06 2:101/Elicit]

The implications of this and other cases of apparent morphological redundancy will be discussed in detail in Chapter 5.

Finally, transitive and applicative stems block any stress shift or vocalic alternation conditioned by strong and weak morphological constructions. That is, transitive and applicative stems always have stress in their final vowel, and block any stress shift or vocalic alternation imposed by strong morphological constructions.

3.3.3 Change of state predicates

In addition to the valence stem allomorphy of unstressed roots, Choguita Rarámuri has a second valency-increasing stem allomorphy system, marked through thematic suffixes and stress for a semantically defined class of verbs, change of state predicates.

The Guarijío cognates of these semantically defined predicates are defined as predicates that denote an irreversible change of state or condition, generally produced by some kind of contact, with prototypical intransitive-causative pairs ‘break’, ‘twist’, ‘torn apart’, ‘shatter’, ‘spill’ (Miller 1996:153). This class of verbs shares morphological traits accross the Uto-Aztecan language family: Heath (1978) reconstructs a morphological class of verbs for Proto-Uto-Aztecan (PUA) and the intermediate protolanguages, Proto-Northern-Uto-Aztecan (PNUA) and Proto-Southern-Uto-Aztecan (PSUA), and gives descriptions of this class of verbs in Southern Paiute, Mono, Luiseño, Cupeño, Cahuilla, Serrano, Hopi, Tepiman, Tarahumara and Aztec. This class is composed of disyllabic roots with thematic variation, and it includes verbs denoting events of physical change of state, even though the actual verbs are not cognate from one language to another.

In Choguita Rarámuri, the class of change-of-state predicates is composed of unstressed roots that are marked as intransitive, transitive or applicative through the presence or abscence of transitive suffixes and specific stress patterns. All change-of-state verb roots are disyllabic.

Intransitive stems have no transitivivizer suffixes and have fixed stress: stress is in the second syllable, whether a stress-shifting suffix (future singular in (11a) and conditional in (11c)) or a stress-neutral suffix (past in (11b) and (11d)) is attached.

11) Intransitive change of state verbs

---

a. čihá-ma ré číba
scatter-Fut:sg Dub goats
‘The goats will scatter’
‘Se van a desparramar las chivas’ [SF 07 1:17/Elicit]

b. ma čihá-ri číba
already scatter-Pst goats
'The goats already scattered'
'Ya se desparramaron las chivas' [SF 07 1:17/Elicit]

c. ripú-sa kusí
cut-Cond wood
'If the wood is cut'
'Si se corta la leña' [BF 08 1:25/Elicit]

d. ma ripú-ri kusí
already cut-Pst wood
'The wood already was cut'
'Ya está cortada la leña' [BF 08 1:25/Elicit]

Transitive stems, on the other hand, are marked through a transitive suffix, and are also sensitive to strong and weak constructions: stress is shifted to the transitive suffix, the third syllable, in strong constructions ((12a) and (12c)), but have final root (second syllable) stress in weak constructions ((12b) and (12d)).

12) Transitive change of state verbs

a. čiha-ná-sa napáči
scatter-Tr-Cond blouse
'If she scatters the blouses...'
'Si desparrama las blusas' [SF 07 1:17/Elicit]

b. píri=m orá čihá-ni-ri namúti
what=2sgN scatter:Tr-Tr-Pst things
'Why did you scatter the things?'
'Por qué desparramas las cosas?' [SF 07 1:17/Elicit]

c. ma ripu-ná-ma ré kusí
now cut-Tr-Fut:sg Dub wood
'She'll cut the wood now'
'Ya va a cortar la leña' [RF 04 verbs/Elicit]

d. serrúčo ripú-ni-ri kusí
saw cut-Tr-Pst wood
'The saw cut the wood'
'El serrucho cortó la leña' [BF 08 1:25/Elicit]

Transitive *–na,* thus, has a stressed and an unstressed allomorph. When bearing stress, the transitive often causes the final root vowel to align in color with the first root vowel, as in (13a). This form contrasts with (13c), where the vowel of the unstressed allomorph of transitive *–na* is neutralized in height.

13) Color alignment of root's final vowel

a. nihé ku'r**u**-ná-ma
1sgN turn-Tr-Fut:sg
'I will turn it (on its own axis)'
'Le voy a dar vuelta (en su propio eje)' [BF 05 1:187/Elicit]

b. nihé ku'r**í**-ma
1sgN turn-Fut:sg
'I will turn (on my own axis)'
'Voy a dar vuelta (en mi propio eje)' [SF 05 1:140/Elicit]

c. ma=ni ku'r**í**-či-ma
already=1sgN turn-Tr.Pl-Fut:sg
'I will now turn it several times (on its own axis)'
'Ya le voy a dar muchas vueltas (en su propio eje)' [BF 05 1:187/Elicit]

Finally, applicative stems are marked through the addition of a transitive suffix and fixed final root (second syllable) stress. As shown in the next examples, the applicative stems of change of state verbs have fixed second syllable stress, whether they are in a strong construction (future singular (14a)) or a weak construction (past (14b)).

14) Applicative change of state verbs

a. nihé mi čiwá-ni-ma
1sgN 2sgA tear.appl-Tr-Fut:sg
'I'm going to tear it for you'
'Yo te lo voy a trozar' [SF 07 1:21/Elicit]

b. nihé ma=mi čihá-ni-ri napáči
1sgN already=2sgA scatter-Tr-Pst blouses
'I scattered your blosues'
'Ya te desparramé las blusas' [SF 07 1:21/Elicit]

The differences between the different kinds of stems are schematized in Table 13.[30]

Table 13: Change of state predicates and thematic alternations

	Weak Constructions	**Strong Constructions**	**Marker**
Intransitive	kasí-ri	kasí-ma	fixed second syllable stress, no transitive suffix
Transitive	kasí-**ni**-ri	kasi-**ná**-ma	transitive *–na*
Applicative	kas**í**-**ni**-ri	kas**í**-**ni**-ma	fixed 2nd syllable stress (plus transitive *–na*)

The stress patterns that indicate valency interact with phonological effects imposed through strong and weak morphological constructions in the paradigms exemplified in Table 5. This interaction is limited to the patterns that do not involve a fixed stress pattern to mark a specific derivational category. The effects of weak and

[30] Brambila (1953) described a set of forms with "irregular presents". The stems with these "irregular presents" have a present form with a final *ni* sequence, which is lost in certain morphological constructions (and analyzed as an instance of truncation by some Uto-Aztecanists (cf. Langacker 1977)). This makes reference to a phenomenon present in the Rarámuri variety spoken in Choguita: intransitive stems of change of state predicates can be found with a final *ni* sequence when marked for recent past/present (through the bare stem). I analyze these cases as instransitive stems that retained the transitive as a thematic suffix, that, due to diachronic reasons not to be discussed here, retained the transitive suffix in certain morphological constructions.

strong mophological contexts, thus, will only produce stress shifts with transitive stems of change of state predicates.

3.3.4 Summary

Verbal roots in Choguita Rarámuri can be characterized as either stressed or unstressed, with significant differences in their prosodic makeup, depending on their interaction with different types of suffixes. Unstressed roots can be furher subdivided if the roots undergo vowel alternations concomitant to the stress shifts. I have presented a morphophonological analysis of these three types of roots, and given arguments to prefer this analysis over a conjugational class analysis.

Unstressed stems can participate in a valence stem allomorphy system and undergo internal, non-concatenative changes when specified for intransitive, transitive or applicative meanings. Another subset of the unstressed stems, semantically defined as a class of verbs of change of state, participates in a second valence stem allomorphy system. In these systems, final stem vowel changes and fixed stress patterns are the markers of morphological categories (valence-increasing categories), while any concomitant stress shifts are epiphenomenal of certain morphological constructions, a byproduct of the phonological make up of roots and affixes and their compositional interaction.

Having addressed the root classes in Choguita Rarámuri, we can now turn to the non-productive and non-concatenative processes occuring at the next level of the Choguita Rarámuri verb, the inner stem.

3.4 The Inner Stem: non-concatenative and unproductive processes

The inner stem, the input to suffixation, is composed of a denominalized noun root, an incorporated verb root, or a verbal root that has optionally undergone a non-concatenative process or a process that is no longer fully productive, including subject number prefixation and pluractional marking.

This first stem level can also characterized morphophonologically: this is the domain of application of compensatory lengthening (described in §5.1.1), and a morphological stress rule with incorporation that assigns stress to the first syllable of the head of the compound. In general, the morphological processes taking place at this stage are more tightly bound phonologically to the root than any later morphological process.

This sub-section is organized as follows: §3.4.1 describes non-concatenative processes; §3.4.2 gives an overview of instrumental prefixes; §3.4.3 describes the process of body-part incorporation; §3.4.4 describes number suppletion and plural prefixation; and §3.4.5 gives an overview of the unproductive verbalizer suffixes and their phonological effects on their bases.

3.4.1 Non-concatenative processes

Non-concatenative processes in Choguita Rarámuri include conversion (§3.4.1.1), pluractional consonant gradation (§3.4.1.2), final stem stress indicating imperative singular (§3.4.1.3), and a stress shift that marks a verbalization process (§3.4.1.4).

3.4.1.1 Conversion

Some nominal stems (including some nouns refering to weather) can take verbal morphology with no overt denominalizing marking. The examples in (15) are listed with the future singular suffix. With some exceptions (like 15a), most of these zero derived verbs are incorporated as unstressed stems.

15) Conversion examples

	Verb	*Gloss*	*Noun*	*Gloss*
a.	remé-ma	‘make.tortillas-Fut:sg’/ ‘hacer.tortillas-Fut:sg’	remé	‘tortillas’
b.	ika-méa	‘be.windy-Fut:sg’/ ‘hacer.viento-Fut:sg’	iká	‘wind’/‘viento’
c.	moro-méa	‘be.foggy-Fut:sg’/ ‘haber.neblina-Fut:sg’	morí	‘smoke’/‘humo’
d.	uku-méa	‘rain-Fut:sg’/ ‘llover-Fut:sg’	ukí	‘rain’/‘lluvia’
e.	nori-méa	‘be.cloudy-Fut:sg’/ ‘nublarse-Fut:sg’	norí	‘cloud’/‘nube’
f.	saki-méa	‘make.esquite-Fut:sg’/ ‘hacer.esquite-Fut:sg’	sakí	‘esquite’

Examples (15c-d) show also that the unstressed vowel of the derived verbal form can harmonize with the stem’s first vowel (*morí* ‘smoke’ becomes *moro-* ‘to be smoky/foggy’ and *ukí* ‘rain’ becomes *uku-* ‘to rain’). This harmonizing process is absent in cognate forms of zero derivation in Guarijío (cf. *yu’kí* ‘rain’, *yu’ki-má* ‘to rain’) (Miller 1996:148).

3.4.1.2 Pluractionality: prefixation and consonant mutation

There is a process that marks plural subject with verbs, or that an action occurs or is being performed by the same agent several times, or by several agents several times.

When used with nouns it marks plural number. These meanings are related in that they refer to event plurality or 'pluractionality'. Pluractionals have been defined to encompass meanings that range from iterative and frequentative to distributive and extensive action (Newman 1980, Wood 2007).

Choguita Rarámuri pluractional forms are marked through a prefixed element analyzed in other descriptive works of Rarámuri and Guarijío as reduplication (Lionnet 1968, Miller 1985).[31] In Guarijío, the cognate process (labelled "plural subject, iterative or durative"), is more clearly analyzed as reduplication, since the prefixed element is (C)V- (e.g. *saé*, *sa-saé* 'smell', *isí, i-isí* 'walk') (Miller 1996:62).

Pluractionals in Choguita Rarámuri are marked in three ways: i) through a prefixed vowel (16a-b) (where the vowel quality of the prefix can be harmonized to the root's first syllable vowel); ii) through consonant mutation (16c-h); or iii) through both consonant mutation and a prefix element (16i-o).[32]

16) Pluractionals

	sg	*pluractional*	*Gloss*	
a.	čóni	o-čóni	'become black'/ 'ennegrecerse'	[AH 05 2:24/Elicit]
b.	siríame	i-sérikame	'governor'/ 'gobernador'	[BF 05 1:156/Elicit]
c.	ka**p**órame	ka**b**órame	'to be round'/ 'ser redondo'	[BF 05 1:155/Elicit]
d.	**r**emarí	**t**émuri	'young people'/ 'joven'	[BF 05 1:155/Elicit]
e.	**r**ikurí	**t**ékiri	'drunk person'/ 'borracho'	[BF 05 1:156/Elicit]

[31] Lionnet (2001) labels these "intensive".

[32] It has been suggested that the prefix-like element was originally a prefix *i-* that has been leveled in color with the first stem vowel (Lionnet 2001a).

f.	ka**p**írame	ka**b**írame	‘cylindrical’/ ‘cilíndrico’	[BF 05 1:156/Elicit]
g.	sa**p**éami	sa**b**éami	‘fat’/‘gordo’	[BF 05 1:156/Elicit]
h.	**r**osákami	**t**osákami	‘white’/‘blanco’	[BF 05 1:157/Elicit]
i.	ki**p**á	i-ki**b**á	‘snow’/‘nevar’	[SF 05 2:8/Elicit]
j.	ku**p**úwé	u-ku**b**é	‘grill pepper(s)’ ‘asar chiles’	[SF 08 1:46/Elicit]
k.	si**t**ákame	i-si**r**ákame	‘to be red’/‘ser rojo’	[BF 05 1:157/Elicit]
l.	**b**ahí	a-**p**ahí	‘drink’/‘tomar’	[SF 08 1:46/Elicit]
m.	ča**b**óči	i-čá**p**oči [p.r.]	‘mixed-race mexicans’/ ‘mestizos’	[BF 05 1:155/Elicit]
n.	mu**k**í	o-mu**g**í	‘woman’/‘mujer’	[BF 05 1:156/Elicit]
o.	**r**anára	a-**t**anára	‘offspring’/‘crías’	[BF 05 1:156/Elicit]
p.	si**t**ákame	i-si**r**ákame	‘red’/‘rojo’	[BF 05 1:156/Elicit]

Consonant mutation involves a voicing toggle, since it produces voicing or lenition of a voiceless stop (16b-f), and devoicing or hardening of a voiced plosive (16f). Pluractional forms, as they involve extended exponence, will be discussed in Chapter 5.

3.4.1.3 Imperative final stem stress

The imperative singular has an allomorph marked only through stress placement with unstressed roots. Final stem imperative stress of unstressed roots contrasts with the stress pattern of these roots in weak constructions: in (17), the trisyllabic unstressed roots *ra’ama,* ‘give advice’, and *ra’iča* ‘speak’, have third syllable stress in the imperative ((17a) and (17d)) as well as in strong constructions ((17b) and (17e)), but second syllable stress in weak constructions ((17c) and (17f)).

17) Imperative stress shift

	Form	*Gloss*	*Construction*
a.	ra’am**á**!	‘give advice!’/‘cálmalos’	Imperative
b.	ra’am**á**-bo	‘give.advice-Fut:pl’	Strong construction
c.	ra’**á**mi-ri	‘give.advice-Pst’	Weak construction
d.	ra’ič**á**!	‘speak!’ / ‘Habla!’	Imperative
e.	ra’ič**á**-ma	‘speak-Fut:sg’	Strong construction
f.	ra’**í**či-ki	‘speak-Pst:1’	Weak construction

As will be discussed in §3.5.2.4, the stress shift to mark imperative is restricted to occur within a defined verbal zone, the derived stem.

3.4.1.4 Stress shift as verbalization

Some nouns can be denominalized through a stress shift one syllable to the right. The stress shift in these cases cannot be said to be triggered by a strong construction, since (18a) is inflected with a stress-shifting suffix and (18c) is inflected with a stress-neutral suffix. The stress shift is, thus, only attributable to the verbalizing process.

18) Verbalizing stress shift

	Form	*Gloss*	*Stress*	
a.	sipučá-ma	‘wear.skirt-Fut:sg’/ ‘ponerse.falda-Fut:sg’	3rd syllable	[BF 07 Sept 6/Elicit]
b.	sipúča	‘skirt’/‘falda’	2nd syllable	[BF 07 Sept 6/Elicit]
c.	napačá-ri	‘wear.blouse-Pst’/ ‘ponerse.blusa-Pst’	3rd syllable	[BF 07 Sept 6/Elicit]
d.	napáča	‘blouse’/‘blusa’	2nd syllable	[BF 07 Sept 6/Elicit]

Some of the nouns that undergo this stress shift may alternatively undergo other processes to mark verbalization. For instance, (18a) can be alternatively realized as (19), with denominalizing suffix *–tá* (and concomitant noun truncation).

19) Alternative affixal verbalization

sipu-tá-a	'skirt-Vblz-Prog'/'falda-Vblz-Prog'

I have not detected any semantic difference between these alternative forms.

3.4.2 Instrumental prefixes

A well-known phenomenon of Uto-Aztecan languages is the presence of a set of instrumental prefixes that indicate the instrument with which a transitive activity is done, or the manner in which the activity is carried out. These prefixes (approximately 20) are reconstructed for Proto-Uto-Aztecan. A list of reconstructions is given in (20) (from Dayley (1989:92)):

20) Uto-Aztecan instrumental prefixes

	Instrumental Gloss	*Reconstructed roots*	
		Form	*Gloss*
a.	'with heat or fire'	*kuh	'fire'
b.	'with the teeth or mouth'	*kü'i	'bite'
c.	'with the hand'	*maa	'hand'
d.	'with the nose'	*mu-pi	'nose'
e.	'(with or pertaining to) water'	*paa	'water'
f.	'with the butt or behind'	*pih	'back'
g.	'with or from cold'	*süp	'cold'
h.	'with the mind, by feeling or sensation'	*suuna	'heart'
i.	'with the foot'	*tannah	'foot'

According to Langacker 1977, these instrumental prefixes are morphologically active only in the Numic and Tepiman branches of Uto-Aztecan, and have only lexicalized remnants in the rest of the Uto-Aztecan family. This is true in the case of Choguita Rarámuri. The examples in (21) show that this language's cases of instrumental incorporation are only a few lexicalized items.

21) Instrumental prefixes in Choguita

	Form	*Gloss*	*Translation*	
a.	ma+čó	'hand +hit' 'mano+pegar'	'Hit with hand'/ 'pegar con la mano'	[RF 04 1:124/Elicit]
b.	ma+hó	'hand+dig'/ 'mano+escarbar'	'Fondle'/'manosear'	[BF 04 Com/Elicit]
c.	rara+hó	'foot+dig'/ 'pie+escarbar'	'Dig with foot'/ 'escarbar con el pie'	[SF 08 1:48/Elicit]
d.	sika+čó	'hand+hit'/ 'mano+pegar'	'Hit with hand'/ 'pegar con la mano'	[SF 04 1:123/Elicit]

In some cases, the incorporated noun does not have a correlated independent nominal form, as *ma-* (28a). Lionnet (2001b:87) identifies several instrumental prefixes in the Norogachi dialect (*ba(')-* 'water', *ku-* 'wood', *ma-* 'hand', *mo(')-* 'head', and *na-* 'fire'), but does not provide any examples. The Choguita Rarámuri verbs *motóchi* 'hit (oneself) in the forehead', *motépia* 'brade hair' probably contain the prefix *mo-* 'head'.

3.4.3 Body-part incorporation

Another inner stem building process is noun incorporation. Raramuri has N-V constructions that are restricted to nouns referring to body parts and bodily fluids, with properties that are prototypical of 'body part incorporation'. This is a restricted kind of noun incorporation, which is common in languages of the Americas, including the Uto-Aztecan family (Baker 1998). Relevant examples are shown in (22), where the body-part nouns (*mo'ó* 'head', *busí* 'eye', *ropá* 'belly', etc.) precede a verbal root, the head of the incorporated construction.

22) Body part incorporation constructions

	Form	*Gloss*	*Translation*	
a.	mo'o+répi-ri	'head+cut-Pst'/ 'cabeza+cortar-Pst'	'behead, intr' 'descabezarse'	[SF 07 1:185/ Elicit]
b.	busi+kási	'eye+break'/ 'ojo+quebrar'	'be blind'/ 'enceguecerse'	[SF 06 1:112/Elicit]
c.	ropa+kási	'belly+break'/ 'estómago+romper'	'miscarriage'/ 'abortar'	[BF 07 VDB/Elicit]
d.	siwa+bóti-ri	'guts+loosen-Pst'/ 'tripas+soltarse-Pst'	'disemboweled, intr'/ 'destriparse'	[SF 07 1:186/ Elicit]
e.	kuta+bíri	'neck+twist'/ 'cuello+torcerse'	'twist neck, intr'/ 'torcerse el cuello'	[SF 07 VDB/Elicit]
f.	čoma+bíwa	'mucus+clean'/ 'mocos+limpiar'	'clean mucus'/ 'limpiarse los mocos'	[SF 08 1:51/Elicit]

Some of these constructions (e.g. (22d-f)) are fully compositional and have transparent semantics. The incorporated noun generally fills the syntactic role of object, decreasing the verb's valence. Incorporated constructions can also be externally modified, as example (23) shows.

23) External modification of incorporated verb

ma	kosúrti	rono+répi-ri	mono
/ma	kosúriti	ronó+repú-li	móno/
already	left	leg+cut-Pst	doll

'The doll's left leg already fell'
'Ya se le cayó la pata izquierda al mono' [SF 07 1:186/Elicit]

Incorporated body-part nouns, however, do not form an open class. Only a few body-part terms are found in these constructions, and not the full range of lexical items in this semantic class. Body-part terms such as *raníka-ra* ‘heel’, *kočía-ra* ‘eyebrow, lashes’, and *lomíriči* ‘wrist’ are never found in incorporated constructions.

As for the prosodic make-up of incorporated forms, regardless of the underlying accentual information the roots might carry, stress is assigned in the first syllable of the head of the construction, the verbal root. In forms where the first element, the noun, is disyllabic and where the second element, the head verb, has second-syllable stress in non-incorporated structures, stress surfaces on the first syllable of the second member (24).

24) Stress shift in incorporated forms

	Form	*UR*	*Gloss*
a.	busi+k**á**si	/busí+kas**í**/	‘eye+break’/‘ojo+romperse’ [BF 07 1:163/Elicit]
b.	kuta+b**í**ri	/kutá+bi’r**í**/	‘neck+twist’/‘cuello+torcerse’ [BF 07 1:163/Elicit]
c.	rono+r**é**pi	/ronó+rep**ú**/	‘foot+cut’/‘pie+cortase’ [BF 07 1:163/Elicit]
d.	sika+r**é**pi	/siká+rep**ú**/	‘hand+cut’/‘mano+cortarse’ [BF 07 1:163/Elicit]

Incorporated body-part nouns can also be truncated to fit the prosodic template of incorporated forms. In (25), the trisyllabic nouns *čaméka,* ‘tongue’, and *čerewá*, ‘sweat’, truncate their final syllable in the incorporated form.

25) Truncation of tetrasyllabic nouns in incorporation

	Form	*UR*	*Gloss*
a.	čame+répu	/čamé**ka**+repú/	‘tongue+cut’/‘lengua+cortarse’ [SF 07 1:184/Elicit]
b.	čere+bíwa	/čere**wá**+bi’wá/	‘sweat+clean’/‘sudar+limpiar’ [SF 07 1:187/Elicit]

Incorporated forms will be re-examined in the analysis of the morphologically conditioned stress system in Chapter 4.

3.4.4 Number marking: suppletion and plural prefixes.

Choguita Rarámuri lacks inflectional agreement marking, and displays a few lexically restricted resources to mark plurality and pluractionality on both nouns and verbs. This section describes the processes that apply to verbs.

Like most Uto-Aztecan languages, Choguita Rarámuri has number suppletion for certain roots, mostly positional verbs. Agreement is expressed with intransitive patient-like subjects (26a-d) and with transitive objects (26e) (S and O (Dixon 1979)), in an ergative pattern.

26) Number verb suppletion

	Sg	*Pl*	*Gloss*	
a.	asi-	močí-	'sit'/'sentarse'	[BF 05 2:45-46/Elicit]
b.	wiri-	hawá-	'stand'/'pararse'	[BF 05 2:46/Elicit]
c.	bo'i-	bi'ti-	'lie down'/'acostarse'	[BF 05 2:47/Elicit]
d.	bakí-	mo'í-	'go in'/'entrar'	[BF 05 1:133/Elicit]
e.	mi'ri-	ko'i-	'kill'/'matar'	[RF 04 1:103/Elicit]

In addition, there are two non-suppletive, semi-productive processes in Choguita Rarámuri to mark plurality. The first one is used exclusively with verbal roots and it marks subject number in an accusative pattern (S and A). When the subject is singular, a prefix *ni-* is added or the root remains unprefixed; when the subject is plural, the prefix *na-* is used (27).

27) Number prefixation

	Singular	*Plural*	*Gloss*	
a.	surí/ni-surí	na-surí	'fight over something' 'disputar'	[BF 05 2:107/Elicit]
b.	ikí/ ni-ikí	na-kí	'bite/sting'/'picar'	[BF 05 2:107/Elicit]
c.	očó	na-čó	'hit w/fist'/ 'pegar con el puño'	[BF 05 2:107/Elicit]

d.	ku'íri/ ni-kúri	na-kúri	'help'/'ayudar'	[RF 04 VDB/Elicit]
e.	ni-hirápi	na-harápi	'restle'/'luchar'	[AH 05 2:100/Elicit]
f.	ni-hisípi	na-hisípi	'reach'/'alcanzar'	[BF 05 2:106/Elicit]
g.	ni-tówi	na-tówi	'surpass'/'rebasar'	[BF 05 2:106/Elicit]
h.	ni-hisá	na-hisá	'challenge'/'retar'	[BF 05 2:106/Elicit]
i.	ni-té	na-té	'step on'/'pisar'	[BF 05 2:107/Elicit]

The examples in (27a-d) have an independent root form with no prefix for the singular, but the forms in (27e-f) are not attested alternatively without a subject number prefix.

3.4.5 Verbalizing morphology

Choguita Rarámuri has several productive verbalizing suffixes, including 'make' *–ta*, reversive *–bu*, 'gather' *–tu* and a replacive suffix *–e.* A noun derived with the verbalizer *-ta (-ra)* suffix becomes a verb meaning 'to make/become N' (28a) or, when used with nouns referring to a piece of clothing, 'to wear N' (28b, c). It follows the nominal root forming a base to which inflectional morphology is added.[33]

28) Verbalizer *–ta* 'make/become'

---

a. nori-rá-ma ré
cloud-Vblz-Fut:sg Dub
'It will get cloudy'
'Se va a nublar, parece' [BF 04 1:92/Elicit]

b. nihé aka-rá-sa sapato
1sgN sandal-Vblz-Cond shoes
'I will wear shoes'
'Voy a ponerme zapatos' [SF 08 1:47/Elicit]

---

[33] The allomorphs are lexically suppletive, as discussed in Chapter 2.

c.	sipu-tá-a	čukú
	skirt-Vblz-Prog	bend
	‘(She is) puting on a skirt’	
	‘Se está poniendo la falda’	[BF 07 Sept 6/Elicit]

When this suffix is added to trisyllabic nouns, the last syllable of the noun is truncated in order to meet the requirement of this construction to have stress on the denominalizing suffix (29) (the truncated syllable of the noun is in boldface in the underlying representation).

29) Noun truncation in verbalizing constructions

he	ná=ni	sipúča	sipu-tá-mo	rá
/he	ná=ne	sipúča	sipú**ča**-tá-ma	orá/
he	Prox=1sgN	skirt	skirt-Vblz-Fut:sg	Cer
‘I will wear this skirt’				
‘Me voy a poner esta falda’				[BF 07 Sept 6/Elicit]

This truncation process resembles the truncation that trisyllabic nominal roots undergo in incorporation constructions (cf. 25)

The suffix *–bu*, on the other hand, has a “reversive” meaning and it derives verbs from nouns is a non-productive affix that has the meaning ‘remove’ or ‘undo’.[34] Some examples of this derivational suffix are provided in (30).

30) Reversive *–bu* suffix

a.	nihé	torí	bo’o-bú-ma	
	1sgN	chicken	feather/fur-Rev-Fut:sg	
	‘I will pluck the chicken’			
	‘Voy a desplumar la gallina’			[SF 08 1:51/Elicit]

[34] A cognate suffix can be found in Guarijío, and Miller identifies the verb *puha*, ‘to take away’, as its source (1996:151). The Rarámuri cognate of this verb is *bu(’)é* ‘to take away’.

b.	pačá	atí	muní	ri'i-bú-a
	inside	siting	beans	stone-Rev-Prog

'He is sitting inside taking out stones from beans'
'Está (sentado) adentro limpiando frijol (quitándole las piedras)'
[SF 08 1:51/Elicit]

c.	ma	čomo-bú-ka!
	already	mucus-Rev-Imp:sg

'(You.sg) clean your nose already!'
'Ya límpiate la nariz!' [SF 08 1:51/Elicit]

Another derivational suffix that attaches to nominal roots to form verbs is 'gather' *–tu (-ru)*. Its meaning is 'to gather' or 'to bring', and it seems to be fairly unproductive, since it is restricted to just a few nouns. It is always stressed, it occurs next to the nominal root, and as part of the inner stem, it is sensitive to the morphophonological effects that characterize this stem level. Some examples are given in (31).

31) Verbalizer *–tu* suffix

a.	nihé	ba'wi-tú-ma
	1sgN	water-gather-Fut:sg

'I will bring water'
'Voy a traer agua'

b.	ma=ti	ila-rú-po
	now=1plN	cactus-gather-Fut:pl

'Let's gather cactus now'
'Vamos juntando nopales' [SF 08 1:52/Elicit]

c.	mi	ri'rí	na'i-rú-mi-sa
	Dem	there	fire-gather-Mot:Imp-Imp:sg

'Go get fire over there!'
'Ve a traer lumbre allá!' [SF 08 1:52/Elicit]

d.	hípi	oméači	raki-rú-pa	rá
	today	sunday	palm-gather-Fut:pass	Cer

'Palms will be gathered today, Sunday'
'Hoy domingo van a recibir la palma' (lit. 'las palmas serán juntadas')
[SF 08 1:52/Elicit]

Finally, the verbalizer *–e*, with the general meaning 'to have' or 'to wear', is a replacive suffix. It targets the nominal stem final vowel, and it is always stressed. The examples in (32) show this derivation.

32) Verbalizer suffix *–e*

	Verb		*Noun*		
a.	kun-é-	'marry a man'/ 'casarse con hombre'	kuná	'Husband' 'marido'	[BF 05 1:116/Elicit]
b.	up-é-	'marry a woman'/ 'casarse con mujer'	upí	'Wife'/ 'mujer'	[BF 05 1:116/Elicit]
c.	ak-é	'wear sandals'/ 'enhuaracharse'	aká	'Sandal'/ 'huarache'	[BF 05 1:116/Elicit]
d.	wir-é	'wear earrings'/ 'enaretarse'	wirá	'Earring'/ 'arete'	[BF 07 sept 6/Elicit]
e.	motos-é	'have white hair'/ 'tener canas'	motosá	'White hair'/ 'canas'	[BF 07 sept 6/Elicit]

3.4.6 Summary

Verbal roots in Choguita Rarámuri may undergo undergo semi-productive and unproductive process, both concatenative and non-concatenative, before adding any suffixes. These processes include conversion, pluractional consonant mutation, stress shifts to mark imperative or verbalization, and body-part incorporation.

Having described root classes and the processes taking place at the innermost level of the verbal stem, I will now turn to the suffixation domain.

3.5 Verbal template and verbal domains

The suffix positions and categories expressed in the Choguita Rarámuri verbal structure are schematized in Table 14 (where the inner stem is represented as α).

Table 14: Suffix positions and categories of the Choguita Rarámuri verb

Position	**Type**	**Categories**
S1	Derivation	Inchoative
S2	Derivation	Transitives
S3	Derivation	Applicatives
S4	Derivation	Causative
S5	Derivation	Applicative
S6	Modality	Desiderative
S7	Derivation	Associated Motion
S8	Modality	Auditory Evidential
S9	Inflection	Voice/Aspect/Tense
S10	Inflection	Mood
S11	Inflection	TAM
S12	Subordination	Deverbal morphology

The suffixes in each position do not generally co-occur in the same word, due to their semantic incompatibility (though there are systematic exceptions; these will be discussed in this chapter and the rest of this dissertation).

A summary of the verbal suffixes and their position in the verbal template is given in Table 15. A basic description and examples of the suffixes can be found in Appendix 2. The 'Reference' column in Table 15 refers to the section where each individual suffix is described in this Appendix.

Table 15: Choguita Rarámuri verbal suffixes

	Category	**Suffix**	**Reference**
S1	Inchoative	Inchoative *-ba* (Inch)	§1
S2	Transitives	Pluractional transitive *-ča* (Tr:pl)	§2.1
		Transitive *-na* (Tr)	§2.2
		Transitive *-bu* (Tr)	§2.3
S3	Applicatives	Applicative *-ni* (Appl)	§3.1
		Applicative *-si* (Appl)	§3.2
		Applicative *-wi* (Appl)	§3.3
S4	Causative	Causative *-ti* (Caus)	§4
S5	Applicative	Applicative *-ki* (Appl)	§5
S6	Desiderative	Desideartive *–nare* (Desid)	§6
S7	A. Motion	Associated Motion *–simi* (Mot)	§7
S8	A. Evidential	Auditory Evidential *–čane* (Ev)	§8
S9	Tense, Aspect, Mood, Voice	Past Passive *-ru* (Pst:Pass)	§9.1
		Future Passive *-pa* (Fut:Pass)	§9.2
		Medio-Passive *–riwa* (MPass)	§9.3
		Conditional Passive *–suwa* (Cond:Pass)	§9.4
		Future Singular *-méa, -ma* (Fut:sg)	§9.5
		Future Plural *-po* (Fut:pl)	§9.6
		Motion Imperative *-me* (Mot:Imp)	§9.7
		Conditional *-sa* (Cond)	§9.8
		Irrealis singular *–me* (Irr:sg)	§9.9
		Irrealis plural *-pi* (Irr:pl)	§9.10
S10	Mood	Potential *-ra* (Pot)	§10.1
		Imperative sg. *–ka* (Imp:sg)	§10.2
		Imperative sg. *-sa* (Imp:sg)	§10.3
		Imperative pl. *-si* (Imp:pl)	§10.4
S11	Tense, Aspect, Mood	Reportative *-ra* (Rep)	§11.1
		Past perfective *-li* (Pst)	§11.2
		Past perfective , 1st person *-ki* (Pst:1)	§11.3
		Past imperfective *–e* (Impf)	§11.4
		Progressive *-a* (Prog)	§11.5
		Indirect causative *-nura*	§11.6
S12	Subord.	Temporal *-či* (Temp)	§12.1
		Epistemic *-o* (Ep)	§12.2
		Gerund *-ka* (Sim)	§12.3
		Purposive *-ra* (Pur)	§12.4
		Participial *-ame* (Ptcp)	§12.5

This verbal structure does not imply a slot-and-filler, template-like structure - the labels S1…S12 are not intended to imply a flat structure as in a slot matrix. In the highly agglutinating Choguita Rarámuri verbal morphology, morphotactic, and morphophonological processes define a hierarchical structure of the verb, with suffixes closer to the inner stem displaying less salient morpheme junctures (given by phonological transparency and productivity). In the structure represented in Table 16, I identify five verbal zones after the inner stem level: a derived stem, a syntactic stem, an aspectual stem, a finite verb level, and finally the subordinate verb.

Table 16: Choguita Rarámuri verbal stem levels

Position	**Marker**	**Stem level**
α	Pluractionality, number, Verbalization, etc.	Inner Stem
S1	Inchoative	Derived Stem
S2	Transitives	
S3	Applicatives	Syntactic Stem
S4	Causative	
S5	Applicative	
S6	Desiderative	Aspectual Stem
S7	Associated Motion	
S8	Auditory Evidential	
S9	Voice/Aspect/Tense	Finite Verb
S10	Mood	
S11	TAM	
S12	Deverbal morphology	Subordinate Verb

The first identifiable layer in the suffixation domain is the “derived stem”. This layer of the verbal stem includes two kind of semantically restricted, unproductive derivational suffixes (an inchoative suffix and three transitive suffixes). These suffixes, as shown in §3.3.3, are restricted to a semantically defined class of verbs, change of state verbs. There are three morphological and morphophonological criteria that allow us to identify this stem level as a defined sub-constituent of the Choguita Rarámuri verb: first, the non-concatenative imperative singular (described in §3.4.1.3) is marked as final stress of this stem level; second, this level is also the domain of the passive-induced lengthening (discussed in §3.5.2.3); finally, the derived stem undergoes the stress shift that characterizes unstressed stems when combined with strong suffixes (addessed in §3.3.1).

The derived stem is the input to the next stage of the construction of the Choguita Rarámuri verb, the "syntactic stem". This next stem level includes suffixes in S3-S5, suffixes that mark valence-increasing operations. Within this stem level, suffixes are attested in variable order and display multiple (or extended) exponence. The suffixes in this level also form a coherent zone within the Choguita Rarámuri verb in morphophonological terms: these suffixes are stress-neutral, forming a small pocket of unstressable suffixes within a larger, stressable domain. Finally, this stem domain is part of the domain of round harmony, as defined in §3.5.2.4.

Another layer of the verbal stem is the "aspectual stem", composed of suffixes in positions S6 to S9, marking desiderative, associated motion, and auditory evidential. These suffixes, which are semantically related to independent verb forms in the language, all have monosyllabic allomorphs. The phonological factors determining the distribution of dysillabic and monosyllabic allomorphs will be the focus of Chapter 6. These suffixes also display variable ordering, due to factors to be discussed in Chapter 7. These sufixes are also part of the domain for round harmony and constitute the last layer where this process applies (that is, suffixes to the right of this domain are not targets for spreading of the harmony).

The final stage in constructing a Choguita Rarámuri inflected verb consists in adding the suffixes in positions S9-S11 in the finite verb, the "finite verb" level suffixes. The grammatical categories marked at this level are mood distinctions (including imperative and reportative), voice, tense, and aspect (and number and person marginally), conflated in portmanteaux suffixes. In this domain there are inflectional affixes that produce an idiosyncratic meaning when combined.

Finally, a finite verb can be the input for another, optional layer of morphology, in order to be used in subordinate clause constructions. These suffixes, in position S12, are the last stage of affixation of the Choguita Rarámuri verb, and are stress neutral. They produce nominalizations, and are at the word boundary.

Table 17 summarizes the linear order facts, and the semantic, morphophonological and prosodic properties of affixes that have motivated the verbal zones proposed for the Choguita Rarámuri verb.

The evidence for the proposed structure will be laid out as follows. In §3.5.1, I present the morphotactic evidence for positing the positions in the verbal template, and in §3.5.2, I give the morphophonological evidence for positing different verbal domains.

Table 17: Characteristics of the Choguita Rarámuri verb

Stem level	**Categories expressed**	**Morphotactics**	**Phonology**	**Stress properties**
Inner Stem	Body part incorporation, pluractional, number prefixes, verbalization	Fixed order	Haplology, compensatory lengthening, passive length, imperative stress, round harmony	Shifting
Derived Stem	Inchoative Transitive	Fixed order	Passive length, imperative stress, round harmony	Shifting
Syntactic Stem	Applicative Causative	Variable order, Multiple exponence	Round harmony	Neutral
Aspectual Stem	Desiderative Ass. Motion Evidential	Variable order	Round harmony, short allomorphs	Shifting / Neutral
Finite Verb	Voice TAM Indirect Causative	Fixed order		Neutral (except S10)
Subord. Verb	Nominalizations, subordination	Fixed order		Neutral

3.5.1 Morphotactic evidence for affix ordering generalizations

The morphotactic evidence for positing the suffix positions or slots in the verbal template comes from suffixes' linear ordering properties, as well as their exponence and permutation possibilities. The evidence is presented progressively describing the positions from the inner stem towards the outer layers of affixation.

The closest positions to the inner stem in the verbal template are occupied by suffixes that are only used with change-of-state predicates: the inchoative suffix (in S1) and a set of transitive suffixes in (S2). Their ordering is illustrated in (33).

33) Inch (S1) – Tr(Pl) (S2)

a. ma=n rata-**bá-či**-ki ko'wá-ami
already=1sgN heat-**Inch-Tr:Pl**-Pt:1 eat-Ptcp
'I already heated up the food'
'Ya calenté la comida' [BF 08 1:20/Elicit]

b. muhé muní ma čoko-**bá-na**-ri
2sgN beans already sour-**Inch-Tr**-Pst
'You already made the beans go sour'
'Ya hiciste que se agriaran los frijoles' [SF 04 1:113/Elicit]

c. ne ma aka-**bá-či**-ri kahé [pr.]
1sgN already sweet-**Inch-Tr:Pl**-Pst coffee
'I already sweetened the coffee'
'Ya endulcé el café' [BF 08 1:20/Elicit]

d. ne mi ba'wí rata-**bá-č**-ki-ra?
1sgN 2sgA water heat-**Inch-Tr**-Appl-Pot
'Shall I heat the water for you?'
'Te caliento el agua?' [BF 08 1:21/Elicit]

Position S3 is occupied by a set of applicative suffixes. These applicative suffixes might have encoded semantic differences in a previous diachronic stage,[35] but synchronically they are lexically selected by the roots to which they attach. For instance, applicative suffix *–ni* is the only applicative suffix that can be attached to bases derived with transitive suffix *–bu* ((34a-b)). This applicative suffix, however, can be attached to transitive stems derived through other transitive suffixes (34c).

[35] Some semantic differences are still retained in cognate suffixes in the closely related language Guarijío (Miller 1996)).

34) Tr (S2) – Appl (S3)

---

a.

we	ne	mo’o-**bú-ni**-ma	towí	éči	mukí
Int	1sgN	go.up**-Tr-Appl**-Fut:sg	boy	Dist	woman

‘I will lift the boy for that woman’
‘Voy a levantarle el niño a esa mujer’ [BF 05 1:39/Elicit]

b.

we	ta	raki**-bú-ni**-bo
Int	1plN	push**-Tr-Appl**-Fut:pl

‘Let’s push it for him’
‘Vamos empujándesolo’ [SF 05 1:61/Elicit]

c.

ri’o**-ná-ni**-ma
lijar**-Tr-Appl**-Fut:sg
‘They will sandpaper (the wood)’
‘Se lo va a lijar (la madera)’ [SF 05 1:175/Elicit]

The applicative suffixes in slot S3 are in turn followed by a productive causative suffix in slot S4. In (35), applicative suffixes *–ni, -si* and *-wi* preceed the causative suffix *–ti*.

35) Appl (S3) – Caus (S4)

---

a.

gabriélo	šuwí-**w-ti**-ma	ré	ba
Gabriela	finish.up:Appl-**Appl-Caus**-Fut:sg	Dub	Cl

‘Gabriela will make her finish up (his tortillas)’
‘Gabriela va a hacer que ella se las acabe (sus tortillas)’
[BF 08 1:27/Elicit]

b.

ne	a	mi	šú-**n-ti**-ki-sa	ró
1sgN	Aff	2sgA	sew-**Appl-Caus**-Appl-Cond	Q

‘What if I made you sew her a skirt?’
‘Qué tal si te hago coserle una falda? [BF 08 1:28/Elicit]

c.

to	jadíra	pá**-š-ti**-ri	bo!
Exh	yadira	throw-**Appl-Caus**-Imp:sg	Exh

‘Let’s see, throw it to Yadira!’
‘A ver, tíraselo a Yadira!’ [BF 08 1:28/Elicit]

d.	oší-**w-ti**-mo	rá	ne	yé-ra
	write-**Appl-Caus**-Fut:sg	Cer	1sgN	mom-Poss

‘She’ll make him write my mom (a letter)’
‘Va a hacer que le escriba a mi mamá’ [BF 08 1:28/Elicit]

The productive causative suffix *–ti* appears ordered before the productive applicative suffix *–ki* (36), motivating a slot S5 for the applicative suffix.

36) Caus (S5) – Appl (S6)

a.	ne	a	mi	šú-n**-ti-ki**-sa	ró
	1sgN	Aff	2sgA	sew-Appl**-Caus-Appl**-Cond	Q

‘What if I made you sew her a skirt?’
‘Qué tal si te hago coserle una falda? [BF 08 1:28/Elicit]

b.	tamí	ko=mi	opés-**ti-ki**-ma	ré	ba
	1sgA	Emph=2sgN	vomit-**Caus-Appl**-Fut:sg	Dub	Cl

‘You’ll make him throw up on me’
‘Vas a hacer que me vomite encima’ [BF 08 1:27/Elicit]

c. aka-bá-**ti-ki**=ni
sweet-Inch-Caus-Pst:1=1sgN
‘I sweetened it’
‘Lo endulcé’ [BF 08 1:18/Elicit]

d.	tamí	noké-r-**ti-ki**-ri!
	1sgA	move.sth-Caus-**Caus-Appl**-Imp:sg

‘Move it for me!’
‘Muévemelo!’ [BF 08 1:28/Elicit]

While the Causative-Applicative (*-ti-ki*) order is the most commonly attested, these suffixes can also permutate their order. In the examples in (37) the applicative suffix *-ki* is ordered before the causative suffix *–ti*.

37) Appl-Caus *–ki-ti* order

a. to, jéni dúlse íw-**ki-ti**-ri jadíra
go! candy bring.Appl-Appl-Caus-Imp.sg
'Make Yeni bring candy for Yadira'
'Ve, haz que Yeni le traiga dulces a Yadira' [BF 07 1:62/Elicit]

b. to mičí-**k-ti**-ri bo
Exh carve-**Appl-Caus**-Imp:sg Exh
'Carve it for him'
'Lábraselo!' [BF 08 1:107/Elicit]

c. ne čo'má bi'wí-**k-ti**-mo rá tiwé
1sgN mucus clean-**Appl-Caus**-Fut:sg Cer girl
'I'll make her clean the girl's nose'
'La voy a hacer que le limpie los mocos a la niña' [BF 08 1:55/Elicit]

The applicative-causative order, as exemplified in (37), is marginally attested in the corpus (the causes of this permutation will be discussed in Chapter 7 (§7.3.3)). The overwhelming preference for the causative-applicative order motivates positing a separate slot, S5, for the productive applicative suffix *–ki*, separate from the rest of the applicative suffixes in S3. An additional argument in favor of keeping the two applicative positions distinct comes from the difference in productivity between the inner applicatives and the later, productive suffix *–ki*,. This difference will also be discussed on Chapter 5 in terms of the applicative suffixes multiple exponence.

The applicative suffix is in turn followed by the desiderative suffix *–nare* (in slot S6). This suffix, related to the free verbal root *nakí* 'want', is exemplified after the applicative suffix in (38).

38) Appl (S5) – Desid (S6)

a.

ne	mi	biré	wási	mi’rí**-ki-niri**	muhé	omáwarači
1sgN	2sgA	one	cow	kill**-Appl-Desid**	2gnN	party

‘I want to kill one cow for you, for your party’
‘Quiero matar una vaca para ti (para tu fiesta) [SF 07 2:65-66/Elicit]

b.

ja	tamí	pičí**-ki-niri**	nihé	bitériči
already	1sgA	sweep**-Appl-Desid**	1sgN	house

‘They already want to sweep my house for me’
‘Ya me quieren barrer la casa’ [SF 07 2:65-66/Elicit]

c.

mi	simé-**ki-ni**-ra	rú
2sgA	play-**Appl-Desid**-Rep	say

‘He says he wants to play a song for you’
‘Dice que te quiere tocar una canción’ [BF 08 1:60/Elicit]

d.

ém	chimí	simí-ra	banisú-**ki-ni**-ma
2plN	there	go-Pot	pull-**Appl-Desid**-Fut:sg

‘They will want to go and pull it for them’
‘Van a querer ir jalándoselo’ [SF 08 1:75/Elicit]

The desiderative suffix *-nare* is then followed by the associated motion –*si*, as exemplified in (39). This suffix, which also has a disyllabic (long) allomorph –*simi*, is derived from the motion verb *simi* ‘go (sg.)’.

39) Desid (S6) – Mot (S7)

a.

ne	ča	koči**-nál-si-i**	ináro
1sgN	Neg	sleep**-Desid-Mot-Impf**	go

‘I wanted to go along sleeping (e.g., riding in a bus)’
‘Quise irme durmiendo’ [SF 07 2:72-73/Elicit]

b.

ko’**-nál-si**-a	iná-li
eat**-Desid-Mot**-Prog	go-Pst

‘He went wanting to go along eating’
‘Se fue queriendo comer’ [SF, 07 2:72-73/Elicit]

c. ne isíi-**n-si**-a ináro
1sgN urinate-**Desid-Mot**-Prog go
'I'm going along wanting to urinate'
'Voy queriendo orinar' [BF 08 1:61/Elicit]

d. ma=n ne chakéna wá-**n-si**-a inári rité
already 1sgN aside throw-**Desid-Mot**-Prog go stone
'I go along wanting to throw away the stones'
'Ya me dan ganas de ir quitando las piedras' [BF 08 1:88/Elicit]

The desiderative and associated motion suffixes are also attested in the inverse order, as shown in (40).

40) Mot-Desid order

a. ri'i-bú**-s-niri** rité bu'učími
stone-Rev**-Mot-Desid** stone road
'(He) wants to go along the road removing stones'
'Quiere irse por el camino quitando las piedras' [SF 07 2:72-73/Elicit]

b. awí**-si-nir**-i
dance**-Mot-Desid**-Impf
'She wanted to go along dancing'
'Quería irse bailando' [SF 07 2:72-73/Elicit]

c. ne=n nará**-s-nil**-a ináro
Int=1sgN cry-**Mot-Desid**-Prog go
'I'm going along feeling like crying'
'Voy queriendo llorar' [BF 08 1:89/Elicit]

d. á birá tamí yó-r-**si-ni**-ra ruá
Aff really 1sgA mad-Caus-**Mot-Desid**-Rep say
'He says he wants to go along making me mad'
'Dice que me quiere ir haciendo enojar' [SF 08 1:72/Elicit]

The next position is occupied by the auditory evidential suffix, *-čane*, another dysillabic suffix that is transparently related to an independent verb in the language, *(a)čane*, 'say, sound like'. The following examples show the evidential suffix ordered after the associated motion suffix (41) and the desiderative suffix (42).

41) Mot (S7) – Ev (S8)

---

a. wikuwá**-s-čin**-a
whistle **-Mot-Ev**-Prog
'It sounds like they are going around whistling'
'Se oye que alguien va chiflando' [SF 07 2:74, el492/Elicit]

b. wí-**s-čane**
harvest-**Mot-Ev**
'It sounds like somebody is going along harvesting'
'Se oye que van pizcando' [SF 08 1:132/Elicit]

c. á bírá ubá-r-**s-čani**
Aff really bathe-Caus-**Mot-Ev**
'It sounds like they are going along bathing them'
'Se oye que van bañándolos' [SF 08 1:150/Elicit]

d. á birá we áa **s-čani** wikokí u'páka
Aff really Int look.for-**Mot-Ev** mushrooms back
'It sounds like they are going along looking for mushrooms back there'
'Se oye que van buscando hongos atrás' [SF 08 1:145/Elicit]

42) Desid (S6) – Ev (S8)

---

s. wikará**-n-čane**
sing-**Desid-Ev**
'It sounds like they want to sing'
'Se oye como que quieren cantar' [SF 07 1:9/Elicit]

b. ma ko'-**nál-čani**
already eat-**Desid-Ev**
'It seems they already want to eat'
'Como que ya quieren comer' [SF 08 1:124/Elicit]

c. rokó á ri'é-**n-čin**-i
last.night Aff play-**Desid-Ev**-Impf
'Last night it sounded like they wanted to play'
'Anoche se oía que querían jugar' [SF 08 1:124/Elicit]

d.	rokó	mi	bo'órri	na	harré	mo'i-**náal-čin**-i
	night	there	up.there	there	some	enter.pl-**Desid-Ev**-Impf

‘Last night it sounded like theey wanted to go inside up there’
‘Anoche se oía que querían entrar allá arriba’ [SF 08 1:124/Elicit]

The desiderative and evidential suffixes, too, can appear in the inverse order, as shown in (43), due to factors to be discussed in Chapter 7 (§7.3.2).

43) Evidential-Desiderative order

a. opés**-ča-nar**-o
throw.up-**Ev-Desid**-Ep
‘It sounds like they want to throw up’
‘Se oye como que quieren vomitar’ [BF 07 rec300/Elicit]

b. paraér**-ča-nar**-o
dance.paraéri-**Ev-Desid**-Ep
‘It sounds like they want to dance paraéri’
‘Se oye como que quieren bailar paraéri’ [BF 07 1:182/Elicit]

c.	á	birá	chikle	kéči**-ča-niri**	kúruwi
	Aff	really	gum	chew-**Ev-Desid**	kids

‘It seems like the kids want to chew gum’
‘Se oye que los niños quieren mascar chicle’ [SF 08 1:146/Elicit]

d.	nápi	ré	atís-**ča-nar**-a
	Rel	Dub	sneeze-**Ev-Desid**-Prog

‘It is like somebody wants to sneeze (it spunds like it)’
‘Como que se oye que quieren estornudar’ [SF 08 1:122/Elicit]

As shown in the next examples, the desiderative suffix (44), the associated motion suffix (45) and the evidential suffix (46) precede a set of stress-shifting suffixes, posited to occupy slot (S9). All of the suffixes in this position are portmanteaux suffixes encoding both passive voice and a tense/aspectual distinction: past passive (Pst:Pass) *–ru*, future passive (Fut:Pass) *–pa*, habitual passive (MPass) *–riwa* ~ *-wa*, and conditional passive (Cond:Pass) *–suwa,* future singular (Fut:sg) *–méa* ~ *-ma,* future plural (Fut:pl) –

po, motion imperative (Mot:Imp) –*me*, conditional (Cond) –*sa*, irrealis singular (Irr:sg) –*me*, and irrealis plural (Irr:pl) -*pi*.

44) Desid (S6) – Fut.sg (S9)

---

a. pičí-r**-ni-mo** rá
sweep-Caus**-Desid-Fut:sg** Cer
'He will want to make him sweep'
'Va a querer hacerlo barrer' [BF 07 EDCW(81)/Elicit]

b. nihé ko á kahé pák-si-**ni-ma**
1sgN Emph Aff coffee brew-Mot-**Desid-Fut:sg**
'I will go along wanting to brew some coffee'
'Voy a querer ir colando café' [SF 08 1:147/Elicit]

c. počí-t-**ni-mo**=n orá jadíra
jump-Caus-**Desid-Fut:sg**=1sgN Cer Yadira
'I will want to make Yadira jump'
'Voy a querer hacer brincar a Yadira' [BF 08 1:62/Elicit]

45) Mot (S7) – Fut.sg (S9)

---

a. nihé mi tičí-k**-si-ma**
1sgN 2sgA comb-Appl**-Mot-Fut:sg**
'I will go along the way combing your hair'
'Voy a ir peinándote' [SF 07 2:67/Elicit]

b. ne kochí pochí-ti-**si-ma**
1sgN dog jump-Caus-**Mot-Fut:sg**
'I will go along making the dog jump'
'Voy a ir haciendo que brinque el perro' [SF 08 1:72/Elicit]

c. mi=n piwá-r-**si-mo** rá
2sgA=1sgN smoke-caus-**Mot-Fut:sg** Cer
'I';; make you go along smoking'
'Voy a hacer que vayas fumando' [BF 08 1:91/Elicit]

46) Ev (S8) – MPass (S9)

a. ne ičíi-r-**čunu-a**
/ne ičíi-ri-**čane-wa**/
1sgN plant.Appl-Appl-Ev-MPass
'It sounds like they are planting (corn) for me'
'Se oye como que me están sembrando maíz' [SF 07 1:10/Elicit]

The evidential suffix can also appear ordered after these suffixes, under circumstances to be defined in Chapter 7. The examples below show the evidential suffix preceeded by the stressed allomorph of the Future Singular suffix (47a-b) and by the Habitual Passive suffix (47c).

47) Future/Habitual Passive – Evidential order

a. nápi ré ma awi**-mé-čani**
Rel Dub already dance**-Fut:sg-Ev**
'It sounds like they are going to dance'
'Se oye como que van a bailar' [SF 07 1:140/Elicit]

b. nápi ré nakó**-m-čan**-a wási
Rel Dub fight**-Fut:sg-Ev**-Prog cows
'It sounds like the cows are going to fight'
'Se oye como que las vacas se van a pelear' [SF 07 1:140/Elicit]

c. nápi rimé-nu**-a-čan**-a
Rel make.tortillas-Appl**-MPass-Ev**-Prog
'It sounds like they are making him tortillas'
'Como que se oye que le están haciendo tortillas' [SF 07 2:69/Elicit]

Finally, there is another slot of stress-shifting affixes that mark mood (potential (Pot) *–ra*, imperative singular (Imp.sg) suffixes *-ka* and *–sa*, and imperative plural

(Imp:pl) *–si*). In (48), the potential suffix and the imperative singular suffix *–sa* are ordered after the motion imperative suffix (in S8):[36]

48) Mot:Imp (S9) – Mood (S10)

a. júr-ka osi**-mé-ra** ré [pr.]
take-IMP write**-Mot:Imp-Pot** Dub
'Go, take him to see if he writes'
'Ve y llévalo a ver si escribe' [BF 08 1:94/Elicit]

b. áa-**m-sa**
give-**Mot:Imp-Imp:sg**
'Go give it to her!'
'Ve y dáselo!' [RF 04 1:112/Elicit]

As we have seen, there is a fair amount of morphotactic evidence for positing the positions of a complex verbal template. The evidence laid out in this subsection involves attested linear ordering of suffixes. There are, however, two other important morphotactic phenomena in the Choguita Rarámuri verb: variable order of suffixes and multiple (or extended) exponence.

I have shown data that shows that several suffixes do not have a fixed order with respect to other suffixes, in interactions that are specific to defined pairs of suffixes in the syntactic and aspectual stem of the verb. Suffixes that might permutate their order include: causative and applicative (36-37); desiderative and associated motion (39-40); and desiderative and evidential (42-43)).

[36] There is no example that demonstrates the relative ordering between the evidential suffix (posited in S9) and the mood suffixes in (S10). The evidential is semantically incompatible with at least the imperative mood.

In addition, the suffixes in the syntactic stem can display multiple exponence, i.e., they can be multiply marked without an equivalent semantic recursivity, a phenomenon addressed in detail in Chapter 5. This is exemplified in (49).

49) Causative and Applicative Multiple Exponence

Causative Multiple Exponence

a. nihé bírá i'né**-r-ti-**mo rá
1sgN really look-**Caus-Caus**-Fut:sg Cer
'I'll make him look at it'
'Lo voy a hacer que lo vea' [SF 06 3:181/Elicit]

b. nihé i'né**-ri-**ri
1sgN look-Caus-Pst
'I made him look at it'
'Lo hice que lo viera' [SF 06 3:181/Elicit]

Applicative Multiple Exponence

c. boto-búu**-n-ki**-ri=ni bóte
sink-Tr-**Appl-Appl**-Pst:Pass=1sgN can
'They sank my can (in the river)'
'Me hundieron el bote' [SF 07 2:32/Elicit]

d. boto-búu**-ni**-ri=ni
sink-Tr-**Appl**-Pst:Pass=1sgN
'They sank my can (in the river)'
'Me hundieron el bote' [SF 07 2:32/Elicit]

Variable suffix ordering and multiple exponence might render the verbal structure proposed in Table 16 a highly abstract representation. This structure, however, will be retained as a descriptive device since variable orders of suffixes are restricted to specific pairs of suffixes. The applicative, for instance, while variably ordered with respect to the causative, has a fixed position preceeding the desiderative, associated motion, etc. Moreover, variable suffix ordering and multiple exponence are only found with suffixes that belong to particular layers or domains in the verb. Table 18 schematizes the proposed verbal domains in the Choguita Rarámuri verb and the order and exponence generalizations of the suffixes in each domain.

Table 18: Order and exponence properties of suffixes by verbal domain

Position	**Stem level**	**Order and exponence**
S1	Derived Stem	Fixed suffix order
S2		
S3	Syntactic Stem	Variable suffix order, multiple exponence
S4		
S5		
S6	Aspectual Stem	Variable suffix order
S7		
S8		
S9	Finite Verb	Fixed suffix order
S10		
S11		
S12	Subordinate Verb	Fixed suffix order

There is other evidence showing that the concatenation of the Choguita Rarámuri verb is not unidimensional, and that there is an internal organization or hierarchy of processes. The next section will address the morphologically conditioned phonology that make suffixes in the inner layers of the verb more tightly fused with the root than outer, inflectional suffixes.

3.5.2 Phonological transparency and morpheme boundary strength

The Choguita Rarámuri verb displays a nested structure that can be characterized in terms of the semantics and overall function of clusters of suffixes (valence-increasing, aspectual, etc.), and the morphologically conditioned phonology that yields different degrees of morphophonological fusion between suffixes. This sub-section is concerned with the latter phenomena.

Table 19 shows the distribution of the morphologically-conditioned phonology in the different domains of the Choguita Rarámuri verb.

Table 19: Morphologically conditioned phonology by verbal domain

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
Inner Stem	**Derived Stem**		**Syntactic Stem**			**Aspectual Stem**			**Finite Verb**			**Sub Verb**
CL												
Haplology												
Passive-triggered lenghthening												
Imperative stress-shift												
Round Harmony												

The phonological phenomena discussed in this section are root-suffix haplology (§3.7.2.1), compensatory lengthening (§3.7.2.2), past-passive induced lenthening (§3.7.2.3), imperative stress shift (§3.7.2.4), round harmony (§3.7.2.5), and the distribution of stress-shifting and stress-neutral suffixes in the verb (§3.7.2.6).

3.5.2.1 Root-suffix haplology

We have seen that stress-conditioned vowel deletion results in derived consonant clusters (§2.3.2.2.1) and geminates (§2.3.2.2.2) in Choguita Rarámuri. As highlighted above, derived geminates are subject to inter-speaker (and to a lesser extent, intra-speaker) variation. The alternative to having a derived geminate is to have syllable deletion in avoidance of adjacent identical syllable onsets. In this language, haplology between a final syllable in the inner stem and a following suffix syllable with identical onsets takes place in morphologically complex constructions. In (50a,d,g), the root's underlying final, unstressed syllable and the immediately adjacent suffix syllable have identical onsets, leading to deletion of one syllable. (50b,e) show how the root's final syllable is not deleted in other morphological constructions or word finally (as in (50h)). (50c,f,i) show unattested, hypothetical forms with adjacent root and suffix syllables with identical onsets.

50) Root-suffix haplology

	Form	*UR*	*Gloss*	
a.	asíi-sa	/asísi-sa/	'wake.up-Cond'/ 'despertarse-Cond'	[BF 08 1:1/Elicit]
b.	asís-ma	/asísi-ma/	'wake.up-Fut:sg'	[BF 08 1:1/Elicit]
c.	*asísi-sa			
d.	sutubé-čin-	/sutubé**či**-čane/	'trip-Ev-' 'tropezarse-Ev'	[SF 07 1:143/Elicit]
e.	sutubéči-niri	/sutubéči-nale/	'trip-Desid'	[BF 07 1:138/Elicit]
f.	*sutubéči-čin-			
g.	sikoráa-nir-	/sikorá**na**-nale/	'have.eye.secretion-Desid-'[37] 'enlagañarse-Desid-'	[BF 08 1:1/Elicit]
h.	sikorána	/sikorána/	'have.eye.secretion'	[BF 07 1:151/Elicit]
i.	*sikorána-nale-			

Example (51a) shows how haplology also takes place with Inner Stem suffixes:

[37] The Spanish translation of this verb form is 'le quieren salir lagañas, quiere lagañear', which is translated to English as 'it is imminent that she will have eye secretion'.

51) Inner stem suffix-suffix haplology

a.	čabóo-po	/čabó-**pi**-po/	‘beard-Rev-Fut:pl’/ ‘barba-Rev-Fut:pl’	[SF 08 1:5/Elicit]
b.	čabó-pi-ri	/čabó-pi-li/	‘beard-Rev-Pst’	[SF 08 1:5/Elicit]

No haplology takes place between identical syllable sequences within roots (e.g. **así-ma /asísi-ma/,* ‘wake.up-Fut:sg’ (50b)). Syllables with identical onsets belonging to two suffixes can optionally undergo deletion (e.g. (52)).

52) Optional suffix-suffix haplology

	Form	*UR*	*Gloss*
a.	ra’amá-n-ki-ki	/ra’amá-na-ki-ki/	‘advise-Desid-Appl-Pst:1’ [BF 06 5:132/Elicit]
b.	mičíi-ki	/mičí-**ki**-ki/	‘carve-Appl-Pst:1’ [BF 08 1/Elicit]

3.5.2.2 Compensatory lengthening

As we have seen in Chapter 2, there is no evidence of contrastive vowel length in Choguita Rarámuri. Surface long vowel sequences, however, are not uncommon and are salient acoustically in this language. There are several processes that yield these vowel sequences in surface representations. One of such processes is a word minimal size constraint affecting open class verbs (§2.3.4). Another source for surface vowel length is Compensatory lengthening (CL), the phenomenon whereby the deletion of one element triggers a corresponding lengthening of another element.[38] I address this process in this section.

[38] CL has been treated as the transfer or preservation of a phonological unit, i.e. a mora, within a prosodic unit in the phonological literature (Hyman 1985, McCarthy & Prince 1986, inter alia), or as a phonetically-based process that results from isochrony, the preservation of phonetic duration (Timberlake 1983, Barnes & Kavitskaya 2000). I am assuming that while this process was based phonetically, it has been lexicalized or morphologized.

The more widespread CL pattern involves deletion of a vowel that triggers lengthening of a preceding syllable’s stressed vowel. This is exemplified in (53).

53)	‘CVCV	→	‘CV:C	
a.	láni-	>	láan-	‘bleed’/‘sangrar’
b.	mári-	>	máal-	‘swim’/‘nadar’
c.	nári-	>	náar-	‘ask’/‘preguntar’
d.	murubé-ni-	>	murubée-n-	‘approach-Appl’/‘acercarse-Appl’
e.	ramuwéri-	>	ramuwéel-	‘joke w/in laws’/ ‘vacilar con los cuñados’

Vowel deletion in these contexts occurs due to posttonic syncope in derived environments (described in Chapter 2). Some of the examples in (53) are given in context in (54). In these cases, CL takes place when the intervening consonant is a sonorant. Lengthened vowels are underlined in the surface form and deleted vowels are in bold face in the underlying representation.

54) CL with intervening sonorant

	Form	*UR*	*Gloss*	
a.	n<u>áa</u>r-ta	/nár**i**-ra/	‘ask-Pot’/‘preguntar-Pot’	[SF 08 1:82/Elicit]
b.	murub<u>ée</u>-n-ti	/murubé-n**i**-ti/	‘get.close-Appl-Caus’	[BF 07 6:07/Elicit]
c.	ramuw<u>ée</u>l-čane	/ramuwél**i**-čane/	‘joke.with.in.laws[39]-Ev’	[BF 07 1:181/Elicit]
d.	láan-ki	/láni-ki/	‘bleed-Pst:1’	[BF 08 1:94/Elicit]

Though vowel CL through vowel loss has been documented for other languages, this process is more uncommon than CL through consonant loss (cf. Kavitskaya 2001:3, Kavitskaya 2002).

[39] This verb more accurately refers to a very specific kind of social interaction that involves joking playing around with a sister- or brother-in-law.

Cases of CL triggered by deletion of a whole syllable have not been reported or even mentioned, to my knowledge, as a logical type of CL. A second pattern of apparent vowel CL in Choguita Rarámuri, however, involves precisely the deletion of a syllable. In (55a), the tetrasyllabic root *nabisúri* truncates the final syllable when attaching the disyllabic desiderative suffix *–nare*. The result is a stem with a long stressed vowel. There are no other potential sources for lengthenng in this case (such as passive-conditioned lengthening or vowel loss), so the lengthening must be attributed to syllable deletion. CL takes place with an intervening voiceless affricate (55c), and an intervening voiceless fricative (55e). Below each example of syllable-triggered CL includes a related form with no deletion.

55) Syllable deletion triggered CL

	Forms	*UR*	*Gloss*
a.	nabis<u>úu</u>-niri	/nabisú**ri**-nale/	'form.line-Desid' [BF 07, SF 08 1:83 /Elicit]
b.	nabisúri-ma	/nabisúri-ma/	'form.line-Fut:sg' [BF 07 VDB/Elicit]
c.	sutub<u>ée</u>-či-nare	/sutubé**či**-ča-nale/	'trip-Ev-Desid [BF 07 rec300/Elicit]
d.	sutubéči-ma	/sutubéči-ma/	'trip-Fut:sg' [LEL 06 5:35/Elicit]
e.	asíi-sa	/así**si**-sa/	'wake.up-Cond' [SF 08 1:82/Elicit]
f.	asísi-ma	/asísi-ma/	'wake.up-Fut:sg' [SF 08 1:82/Elicit]

We could alternatively analyze CL triggered by syllable deletion as CL triggered by consonant deletion after cyclically applied posttonic syncope. That is, deletion would not target the syllable as a unit. Instead, the consonant, after being syllabified as coda of the preceeding syllable, would be the target of a phonetic weakening process to a semi-vowel and subsequent monophthongization (as proposed for other cases of CL by De Chene & Anderson 1979). This can be represented schematically as in (56):

56) CL derived through syncope, gliding and monophthongization

UR	Syncope	C Gliding	Monophthongization
/CVCVC**V**/	CVCVC	CVCV**G**	CVCV**V**

There is no evidence, however, that all derived coda consonants can glide, except for /b/ (cf. 2.2.3.1). Furthermore, not all labio-velar semi-vowels undergo monophthongization (e.g. (57)). Their existence makes it hard to posit a special set of semi-vowels that would not weaken and monopthongize with the syllable nucleus.

57) Non-monophthongized labio-velar semi-vowels

a.

ne	ko	mi	rarí-**w**-ti-ma	patrísio
/ne	ko	mi	rarí-wi-ti-ma	patrísio/
1sgN	Emph	2sgA	buy-Appl-Caus-Fut:sg	Patricio

‘I will make you buy a soda for Patricio’
‘Voy a hacer que le compres soda a Patricio’ [BF 07 2:39/Elicit]

b.

basaró**w**-mi	ré	ma	ba’arí-o
/basarówa-mi	ré	ma	ba’arí-o/
stroll.around-Irr:sg	Dub	perhaps	tomorrow-Ep

‘Perhaps she will take a stroll tomorrow’
‘A lo mejor va a pasear mañana’ [BF 07 1:150/Elicit]

Whether we analyze this last set of cases as instances of CL or not, the cases of vowel lengthening shown above are uncontroversially a case of CL triggered by V loss. CL is seemingly restricted to targeting stressed vowels of roots or derivational suffixes in the inner stem, delimitating this stem level.

3.5.2.3 Dominance effects: past passive-conditioned lengthening

Another morphologically conditioned phonological effect involves vowel lengthening triggered by the past passive construction. The past passive suffix *-ru* is a stress-shifting affix with a stressed and an unstressed allomorph. The unstressed allomorph has the property of triggering lengthening of the final stem stressed vowel. This is exemplified in (58).

58) Vowel lengthening induced by past passive suffix

---

a.

na'í	osíi-ru
/na'í	osi-ru/
here	write:Appl-Pst:Pass

'Something was written here'
'Aqui escribieron' [SF 08 1:45/Elicit]

b.

ka=ni	bahurée-ro	ba
/ka=ne	bahuré-ru	ba/
Neg=1sgN	invite-Pst:Pass	Cl

'I wasn't invited'
'No me invitaron' [BF 07 2:33/Elicit]

c.

tòo-ru	grabadóra
/tò-ru	grabadóra/
take-Pst:Pass	recorder

'The recorder was taken'
'Se llevaron la grabadora' [SF 08 1:45/Elicit]

d.

na'í	ičíi-ru
/na'í	iči-ru/
here	sew-Pst:Pass

'It was sewn here'
'Aqui sembraron' [SF 08 1:45/Elicit]

This effect, which cannot be predicted from the prosodic or phonological properties of the affix, can be considered as an instance of dominance. "Dominant" affixes (as opposed to "recessive" affixes) have been defined as affixes which delete or neutralize contrasts in the base to which they attach (Kiparsky 1982, Inkelas 1998). Although dominant affixes are typically described as involving the deletion of accentual or tonal information from the base, there are also cases of dominant affixes that neutralize vowel length in the base (such as Mam Maya (Willard 2004)). I argue that the past passive suffix is a dominant suffix which imposes lengthening in a preceding stressed syllable.

There are constructions where the vowel quality of the past passive suffix (a high, back round vowel) is neutralized in height in posttonic position. This yields a suffix form that is homophonous with the active voice past suffix (*-ri*). In (59-60), the passive constructions would thus be homophonous with past active constructions, except that the lengthening in the stressed root vowel is a clear index of the passive construction. It is possible that there is a change in progress where the lengthening is being reanalyzed as the marker of past passive.

59) Neutralized vowel quality of past passive suffix

---

a.

na'í	ko	we	č**óo**r-ti-ri
/na'í	ko	we	čóri-ti-ru/
here	Emph	Int	have.cramps-Caus-Pst:Pass

'People feel cramps here'
'Aqui se acalambra la gente' [BF 05 2:41/Elicit]

b.

ne	ko	birá	ruw**ée**-ri	we	kaní-ra	ra/
/ne	ko	birá	ruwé-ru	we	kaní-ra	ra/
1sgN	Emph	really	tell-Pst:Pass	Int	happy-Rep	say

'I was told he got really happy'
'Me contaron que se puso bien contento' [SF 08 1:84/Elicit]

While the lengthening in (59a) could be alternatively analyzed as CL triggered by syncope, the lengthening in (59b) cannot be attributed to CL, since there is no posttonic syncope in this form.

Passive-induced lengthening targets the root or a derivational suffix in the inner stem. (60a) shows the derivational suffix *–rú* undergoing legthening. The same base does not undergo vowel lengthening with the active past suffix *–ri*.

60) Past passive induced lengthening of Inner Stem suffix

---

a. na'í raki-rúu-ru
/na'í raki-rú-ru/
here palm-gather-Pst:Pass
'Palms were gathered here'
'Aqui juntaron palmas' [SF 08 1:97/Elicit]

b. hasínto raki-rú-ri
/hasínto raki-rú-li/
Jacinto palm-gather-Pst
'Jacinto gathered palms'
'Jacinto juntó palmas' [SF 08 1:97/Elicit]

The target of passive-induced lengthening includes the transitive suffixes in position S2, in the Derived Stem level (61).

61) Past passive induced lengthening of Derived Stem suffixes

---

a. migél ča'i-búu-ru siká-ra
/migél ča'i-bú-ru siká-la/
Miguel grab-Tr-Pst:Pass hand-Poss
'Miguel's hand got stuck (by somebody else)'
'Le atoraron la mano a Miguel' [SF 08 1:97/Elicit]

b. ma čiha-náa-ri napáči
/ma čiha-ná-ru napáča/
already scatter-Tr-Pst:Pass blouses
'The blouses were thrown around'
'Ya desparramaron las blusas' [SF 07 1:17-21/Elicit]

c. ma rapa-náa-ru
/ma rapa-na-ru/
already split-Tr-Pst:Pass
'She was already operated (lit. cut)'
'Ya la operaron (cortieron)' [SF 08 1:84/Elicit]

On the other hand, suffixes on the Syntactic Stem (and any later morphological stem levels) block lenghtening of the stressed syllable in past passive constructions. In each example in (62), the past passive suffix does not trigger lengthening of an immediately preceding Applicative suffix.

62) No past passive induced lengthening of Syntactic Stem suffixes

---

a. ne amačí-ki-ru
/ne amačí-ki-ru/
1sgN pray-Appl-Pst:Pass
'They were praying for me' (lit. 'I was being prayed for')
'Me rezaron' [SF 05 2:105/Elicit]

b. ma=ni ba'i-rú-ku-ru ba'wí
/ma=ni ba'i-rú-ki-ru ba'wí/
already=1sgN water-gather-Appl-Pst:Pass water
'They already brought me water'
'Ya me trajeron agua' [SF 08 1:84/Elicit]

c. nihé kobísi pá-si-ru
/nihé kobísi pá-si-ru/
1sgN pinole throw-Appl-Pst:Pass
'They threw my pinole'
'Me tiraron el pinole' [SF 08 1:85/Elicit]

There are no constructions in the corpus where the past passive suffix imposes lengthening on a base including the suffixes in positions S3-S4 either, which implies that the domain of lengthening is restricted to the suffixes up to position S2, the Derived Stem level.

3.5.2.4 Final stem imperative stress shift

As we have seen above (Chapter 3, §3.4.1.3), the imperative may be marked as final stem stress. This marking is restricted to be realized in a domain that includes the "derived stem" level. Transitive stems of change of state predicates (described in §3.3) have an imperative with stress on the transitive suffix (63a).

63) Imperative stress shift

	Form	*Gloss*	*Construction*
a.	kaši-**ná**	'break-Tr' ('break it!)/ 'rómpelo!'	Imperative, transitive
b.	kasi-**ná**-ma	'break-Tr-Fut:sg'	Strong construction
c.	ka**sí**-na-ri	'break-Tr-Pst'	Weak construction

Stress on the transitive suffix is characteristic of transitive stems in strong constructions (63b), and contrasts with second syllable stress of the same transitive stems in weak constructions (63c). The imperative of intransitive change of state predicates will, on the other hand, involve fixed second syllable stress plus an imperative singular suffix (as in (64)).

64) Imperative of change of state predicates

	Form	*Gloss*	*Translation*
a.	kasí-ka	'break-Imp:sg'	'break yourself!'/'rómpete!' [SF 08 1:98/Elicit]
b.	wačí-ka	'be.straight-Imp:sg'	'straighten up!'/'enderézate!' [SF 08 1:98/Elicit]

Since the transitive suffixes of change-of-state predicates are part of the derived stem, we can identify final stem stress to mark imperative as a process restricted to this verbal zone.

3.5.3.5 Round harmony

Choguita Rarámuri has a round harmony process,[40] where non-round vowels of certain suffixes may become round when preceeded by a stressed back stem vowel. The following examples show the role of stem stressed vowels as triggers of the rounding of the following suffix vowels: in (65a) and (65c), a stem final high, back vowel triggers rounding in the vowels of the causative, applicative and associated motion suffixes; in (65b) and (65d), on the other hand, there is no rounding of applicative suffix vowels with a stem final high, front vowel.

65) Round harmony triggers

	Forms	*UR*	*Gloss*
	Round harmony		
a.	banisú-**tu-su**-ma	/banisú-ti-si-ma/	'pull-Caus-Mot-Fut:sg' [SF 07 2:67 rec487 /Elicit]
	No harmony		
b.	tičí-**k-si**-ma	/tičí-ki-si-ma/	'comb-Appl-Mot-Fut:sg' [SF 07 2:67 rec487/Elicit]
	Round harmony		
c.	šukú-**ku**-po	/sukú-ki-po/	'scratch-Appl-Fut:pl' [BF 05 1:116/Elicit]
	No harmony		
d.	noké-**ki**-r-o	/noké-ki-li-o/	'move:Appl-Appl-Pst-Ep' [BF 05 1:116/Elicit]

[40] I will refer to this process as round harmony, although this process is gradient rather than categorical.

While round harmony in Choguita Rarámuri resembles other Vowel Harmony systems in its perseveratory, root-controlled nature, there is also evidence that harmony can be blocked or favored by the vocalic queality of an inflectional suffix following the target vowels (these suffixes are themselves outside of the domain of harmony). In (66a) and (66c), the applicative suffix *–ki* and the causative suffix *–ti* are realized with a round vowel after a stem with a final back vowel *if* the following inflectional suffix has a back vowel as well. The role of the final inflectional suffix in the harmony can be appreciated in (66b) and (66d), where the applicative and causative suffixes do not undergo round harmony when followed by an inflectonal suffix with a high, front vowel.

66) Anticipatory nature of round harmony

	Forms	*UR*	*Gloss*
a.	kupuró-k**u-**ma	/kupuró-ki-ma/	'blink-Appl-Fut:sg' [BF 05 2:22/Elicit]
b.	kupuró-k**i-**ki	/kupuró-ki-ki/	'blink-Appl-Pst:1' [BF 05 2:22/Elicit]
c.	kupuró-t**u-**ma	/kupuró-ti-ma/	'blink-Caus-Fut:sg' [BF 05 2:22/Elicit]
d.	kupuró-ti-ki	/kupuró-ti-ki/	'blink-Caus-Pst:1' [BF 05 2:22/Elicit]

This shows, then, than while clearly root-controlled, this process is also partially anticipatory. It also shows that back harmony is restricted to a subconstituent of the hierarchical structure of the verb. We have seen examples of round harmony targeting the vowels of causative *–ti* (S4), applicative *–ki* (S5), and associated motion *–simi* (S7). The examples in (67) show an array of suffixes undergoing rounding harmony. These suffixes belong in the Derived Stem, Syntactic Stem and Aspectual Stem leveles.

67) Round harmony in Derived Stem and Syntactic Stem

Forms *UR* *Gloss*

Applicative –si (S3)

a. pá-**šu**-ru
/pá-si-ru/
1sgN throw-Appl-Pst:Pass
'It will be thwron in my direction (for me)'
'Me lo van a tirar (hacia mi)' [RF 04 1:82/Elicit]

No harmony

b. pá-si-ki
throw-Appl-Pst:1
'I threw it for him'
'Se lo tiré' [RF 04 1:82/Elicit]

Applicative –ni (S4)

c. ne	ko	biré	čomarí	sirú-**nu**-pa	ré
/ne	ko	biré	čomarí	sirú-ni-pa	aré/
1sgN	Emph	one	deer	hunt-Appl-Fut:Pass	Dub

'I will have a deer hunted'
'Me van a cazar un venado' [SF 05 1:136/Elicit]

Evidential –čane (S9)

d. súu-n-**čun**-a[41]
/sú-nare-čane-a/
sow-Desid-Ev-Prog
'It sounds like she wants to sow'
'Se oye como que quiere coser' [SF 07 1:9/Elicit]

e. misú-čun-a
/misú-čane-a/
catch-Ev-Prog
'It sounds like they are catching (mice)'
'Se oye como que andan atrapando ratones' [SF 07 1:10/Elicit]

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[41] Again, there is evidence that a following inflectional suffix with a front high vowel blocks the rounding harmony process:

sú-n-čan-i
/sú-ni-čane-i/
sow-Appl-Ev-Impf
'It used to sound like they were sowing stuff for her'
'Se oía como que le cosían' [SF 07 1:9/Elicit]

There are cases where harmony appears to be blocked: in (68) there is no round harmony with the applicative and evidential suffixes, despite the presence of the trigger (a back, stressed vowel in the stem) and the following inflectional suffix with a back vowel. Instead, the back vowel of the evidential suffix has undergone height neutralization.

68) Blocked harmony

a. misú-ki-čin-a
/misú-ki-čane-a/
catch-Appl-Ev-Prog
'It sounds like they are catching (some mice) for somebody'
'Se oye como que le están atrapando ratones ' [SF 07 1:10/Elicit]

We have seen that the [+round] feature can spread over more than one vowel (e.g. (67a)), so it cannot be argued that harmony is limited in its rightward (or leftward) spreading. Instead, it is possible that this case has been rendered opaque by posttonic vowel height neutralization (described in Chapter 2).

Finally, as we have seen in §2.3.1.2.3, back round vowels also favor reduction of posttonic unstressed vowels to schwa. Posttonic vowel reduction to schwa occurs frequently when preceded by a back, stressed vowel. The examples below, however, show that reduction to schwa takes place after central (69a) and front, mid vowels (69b) as well.

69) /i/ → ə / á, é __

a.	nár**ə̲**-ma	/nár**i**-ma/	'ask-Fut:sg'/ 'preguntar-Fut:sg'	[SF 05 1:86/Elicit]
b.	natép**ə̲**-ma	/natép**i**-ma/	'meet-Fut:sg'/ 'encontrarse-Fut:sg'	[BF 05 1:111/Elicit]

The examples in (69) thus shows that the gradient process of unstressed vowel reductin to schwa and round harmony do not appear in the same vocalic environments.

In sum, rounding harmony in Choguita Rarámuri is stem-controlled but is simultaneously sensitive to outer inflectional suffixes, which are in turn out of the harmony domain. The targets of rounding harmony ainclude the root and Inner Stem processes, as well as suffixes up to position S9. There is no evidence that other potential targets occuring in outer positions of the stem undergo rounding harmony. Thus, rounding harmony constitues another phenomenon that contributes to creating less salient juctures between suffixes of certain inner domain of the verbal stem.

3.5.2.6 Stress and the verb: stress-shifting and stress-neutral suffixes

We have seen that the agglutinating structure of the Choguita Rarámuri is not uniform with respect to its morphophonological properties. There is yet another important property of the verbal stem that suggests an internal, layered organization: the characterization of suffixes as stress-shifting and stress-neutral. This section discusses how suffixes are grouped into layers in the verb according to their stress properties. Table 20 shows the placement of the two kinds of suffixes along the stem levels of the Choguita Rarámuri verb.

Table 20: Distribution of stress-shifting and stress-neutral suffixes in the verb

Position	Stress behavior of suffixes	Stem level
S1	Stress-shifting	Derived Stem
S2		
S3	Stress-neutral	Syntactic Stem
S4		
S5		
S6	Stress-shifting	Aspectual Stem
S7	Stress-neutral	
S8		
S9	Stress-shifting	Finite Verb
S10		
S11	Stress-neutral	
S12	Stress-neutral	Subordinate Verb

Stress-shifting suffixes combine with the inner stem and comform the stress domain, while non-shifting suffixes are outside the stressable domain. The stress properties of Choguita Rarámuri suffixes align with other properties that define the stem levels or domains, since stress-shifting and stress-neutral suffixes are grouped in interleaved layers in the morphological structure of the stem.

It has been proposed that accent systems where the interaction between prespecified information and word formation processes yields competing lexical accents, prosody is determined by morphology: and a "headmost" accent wins, and the phonological properties of this morphological head percolate to the word level (Revithiadou (1998:3-4)). Under this account, 'heads' are characterized as derivational morphemes (not inflectional ones). In Choguita Rarámuri there is no correlation between the suffixes' prosodic properties and their status as derivational or inflectional morphology.

3.6 The verbal complex: clitics and modal particles

Nominal pronominal forms have corresponding enclitic forms, prosodically dependent forms on their word host that do not carry any restrictions about the syntactic category of the words they attach to (Bickel & Nichols 2007). Table 21 illustrates the clitic pronominal forms (free pronouns are given in parenthesis). Third person is marked with a demonstrative *mi*, both as a free form and as an enclitic.

Table 21- Pronominal enclitic forms

	Nominative	**Accusative**
1sg	=ni (nehé)	(tamí)
2sg	=mi (muhé)	(mi)
1pl	=ti (tamuhé/tamó)	(tamí)
2pl	=timi (émi)	(mi)

Choguita Rarámuri person enclitics can attach to verbs and hosts of virtually any category, and, like many other Uto-Aztecan languages (Steele 1976, Bickel & Nichols 2007), are generally in Wackernagel position, right after the first subconstituent of a phrase (70).

70) Person enclitic hosts

Relativizers

a. rimú-i=ni náp=tim noká-o
dream-Impf=1sgN Rel=2plA move-Ep
'I used to dream that you all were moving'
'Yo soñaba que ustedes se movían' [BL 05 1:114/Elicit]

	Demonstratives (within a noun phrase)				
b.	ti=n	torí	si'rí-ti-mo		rá
	Dem=1sgN	chicken	drown.intr-Caus-Fut:sg		Cer
	'I will drown the chicken'				
	'Voy a ahogar al pollo'				[BF 05 2:49/Elicit]

	Preposed Particles				
c.	a'rí	ku=n	noríni-ma		
	later	back=1sgN	come-Fut:sg		
	'I will come back later'				
	'Al rato vuelvo'				[BF 05 2:49/Elicit]

	Negative adverbs				
d.	ke=ni	táši	čo maná	bahtári	
	Neg=1sgN	Neg	yet make.beverage	corn.beer	
	'I haven't made corn beer yet'				
	'No he hecho tesgüino todavía'				[BF 05 2:56/Elicit]

	Epistemic particles				
e.	noké-ri	ré=n	má-o		
	move-Pst	Dub=1sgN	maybe-Ep		
	'Maybe I moved him'				
	'A lo mejor lo moví'				[BF 05 1:114/Elicit]

	Nouns				
f.	naparí	noká-ri	ronočí=ni	okó	
	when	move-Pst	legs=1sgN	hurt	
	'When I moved, my legs hurt'				
	'Cuando me moví me dolieron las piernas'				[BF 05 1:114/Elicit]

	Full pronouns				
g.	pe	tamó=m	naháta iší		
	little	1plA=Dem	follow doing		
	'It went like that, following us around'				
	'Así anduvo siguiéndonos'				[BF 05 text 2/Text]

Although the list of possible hosts in (70) is not exhaustive, it illustrates clearly the unrestrictedness of possible hosts for the person clitics.

Choguita Rarámuri also has epistemic modality markers. Epistemic modality, or the expression of the degree of certainty speakers have towards the actuality of an event, is marked in Choguita Rarámuri through two modal particles that follow inflected verbs: *aré*, which expresses doubt and uncertainty (71a), and *orá*, which marks certainty, and often volition (71b). Forms lacking such particles have a neutral interpretation with respect to the speaker's commitment to the truth value of the proposition.

71) Epistemic modality markers

a. nár-ma ré
/nári-ma aré/
ask-Fut:sg Dub
'(He) will probably ask'
'Probablemente va a preguntar' [BL 05 1:152/Elicit]

b. nár-mo lá
/nári-ma olá/
ask-Fut:sg Cer
'(he) will definetly ask'
'Seguramente que va a preguntar' [BL 05 1:152/Elicit]

As the examples in (71) show, these particles have the phonological effect of inducing vowel deletion of the final vowel of the singular future suffix. This phenomenon has led some to describe these epistemic elements as "suffixes with independent stress" in other Rarámuri dialects (cf. Burguess 1984, Ramos-Chaparro et al. 1997). These elements, however, show their independent-word status trough their prosodic independence, and their ability to appear after person clitics. In a strong hypothesis of syntax-phonology interactions, cliticization follows syntax, which predicts that clitics are able to attach to other clitics, but affixes cannot attach to clitics (Zwicky and Pullum 1983).

Finally, deletion between the final future suffix and the epistemic particles takes place with an intermediate enclitic that has lost its vowel. This is exemplified in (72).

72) Vowel deletion induced by epistemic markers

a. ča'i-mé**o**=n lá
/ča'i-méa=ne olá/
stuck-Fut:sg=1sgN Cer
'I will get stuck'
'Me voy a atorar' [BF 05 1:133/Elicit]

b. bahí-m**o**=n olá
/bahí-ma=ne olá/
drink-Fut:sg=1sgN Cer
'I will drink'
'Voy a tomar' [AH 05 2:101/Elicit]

c. rikú-m**a**=n ré
/rikú-ma=ne aré/
be.drunk-Fut:sg=1sgN Dub
'I will probably get drunk'
'Probablemente me voy a emborrachar' [BF 05 2:120/Elicit]

d. rikú-m**o**=n olá
/rikú-ma=ne orá/
be.drunk-Fut:sg=1sgN Cer
'I will get drunk'
'De seguro me voy a emborrachar' [BF 05 2:120/Elicit]

Vowel deletion takes place post-lexically after the intermediate person clitic loses its vowel.

3.7 Summary

As we have seen, the highly agglutinating verbal structure of Choguita Rarámuri displays morphotactic, prosodic and morphophonological properties that define a concentric organization of suffixes, with more fused suffixes closer to the root and more separable suffixes in the outer layer of the verb. The verbal structure scheme proposed in this chapter is repeated in (73).

73) Choguita Rarámuri verbal stem levels

Positions	**Categories**	**Stem levels**
α	Root + unproductive and seproductive processes	Inner Stem
S1	Inchoative	Derived Stem
S2	Transitives	
S3	Applicatives	Syntactic Stem
S4	Causative	
S5	Applicative	
S6	Desiderative	Aspectual Stem
S7	Associated Motion	
S8	Auditory Evidential	
S9	Voice/Aspect/Tense	Finite Verb
S10	Mood	
S11	TAM	
S12	Deverbal morphology	Subordinate Verb

Despite having mostly a fixed position, the ordering of suffixes is not arbitrary and conforms to general principles. There are no discontinuous dependencies across suffix positions, as is frequent in position class morphologies. The structure proposed, instead, fits Bybee's lexical-derivational-inflectional continnum, and generally conforms to the universal principles of relevance, derivation within inflection and scope (see Chapter 7 for discussion). This is a property attributed to layered morphologies vs. templatic or position class morphologies, where general semantic and syntactic principles do not determine the whole range of affix ordering facts (cf. Bickel and Nichols 2007, Stump 1993). In the analysis proposed here, the configurational structure of the Choguita

Rarámuri verb accounts for a zone of variable order, multiple exponence in the syntactic stem, and the fixed order in the rest of the zones.

Chapter 4: Morphologically conditioned stress

4.1 Introduction

In the first part of this dissertation, I have provided a general description of the phonological processes and morphological structure of the Choguita Rarámuri verb. The general description of the verbal morphology has revealed that this language possesses a wide range of morphologically conditioned phonology, of which the morphologically conditioned stress system is specially theoretically and typologically relevant. This chapter is concerned with the description and analysis of this system. In this language stress is mixed, with roots being either lexically specified or unspecified for stress. Lexically unspecified roots receive stress rhythmically in systematic sub-patterns which are morphologically determined. Stress is restricted to an initial three-syllable window, a typologically highly unusual pattern that has been predicted not to exist (Hulst 1999), and documented previously in only four other languages (Kager 1993, Hualde 1998).

Phonological effects that are specific to particular morphological contexts are widespread cross-linguistically and have significant consequences for developing theories of the phonology-morphology interface. Currently, there are two main competing models of language-internal phonological variation: lexically indexed faithfulness constraints (McCarthy & Prince 1995, Smith 1997, Benua 1997a, 1997b; Itô & Mester 1999; Alderete 1999, 2001; Pater 2000; inter alia), and cophonologies or morphologically-specific rankings (Orgun 1996; Anttila 1997, 2002; Inkelas 1998; Orgun & Inkelas 2002, Inkelas & Zoll 2005, 2007; inter alia). While similar in some respects, these approaches make divergent empirical and theoretical predictions. Perhaps the most important difference between the two models is the status of markedness reversals, or the possibility of a single language exhibiting variation of unmarked patterns. Cophonology theory predicts that markedness reversals may occur in natural language, while indexed constraint theory predicts that languages only have a single, unmarked (default) pattern (the 'Grammar dependence' argument (Inkelas & Zoll 2007)).

In this chapter, I propose that the complexity of the attested Choguita Rarámuri stress patterns can only be captured through cophonologies, or construction-specific phonological mappings. Specifically, I argue that this language possesses not one, but two default stress patterns (second- and third-syllable stress), a fact that is naturally captured in cophonology theory. The cophonology analysis defended here is contrasted with an indexed-constraint analysis, where morphologically conditioned stress is handled through a single ranking of markedness constraints and indexed faithfulness constraints to individual morphological contexts. It is demonstrated that the indexed constrain analysis makes the wrong empirical predictions in the Choguita Rarámuri case. Finally, the markedness of the initial three-syllable window is handled in the present analysis through a ternary constituent with an adjoined syllable, which is allowed or disallowed by each phonological sub-grammar.

I begin this chapter with an illustration of the distributional properties of Choguita Rarámuri stress in §4.2, including the evidence for positing an initial three-syllable stress window. I will then provide a cophonology account in §4.3. An alternative indexed constraint analysis is considered in §4.4. In §4.5, I discuss the implications of using a ternary constituent to model third syllable stress. Finally, I conclude in §4.6 with a summary.

4.2 Distributional properties of stress

The descriptive generalizations of the Choguita Rarámuri stress system are summarized in (1):

1) Choguita Rarámuri stress properties

---

a) Each prosodic word has a single stress.

b) There is no secondary stress (i.e. this is an unbounded system).

c) Roots can be stressed or unstressed.

d) Affixes are either stress-shifting or stress-neutral, meaning that they can perturb the root's stress or be neutral regarding stress assignment, respectively.

e) In words containing no stressed roots or stress-shifting suffixes, stress falls in the second syllable of the root.[42]

[42] Second-syllable stress is the reconstructed pattern for Proto-Uto-Aztecan (Munro 1977). Within the Uto-Aztecan language family, second-syllable and second-mora stress has been kept in Hopi, Numic languages and other Taracahitan languages (Munro 1977).

f) In words containing an unstressed root and a stress-shifting suffix, stress falls in the third syllable of the word (the immediately adjacent stress-shifting suffix with disyllabic roots, the final root syllable of three-syllable roots).

g) In multiply affixed words, the stress properties of the word depend on the stress makeup of the morphemes of the Stem (root plus first suffix).

h) Lexical stress in roots blocks morphologically-conditioned second and third syllable stress.

i) Incorporated constructions display an stressual pattern of dominance that deletes inherent stress on the members of the construction, an instance of morphologically sensitive phonological dominance.

j) There is an initial three-syllable window.

Before addressing each point in (1), I turn to the phonetic and phonological properties of stress in Choguita Rarámuri.

4.2.1 Phonetic and phonological properties

As we have seen in Chapter 2, Choguita Rarámuri exhibits both phonetic and phonological properties of stress systems: i) all content words have stress; ii) there is only one syllable in content words with greater degree of prominence (stress is 'culminative'); iii) stressed vowels display increased phonetic duration; iv) unstressed vowels undergo reduction; and v) onsets of stressed syllables are augmented (through greater voice onset time) (cf. Chapter 2, §2.3.1.1).

Vowels in stressed syllables tend to be longer than those in unstressed syllables (cf. Chapter 2, §2.3.1.1). The difference in articulation of stressed vs. unstressed vowels is also reflected in tendency of unstressed vowels to be more centralized (de Jong (1995), Gussenhoven (2004)). In Choguita Rarámuri, unstressed vowels are often reduced to schwa (2a-c), neutralized in height (2d-e) or deleted altogether (2f-i). Relevant vowels are underlined.

2) Unstressed vowel reduction and deletion

	Form	*UR*	*Gloss*
	Vowel reduction		
a.	[aʔwá-rə̲mi]	/a'wá-ra̲mi/	'swallow-Ptcp'/'tragar-Ptcp'
b.	[tʃipó-rə̲-ma]	/čipó-ri̲-ma/	'bounce-Caus-Fut:sg'/'botar-Caus-Fut:sg' [LEL 07 Caus_ME/Elicit]
c.	[pórə-ki]	/pómri̲-ki/	'cover-Pst:1'/'tapar-Pst:1' [AH 05 1:125/Elicit]
d.	[tʃihá-ni̲-ri]	/čiha-na̲-li/	'scatter-Tr-Pst'/'desparramarse-Tr-Pst' [SF 07 1:17/Elicit]
e.	[tiyópi̲-tʃi]	/tiyopa̲-či/	'church-Loc'/'iglesia-Loc' [SF 06 tx12/Text]
	Vowel deletion		
f.	[raén-tʃi]	/raéna̲-či/	'sun-Loc'/'sol-Loc'
g.	[náar-ki=ni]	/nári-ki=ni/	'ask-Pst:1=1sgN'/'preguntar-Pst:1=1sgN' [BF 08 1:108/Elicit]
h.	[wató-n-ki-]	/wató-na̲-ki-/	'stretch-Tr-Appl-'/'estirar-Tr-Appl' [SF 07 Caus,_ME/Elicit]
i.	[to-nál-tʃin-]	/to-nále̲-čane-/	'take-Desid-Ev-Ep'/'llevar-Desid-Ev-Ep' [BF 06 5:148-150/Elicit]

The forms in (2) exemplify reduction and syncope of the immediately posttonic vowel. As we have seen in Chapter 2 (§2.3.1.2), however, there are three distinct patterns of vowel reduction targeting both pre-tonic and posttonic vowels. These patterns are summarized in (3).

3) Unstressed vowel reduction patterns

a.	/e/	→ [i] in pretonic and posttonic syllables
b.	/a/, /o/	→ [i] in non-final, posttonic syllables
c.	/i/, /u/	→ [ə] in non-final, posttonic syllables

Reduction is mostly attested confined to posttonic vowels (i.e., a wider arrange of contrasts are attested pre-tonically than posttonically). In addition, there is no audible secondary stress.

I have argued that there are phonological and morphological sources for derived vowel length in Choguita Raramuri (cf. Chapter 2, §2.3.2.3.1, §2.3.2.4.2, §3.5.2.2). These derived long vowels do not play any role in determining stress location. In fact, there is no single general rule that models stress location in Choguita Rarámuri. The distributional properties of stress in roots and suffixes is addressed next.

4.2.2 Stress properties of roots and affixes

Assuming we are correct in interpreting Choguita Rarámuri word prominence as stress, we now turn to the details of its distribution. Stress is part of the underlying representation of at least some morphemes.[43] The examples in (4) (repeated from (55) in Chapter 3) illustrate stress minimal pairs. Stressed vowels are in bold face.

4) Stress minimal pairs

	1st syllable stress			*2nd syllable stress*	
a.	múri	'basket'/'canasta'	b.	murí	'turtle'/'tortuga'
c.	éka	'close it!'/'ciérralo!'	d.	eká	'wind'/'viento'
e.	múči	'baby'/'bebé'	f.	mučí	'vagina'
g.	kóči	'pig'/'puerco'	h.	kočí	'dog'/'perro'

Stress is also a morphological process that marks imperative mood (5a-b) and verbalizations (5c-d) (cf. §3.4.1.3, §3.4.1.4, respectively).

[43] Contrastive vowel length is reconstructed for Proto-Uto-Aztecan (Campbell & Langacker 1978). Unpredictable stress contrasts in Choguita Rarámuri probably derive from an earlier distinction in vowel length; stress might then have become unpredictable when the vowel length distinction was lost.

5) The morphological role of stress

	Forms	*Gloss*	*Form*	*Gloss*
a.	ra’**í**ča	‘speak’/‘hablar’	ra’ič**á**!	‘speak!’/‘habla!’
b.	ra’**á**mi-ri	‘give.advice-Pst’/ ‘aconsejar-Pst’	ra’am**á**!	‘give advice!’/ ‘aconséjalo!’
c.	sip**ú**ča	‘skirt’/‘falda’	sipuč**á**	‘put skirt on’/ ‘ponerse falda’
d.	nap**á**ča	‘blouse’/‘blusa’	napač**á**	‘put blouse on’/ ‘ponerse blusa’

Roots can be underlyingly stressed on the first, second or third syllable. These patterns are exemplified in morphologically complex words in (6).

6) First, second and third-syllable stress

	Form	*Gloss*	
	First syllable stress		
a.	h**ú**misi-ri	‘take.off.pl-Pst’	[SF 05 1:101/Elicit]
b.	**é**ri-simi	‘close-Mot’	[SF 08 1:142/Elicit]
c.	k**é**či-si-niri	‘chew-Mot-Desid’	[SF 08 1:146/Elicit]
	Second syllable stress		
d.	poč**í**-po	‘jump-Fut:pl’	[SF 05 1:69/Elicit]
e.	poč**í**-ti-si-ma	‘jump-Caus-Mot-Fut:sg’	[SF 08 1:72/Elicit]
f.	at**í**s-ča-nare	‘sneeze-Ev-Desid’	[SF 07 1:73/Elicit]
	Third-syllable stress		
g.	amač**í**-a	‘pray-Prog’	[SF 04 1:133/Elicit]
h.	amač**í**-si-ma	‘pray-Mot-Fut:sg’	[SF 08 1:142/Elicit]
i.	basar**ó**wi-ni-ma	‘stroll-Desid-Fut:sg’	[SF 07 1:150/Elicit]

Although the position of stress is lexically governed in some words, Choguita Rarámuri has words that receive default stress assignment. As proposed for other Uto-Aztecan languages (e.g. Cupeño (Cupan; Hill & Hill (1968), Alderete (2001)), Choguita Rarámuri roots fall into two classes: stressed and unstressed. We have seen in Chapter 3 that stressed roots are lexically specified with a diacritic mark which is phonetically realized as stress in output forms; these roots retain stress in a fixed syllable in morphologically complex constructions throughout derivation. Unstressed roots, on the other hand, are not lexically pre-specified for stress and receive stress by default; location of stress in these roots depends on particular morphological contexts.

The contrast between stressed and unstressed roots becomes apparent when considering the different stress patterns of roots that add the locative suffix *-či* (as exemplified in (7)). Underlying stress is marked as underlining in UR's.

7) Stressed vs. unstressed roots in Choguita Rarámuri

	Underlying	*Gloss*	*Bare stem*	*Locative suffix*	
	Stressed Roots				
a.	/m$\underline{\text{u}}$ri/	'basket'/ 'canasta'	múri	múri-či	[BF 08 1:105/Elicit]
b.	/p$\underline{\text{u}}$ra/	'belt'/'cinto'	púra	púra-či	[LEL 06 5:128/Elicit]
c.	/s$\underline{\text{o}}$ru/	'soda'	s**ó**ru	s**ó**ru-či	[LEL 06 5:128/Elicit]
d.	/war$\underline{\text{i}}$/	'basket'	war**í**	war**í**-či	[LEL 06 5:129/Elicit]
e.	/kob$\underline{\text{i}}$si/	'pinole'	kob**í**si	kob**í**si-či	[LEL 06 5:128/Elicit]
	Unstressed Roots				
f.	/seka/	'hand'/'mano'	sek**á**	seka-**čí**	[NDB/Elicit]
g.	/rape/	'rock'/'roca'	rap**é**	rape-**čí**	[NDB/Elicit]
h.	/wasa/	'cultivation field'/ 'tierra de cultivo'	was**á**	wasa-**čí**	[BF 06 5:127/Elicit]
i.	/rono/	'foot'/'pie'	ron**ó**	rono-**čí**	[BF 06 5:127/Elicit]
j.	/kupa/	'hair'/'pelo'	kup**á**	kupa-**čí**	[LEL 06 5:129/Elicit]

Stressed roots have fixed stress in the first (7a-c) or second (7d-e) syllable, whether bare or suffixed with locative *–či*. In unstressed roots, stress falls on the locative suffix, one syllable to the right with respect to their bare counterparts (7f-j).

The contrast observed in (7) is not only found in nominal paradigms, but is also present in verbal roots. The effect of the conditional suffix *-sa* in the two types of verbal roots is illustrated in (8):

8) Stressed and unstressed verbal roots

	UR	*Gloss*	*Bare stem*[44]	*Conditional suffix*	
	Stressed Roots				
a.	/bene/	'learn'/ 'aprender'	ben**é**	ben**é**-sa	[RF 04 1:9/Elicit]
b.	/bahi/	'drink'/'beber'	bah**í**	bah**í**-sa	[BF 04 1:11/Elicit]
c.	/isi/	'urinate'/ 'orinar'	is**í**	is**í**-sa	[SF 05 1:80/Elicit]
d.	/bure/	'tie'/'amarrar'	bur**é**	bur**é**-sa	[SF 05 1:93/Elicit]
e.	/re'e/	'play'/'jugar'	re'**é**	re'**é**-sa	[BF 04 1:75/Elicit]
	Unstressed Roots				
f.	/čapi/	'grab'/ 'agarrar'	čap**í**	čapi-s**á**	[SF 05 1:102/Elicit]
g.	/mači/	'toast corn'/ 'tostar maiz'	mač**í**	mači-s**á**	[SF 05 1:79/Elicit]
h.	/osa/	'read/write'/ 'leer/escribir'	os**á**	osi-s**á**	[JH 04 1:5/Elicit]
i.	/siwa/	'bloom'/ 'florear'	siw**á**	siwa-s**á**	[BF 05 1:173/Elicit]
j.	/ohi/	'throw sticks'/ 'tirar palos'	oh**í**	ohi-s**á**	[SF 07 1:156/Elicit]

Like nominal roots, verbal roots are either stressed (with fixed stress across derivation (8a-e)), or unstressed (with stress falling in different positions across the paradigm (8f-j)). In the rest of the chapter I will focus on verbal stress patterns.

As we have seen in Chapter 3, the locative and the conditional suffixes are part of a class of suffixes that trigger a stress shift with unstressed roots, *stress-shifting* suffixes.

[44] Present tense or imperative singular can be marked through the bare stem, so these examples are in fact instances of inflected words.

This class contrasts with another class composed of suffixes that do not perturb the stress of the stems to which they attach, *stress-neutral suffixes*. A non-exhaustive list of the two types of suffixes is provided in Table 22.

Table 22: Stress-neutral and stress-shifting verbal suffixes

Stress-neutral		Stress-shifting	
Form	Example	Form	Example
Causative *-ti*	*suk**ú**-ti*	Desiderative *-nare*	*suku-**ná**re*
Applicative *-ki*	*suk**ú**-ki*	Future Passive *–pa*	*suku-**pá***
Ass. Motion *–simi*	*suk**ú**-simi*	Habitual passive *–wa*	*suku-**wá***
Evidential *-čane*	*suk**ú**-čane*	Cond. pass. *-suwa*	*suku-**sú**wa*
Past Passive *-ru*	*suk**ú**-ru*	Future sg *–mea*	*suku-**mé**a*
Irrealis plural *-pi*	*suk**ú**-pi*	Future plural *–bo*	*suku-**bó***
Past *–ri*	*suk**ú**-ri*	Motion imp. *-me*	*suku-**mé***
Progressive *-a*	*suk**ú**-a*	Irrealis singular *-me*	*suku-**mé***
Imperfective *-e*	*suk**ú**-i*	Conditional *-sa*	*suku-**sá***
Past 1st person *-ki*	*suk**ú**-ki*	Potential *–ta*	*suku-**rá***
Imperative *–ri*	*suk**ú**-ri*	Imperative sg. *–sa*	*suku-**sá***
Reportative *–ra*	*suk**ú**-ra*	Imperative pl *–si*	*suku-**sí***
Epistemic *–o*	*suk**ú**-o*	Gerund *–ka*	*suku-**ká***

Roots, on the other hand, can be further characterized depending on their prosodic size. As mentioned in Chapter 3 (§3.2), from a total of 1004 roots (680 verbal roots and 324 nominal roots), 3% are monosyllabic, 47% are disyllabic, and 40% are trisyllabic. The rest of the roots are tetrasyllabic or longer (105 or 10% of the total). After closer inspection, these longer roots turn out to be compounds (e.g. *mukurúsi* 'have seizures' (*mukú* 'die') or *kosímiti* 'do somersaults' (*kosí* 'buttocks') or loanwords from Spanish (e.g. *basarówa* 'stroll' (from Spanish 'pasear') or *sipijári* 'brush' (from Spanish 'cepillar')). Thus, the Choguita Rarámuri root lexicon consists of mostly disyllabic and trisyllabic roots. I address each type next.

4.2.2.1 Disyllabic forms

Disyllabic roots can be underlyingly stressed or unstressed. Disyllabic stressed roots are exemplified in (9).

9) Stressed, disyllabic roots

	UR	*Gloss*	*Bare*	*Shifting Suffix*	*Neutral Suffix*
	First syllable stress				
a.	/tá̱ni/	‘ask for’/‘pedir’	t**á**ni	t**á**ni-ma	t**á**ni-ri
b.	/pú̱či/	‘blow’/‘soplar’	p**ú**či	p**ú**či-ma	p**ú**či-ri
c.	/me̱ti/	‘drive’/‘conducir’	m**é**ti	m**é**ti-ma	m**é**ti-ri
d.	/e̱ri/	‘close’/‘cerrar’	**é**ri	**é**ri-ma	**é**ri-ri
e.	/na̱ri/	‘ask’/‘preguntar’	n**á**ri	n**á**ri-ma	n**á**ri-ri
	Second syllable stress				
f.	/kači̱/	‘spit’/‘escupir’	ka**čí**	ka**čí**-ma	ka**čí**-ri
g.	/awe̱/	‘grill’/‘asar’	aw**é**	aw**é**-ma	aw**é**-ri
h.	/riwe̱/	‘leave’/‘dejar’	riw**é**	riw**é**-ma	riw**é**-ri
i.	/napa̱/	‘hug’/‘abrazar’	nap**á**	nap**á**-ma	nap**á**-ri
j.	/seme̱/	‘play violin’/ ‘tocar violín’	sem**é**	sem**é**-ma	sem**é**-ri

Almost all disyllabic words with first syllable stress (as in (9a-d)) are stressed, and never displace stress to stress-shifting suffixes.

Unstressed disyllabic roots are exemplified in (10).

10) Unstressed disyllabic roots

	UR	*Gloss*	*Bare stem*	*Shifting suffix*	*Neutral suffix*
a.	/uku/	‘rain’/‘llover’	uk**ú**	uku-m**é**a	uk**ú**-ri
b.	/čapi/	‘grab’/‘agarrar’	čap**ị́**	čapi-m**é**a	čap**í**-ri
c.	/ča’i/	‘get stuck’/‘atorarse’	ča’**ị́**	ča’i-m**é**a	čap**í**-ri
d.	/sawi/	‘cure:intr’/‘curarse’	saw**í**	sawi-m**é**a	saw**í**-ri

e. /rono/ 'boil'/'hervir' ron**ó** rono-m**éa**[45] ron**ó**-ri

These roots, with third syllable stress with stress-shifting suffixes, increase the proportion of words with third syllable stress in the corpus.

4.2.2.2 Trisyllabic forms

Most trisyllabic roots, which are about 40% of the database, are stressed, with fixed second syllable stress (11) or fixed third syllable stress (12):

11) Second-syllable, stressed trisyllabic roots

	UR	*Gloss*	*Bare verb*	*Shifting suffix*	*Neutral suffix*
a.	/nateti/	'pay'/'pagar'	nat**é**ti	nat**é**ti-ma	nat**é**ti-ri
b.	/nahata/	'follow'/ 'seguir'	nah**á**ta	nah**á**ti-ma	nah**á**ti-ri
c.	/sebari/	'complete'/ 'completar'	seb**á**ri	seb**á**ri-ma	seb**á**ri-ri
d.	/očopi/	'stick'/ 'pegarse'	oč**ó**pi	oč**ó**pi-ma	oč**ó**pi-ri

12) Third-syllable, stressed trisyllabic roots

	UR	*Gloss*	*Bare verb*	*Shifting suffix*	*Neutral suffix*
a.	/binihi/	'acuse'/ 'acusar'	binih**í**	binih**í**-ma	binih**í**-ri
b.	/bahuré/	'invite'/ 'invitar'	bahur**é**	bahur**é**-ma	bahur**é**-ri
c.	/sukuču/	'scratch'/ 'rasguñar'	sukuč**ú**	sukuč**ú**-ma	sukuč**ú**-ri

[45] The future singular suffix displays an interesting allomorphy: *–ma*, used with stressed roots, and *–méa*, used with unstressed roots. Consistently, the former is unstressed while the latter is stressed, and root stress seems to be the only parameter that plays a role in allomorph selection. The future singular suffix is the only suffix that displays this stress-conditioned suppletive allomorphy. Guarijio, another Taracahitan language, does not have this allomorphy for the cognate future suffix (in both stressed and unstressed contexts, the future singular suffix is *–ma* (Miller 1996)).

d.	/wikar<u>a</u>/	'sing'/ 'cantar'	wikar**á**	wikar**á**-ma	wikar**á**-ri

There are also unstressed trisyllabic roots. As shown in (13), these roots have shifting stress in morphologically complex constructions.

13) Unstressed trisyllabic roots

	Form	*Gloss*	*Stress*	
a.	an**á**ča-ri	'endure-Pst'	2nd syllable	[RF 04 1:123-Elicit]
b.	an**á**ča-ki	'endure-Pst:1'	2nd syllable	[RF 04 1:123-Elicit]
c.	an**á**ča-ti	'endure-Caus'	2nd syllable	[RF 04 1:123-Elicit]
d.	an**á**ča-i	'endure-Impf'	2nd syllable	[RF 04 1:123-Elicit]
e.	anač**á**-ma	'endure-Fut:sg'	3rd syllable	[RF 04 1:123-Elicit]
f.	anač**á**-ba	'endure-Fut:Pass'	3rd syllable	[RF 04 1:123-Elicit]
g.	anač**á**-sa	'endure-Cond'	3rd syllable	[RF 04 1:123-Elicit]
h.	anač**á**-nare	'endure-Desid'	3rd syllable	[RF 04 1:123-Elicit]

The stress shifts that the verbal root *anáča,* 'endure' (*'aguntar'*), undergoes in (13) parallels those of unstressed disyllabic roots in different morphological constructions: the verb has second syllable stress when inflected with stress-neutral suffixes (13a-d), but third syllable stress when inflected with stress-shifting suffixes (13e-h). Further examples of unstressed trisyllabic roots are given in (14):

14) Unstressed trisyllabic roots

	Stress-neutral suffixes		*Stress-shifting suffixes*	
a.	nas**ó**wa-ri	'mix-Pst'/'revolver'	nasow**á**-ma	'mix-Fut:sg'
b.	nas**ó**wa-ki	'mix-Pst:1'	nasow**á**-sa	'mix-Cond'
c.	nas**ó**wa-a	'mix-Prog'	nasow**á**-bo	'Fut:pl'
d.	ra'**á**ma-ri	'give.advice-Pst'/ 'dar consejos-Pst'	ra'am**á**-ma	'give.advice-Fut:sg'
e.	ra'**á**ma-a	'give.advice-Prog'	ra'am**á**-sa	'give.advice-Cond'
f.	ra'**á**ma-ki	'give.advice-Pst:1'	ra'am**á**-bo	'give.advice-Fut:pl'
g.	ra'**í**ča-ri	'speak-Pst'/'hablar'	ra'ič**á**-ma	'speak-Fut:sg'
h.	ra'**í**ča-a	'speak-Prog'	ra'ič**á**-bo	'speak-Fut:pl'
i.	ra'**í**ča-ki	'speak-Pst:1'	ra'ič**á**-sa	'speak-Cond'

The forms in (13-14) show that stress-neutral suffixes are not pre-stressing, as could have been assumed from the stress pattern of unstressed disyllabic roots. If stress-neutral suffixes were pre-stressing, we would expect third-syllable stress with trisyllabic unstressed roots, immediately preceding the suffixes, instead of the attested second syllable stress. These hypothetical, unattested forms are illustrated in the second column in (15).

15) Attested and hypothetical forms with stress-neutral suffixes

	Attested	*Unattested*	*Gloss*	
a.	nas**ó**wa-ri	*nasow**á**-ri	'mix-Pst'/ 'mezclar-Pst'	[RF 04 1:123/Elicit]
b.	nas**ó**wa-ki	*nasow**á**-ki	'mix-Pst:1'	[RF 04 1:123/Elicit]
c.	nas**ó**wa-a	*nasow**á**-a	'mix-Prog'	[RF 04 1:123/Elicit]
d.	ra'**á**ma-ri	*ra'am**á**-ri	'give.advice-Pst'/ 'dar.consejo-Pst'	[RF 04 1:64/Elicit]
e.	ra'**á**ma-a	*ra'am**á**-a	'give.advice-Prog'	[RF 04 1:64/Elicit]
f.	ra'**á**ma-ki	*ra'am**á**-ki	'give.advice-Pst:1'	[RF 04 1:64/Elicit]
g.	ra'**í**ča-ri	*ra'ič**á**-ri	'speak-Pst'/ 'hablar-Pst'	[SF 05 1:98/Elicit]
h.	ra'**í**ča-a	*ra'ič**á**-a	'speak-Prog'	[SF 05 1:98/Elicit]
i.	ra'**í**ča-ki	*ra'ič**á**-ki	'speak-Pst:1'	[SF 05 1:98/Elicit]

Finally, stress-neutral suffixes are never stressed. Following the pattern of unstressed trisyllabic roots (in (13-14)), we would expect unstressed disyllabic roots adding a stress-neutral suffix (like causative *-ti*) and a stress-shifting suffix (like future singular *–ma*) to have third syllable stress. These verbs, however, have second-syllable stress. This is illustrated in (16).

16) The unstressability of stress-neutral suffixes

	Attested	*Unattested*	*Gloss*	
a.	aw**í**-ti-sa	*awi-t**í**-sa	'dance-Caus-Cond'/ 'bailar-Caus-Cond'	[SF 08 1:112/Elicit]
b.	rar**í**-si-ma	*rari-s**í**-ma	'buy-Mot-Fut:sg'/ 'comprar-Mot-Fut:sg'	[AH 05 1:130/Elicit]
c.	os**í**-si-ma	*osi-s**í**-ma	'read-Mot-Fut:sg'/ 'leer-Mot-Fut:sg'	[SF 05 1:78/Elicit]
d.	čon**í**-ki-ma	*čoni-k**í**-ma	'fist.fight-Appl-Fut:sg'/ 'pelear.chingazos-Appl-Fut:sg'	[SF 05 1:67/Elicit]

The unstressability of stress-neutral suffixes is further evidenced by unstressed monosyllabic roots. Only two of twenty-seven monosyllabic verbal roots are unstressed (*ru* 'say' ('*decir*') and *tó* 'bring' ('*traer*')). These roots shift stress to stress-shifting suffixes, as shown in (17).

17) Unstressed monosyllabic roots

	Form	*Gloss*	*Unattested*	
	Stress-neutral suffixes			
a.	r**ú**-ki	'say-Pst:1'	*ru-k**í**	[JH 04 1:27/Elicit]
b.	r**ú**-ri	'say-Pst'	*ru-r**í**	[JH 04 1:27/Elicit]
c.	r**ú**-simi	'say-Mot'	*ru-s**í**mi	[RF 04 1:102/Elicit]
d.	r**ú**-ra	'say-Rep'	*ru-r**á**	[RF 04 1:102/Elicit]
	Stress-shifting suffixes			
e.	ru-m**é**a	'say-Fut:sg'		[JH 04 1:27/Elicit]
f.	ru-s**á**	'say-Cond'		[RF 04 1:102/Elicit]
g.	ru-b**ó**	'say-Fut:pl'		[JH 04 1:27/Elicit]
h.	ru-n**á**re	'say-Desid'		[RF 04 1:102/Elicit]

We might have expected the forms in (17a-d) to have second syllable stress when adding stress-neutral suffixes, following the pattern of disyllabic and trisyllabic unstressed roots. Instead, stress in these words is in the root, the first syllable. These cases suggest that the stress rule associated with stress-neutral suffixes must also meet the condition of being assigned *within* the root. Stress-neutral suffixes are not part of the stress domain.

Setting aside the two cases of unstressed monosyllabic verb roots, we have seen that unstressed roots receive stress through two regular emergent sub-patterns, second syllable stress and third syllable stress, specific to two sets of morphological constructions (with stress-neutral and stress-shifting suffixes, respectively).

There is, however, a potential counterexample for this generalization: a set of exceptional disyllabic roots have **first** syllable stress with stress-neutral suffixes, and **second** syllable stress with stress-shifting suffixes. From a corpus of 680 verbal roots, eight roots exhibit this behavior. An exhaustive list is given in (18):

18) Disyllabic roots with first and second syllable stress

	UR	*Gloss*	*Shifting Suffix*	*Neutral Suffix*	
a.	/uba/	'bathe'/ 'bañarse'	ub**á**-ma	**ú**bi-ri	[RF 04 1:102/Elicit]
b.	/noča/	'work'/ 'trabajar'	noč**á**-ma	n**ó**či-ri	[SF 05 1:97/Elicit]
c.	/seba/	'reach'/ 'alcanzar'	seb**á**-ma	s**é**bi-ri	[BF 05 1:171/Elicit]
d.	/čuta/	'sharpen'/ 'afilar'	čut**á**-ma	č**ú**ti-ri	[RF 04 1:122/Elicit]
e.	/pewa/	'smoke'/ 'fumar'	pew**á**-ma	p**é**wi-ri	[RF 04 1:122/Elicit]
f.	/čota/	'begin'/ 'empezar'	čot**á**-ma	č**ó**ti-ri	[LEL 06 5:36/Elicit]
g.	/soma/	'wash head'/ 'lavar cabeza'	som**á**-ma	s**ó**mi-ri	[BF 06 FN4-23/Elicit]
i.	/nata/	'think'/ 'pensar'	nat**á**-ma	n**á**ti-ri	[SF 04 1:67/Elicit]

Comparison of these roots with their cognates in Guarijío (Miller 1996), a closely related Taracahitan language, reveals that this set of roots is truly exceptional. Specifically, the Guarijío cognates all have *three* syllables, suggesting that Choguita Rarámuri has innovated initial syllable truncation with these forms. The cognate forms are shown in (19).

19) Cognate Choguita Rarámuri – Guarijío roots

	C. Rarámuri		*Guarijío*		*Gloss*
a.	uba	[SF 05 1:86]	u'upá	[M402]	'bathe'/'bañarse'
b.	noča	[RF 04 1:129]	inóča	[M340]	'work'/'trabajar'
c.	seba	[RF 04 1:109]	ahséba	[M323]	'reach'/'alcanzar'
d.	čota	[LEL 06 5:36]	ihčotá	[M337]	'begin'/'empezar'
e.	soma	[LEL 06 FN]	mo'so-má	[M360]	'wash head or hair'/ 'lavar cabeza o pelo'
f.	nata	[JH 04 1:2]	u'natá	[M401]	'think'/'pensar'

It is not the case that all of the Choguita Rarámuri roots are one syllable shorter than the corresponding Guarijío cognates (e.g. Choguita Rarámuri *ra'íča* – Guarijío *ta'íča* (M391), 'speak'; Choguita Rarámuri *rosówa* – Guarijío *tohsoá* (M396), 'cough'). The forms in (18) are derived from trisyllabic roots through a recent diachronic development. Based on this comparative evidence, I contend that these exceptional forms do not constitute a counterexample to the stress patterns found with unstressed roots, but instead follow the pattern of unstressed trisyllabic roots.

In sum, Choguita Rarámuri roots are either stressed or unstressed and suffixes are either stress-shifting or stress-neutral. Unstressed roots display systematic sub-patterns: second-syllable stress with stress-neutral suffixes and third-syllable stress with stress-shifting suffixes. The next section deals with constructions with multiple suffixes.

4.2.3 Multiple affixation constructions

As we have seen in Chapter 3 (§3.3.1.3), in words containing unstressed roots and multiple suffixes, the stress properties of the word are defined in the first layer of affixation. As exemplified below, words containing an unstressed root (*sukú* 'scratch' (*'rasguñar'*)) will have third syllable stress when the suffix is stress shifting (20a-d), and second syllable stress when the first suffix is stress neutral (20e-l), regardless of the stress type of outer suffixes.

20) Multiply affixed word containing an unstressed root

	Form	*Gloss*
	Verb + stress shifting suffix + stress shifting suffix	
a.	suku-nár-sa	'scratch-Desid-Cond'
b.	suku-bó-si	'scratch-Fut:pl-Imp:pl'
	Verb + stress shifting suffix + stress neutral suffix	
c.	suku-nári-ki	'scratch-Desid-Pst:1'
d.	suku-wá-i	'scratch-MPass-Impf'
	Verb + stress neutral suffix + stress shifting suffix	
e.	sukú-si-ma	'scratch-Mot-Fut:sg'
f.	sukú-ki-ma	'scratch-Appl-Fut:sg'
	Verb+stress neutral suffix + stress neutral suffix	
g.	sukú-ri-ri	'scratch-Caus-Pst'
h.	sukú-r-ki	'scratch-Caus-Pst:1'

Irrespective of the stress type of the suffixes added, then, unstressed roots will have a stress makeup dependent on the prosodic makeup of the root and the first suffix added, a Stem domain (which is independent of the morphological levels defined in Chapter 3).

In addition, there is an over-arching restriction that requires stress to be assigned in the first three syllables of the word. The next section addresses this restriction.

4.2.4 An initial three-syllable stress window

Window stress systems have been defined as systems where "stress falls within a disyllabic or trisyllabic sequence of syllables from the edge of the domain, but is unpredictable within that window" (Kager 1993:1). There are, however, languages with predictable stress within a window: in Pirahã (spoken in the Amazon), for example, stress is assigned to the heaviest syllable within the last three syllables of the word (Everett 1988, Green & Kenstowicz 1995). Regardless of the predictability of stress within the two- or three-syllable margin, the key characteristic of window systems is the presence of alternations that maintain binarity or ternarity (e.g., in constructions with multiple affixation, reduplication, compounding, etc.)

Earlier descriptions of other Rarámuri varieties and Guarijío have documented that stress is left-aligned in these languages and never placed beyond the third syllable, with alternations in reduplication and compounding maintaining this three-syllable restriction (cf. Brambila (1953:245) for Norogachi Rarámuri and Miller (1996:49-50) for River Guarijío).

The forms below show that Choguita Rarámuri stress is indisputably left-aligned. Since the longest monomorphemic roots in this language are tetrasyllabic at most, the evidence in (21) involves morphologically complex forms.

21) Left alignment of stress

	Forms	*Gloss*	
a.	poč**í**-po	'jump-Fut:pl'/'brincar-Fut:pl'	[SF 05 1:69/Elicit]
b.	poč**í**-ti-si-ma	'jump-Caus-Mot-Fut:sg'	[SF 08 1:72/Elicit]
c.	amač**í**-ma	'pray-Fut:sg'/'rezar-Fut:sg'	[SF 04 1:133/Elicit]
d.	amač**í**-ti-ma	'pray-Caus-Fut:sg'	[BF 08 1:108/Elicit]
e.	at**í**si-ma	'sneeze-Fut:sg'/ 'estornudar-Fut:sg'	[BF 05 1:111/Elicit]
f.	at**í**s-ča-nare	'sneeze-Ev-Desid'	[SF 07 1:73/Elicit]
g.	basar**ó**wi-ki	'stroll-Pst:1'/'pasear-Pst:1'	[BF 05 1:162/Elicit]
h.	basar**ó**wi-ni-ma	'stroll-Desid-Fut:sg'	[SF 07 1:150/Elicit]

While the forms in (21a-e, g) could be ambiguous between second and third syllable stress and penultimate and antepenultimate stress, embedding these forms in further morphology reveals that the correct generalization about stress assignment can only be made with respect to the left edge of the prosodic word. Each pair of morphologically related words ((21a-b), (21c-d), (21e-f) and (21g-h)) shows that stress is constantly on the second or third syllable.

Choguita Rarámuri, like Norogachi Rarámuri and Guarijío, also has constructions that display stress alternations. There are N-V constructions that are restricted to nouns referring to body parts and bodily fluids. In these constructions, the noun root is fully integrated with the verb morphologically, and both the noun root and the verb root can be used independently. As discussed in §3.4.3, these properties are prototypical of 'body part incorporation', a restricted kind of noun incorporation, which is common in languages of the Americas (Baker 1996). Stress in these constructions is actively constrained by the grammar. If the head, the incorporated verb, has second syllable stress in isolation and if the first member, the body-part noun, is two syllables long, stress retracts to the verb’s first syllable, the construction’s third syllable.[46] This is exemplified in (22).

22) Stress retraction in incorporated constructions

	Underlying	*Gloss*	*Bare verb*	*Incorporated verb*
a.	/busi+kasi/	‘eye+break’/ ‘ojo+quebrar’	kas**í**	busi+k**á**si
b.	/ropa+kasi/	‘stomach+break’/ ‘estómago+quebrar’	kas**í**	ropa+k**á**si
c.	/bus**i**+bota/	‘eye+come.out’/ ‘ojo+salirse’	bot**á**	busi+b**ó**ta
d.	/kawa+bota/	‘egg+come out’/ ‘huevo+salirse’	bot**á**	kawa+b**ó**ta
e.	/kuta+bi’ri/	‘neck+twist’/ ‘cuello+torcerse’	bi’r**í**	kuta+b**í**ri
f.	/čoma+bi’wa/	‘mucus+clean’/ ‘mocos+limpiar’	bi’w**á**	čoma+b**í**wa
g.	/čerewa+bi’wa/	‘sweat+clean’/ ‘sudor+limpiar’	bi’w**á**	čere+b**í**wa

All possible interactions of stressed and unstressed roots are attested in these forms: unstressed noun plus unstressed verb (22a), stressed noun plus unstressed verb (22b), unstressed noun plus stressed verb (22c), and stressed noun plus stressed verb (22d). Regardless of the underlying stress information the roots of the construction might carry, stress is assigned in the first syllable of the head of the construction, the verbal root. The stress retraction phenomenon involves actual deletion of lexical inherent root stress from the head of the construction. The verbal root *bị’wá* ‘to clean’, for instance, is an stressed root (with fixed stress when adding stress-shifting suffixes) (e.g. (23)):

[46] In (22e-g), the glottal stop associated with the verbal roots does not emerge in the surface incorporated form due to the glottal prosody place restriction described in Chapter 2, §2.3.3.

23) Stress properties of verb root *bi'wá* 'clean' (*'limpiar'*)

	Form	*Gloss*	
a.	bi'w**á**-ma	'clean-Fut:sg'	[SF 05 1:72/Elicit]
b.	bi'w**á**-sa	'clean-Cond'	[SF 05 1:72/Elicit]
c.	bi'w**á**-bo	'clean-Fut:pl'	[SF 05 1:72/Elicit]
d.	bi'w**á**-nare	'clean-Desid'	[SF 05 1:72/Elicit]
e.	bi'w**á**-si	'clean-Imp:pl'	[SF 05 1:72/Elicit]

In incorporation, however, this verbal root undergoes a stress shift one syllable to the left (e.g., *čoma+b**í**'wa* (22f)). Stress in incorporated verbs, therefore, involves both stress deletion and stress-reassignment. Brambila (1953) and Miller (1996) interpret similar stress deletion and re-assignment facts in the Taracahitan languages as evidence for a three-syllable stress window. Fourth syllable stress, which would result in the incorporated forms in (22a-f) if there were no stress reassignment, would fall outside this window, and is therefore retracted one syllable to the left.

However, the stress alternations in the incorporated forms of Choguita Rarámuri can also be analyzed as arising not from a stress window, but from a mophological stress rule specific to incorporated constructions. This morphological stress rule would require stress to be assigned in the first syllable of the head of the incorporated construction. This morphological stress rule is defined in (24).

24) Incorporated verb stress rule

The head of the incorporation construction, the verbal root must bear stress in the first syllable

There are, however, further testing grounds for the window hypothesis. The behavior of trisyllabic nouns in incorporation is crucial in this regard. Choguita Rarámuri, like other Uto-Aztecan languages (e.g. Southern Paiute (Sapir 1931) and Kawaiisu (Zigmond et al. 1991)), tends to shorten its trisyllabic nouns to a disyllabic form when incorporated. These truncated forms in incorporation are shown in (25).

25) Noun truncation in incorporation

	UR	*Gloss*	*Bare noun*	*Incorporated verb*
a.	/čerewa+bi’wa/	‘sweat+clean’ ‘sudor+limpiar’	čerewá	čere+bíwa
b.	/čameka+repu/	‘tongue+cut’ ‘lengua+cortar’	čaméka	čame+répu

Truncation of tetrasyllabic nouns in the incorporated forms in (25) is ambiguously triggered by either an initial three-syllable stress window or a morphological incorporation stress rule defined in (24). However, while most speakers completely reject non-truncated versions of the forms in (25), for some speakers such forms are in fact interpretable. These non-truncated forms are shown in (26), where angled brackets indicate that these forms are abstract and not spontaneously produced.

26) Interpretable, non-truncated incorporated verbs

	Form	*Gloss*	*Stress*
a.	<čameká+repu>	‘tongue+cut’/‘lengua+cortar’	*3rd syllable*
b.	<kutačí+repu>	‘neck+cut’/‘cuello+cortar’	*3rd syllable*

These forms, with stress in the third syllable, are not spontaneously produced, but their intended meanings can be retrieved. Equivalent non-truncated forms with stress in the fourth syllable, on the other hand, were completely rejected and their intended meaning could not be recovered. These forms are shown in (27).

27) Uninterpretable, non-truncated incorporated verbs

	Form	*Gloss*	*Stress*
a.	*čameka+répu	‘tongue+cut’	*4th syllable*
b.	*kutači+répu	‘neck+cut’	*4th syllable*

The incorporation stress rule is violated in the interpretable cases in (26), but the initial three-syllable stress window is violated in the completely rejected forms in (27), suggesting that there is indeed an overarching, exceptionaless restriction that restricts stress to the first three syllables of the word in Choguita Rarámuri. There is indeed not a single form in the Choguita Rarámuri corpus that has stress outside this three-syllable range.

While languages with a final ternary stress window - permitting only final, penultimate, or antepenultimate stress - are not uncommon (e.g. Imbabura Quechua, Macedonian, Greek, Hebrew, Spanish, Polish, Zoque, Italian), initial three-syllable stress windows have been rarely documented (Hyman (1977), Kager (1993)). To my knowledge, these have been described only in four other languages to date: in Icua Tupi (Tupi), Terena (Tupi), Wishram Chinook (Chinookan) (Kager (1993)), and Azkoitia Basque (Hualde (1998)). Assuming that we are correct in interpreting the stress and truncations alternations of Choguita Rarámuri, we can add another case to this typologically marked set. River Guarijío must be added to this list as well. Evidence for an initial three-syllable window in this language are found in stress alternations of its productive reduplication patterns (Miller 1996).

4.2.5 Summary

Table 23 summarizes the types of roots that exist in Choguita Rarámuri (in terms of their size and their underlying stress properties) and the possible interactions with stress-shifting and stress-neutral suffixes (stress in roots is marked through underlining; stress-shifting suffixes are marked with bold-face).

Table 23: Choguita Rarámuri stress patterns by root and suffix type

Monosyllables	$/\underline{\sigma} + \boldsymbol{\sigma}/$	First syllable stress	sú-sa
	$/\underline{\sigma} + \sigma/$	First syllable stress	sú-ri
	$/\sigma + \boldsymbol{\sigma}/$	Second syllable stress	ru-sá
	$/\sigma + \sigma/$	First syllable stress	rú-ri
Disyllables	$/\underline{\sigma}\ \sigma + \boldsymbol{\sigma}/$	First syllable stress	táni-sa
	$/\underline{\sigma}\ \sigma + \sigma/$	First syllable stress	táni-ri
	$/\sigma\ \underline{\sigma} + \boldsymbol{\sigma}/$	Second syllable stress	kačí-sa
	$/\sigma\ \underline{\sigma} + \sigma/$	Second syllable stress	kačí-ri
	$/\sigma\ \sigma + \boldsymbol{\sigma}/$	**Third syllable stress**	awi-sá
	$/\sigma\ \sigma + \sigma/$	**Second syllable stress**	awí-ri
Trisyllables	$/\underline{\sigma}\ \sigma\ \sigma + \boldsymbol{\sigma}/$	First syllable stress	húmisi-sa
	$/\underline{\sigma}\ \sigma\ \sigma + \sigma/$	First syllable stress	húmisi-ri
	$/\sigma\ \underline{\sigma}\ \sigma + \boldsymbol{\sigma}/$	Second syllable stress	natéti-sa
	$/\sigma\ \underline{\sigma}\ \sigma + \sigma/$	Second syllable stress	natéti-ri
	$/\sigma\ \sigma\ \underline{\sigma} + \boldsymbol{\sigma}/$	Third syllable stress	binihí-sa
	$/\sigma\ \sigma\ \underline{\sigma} + \sigma/$	Third syllable stress	binihí-ri
	$/\sigma\ \sigma\ \sigma + \boldsymbol{\sigma}/$	**Third syllable**	anačá-sa
	$/\sigma\ \sigma\ \sigma + \sigma/$	**Second syllable**	anáča-ri

Choguita Rarámuri has two default stress patterns: second syllable stress and third syllable stress. Words composed of unstressed roots and stress-neutral suffixes trigger the second syllable pattern, while words composed of unstressed roots and stress-shifting suffixes trigger the third syllable pattern. In multiply affixed words, the stress makeup of the word will be determined by the prosodic makeup of the morphemes in the Stem (root plus first layer of affixation). The numerous instances of third syllable stress are accounted for through either lexical stress of roots or by the effect of stress-shifting suffixes. The initial three syllable window precludes stress from falling in stress-shifting suffixes when the root is itself three syllables long. Violations to the window, however, are not being resolved through a second syllable pattern. Instead, these forms receive stress through the third-syllable stress default pattern.

Surface stress in Choguita Rarámuri is thus the product of a complex interplay of lexical, morphological and purely prosodic factors. Crucially, default stress patterns are governed by morphological structure, rather than directionality principles alone. The next section provides a Cophonology analysis of this system of morphologically conditioned stress.

4.3 A Cophonology analysis

The highly complex stress facts of Choguita Rarámuri are naturally captured through different cophonologies. In cophonology theory, intra-linguistic variation is handled with construction-specific phonological mappings, or morphologically blind phonological sub-grammars (Orgun 1996, Anttila 1997, 2002, Inkelas 1998, Inkelas & Zoll 2003, Yu 2000). Phonological rules or constraints are fully general, since it is entire rankings of constraints that are associated to specific morphological contexts. When cophonologies differ across morphological constructions, as in the Choguita Rarámuri case, morphologically conditioned phonology obtains.

The cophonologies in this case are formalized in Optimality Theory (OT; McCarthy & Prince 1993; Prince & Smolensky 1993). Each cophonology consists of a phonological sub-grammar spelled out as a hierarchy of ranked and violable markedness, faithfulness and alignment constraints. Some of the relevant constraints are summarized in (28).

28) Footing constraints for Choguita Rarámuri stress assignment

ALL-FT-L:	Every foot stands at the left edge of the prosodic word (PrWd).
PARSE-σ:	Syllables must be parsed into feet.
IAMB:	Feet have final prominence.
TROCHEE:	Feet have initial prominence.

Prosodic Faithfulness (PROS-FAITH) constraints (McCarthy (1997), Zoll (1998), Alderete (1999, 2001)) enforce the realization of underlying stress in its original position in every cophonology. These constraints are defined in (29).

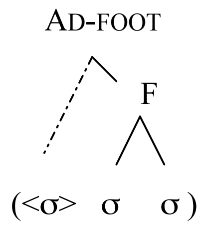
29) Prosodic Faithfulness (Pros-Faith) Constraints (Alderete 2001:24)

MAX-PROM:	Every prominence in the input must have a correspondent in the output.
DEP- PROM:	Every prominence in the output must have a correspondent in the input.
NO-FLOP-PROM:	Corresponding prominences must have corresponding sponsors and links.

The over-arching window restriction can be attributed to a high ranked constraint that forces feet to the left edge of the prosodic word, ALL-FT-L. This constraint, together with the ranking IAMB >> TROCHEE, yields second syllable stress.

Third-syllable stress needs an additional component. To formalize third syllable stress in strong morphological constructions and in incorporated constructions, I will resort to a ternary constituent (following Selkirk (1980), Itô & Mester (1992, 2003), Blevins & Harrison (1999), and Zoll (2004), among others), a foot with a single (left-) adjoined syllable. This ternary constituent is schematized in (30).

30) Ternary constituent with single adjoined syllable (Zoll 2004)



This representation crucially groups three syllables into a constituent. The ternary constraint violates non-strict layering (Selkirk (1984)), STRICT (Zoll 2004).[47] This constraint's relative ranking is different in each cophonology.

As proposed in Chapter 3, stress-shifting suffixes together form "strong" morphological constructions, while stress-neutral suffixes form "weak" morphological constructions, where "morphological constructions" are any morphological processes that combine two sisters into a single constitutent to form a complex word (Inkelas and Zoll 2005:12). Each type of morphological construction is associated with a particular stress pattern. To describe the split between the two types of affixal constructions it is necessary to posit two cophonologies, each with its own specified ranking of this constraint:

31) Two stress cophonologies of Choguita Rarámuri affixal constructions

a.	*Cophonology Weak:* **STRICT** >> IAMB, PARSE-σ	2nd syllable stress
b.	*Cophonology Strong:* IAMB, PARSE-σ >> **STRICT**	3rd syllable stress

In the next section I show how these affixal stress cophonologies work.

[47] This constraint must be internally complex, allowing only one adjoined syllable and ruling out a quaternary foot with two adjoined syllables.

4.3.1 Affixal stress cophonologies

In Cophonology *weak*, the cophonology of weak morphological constructions, STRICT is highly ranked, enforcing second syllable stress. In Cophonology *strong*, the cophonology of strong morphologial constructions, STRICT is ranked below PARSE-σ, allowing for ternary constituents (and third syllable stress). Both of these stress patterns are default patterns, since they emerge when there is no lexically pre-specified stress information in the morphemes of a morphologically complex word.

Since there is no phonetic or phonological evidence for secondary stress in Choguita Rarámuri, we can assume that ALL-FT-L is ranked above PARSE-σ, producing a non-iterating stress system. Feet are iambic (IAMB outranks TROCHEE).[48] The unstressability of stress-neutral suffixes (which precludes stress to the root) is captured through a positional markedness constraint, STEMSTRESS, which favors roots and stress-shifting suffixes (the stressable Stem domain) over stress neutral affixes for stress assignment (c.f. analysis of Tuyuca by Barnes (1996) and Smith (1998)). The constraint enforcing this requirement is defined in (32).

32) Positional markedness constraint (Smith 1998)

STEMSTRESS: Every Stem has a stress

While stress-neutral suffixes are not part of the stressable domain, stress-shifting suffixes are. It must be stipulated that stress-shifting suffixes do not incur in violations of

[48] This assumption in the analysis renders Choguita Rarámuri stress system an unbounded, weight-insensitive iambic system. Weight-insensitive iambs have been claimed to be universally dispreferred (see Hayes' (1995) Iambic-Trochaic Law), though see Graf & Ussiskhin (2003) analysis of Modern Hebrew using weight-insensitive iambs.

STEMSTRESS when bearing stress. Stress-shifting suffixes form a tight phonological unit with their host root, and are part of the stem for stress purposes, inducing stress assignment. Stress-neutral suffixes, on the other hand, have a different status, since they are not part of the stressable domain. Stress-shifting and stress-neutral suffixes may thus be characterized as *cohering* and *non-cohering*, respectively. Cohering suffixes are suffixes that form one prosodic word with the preceding stem (evidenced by their phonological behavior as identical to morphologically simple words), and non-cohering suffixes form prosodic words of their own (Booij 2002). For general discussion about cohering and non-cohering affixes, see Dixon (1977), and Booij (1977, 1995, 2002).

The ranking in (33) is fixed in every cophonology.

33) Fixed constraints in Choguita Rarámuri stress

ALL-FT-L >> STEMSTRESS, PROS-FAITH >> IAMB >> PARSE-σ

As discussed earlier, the proposal here is that each cophonology differs in the relative ranking of STRICT. Cophonology Weak ranks STRICT above IAMB and PARSE-σ. The total ranking of this cophonology is given in (34).

34) Cophonology Weak ranking

ALL-FT-L >> STEMSTRESS, STRICT, PROS-FAITH >> IAMB >> PARSE-σ

The high ranked STRICT, ALL-FT-L and IAMB generate second syllable stress in both disyllabic (tableau (35)) and trisyllabic (tableau (36)) unstressed roots with stress-neutral suffixes.

35) Second-syllable stress, disyllabic unstressed root plus stress-neutral suffix

čapí-ri
/čapí-li/
grab-Pst

	/čapi-li/	ALL-FT-L	STRICT	IAMB	PARSE-σ
a.	(čá.pi).ri			*!	*
b.	ča.(pí.ri)	*!		*	*
c.	ča.(pi.rí)	*!			*
☞ d.	(ča.pí).ri				*
e.	(<ča>.pi.rí)		*!		

36) Second-syllable stress, trisyllabic unstressed root plus stress-neutral suffix

ra'íča-ri
/ra'íča-li/
speak-Pst

	/raiča-li [+c.g.]/	ALL-FT-L	STRICT	IAMB	PARSE-σ
a.	(ra.'í)(ča.rí)	*!*			
b.	ra.'i(čá.ri)	*!*		*	**
c.	(rá.'i)ča.ri			*!	**
☞ d.	(ra.'í)ča.ri				**
e.	(<ra>.'i.čá).ri		*!		*

In both cases, candidates with a ternary constituent ((35e) and (36e)) are eliminated due to a fatal violation of the high ranked STRICT.

The role of STEMSTRESS can be appreciated in the case of monosyllabic unstressed roots, where a degenerate foot is preferred over an iamb where stress falls in a stress-neutral suffix instead of the root (37).[49]

[49] This highly unmarked structure, a word with a degenerate foot and an unparsed syllable, is tolerated in the language minimally (there are only two unstressed monosyllabic roots in the corpus).

37) Monosyllabic unstressed root plus stress-neutral suffix

rú-ri
/rú-li/
say-Pst

	/ru-li/	STEMSTRESS	IAMB	PARSE-σ
a.	(ru.-rí)	*!		
☞ b.	(rú).-ri		*	*

In Cophonology Strong, on the other hand, the ban on ternary feet is low ranked, since STRICT is ranked below PARSE-σ and IAMB. The total ranking of Cophonology Strong is given in (38).

38) Cophonology Strong

ALL-FT-L >> STEMSTRESS, PROS-FAITH >> IAMB >> PARSE-σ >> **STRICT**

The effect of this ranking is illustrated in tableau (39), with an evaluation of a disyllabic unstressed root plus a stress-shifting suffix. A word with a ternary constituent (39e) is preferred over a form with an unparsed syllable (39c).

39) Third-syllable stress, disyllabic unstressed root plus stress-shifting suffix

čapí-sa
/čapí-sa/
grab-Cond

	/čapi-sa/	ALL-FT-L	IAMB	PARSE-σ	STRICT
a.	(čá.pi).sa		*!	*	
b.	ča.(pí.sa)	*!	*	*	
c.	(ča.pí).sa			*!	
d.	ča.(pi.sá)	*!		*	
☞ e.	(<ča>.pi.sá)				*

This ranking also correctly yields third syllable stress with an unstressed trisyllabic root and a stress-shifting suffix, as shown in (40).

40) Third-syllable stress, trisyllabic unstressed root plus stress-shifting suffix

ra'ičá-sa
/ra'iča-sa/
speak-Cond

	/raiča-sa [+c.g.]/	All-Ft-L	Iamb	Parse-σ	Strict
a.	(rá.'i)ča.sa		*!	**	
b.	ra.'i(čá.sa)	*!*	*	**	
c.	(ra.'í).ča.sa			*!*	
d.	ra.('i.čá).sa	*!		**	
☞ e.	(<ra>.'i.čá).sa			*	*

The examples considered so far have all involved the Stem level. Recall from the examples shown in (20) (in §4.2.3, above), that stress is assigned in the Stem, which consists of the root plus one layer of morphological exponence. Suffixes added after the Stem are phonologically evaluated in a different Stem level (the properties of this stem level are discussed in Chapter 5). Crucially, we have seen how the stress properties of suffixes added after the Stem level do not determine the stress makeup of the word. That is, it is the phonological properties of the Stem level which percolate up to the Word level. The branching morphological structure of the Choguita Rarámuri is depicted in (41):

41) Branching morphological structure

awí-ti-sa
dance-Caus-Cond
'If she would make him dance'

(awíti, sa) = [awítisa]

φ_{Weak} (awi, ti) = [awíti] -sa

/awi/ -ti

Stem (stress assignment)

A first morphological layer composed of the root plus stress-neutral causative suffix ([awí-ti]), is evaluated through Cophonology Weak (exemplified in tableau (42)). I assume that the output of this level, the Stem level evaluation, is well-formed in terms of stress assignment, and this form does not undergo the stress cophonology of the next level (i.e., the Stem output will not be evaluated by the stress cophonology of any later suffixes).

42) Stem level analysis of disyllabic unstressed root and stress-neutral suffix

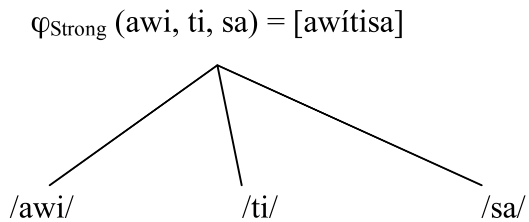
awí-ti
dance-Caus

	/awi-ti/	STEMSTRESS	PARSE-σ	STRICT
☞a.	(a.wí).ti		*	
b.	(<a>.wi.tí)	*!		*

We could alternatively assume a flat morphological structure, like the one depicted in (43).

43) Flat morphological structure

awí-ti-sa
dance-Caus-Cond
‘If she would make him dance’



The structure in (42) is exemplified with an unstressed disyllabic roots followed by a stress-neutral suffix, which is in turn followed by a stress-shifting suffix. The final suffix, a stress-shifting suffix, imposes Cophonology Strong (i.e., third syllable stress) to the word. The window restriction would not preclude stress from falling in the third syllable, so the constraint STEMSTRESS would be critical in this case in order to derive the correct stress pattern, second syllable stress. This is exemplified in tableau (44), where STEMSTRESS prevents the selection of the candidate with stress in a stress neutral suffix (Causative –*ti*).

44) Disyllabic unstressed root under recursive affixation, monostratal analysis

awí-ti-sa
/awi-ti-sa/
dance-Caus-Cond

	/awi-ti-sa/	STEMSTRESS	PARSE-σ	STRICT
☞a.	(a.wí).ti.sa		**	
b.	(<a>.wi.tí).sa	*!	*	*

While a monostratal analysis of stress assignment also derives the correct results, it requires eliminating bracket erasure, since the cophonology imposed by the last suffix would make reference to the more embedded constituents. Eliminating bracket erasure is not theoretically uncontroversial (see Orgun & Inkelas 2002 for discussion). Most importantly, however, a cyclic analysis is supported by other patterns of morphologically conditioned phonology in this language, discussed in this dissertation (cf. Chapter 5 and Chapter 6).

4.3.2 Incorporation stress cophonology

The morphological stress rule of incorporated verbs is given by yet a third cophonology, in which there is a high ranking constraint that requires the first syllable of the construction head, the second member, to be stressed. This constraint is defined in (45).

45) Incorporation construction stress rule

ACC-TO-HEAD(σ_1): The head of the incorporation construction must have an stress in the first syllable.

This constraint would be ranked below ALL-FT-L but above PROS-FAITH, to ensure the deletion of any underlying stress of both nouns and verbs in incorporated constructions. Like Cophonology Strong, Cophonology ϕ_3 ranks STRICT below PARSE-σ, allowing ternary feet. The ranking that yields stress in these constructions is given in (46).

46) Cophonology Incorporation

ALL-FT-L >> ACC-TO-HEAD(σ_1) >> PROS-FAITH, MAX-IO, STEMSTRESS >> IAMB >> PARSE-σ >> STRICT

An example of how this ranking yields the attested output is given in (47).

47) Body-part incorporation stress

kawa+bóta
/ka'wá+botá/
'egg+loosen'

	/kawá+botá/	ALL-FT-L	ACC-TO-HEAD(σ_1)	PROS-FAITH	STRICT
a.	(kawá)+bota		*!	*	
b.	(kawá)(+botá)	*!*	*		
c.	kawa(+botá)	*!*	*	*	
d.	ka(wa+bó)ta	*!		**	
☞ e.	(<ka>wa+bó)ta			**	*

The constraint ACC-TO-HEAD(σ_1), ranked above PROS-FAITH, eliminates candidate (47b), with faithful stress to underlying noun and verb prominences. This constraint also eliminates the candidate with stress in the second syllable of the head verb (47c).

This constraint ranking also yields the truncation effect of trisyllabic nouns in incorporation shown in (24)). Crucially, ACC-TO-HEAD(σ_1) dominates MAX-IO, a constraint banning deletion of input segments in output forms. This constraint is defined in (48).

48) MAX-IO: Input segments must have output correspondents

49) Truncation in body-part incorporation

čere+bíwa
/čerewá+bi'wá/
'sweat+clean'

	/čerewa+bi'wá/	ALL-FT-L	ACC-TO-HEAD(σ_1)	PROS-FAITH	MAX-IO	STRICT
a.	(čeré)wa+biwa		*!	*		
b.	(čeré)(wa+bí)wa	*!*		*		
c.	čere(wa+bí)wa	*!*		*		
d.	(<če>rewá)+biwa		*!	*		*
☞ e.	(<če>re+bí)wa			*	**	*

In this tableau, the window effect is achieved by the ranking ALL-FT-L >> PROS-FAITH.

Crucially, the ranking MAX-IO >> STRICT (fixed in Cophonology Strong) predicts that the pressure to build ternary feet will never induce truncation of roots in strong morphological constructions, but only in incorporated constructions under the effect of the high ranked ACC-TO-HEAD(σ_1). This prediction is borne out in the Choguita Rarámuri corpus.

4.3.3 Grammar lattice

While cophonology theory in principle could allow for each cophonology in a language to display a completely different ranking, the potential divergence in a single grammar is addressed in this theory by assuming that every cophonology in a language conforms to a 'Master Ranking', sharing a partial ranking of constraints (Anttila (1997, 2002), Inkelas & Zoll (2003, 2007)).

The three phonological sub-grammars of Choguita Rarámuri are partially ordered with respect to a Master Ranking in a grammar lattice. The Master Ranking of Choguita Rarámuri stress contains the undominated requirement that stress must be located in the first three syllables of the prosodic word, as well as the lower ranked constraint that enforces the realization of input prosodic information. These pressures are invariant within the grammar, and each cophonology further specifies its own unmarked, emergent pattern.

The schema in (50) shows the relevant section of the grammar lattice in Choguita Rarámuri for stress assignment. The requirement of feet to be built at the left edge of the prosodic word and the requirement to keep stress in the stem are undominated in the Master Ranking. The different cophonologies must specify their ranking of STRICT, allowing or disallowing ternary feet. Cophonology Incorporation also includes ACC-TO-HEAD(σ_1), a constraint that assigns stress to the first syllable of the head of the construction.

50) Grammar lattice for stress assignment in Choguita Rarámuri

Stress Master Ranking
AllFt-L >> StemStress >> {Strict, Pros-Faith , Iamb, Parse-σ }

Cophonology Weak
Weak Constructions
(2nd syllable stress)
Strict >> Iamb >> Parse-σ

Cophonology Strong
Strong Constructions
(3rd syllable stress)
Iamb >> Parse-σ >> Strict

Cophonology Incorporation
Incorporation Constructions
AllFt-L >> Acc-to-Head(σ_1) >> Pros-Faith >> Strict

Every cophonology is related to each other in this grammar lattice (Anttila 2002), since each cophonology inherits the invariably ranked constraints from the Master Ranking. This schema, in addition, relates the two cophonologies that allow ternary feet, Cophonology Strong and Cophonology Incorporation. The pressure for a ternary constituent in these cophonologies stems from the ranking AllFt-L >> Parse-σ, which favors larger feet (see Elenbaas & Kager 1999).

We might speculate about the nature of the relationship between the two cophonologies with third syllable stress. On the one hand, morphological heads in compounding and incorporation are prosodically prominent. On the other hand, second syllable stress roots are the most frequent root type. This two factors could have led the morphologically conditioned third syllable stress to be reanalyzed as a ternary initial window system. That is, if stress-shifting suffixes have a more recent history of grammaticalization than stress-neutral suffixes, we can see a natural link between the constructions with stress-shifting suffixes and incorporation constructions.[50] The diachronic source of the stress window will remain a topic for future research.

4.3.4 The Choguita Rarámuri stress system and Lexical Phonology and Morphology (LPM)

Cophonology theory was developed from the central tenets of Lexical Morphology and Phonology (LPM; Pesetsky (1979), Kiparsky (1982a, b), Mohanan (1982, 1986)), where morphologically conditioned phonology is handled through sequentially ordered strata of morphological constructions, each characterized by fully general phonological rules/constraints.

Cophonology departs from its predecessor framework by abandoning some of LPM's central assumptions,[51] including the Continuity of Strata Hypothesis (also referred to as the Stratum Domain Hypothesis) (Mohanan 1982, 1986): "[g]iven that phonological and morphological rules may apply in more than one stratum, it is desirable to constrain multiple stratum domain assignment by requiring that the strata in such cases be contiguous" (Mohanan 1986:46-47). This hypothesis is summarized in (51).

51) Continuity of Strata Hypothesis (Mohanan 1982, 1986)

The domain of a rule may not contain nonadjacent strata (or, a rule applying at two levels applies to all intervening levels).

[50] For instance, the future singular (stress-shifting) suffix *–méa* originated in the PUA verb **méla*, 'walk, go' (Leopoldo Valiñas, p.c.).

[51] For a full discussion about the differences between LPM and Cophonology theory, see Inkelas & Zoll (2005).

According to this hypothesis, we should not be able to find, for instance, a language where the stem and non-contiguous suffixes would share a phonological property that is not shared by an intermediate layer.

The proposed hierarchical structure of Choguita Rarámuri verbs (justified in Chapter 3) would *seem* to conform exactly to this prediction. Each morphological domain is characterized by phonological properties that apply concentrically to every domain between the most embedded constituent, the inner stem, and the outermost level where each phonological property. Thus, a phonological property like rounding harmony, applies in the Inner Stem and the Aspectual Stem domains, as well as all intermediate levels (the Derived and Syntactic Stem levels). Table 19 is repeated below in (52).

52) Morphologically conditioned phonology by verbal domain

<table>
<tr><th>Zone</th><th>Inner Stem</th><th>Derived Stem</th><th>Syntactic Stem</th><th>Aspectual Stem</th><th>Finite Verb</th><th>Subord. Verb</th></tr>
<tr><td rowspan="5">Phonology</td><td>Haplology</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>CL</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Passive-triggered lengthening</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Imperative stress shift</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Rounding harmony</td><td></td><td></td></tr>
</table>

However, stress is the only phonological property that does not conform to this neatly contiguous organization of the phonology-morphology interleaving in the Choguita Rarámuri verb. Recall from Chapter 3 (Table 20) the distribution of stress-shifting and stress-neutral suffixes in the hierarchical structure of the verb, repeated here in (53).

53) Distribution of stress-shifting and stress-neutral suffixes in the verbal domains

<table>
<tr><th>Position</th><th>Stress behavior of suffxes</th><th>Stem level</th></tr>
<tr><td>S1</td><td rowspan="2">Stress-shifting</td><td rowspan="2">Derived Stem</td></tr>
<tr><td>S2</td></tr>
<tr><td>S3</td><td rowspan="3">Stress-neutral</td><td rowspan="3">Syntactic Stem</td></tr>
<tr><td>S4</td></tr>
<tr><td>S5</td></tr>
<tr><td>S6</td><td>Stress-shifting</td><td rowspan="3">Apectual Stem</td></tr>
<tr><td>S7</td><td rowspan="2">Stress-neutral</td></tr>
<tr><td>S8</td></tr>
<tr><td>S9</td><td>Stress-shifting</td><td rowspan="3">Finite Verb</td></tr>
<tr><td>S10</td><td rowspan="2">Stress-neutral</td></tr>
<tr><td>S11</td></tr>
<tr><td>S12</td><td>Stress-neutral</td><td>Subordinate Verb</td></tr>
</table>

What this structure shows is that it is not the case that all stress-shifting suffixes are clustered together and ordered before stress-neutral suffixes, supporting the assumption that cophonologies are intrinsically unordered. Stress-shifting suffixes do not share a stress property because of any hypothetical membership to contiguous layers.

4.3.5 Summary

I have proposed that there are three stress cophonologies in Choguita Rarámuri, which determine the three detected grammatical stress patterns in this language. These are summarized in (54).

54) Three stress cophonologies

a. Cophonology Weak: default second syllable stress.

b. Cophonology Strong: default third syllable stress.

c. Cophonology Incorporation: incorporation constructions stress (third-syllable stress).

The three stress cophonologies yield a mixed binary/ternary iambic system. A similar system has been proposed for Chugach Alutiiq (Eskimo-Aleut; Hewitt (1992) and Elenbaas and Kager (1999)).

4.4 Competing Indexed Constraint analysis

At this point it is important to consider a competing analysis of Choguita Rarámuri in an alternative model of the phonology-morphology interface, the Indexed Constraint approach. In this theory (first developed by Benua (1997a,b), Alderete 1999, Ito & Mester 1999) there is a single constraint ranking and morphologically conditioned phonology is modeled through indexing individual faithfulness constraints.[52] Proponents of the Indexed Constraint approach argue that Cophonologies are too powerful by allowing phonological sub-grammars to potentially be quite divergent. A prediction of Indexed Constraint theory is that there are no markedness reversals, and that languages display a single, emergent unmarked pattern.

Choguita Rarámuri stress can be analyzed through a stress-specific indexed-constraint theory, the Root Controlled Stress (RCA) hypothesis (Alderete 1999, 2001).

[52] See Pater (2006, to appear) for discussion of an Indexed Constraint model where both markedness and faithfulness constraints can be indexed.

The RCA assumes the Morphologically-Dispersed Faithfulness meta-constraint Root Faith >> Affix Faith (McCarthy & Prince 1995), and treats stress resolution as an instance of root-privilege. Given the culminative nature of stress, competing lexical stresss in a word lead to an stress resolution that favors the root. This hypothesis, the Root Controlled Stress hypothesis, is defined in (55).

55) Root Controlled Stress Hypothesis (Alderete 2001:43)

In lexical-to-surface mappings of a word with more than one inherent stress, if stress is deleted, stress in the root is realized over stress elsewhere in the word.

Under this approach, highly ranked Prosodic Faithfulness (as defined in (29) above) enforces the realization of underlying stress in its original position. Prosodic Faithfulness constraints distinguish between Max-Prom$_{\text{Root}}$ and Max-Prom$_{\text{Affix}}$, and the former outranks the latter in stress resolution, following the Root Faith >> Affix Faith metaconstraint. When Prosodic Faithfulness does not determine the output –that is, when the input lacks lexically pres-specified stressual information-, the invariant, lower ranked markedness constraints yield default stress assignment.

The properties of the Choguita Rarámuri stress system are easily translatable into an RCA analysis: underlying stress of roots prevails in numerous morphological contexts where stress-shifting suffixes derive their properties from underlying, lexical stress. Affixal stress would only be realized in words with unstressed roots. Roots are “strong” positions, and indexing prosodic faithfulness constraints to roots and affixes takes care of the asymmetry between the strong and weak positions.

In an RCA analysis, prosodic faithfulness must be ranked above the markedness constraints that give second syllable stress (IAMB and PARSE-σ). Prosodic faithfulness cannot, however, be undominated: the stress window strictly confines input stressual information to the first three syllables. Within this theory, Choguita Rarámuri instantiates a 'hybrid stress' system, i.e., a system in which stress is contrastive in some contexts, but over-arching constraints limit the distribution of the stress contrast (Alderete 2001). In an approach like the RCA, the hybrid system is modeled through interleaving of indexed Prosodic Faithfulness and general markedness constraints, yielding the limitations on contrastive stress to, for instance, a stress window.

The RCA correctly predicts second syllable stress and third syllable stress through the interaction of root stress vs. affix stress. The ranking ALL-FT-L >> MAX-PROM$_{Affix}$ prevents trisyllabic unstressed roots from having stress on an stressed suffix (the fourth syllable). The single ranking of Choguita Rarámuri is given in (56).

56) Single ranking of Choguita Rarámuri stress in RCA

ALL-FT-L >> MAX-PROM$_{Root}$ >> IAMB >> MAX-PROM$_{Affix}$ >> STRICT >> PARSE-σ

This ranking yields the correct result with second-syllable stress with a disyllabic unstressed root plus an unstressed suffix (tableau (57)), and second-syllable stress with a trisyllabic unstressed root plus an unstressed suffix (tableau (58)).

57) Second-syllable stress, disyllabic unstressed root plus unstressed suffix

čapí-ri
/čapi-li/
'grab-Pst'

	/čapi-li/	ALL-FT-L	IAMB	STRICT	PARSE-σ
a.	(čá.pi).ri		*!		*
b.	ča.(pí.ri)	*!	*		*
c.	ča.(pi.rí)	*!			*
☞ d.	(ča.pí).ri				*
e.	(<ča>.pi.rí)			*!	

58) Trisyllabic unstressed root plus unstressed (stress-neutral) affix

anačá-ki
/anača-ki/
endure-Pst:1

	/anača-ki/	ALL-FT-L	IAMB	STRICT	PARSE-σ
a.	(a.ná)(.ča.kí)	*!*			
b.	(a.na)(.čá.ki)	*!*	*		
c.	a.na(ča.kí)	*!*			**
☞ d.	(a.ná)ča.ki				**
e.	(<a>.na.čá).ki			*!	*

The ranking STRICT >> PARSE-σ eliminates the candidates with a ternary constituent and third-syllable stress ((57e) and (58e)).

This ranking, however, yields the wrong result if we consider a trisyllabic unstressed root plus an stressed (stress-shifting) suffix, as shown in tableux (59).

59) Trisyllabic unstressed root plus stressed (stress-shifting) suffix

anačá-sa
/anača-sá/
'endure-Cond'

	/anača-sá/	ALL-FT-L	MAX-$\text{PROM}_{\text{Affix}}$	STRICT	PARSE-σ
a.	(a.ná)(časá)	*!*			
b.	a.na(časá)	*!*			**
(☞) c.	(a.ná).ča.sa		*		****
💣 d.	(<a>.na.čá).sa		*	*!	**

In this case ALL-FT-L is violated by the candidates that are faithful to the affix (59a-b). The remaining candidates violate faithfulness to the affix prominence. The ranking STRICT >> PARSE-σ yields as the wining candidate the form with second syllable stress (candidate (57c)), and not the attested third syllable stress form (58d).

If we were to rank PARSE-σ above STRICT, we would have the right result in this case. This is shown in tableau (60).

60) Trisyllabic unstressed root, stressed (stress-shifting) affix
(ranking PARSE-σ >> STRICT)

anačá-sa
/anača-sá/
endure-Cond

	/anača-sá/	ALL-FT-L	MAX-$\text{PROM}_{\text{Affix}}$	PARSE-σ	STRICT
a.	(a.ná)(.ča.sá)	*!*			
b.	a.na(.ča.sá)	*!*		**	
c.	(a.ná).ča.sa		*	*!*	
☞ d.	(<a>.na.čá).sa		*	*	*
e.	a(.na.čá).sa	*!	*	**	

However, this ranking would then yield the wrong result when the same root would take an unstressed (stress-neutral) affix, yielding third syllable stress when the attested form has second syllable stress. This is shown in tableau (61).

61) Trisyllabic unstressed root, unstressed (stress-neutral) affix
(ranking PARSE-σ >> STRICT)

anáča-ri
/anača-li/
endure-Pst

	/anača-li/	ALL-FT-L	MAX-PROM$_{Affix}$	PARSE-σ	STRICT
a.	(a.ná)(.ča.rí)	*!**			
b.	a.na(.ča.rí)	*!*		*	
💣 c.	(a.ná).ča.ri			*!*	
☞ d.	(<a>.na.čá).ri			*	*
e.	a.(na.čá).ri	*!		**	

We have, then, that attempting to model the attested stress patterns of Choguita Rarámuri under a single ranking generates a *ranking paradox*. All trisyllabic roots with third syllable stress would have to be assumed to be stressed. An alternation where an unstressed root has second syllable stress with an unstressed (stress-neutral) suffix (i.e., *a**ná**ča-ri*), but third syllable stress with an stressed (stress-shifting) one (i.e., *ana**čá**-sa*), is left unexplained under the single ranking approach. The prediction is that when the undominated alignment constraint prevents lexical stress from surfacing in its original position, a uniform default pattern (default second syllable stress in this case) must be assigned instead. It is thus impossible to model third-syllable stress in these cases.

An RCA account fails to account for the incorporated construction stress pattern, a dominance pattern, plus the existence of two default stress patterns, that privilege roots over affixes through positional markedness. The existence of multiple default patterns challenges the core assumption of this kind of approach, in which markedness constraints remain unaltered in a single ranking in a given language, thus precluding any markedness reversals. It seems, however, that the only way of modeling the Choguita Rarámuri pattern with the RCA assumptions is precisely through a markedness reversal.

Finally, although the RCA correctly emphasizes the asymmetry between roots and affixes in the resolution of stress, it incorrectly predicts that this asymmetry is only possible when stress is present in the input. That is, only through positional faithfulness are roots conferred a privileged role over affixes. The Choguita Rarámuri case demonstrates, however, that roots also prevail in default stress assignment, an important generalization that the RCA is not able to capture. Thus, the RCA (and Indexed Constraint theory more generally) undergenerates in this case.

4.5 The markedness of ternary constituents

The analysis presented here represents third-syllable stress through a ternary constituent. An advantage of the ternary constituent analysis is that explains the relative markedness of ternary systems with respect to binary systems. Both bounded ternary systems (e.g. Cayuvava (Elenbaas & Kager 1999)) and unbounded ternary systems (e.g. Macedonian (Beasley & Crosswhite 2003) and, as proposed here, Choguita Rarámuri) can be generated through a ternary foot. Ternary feet violate the structural constraint STRICT, but binary feet do not. In the factorial typology depicted in Table 24, binary feet are strongly preferred (Zoll 2004).

Table 24: Factorial typology with a ternary constituent (from Zoll 2004)

ALL-FEET-X	PARSE-σ	STRICT	σσσ (σσ<σ>) **(<σ>σσ)σσσ C. Rarámuri**
PARSE-σ	ALL-FEET-X	STRICT	(σσ<σ>)(σσ<σ>) (<σ>σσ)(<σ>σσ)
STRICT	PARSE-σ	ALL-FEET-X	(σσ)(σσ)(σσ)
PARSE-σ	STRICT	ALL-FEET-X	(σσ)(σσ)(σσ)
STRICT	ALL-FEET-X	PARSE-σ	σσσσ(σσ) (σσ)σσσσ
ALL-FEET-X	STRICT	PARSE-σ	σσσσ(σσ) (σσ)σσσσ

There are alternative analyses of the Choguita Rarámuri system without ternary constituents. One such analysis would involve resorting to initial extrametricality (as in Hualde's (1998) analysis of postposinitial stress in Basque). If one assumes a strictly binary foot typology, ruling out initial extrametricality (as done by Prince & Smolensky (1993)) would imply predicting that third-syllable stress is not attested in natural languages (as Hulst (1999) does). However, even if initial extrametricality were assumed in the Choguita Rarámuri case, the extrametricality of the first syllable would have to be undone in the cases where the first syllable is lexically pre-specified with an stress mark. This is an undesirable result, as discussed in Beasley & Crosswhite's (2003) analysis of Macedonian right-edged, ternary window.

Another alternative analysis would involve trochaic feet (which would fit Hayes' (1995) Iambic-Trochaic Law prediction that quantity-insensitive systems only have trochaic feet). However, it would be hard to reconcilliate a left-aligned trochaic system with disyllabic words with second syllable stress (which are well represented in the Choguita Rarámuri corpus). Specifically, as discussed in Graf & Ussishkin (2003), this kind of analysis would have the undesirable consequence of having to handle these forms through a structure with an initial unparsed syllable and a degenerate foot, a highly marked structure.

The ternary constituent approach to ternary yields the correct results in explaining both the complicated stress facts of this particular language, as well as the overall markedness of the pattern cross-linguistically.

4.6 Conclusions

This chapter presented empirical generalizations of Choguita Rarámuri stress, a mixed stress system, which includes two default stress patterns, second and third syllable stress. These two coexisting default stress patterns were formalized through a mixed binary-ternary iambic system. In addition, I showed how Choguita Rarámuri has a dominance pattern, the incorporated construction stress rule, which deletes any input lexical stress, and assigns stress to the first syllable of the head of the construction. I have demonstrated that this language possesses an over-arching restriction that limits stress to the first three syllables of the word, a typologically marked initial three-syllable window. The markedness of the pattern is explained through an analysis that employs a ternary constituent.

I proposed that these descriptive facts are captured through three co-phonologies relevant for stress in Choguita Rarámuri. Third syllable stress is present in two of these co-phonologies. The existence of two default patterns plus a dominance pattern with the incorporated construction fall out naturally from a cophonology analysis, in which morphologically conditioned phonology is handled through general phonological constraints and multiple rankings.

Chapter 5: Multiple Exponence

5.1 Introduction

The interleaving of morphology and phonology of the Choguita Rarámuri verb reveals a hierarchical structure where morphological processes that are closer to the root display more phonological fusion. This concentric arrangement of domains is also defined morphotactically: multiple exponence, a many-to-one mapping between meaning and form, is found in two specific layers of the morphological structure of the verb. This chapter is concerned with these patterns of multiple exponence, their synchronic motivation and their implications for current typologies of multiple exponence.

The theoretical and typological relevance of multiple exponence in the literature has so far been emphasized to the extent that it challenges wide-held principles of economy and structure complexity (eg., Andrews 1990, Anderson 1992, Kiparsky 2005), as well as the conception of the morpheme as a Saussurean sign (Halle & Marantz 1993, Steele 1995, among others). On the other hand, multiple exponence has been crucial for inferential-realizational theories of morphology, where a single set of morphosyntactic features may be realized in more than one place in the structure of a word (Anderson 2005). Multiple exponence is therefore a piece of empirical evidence in favor of this kind of framework. In this chapter, I describe and analyze Choguita Rarámuri multiple exponence patterns, and propose that they are not morphosyntactically motivated (as would be expected in inferential-realizational theories of morphology), but are instead morphophonologically conditioned. This case, I argue, requires modifying current typologies of multiple exponence and rethinking the 'Split Morphology' hypothesis (Anderson 1982, 1992).

Specifically, I contend that the synchronic motivation for multiple exponence in Choguita Rarámuri is to achieve greater morphological transparency, disambiguating opaque formal markers and enhancing relevant morphophonological junctures within the agglutinating verb. I formalize the imperative for morphological transparency through an OT analysis and propose that some seemingly arbitrary properties of the multiple exponence patterns in this language are explained by a general, functional principle of parsability or recoverability of morphological information in morphologically complex constructions (Broselow 2003; van Oostendorp 2004, 2006; Hay & Plag 2004; Hay & Baayen 2005).

Choguita Rarámuri multiple exponence is typologically and theoretically significant for several reasons. First, multiple exponence in this case is completely superfluous (that is, each of the redundant exponents realizes the exact same meaning). Second, most of the multiple exponence patterns are optional (that is, with the exception of one pattern, forms with redundant exponence stand in free variation with forms with only one exponent). And third, they instantiate a type of multiple exponence that is not accounted for (and at least suggested not to exist) by realizational-inferential theories of morphology, namely multiple exponence of derivational morphology. These properties make these patterns harder to reanalyze in alternative frameworks that seek to explain apparent cases of ME away (cf. Distributed Morphology (Hale and Marantz 1993, Noyer 1997)). None of these properties, however, are problematic in an analysis in which multiple exponence is explained through the interleaving of phonology and morphology in a morphologically complex language.

This chapter is structured as follows. In §5.2, I lay out the characterizations that multiple exponence has received in the literature and some of the theoretical issues arising from a cross-linguistic perspective. I then turn to Choguita Rarámuri verbs in §5.3, and present the details of multiple exponence patterns in this language. In §5.4, I lay out the details of the analysis, where I formalize the functional motivation of ME as a repair to morphological opacity through morpho-prosodic alignment constraints in Stratal OT. I conclude in §5.5 by introducing potential broader implications and questions for further research.

5.2 Multiple Exponence in cross linguistic perspective

5.2.1 Multiple Exponence and principles of economy

Multiple or extended exponence was first defined as a one-to-many mapping between a (morphological) category and its formal expression by Matthews (1974:149). Matthews illustrated this type of exponence with German plural nouns, where plural is marked by either an affix (1a-b), Umlaut (1c-d), or both by an affix and by Umlaut (1e-f), in an extended exponence pattern.

1) Multiple Exponence in German plural nouns

	Singular	*Plural*	*Gloss*
	Suffixation		
a.	Arm	Arm-e	'arm'
b.	Bild	Bild-er	'picture'
	Umlaut		
c.	Vater	Väter	'father'
d.	Boden	Böden	'earth'
	Suffixation + Umlaut (Multiple Exponence)		
e.	Wurm	Würm-er	'worm'
f.	Hals	Häls-e	'neck'

Multiple Exponence (henceforth ME) is the logical counterpart to cumulative exponence. Cumulative exponence is a many-to-one relationship between meaning and form (e.g., case and number expressed by a single formative in Russian). The existence of ME is a challenge for principles of economy and structural complexity in morphological expression, such as Anderson's (1992) Elsewhere condition (see also Aronoff 1976, Anderson 1982, Kiparsky 1982, 2005, and Andrews 1990). A sample of these statements is given in (2).

2) Statements against redundancy and specificity in morphology

a. "If a lexical item L appears in a c-structure position P corresponding to an f-structure F, and there is another lexical item L' whose specifications are subsumed by those of L but subsume those of F, then the structure is blocked" (Andrews 1990:507).

b. Elsewhere Principle: "Application of a more specific rule blocks that of a later more general one" (Anderson 1992:132).

c. “Among equally expressive expressions, the simplest is optimal” (Kiparsky 2005:114).

Economy has also been invoked as a functional motivation in language change. For Haspelmath (2008), economical patterns, defined as those which are “shorter (fewer words, fewer syllables, fewer segments) or otherwise [requiring] less articulatory effort” (2008:187-188), arise diachronically through a series of economically-motivated changes. According to Haspelmath, a more complex (or periphrastic) construction, involving additional morphological markers for maximal transparency, will be inhibited in analogical change since “speakers know that hearers can predict the meaning they want to express, so they are likely to economize and not use the novel, more explicit pattern” (2008:208).[53]

Principles against redundancy and structural complexity in both synchronic and diachronic theories thus share the common assumption that the most specific and parsimonious set of morphemes realizing a particular grammatical feature will block a less specific or economical set of morphemes, ruling out any forms that superfluously mark a category (e.g., *worse* blocks **badder* in English). While there are many cases that exemplify this kind of blocking, cases of ME are not isolated. There is a significant number of patterns explicitly analyzed as ME in a typologically varied sample of

[53] In contrast to Haspelmath’s proposal is Kuryłowicz’s first law of analogy (Kuryłowicz 1947 (Winters 1995), Hock 1991). This law expresses a tendency in language change where a more complex marker replaces a simple marker in analogical change: “A bipartite marker tends to replace an isofunctional morpheme consisting of only one of these elements” (Hock 1991:211). An example of this would be Old High German inflectional classes for masculine nouns, where a “bipartite” or “complex” plural marker (a suffix plus umlaut, e.g., (1e-f) above) was the form generalized, and not a simple marker (consisting of only the suffix, e.g. (1a-b) above). Hock (1991) adopts a more general interpretation of Kuryłowicz’s first law, where more ‘clearly’ or ‘overtly’ marked elements tend to be preferred in analogical change (1991:211).

languages. These include: Breton (Celtic; Stump 1991); Potawatomi (Algonquian; Hockett 1939, 1948, 1966), Anderson 1992); Luganda (Niger Congo; Peterson 1994); Limbu, Chintang and other Kiranti languages (Tibeto-Burman; Anderson 2005 citing van Driem 1990, 1997; Bickel et al. 2007); Mansi (aka Vogul) (Uralic; Hammond 1981); Maay (Afro-Asiatic; Paster 2008); Skou (Oceanic; Donohue 1999, 2003); and Tsova-Tush (Nakh-Dagestanian; Harris in press), among others. In all of these cases, a category is expressed by more than one formal marker.

5.2.2 Multiple Exponence and the morpheme as a Saussurean sign

ME is not only problematic for theories of blocking and structural complexity that assume any version of economy, but also for lexical theories of morphology that assume the classical conception of the morpheme as a Sausurean sign, a one-to-one association between meaning and form (Stump 2001). In one framework, Distributed Morphology, the existence of ME is explicitly rejected: "there is no "multiple exponence" of features from a single syntactic or morphological node" (Halle and Marantz (1993:138)); "[a] morphological rule introducing an affix is a structure-building rule. Structure-building rules discharge features and positions-of-exponence. The affix so introduced is the principal exponent of the features discharged" (Noyer (1997:lv)).

In order to maintain the theory's architecture, proponents of Distributed Morphology have sought to reanalyze cases of ME as something else. In this spirit, Halle & Marantz (1993:140) reanalyze Potawatomi agreement (analyzed as ME by Anderson 1992) as a case where the apparently redundant verbal agreement markers realize different, partially overlapping features. In Distributed Morphology there is no ME, but "fission", a situation where a morpheme discharges features into a "fissioned" position but retains a subset of its features available for later insertion into another morpheme position (Noyer 1992).[54]

Other kind of apparent cases of ME have been reanalyzed as the outcome of a morphologically conditioned phonological rule. For instance, German plural marking, Matthews' parade example of extended exponence in (1), has been proposed to involve Umlaut as an abstract feature, instead of second, superfluous exponent of a feature [plural] (Wiese 1996, Müller 2007).[55] Under this kind of analysis, there is only one formal marker and a concomitant morphophonological change or a special stem modification dependent on the primary marker (see Anderson 2005 for discussion).

These efforts to reanalyze alleged cases of ME yields a typology that dissects patterns in terms of formal and semantic properties of the exponents involved. For instance, in terms of the formal properties of ME, we might ask: are affixal exponents better candidates for ME than non-concatenative exponents (as Wiese's 1996 analysis of German number marking suggests)? Are exponents in ME always discontinuous (as suggested in Sells' 2004)? Is ME confined to the word level or can exponents be distributed in phrasal constituents (Sells 2004)? As for the semantic properties of exponents, are patterns of completely superfluous double exponence better candidates for

[54] The notion of "fission" presupposes that the features expressed by each exponent are overlapping. Cases where each exponent realizes the exact same of features arguably escape this kind of reanalysis within this framework (see Inkelas et al. 2006 for discussion).
[55] Noyer (1997:lv) analyzes the umlaut in German plurals as "feature-changing rule...[which] cannot discharge (or "spell out") [the feature] plural".

ME than cases of overlapping exponence (cf. the operation of fission in Distributed Morphology)?

5.2.3 Multiple Exponence as the multiple expression of morphosyntactic features

In contrast to lexicalist theories like Distributed Morphology, ME is not problematic for inferential-realizational theories of morphology and syntax, where a word's association to a set of morphosyntactic features licenses the formal expression of its exponents (Stump 2001). ME is thus not unexpected, since morphosyntactic features may be realized morphologically by more than one exponent as long as the multiple exponents belong to different rule blocks (Matthews 1972, Anderson 1992, Aronoff 1994, Stump 2001, Sells 2004, inter alia).

This, however, carries an interesting implication as to the *kinds* of ME expected to be attested in natural language. Specifically, if ME comes about through transfer of morphosyntactic, inflectional features, then there is an expectation that ME will only be exhibited by inflectional categories, but not by any kind of morphology that does not involve morphosyntactic features (such as argument structure changing morphology or any other morphological operation that is derivational). This assumption is in fact widespread and present well beyond the corners of inferential-realizational frameworks. Since Matthew's (1972) original definition, ME has been defined as "[a] one-to-many mapping between *morphosyntactic* [my emphasis, GC] information and phonological information" (Peterson 1994:83). For Anderson (2001), ME involves a situation where "a single property of (what constitutes from the point of view of the *syntax*) [my emphasis, GC] a single word can be realized at more than one point in the form of that word...[the] multiple formal realization of the same inflectional content..." ((2001:1-2)). Sells (2004) defines it as "various instances of multiple or apparently parasitic marking of *inflectional* [my emphasis, GC] information...a situation where one piece of grammatical information is realized by more than one discontinuous segmental part, possibly distinct in form from each other" (Sells 2004:188). Finally, for Müller (2007), ME is instantiated by "those cases of morphological realization where a single *morphosyntactic* property seems to be expressed by more than one exponent (i.e., *inflectional* marker...)" [my emphasis, GC] (Müller 2007:1).

These definitions of ME diverge in specific details of how ME is expressed, but they all agree in referring to morphosyntactic features or inflectional morphology. This is in fact born out in all of the cases documented so far (e.g., agreement in Potawatomi, Mansi, Limbu and other Kiranti languages; number in Breton and Maay; negation in Luganda and Limbu, etc.). We have then than a wide-spread assumption of the mechanism that gives rise to ME (namely, the expression of morphosyntactic features in rule blocks) is supported by the empirical evidence available so far.

There is perhaps another reason why derivational morphology has not been considered to be a candidate for ME, and this is the recursivity property that distinguishes this kind of morphology from inflectional morphology (Booij 2000). This property is what allows us to expect that a stem may be able to undergo a derivational process more than once. For instance, in Choguita Rarámuri and Turkish, a root may introduce a causer argument through a causative suffix ((3a) and (3c)); a causative stem may in turn be further causativized, introducing a second causer argument ((3b) and (3d)).

3) Recursive application of causative suffixes

Choguita Rarámuri causatives

a. ne mi biné**-ri**-ma wikará
1sgN 2sgA learn**-Caus**-Fut:sg sing
'I will teach (lit. make you learn) how to sing'
'Voy a hacerte que aprendas cómo cantar' [LEL 06 ENIC(43)/Elicit]

[[learn] + Caus = teach]

b. nihé mi biné-r-**t**i-ma kúruwi
1sgN 2sgA learn-**Caus-Caus**-Fut:sg children
'I will make you make the children learn
(lit. I will make you teach the children)'
'Hice que tú les enseñaras a los niños' [SF 07 el156/Elicit]

[[[learn] + Caus = teach] + Caus = make teach]

Turkish recursive causatives (Lewis 1967:146)

c. öl-**dür-**
die-**Caus-**
'to kill'

[[die] + Caus = kill]

d. öl-**dür-t-**
die-**Caus-Caus-**
'to have someone killed'

[[[die] + Caus = kill] + Caus = make kill]

In (3), each causative exponent is correlated with a modification in the predicate's argument structure (the introduction of a causer argument). What would be unexpected given the definitions of ME highlighted above and the recursivity property of derivational morphology is to have multiple formal instances of the same derivational process with no parallel semantic recursivity. As shown in (4), however, this is precisely what is attested in some causative forms in both Choguita Rarámuri and Turkish: forms with one causative marker (4a, 4c) are semantically equivalent to (and stand in free variation with) forms with two causative markers (4b, 4d). Notice that in both languages the semantically recursive causatives in (3) and the redundantly marked causatives in (4) are expressed through the same formal exponents (*-r-ti* in Choguita Rarámuri and *–dVr-t* in Turkish).

4) Causative doubling with no recursive semantics

Choguita Rarámuri

a. ne=mi ra'ičá-**ri-**ma
1sgN=2sgA speak-**Caus**-Fut:sg
'I will make you speak'
'Te voy a hacer que hables' [LEL 06 4:155/Elicit]

*'I will make you make him speak'

[[speak] + Caus = make speak]

b. á birá tamí ra'ičá-**r-ti**-ri siríame
Aff really 1sgA speak-**Caus-Caus**-Pst governor
'The governor made me speak'
'El gobernador me hizo hablar' [SF 06 2:163/Elicit]

*'I will make you make him speak'

[[speak] + Caus = make speak]

Turkish (Lewis 1967:146)

c. de-**dir**-
say-**Caus**
'Make say'

[[say] + Caus = make say]

d. de-**dir-t-**
say-**Caus-Caus-**
'Make say'
*'Make someone make somebody else say'

[[say] + Caus = make say]

While the examples in (4) do not involve inflectional morphology,[56] they do constitute instances of ME under Mathews' (1972) original definition: a single morphological category (one causative operation) is formally introduced by two exponents (two causative allomorphs). W*hat* exactly is ME, then? What are the characteristics that are necessary to define a pattern as involving ME if Matthew's original definition is not sufficient or specific enough? The Choguita Rarámuri case, I argue, makes us reconsider the typology of ME. Derivational morphology can undergo ME, and non-morphosyntactic sources for ME must be acknowledged.

In the next section I lay out the details of each of the ME patterns found in the Choguita Rarámuri data, and show that, while divergent in certain aspects of formal expression, these patterns share key properties.

5.3 Choguita Rarámuri Multiple Exponence

As shown in (4) above, Choguita Rarámuri exhibits causative doubling with no corresponding semantic recursivity. This constitutes an instance of ME. Choguita

[56] The question of where exactly to draw the line between inflectional morphology and derivational morphology is not a straightforward one (cf. Anderson (1982, 1992), Bybee (1985), Booij (1994), inter alia). There is however some general consensus that criteria such as generality/productivity, obligatoriness, recursivity and sensitivity to grammatical environment are useful indicators in distinguishing the two kinds of morphology (cf. Bybee 1985, Bickel & Nichols 2007).

Rarámuri in fact exhibits more than one pattern of redundant formal marking. These patterns are summarized in (5).

5) Choguita Rarámuri ME

a. Pluractional prefixation and stem consonant mutation (§5.3.1)
b. Applicative stems that take applicative suffixes (§5.3.2)
c. Causative suffix doubling (§5.3.3)
d. Multiple suffixation of applicative suffixes (§5.3.4)

While each type of ME differs from the rest in one or more ways, each of the exponents realize the exact same set of features. That is, no additional information is contributed by the second exponent, making the doubling completely superfluous. The next sections address each of these patterns in detail.

5.3.1 Pluractional prefixation and stem consonant mutation

As we have seen in Chapter 3 (§3.4.1.2), Choguita Rarámuri has a category of pluractionality, marked in nouns and verbs. Pluractionals in Choguita Rarámuri, appearing frequently in text but of receding productivity, are marked through prefixation (6a-b), consonant mutation (6c-h), or both through prefixation and consonant mutation (6i-p).[57]

[57] The prefix (originally *i-*) assimilates in color with the first stem vowel, as first noted in Lionnet (1968) (cf. Chapter 3, 3.4.1.2).

6) Pluractionals

	sg	*pluractional*	*Gloss*	
a.	čóni	o-čóni	‘become black’/ ‘ennegrecerse’	[AH 05 2:24/Elicit]
b.	siríame	i-sérikame	‘governor’/ ‘gobernador’	[BF 05 1:156/Elicit]
c.	ka**p**órame	ka**b**órame	‘to be round’/ ‘ser redondo’	[BF 05 1:155/Elicit]
d.	**r**emarí	**t**émuri	‘young people’/ ‘joven’	[BF 05 1:155/Elicit]
e.	**r**ikurí	**t**ékiri	‘drunk person’/ ‘borracho’	[BF 05 1:156/Elicit]
f.	ka**p**írame	ka**b**írame	‘cylindrical’/ ‘cilíndrico’	[BF 05 1:156/Elicit]
g.	sa**p**éami	sa**b**éami	‘fat’/‘gordo’	[BF 05 1:156/Elicit]
h.	**r**osákami	**t**osákami	‘white’/‘blanco’	[BF 05 1:157/Elicit]
i.	ki**p**á	i-ki**b**á	‘snow’/‘nevar’	[SF 05 2:8/Elicit]
j.	ku**p**úwé	u-ku**b**é	‘grill pepper(s)’ ‘asar chiles’	[SF 08 1:46/Elicit]
k.	si**t**ákame	i-si**r**ákame	‘to be red’/‘ser rojo’	[BF 05 1:157/Elicit]
l.	**b**ahí	a-**p**ahí	‘drink’/‘tomar’	[SF 08 1:46/Elicit]
m.	ča**b**óči	i-čá**p**oči [p.r.]	‘mixed-race mexicans’/ ‘mestizos’	[BF 05 1:155/Elicit]
n.	mu**k**í	o-mu**g**í	‘woman’/‘mujer’	[BF 05 1:156/Elicit]
o.	**r**anára	a-**t**anára	‘offspring’/‘crías’	[BF 05 1:156/Elicit]
p.	si**t**ákame	i-si**r**ákame	‘red’/‘rojo’	[BF 05 1:156/Elicit]

The forms with both prefixation and stem consonant mutation do not have corresponding forms with only a single exponent. This pattern resembles German plural noun marking, where “a property is identified in position *a* in one class of words, in position *b* in another, and then in both positions *a* and *b* in a third” (Matthews 1974:149).

5.3.2 Applicative stems with applicative suffixes

A second pattern of ME in Choguita Rarámuri involves, like pluractionals, a combination of a non-concatenative process and affixation, with applicative stems optionally adding applicative suffixes without adding an additional benefactive argument.

As discussed in Chapters 3 and 4, unaccented roots have a valence stem allomorphy system where applicative stems are formed by replacing the final stem vowel with a stressed front vowel. The valence stem allomorphy system, exemplified in Table 12 in Chapter 3, is repeated here in (7).

7) Valence stem allomorphy

	Intransitive	*Transitive*	*Applicative*	*Gloss*
a.	suwí	suwá	suwé	'run out/finish up'/ 'acabar(se)'
b.	sawí	-	sawé	'cure, heal'/'curar(se)'
c.	-	rará	raré	'buy'/'comprar'
d.	noko	-	noké	'move'/'mover(se)'
e.	-	ičá	ičí	'plant'/'sembrar'
f.	uku	-	uké	'rain'/'llover'
g.	wiri	wirá	wiré	'stand'/'parar(se)'
h.	čo'i	čo'á	čo'í	'extinguish'/'apagar(se), extinguir(se)
i.	-	osá	osé, osí	'write/read'/'escribir/leer'
j.	-	kimá	kimé	'cover with blanket'/'tapar(se)'

The contrast between a transitive and an applicative stem is shown in (8), where a benefactive argument is introduced in (8b) with the applicative stem (with stress in the root final high vowel).

8) Intransitive, transitive and applicative suppletive stems

Intransitive

a. nihé ba'arí **iči**-méa muní
1sgN tomorrow **plant**-Fut:sg beans
'I will plant beans tomorrow'
'Mañana voy a sembrar frijol' [LEL 06 5:119/Elicitt]

	Applicative				
b.	nihé	ba'arí	ne	yé-ra	**ičí**-ma
	1sgN	tomorrow	1sgN	mother-Poss	**plant.Appl**-Fut:sg

'I will plant for my mom tomorrow'
'Mañana voy a sembrarle a mi mamá (su tierra)'

Applicative stems built through this stem allomorphy may add an applicative suffix with no change in meaning. The pair of verbal forms exemplified in (9), with one and two applicative markers, are functionally equivalent.

9) Applicative stems with applicative suffixes

a.	ma=ni	mi	**suwé**-ri	remé
	already=1sgN	2sgA	**finish.up.Appl**-Pst	tortillas

'I already finished (ate) up your tortillas'
'Ya me acabé tus tortillas' [BF 08 1:113/Elicit]

b.	ma=ni	mi	**suwé-ki**-ri	remé
	already=1sgN	2sgA	**finish.up.Appl-Appl**-Pst	tortillas

'I already finished (ate) up your tortillas'
'Ya me acabé tus tortillas' [LEL 06 5:123/Elicit]

More examples are provided in (10). These applicative are similar to the pluractional forms exemplified in the previous section since they express a category through affixation and a stem modification. However, the pattern of redundant applicative marking is optional.

10) Applicative stems with applicative suffix *–ki*

	applicative stem	*redundant applicative*	*Gloss*
a.	osí-ma	**osí-ki**-ma	'write:**Appl-Appl**-Fut:sg'/ 'escribir:**Appl-Appl**-Fut:sg' [BF 06 2:98/Elicit]
b.	roné-ma	**roné-ki**-ma	'boil:**Appl-Appl**-Fut:sg'/ 'hervir:**Appl-Appl**-Fut:sg' [BF 06 2:101/Elicit]

c.	rahé-ma	**rahé-ki**-ra	‘light.up:**Appl-Appl**-Pot’/ ‘prender:Appl-Appl-Pot’ [SaF 06 4:104/Elicit]
d.	ičí-ri	**ičí-ki**-ri	‘plant:**Appl-Appl**-Pst’/ ‘plantar:Appl-Appl-Pst’ [BF 06 MEH/Elicit]
e.	ku’rí-ni-ma	**ku’rí**-n-**ki**-ri	‘turn**:Appl**-Tr-**Appl**-Imp:sg’/ ‘voltear:Appl-Tr-APpl-Imp:sg’ [BF 08 1:92/Elicit]

Finally, another important feature of this pattern is that only the most productive applicative suffix (*-ki*) is added to an applicative stem, despite the existence of three other applicative suffixes (*-ni, -si-,* and *–wi*) in the language. This fact is addressed again in §5.4.2 below.

5.3.3 Multiple affixation of the causative suffix

The most frequently attested pattern of ME in Choguita Rarámuri involves doubling of the causative suffix. The causative suffix has two lexically determined allomorphs, *-ti* (11a-d) and *–ri* (11e-h).

11) Distribution of *–ti* and *–ri* causative allomorphs

	Forms	*Gloss*	*Meaning*
	Causative allomorph -ti		
a.	napá-**ti**-ma	‘hug-**Caus**-Fut:sg’/ ‘abrazar-Caus-Fut:sg’	‘X makes Y hug Z’ [BF VDB/Elicit]
b.	wikará-**ti**-ri	‘sing-**Caus**-Pst’/ ‘cantar-Caus-Pst’	‘X makes Y sing’ [JH 04 1:2/Elicit]
c.	wá-**ti**-ra	‘be.ripe-**Caus**-Pot’/ ‘madurarse-Caus-Pot’	‘X makes Y get ripe’ [SF 05 1:91/Elicit]
d.	misú-**ti**-ma	‘hunt-**Caus**-Fut:sg’/ ‘cazar-caus-Fut:sg’	‘X makes Y hunt’ [SF 05 1:124/Elicit]
	Causative allomorph -ri		
e.	pewá-**ri**-ma	‘smoke-**Caus**-Fut:sg’/ ‘fumar-Caus-Fut:sg’	‘X makes Y smoke’ [RF 04 1:122/Elicit]

f.	bučé-**ri**-a	‘load:Appl-**Caus**-Prog’/‘X makes Y load Z’ ‘cargar:Appl-Caus-Prog’	[SF 05 1:94/Elicit]
g.	ubá-**r**-sa	‘bathe-**Caus**-Cond’/ ‘X makes Y bathe’ ‘bañar-Caus-Cond’	[LEL 06 4:151/Elicit]
h.	hawá-**r**-ma	‘stand-**Caus**-Fut:sg’/ ‘X makes Y stand’ ‘pararse:pl-Caus-Fut:sg’	[LEL 06 4:151/Elicit]

As we have seen in Chapter 2, all suffixes with a plosive onset display this allomorphy (cf. §2.2.4 in Chapter 2). We have also seen that there is a phonological process that devoices voiced/lenis consonants after another consonant. The rule, given in (51) in Chapter 2, is repeated in (12).

12) Post-consonantal stop devoicing

[+ voice] stop ➞ [-voice] / C__

Due to this general phonological rule, posttonic vowel deletion yields an environment in which the onset of the causative suffix is voiceless. This is exemplified in (13).

13) Phonological distribution of causative allomorph *-ti*

	Form	*Gloss*	*Unattested*	
a.	láan-**ti**-ki	‘bleed-**Caus**-Pst:1’/ ‘sangrar-Caus-Pst:1’	*lán-**r**i-ki	[SF 05 1:102/Elicit]
b.	sikirép-**ti**-ki	‘cut-**Caus**-Pst:1’/ ‘cortar-Caus-Pst:1’	*sikirép-**r**i-ki	[BF 05 1:113/Elicit]
c.	o’péš-**ti**-a	‘vomit-**Caus**-Prog’/ ‘vomitar-Caus-Prog’	*o’péš-**r**i-a	[BF 05 1:136/Elicit]
d.	očóp-**ti**-po	‘stick-**Caus**-Fut:pl’/ ‘pegar-Caus-Fut:pl’	*očóp-**r**i-po	[BF 05 1:113/Elicit]

Many causativized verbs in Choguita Rarámuri may optionally be marked with one causative suffix or doubly marked with the two non-identical allomorphs of the causative suffix, the reduced allomorph *–r* followed by the allomorph *-ti*. This causative doubling is exemplified in (14).

14) Causative suffix doubling

a.	nehé	mé-**ri**-ma		
	1sgN	win-**Caus**-Fut:sg		
	'I will make her win'			
	'La voy a hacer ganar'			[LEL 06 4:151/Elicit]
b.	á=mi	tamí	mé-**r-ti**-ma?	
	Aff=2sgN	1sgA	win-**Caus-Caus**-Fut:sg	
	'Will you make me win?'			
	'Me vas a hacer que gane?'			[BF 08 1:113/Elicit]
c.	ra'ičá-**ri**-ma			
	speak-**Caus**-Fut:sg			
	'She'll make him speak'			
	'Lo va a hacer que hable'			[LEL 06 4:154/Elicit]
d.	mi=n	ra'ičá-**r-ti**-mo	rá	
	2sgA=1sgN	speak-**Caus-Caus**-Fut:sg	Cer	
	'I will make you speak'			
	'Te voy a hacer hablar'			[BF 08 1:113/Elicit]

The forms in (14b,d) are analyzed under the assumption that *r* and *ti* are in fact two separate exponents, and not a fused element (a hypothetical allomorph *–rti*). This assumption is made based on two facts. First, each allomorph is found independently marking a modification of argument structure of the predicate (as exemplified in (11)). Second, this sequence of suffixes is also found with fully compositional semantics (as exemplified in (3)).

A crucial characteristic of causative doubling is that it is only found in a prosodically defined environment. The possibility of having doubling of the causative suffix is in fact determined by the position of stress in the base to which the causative is attached: final-stress bases will optionally have ME of the causative (15a-e), while bases with non-final stress, where posttonic vowel deletion targets the final vowel of the base, never display causative suffix doubling (15f-j).

15) Stress and causative doubling

	Causative suffixation	*Causative doubling*	*Gloss*
	Causative doubling with final stress stems		
a.	mé-**r**-ma	mé-**r**-**ti**-ma	‘win-**Caus-(Caus)**-Fut:sg’/ ‘ganar-Caus-(Caus)-Fut:sg’ [BF 08 1:113/Elicit]
b.	sirú-**ri**-ri	sirú-**r**-**t**-i	‘hunt-**Caus-(Caus)**-Impf’/ ‘cazar-Caus-(Caus)-Impf’ [SF 05 1:136/Elicit]
c.	bahí-**ri**-a	bahí-**r**-**ti**-po	‘drink-**Caus-(Caus)**-Fut:pass’/ ‘tomar-Caus-(Caus)-Fut:pass’ [BF 04 1:11/Elicit]
d.	aka-rá-**ri**-ma	aka-rá-**r**-**ti**-ma	‘sandal-Fact-**Caus-(Caus)**-Fut:sg’/ ‘huarache-Fact-Caus-(Caus)-Fut:sg’ [SF 05 1:103/Elicit]
	No causative doubling with prefinal stress stems		
e.	té̱k-**ti**-ma	*té̱k-**r**-**ti**-ma	‘be.drunk:pl-**Caus**-**Caus**-Fut:sg’/ ‘estar.borracho:pl-Caus-Caus-Fut:sg’ [BF 08 1:114/Elicit]
f.	paní̱k-**ti**-ma	*paní̱k-**r**-**ti**-ma	‘wash.hands-**Caus**-**Caus**-Fut:sg’/ ‘lavar.manos-Caus-Caus-Fut:sg’ [BF 08 1:114/Elicit]
g.	opéš-**ti**-ma	*opéš-**r**-**ti**-ma	‘vomit-**Caus-Caus**-Fut:sg’/ ‘vomitar-Caus-Caus-Fut:sg’ [BF 08 1:114/Elicit]
h.	bačím-**ti**-po	*bačím-**r**-**ti**-po	‘sprinkle-**Caus**-**Caus**-Fut:pl’/ ‘rociar-Caus-Caus-Fut:pl’ [BF 08 1:114/Elicit]
i.	očóp-**ti**-po	*očóp-**r**-**t**i-po	‘stick-**Caus-Caus-**Fut:pl’/ ‘pegar-Caus-Caus-Fut:pl’ [BF 05 1:113/Elicit]

The example in (16) further confirms that it is the location of stress which conditions causative doubling. There are roots that have final or pre-final stress depending on particular morphological constructions or, alternatively, in free variation.

With these roots, non-final stress yields a form with one causative (16a,c), while final stress yields an optional form with ME (16b, d).

16) Causative doubling and stress position

	Forms	*Gloss*	*Unattested*
a.	úb-ti-ri	'bathe-**Caus**-Pst'	*úb-**r-ti**-ri
b.	ubá-**r-ti**-ma	'bathe-**Caus-Caus**-Fut:sg'	
c.	nóč-ti-**ri**	'work-**Caus**-Pst'	*nóč-**r-ti**-ri
d.	nočá-**r-ti-**ma	'work-**Caus-Caus**-Fut:sg'	

In sum, causative doubling is a productive pattern which is optional within a prosodically-defined context, namely final stress bases. I have argued that this phenomenon involves the two different allomorphs of the same causative suffix, and not as a single, bound, third allomorph of the causative.

5.3.4 Multiple suffixation of applicative suffixes

The final pattern of ME involves multiple suffixation of applicative suffixes. We have seen in Chapter 3 that Choguita Rarámuri has more than one applicative suffix, and that these applicative suffixes are situated in different positions in the proposed verbal structure: applicative suffixes *–ni*, *-si* and *–wi* are lexically selected by the bases to which they attach and are clustered in position S3. The productive applicative *–ki*, on the other hand, occupies position S5. The distribution of morphological categories along the verbal structure is repeated in (17) (where applicative positions are highlighted with boldface).

17) Suffix positions and categories expressed in the Choguita Rarámuri verb

Positions	**Categories**
S1	Inchoative
S2	Transitives
S3	**Applicatives**
S4	Causative
S5	**Applicative**
S6	Desiderative
S7	Associated Motion
S8	Auditory Evidential
S9	Voice/Aspect/Tense
S10	Mood
S11	TAM
S12	Deverbal morphology

Applicative stems built with one of the inner applicative suffixes can be optionally recursively marked with the applicative suffix *–ki* in position S5, as exemplified in (18). This double marking of applicative suffixes is marginal compared to causative suffix doubling, but there are attested cases nonetheless. Forms with one applicative marker and forms with two applicative markers occur in free variation, and consultants do not report any change in the meanings of these forms.

18) Multiple affixation of different applicative suffixes

a. ne mi sú-**n**-ma sipúča
1sgN 2sgA sew-**Appl**-Fut:sg skirt
'I will sew a skirt for you'
'Te voy a coser una falda' [SF 05 1:80/Elicit]

b. ne mi sú-**n-ki**-ma sipúča
1sgN 2sgA sew-**Appl-Appl**-Fut:sg skirt
'I will sew a skirt for you'
'Te voy a coser una falda' [SF 06 6:73/Elicit]

c.	ma=ni	mi	pá-**si**-ri	pelota	
	already=1sgN	2sgA	throw-**Appl**-Pst	ball	

‘I already threw the ball at you’
‘Ya te tiré la pelota’ [LEL 06 6:77/Elicit]

d.	ma=ni	mi	pá-**s**-**ki**-ri	pelota	[p.r.]
	already=1sgN	2sgA	throw-**Appl-Appl**-Pst	ball	

‘I already threw the ball at you’
‘Ya te tiré la pelota’ [LEL 06 6:77/Elicit]

g.	ne	mi	wasará-**ni**-ma	
	1sgN	2sgA	plow-**Appl**-Fut:sg	

‘I can plow the ground for you here’
‘Yo te barbecho la tierra aqui’ [BF 08 1:92/Elicit]

h.	ne	mi	wasará-**n**-**ki**-ra	na’í
	1sgN	2sgA	plow-**Appl-Appl**-Pot	here

‘I can plow the ground for you here’
‘Yo te barbecho la tierra aqui’ [BF 08 1:92/Elicit]

i.	á=m	tamí	riwí-**wu**-ma
	Aff=2sgN	1sgA	find-**Appl**-Fut:sg

‘Shall I find it for you?’
‘Te lo encuentro?’ [BF 08 1:16/Elicit]

j.	á=m	tamí	riwí-**w**-**ki**-ma
	Aff=2sgN	1sgA	find-**Appl-Appl**-Fut:sg

‘Shall I find it for you?’
‘Te lo encuentro?’ [BF 08 1:16/Elicit]

k.	ne	mi	rimé-**ni**-ma	
	1sgN	2sgA	make:tortillas-**Appl**-Fut:sg	

‘I’ll make you tortillas’
‘Te voy a hacer tortillas’ [BF 05 1:111/Elicit]

l.	ne	mi	rimé-**n**-**ki**-mo	rá
	1sgN	2sgA	make:tortillas-**Appl-Appl**-Fut:sg	Cer

‘I’ll make you tortillas’
‘Te voy a hacer tortillas’ [BF 08 1:93/Elicit]

m.	ne	mi	pakó-**ni**-ra	plato		
	1sgN	2sgA	wash-**Appl**-Pot	plate		
	'I'll wash the plates for you'					
	'Te voy a lavar los trastes'				[BF 08 1:93/Elicit]	
n.	ne	mi	pakó-**n-ki**-ra	plato		
	1sgN	2sgA	wash-**Appl**-**Appl**-Pot	plate		
	'I'll wash the plates for you'					
	'Te voy a lavar los trastes'				[BF 08 1:93/Elicit]	

Finally, the two applicative exponents need not be contiguous. As shown in (19), the causative can be suffixed between the two applicative suffixes.

19) Non-contiguous affixation of different applicative suffixes

a.	mi=n	biré	sipúča	sú-**n**-ti-**ki**-ma	rá	jéni
	2sgA=1sgN	one	skirt	sew-**Appl-**Caus**-Appl**-Fut:sg	Cer	Yeni
	'I'll make you sew a skirt for Yeni'					
	'Te voy a hacer que le cosas una falda a Yeni'			[BF 07 2:34/Elicit]		
b.	mi=ni	dúlse	rarí**-w-**ti**-ki**-ma	jadíra		
	2sgA=1sgN	candy	buy-**Appl-**Caus**-Appl**-Fut:sg	Yadira		
	'I'll make you buy candy for Yadira'					
	'Te voy a hacer que le compres dulces a Yadira'			[SF 07 2:32/Elicit]		

An important feature of this pattern is that it also occurs with final stress roots, the environment where causative doubling is found. In these cases, the first exponent also undergoes reduction through posttonic vowel deletion. The applicative suffix *–ki* then attaches to a consonant final base (or a base with a causative suffix, as in the examples in (19)).

5.3.5 Summary

There are four different kinds of ME in the Choguita Rarámuri verbal morphology. Our cross-linguistic survey of ME in §5.2.2 led us to ask if a finer typology of ME should distinguish the following:

(i) do exponents of ME express the exact same meanings or just overlap in certain features?;

(ii) does ME involve only affixal exponents or a combination of non-concatenative and affixal exponents?;

(iii) are exponents identical or different allomorphs of the same exponent?;

(iv) are exponents contiguous or discontiguous in their linear arrangement?

Based on the Choguita Rarámuri ME patterns, we might also want to specify:

(v) whether ME is obligatory/optional;

(vi) whether there is any phonological/prosodic conditioning of ME; or

(vii) whether ME is productive or marginal in the language.

Table 25 summarizes the Choguita Rarámuri ME patterns in terms of these questions.

Table 25: Characteristics of the ME patterns of Choguita Rarámuri

		Pluractional (§5.3.5.1)	**Appl Stem + Affix (§5.3.5.2)**	**Caus-Caus (§5.3.5.3)**	**Appl-Appl (§5.3.5.4)**
(i)	**features expressed by each exponent**	same	same	same	same
(ii)	**formal realization (affix, non-conct)**	non-conc. and affixal	non-conc. and affixal	affixal	affixal
(iii)	**allomorphy**	-	-	allomorphy	-
(iv)	**location of exponents**	contiguous	contiguous	contiguous	(contiguous)[58]
(v)	**obligatoriness of double exponence**	obligatory	optional	optional	optional
(vi)	**prosodic conditioning**	no prosodic conditioning	no prosodic conditioning	prosodic conditioning	prosodic conditioning
(vii)	**productivity**	unproductive	(productive)[59]	productive	unproductive

These patterns may diverge in productivity, optionality, prosodic conditioning and formal expression, but ME is uniformly characterized by the following properties: it is completely superfluous (no additional meanings are realized by any of the exponents); it involves derivational information (pluractionality and argument structure changing morphology); and it involves formally distinct exponents, whether because they are different markers or different allomorphs of the same suffix (e.g. causative *–ti/-ri*). Most importantly, ME is realized in only two verbal zones of the morphological structure. In

[58] As shown in (18), applicative exponents need not be contiguous.
[59] The limited frequency of this pattern stems from the fact that applicative stem allomorphy is lexically selected by a limited number of verbal roots (cf. Chapter 3, §3.5.1).

the next section I provide an analysis of ME that addresses this fact and links it to the synchronic motivation of these patterns.

5.4 Multiple Exponence as morphological transparency

As mentioned above, a key characteristic of Choguita Rarámuri ME is that it is confined to two specific domains in the verbal structure of the verb: the Inner Stem (pluractional double marking, applicative stems) and the Syntactic Stem (causative doubling and applicative multiple marking).[60] The locus of ME within the Choguita Rarámuri verbal domains is highlighted in Table 26.

Table 26: Verbal domains and the localized appearance of ME

Position	**Stem level**	**ME locus**
α	Inner Stem	**ME**
S1	Derived Stem	
S2		
S3	Syntactic Stem	**ME**
S4		
S5		
S6	Aspectual Stem	
S7		
S8		
S9	Finite Verb	
S10		
S11		
S12	Subordinate Verb	

[60] While all markers in the Syntactic Stem level undergo ME, only a few markers within the Inner Stem level may undergo ME. The reasons why some exponents in this stem level do not undergo ME are addressed in §5.4.2, below.

What I propose is that ME is localized in this fashion in two defined levels of the morphological structure because there is a set of properties that make the markers in these areas morphologically *opaque*, or less susceptible to morphological segmentation. It is not the case that these markers are opaque because of the morphological position they occupy (i.e., they are not diacritically marked), but rather their opacity results from the confluence of independent morphophonological factors. This opacity is then repaired through ME: a second exponent enhances the strength of morphological junctures within the agglutinating verb.

Morphological opacity can be defined in terms of morphological boundary strength or degree of morphological segmentation within a complex word. Words containing opaque morphological markers are words where the internal morphological boundaries are not obvious, while morphologically transparent words are susceptible to internal morphological segmentation, typically with phonological boundaries that are coextensive with the morphological ones. For instance, Booij (to appear) illustrates the loss of morphological transparency that lexicalization brought about in the Dutch word *aardappel* 'potato'. Historically a compound, this word has lost any phonological cues to the former word-internal boundary: the word is syllabified as a monomorphemic word (aar.dap.pel), and not with syllabic boundaries matching the morphological ones (**aar**__d.a__**p.pel*). The opacity of the word, thus, stems from the lack of isomorphism between morphological and phonological boundaries.

The correspondence between morphological and phonological (prosodic) constituents are central to Prosodic Morphology within Optimality Theory (OT;

McCarthy & Prince (1993); Prince & Smolensky (1993)) (McCarthy & Prince (1993, 1994)), and has been invoked to explain, for instance, prosodic size requirements of morphological domains (Kager (1999)), augmentation in the form of epenthesis (Walker (2002)), prosodically-conditioned morpheme doubling (Downing (2005)), edge/interior markedness asymmetries (Broselow (2003)), etc. Morpho-prosodic alignment and anchoring has also been argued to be motivated functionally by the need to recover segmental and morphological information: parsing of speech into morphological components will be facilitated by the preservation of marked sequences at morpheme junctures (Broselow (2003)).[61]

The notion of morphological opacity/transparency (especially as conceived of by (Broselow (2003)) can be considered to be analogous to the psycholinguistic concept of gradient parsability of affixes in speech perception (Hay (2003), Hay & Plag (2004)), where affixes have different degrees of decomposability or parsability in speech perception, and occupy a place along a processing complexity scale. The presence or lack of isomorphism of morphological and phonological boundaries in transparent morphology (as exemplified in the Dutch example) is only one possible factor determining parsability: affixes difficult to parse are less separable affixes with higher boundary strengths because they are less phonologically segmentable, less transparent, less frequent and/or less productive (Hay & Plag (2004:571)). Arguably, phonological fusion, transparency, frequency and productivity are not completely independent

[61] For a discussion of the functional motivation of exponence, see van Oosteendorp (2004, 2006). For van Oostendorp (2004), the principle of phonological recoverability (which states that morphological information in the input should be expressed in the output) can be linked to a functional need of phonological cues in morphologically complex forms.

variables. As Hay & Baayen (2005) state, "[t]he more the parts 'stand out' in the whole, the stronger the paradigmatic relations that the whole entertains. Affixes represented by more words which are infrequent relative to their bases, and which contain low probability phonotactics, are not only the most likely to be more highly segmentable and to develop stronger independent representations, they are also more readily available for use in new words; that is, they tend to be more productive" (2005:345).

Whether individual factors can be singled out or not in determining the degree of decomposability or parsability of a given affix, the important point that the definitions of opacity and parsability share is that they refer to a *gradient* property of morphological entities that is intimately linked to the degree of juncture strength in morphologically complex constructions.[62] In this gradient scheme, the more 'bound' a marker is to its base (i.e., the less salient its juncture is), the more opaque or difficult to parse it is.

I propose that the opacity/parsing-difficulty of morphological markers exhibiting ME in Choguita Rarámuri has one of two sources: they are either increasingly unproductive (pluractional and applicative marked in the stem) or display a high degree of morphophonological fusion (causative and applicative). The necessary components to the proposed analysis are laid out next. First, I will show the specific ways in which opacity is repaired through ME (§5.4.1). And second, I will give a detailed account of

[62] The probability and frequency of phonotactic patterns is assessed through statistical measures of large corpora (cf. Hay & Baayen (2002), Hay (2003), Hay and Plag (2004), inter alia). In the Choguita Rarámuri case, transparency of segmentation, productivity and phonological fusion is assessed on the basis of the systematic description and analysis of the phonotactic patterns of Choguita Rarámuri provided in this dissertation. I thus derive a characterization of opacity/low-parsability of suffixes through structural properties.

why other potentially opaque markers in the Choguita Rarámuri verb (§5.4.2) do not display ME.

5.4.1 Phonological fusion and declining productivity as the source of Multiple Exponence

As I showed in Chapter 3, the Choguita Rarámuri verb has a layered, hierarchical structure that can be divided into stem levels. Each level is characterized by morphophonological properties, such as back harmony and stress shifts. The morphological processes taking place closer to the root are tied more closely, phonologically, to the root than later morphological process. Table 19 is repeated below in (20).

20) Morphologically conditioned phonology by verbal domain

<table>
<tr><th>Zone</th><th>Inner Stem</th><th>Derived Stem</th><th>Syntactic Stem</th><th>Aspectual Stem</th><th>Finite Verb</th><th>Subordinate Verb</th></tr>
<tr><td rowspan="5">Phonology</td><td>Haplology</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>CL</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Passive-triggered lengthening</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Imperative stress shift</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Rounding harmony</td><td></td><td></td></tr>
</table>

An important property of the organization of the morphological structure proposed in this dissertation is the distribution of suffixes in terms of their stress properties. We have seen that stress-shifting suffixes and stress-neutral suffixes are not neatly ordered into two adjacent blocks (as would be expected in Mohanan's (1986) Stratum Domain hypothesis (cf. discussion in Chapter 4 (§4.3.4)), but are instead interleaved in discontinuous layers. The distribution of the two types of suffixes is repeated in (21).

21) Distribution of stress-shifting and stress-neutral suffixes in the verbal domains

Position	**Stem level**	**Suffix stress properties**
S1	Derived Stem	Stress-shifting
S2		
S3	Syntactic Stem	Stress-neutral
S4		
S5		
S6	Aspectual Stem	Stress-shifting
S7		Stress-neutral
S8		
S9	Finite Verb	Stress-shifting
S10		
S11		Stress-neutral
S12	Subordinate Verb	Stress-neutral

The first layer of stress-neutral suffixes in the Syntactic Stem is the locus of two patterns of ME, causative doubling and applicative multiple marking. This layer of suffixes is also within the domain of rounding harmony (cf. (20)), and so it displays comparatively more fusion with the root than suffixes in the outer zones or domains of the verb.

As we have seen in the previous section, the possibility of multiple affixation of causatives and applicatives is sensitive to prosody: no ME is found where the base for affixation has pre-final stress. Specifically, doubling of causatives or multiple applicativization occurs when the first exponent is immediately posttonic, loses its vocalic nucleus and the onset consonant is resyllabified as coda of the stressed syllable. The prosodic generalization of both causative doubling and multiple applicative suffixation is summarized in Table 27.

Table 27: Causative doubling and multiple suffixation of applicatives

Pattern	**Prosodic generalization**	**Examples**
Causative doubling	[... σ -C]–ti	[bučé**-r**]**-ti**-ma [aka-rá**-r**]**-ti**-ma
Multiple applicatives	[... σ -C] –ki	[sú**-n**]**-ki**-ma [pá**-s**]**-ki**-ri

I contend that phonological reduction (via posttonic vowel deletion) renders the inner suffixes less morphologically segmentable. These reduced exponents are part of a causative or applicative base which requires further suffixation, a second exponent, for morphological transparency. In the forms with ME in (21), the second exponent of the causative and applicative is unambiguous for two reasons: i) this second exponent is coextensive with a syllable head (the syllable rhyme); and ii) the resulting heterosyllabic consonant cluster provides an unambiguous cue for the boundary between the stem and the rest of the verb, a cue that facilitates the parsing of the word into morphemes.

This synchronic pressure for morpho-prosodic transparency can be formalized in a version of OT where different domains or morphological subconstituents within the word may have different rankings (Stratal OT or Lexical Phonology Morphology – OT (LPM-OT (Kiparsky (2000, 2003)) and Optimal Construction Morphology (OCM; Inkelas et al. (2006)). Specifically, I propose that there are at least three subconstituents in the Choguita Rarámuri verb: a Stem, the domain of stress assignment; a derivational stem, DStem, the domain of affixation of derivational suffixes (belonging to the Syntactic and Aspectual Stem levels depicted in (21)); and an inflectional stem, IStem, the domain of affixation of inflectional suffixes (belonging to the Finite and Subordinate Verb levels).[63] I will first provide a formal treatment of the patterns of ME that have a clear prosodic conditioning (multiple affixation of causative and applicative suffixes), and will then extend the analysis to the patterns of ME that are not prosodically conditioned (pluractionals and applicative stems that add applicative suffixes).

In Choguita Rarámuri, stress is assigned to an input root and a first layer of morphology in a Stem level, which consists of the root plus one layer of morphological exponence (cf. Chapter 4, (§4.3.1)). The relevant footing constraints operating at this level are defined in (22).

22) Footing constraints at Stem level

a.	ALL-FT-L:	Every foot stands at the left edge of the prosodic word (PrWd).
b.	PARSE-σ:	Syllables must be parsed into feet.
c.	IAMB:	Feet have final prominence.
d.	TROCHEE:	Feet have initial prominence.
d.	MAX-IO:	Every segment in the input has a correspondent in the output.

As discussed in Chapter 4, in this language iambic feet are built from left to right through the ranking ALL-FT-L >> IAMB >> PARSE-σ (where the ranking ALL-FT-L >>

[63] LPM-OT/Stratal OT and OCM differ in the nature and interaction of constituent types within words (e.g., Stratal OT assumes a fixed number of constituent types which have their order fixed, while OCM assumes that the number of morphological subconstituents may vary and that their order is partial (Inkelas et al. (2006)).

PARSE-σ yields a non-iterating stress system).[64] Posttonic syncope is modeled through the ranking PARSE-σ >> MAX (Gouskova (2003)). Finally, I assume that a constraint REALIZE-MORPH enforces the expression of input semantic features in output forms (Akinlabi 1996, Walker 2000, Kurisu 2001, Itô & Mester 2002, van Oostendorp 2004, 2006). This constraint is defined in (23).[65]

23) Phonological recoverability constraint

REALIZE-MORPH: Every morpheme has to be expressed in the phonological structure

The effect of the constraint raking REALIZE-MORPH >> PARSE-σ >> MAX is illustrated in (24) in a Stem level evaluation of an input root (*čipó*, 'bounce') plus causative.[66]

24) Stem level evaluation, root plus causative

čipó-r-
/čipó-ri/
bounce-Caus-

	/čipó, -ri/	REALIZE-MORPH	PARSE-σ	MAX
a.	(či.pó.)-ri		*!	
☞ b.	(či.pó-r)			*
c.	(či.pó)	*!		

The high-ranked REALIZE-MORPH rules out candidate (24c), which does not express a target 'Causative' meaning in the output. The ranking IAMB >> PARSE-σ favors candidate

[64] For ease of exposition, and since it is not critical for the present analysis, I will not consider forms that build ternary feet in Cophonology Strong (cf. Chapter 4).
[65] This analysis could be translated to a realizational frame and assume that morphemes are not items in the input. I resort to the item-based approach to simplify the exposition of the problem.
[66] Since it does not affect the present analysis, I will not consider candidates with trochaic feet or right-aligned feet, and will not include the constraints IAMB and ALL-FT-L in the Tableaux.

(24b), with vowel deletion, over candidate (24a) with an unparsed syllable.

We can assume that there is free constraint ranking at the Stem level between PARSE-σ and MAX, which yields alternative Stem level outputs with no posttonic deletion. This is independently motivated by the fact that posttonic vowel deletion is optional in Choguita Rarámuri (cf. Chapter 2, §2.3.1.2.4)). As shown in (25), a Stem level evaluation of the root *čipó* plus causative with the ranking MAX >> PARSE-σ yields a Stem output with no posttonic vowel deletion.

25) Stem level evaluation, root plus causative (MAX >> PARSE-σ)

čipó-ri
/čipó-ri/
bounce-Caus

	/čipó, -ri/	REALIZE-MORPH	MAX	PARSE-σ
☞ a.	(či.pó.)-ri			*
b.	(či.pó-r)		*!	
c.	(či.pó)	*!		

We thus have two potential outputs from the Stem level from an input root and a first cycle of causative morphology, *čipór* and *čipóri*. The form *čipóri*, with no posttonic vowel deletion, can be inflected for imperative singular or present tense, categories which are realized by the bare stem. That is, the form *čipóri* does not require further suffixation in order to be used as a well-formed word. The Stem output form *čipór*, however, requires further suffixation to be an optimal word form.

I follow Inkelas et al. (2006), and assume that the morphological opacity of a reduced Stem level output like *čipór* can be formalized as a structural well-formedness requirement at a morphological subconstituent level (a 'slot' in the word). ME turns the suboptimal Stem form into a possible word. The Stem output *čipór* is the input to a second round of morphology, the DStem (where suffixes belonging to the Syntactic or Aspectual Stem levels are added) or the IStem (where suffixes belonging to the Finite or Subordinate Verb levels are added) (cf. Chapter 7 for discussion). The markedness constraints operating at this second level of evaluation are defined in (26).

26) Markedness constraints operating at the DStem/IStem level

a.	FINAL-V:	Every prosodic word is vowel-final (the logical counterpart of FINAL-C (McCarthy & Prince 1994:22)
b.	DEP:	Output segments must have input correspondents
c.	PARSE-σ:	Syllables must be parsed into feet.
d.	MAX-IO:	Every segment in the input has a correspondent in the output.

Crucially, well-formed words in this language are vowel-final (cf. Chapter 2, §2.3.1.2.4). This phonotactic requirement is formalized through the high-ranked constraint FINAL-V. The constraint against epenthesis, DEP, is also high-ranked, since there is no evidence for epenthesis in Choguita Rarámuri words (cf. Chapter 2, §2.3.2.4). Finally, a constraint against voiced consonants in post-consonantal position ($*CC_{[+VOICE]}$) avoids this undamissible type of sequence (cf. Chapter 2, §2.2.4). As exemplified in tableau (27), the ranking that yields the correct output is $*CC_{[+VOICE]}$, DEP, FINAL-V >> REALIZE-MORPH >> PARSE-σ.

27) DStem level evaluation of causative Stem *čipór*

čipó-r-ti
bounce-Caus-Caus

	/čipór, -ri/	*CC$_{[+\text{VOICE}]}$	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(či.pó.)ri		*!		*	*
☞ b.	(či.pór.)-ti					*
c.	(či.pó.)ri.-ti		*!			**
d.	(či.pór)			*!	*	
e.	(či.pór.)-ri	*!				

The constraint against epenthesis, DEP, eliminates the candidates that insert a vowel after the stem ((27a) and (27c)),[67] and FINAL-V eliminates candidate (27d), with a faithful consonant-final base (which also violates REALIZE-MORPH). An important feature of this analysis is the fact that the semantic property 'Causative' is in the input of this level of evaluation. This formalizes the assumption that a reduced Stem output form like *čipór*, a consonant-final Stem,[68] has a feature 'Causative' that percolates to the next level. This Stem output form and the exponent added in the DStem level are thus codependent.

[67] If DEP were low ranked in this stem level it would potentially yield Duke of York derivations as winning candidates, by restoring the vowel deleted in the previous level.

[68] Consonant-final stems derived through posttonic vowel deletion are not uncommon in Choguita Rarámuri (cf. Chapter 2, §2.3.1.2.4). In the case of causative and applicative suffixes, these are also found aligned at the right edge of a consonant final base in contexts outside doubling and multiple affixation. For instance, the phonological conditions on the causative suffix allomorphy produce a surface generalization where the allomorph *–ti* is the allomorph added to consonant final bases. Recall the data presented in (15), repeated below:

Causative *–ti* after C final bases

	Forms	*Gloss*	*Unattested*	
a.	láan-**ti**-ki	'bleed-**Caus**-Pst:1'	*lán-**r**i-ki	[SF 05 1:102/Elicit]
b.	sikirép-**ti**-ki	'cut-**Caus**-Pst:1'	*sikirép-**ri**-ki	[BF 05 1:113/Elicit]
c.	o'péš-**ti**-a	'vomit-**Caus**-Prog'	*o'péš-**ri**-a	[BF 05 1:136/Elicit]
d.	očóp-**ti**-po	'stick-**Caus**-Fut:pl'	*očóp-**ri**-po	[BF 05 1:113/Elicit]

In these cases, posttonic vowel reduction targets the root's final vowel. The causative allomorph is then affixed to this consonant final base.

This analysis also yields the correct results with forms that display multiple applicative suffixes. The Tableaux below illustrate how the variable ranking between PARSE-σ and MAX yield two possible output forms at the Stem level, namely a Stem with posttonic vowel deletion (28b) and a Stem without posttonic vowel deletion (29b).

28) Stem level evaluation, root plus applicative (PARSE-σ >> MAX)

sú-n-
/sú-ni/
sow-Appl-

	/sú, -ni/	REALIZE-MORPH	PARSE-σ	MAX
a.	(sú)-ni		*!	
☞ b.	(sú-n)			*
c.	(sú)	*!		

29) Stem level evaluation, root plus applicative (MAX >> PARSE-σ)

sú-ni
/sú-ni/
sow-Appl

	/sú, -ni/	REALIZE-MORPH	MAX	PARSE-σ
☞ a.	(sú)-ni			*
b.	(sú-n)		*!	
c.	(sú)	*!		

As with causative Stem outputs, the form with no posttonic deletion (*súni* in (29a)) is a well-formed word by itself, but the Stem output *sún* in (28b) is not. This Stem output must thus be submitted to a second round of morphology. Tableau (30) shows the DStem evaluation of Stem output *sún*.

30) DStem level evaluation of applicative Stem *sún*

sú-n-ki
sow-Appl-Appl

	/sún, -ki/	DEP	FINAL-V	REALIZE -MORPH	PARSE-σ
a.	(sú.)ni	*!		*	*
☞ b.	(sún.)-ki				*
c.	(sú.)ni.-ki	*!			**
d.	(sún)		*!	*	

Again, the addition of an applicative exponent in this level of evaluation repairs the structural deficiency of the reduced Stem output. An important consequence of this analysis is that the interaction between the Stem level and the DStem level yield forms that contain a sharp juncture: a consonant-final Stem is not repaired through an epenthetic vowel, but by the addition of an affixal exponent which is aligned with a syllable rhyme. ME, as well as the sharp juncture between the stem and the rest of the inflected verb, are epiphenomenal: there are no ME-specific constraints or 'juncture-enhancing' specific constraints.[69] Instead, transparency results from the interaction between the markedness constraints operating at the Stem level (which can lead to posttonic deletion to satisfy optimal syllable parsing) and the markedness constraints at a later level with different

[69] We could also consider an alternative analysis where the synchronic motivation for ME would come from paradigm uniformity. In Output-Output (OO) Correspondence Theory (Kenstowicz (1996, 1997, 2000), Benua (1995, 1997), Kager (1999), Steriade (2000)) derivationally related words are grouped into paradigms and a set of OO Constraints enforce identity of a shared base string (see also Optimal Paradigm (OP; McCarthy (2005), Downing (2005)). As Downing (2005) and Inkelas et al (2006) point out, however, in OO Correspondence the shared base strings where uniformity is imposed must be possible words. In OP, on the other hand, only inflectional paradigms are subject to OP constraints (although see Downing (2005) for a modified version of OP where derivational morphology can also be evaluated by these constraints). While a modified version of OO Correspondence or OP theory could provide a plausible account of ME in Choguita Rarámuri, the analysis proposed here avoids Paradigm Uniformity constraints, and assume instead that any paradigmatic effects are, like ME and juncture effects, epiphenomenal to the morphology-phonology interleaving (cf. Kiparsky (2000).

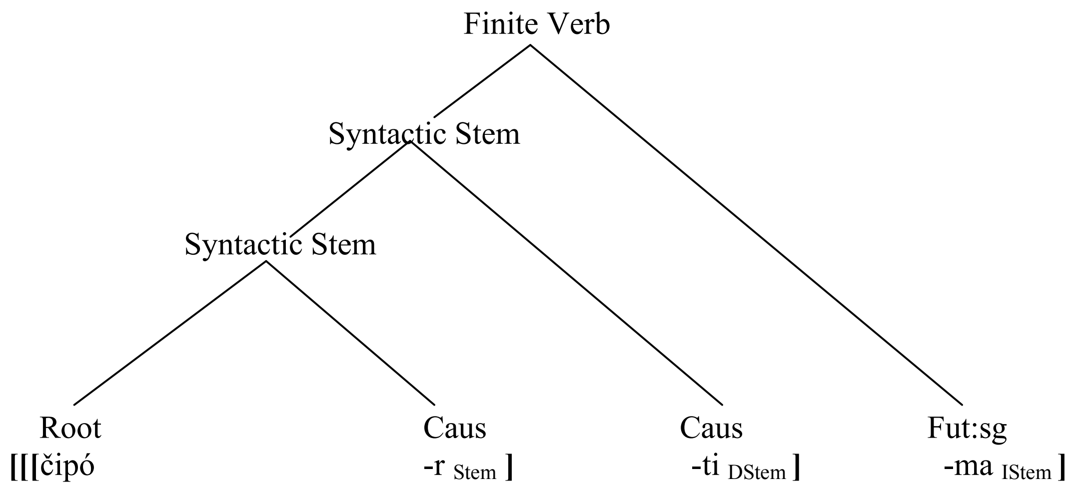
phonological constraints (which require prosodic words to be coda-less and have no segment epenthesis). Different constraints at different morphological levels bring about a sharp morphological juncture through a heterosyllabic consonant cluster.

An important implication of this analysis is that the reduced/opaque exponent is not "semantically defective", as argued in other analyses of redundant morphological marking (cf. Noyer (1993), Peterson (1994)), where only one exponent is the "true" marker of the semantic content expressed (entailing that ME is only apparent). This cannot be the case, since the inner exponents are found independently of the redundant markers, and speakers use forms with ME in free variation with forms with no ME. Speakers are thus able to retrieve the single exponents' meaning and function in multiple morphological contexts. The reduced exponent in ME is rather *structurally* defective: this exponent is the final consonant of a stem (either a causative stem or an applicative stem) that requires further suffixation. The schema in (31) illustrates the hierarchical structure of a word with causative ME, where each causative exponent is affiliated to the morphological structure.[70]

[70] This analysis thus differs from a similar analysis of Jita causative doubling provided in Downing (2005), where causative exponents that are semantically vacuous are not affiliated to the morphological structure of the word.

31) Morphological and prosodic structure of causative doubling

a. Hierarchical morphological structure



The structurally-defective exponent is part of a morpho-prosodic constituent, a Causative Stem, that requires further suffixation for structural well-formedness. This Causative Stem can be analyzed as a 'morphomic' stem, a purely formal subconstituent of the word which is co-dependent with a suffix in the expression of the causative meaning. For discussion of morphomic stems and their role in morphological analysis, see Aronoff (1992, 1994), Blevins (2003, 2005), Luis & Spencer (2005), Stump (2001), and Inkelas & Zoll (2005).

As mentioned above, phonological reduction at a morphological boundary is not the only source for morphological opacity in Choguita Rarámuri. The pattern of multiple applicative marking, while prosodically motivated, is also arguably conditioned by the decreasing productivity of the inner applicative marker. This is why a base marked with an unproductive, lexically restricted applicative (applicative suffixes in position S3 *–ni, -si, -wi*) does not get disambiguated by adding another unproductive applicative suffix, but rather by adding the more productive applicative suffix (-*ki*) in S5. The hypothetical examples in (32) illustrate this point.

32) Unattested types of applicative ME

	Attested	*Unattested*	*Unattested*	*Gloss*
a.	sú-**n**-**ki**-ma	*sú-**n**-**si**-ma	*sú-**n**-**ni**-ma	'sew-Appl-Appl-Fut:sg'/ 'coser-Appl-Appl-Fut:sg'
b.	pá-**s**-**ki**-ri	*pá-**s**-**ni**-ri	*pá-**s**-**si**-ri	'throw-Appl-Appl-Pst'/ 'tirar-Appl-Appl-Pst'
c.	boto-bú-**n**-**ki**	*boto-bú-**n**-**si**	*boto-bú-**n**-**ni**	'sink-Tr-Appl-Appl'/ 'hundir-Tr-Appl-Appl'

The logically possible forms of applicative ME include doubling of the same applicative suffix or adding two distinct applicative suffixes from the set in S3. However, only the most productive applicative suffix, -*ki*, can be added to an already applicative base.[71]

Morphological opacity, thus, seems to also be generated through receding productivity. I propose that this is the main source of opacity of applicative stems that take a redundant applicative suffix and of pluractionality marked through stem medial consonant mutation. The case of applicative stems (marked through stem allomorphy) is analogous to the pattern of multiple applicative suffixation: the inner exponent does not get redundantly marked with any of the applicative suffixes in S3 that are more restricted

[71] It could also be argued that these forms are unattested because the forms with –*si* can be ambiguously interpreted as marking associated motion (-*si* is the short allomorph of the associated motion), and forms marked with –*ni* can ambiguously be interpreted as marking the desiderative (-*ni* is the neutralized allomorph of the desiderative (/-na/)). Another possibility is that heterosyllabic clusters and geminates that would result in the unattested forms in (33) (**ns, sn, nn, ss**) are phonotactically illicit. It should be noted, however, that while derived fricative geminates are not attested, derived nasal geminates are (cf. Chapter 2, §2.3.2.2), as well as nasal-fricative and fricative-nasal derived heterosyllabic clusters (cf. Chapter 2, §2.3.2.2.1). Thus, all but the [ss] sequence in the unattested examples are phonotactically possible in this language.

in distribution, but only with productive applicative suffix *–ki* in S5. Consider the hypothetical forms in (33).

33) Unattested applicative ME

	Attested	*Unattested*	*Unattested*	*Gloss*
a.	osí-ki-ma	*osí-ni-ma	*osí-si-ma	‘write:Appl-Appl-Fut:sg’/ ‘escribir:Appl-Appl-Fut:sg’
b.	roné-ki-ma	*roné-ni-ma	*roné-si-ma	‘boil:Appl-Appl-Fut:sg’/ ‘hervir-Appl-Fut:sg’
c.	rahé-ki-ra	*rahé-ni-ma	*rahé-si-ma	‘light.up:Appl-Appl-Pot’/ ‘prender:Appl-Appl-Pot’

Again, logically possible forms with applicative stems adding unproductive applicative suffixes in position S3 are unattested in the corpus. An opaque exponent of the applicative will only be disambiguated with the most productive and transparent applicative marker in the language.

The stratal analysis proposed above can be extended to those patterns of ME that are not prosodically conditioned. Consider first the derivation of a root and an applicative exponent at the Stem level in Tableau (34). The root in question has a selectional restriction that enforces that the applicative exponent in this case is stem allomorphy (cf. Chapter 3, §3.3.2). The ranking of PARSE-σ and MAX is irrelevant in this case, and REALIZE-MORPH determines that the output candidate is *suwé* (34b), the applicative stem.

34) Stem level evaluation, input root *suwi* 'finish off' plus applicative

suwé
finish.up:Appl

	/suwi, Appl/	REALIZE-MORPH	PARSE-σ	MAX
a.	(su.wí)	*!		
☞ b.	(su.wé)			

This Stem output, marked with a non-concatenative exponent of limited distribution (due to a selectional restriction of its base root), may be used as an optimal word form or may be optionally submitted to the DStem level.[72] The ranking DEP, FINAL-V >> REALIZE-MORPH >> PARSE-σ favors the candidate with extended exponence (35b).

35) DStem level evaluation, applicative stem

suwé-ki
finish.up:Appl-Appl

	/suwé, -ki/	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(su.wé)			*!	
☞ b.	(su.wé.)-ki				*
c.	(su.wé-k)		*!		

The winning DStem output form, *suwéki*, is a well-formed word that can be used by itself or undergo further morphological marking. As mentioned above, potentially opaque applicative stems are not repaired by adding the applicative suffixes in

[72] A component of this analysis is assuming Level Economy (Inkelas & Orgun (1995), Yu (2002)): Stem outputs that are well-formed words by themselves (e.g., *čipóri* in (26a)) do not need be evaluated in the DStem level. They can be subjected to the Stem phonology and be used as optimal words with no further affixation, or they can be directly evaluated at a later level if undergoing a morphological operation at a later level. That is, not all forms will be evaluated by the phonological rankings of all levels, but only in the levels where a morphological operation applies.

position S3, *-ni, -si* and *–wi*, but only applicative suffix *–ki* (in (S5)). The hypothetical forms **suwé-ni, *suwé-si* and **suwé-wi* are unattested because these suffixes are lexically conditioned by the roots to which they attach. The applicative *–ki* , however, is not constrained by selectional restrictions and is completely productive.

Finally, we have the pluractional pattern of ME, which involves mutation of a consonant stem and prefixation. Although pluractional prefixation is not significantly more productive than stem consonant mutation, I conjecture it involves a higher degree of transparency (as an affixal exponent) than alternating the voicing of a stem internal consonant. Consonant mutation takes place at the Stem level (Tableau (36)). The output Stem form is then evaluated at the DStem level, where a second exponent of pluractional satisfies the high-ranked REALIZE-MORPH constraint (Tableau (37)).

36) Stem level evaluation, input root *bahi* 'drink' plus pluractional

	/bahi, Pl/	REALIZE-MORPH	PARSE-σ
a.	(ba.hí)	*!	
☞ b.	(pa.hí)		

37) DStem level evaluation, pluractional stem

a-pahí
Pl-drink:Pl

	/pahí, Pl/	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(pa.hí)			*!	
☞ b.	(<a>-pa.hí)				

The only difference between pluractional realization and the other patterns of ME is that pluractional forms that display ME do not have an alternative form with no ME. Evaluation at the DStem level for these forms can thus not be obviated.

In sum, the overarching mechanism generating ME in the Choguita Rarámuri verb is morphological opacity: ME arises when a morphological marker is difficult to parse and a second round of marking is required for the sake of morphological transparency/structural well-formedness. Under this analysis, one of the exponents is not semantically defective, but structurally defective, whether because it is strongly fused with its base or whether its productivity is receding. ME is not arbitrarily restricted to two stem levels in the Choguita Rarámuri verb, but instead driven by a general principle that facilitates the parsing of complex constructions into their component parts. In the next section, I address the mechanisms operating in the language that preclude ME to be expressed in other layers of the Choguita Rarámuri verb.

5.4.2 Lack of Multiple Exponence in the rest of the Choguita Rarámuri verb

The analysis I have proposed here relies on the assumption that the synchronic motivation for ME in this language comes from morphological opacity. Under this account it should be possible to explain why ME is not exhibited by every potentially opaque morphological marker in the language. That is, why isn't ME a system-wide property?[73] I have defined morphological opacity in terms of a high degree of phonological fusion through posttonic vowel loss and through declining productivity.

[73] Müller (2007) states that an advantage of his theory of 'enrichment rules' within the framework of Distributed Morphology is precisely to predict that ME is a system-wide property. As I will discuss below, this is in fact problematic.

Any other marker that might meet these two criteria is therefore potentially opaque in the same way as the exponents that display ME. In what follows, I will go over these markers and discuss why these exponents do not undergo redundant marking.

First, I will address the markers that can be argued to display stronger junctural boundaries due to a high degree of phonological fusion. An assumption I make is that stress-shifting suffixes are not prone to the kind of opacity (in this case, morphophonological fusion) that stress-neutral suffixes undergo, because they bear stress in many morphological constructions.[74] These suffixes, as bearers of stress, are strong positions that resist phonological reduction and neutralization (for discussion of stressed syllables as strong positions in phonological neutralization, see Barnes (2002, 2006) and Smith (2002)). While unstressed instances of these suffixes are candidates for posttonic vowel reduction, other forms in their paradigm will be stressed and never reduced.

Let us thus consider the stress-neutral suffixes in the Choguita Rarámuri verb that do not undergo ME. These stress-neutral suffixes are located in the Aspectual Stem (positions S7-S8) and in the Finite Verb and Subordinate Verb (positions S10-S11). These markers can be argued to be opaque since: i) they never bear stress, and ii) they can be affixed to a stress-final base, the prosodic environment where causative doubling and multiple applicative suffixation is found. The stress-neutral affixes in the Aspectual Stem may potentially lose their vocalic nucleus posttonically. The position of these stress-neutral suffixes are highlighted in Table 28.

[74] Recall that stress is fixed with accented roots, even when derived with stress-shifting suffixes (cf. Chapter 4, §4.2.2).

Table 28: Other stress-neutral suffixes in the Choguita Rarámuri verb

Position	**Suffix stress properties**	**Stem level**
S1	Stress-shifting	Derived Stem
S2		
S3	Stress-neutral	Syntactic Stem
S4		
S5		
S6	Stress-shifting	Apectual Stem
S7	**Stress-neutral**	
S8		
S9	Stress-shifting	Finite Verb
S10		
S11	**Stress-neutral**	
S12	**Stress-neutral**	Subordinate Verb

The stress-neutral suffixes in the Aspectual Stem are Associated Motion (Mot) and Auditory Evidential (Ev), in S7 and S8, respectively. These suffixes have "short" (monosyllabic) allomorphs (*-si* and *–ča*, respectively) when serving as bases for further suffixation (this is discussed in detail in Chapter 6). The short allomorph of the associated motion suffix may lose its vocalic nucleus in posttonic position, as exemplified in (38).

38) Posttonic vowel deletion targeting associated motion suffix

	Forms	*UR*	*Gloss*	
a.	siná-**s**-čane	/siná-**si**-čane/	'scream-**Mot**-Ev'/ 'gritar-**Mot**-Ev'	[SF 07 2:47/Elicit]
b.	wikará-**s**-ka	/wikará-**si**-ka/	'sing-**Mot**-Ger'/ 'cantar-**Mot**-Ger'	[BF 06 EJP(10)/Elicit]
c.	ubá-**s**-nare	/ubá-**si**-nare/	'bathe-**Mot**-Desid'/ 'bañar-**Mot**-Desid'	[SF 06 EDCW(30)/Elicit]
d.	wikawá-**s**-pa	/wikawa-**si**-pa/	'lose-**Mot**-Fut:pass'/ 'perder-**Mot**-Fut:pass'	[SF 06 tx12(5:59)/Text]

This suffix thus undergoes the same kind of phonological reduction as the causative and applicative in the Syntactic Stem. Consideration of unattested forms with hypothetical ME of associated motion, analogous to causative doubling and multiple applicative suffixation, reveals the reason why these forms are not attested. Hypothetical ME of this marker (exemplified in (39)) would involve reduction of the first marker (through posttonic vowel deletion) and a second round of affixation.

39) Unattested forms with ME of associated motion

	Attested	*Unattested ME*	*Gloss*
a.	siná-**s**-čane	*siná-**s**-**si**-čane	'scream-Mot(*-Mot)-Ev'/ 'gritar-Mot(*-Mot)-Ev'
b.	wikará-**s**-ka	*wikará-**s**-**si**-ka	'sing-Mot(*-Mot)-Ger'/ 'cantar-Mot(*-Mot)-Ger'
c.	ubá-**s**-nare	*ubá-**s**-**si**-nare	'bathe-Mot(*-Mot)-Desid' 'bañar-Mot(*-Mot)-Desid'
d.	wikawá-**s**-pa	*wikawá-**s**-**si**-pa	'lose-Mot(*-Mot)-Fut:pass'/ 'perder-Mot(*-Mot)Fut:pass'

The unattested forms in (39) are phonotactically problematic: posttonic deletion and ME in these cases would yield derived geminates that are not attested in Choguita Rarámuri. Recall from Chapter 2 (§2.3.2.1) that Choguita Rarámuri syllables are underlyingly CV, and that posttonic deletion yields derived surface geminates. However, there are no derived fricative geminates in this language. The sequence [ss] in the unattested forms in (39) would thus be phonotactically illicit.

This phonotactic restriction can be formalized through a constraint *[ss], banning identical fricative sequences. This constraint militating against fricative geminates must be ranked above the constraints that compel ME. Tableau (40) illustrates a Stem level output of an input root and associated motion with the ranking that yields posttonic vowel deletion, PARSE-σ >> MAX. A hypothetical DStem level evaluation in Tableau (41) of this Stem output form illustrates why ME does not occur.

40) Stem evaluation of root *pakó* 'wash' and associated motion

pakó-s-
/pakó-si-/
wash-Mot-

	/pako, -si/	REALIZE -MORPH	PARSE-σ	MAX
a.	(pa.kó)	*!		
☞ b.	(pa.kó-s)			*
c.	(pa.kó.)-si		*	

41) DStem evaluation of Stem output *pakós* and associated motion

	/pakós, -si/	*[SS]	DEP	FINAL-V	REALIZE -MORPH	PARSE-σ	M-PARSE
a.	(pa.kó.)si		*!		*	*	
b.	(pa.kós.)-si	*!				*	
c.	(pa.kós)			*!	*		
d.	(pa.kó.)si-si		*!			**	
☞e.	Ø						*

As (41) shows, the top-ranked constraint *[SS] successfully prevents the candidate with ME of associated motion to emerge as the winner. Since DEP and FINAL-V are not crucially ranked, however, candidates with epenthesis (41a, d) or a final vowel (41c) will also be ruled out. A null parse output, a candidate with no phonetic realization (41e), violates M-PARSE (Prince & Smolensky 1993)[75] (a constraint assigning a violation to a candidate where a morpheme is not pronounced) but satisfies every higher ranked markedness constraints. The reduced Stem output will thus not be a well-formed word unless it undergoes further suffixation.

The other suffix in the Aspectual Stem is the evidential, which has a short allomorph *-ča*. This allomorph, however, is never susceptible to posttonic syncope because its distribution is conditioned by stress position (the short allomorph of the evidential never attaches to the immediately posttonic syllable, the environment where causative and applicative ME is found).[76] Even if we were to consider hypothetical forms with ME of the short allomorph of the evidential, we would find that these hypothetical forms are also phonotactically ill-formed. Specifically, like in the case of the unattested forms with ME of associated motion in (39), ME of the evidential would result in an illicit alveo-palatal geminate (cf. Chapter 2, §2.3.2.1). This is illustrated in Tableau (42). The same observations made with the case of hypothetical ME of associated motion apply in this case.

42) DStem evaluation of hypothetical Stem output *pakóč* and evidential

	/pakóč, -ča /	*[čč]	DEP	FINAL-V	REALIZE -MORPH	PARSE-σ	M-PARSE
a.	(pa.kó.)ča		*!		*	*	
b.	(pa.kóč.)-ča	*!				*	
c.	(pa.kóč)			*!	*		
d.	(pa.kó.)ča-ča		*!			**	
☞e.	Ø						*

[75] I assume that Realize-Morph is distinct from M-Parse, in that the former evaluates recoverability of morphological information from the phonological string. Candidates violating Realize-Morph will have an unrecoverable morpheme, while candidates violating M-Parse will be phonetically null.
[76] The details of this restriction on the allomorph's distribution is addressed in Chapter 6.

Furthermore, the suffixes in this stem layer do not have allomorphs that could provide phonotactically sound alternatives to repairing opacity as I have proposed occurs in the attested cases of ME in this language. ME repairs lack of transparency in the agglutinating verb through different markers and different allomorphs, yielding a sharp juncture between the two exponents. There is no explicit ban on ME in the Aspectual Stem layer: independently motivated output well-formedness constraints militate against ME in these cases.

A final set of potentially-opaque stress-neutral suffixes is located in the Finite verb and Subordinate verb, in positions S11 to S12. A list of the suffixes in these positions, encoding tense, aspect, voice, mood and nominalization, is given in (43).[77]

43) Stress-neutral suffixes in S11 and S12

Suffix	*Example*	*Gloss*
Reportative *–ra*	ča'í-ra	'grab-Rep'/'agarrar-Rep'
Past perfective *–ri*	ča'í-ri	'grab-Pst'
Past perfective, 1^{st} *–ki*	ča'í-ki	'grab-Pst:1'
Past imperfective *–e*	ča'í-e	'grab-Impf'
Progressive *–a*	ča'í-a	'grab-Prog'
Epistemic *–o*	ča'í-o	'grab-Ep'
Gerund *-ka*	ča'í-ka	'grab-Ger'

These suffixes do not undergo reduction like the kind attested by other stress-neutral suffixes closer to the root in the hierarchical structure. First, vocalic exponents could not be deleted in any context. Most generally, these suffixes are in final position in

[77] This list does not include the locative and purposive suffixes in the Subordinate Verb stem level, since these suffixes always attach to bases inflected with the present progressive suffix *–a* (cf. Chapter 3, §3.5.1 and Appendix 1), and are thus never in immediately posttonic position.

the hierarchical morphological structure, and posttonic vowel deletion does not target verb-final unstressed vowels (cf. Chapter 2, §2.3.1.2.4).

Furthermore, there would be phonotactic constraints that would preclude doubling in hypothetical forms with ME. For instance, ranking *[rr] (another unattested sequence in Choguita Rarámuri) above the alignment constraints that yield ME in the case of causatives and applicatives, as Tableau (44) shows, successfully prevents ME of the inflectional past suffix.

44) DStem level evaluation of root inflected for past tense

	/pakór, -ri/	*[rr]	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ	M-PARSE
a.	(pa.kór)-ri	*!				*	
b.	(pa.kó.)ri		*!		*	*	
c.	(pa.kó.)ri.-ri		*!			**	
d.	(pa.kór)			*!	*		
☞ e.	Ø						*

Once again, we have a general phonological constraint preventing the appearance of ME.

Another set of potentially opaque morphological markers are markers that are no longer fully productive. I have argued that ME in the pluractional and applicative stem patterns are motivated through opacity due to the receding productivity of the inner exponents in these cases. However, other unproductive markers in this language are not doubled under any circumstance. The localization of these suffixes, in the Inner Stem and the Derived Stem, is highlighted in Table 29.

Table 29: Unproductive processes in the Inner Stem and the Derived Stem

Position	**Stem level**
α	**Inner Stem**
S1	**Derived Stem**
S2	
S3	Syntactic Stem
S4	
S5	
S6	Aspectual Stem
S7	
S8	
S9	Finite Verb
S10	
S11	
S12	Subordinate Verb

Unproductive processes that take place at the Inner Stem include instrumental prefixes, body-part incorporation, and number marking marked through plural prefixes (distinct from the prefix found in pluractional constructions) (these constructions are described in Chapter 3, §3.4.2, §3.4.3, and §3.4.4, respectively). These processes are exemplified in (45).

45) Inner Stem unproductive processes

	Form	*Gloss*	*Translation*	*Free morphemes*
	Instrumental prefixes			
a.	ma+čó	‘hand +hit’	‘hit w/hand’/ ‘pegar con mano’	o’čó
b.	ma+hó	‘hand+dig’	‘dig w/hand’/ ‘escarbar con mano’	hó
	Body-part incorporation			
c.	ropa+kási	‘belly+break’	‘have miscarriage’/ ‘abortar’	ropá, kasí
d.	čoma+bíwa	‘mucus+clean’	‘clean mucus’/ ‘limpiar mocos’	čo’ma, bi’wá

	Singular/Plural prefixation			
	Sg	*Pl*	*Gloss*	*Free morphemes*
e.	ni-tówi	na-tówi	'surpass'/'rebasar'	tówi
f.	ni-hisá	na-hisá	'challenge'/'retar'	hisá

First, let us consider instrumental prefixes, which are no longer available in the lexicon as a synchronically productive set. In this case, it is not only the markers which have been lexicalized (e.g., the root *ma* in (45a-b) is no longer synchronically used to mean 'hand' in Choguita Rarámuri), but the process of incorporating a body-part noun as instrument is no longer productive either.[78] There is thus no active synchronic meaning to disambiguate in these forms.

In the case of body-part incorporation, recall from Chapter 3 that there are not many examples of this kind of process since the set of nouns that can undergo incorporation is limited within its class (i.e., only a few body-part nouns can incorporate). Furthermore, incorporated forms are highly restricted in their prosodic makeup in two ways. First, they obey a language-wide restriction that requires stress to be assigned in an initial three-syllable window. And second, they display a morphologically-conditioned stress rule where the first syllable of the head of the construction (the second member, the verb) must receive stress. Hypothetical forms with doubling of the incorporated noun would thus result in prosodically impossible forms. This is exemplified in (46).

[78] This contrasts with the situation in Numic language family (Northern Uto-Aztecan), where instrumental prefixes are synchronically productive.

46) Hypothetical doubly incorporated forms

	Attested	*Gloss*	*Unattested*
a.	rono+répi	'foot/leg+cut'/'pie/pierna+cortar'	*rono+rono+répi
b.	čere+bíwa	'sweat+clean'/'sudor+limpiar'	*čere+čere+bíwa
c.	ropa+kási	'belly+break'/'panza+romper'	*ropa+ropa+kási

Finally, we have forms where verbal number is marked through a prefix, *ni-* for singular and *na-* for plural, as exemplified in (45e,f). While not productively used with every verb in the language, these prefixes are arguably not opaque in their segmentation, since there are a few of these words where there exist alternative stems that can be used without the prefix (e.g., *ni-surí/surí* 'fight over something', *ni-ikí/ikí* 'bite'). Consequently, we do not find ME of plural prefixation.

I contend that weak junctures are also the reason why there is no ME of transitive suffixes *–bú, –na* and pluractional transitive *–ča* in position S2, even though these suffixes are of receding productivity in Choguita Rarámuri. These suffixes not only do not display ME, but are being *replaced* by the productive causative suffix *–ti*, as exemplified in (47).

47) Replacement of transitive *–na* with causative *–ti*

	Attested	*Unattested (expected)*	*Gloss*
a.	suku-bá-**ti**-sa	*suku-bá-**na**-sa	'warm.body-Inch-Caus(/*-Tr)-Cond' /'caliente.cuerpo-Inch-Caus-Cond'
b.	aka-bá-**ti**-ma	*aka-bá-**na**-ma	'sweet-Inch-Caus(/*-Tr)-Fut:sg'/ 'ser.dulce-Inch-Caus-Fut:sg'
c.	čoko-bá-**ti**-ma	*čoko-bá-**na**-ma	'sour-Inch-Caus(/*-Tr)-Fut:sg'/ 'ser.asedo-Caus-Fut:sg'
d.	čipu-bá-**ti**-ma	*čipu-bá-**na**-ma	'bitter-Inch-Caus(/*-Tr)-Fut:sg'/ 'ser.amargo-Inch-Caus-Fut:sg'

The verb roots exemplified in (47) encode change-of-state predicates, the semantically defined class of predicates where inchoativity and transitivization is productively encoded through the suffixes in question in other varieties of Rarámuri (cf. Chapter 3, §3.3.3; see also Brambila (1953) about Norogachi Rarámuri and Caballero (2003) about Ojachichi Rarámuri). These forms raise an interesting question about Choguita Rarámuri ME patterns: why does morphological opacity not lead to replacement in every case? Why do words retain the opaque markers in pluractional, applicative and causative stems, and not follow the pattern of words marked with transitive suffixes? I conjecture that, while unproductive, these formatives are fairly segmentable, like the plural prefix *na-*. Their replacement follows from their identification as accessory to the verbal stem and the availability of a more productive marker (causative suffix *–ti*).

We have, then, that in each of the attested patterns of ME in Choguita Rarámuri, there is a formally distinct exponent available for each category which is more morphological transparent than the opaque marker. In the cases where there is no ME, morphological opacity brought about by the lack of productivity of the markers involved cannot be resolved as in the attested cases of ME since there are no morphological means of making these forms morphologically transparent. ME is not a property arbitrarily assigned to markers in the Syntactic Stem and Inner Stem. There are synchronically active, well-formedness constraints on output forms that rule ME in other subconstituents of the verb.

5.4.3 Summary

I have proposed that ME, as attested in Choguita Rarámuri, can also have morphophonological sources and not only morphosyntactic ones. A high degree of morphophonological fusion and receding productivity renders certain key morphological junctures opaque. The availability of multiple suffixes or allomorphs for certain opaque markers (argument-structure changing morphemes in the Syntactic Stem and Inner Stem) allows for a phonotactically sound repair for this morphological opacity. In the proposed LPM/OCM OT analysis, different markedness constraints at different morphological levels bring about a sharp morphological juncture through a heterosyllabic consonant cluster. Reduction and doubling yield a junctural sequence, a posttonic heterosyllabic cluster, that creates a sharp boundary that is never attested intra-morphemically.[79]

This juncture is between the Stem and the rest of the inflected verb. Recall from Chapter 3 and 4 that stress-shifting suffixes form part of the stressable domain (they are prosodically cohering), while stress-neutral suffixes are outside this stressable domain (they are prosodically non-cohering) and never stressed. Given the initial three-syllable stress window that is active in the language, the lack of productive prefixation, and the general prosodic size of verbal roots (disyllabic or trisyllabic), the Stem (the stressable domain) constitutes an important prosodic unit within the word. The doubling of causatives and applicatives in Choguita Rarámuri provide a cue for this relevant constituent. Phonological cues are critical in enhancing a morphological juncture in a

[79] According to Hay & Baayen (2005:345), "[j]unctural phonotactics concern the probability of the sequence of sounds spanning the juncture between its parts. Low probability, ill-formed, junctural sequences create sharper boundaries and more salient parts (eg. i**nh**umane – (**nh**) never occurs in simple words in English). Words with higher probability phonotactics across the morphological boundary (e.g. i**ns**incere; cf. ti**ns**el) have less salient parts."

morphologically complex language like Choguita Rarámuri, which displays a high degree of morphophonological fusion and a relatively small phonological inventory. For discussion of the role of prominence as phonological cue in morphologically complex languages, see Rice (2005).[80]

5.5 Conclusions and possible further implications

The broader generalization that can be drawn from the Choguita Rarámuri case is that the phenomenon of ME requires a new typology. In this new typology, we will find a subtype of redundant morphological marking with the following characteristics: i) one of the exponents will present a certain degree of structural opacity (i.e., a strong morphological juncture); ii) a second exponent will provide a clear cue to the morphological structure through optimal morpho-prosodic alignment with a syllable rhyme and a clear contrast with respect to the opaque marker; iii) there will be no

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[80] One aspect of the Choguita Rarámuri ME patterns that is left unexplained in this thesis is the fact that these patterns, with the exception of the pluractional, stand in free variation with forms with no ME. Since forms displaying ME co-exist freely with forms with no ME, we might consider this phenomenon as a first step in a historical process where loss of constrast leads to ME. This is what has been proposed as the source of ME in Skou (Donahue 1999). In Skou, a language of New Guinea, a series of sound changes (loss of voicing and other contrasts) led to consonant cluster simplifications. These changes affected agreement prefixes, leading to loss of contrast in a large number of verb forms in paradigms. "These factors would appear to be sufficient to bring about a second process of cliticization onto the verb in order to preserve contrastive verbal agreement" (Donohue 2003:493). Similar developments have been proposed for the ME patterns of Limbu, a Kiranti language (van Driem 1997, Anderson 2001). From a diachronic point of view, Choguita Rarámuri might be thought of a case of reanalysis of a reduced exponent as part of the stem which undergoes further suffixation:

			Posttonic V deletion:		*Reanalysis and further suffixation:*
a.	mé-**ri-**ma	→	mé-**r**-ma	→	mé-**r]**-**ti**-ma
b.	ra'ičá-**ri**-ma	→	ra'ičá-**r**-ma	→	ra'ičá-**r]**-**ti**-ma
c.	sú-**ni**-ma	→	sú-**n**-ma	→	sú-**n]**-**ki**-ma
d.	boto-bú-**ni**-ri	→	boto-bú-**n**-ri	→	boto-bú-**n]**-**ki**-ri

restrictions as to the types of morphological categories undergoing the process. Further research is required to test these predictions cross-linguistically.[81]

The role of syllable structure, phonotactics and the frequency and regularity of certain sequences for ease of parsing has been addressed in research concerned with learning word and morpheme segmentation (Harrington, Watson & Cooper 1998, Cairns, Shillcock, Chater & Levy 1994; Brent 1999, inter alia; cf. Albright 2004 for discussion and more references). Phonotactics and frequency/probability of junctures are also addressed in research concerned with parsing as a synchronic constraint in grammar (Hay 2003, Hay & Plag 2004; see also Broselow 2003 and Albright 2004). It is suggested here that a phenomenon like ME might also be a morphophonological resource that speakers use in parsing complex morphology.

Finally, this case raises the more general issue of the status of derivational morphology for inferential-realizational models of morphology, which are founded on the assumption that inflection and derivation belong to different components of the grammar, and thus differ in their formal properties (the 'Split Morphology Hypothesis' (Matthews 1972, Anderson 1982, 1992). So far, ME has been only described for inflection (particularly agreement), but not for derivation. In this chapter, I have proposed that ME can be morphologically conditioned and not constrained to inflection, constituting a possible example of how inflectional and derivational morphology do not differ drastically as to their formal morphological properties.

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[81] Good starting points might be Turkish (Lewis (1967)) and Evenki (Nedjalkov (1997)). These languages display superfluous, optional ME of derivational morphology, where one of the exponents is phonologically reduced and the other exponent is a longer allomorph.

Chapter 6: Morphological and phonological conditions on allomorph selection

6.1 Introduction

In the preceding chapter, we have seen how different phenomena in Choguita Rarámuri reveal a complex interplay between phonological and morphological constraints operating in different morphological subconstituents of the word. In this chapter I address a third phenomenon of the Choguita Rarámuri phonology-morphology interface, namely the phonological and morphological conditions governing allomorph selection. I propose that the patterns of allomorph distribution in this language stem from the fact that different allomorphs are added in different morphophonological subconstituents of the word. This case is typologically and theoretically highly relevant, as it provides an example of allomorphy which is outwardly conditioned, instantiating a pattern predicted not to occur in the subcategorization approach to the phonology-morphology interface (Lieber 1980; Kiparsky 1982, 1996; Selkirk 1982; Orgun 1996; Yu 2003, 2007; Paster 2005, 2006, to appear; Bye to appear).

In Choguita Rarámuri there are four disyllabic suffixes which have monosyllabic (or 'short') allomorphs, corresponding to the first syllable of the disyllabic ('long') allomorphs. While related in a highly transparent fashion, the alternation is morpholexical, as there is no general process in the language that can derive the two surface shapes to a single underlying representation. The distribution of the allomorphs is, nonetheless, not arbitrary. Long allomorphs are added in a final stem domain, aligned with the right edge of the prosodic word, while short allomorphs are selected in inner domains that require further suffixation in order to become well-formed words. While there is an alternative monostratal analysis of allomorph selection where allomorph distribution would be driven by global output optimization, the analysis defended here relates allomorph selection to stress assignment, the distribution of posttonic syncope and the conditions governing multiple exponence in this language (cf. Chapter 5 (§5.4.1)).

Allomorph selection, with its right-edge conditioning restriction, provides a relevant complement to the strong left-edge prosodic restriction. As we have seen in Chapter 4, this language possesses a three-syllable stress window, which is inviolable and which motivates alternations such as syllable truncation. As will be argued in this chapter, allomorph selection is partly conditioned by a right-edge restriction that, while more flexible than the stress window, effectively constraints the possible word types in this language.

This chapter is structured as follows. In §6.2, I show that both long and short allomorphs may undergo general vowel reduction and deletion processes which may alter their surface properties. There are, however, only two types of morpholexically determined allomorphs, namely long (disyllabic) allomorphs and short (monosyllabic) allomorphs. In §6.3, I address the factors involved in determining the distribution of short and long allomorphs. In §6.4, I discuss the criteria by which long and short allomorphs can be characterized as suppletive allomorphy and not the product of a general morphophonological rule. In §6.5, I present a stratal OT analysis of allomorph selection, where the outward conditioning of allomorphy is formalized through morpho-prosodic alignment constraints. These alignment constraints, together with general phonotactic constraints, yield the attested results. In this section I also discuss an alternative monostratal analysis and its drawbacks. In §6.6, I discuss the implications this case presents for two competing models of the phonology-morphology interface, the 'output optimization' (P >> M) approach (McCarthy & Prince 1993a, 1993b, Kager 1996; Mascaró 1996; Rubach & Booij 2001, inter alia) and the subcategorization approach. Finally, §6.7 summarizes and concludes the chapter.

6.2 Formal properties of long and short allomorphs

Choguita Rarámuri has four disyllabic suffixes, each of which is transparently related to an independent verb.[82] These disyllabic suffixes and corresponding independent verbs are given in (1).

[82] There are two other disyallbic suffixes, future singular –*méa* and participial -*ame*. Future singular –*méa* (with a monosyllabic, unstressed allomorph –*ma*) is not related to a synchronically active independent verb, but is derived from an independent verb as well. As mentioned in Chapter 2 (footnote (52)), the suffix –*méa* derives from PUA verb **méla*, 'walk, go' (Leopoldo Valiñas, p.c.).

1) Choguita Rarámuri disyllabic suffixes

Suffixes		*Independent verbs*	
-simi	Associated motion	simí	'go (sg.)'/'ir (sg.)'
-nura	Indirect Causative	nuré	'oblige, force'/'mandar, obligar'
-čane	Auditory evidential	(a)čane	'say, make noise'/ 'decir, hacer ruido'
-nale	Desiderative	nakí	'want'/'querer'

These disyllabic ('long') suffixes all have 'short' allomorphs that are one syllable shorter, matching the first syllable of the long allomorphs. These correspondences are illustrated in (2).

2) Long and short allomophs

	Long allomorphs	*Short allomorphs*
Desiderative	-nale	-na
Associated Motion	-simi	-si
Auditory evidential	-čane	-ča
Indirect Causative	-nura	-na

While long and short allomorphs are transparently related, these allomorphs are suppletive (i.e., listed in the lexicon), and not the product of a general morphophonological rule deriving two surface shapes from one underlying form. The criteria behind this characterization is discussed in §6.4. Examples of corresponding long and short allomorphs are provided in (3).

3) Long and short allomorphs

	Forms	Gloss	Translation
	Desiderative		
a.	ko'**-nári**-sa	'eat**-Desid**-Cond'	'If she wanted to eat'/ 'Si quisiera comer' [SF 06 EDCW31/Elicit]
b.	pičí**-na**-mi	'sweep**-Desid**-Irr:sg'	'He might want to sweep'/'A lo mejor va a querer barrer' [LEL 06 EDCW141/Elic]
	Evidential		
c.	páki-**čani**	'brew-**Ev**'	'It sounds like brewing'/ 'Se oye que cuelan (café)' [SF 08 1:147/Elicit]
d.	atís-**ča**-nar-a	'sneeze-**Ev**-Desid-Prog'	'It sounds like they want to sneeze'/'Se oye que quieren estornudar' [SF 08 1:122/Elicit]
	Associated Motion		
e.	nári-**simi**	'ask-**Mot**'	'They go along asking'/'Van preguntando' [SF 08 1:148/Elicit]
f.	nár-**si**-mo	'ask-**Mot**-Fut:sg'	'She will go along asking'/'Va a ir preguntando' [SF 08 1:148/Elicit]
	Indirect Causative		
g.	počí-ti-**nura**	'jump-Caus-**Caus:I**'	'Make her make them jump!'/ 'Mándala que los haga brincar!' [SF 08 1:133/Elicit]
h.	bené-ri-**na**	'learn-Caus-**Caus:I**'	'Make her teach!'/'Mándala a que los enseñe!' [SF 08 1:122/Elicit]

The underlying vowel qualities of the short allomorphs are identical to the underlying vowel qualities of the first syllable of the corresponding long allomorphs, with the exception of the short allomorph of Indirect Causative, *-na*.

The surface formal properties of both short and long allomorphs are predictable by general phonological rules. As we have seen in Chapter 2 (§2.3.1.2), posttonic vowels are often neutralized in height. These optional vowel reduction processes are schematized in (4).

4) Posttonic vowel reduction

a.	/e/	→ [i] in pre-tonic and posttonic syllables
b.	/a/, /o/	→ [i] in non-final, posttonic syllables
c.	/i/, /u/	→ [ə] in non-final, posttonic syllables

The examples in (5) show how these general phonological rules target both long and short allomorphs.

5) Vowel quality of long and short allomorphs

*Evidential long allomorph (/-č**a**ne/ → [-č**i**ne])*

a. rosowá-**čin**-o
cough-**Ev**-Ep
'It sounds like coughing'
'Se oye que tosen' [BF 07 rec301/Elicit]

*Evidential short allomorph (/-č**a**/ → [-č**i**])*

b. opés-**či**-nir-o
vomit-**Ev**-Desid-Ep
'It sounds like they want to throw up'
'Se oye como que quieren vomitar' [BF 07 rec300/Elicit]

*Desiderative long allomorph (/-n**a**r**e**/ → [-n**i**r**i**])*

c. elísa ku awí-si-**niri**
Elisa Rev dance-Mot-**Desid**
'Elisa wants to go along dancing'
'Elisa quiere irse bailando' [SF 08 1:75/Elicit]

*Desiderative short allomorph (/-n**a**/ → [-n**i**])*

d. ba'arí á nará-**ni**-ma ré
tomorrow Aff cry-**Desid**-Fut:sg Dub
'Tomorrow they will want to cry'
'Mañana van a querer llorar' [SF 08 1:125/Elicit]

*Indirect Causative long allomorph (/-n**u**ra/ → [-nəra])*
e. mo'o-bú**-nəra**
go.up-Tr**-Caus:I**
'Send them to go up!'
'Mándalos que suban!' [LEL 06 ENIC(37)/Elicit]

The vowel of the Indirect Causative short allomorph does not undergo any height neutralization, since it is always in word-final position. As explicitly stated in the rule in (4b), word-final front vowels are exempt from this height neutralization process.

Long and short allomorphs are also susceptible to a general process of posttonic vowel deletion (cf. Chapter 2, §2.3.1.2.4). This is exemplified in (6).

6) Posttonic syncope of allomorphs

Long allomorph of Desiderative (–CVCV → -CVC)
a. ko'-**nár**-ti-ma
eat-**Desid**-Caus-Fut:sg
'She will make him want to eat'
'Lo va a querer hacer comer' [SF 07 EDCW(30)/Elicit]

Short allomorph of Desiderative (-CV → -C)
b. ma=m tamí bahíi-**n-**ti-ri kahé
already=2sgN 1sgA drink-**Desid**-Caus-Pst coffee
'You already made me drink coffee'
'Ya me hiciste querer tomar café' [SF 08 1:135/Elicit]

Short allomorph of Associated Motion (-CV → -C)
c. á wikubá-**s**-čani
Aff whistle-**Mot**-Ev
'It sounds like someone is going along whistling'
'Se oye como que van chiflando' [SF 08 1:158/Elicit]

In (6a), the long allomorph of the Desiderative suffix, which is stressed, undergoes posttonic syncope. There are otherwise no examples of long allomorphs that display posttonic vowel deletion. Deletion is in fact blocked if it would result in a phonotactically illicit consonant cluster. Long and short allomorphs of the Evidential suffix, for instance, do not undergo posttonic vowel deletion, since this would generate an illicit tautosyllabic consonant cluster (cf. Chapter 2, §2.3.2.2.1). Hypothetical, unattested forms are exemplified in (7b-c) and (7e-f).

7) No posttonic vowel deletion of Evidential allomorphs

a. húm-**čan**-i
take.off:pl-**Ev**-Impf
'It sounded like they were taking off (in a race)'
'Se oía como que se arrancaban' [SF 07 1:7/Elicit]

b. *húm-**čn**-i

c. *húmi-**čn**-i

d. atís-**ča**-nare
sneeze-**Ev**-Desid
'It sounds like they want to sneeze'
'Se oye como que quieren estornudar' [SF 07 1:73/Elicit]

e. *atís-**č-n**are

f. *atísi**-č-n**are

The Indirect Causative allomorphs is not a target for posttonic vowel syncope either, since deletion does not target word-final vowels in Choguita Rarámuri (cf. §2.3.1.2.4). As exemplified in (8), the short allomorph of the Indirect Causative is always word-final, and thus exempt from posttonic deletion.

8) No posttonic vowel deletion of Indirect Causative allomorphs

a. biné-ri**-na** nuré
learn-Caus-Caus:I oblige:Imp
'Make her teach!'
'Hazla que enseñe!' [LEL 06 ENIC(44)/Elicit]

b. *biné-ri-**n**

c.	kirí-si-**na**	nuré	kiribá
	gather.quelites-Mot-**Caus:I**	oblige:Imp	quelites
	'Make them gather quelites!'		
	'Hazlos que recojan quelites!'		[SF 08 1:133/Elicit]

d. *kirí-si-**n**

There are thus only two allomorph types, a disyllabic ('long') allomorph type and a transparently related monosyllabic ('short') allomorph type. The formal properties of both long and short allomorphs are predictable from general phonological rules: allomorphs have predictable vowel qualities, and may undergo posttonic vowel deletion if no phonotactic constraints are violated. Table 30 summarizes long and short allomorphs possible surface forms in terms of syllable shape.

Table 30: Long and short allomorphs' shape

	Long allomorphs		*Short allomorphs*	
Associated Motion	*-simi*	CVCV	*-s(i)*	C(V) [posttonic syncope]
Desiderative	*-nar(e)*	CVC(V) [posttonic syncope]	*-n(a)*	C(V) [posttonic syncope]
Auditory Evidential	*-čane*	CVCV	*-ča*	CV
Indirect Causative	*-nura*	CVCV	*-na*	CV

Next, I turn to the conditions that govern the distribution of long and short allomorphs in Choguita Rarámuri.

6.3 Allomorph distribution

In this section I show how allomorph selection is not determined by the properties of the base to which allomorphs attach, but by outer morphological material. Specifically, allomorph selection is mainly conditioned by the presence or absence of latter suffixes added to the stem that contains the competing allomorphs. There are only two exceptions to this generalization. First, the long allomorph of the Desiderative suffix, a stress shifting suffix, is selected by unstressed roots (i.e., there is no stressed version of the short Desiderative allomorph /-na/). And second, both the long and short allomorphs of the Indirect Causative suffix are always word-final, their distribution largely arbitrary and subject to intra-speaker variation.

Let us first consider the evidence showing that allomorph distribution is not conditioned by the lexical, morphological or phonological properties of the bases to which they attach. As exemplified in (9), long and short allomorphs are not lexically conditioned by their bases. The same bases may add long or short allomorphs.

9) No lexical conditioning on allomorph distribution

a. opés-**čane**
vomit-**Ev**
'It sounds like somebody is throwing up'
'Se oye que vomitan' [BF 07 rec300/Elicit]

b. opés-**či**-nir-o
vomit-**Ev**-Desid-Ep
'It sounds like somebody wants to throw up'
'Se oye que quieren vomitar' [BF 07 rec300/Elicit]

c. towí we nári-**simi** bu'učími
boy Int ask-**Mot** road
'The boy goes along the road asking'
'El niño va preguntando por el camino' [SF 08 1:148/Elicit]

d.	nihé	á	nár-**si**-mo	rá
	1sgN	Aff	ask-**Mot**-Fut:sg	Cer

‘I’ll go along asking’
‘Voy a ir preguntando’ [SF 08 1:148/Elicit]

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e. porá-p-ti-**niri**=ni
cover-Rev-Refl-**Desid**=1sgN
‘I want to uncover it’
‘Lo quiero destapar’ [BF 08 1:56/Elicit]

f.	nápi	ré	porá-p-ti-**ni**-ra	ko
	Rel	Dub	cover-Rev-Refl-**Desid**-Pot	Emph

‘It seems it is about to get uncovered’
‘Como que se quiere destapar’ [BF 08 1:56/Elicit]

As mentioned above, the Desiderative is the only disyllabic suffix that is stress-shifting. When attaching to an unstressed root in the Stem level (the level of stress assignment that contains the root and the first layer of affixation, cf. Chapter 4 (§4.3.1) and Chapter 5 (§5.4.1)), the Desiderative allomorph is always long, regardless of the presence/nature of outer inflection. This is shown in (10).

10) Stressed Desiderative allomorph *–náre*

	Form	*Gloss*	
a.	rono-**nári**	‘boil-**Desid**’/ ‘hervir-Desid’	[SF 08 1:125/Elicit]
b.	koči-**nál**-si-a=ni	‘sleep-**Desid**-Mot-Prog=1sgN’/ ‘dormir-Desid-Mot-Prog=1sgN’	[BF 08 1:60/Elicit]
c.	awi-**nár**-si-ri	‘dance-**Desid**-Mot-Pst’/ ‘bailar-Desid-Mot-Pst’	[SF 08 1:75/Elicit]
d.	ko’-**nári**-mi	‘eat-**Desid**-Irr:sg’/ ‘comer-Desid-Irr:sg’	[SF 08 1:122/Elicit]
e.	rari-**náal**-ti-ma	‘buy-**Desid**-Caus-Fut:sg’/ ‘comprar-desid-Caus-Fut:sg’	[SF 08 1:123/Elicit]
f.	mo’i-**náal**-čin-i	‘go.in:pl-**Desid**-Ev-Impf’/ ‘entrar:pl-Desid-Ev-Impf’	[SF 08 1:124/Elicit]
g.	uku-**náal**-čani	‘rain-**Desid**-Ev’/ ‘llover-Desid-Ev’	[SF 08 1:125/Elicit]

The distribution of long and short allomorphs is otherwise not dependent on the stress properties of the base to which they attach. This is exemplified in (11), where bases with the same prosodic make up take both long and short unstressed allomorphs (stressed syllables are underlined).

11) No inside-out prosodic conditioning on allomorph distribution

	Form	*Gloss*	
	Immediately posttonic		
a.	ubá-**niri**	‘bathe-**Desid**’/‘bañar-Desid’	[BF 06 EDCW29/Elicit]
b.	sú-**ni**-ra	‘sew-**Desid**-Rep’/ ‘coser-desid-Rep’	[LEL 06 EDCW126/Elic]
c.	wikará-**čane**	‘sing-**Ev**’/‘cantar-Ev’	[SF 07 1:7/Elicit]
d.	atís-**ča**-nar-a	‘sneeze-**Ev**-Desid-Prog’/ ‘estornudar-Ev-Desid-Prog’	[SF 08 1:122/Elicit]
e.	ayá-**simi**	‘go.in.group-**Mot**’/ ‘ir.grupo-Mot’	[BF 06 E30A/Elicit]
f.	wikará-**s**-ka	‘sing-**Mot**-Ger’/ ‘cantar-Mot-Ger’	[BF 06 EJP(10)/Elicit]
g.	ra’né-**nura**	‘fire.gun-**Caus:I**’/ ‘disparar-Caus:I’	[SF 08 1:155/Elicit]
	Not immediately posttonic		
h.	ko’á-r-ti-**nir**-a	‘eat-Caus-Caus-**Desid**-Prog’/ ‘comer-Caus-Caus-Desid-Prog’	[SF 06 EDCW(89)/Elicit]
i.	sú-r-ti-**ni**-ma	‘sew-Caus-Caus-**Desid**-Fut:sg’/ ‘coser-Caus-Caus-Desid-Fut:sg’	[BF 06 5:138/Elicit]
j.	rarahíp-ti-**čini**	‘run.ball.race-Caus-**Ev**’/ ‘correr.carrera.bola-Caus-Ev’	[SF 08 1:127/Elicit]
k.	kéči-**ča**-niri	‘chew-**Ev**-Desid’/ ‘masticar-Ev-Desid’	[SF 08 1:146/Elicit]
l.	kéči-**simi**	‘chew-**Mot**’/‘masticar-Mot’	[SF 08 1:145/Elicit]
m.	porá-p-ti-**si**-o	‘cover-Rev-Refl-**Mot**-Ep’/ ‘tapar=Rev-Refl-Mot-Ep’	[BF 08 1:56/Elicit]
n.	húmsi-**nura**	‘take.off:pl-**Caus:I**’/ ‘arrancarse:pl-Caus:I’	[SF 08 1:155/Elicit]
o.	á-si-**na**	‘look.for-Mot-**Caus:I**’/ ‘buscar-Mot-Caus:I’	[SF 08 1:145/Elicit]

As we can see in (11), long and short allomorphs are attested in immediately pos-tonic position (11a-g) or later in the word (11h-p). These forms show that both long and short allomorphs attach to roots or to morphologically complex bases. There are thus no restrictions as to which bases these allomorphs can attach.

Allomorph distribution is, however, not arbitrary. An examination of morphologically complex verbs with long and short allomorphs in a small sample (443 forms total) reveals a pattern of allomorph distribution correlated with the properties of the *right* edge of the word: short allomorphs appear almost exclusively in forms where they are followed by further suffixes. This is exemplified in (12).

12) Short allomorph distribution

	Form	*Gloss*	
a.	ačé-**ni**-sa	'put.in-**Desid**-Cond'/ 'echar-desid-Cond'	[SF 07 romara/Text]
b.	naharáp-**ni**-ma	'wrestle-**Desid**-Fut:sg'/ 'luchar-Desid-Fut:sg'	[BF 07 1:152/Elicit
c.	rihibá-**n**-sa	'rihibára-**Desid**-Cond'	[SF 07 romara/Text]
d.	wikará-**n**-čane	'sing-**Desid**-Ev'/ 'cantar-desid-Ev'	[SF 07 1:9/Elicit]
e.	ri'i-bú-r-**si**-ri	'stone-gather-Caus-**Mot**-Pst'/ 'piedras-juntar-caus-Mot-Prog'	[SF 07 2:63/Elicit]
f.	tičí-k-**si**-ma	'bark-Caus-**Mot**-Pst'/ 'ladrar-Caus-Mot-Pst'	[SF 07 2:67/Elicit]
g.	a'wá-**s**-čin-a	'swallow-**Mot**-Ev-Prog'/ 'tragar-Mot-Ev-Prog'	[SF 07 2:74/Elicit]
h.	siná-**s**-čin-a	'scream-**Mot**-Ev-Prog'/ 'gritar-Mot-Ev-Prog'	[SF 07 2:47/Elicit]
i.	atís-**ča**-nar-a	'sneeze-**Ev**-Desid-Prog'/ 'estornudar-Ev-Desid-Prog'	[SF 08 1:122/Elicit]
j.	kéchi-**ča**-niri	'chew-**Ev**-Desid'/ 'masticar-Ev-Desid'	[SF 08 1:146/Elicit]
k.	opés-**ča**-nar-o	'vomit-**Ev**-Desid-Ep'/ 'vomitar-Ev-Desid-Ep'	[BF 07 rec300/Elicit]
l.	paraér-**ča**-nar-o	'dance.paraéri-**Ev**-Desid-Ep'/ 'bailar.paraéri-Ev-Desid-Ep'	[BF 07 1:182/Elicit]

In contrast, long allomorphs largely occur closing the words in which they occur. This is exemplified in (13).

13) Long allomorph distribution

	Form	*Gloss*	
a.	sú-r**-niri**	‘sew-Caus**-Desid**’/ ‘coser-Caus-Desid’	[BF 06 EDCW(52)/Elicit]
b.	porá-p-ti-**niri**	‘cover-Rev-Refl-**Desid**’ ‘tapar-Rev-Refl-Desid’	[BF 08 1:56/Elicit]
c.	kačí-si-**niri**	‘spit-Mot-**Desid**’/ ‘escupir-Mot-Desid’	[SF 08 1:75/Elicit]
d.	awí-r-si-**niri**	‘dance-Caus-Mot-**Desid**’/ ‘bailar-Caus-Mot-Desid’	[SF 08 1:122/Elicit]
e.	korú-ti**-simi**	‘feel.like.eating-Caus-**Mot**’/ ‘querer.comer-Caus-Mot’	[SF 08 1:71/Elicit]
f.	nári-**simi**	‘ask-Mot’/‘preguntar-Mot’	[SF 08 1:148/Elicit]
g.	sa’pá-r**-simi**	‘flesh-Vblz**-Mot**’/ ‘carne-Vblz-Mot’	[LEL 07 MN/Elicit]
h.	ayá**-simi**	‘go.in.group**-Mot**’/ ‘ir.grupo.Mot’	[BF 07 E30A/Elicit]
i.	toré**-čani**	‘cackle-**Ev**’/‘cacarear-Ev’	[SF 07 1:7/Elicit]
j.	roróo-n-**čani**	‘snore-Desid-**Ev**’/ ‘roncar-desid-Ev’	[SF 08 1:125/Elicit]
k.	remé-n-**čani**	‘make.tortillas-Appl-**Ev**’/ ‘hacer.tortillas-Appl-Ev’	[SF 08 1:128/Elicit]
l.	ubá-s-**čani**	‘bathe-Mot-Ev’/ ‘bañarse-Mot-Ev’	[SF 08 1:150/Elicit]

The Indirect Causative suffix, however, is never followed by any other morphology, by virtue of its outer position in the morphological structure of the verb (position S11, cf. Chapter 3 (§3.5)), and by its incompatibility with any inflectional marking. As shown in (14), both long and short allomorphs of this suffix are closing suffixes in the words they occur.

14) Indirect Causative allomorph's distribution

	Form	*Gloss*	
a.	mo'o-bú**-nura**	'go.up-Tr**-Caus:I**'/ 'subir-Tr-Caus:I'	[LEL 06 ENIC(37)/Elicit]
b.	simí**-nura**	'go:sg**-Caus:I**'/'ir:sg-Caus:I'	[BF 06 EJP(4)/Elicit]
c.	čiwa-ná**-nura**	'tear-Tr**-Caus:I**'/ 'trozar-Tr-Caus:I'	[LEL 06 ENIC(39)/Elicit]
d.	pochí-ti-**nura**	'jump-Caus-**Caus:I**'/ 'brincar-Caus-Caus:I'	[SF 08 1:133/Elicit]
e.	rimé-ni-**nura**	'make.tortillas-Appl-**Caus:I**'/ 'hacer.tortillas-Appl-Caus:I'	[SF 08 1:134/Elicit]
f.	ra.ta.-bá.-či.**-na**	'heat-Inch-Tr**-Caus:I**'/ 'calentar-Inch-Tr-Caus:I'	[LEL 06 ENIC(53)/Elicit]
g.	bi.né.-ri.**-na**	'learn-Caus-**Caus:I**'/ 'aprender-Caus-Caus:I'	[LEL 06 ENIC(44)/Elicit]
h.	kirí-si-**na**	'gather.quelites-Mot-**Caus:I**'/ 'juntar.quelites-Mot-Caus:I'	[SF 08 1:133/Elicit]
i.	bené-r-si-**na**	'learn-Caus-Mot-**Caus:I**'/ 'aprender-Caus-Mot-Caus:I'	[SF 08 1:133/Elicit]
j.	i'né-si-**na**	'look-Mot-**Caus:I**'/ 'mirar-Mot-Caus:I'	[SF 08 1:134/Elicit]

Furthermore, the long allomorphs of the Evidential and the Desiderative suffixes can be followed by a set of inflectional vocalic (onsetless) suffixes (the Progressive *–a* suffix (15a-b), the Imperfective *–i* suffix (15c-d) and the Epistemic *–o* suffix (15e-f)), which induce deletion of final vowel of the second syllable of the long allomorph.

15) V deletion triggered by vocalic suffixes

a. nará-t**-čan**-a-či
/nará-ti**-čane**-a-či/
cry-Caus**-Ev**-Prog-Temp
'When it sounds like they are making her cry...'
'Cuando se oye que lo hacen llorar...' [SF 07 1:9/Elicit]

b. sutubéči**-nar**-a
/sutubéči**-nale**-a/
trip**-Desid**-Prog
'It is imminent that he will trip'
'Se está queriendo tropezar' [BF 07 rec300/Elicit]

c. nará-t**-čan**-i
/nará-ti-**čane-**i/
'cry-Caus**-Ev**-Impf'
'It sounded like they were making someone cry'
'Se oía como que hacían llorar a alguien' [SF 07 1:9/Elicit]

d. kačí-si-**nir**-i
/kačí-si-**nale**-i/
spit-Mot-**Desid**-Impf
'He was feeling like going along spiting'
'Tenía ganas de ir escupiendo' [SF 08 1:75/Elicit]

e. ko'á-r-ti**-nir**-o
/ko'á-ri-ti**-nale**-o/
eat-Caus-Caus-**Desid**-Ep
'She wants to make them eat'
'Quiere hacerlos comer' [BF 06 EDCW/Elicit]

f. to-nál-**čin**-o
/to-nále-**čane**-o/
take-Desid-Ev-Ep
'It sounds like they want to take it'
'Se oye como que se lo quieren llevar' [BF 06 5:148-150/Elicit]

In each of these examples, the final inflectional vocalic suffix deletes the final vowel of the preceding long allomorph, replacing the nucleus of the allomorph's second syllable. These final inflectional suffixes do not induce deletion of all long allomorphs, though. As exemplified in (16), vocalic suffixes are combined with the Associated Motion short allomorph, resulting in vowel hiatus.

16) No V deletion with Associated Motion

a. koči-nál**-si-a**=ni iná-ri
sleep-Desid-**Mot-Prog**=1sgN go.sg-Pst
'I went along wanting to sleep'
'Quise irme durmiendo' [BF 08 1:60/Elicit]

b. *koči-nál**-sim-a**

c. porá-p-ti-**si-o**
cover-Rev-Refl**-Mot-Ep**
'(The container) is uncovering'
'Se va destapando (la barrica)' [BF 08 1:56/Elicit]

d. *porá-p-ti-**sim-o**

When speakers were prompted with the constructed examples in (16c) and (16d), they interpreted these forms with a different morphological composition (specifically, a short allomorph of the Associated Motion followed by the Future Singular suffix *–ma* (~ *-mo*)).

Short allomorphs are, on the other hand, all impervious to the deletion imposed by these suffixes. Consider the hypothetical forms in (17). Each form in (15) is exemplified with a short allomorph in (17a-f), and the example forms in (16) are compared with hypothetical forms in (17g-h).

17) No V deletion of short allomorphs

	Forms	*Gloss*
a.	*nará-t-**č-a**-či	'cry-Caus-**Ev-Prog**-Loc'
b.	*sutubéči-**n-a**	'trip-**Desid-Prog**'
c.	*nará-t-**č-i**	'cry-Caus-**Ev-Impf**'
d.	*kačí-si-**n-i**	'spit-Mot-**Desid-Impf**'
e.	*ko'á-r-ti-**n-o**	'eat-Caus-Caus-**Desid-Ep**'
f.	*to-nál-**č-o**	'take-Desid-**Ev-Ep**'
g.	*koči-nál-**s-a**=ni	'sleep-Desid-**Mot-Prog**=1sgN'
h.	*porá-p-ti-**s-o**	'cover-Rev-Refl**-Mot-Ep**'

In sum, the distribution of unstressed long and short allomorphs is largely predictable: except for the Indirect Causative suffix, short allomorphs are conditioned by the presence of outer morphological material, and long allomorphs are generally word final, unless they are followed by a replacive suffix that induces deletion of their final vowel. Exceptions to the vowel deletion process induced by vocalic suffixes can be explained as resulting from an anti-homophony constraint.

These generalizations are also apparent in forms containing more than one suffix with competing allomorphs. Any logically possible combination of allomorphs is attested. It is important to note that the linear placement of suffixes is manipulated by a mechanism in the grammar (addressed in Chapter 7) which is separate from the mechanism involved in allomorph selection. The shape of suffixes and the order in which they occur are independently determined. Consider first forms that involve a short-long allomorph sequence. In this case, the short allomorph is followed by another exponent, and the long allomorph is either word final (18f-h) or followed by a replacive vowel suffix (18a-e).

18) Short-Long allomorph sequences

a.	bahí**-n-čin**-a	'drink-**Desid-Ev**-Prog'/ 'tomar-Desid-Ev-Prog'	[SF 07 1:8/Elicit]
b.	opés**-či-nir-**o	'vomit-**Ev-Desid**-Ep'/ 'vomitar-Ev-Desid-Ep'	[BF 07 rec300/Elicit]
c.	wikuwá**-s-čin**-a	'whistle**-Mot-Ev**-Prog'/ 'chiflar-Mot-Ev-Prog'	[SF 07 2:74/Elicit]
d.	paraér**-či-nir-**o	'dance.paraéri-**Ev-Desid**-Ep'/ 'bailar.paraéri-Ev-Desid-Ep'	[SF 07 1:182/Elicit]
e.	atís-**ča-nar**-a	'sneeze-**Ev-Desid**-Prog'/ 'estornudar-Ev-Desid-Prog'	[SF 08 1:122/Elicit]

f.	ubá**-s-niri**	**‘**bathe-**Mot-Desid**’/ ‘bañarse-Mot-Desid’	[SF 06 EDCW(30)/Elicit]
g.	kačí-**si-niri**	‘spit-**Mot-Desid**’/ ‘escupir-Mot-Desid’	[SF 08 1:75/Elicit]
h.	simá**-s-nura**	‘go:sg-**Mot-Caus:I’**/ ‘ir:sg-Mot-Caus:I’	[LEL 06 EIC(27)/Elicit]

Short and long allomorphs of different suffixes do not form fixed ‘portmanteux’ sequences. All disyllabic suffixes, with the exception of the Indirect Causative suffix, can be variably ordered (e.g., Desiderative and Evidential in (18a) and (18e)). The prediction is that the inner allomorph will be short and the outer allomorph will be long, if not followed by further suffixes. If a base containing two relevant allomorphs is further marked by an inflectional morpheme, then we expect a short-short allomorph sequence. This prediction is borne out, as shown in (19a-e), with the exception of forms containing a short allomorph of the Indirect Causative (19f-h), which is always word final and not followed by any inflectional suffixes.

19) Short-short allomorph sequences

	Form	*Gloss*	
a.	isíi-**n-si**-a	‘urinate-**Desid-Mot**-Prog’/ ‘orniar-Desid-Mot-Prog’	[BF 08 1:61/Elicit]
b.	jór-**si-ni**-la	‘be.angry-**Mot-Desid**-Rep’/ ‘estar.enojado-Mot-Desid-Rep’	[SF 08 1:72/Elicit]
c.	pák-**si-ni**-ma	‘brew-**Mot-Desid**-Fut:sg’/ ‘colar-Mot-Desid-Fut:sg’	[SF 08 1:147/Elicit]
d.	pák-**si-ni**-mi	‘brew-Mot-**Desid-Irr:sg**’/ ‘colar-Mot-Desid-Irr:sg’	[SF 08 1:147/Elicit]
e.	ičí**-n-si**-ma	‘sow-**Desid-Mot**-Fut:sg’/ ‘sembrar-Desid-Mot-Fut:sg’	[LEL 06 EDCW123/Elic]
f.	kirí-**si-na**	‘gather.quelites-**Mot-Caus:I**’/ ‘juntar.quelites-Mot-Caus:I’	[SF 08 1:133/Elicit]

g.	i’né-**si-na**	‘look-**Mot-Caus:I**’/ ‘mirar-Mot-Caus:I’	[SF 08 1:134/Elicit]
h.	bené-r-**si-na**	‘learn-Caus-**Mot-Caus:I**’/ ‘aprender-Caus-Mot-Caus:I’	[SF 08 1:133/Elicit]

Finally, we have seen that the Desiderative suffix has only one stressed allomorph, disyllabic *–náre*. This stressed allomorph can be combined with both short (20a-d) and long allomorphs (20e-h).

20) Long allomorph *–nare* plus long and short allomorphs

	Form	*Gloss*	
a.	koči-**nál-si**-a	‘sleep-**Desid-Mot**-Prog’/ ‘dormir-Desid-Mot-Prog’	[BF 08 1:60/Elicit]
b.	awi-**nár-si**-ri	‘dance-**Desid-Mot**-Pst’/ ‘bailar-Desid-Mot-Pst’	[SF 08 1:75/Elicit]
c.	ko’-**nári-si**-mi	‘eat-**Desid-Mot**-Irr:sg’/ ‘comer-Desid-Mot-Irr:sg’	[SF 08 1:122/Elicit]
d.	ko’**-nári-si**-o	‘eat-**Desid-Mot**-Ep’/ ‘comer-Desid-Mot-Ep’	[BF 06 EDCW69/Elicit]
e.	ko’-**nál-čani**	‘eat-**Desid-Ev**’/ ‘comer-Desid-Ev’	[SF 08 1:124/Elicit]
f.	mo’i-**náal-čin**-i	‘go.in-**Desid-Ev**-Impf’/ ‘entrar-Desid-Ev-Impf’	[SF 08 1:124/Elicit]
g.	rono-**náal-čani**	‘boil-**Desid-Ev**’/ ‘hervir-desid-Ev’	[SF 08 1:125/Elicit]
h.	uku-**náal-čani**	‘rain-**Desid-Ev**’/ ‘llover-desid-Ev’	[SF 08 1:125/Elicit]

In these cases, then, the choice of long or short allomorph after the stressed Desiderative allomorph will depend on the generalizations outlined above. Specifically, short allomorphs are selected when there are outer inflectional suffixes.

So far I have stated the right-edge effect on allomorph selection in morphological terms, but we could interpret this restriction *prosodically*: short allomorphs are found when multiple suffixes contribute multiple unparsed syllables to the posttonic portion of the stem. As discussed in Chapter 2 (§2.3.1), there is no audible secondary stress in Choguita Rarámuri. Allomorph distribution could thus be proposed to optimize words by reducing the number of unparsed syllables in the prosodic word. Consider, for instance, the forms in (21), which include attested forms containing a short allomorph, immediately followed by an abstract, hypothetical form (in curly brackets) containing the same sequence of morphemes, but replacing the short allomorph with its long counterpart. Attested forms have two posttonic syllables, while the abstract forms with a corresponding long allomorph would have three or four posttonic syllables.

21) Correspondence between forms with short and long allomorphs

	Forms	*Gloss*	*Posttonic syllables*	
a.	pičí.-**ni**.-mi	'sweep-Desid-Irr:sg'	2	[LEL 06 EDCW141/Elici]
b.	{pičí.-**na.re**.-mi}	'sweep-Desid-Irr:sg'/ 'barrer-Desid-Irr:sg'	3	
c.	ra.'amá.-**ni**.-ra	'give.avice-Desid-Rep'	2	[BF 07 EVS47/Elicit]
d.	{ra'amá.-**na.re**.-ra}	'give.advice-Desid-Rep'/ 'dar.consejo-Desid-Rep'	3	
e.	rosowá-**n**.-či.n-o	'cough-Desid-Ev-Ep'	2	[BF 07 rec301/Elicit]
f.	{rosowá.-**na.re**.-ča.n-o}	'cough-Desid-Ev-Ep'/ 'toser-Desid-Ev-Ep'	4	
g.	sú-**s**.-na.ri	'sew-Mot-Desid'	2	[BF 06 EDCW70/Elicit]
h.	{sú.-**si.mi**-na.re}	'sew-Mot-Desid'/ 'coser-Mot-Desid'	4	
i.	basarów.-**ni**.-ma	'stroll-Desid-Fut:sg'	2	[SF 07 1:150/Elicit]
j.	{basarów.-**na.re**.-ma}	'stroll-Desid-Fut:sg'/ 'pasear-Desid-Fut:sg'	3	
k.	tičí-k.-**si**.-ma	'comb-Appl-Mot-Fut:sg'	2	[SF 07 2:67-69/Elicit]
l.	{tičí.-ki.-**si.mi**.-ma}	'comb-Appl-Mot-Fut:sg' 'peinarse-Appl-Mot-Fut:sg'	4	

The comparison between these attested forms and their hypothetical competing forms would suggest that allomorph selection is driven by surface constraints on the prosodic size of the posttonic portion of the stem. The conditioning environment for allomorph selection would be rendered opaque by allomorph selection itself.

However, we would not expect to get the short-long allomorph sequences exemplified in (18): if the constraint driving allomorph selection is a ban on unparsed syllables (Parse-σ), we would expect that short allomorphs will always be selected. Other phonotactic and morphological constraints would have to outrank any prosodic well-formedness constraints in order to explain why forms with three (or more) surface posttonic syllables, while not frequent, are nonetheless attested in Choguita Rarámuri. These forms are exemplified in (22).

22) Forms with three posttonic syllables

a. atís-ča-nar-a
sneeze-Ev-Desid-Prog
'It sounds like they want to sneeze'
'Se oye como que quieren estornudar' [SF 08 1:122/Elicit]

b. opés-či-nir-o
vomit-Ev-Desid-Ep
'It sounds like they want to throw up'
'Se oye como que quieren vomitar' [BF 07 rec300/Elicit]

c. porá-p-ti-niri
cover-Rev-Refl-Desid
'I want to uncover it'
'Lo quiero destapar' [BF 08 1:56/Elicit]

d. rarahíp-ti-čini
run.ball.race-Caus-Ev
'It sounds like they are making them race'
'Se oye que los están haciendo correr (rarahípa)' [SF 08 1:127/Elicit]

e. awí-r-si-niri
dance-Caus-Mot-Desid
'They want to go along making them dance'
'Quieren ir haciéndolos bailar' [SF 08 1:122/Elicit]

I argue that the right-edge restriction in Choguita Rarámuri is best characterized morphologically, since any possible prosodic well-formedness constraint has a very limited effect in determining allomorph selection. Next, I address the question of the nature of the alternation.

6.4 Suppletive allomorphy or morphophonology?

So far, I have described the formal properties and distribution of Choguita Rarámuri long and short allomorphs under the assumption that they are (suppletive) allomorphs, and not the product of a regular phonological rule deriving them from a single underlying form. Arriving at this conclusion is not, however, a trivial task, as short and long allomorphs constitute a relevant borderline case between morphophonology and suppletive allomorphy.

A specific set of criteria is proposed in Kiparsky (1996) to distinguish morpholexical processes (allomorphy proper) from morphophonological ones. These criteria are summarized in (23) (cf. Paster 2005, 2006, to appear).

23) Allomorphy vs. morphophonology (Kiparsky 1996:17)

Allomorphy

a. The alternation is idiosyncratic (item-specific).
b. The alternation may involve more than one segment.
c. The alternation observes morphological locality.
d. The alternation precedes morphophonemic rules.

Morphophonology

a´ The alternation is general.
b´ The alternation involves only one segment.
c´ The alternation observes phonological locality
d´ The alternation is ordered after morpholexical processes

As Paster 2006 notes, determining if an alternation is general or item-specific is perhaps the most important criterion in deciding whether a given pattern involves suppletive allomorphy or regular phonology. With respect to this criterion, we have seen that Choguita Rarámuri short allomorphs are transparently related to the long allomorphs, corresponding to the first syllable of the latter. While this alternation involves more than one segment (a suppletive property (23b)), we could treat the alternation as regular morphophonology by proposing that short allomorphs derive from a disyllabic underlying form through a general truncation process targeting a single phonological *unit*, a syllable (Mary Paster, p.c.). In order to assess if there is a general syllable deletion process in Choguita Rarámuri, it would be necessary to determine if deletion would take place in all possible contexts.

A first potential context for syllable deletion is found in roots with pre-final stress, where a posttonic syllable could be deleted. Roots do truncate in morphologically and prosodically-defined contexts, but there is no similarity between these contexts and the environment in which short allomorphs are found.

First, consider the forms compared in (24). Roots delete their last, unstressed syllable when attaching a suffix with an identical onset (24b,d) (Chapter 3, §3.5.2.1). The same roots will not undergo syllable deletion in other morphologically complex constructions (24a,c). Deleted syllables are in bold face in the underlying representation, and syllable sequences with identical onsets are underlined.[83]

24) Root-affix haplology

---

a. sutubéči-niri
/sutubéči-nale/
trip-Desid
'He will most likely trip'
'Se oye que se andan tropezando' [BF 07 1:138/Elicit]

b. sutubée-čin-o
/sutubé<u>**či**-ča</u>ne-o/
trip-Ev-Ep
'It sounds like they are tripping'
'Se quiere tropezar' [SF 07 1:143/Elicit]

c. šikorána
/sikorána/
have.eye.secretion
'He has eye secretion'
'Tiene lagañas' [BF 07 1:151/Elicitation]

d. šikorráa-nir-o
/sikorá<u>**na**-na</u>le-o/
have.eye.secretion-Desid-Ep
'He will most likely have eye secretion'
'Como que le quieren salir lagañas' [BF 07 1:151/Elicitation]

Roots may also truncate a posttonic syllable in noun incorporation (25a-b) and denominal constructions (25c-d).

[83] Syllable deletion triggers lengthening in the stressed syllable (cf. Chapter 3 (§3.5.2.2)).

25) Pre-tonic nominal root shortening:

a. čame+répi-ma
/čamé**ka**+repu-ma/
'tongue+cut-Fut:sg'
'It will severe its own tongue'
'Se va a cortar la lengua (de tajo)' [SF 07 1:187/Elicit]

b. čere+bíwi-ma
/čeré**wa**+bi'wá-ma/
'sweat+clean-Fut:sg'
'He's going to clean his sweat'
'Va a limpiar el sudor' [SF 07 1:187/Elicit]

c. sipu-tá-ma
/sipú**ča**-tá-ma/
'skirt-Fact-Fut:sg'
'She will put on the skirt'
'Se va a poner la falda' [LEL 06 4:185/Elicit]

d. komá-ti-ma
/komá**re**-ta-ma/
'comadre-Fact-Fut:sg'
'She'll make her her comadre'
'La va a hacer su comadre' [LEL 06 4:185/Elicit]

As we have seen in Chapter 3 and Chapter 4, truncation in noun incorporation and denominal constructions is enforced by the overarching prosodic restriction imposed by the three-syllable stress window and, in the case of incorporated forms, by a morphological stress rule that assigns stress to the first syllable of the construction's head, the verbal root (cf. §3.4.3, §4.3.2).

There are thus several morphological and prosodic environments that condition syllable truncation in roots. However, these contexts are very specific and do not match the environments where short allomorphs of suffixes are found. Consider, for instance, the forms in (26). In (26a) and (26c), a root with pre-final stress adds a short allomorph and further inflection. As (26b, d) exemplify, there are no alternative forms where the root has a corresponding 'short' allomorph in morphologically complex forms. We would certainly expect this under an account where short allomorphs are selected when multiple morphemes would contribute multiple unparsed syllables to the posttonic portion of the stem.

26) No 'short' root allomorphs

a. sutubéči-ni-ma
trip-Desid-Fut:sg
'He will most likely trip'
'Se va a querer andar tropezando' [BF 07 1:150/Elicit]

b. *sutubé-ni-ma

c. basarówa-ni-ma
stroll-Desid-Fut:sg
'Tomorrow she will want to take a stroll'
'Mañana va a querer pasear' [SF 07 1:150/Elicit]

d. *basaró-ni-ma

Roots are thus subject to different kinds of syllable deletion. This suggests that short allomorphs are not the product of a general phonological rule, but are in fact suppletive.

6.5 The interaction of phonological and morphological conditions on allomorph selection

Given the generalizations provided in §6.3, Choguita Rarámuri allomorph distribution can be analyzed as dependent on different stem level domains: long and short allomorphs are added in different morphophonological subconstituents of the word. Crucially, long allomorphs are added in a final stem domain, aligned with the right edge of the prosodic word, while short allomorphs are selected in inner domains that require further suffixation in order to be promoted to the word level. In other words, short allomorphs create stems and long allomorphs create words. With this analysis I thus adopt the assumption of LPM, Stratal OT and OCM that there is a relationship between the hierarchical morphological structure of a word and layered phonological domains. While there is an alternative monostratal analysis of allomorph selection where allomorph distribution would be driven by global output optimization, the analysis defended here relates allomorph selection with the analysis of stress assignment, the distribution of posttonic syncope and the conditions governing multiple exponence in Choguita Rarámuri (cf. Chapter 4, Chapter 5).

I have proposed in Chapter 5 that there are at least three subconstituents in the Choguita Rarámuri verb: a Stem, the domain of stress assignment; a derivational stem, DStem, the domain of affixation of derivational suffixes; and an inflectional stem, IStem, the domain of affixation of inflectional suffixes (belonging to the Finite and Subordinate Verb levels). The footing constraints operating at the Stem level are listed in (27) (cf., (23) in §5.4.1, Chapter 5):

27) Footing constraints at Stem level

a.	ALL-FT-L:	Every foot stands at the left edge of the prosodic word (PrWd).
b.	PARSE-σ:	Syllables must be parsed into feet.
c.	IAMB:	Feet have final prominence.
d.	TROCHEE:	Feet have initial prominence.
d.	MAX-IO:	Every segment in the input has a correspondent in the output.

Stem outputs attaching further morphemes are evaluated in a later stem level (the DStem or IStem (cf. Chapter 5, §5.4.1, Chapter 7). The markedness constraints operating at these stem levels are repeated in (28) from Chapter 5 ((27) in §5.4.1).

28) Markedness constraints operating at the DStem/IStem level

a.	FINAL-V:	Every prosodic word is vowel-final
b.	DEP:	Output segments must have input correspondents
c.	PARSE-σ:	Syllables must be parsed into feet.
d.	MAX-IO:	Every segment in the input has a correspondent in the output.

Let us first consider the cases where an unstressed root is combined with the Desiderative suffix in the Stem level, the level of stress assignment (Chapter 4, §4.3.1). The only available allomorph in the input in this case is a long allomorph. Recall that there are two stress cophonologies, Cophonology Weak (with second syllable stress) and Cophonology Strong (with third syllable stress). The stress shifting Desiderative suffix imposes a Cophonology Strong ranking (IAMB, PARSE-σ >> STRICT), since it combines with an unstressed root, *koči* 'sleep'. As shown in tableau (29), this ranking yields a winning candidate with stress in the shifting Desiderative suffix, the third syllable.

29) Cophonology Strong, Unstressed Root + Desiderative

koči-náre
sleep-Desid
'She wants to sleep'

	/koči, -nare/	IAMB	PARSE-σ	STRICT
☞ a.	(<ko>či-ná)re		*	*
b.	(kočí)-nare		*!*	

This Stem level output is a well-formed word, but it could also be used as the base for affixation in a later Stem level (cf. data in (20)). Outside of this context, I will assume that two competing allomorphs will be available for evaluation. In order to determine which allomorph is selected, we need to include two constraints that enforce the requirement of long allomorphs to be added in the last morphological subconstituent of the word and of short allomorphs to be added in inner constituents. These requirement can be formalized as a constraint for long allomorphs to be aligned with the right edge of prosodic word, and short allomorphs to be aligned with the right edge of a Stem level. In Generalized Alignment terms, an edge of a morphological constituent coincides with the edge of a phonological or morphological pivot (McCarthy & Prince 1993, Yu 2007). These constraints are defined in (30).

30) Alignment of allomorphs to morphological subconstituents

a. ALIGN($[\sigma\ \sigma]_{Af}$, R, PrWd, R): The right edge of long allomorphs is aligned to the right edge of the prosodic word

b. ALIGN($[\sigma]_{Af}$, R, Stem, R): The right edge of short allomorphs is aligned to the right edge of the Stem

In the case of a Stem level evaluation with a Cophonology Strong ranking (IAMB, PARSE-σ >> STRICT) imposed by a stress-shifting suffix, allomorph selection will be critically determined by the ranking of ALIGN$[\sigma\ \sigma]_{Af}$ and ALIGN$[\sigma]_{Af}$. A Stem level output with a long allomorph is a self-standing word (31a), and a Stem level output with a short allomorph requires undergoing a second round of morphology in order to achieve 'wordhood' (31b). In each tableau, the competing allomorphs are included in the input, following most OT analysis of allomorph selection.[84]

[84] This implementation is not uncontroversial (cf. Wolf & McCarthy to appear, Paster 2005), but the implications of this will not be dealt with in this chapter.

31) Two outputs for stressed root *pičí* + Desiderative

a. pičí-nare
sweep-Desid
'He wants to sweep'

Stem = Prosodic word

	/pičí, {-nale, -na}/	ALIGN $[\sigma\ \sigma]_{Af}$	ALIGN $[\sigma]_{Af}$	MAX-PROM	IAMB	PARSE-σ	STRICT
☞ a.	(pičí)-nare					**	
b.	(pičí)-na		*!			*	
c.	(<pi>či-ná)re			*!		*	*
d.	(<pi>či-ná)		*!	*			*

b. pičí-na-
sweep-Desid-

Stem = Base for affixation

	/piči, {-nale, -na}/	ALIGN $[\sigma\ \sigma]_{Af}$	ALIGN $[\sigma]_{Af}$	MAX-PROM	IAMB	PARSE-σ	STRICT
a.	(pičí)-nare	*!				**	
☞ b.	(pičí)-na					*	
c.	(<pi>či-ná)re	*!		*		*	*
d.	(<pi>či-ná)			*!			*

ALIGN$[\sigma]_{Af}$ is violated in tableau (31a) by the candidates with short allomorphs because these are aligned with the prosodic word. In tableau (31b), the candidates with long allomorphs violate ALIGN$[\sigma\ \sigma]_{Af}$ because they are not aligned with a prosodic word, but an inner morphological constituent, a Stem level which equals a base for further suffixation. The Stem level output *pičína* (from (31b), candidate (b)) is evaluated in the DStem level with another suffix with competing long and short allomorphs in tableau (32a), and with an inflectional suffix in tableau (32b).

32) Stem level output with short allomorph as base for suffixation

a. pičí-n-čane
sweep-Desid-Fut:sg
'He will want to sweep'

	/pičína, {-čane, -ča}/	ALIGN [σ σ]Af	ALIGN [σ]Af	FINAL-V	PARSE-σ
a.	(pičí)n-ča		*!		*
☞b.	(pičí)n-čane				**
c.	(pičí)n-čan			*!	*
d.	(pičí)ni-č		*!	*	*

b. pičí-ni-ma
sweep-Desid-Fut:sg
'He will want to sweep'

	/pičína, -ma/	ALIGN [σ]Af	FINAL-V	PARSE-σ
a.	(pičí)ni-m		*!	*
☞b.	(pičí)ni-ma			**

The wining candidate in (32a) is a form with a long allomorph in word-final position (*pičí-n-čane*), and not a candidate with a short allomorph but fewer violations of PARSE-σ (*pičí-n-ča*). In tableau (32b), the wining candidate satisfies the requirement of words to be vowel final, at the expense of having two unparsed syllables. Alignment constraints of long and short allomorphs, together with general markedness constraints operating at different stems levels account for the attested short-long allomorph sequences.

Let us now consider the cases where the potential vowel hiatus that would result by the addition of a vocalic, onsetless suffix to a base with a long allomorph is resolved by vowel deletion. A ban on vowel hiatus, *VV, must be ranked above faithfulness. This is exemplified in (33).

33) *VV >> ALIGN[σ σ]$_{Af}$

sutubéči-**nar**-a
trip-**Desid**-Prog
'It is imminent that he will trip'

	/sutuubéčinare, -a/	*VV	ALIGN [σ σ]$_{Af}$	PARSE-σ	MAX
☞ a.	(<su>tubé)činar-a		*	***	*
b.	(<su>tubé)činare-a	*!	*	***	

Satisfaction on the ban on vowel hiatus leads to violation of the alignment constraint of long allomorphs. *VV must, however, be outranked by another constraint that prevents vowel deletion to take place in the cases of sequences involving the Associated Motion and vowel initial suffixes (e.g., **koči-nál-**sim-a**** 'sleep-Desid-**Mot-Prog'**, and **porá-p-ti-**sim-o**** 'cover-Rev-Refl-**Mot-Ep**' (exemplified in (16) above)). We could speculate that in this case there is a constraint requiring the semantic content of morpheme sequences to be recoverable from their output expression:

34) Morphological recoverability constraint

REALIZE-MORPH: Every morpheme has to be expressed in the phonological structure (Akinlabi 1996, Walker 2000, van Oostendorp 2006)

The role of this constraint is exemplified in tableau (35).

35) No vowel deletion of long allomorph of Associated Motion

a. *koči-nál**-sim-a**
sleep-Desid-Mot-Prog

	/ kočinálsimi, -a/	REALIZE -MORPH	*VV	ALIGN [σ σ]$_{Af}$	PARSE -σ	MAX	M-PARSE
a.	(<ko>činál)simi-a		*!	*	***	*	
b.	(<ko>činál)sim-a	*!		*	***		
☞ c.	Ø						*

In this case, ranking REALIZE-MORPH, together with *VV, above all other constraints, leads to a situation in which both a candidate with unresolved vowel hiatus (35a) and a candidate with vowel deletion that is interpreted as containing a different morpheme sequence (35b) are ruled out, leading to a null-parse (candidate (35c), which satisfies all constraints, except for M-Parse). Only a base with the short allomorph of the Associated Motion suffix can combine with a vocalic, inflectional suffix.

On the other hand, we could also assume that vowel deletion triggered by an inflectional, vocalic suffix applies idiosyncratically to different kinds of bases. Recall that bases with short allomorphs do not undergo vowel deletion, and vowel hiatus is tolerated in these cases (cf. (17) above).

So far, we have seen that general markedness constraints and alignment constraint of long and short allomorphs yield the attested patterns of allomorph selection and the surface sequences of words that contain competing allomorphs.

Recall, however, that the distribution of the Indirect Causative allomorphs is largely arbitrary: the Indirect Causative suffix must be added last in a morphologically complex construction, given its relative order with respect to other suffixes (cf. Chapter

3, §3.5.1) and its semantically incompatibility with inflectional markers. This suffix, thus, does not conform to the generalization that short allomorphs belong in inner morphological levels and long allomorphs in the final level of affixation. The distribution of short and long allomorphs of this suffix is mostly unpredictable, and subject to speaker variation, with a tendency for short allomorphs to be added to morphologically complex forms, and not be immediately posttonic (36f-k). Long allomorphs, on the other hand, are not necessarily immediately posttonic (36d-e).

36) Indirect Causative allomorph distribution

	Form	*Gloss*	
a.	mo'o-bú**-nura**	'go.up-Tr**-Caus:I**'/ 'subir-Tr-Caus:I'	[LEL 06 ENIC(37)/Elicit]
b.	simí**-nura**	'go:sg**-Caus:I**'/ 'ir:sg-Caus:I'	[BF 06 EJP(4)/Elicit]
c.	čiwa-ná**-nura**	'tear-Tr**-Caus:I**'/ 'trozar-Tr-Caus:I'	[LEL 06 ENIC(39)/Elicit]
d.	počí-ti-**nura**	'jump-Caus-**Caus:I**'/ 'brincar-Caus-Caus:I'	[SF 08 1:133/Elicit]
e.	rimé-ni-**nura**	'make.tortillas-Appl-**Caus:I**'/ 'hacer.tortillas-Appl-Caus:I'	[SF 08 1:134/Elicit]
f.	rata-bá-či**-na**	'heat-Inch-Tr**-Caus:I**'/ 'caliente-Inch-Tr-Caus:I'	[LEL 06 ENIC(53)/Elicit]
g.	bi.né.-ri.**-na**	'learn-Caus-**Caus:I**'/ 'aprender-Caus-Caus:I'	[LEL 06 ENIC(44)/Elicit]
h.	kirí-si-**na**	'gather.quelites-Mot-**Caus:I**'/ 'juntar.quelites-Mot-Caus:I'	[SF 08 1:133/Elicit]
i.	bené-r-si-**na**	'learn-Caus-Mot-**Caus:I**'/ 'aprender-Caus-Mot-Caus:I'	[SF 08 1:133/Elicit]
k.	i'né-si-**na**	'look-Mot-**Caus:I**'/ 'mirar-Mot-Caus:I'	[SF 08 1:134/Elicit]

The same words may be optionally produced with a long or a short allomorph of the Indirect Causative suffix by the same speakers:

37) Optionality in Indirect Causative allomorph selection

a. čipó-tə-**na**
bounce-Caus-**Caus:I** [SF 08 1:134/Elicit]

b. čipó-tə-**nəra**
bounce-Caus-**Caus:I** [SF 08 1:134/Elicit]

‘They are making them bounce (the ball)’
‘Mandan a botar (la pelota)’

As shown in (38), these forms can be modeled through free ranking between ALIGN[σ σ]$_{Af}$ and PARSE-σ. The difference between the Indirect Causative and the rest of the disyllabic suffixes is that in each case the output is a well-formed word.

38) Optional allomorph selection through free ranking, DStem

a. čipó-tə-**na**
bounce-Caus-**Caus:I**
‘They are making them bounce (the ball)’

	/čipóti, {-nura, -na}/	ALIGN [σ]$_{Af}$	PARSE-σ
☞ a.	(čipó)ti-nura		***
b.	(čipó)ti-na	*!	**

b. čipó-tə-**nəra**
bounce-Caus-**Caus:I**
‘They are making them bounce (the ball)’

	/čipóti, {-nura, -na}/	PARSE-σ	ALIGN [σ]$_{Af}$
a.	(čipó)ti-nura	***!	
☞b.	(čipó)ti-na	**	*

The consequence of this analysis is that, in the case of the Indirect Causative suffix, instances of short allomorphs will be attributed to prosodic well-formedness (through a constraint penalizing unparsed syllables), and instances of long allomorphs will be attributed to the violable requirement of long allomorphs to be aligned with the right edge of the prosodic word. Crucially, these constraints will be freely ranked in the same stem level of evaluation.

At this point I would like to discuss the implications of analyzing Choguita Rarámuri allomorph distribution monostratally. The outward conditioning of allomorph selection is straightforwardly modeled in an analysis where phonological and morphological constraints are evaluated in parallel. This kind of analysis would nonetheless require a mechanism to enforce the alignment of long allomorphs to the right edge. Consider, for instance, how markedness constraints alone derive the right result as long as only one relevant allomorph is involved in a morphologically complex construction. Consider tableau (39), where the ranking would be imposed by the outermost, stress-shifting suffix (Cophonology Strong ranking IAMB, PARSE-σ >> STRICT) (cf. Chapter 4, §4.3.1). A high-ranked MAX-PROM constraint eliminates the candidates which do not have stress in the underlyingly stressed root (candidates (39c,d)). The Cophonology Strong ranking selects the candidate with fewer unparsed syllables as the winning candidate.

39) Monostratal analysis of allomorph selection

pičí-ni-ma
sweep-Desid-Fut:sg
'He will want to sweep'

	/pičí, {-nale, -na}-ma/	Max-Prom	Iamb	Parse-σ	Strict
a.	(pičí)-nare-ma			**!*	
☞ b.	(pičí)-ni-ma			**	
c.	(<pi>či-ná)re-ma	*!		**	*
d.	(<pi>či-ná)-ma	*!		*	*

However, with this ranking we would also predict that when two suffixes with available competing long and short allomorphs are added to a word, we would select two short allomorphs, in order to minimize the number of unparsed syllables. This is shown in tableau (40).

40) Multiple competing allomorphs in monostratal analysis

pičí-si-nare
sweep-Mot-Desid
'He wanted to go along sweeping'

	/piči, {-si, -simi}, {-na, -nale}/	Strict	Iamb	Parse-σ
💣 a.	(pičí)-si-na			**
b.	(pičí)-si-nare			***!
c.	(pičí)-simi-na			***!
d.	(pičí)-simi-nare			***!*
e.	(<pi>či-sí)-na	*!		*
f.	(<pi>či-sí)-nare	*!		**

A ban on unparsed syllables is thus insufficient to model the distribution of short and long allomorphs in Choguita Rarámuri. In tableau (41) the situation is fixed by adding $\text{Align}[\sigma\ \sigma]_{Af}$ and $\text{Align}[\sigma]_{Af}$ to the ranking as an undominated constraints, making explicit reference to morphological constituency of each candidate (where W = word and S = stem).

41) Monostratal analysis of allomorph selection with alignment constraint

---

pičí-si-nare
sweep-Mot-Desid
'He wanted to go along sweeping'

	/piči, {-si, -simi}, {-na, -nale}/	ALIGN $[\sigma\ \sigma]_{Af}$	ALIGN $[\sigma]_{Af}$	STRICT	IAMB	PARSE -σ
a.	(pičí)-si$]_S$-na$]_W$		*!			**
☞ b.	(pičí)-si$]_S$-nare$]_W$					***
c.	(pičí)-simi$]_S$-na$]_W$	*!	*			***
d.	(pičí)-simi$]_S$-nare$]_W$	*!				****
e.	(<pi>či-sí)$]_S$-na$]_W$		*!	*		*
f.	(<pi>či-sí)$]_S$-nare$]_W$			*!		**

Allomorph selection, though predicted to satisfy global phonological optimization in a monostratal analysis, is restricted by high-ranked morpho-prosodic alignment constraints ALIGN$[\sigma\ \sigma]_{Af}$ and ALIGN$[\sigma]_{Af}$. In a monostratal analysis there is no correlation between allomorph selection and internal morphological constituency. The proposed stratal analysis is consistent with the analysis of stress assignment (Chapter 4), morphological constituency (Chapter 3), distribution of posttonic syncope (Chapter 5) and the conditions triggering multiple exponence (Chapter 5).

With respect to posttonic vowel deletion, an optional process in Choguita Rarámuri, I have proposed (Chapter 5 (§5.4.1)) that it is restricted to the boundary between the Stem and the rest of the verb. Free constraint ranking at the Stem level between PARSE-σ and MAX yields alternative Stem level outputs with no posttonic deletion and with posttonic vowel deletion. Given the markedness constraints operating at the DStem level, no Stem output with posttonic deletion is a well-formed word; these Stem level outputs are instead dependent morphophonological subconstituents, i.e., a base for further morphological material.

This localized reduction process is also key in understanding the mechanism that yields semantically vacuous morpheme doubling in this language (cf. Chapter 5). Crucially, posttonic vowel deletion mirrors the distribution of short allomorphs. That posttonic vowel deletion and short allomorphs are found in the same environments is not arbitrary. In the proposed analysis, there is no global phonological optimization: the prosodic effect on allomorph distribution is restricted to operate in the inner domains of the morphological structure.

6.6 Implications for an OT-model of the interaction between phonology and morphology

We have seen that Choguita Rarámuri long and short allomorphs represent an interesting borderline case between suppletive allomorphy and morphophonology. However, the typological relevance of this pattern is greater in light of the fact that its distribution is outwardly conditioned. There are very few examples of allomorphy patterns that seem to be conditioned by outer exponents. It is also a type of conditioning explicitly rejected in models that assume that words are built from the inside-out, where phonology applies to the output of morphology in each cyclic pass (as originally proposed in Lexical Phonology and Morphology (Kiparsky 1982, Mohanan 1986)). In this kind of framework a given allomorph B cannot be dependent on another allomorph C in a configuration where C is outside of B ([[A+B] C]) (Carstairs 1988, Kiparsky 1996). The directional asymmetry of conditioning is attributed to the fact that the subcategorization requirements imposed by affixes must be satisfied when these affixes are introduced (Kiparsky 1996). Allomorphy is always ordered before phonology in any given cycle.

Given these assumptions, putative cases of outwardly conditioned allomorphy have been reanalyzed in different ways. It has been proposed, for instance, that some such cases actually involve dependency of an inner allomorph on a morphological category (e.g., negative polarity), not an outer morpheme (Kiparsky 1996). Other reanalysis involve assuming that the surface inner allomorph (C) is originally added outside its conditioning morpheme [B] (with an inside-out conditioning), and later infixed into the base (schematically: [[A+B] **C**] --> [A + **C** + B]) (Paster 2005:15). Neither of these reanalyses could be applied to Choguita Rarámuri allomorphy, though. First, it is not possible to limit short or long allomorphs to morphologically or morphosyntactically defined contexts. Allomorphy is not dependent on a morphological category, a particular morpheme, but the *presence* of outer morphological material. Secondly we could assume an infixing analysis, and hypothesize that long allomorphs are added in a first layer of affixation, and that short allomorphs are added in a second round of morphology, driven by the prosodic requirement of reducing the number of unparsed syllables in the prosodic word. These short allomorphs would later be infixed before the long allomorphs, yielding the attested short-long allomorph sequences. The shortcoming of this analysis is that there would be no independent evidence or synchronic motivation for this hypothetical infixation process.

While problematic for the subcategorization model of morpho-phonology, outward conditioned allomorphy is predicted in a competing model, the 'output optimization' (P >> M) approach (McCarthy & Prince 1993a, 1993b, Kager 1996; Mascaró 1996; Rubach & Booij 2001, inter alia). In this model, phonological well-formedness (P) constraints may take precedence over morphological (M) constraints. Allomorph selection could thus be driven by phonological well-formedness requirements. In this framework, outwardly sensitive allomorphy is expected, since phonology and morphology are evaluated in parallel.

Choguita Rarámuri thus seems to contribute empirical evidence for the P >> M ranking schema. This case, however, is also problematic for this framework, as allomorphy does not yield global phonological optimization. In the analysis defended in this chapter, allomorph distribution is explained through the interaction of morphological and phonological constraints operating at different stem levels, and the fact that different allomorph types "belong" in different morphophonological domains within the word. Allomorphs specify what kind of construction or morphological subconstituent they create – a stem level that requires further suffixation, or a well-formed word (cf. Inkelas et al. 2006).

6.7 Conclusions

In this chapter I have presented Choguita Rarámuri long and short allomorphs, and have argued that they instantiate a typologically unusual type of suppletive allomorphy. It has been shown that allomorph distribution is governed by a complex set of factors, and that its main conditioning factor is the presence or absence of outer morphological exponence. This is typologically and theoretically highly relevant, as Choguita Rarámuri adds another example of allomorphy which is outwardly conditioned, instantiating a pattern predicted not to occur in the subcategorization approach to the phonology-morphology interface.

In the analysis proposed, outward conditioning is attributed to the fact that different allomorphs are added in different morphophonological subconstituents of the word. I also discuss an alternative monostratal analysis of allomorph selection where allomorph distribution would be driven by global output optimization. I have argued that the analysis defended in this chapter here relates allomorph selection with stress assignment, the distribution of posttonic syncope and the conditions governing multiple exponence in Choguita Rarámuri (cf. §5.4.1, Chapter 5, Chapter 4).

Finally, allomorph selection provides a relevant insight into the prosodic organization of this language. There are two morpho-prosodic pressures in the Rarámuri word: i) the left edge limits stress assignment to the first three syllables of the word; and ii) there is a right edge restriction on the size of the prosodic portion of the stem, epiphenomenal from allomorph distribution at different stem levels. I have argued that this prosodic effect is not global, but restricted to inner morphological layers. The left edge restriction is completely exceptionless, but the right edge restriction is flexible. Both restrictions are morphology-dependent. Choguita Rarámuri, with its high degree of opacity due to morphophonological fusion, poses a challenge for the typology of morphological systems and agglutination.

Chapter 7: Variable suffix ordering

7.1 Introduction

In the previous three chapters, I have examined the morphophonological conditions behind stress assignment, multiple exponence and allomorph selection in Choguita Rarámuri. The analysis proposed in each case crucially relies in assuming a step-wise word building process, and constraint rankings associated with different morphophonological subconstituents. The proposed analyses, however, do not tell us what mechanism in the grammar determines in which linear order will suffixes appear in morphologically complex constructions. This chapter is devoted to the linear placement of suffixes and the conditions behind variability in suffix order in this language.

In-depth studies of particular language and language families and their affix order patterns reveal intricate interactions between, for instance, semantic compositionality and templatic restrictions: mixed scope/template systems (Hyman 1993, 2003, Hyman & Mchombo 1999) have been characterized as either involving scope taking precedence over templates (Athabaskan; Rice 2000), or templatic constraints overriding scope

(Chichewa (Hyman 2003); Pulaar (Paster 2005)). This chapter makes an empirical contribution by documenting a novel type of affix order system which cannot be characterized as either 'template-emergent' or 'scope-emergent'. The affix order patterns of this language, which features free affix permutation, evidence a complex interplay between scope, phonological subcategorization and templatic constraints, where scope and templatic constraints are freely ranked, and where phonological subcategorization may override all other constraints. Finally, this chapter also documents how arbitrary suffix sequences may arise through priming effects and morphophonologically-conditioned multiple exponence.

There are three types of suffix permutations in Choguita Rarámuri. First, there are forms where suffix ordering corresponds to semantic compositionality (scope; Baker 1985, Alsina 1999, Rice 2000), e.g. Desiderative and Causative:

1) Semantically compositional suffix ordering

	Stem	*Gloss*	*Translation*
a.	awi-**nár-ti-**	'dance-**Desid-Caus**'/ 'bailar-Desid-Caus'	[X causes [Y want to dance]]
b.	awí-**r-nare**	'dance-**Caus-Desid**'/ 'bailar-Caus-Desid'	[X wants [cause Y to dance]]

Second, there are forms where morpheme order is determined by phonological considerations, e.g. Desiderative and Evidential, where alternative suffix orders correlate with the prosodic properties of the base (Desiderative-Evidential with stress final bases (2a) and Evidential-Desiderative with pre-final stress bases (2b)):

2)	Phonologically conditioned suffix ordering		
	Stem	*Gloss*	*Translation*
a.	wikará-**n-čane**	'sing-**Desid-Ev**'/ 'cantar-Desid-Ev''	[sounds like [X want to sing]]
b.	atísi-**ča-nare**	'sneeze-**Ev-Desid**'/ 'estornudar-Ev-Desid'	[sounds like [X want to sneeze]]

Finally, there are words with variable suffix order, where suffix permutation is not driven by semantic compositionality or phonological subcategorization, e.g. Desiderative and Causative:

3)	Variable (arbitrary) suffix ordering		
	Stem	*Gloss*	*Translation*
a.	awí-**r-si**	'dance-**Caus-Mot**'/ 'bailar-Caus-Mot'	[X causes [Y to go along dancing]]
b.	sú-**s-ti**	'sew-**Mot-Caus**'/ 'coser-Mot-Caus'	[X goes along causing [X to sew]]

Critically, pairs of suffixes displaying this type of arbitrary, variable ordering are also found with alternative orders corresponding to scopal interpretations (cf. (1)).

This chapter is structured as follows. In §7.2, I discuss how the verbal morphology of Choguita Rarámuri adheres broadly to proposed universal principles of affix ordering. In §7.3, I show how two of the verbal domains in the hierarchical structure of the verb are composed of suffixes that can permutate their order. Permutations are driven by three conditioning factors: semantic compositionality or 'scope' (§7.3.1), phonological subcategorization (§7.3.2), and arbitrary (templatic) constraints (§7.3.3). In §7.4, I provide a formal analysis of the interplay between these three sources of affix order, and show how the system can be characterized as mixed scope/template (a kind of system first described in Hyman 2003), where scope and templatic constraints are freely ranked. In §7.5, I present evidence showing that arbitrary suffix sequences may arise from priming effects (§7.5.1) and from morphophonologically-motivated multiple exponence (§7.5.2). Finally, conclusions and questions for further research are given in §7.6.

7.2 The Choguita Rarámuri verb and general principles of affix ordering

I have shown in Chapter 3 (§3.5) that there is semantic, morphotactic and phonological evidence for proposing twelve suffix positions in the Choguita Rarámuri verbal structure, grouped into six verbal zones or layers. These positions and verbal domains, originally depicted in Table 14, are repeated in (4).

4) Categories expressed in the Choguita Rarámuri verb and verbal domains

Position	**Categories**	**Stem level**
α	Root + unproductive and semiproductive processes	Inner Stem
S1	Inchoative	Derived Stem
S2	Transitives	
S3	Applicative	Syntactic Stem
S4	Causative	
S5	Applicative	
S6	Desiderative	Aspectual Stem
S7	Associated Motion	
S8	Auditory Evidential	
S9	Voice/Aspect/Tense	Finite Verb
S10	Mood	
S11	TAM	
S12	Subordination	Subordinate Verb

In terms of the meanings of the categories expressed in the verb, the ordering of elements within the layered structure conforms, at least in a general way, to proposed universal principles of cognitive relevance (Bybee 1985) and derivation within inflection (Bybee 1985, Greenberg 1963): verbalizers and valence-changing markers (from the Inner Stem to the Syntactic Stem) are ordered before voice, mood and aspect/tense markers (clustered in the outer Finite Verb domain).

Furthermore, Choguita Rarámuri is consistent with Bybee's correlation of relevance with degree of phonological fusion (where (inner) derivational morphological exponents are expected to be more tightly fused phonologically with the root than (outer) inflectional affixes (Bybee 1985:97)). In the Choguita Rarámuri verb, phonological processes such as stress shifts (and stress dependent vowel reduction and syncope), root/suffix haplology, compensatory lengthening (CL) and rounding harmony, among other phonological phenomena, define a concentric structure, where morphological exponents closer to the stem display greater morphophonological fusion than outer morphological exponents. The scheme in (5) shows the domain of application of each phonological phenomena within the verbal structure.

5) Morphologically conditioned phonology

<table>
<tr><td></td><td>S1</td><td>S2</td><td>S3</td><td>S4</td><td>S5</td><td>S6</td><td>S7</td><td>S8</td><td>S9</td><td>S10</td><td>S11</td><td>S12</td></tr>
<tr><td>Inner Stem</td><td colspan="2">Derived Stem</td><td colspan="3">Syntactic Stem</td><td colspan="3">Aspectual Stem</td><td colspan="3">Finite Verb</td><td>Sub Verb</td></tr>
<tr><td>Haplology</td><td colspan="2"></td><td colspan="3"></td><td colspan="3"></td><td colspan="3"></td><td></td></tr>
<tr><td>Comp. Lengthen.</td><td colspan="2"></td><td colspan="3"></td><td colspan="3"></td><td colspan="3"></td><td></td></tr>
<tr><td colspan="3">Imperative stress-shift</td><td colspan="3"></td><td colspan="3"></td><td colspan="3"></td><td></td></tr>
<tr><td colspan="9">Round Harmony</td><td colspan="3"></td><td></td></tr>
</table>

The properties of the Choguita Rarámuri verbal structure are thus not compatible with templatic or position-class systems (Simpson & Withgott 1986, Stump 1992, Inkelas 1993, Good 2003). Researchers posit templatic analyses when affix order cannot be analyzed as driven by semantic/syntactic or even phonological structure, and every morpheme in the system is assumed to be lexically indexed for a particular fixed position in a total linear arrangement of position classes. In this kind of systems, morphemes are rigidly ordered, there are formal dependencies between discontinuous suffixes, inflectional and derivational exponents are interspearsed within the verbal structure, and semantically compatible suffixes might be in complementary distribution due to their membership to the same position class (Inkelas 1993). None of these properties, however, can be said to characterize the Choguita Rarámuri verbal system.

Given the phonological, morphosyntacic and general morphotactic properties of the hierarchical structure of the verb, I assume that suffixes belong to one of three ordered blocks of suffixes: the RStem, the DStem and the IStem. The generalization is that suffixes belonging to any of these blocks may not follow suffixes belonging to a later stem.[85] The correspondence between verbal domains and the three ordered blocks of suffixes is depicted in Table 31.

Table 31: Suffix blocks

Position	**Stem level**	**Suffix blocks**
α	Inner Stem	RStem
S1	Derived Stem	
S2		
S3	Syntactic Stem	DStem
S4		
S5		
S6	Aspectual Stem	
S7		
S8		
S9	Finite Verb	IStem
S10		
S11		
S12	Subordinate Verb	

Any suffix from any block may be added directly to the root in the Stem level, the domain of stress assignment (Chapter 4). Any suffix from any block may create a word (vs. a base) (cf. Chapter 6). Suffixes from the RStem and DStem may create stems which are bases for later suffixation. But: i) suffixes in the inner stem do not follow any other suffixes; ii) suffixes in the syntactic and aspectual stem levels do not follow any other suffixes; and iii) suffixes in the finite and subordinate verb levels are ordered last in the word. Crucially, suffix recursion (as described in Chapter 5) and suffix permutation (as

[85] The only exception to this generalization comes from the placement of the evidential suffix, which patterns morphosyntactically and phonologically with the suffixes of the DStem, but may be ordered after any stress-shifting suffix, due to a particular subcategorization restriction to be discussed below (in §7.3.2).

described in this chapter) are two phenomena limited to the suffixes that belong to the DStem.

7.3 Suffix permutation in the Choguita Rarámuri verb

In the hierarchical verbal structure proposed in this dissertation, suffixes belonging to two domains, the Syntactic and Aspectual Stem levels, can appear in alternative orders in a pair wise fashion. The relevant suffixes, encoding valence-changing operations (Causative (Caus) and Applicative (Appl)), modality (Desiderative (Desid) and Evidential (Ev)) and aspect (Associated Motion (Mot)), are highlighted in Table 32.

Table 32: Variable suffix order in the Choguita Rarámuri verb

Position	**Categories**	**Morphotactics**	**Stem level**
S1	Inchoative	Fixed suffix order	Derived Stem
S2	Transitive		
S3	Applicative	Variable suffix order	Syntactic Stem
S4	Causative		
S5	Applicative		
S6	Desiderative		Aspectual Stem
S7	Associated Motion		
S8	Auditory Evidential		
S9	Voice/Tense/Aspect	Fixed suffix order	Finite Verb
S10	Mood		
S11	TAM		
S12	Subordination		Subordinate Verb

A list of the attested pair wise suffix permutations in Choguita Rarámuri is provided in (6).

6) Choguita Rarámuri pairwise suffix permutations

a. Causative -*ti* and Associated Motion -*si*;
b. Desiderative -*nare* and Associated Motion -*si*;
c. Causative -*ti* and Desiderative -*nare*.
d. Desiderative -*nare* and Evidential -*čane*;
e. Causative –*ti* and Applicative –*ki*.

As I will show next, these permutations are driven by either scope, phonological subcategorization or templatic constraints.

7.3.1 Scope-determined suffix ordering

An examination of the attested patterns of suffix order in Choguita Rarámuri reveals that most suffix sequences reflect semantic compositionality or scope. The role of scope as a driving force of affix order has been widely assumed in the theoretical literature. In the so called 'Mirror Principle', morphological derivations and syntactic derivations are assumed to be isomorphic (Baker 1985). The order of certain affixes[86] in complex words is determined by the organization of the grammar, and not just by morphological or phonological factors alone. This generalization is summarized in (7):

7) The Mirror Principle (Baker 1985:375)

"Morphological derivations must directly reflect syntactic derivation (and vice versa)".

[86] The morphological derivations that the Mirror Principle refers to are those that modify grammatical functions and tend to be productively expressed through characteristic verbal morphology in many agglutinating languages, like passives, causatives, lexical reflexive-reciprocals and applicatives. In either their interaction with agreement or other grammatical changing functions, these syntactic processes must match their morphological expression. Clitics and nonconcatenative processes are left outside the scope of Baker's Mirror Principle, where "morphological processes" refer exclusively to prefixation and suffixation (1985:401).

The Mirror Principle can be assumed to reflect lexical operations instead of syntactic derivations (Alsina 1999), but the core prediction remains the same: alternative orderings of morphemes will correlate with different meanings or semantic interpretations. Specifically, in scope-based affix permutations, we expect that when a suffix A has scope over suffix B, A is ordered outside B. Schematically: [[[V] B] A]].

The detailed analysis of morpheme order in Athabaskan languages led Rice (2000) to propose that the overarching mechanism constraining the linear arrangement of affixes in this language family is semantic scope. Her proposal, which I will refer to as the Scope Hypothesis, consists of three specific predictions. These predictions are given in (8).

8) Scope Hypothesis (Rice 2000:79)

a. Elements in a fixed scopal relationship occur in a fixed order with respect to each other;

b. Elements in which the scopal relationship can be reversed occur in variable order, with interpretation related to order;

c. Elements that do not enter into a scopal relationship with each other may occur in different orders, both within a particular language and across the family.

These predictions, as we shall see next, are mostly borne out in the Choguita Rarámuri data.

First, let us consider the case of the relative order of Associated Motion and Desiderative. The examples in (9) show forms where the Desiderative has scope over the Associated Motion, and the order of these suffixes corresponds to their scopal interpretation. The underlying form of the relevant suffixes is indicated in the right-hand corner of each example's first (transcription) line.

9) '[[[V] MOT] DESID][X wants to [go along V]]

a.	nihé	ko	á	ri'i-bú-**s-nare**		bu'učími /-si-nare/
	1sgN	Emph	Aff	stone-Remove-**Mot-Desid**		road
	'I want to go along the road removing stones'					
	'Quiero ir quitando piedras del camino'					[SF 08 1:51/Elicit]
b.	tò-**s-nare**=ni					/-si-nare/
	take-**Mot-Desid**=1sgN					
	'I want to go along taking them (the flowers)'					
	'Quiero írmelas llevando (las flores)'					[BF 06 5:149/Elicit]
c.	hesusíta=ni	yúa	ra'ičá-**s-nare**			/-si-nare/
	Jesusita=1sgN	with	speak-**Mot-Desid**			
	'I want to go along talking with Jesusita'					
	'Quiero ir hablando con Jesusita'					[BF 08 1:61/Elicit]
d.	éči	ikí-**s-nare**	birá=ti	ba		/-si-nare/
	Dist	happen-**Mot-Desid**	really=1plN	Cl		
	'We want that to keep happening'					
	'Nosotros queremos que eso vaya pasando'					[BF 08 1:87/TextElicit]
e.	nihé	ko	wikokí	á-**si-nare**		/-si-nare/
	1sgN	Emph	mushrooms	look.for-**Mot-Desid**		
	'I want to go along looking for mushrooms'					
	'Quiero ir buscando hongos'					[SF 08 1:145/Elicit]

In each of these examples, Desiderative takes scope over Associated Motion, and in each form the interpretation is that it is the event encoded by the verb, not the agent's desire, that will take place while in motion (e.g., 'go along taking', 'go along speaking'). This contrasts with the meanings of forms where Associated Motion takes scope over Desiderative. In these forms, it is the agent's wanting that takes place while in motion (‘to go along wanting to do X’).[87] In (10) the order of Desiderative and Associated Motion suffixes corresponds to their scope.

10) [[[V] DESID] MOT (go along)] [X goes along [wanting to V]]

---

a. ko’-**nár-si**-a inná-ri /-náre-si-/
eat-**Desid-Mot**-Prog go-Pst
‘He goes along wanting to eat’
‘Va de pasada queriendo comer’ [SF 07 2:72-73/Elicit]

b. koči-**nár-si** /-náre-simi-/
sleep-**Desid-Mot**
‘She goes along wanting to sleep’
‘Va (de pasada) queriendo dormir’ [SF 07 2:72/Elicit]

c. ne isíi-**n-si**-a ináro /-na-si-/
1sgN urinate-**Desid-Mot**-Prog go
‘I’m going along wanting to urinate’
‘Voy queriendo orinar’ [BF 08 1:61/Elicit]

Another pair wise suffix interaction that reflects scope is that between the Causative suffix and the Associated Motion suffix. In (11), the Associated Motion has scope over the Causative: the causative event is performed while in motion, and it usually implies that there are several events of causing. For instance, in (11c) there was an implication that one participant (‘the girl’) made repeated attempts at causing the other participant to become mad.

11) [[[V] CAUS] MOT (go along)] [X goes along [cause Y to V]]

---

a. ma=ti počí-**ti-si**-a iná-r-ti-po? /-ti-si/
already=1plN jump-**Caus-Mot**-Prog go-Caus-Caus-Fut:pl
‘Shall we go along making them jump?’
‘Vamos haciéndolo que brinque?’ [BF 07 2:32/Elicit]

[87] Example (18c) shows that this particular sequence (Desid-Mot) is not dependent on the stress properties of the root (both unstressed and stressed roots can take this particular suffix sequence).

b.	ne	mi	bené-**r**-**si**-ma				/-ri-si-/
	1sgN	2sgA	learn-**Caus-Mot**-Fut:sg				

‘I will go along teaching you (how to sing)’
‘Yo te voy a ir enseñando (como cantar)’ [BF 07 2:38/Elicit]

c.	na	es	tá	tiwé	tamí	yó-**r**-**si**-a	/-ri-si/
	Prox	Dist	Det	girl	1sgA	angry-**Caus-Mot**-Prog	

inároo
go
‘This girl is going along making me mad’
‘Esta niña va haciéndome enojar’ [BF 08 1:91/Elicit]

d.	we	tamí	korú-**ti**-**simi**	/ti-simi/
	Int	1sgA	feel.like.eating-**Caus-Mot**	

‘They are going along making me want to eat (eating in front of me)’
‘Van haciéndome querer comer (comen enfrente de mi)’
[SF 08 1:71/Elicit]

In (12), by contrast, the opposite order of suffixes (Associated Motion followed by Causative) corresponds to the interpretation that the causing event takes scope over an event that takes place while in motion (e.g., ‘to cause to go along singing’ in (12a)). Crucially, discussion if these forms would involve clarifying that the causer did not engage in any motion (e.g., in (12a) the causer will not go on the road trip where the event will take place while in motion; the only event that can take place with associated motion under this interpretation is the one encoded by the lower predicate ‘sing’).

12) [[[V] MOT (go along)] CAUS] [X causes [Y to go along V]]

---

a.	ma=ni	mi	wikará-**s**-**ti**-ma	/-si-ti/
	already=1sgN	2sgA	sing-**Mot-Caus**-Fut:sg	

‘I’ll make you go along singing’
‘Te voy a hacer que vayas cantando’ [BF 07 2:32/Elicit]

b.	mi=n	tán-**si**-**ti**-mo	rá	/-si-ti/
	2sgA=1sgN	ask-**Mot-Caus**-Fut:sg	Cer	

‘I’ll make you go along asking for things’
‘Te voy a hacer que le vayas pidiendo’ [BF 07 2:33/Elicit]

c. nará-**ti-si**-ma ré riwéel-čan-i
cry-**Caus-Mot**-Fut:sg Dub seem-Ev-Impf
'It seemed (sounded like) they will go making them cry'
'Parecía (se oía) que lo va a ir haciendo llorar' [SF 08 1:132/Elicit]

d. tá-n-**si-ti**-ma ré /-si-ti/
ask-Appl-**Mot-Caus**-Fut:sg Dub
'She will make him go along asking them'
'Va a hacer que les vaya preguntando' [SF 08 1:72/Elicit]

Finally, a third set of semantically compositional suffix permutations correspond to the Causative and Desiderative suffixes. In (13), each verb form contains a Desiderative-Causative sequence, where the causer makes the causee experience the desire to perform an event. Clarification of the intended meanings involved discussing a context in which the causee could be the only participant experiencing the wanting. For instance, the context of (13d) was a conversation about the speaker's young daughter, who would like to gently scratch the speaker's head, which would cause the speaker to become sleepy.

13) [[[V] -DESID] -CAUS] [X causes [Y to want V]

a. mi =ni awi-**nár-ti**-mo rá /-nare-ti/
2sgA =1sgN dance-**Desid-Caus**-Fut:sg Cer
'I will make you want to dance'
'Voy a hacer que quieras bailar' [BF 06 5:138/Elicit]

b. ba'wí bahí-**n-ti**-ri=ni /-na-ti/
water drink-**Desid-Caus**-Pst:Pass=1sgN
'They made me want to drink water'
'Me hicieron que quisiera tomar agua' [BF 06 2:43/Elicit]

c. ma tamí wikará-**n-ti**-k-o /na-ti/
already 1sgA sing-**Desid-Caus**-Pst:1-Ep
'They already made me want to sing'
'Ya me hicieron que quisiera cantar' [BF 08 1:63/Elicit]

d. má=mi tamí koči-**nár-ti**-ma ré /-nare-ti/
already=2sgN 1sgN sleep-**Desid-Caus**-Fut:sg Dub
'You are going to make me want to sleep'
'Vas a hacer que me den ganas de dormir' [BF 08 1:62/Elicit]

In (14), on the other hand, the Desiderative has scope over the Causative: the subject experiences the desire of making the causee perform the event encoded by the predicate. Morpheme order reflects this scopal interpretation.

14) [[[V] -CAUS] -DESID] [X wants to [cause Y to V]]

a. nihé mi awí-**r-nare** /-ri-nare/
1sgN 2sgA dance-**Caus-Desid**
'I want to make you dance'
'Quiero hacerte bailar' [SF 07 1:94/Elicit]

b. tamí nará-**t-nare** /-ti-nare/
1sgA cry-**Caus-Desid**
'He wants to make me cry'
'Me quiere hacer llorar' [BF 06 EDCW/Elicit]

c. ma=ni mi ubá-**r-nare** /-ri-nare/
already=1sgN 2sgA bathe-**Caus-Desid**
'I want to bathe you'
'Ya quiero bañarte' [BF 08 1:64/Elicit]

d. ne ko naká-**r-nare** kočí /-ri-nare/
1sgN Emph bark-**Caus-Desid** dogs
'I want to make the dogs bark'
'Tengo ganas de hacer ladrar a los perros' [SF 08 1:73/Elicit]

We thus have three types of suffix permutation patterns where suffix ordering reflects scope: that between Desiderative and Associated Motion, Causative and Associated Motion, and Desiderative and Causative. Scope, in addition, is also the predictor of unattested suffix permutations. These unattested permutations are summarized in (15).

15) Unattested suffix sequences

a. The Evidential Suffix does not precede the Causative, Applicative or Associated Motion suffixes.

b. The Applicative does not follow the Desiderative, Associated Motion and Evidential suffixes.

Let us first consider the case of the Evidential suffix. I follow Rice (2000:24) and take 'scope' to refer to semantic compositionality, where the semantics of a given element Z has scope over X and Y if it is added to X and Y as a unit. X and Y will thus be in a closer semantic relationship to each other than with Z. In the case of the Evidential suffix and its interaction with Causative, Applicative, Desiderative and Associated Motion, the latter morphological operations will always be in a closer relationship to the base, as these operations modify the predicate, while the Evidential modifies the proposition that contains the predicate. I contend, thus, that this relationship is one of fixed scope. This relationship is schematized and exemplified in (16).

16) Semantic interaction between Evidential and other operations

[it seems/sounds like [V (Caus, Appl, Mot, Desid)]$_{\text{proposition}}$]

a. Causative-Evidential: It sounds like [X causes Y to do V]
*ubá-**r-čane***
'bathe-Caus-Ev'
'it sounds like X bathes Y' [SF 08 1:150/Elicit]

b. Applicative-Evidential It sounds like [X does V for y]
*tichí-**k-čane***
'comb-Appl-Ev'
'it sounds like X combs Y for Z' [SF 08 1:128/Elicit]

c. A. Motion-Evidential: It sounds like [X is going along doing V]
*wí-**s-čane***
'harvest-Mot-Ev'
'it sounds like X goes along harvesting' [SF 08 1:132/Elicit]

d. Desiderative-Evidential: It sounds like [X wants to do V]
*čikó-**n-čane***
'steal-Desid-Ev'
'it sounds like X wants to steal' [SF 08 1:125/Elicit]

Consistent with this semantic relationship, the order between these suffixes is fixed, with the exception of Desiderative and Evidential (the conditions determining this variable order are addressed in §7.3.2).

The second type of fixed suffix sequences involve the Applicative. With the exception of the Causative suffix, the Applicative precedes the other suffixes in the Aspectual and Syntactic Stems levels (the exceptional Causative-Applicative order will be addressed in §3.2.3). In each case, the Applicative has a closer semantic relationship with the base predicate than Causative, Associated Motion, Desiderative and Evidential. In terms of subset relationships, the Applicative has a more specific relationship with respect to the event encoded by the predicate than the rest of the morphological operations under consideration. Consider the following schematized meanings of hypothetical forms where Applicative would have greater scope than the other operations.

17)	Hypothetical cases of Applicative scope relationships
a.	*Causative and Applicative* for the benefit of Z [X makes Y do V], where the causing event is done for the benefit of Z (vs. X makes Y [do V for Z])
b.	*Associated Motion and Applicative* for the benefit of Z [X goes along doing V] where Z benefits from the event being performed while in motion (vs. X goes along [doing V for Z])
c.	*Desiderative and Applicative*[88] for the benefit of Z [X wants to do V] where the wanting benefits Z (vs. X wants [to do V for Y])
d.	*Evidential and Applicative* for the benefit of Z [it sounds like V is taking place] (vs. it sounds like [X does V for Z])

I have already discussed the factors that suggest that the relationship between Evidential and other suffixes is one of fixed scope. With respect to the Applicative and the Evidential (e.g., (17d)), this is no exception. As for the rest of the hypothetical meaning relationships outlined in (17), it becomes apparent that a form where an Applicative would have greater scope over Causative, Associated Motion and Desiderative would entail a very particular relationship between the Applicative and a subconstituent of the embedded complex (specifically, the causing, associated motion or wanting), but not the whole complex. In contrast, every other morphological operation can modify an Applicative stem as a unit. Thus, we can also characterize this relationship

[88] A form with an Applicative having scope over the Desiderative is, in addition, pragmatically odd, since it implies that an agent-oriented mental state would be conditioned by the effect of benefiting a second participant. The fixed scope prediction is that if an appropriate stimulus would be constructed that could overcome this pragmatic unnaturalness, we would still not be able to get a form where the Desiderative would be in the scope of the Applicative.

as one of fixed scope.[89] The Applicative is always more specific and within the scope of the rest of the suffixes. Consistent with this semantic relationship, there are no documented cases where the Applicative is ordered after the Desiderative, Associated Motion or the Evidential. Attempts of obtaining forms where morpheme order would correspond with the meanings schematized in (17) resulted in ineffability or the production of forms with related meanings which did not correspond to the target form.

In sum, we have seen that scope is an important predictor of suffix interactions in Choguita Rarámuri, where suffixes in a fixed order have fixed scope and suffixes appearing in variable order have reversed scopal relationships where order correlates with interpretation (cf. predictions of the Scope Hypothesis (8a-b)). Not all suffix interactions, however, stem from semantic scope, and other driving forces must be at play in determining attested suffix permutations in this language. It is to these patterns and driving forces that I turn next.

7.3.2 Phonologically conditioned suffix interaction

As mentioned above, there are suffix interactions in this language that do not stem from semantic compositionality. This is the case of the relative order between the Desiderative suffix and the Evidential suffix. As discussed in §3.2.1, while the Desiderative modifies

[89] As discussed in §7.3.3 below, there is evidence that the Causative *–ti* is arbitrarily ordered before the Applicative *–ki*. While the templatic order between these two suffixes is opposite to their scopal relationship, recall from the schema presented in (4) that Choguita Rarámuri possesses three other Applicative exponents (in position (S3)). These suffixes are not productively used and must be lexically specified for which verbs they combine with morphologically. Their relationship with respect to the productive Causative *–ti* suffix is consistent with their scopal relationship.

the predicate, the Auditory evidential modifies the proposition that contains the predicate. The semantic relationship between these suffixes can be schematized as follows.

18) The interaction of Desiderative and Evidential

[it sounds like [X (wants) [V]]

The Evidential will always modify the proposition, whether this proposition contains a predicate expressing agent-oriented modality or not. In (19), the order of these suffixes reflects their fixed scope.

19) DESID-EV [it sounds like [X (wants) [V]]

a. nakó-**n-čan**-a
/nakó-**na-čane**-a/
fist.fight-**Desid-Ev**-Prog
'It sounds like they want to fist fight'
'Se oye como que quieren pelear a chingazos' [SF 07 1:9/Elicit]

b. buyá-**n-čan**-a
/buyá-**na-čane**-a/
go.out.sg-**Desid-Ev**-Prog
'It sounds like she wants to go out'
'Se oye como que quiere salir' [SF 07 2:73/Elicit]

c. wikará-**n-čane**
/wikará-**na-čane**/
sing-**Desid-Ev**
'It sounds like they want to sing'
'Se oye como que quieren cantar' [SF 07 1:9/Elicit]

d. rokó á nará-**n-čin**-i
/rokó á nará-**na-čane**-i/
last.night Aff cry-**Desid-Ev**-Impf
'It sounded like they wanted to cry last night'
'Anoche se oía que querían llorar' [SF 08 1:124/Elicit]

However, as the forms in (20) show, the Desiderative and Evidential suffixes can swap their order. The semantic interpretation, however, does not correlate with the order of the morphological exponents, since the meanings of the forms (19) are the same as the meanings of the forms in (20) (“it sounds like X wants to V”).

20) EV-DESID [it sounds like [X (wants) [V]]

a. atís-**ča-nare**
/atísi-**ča-nale**/
sneeze-**Ev-Desid**
‘It sounds like they want to sneeze’
‘Se oye como que quieren estornudar’ [SF 07 1:129/Elicit]

b. opés-**ča-nar**-o
/opési-**ča-nale**-o/
throw.up-**Ev-Desid**-Ep
‘It sounds like they want to throw up’
‘Se oye como que quieren vomitar’ [BF 07 rec300/Elicit]

c. paraér-**ča-nar**-o
/paraéri-**ča-nale**-o/
dance.paraéri-**Ev-Desid**-Ep
‘It sounds like they want to dance paraéri’
‘Se oye como que quieren bailar paraéri’ [BF 07 1:182/Elicit]

d. á birá čikle kéči-**ča-nare** kúruwi
/á birá čikle kéči-**ča-nale** kúruwi/
Aff really gum chew-**Ev-Desid** kids
‘It sounds like the kids want to chew gum’
‘Se oye que los niños quieren mascar chicle’ [SF 08 1:146/Elicit]

The generalization that emerges from the distribution of each sequence is that the Desiderative-Evidential order (*–n-čane*) is found with final stress roots (19), while the Evidential-Desiderative order (*–ča-nare*) is found with roots with pre-final stress (20).

After posttonic vowel deletion applies, the surface generalization is that the Evidential attaches to a final stress base which is consonant final.[90]

The phonologically-conditioned distribution of these suffix permutations falls in a straightforward fashion from an analysis where it is assumed that affix representations might include phonological requirements for stems to which they can attach (Lieber 1980, Kiparsky 1982, Selkirk 1982, Inkelas 1990, Paster 2006a, Yu 2003, 2007). In this case, the Evidential suffix is sensitive to the phonological properties of the base to which it attaches, i.e., the Evidential subcategorizes for a foot to its left. This subcategorization requirement is schematized in (21).

21) Choguita Rarámuri Evidential phonological subcategorization

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[[(σ σ) $_{\text{Ft}}$ -ča(ne)] $_{\text{Evidential}}$

The role of phonological requirements within subcategorization frames in determining patterns of affix ordering have been shown to be necessary for Chintang (Bickel et al. 2007). In this language, the distribution of variable positioning prefixes is captured through phonological subcategorization, as prefixes subcategorize for phonological words (ω). The variability in prefix ordering in this language stems from the fact that words consist of several phonological words that can act as hosts for prefixes (e.g. a-($_{\omega}$kha)($_{\omega}$tube), 'you met us', vs. ($_{\omega}$kha)-a($_{\omega}$tube) 'you met us') (Bickel et al. 2007:22). In Choguita Rarámuri, the phonological pivot for affixation of the Evidential is consistent. This yields the attested Desiderative and Evidential ordering pattern.

[90] This generalization does not apply to (26d), as alveopalatal affricate geminates [čč], the sequence that would result if posttonic vowel deletion would apply, are not phonotactically permissible in this language.

We have then that in Choguita Rarámuri there are patterns of suffix permutation that are not conditioned by scope, but rather by phonological subcategorization requirements. There are, however, further exceptions to scope in Choguita Rarámuri suffix ordering patterns.

7.3.3 Arbitrary suffix interactions

A third set of suffix interactions in Choguita Rarámuri are not driven by scope, phonological subcategorization or any other grammatical principle. One of such cases involves the interaction between the Causative *–ti* suffix and the Applicative *–ki* suffix. These suffixes can appear in an order that correlates with their scope: discussion of the meanings of these forms revealed that the intended meaning is that it is the event encoded by the predicate, and not the act of causing, that is performed for the benefit of a third participant. The ordering of the morphemes reflects this interpretation.

22) Compositional order Applicative *–ki* – Causative *-ti*

a.

berta	čokíra	kítara=n	tičí-**k**-**ti**-ri	jadíra
Bertha	her.fault	because=1sgN	comb-**Appl-Caus**-Pst:Pass	Yadira

‘Because of Bertha, I was made to comb Yadira’s hair’
‘Por culpa de Bertha me hicieron peinar a Yadira’ [BF 08 1:107/Elicit]

b.

nihé	pe	harré	kusí	mičí-**k**-**ti**-r-o
1sgN	few	some	sticks	carve-**Appl-Caus**-Pst-Ep

ne	ono-rá
my	dad-Poss

‘I was made to carve some sticks for my dad’
‘Me hicieron labrarle unos palos a mi papá’ [BF 08 1:107/Elicit]

c. to, jéni dúlse íw-**ki**-**ti**-ri jadíra
go! Jeni candy bring.Appl-**Appl-Caus**-Imp:sg Yadira
'Go! Make Jeni bring candy for Yadira'
'A ver, haz que Jeni le traiga dulces a Yadira' [BF 07 1:62/Elicit]

These forms are compatible with scope, but the opposite order of suffixes does not entail a corresponding change in interpretation. The forms in (23), while displaying a Causative-Applicative order, are all interpreted with the Causative having scope over the Applicative. This suffix order is the most frequently attested in elicitation.

23) Arbitrary ordering of Causative and Applicative

---

a. tamí ko=mi o'pés-**ti**-**ki**-ma ré ba
1sgA Emph=2sgN vomit-**Caus-Appl**-Fut:sg Dub Cl
'You'll make him throw up on me'
'Vas a hacer que me vomite encima' [BF 08 1:27/Elicit]

b. tamí noké-r-**ti**-**ki**-ri
1sgA move.Appl-Caus-**Caus-Appl**-Imp:sg
'Make him move it for me'
'Haz que me lo mueva' [BF 08 1:28/Elicit]

c. mi=n tamí koči ubá-r-**ti**-**ki**-ma
2sgA=1sgN 1sgA dog bathe-Caus-**Caus-Appl**-Fut:sg
'I'll make you bathe the dog for me'
'Te voy a hacer que me bañes el perro' [BF 07 1:61/Elicit]

There are in fact no forms with the Causative-Applicative sequence that are semantically compositional. Attempts at obtaining forms where Applicative would have scope over Causative ("for the benefit of Z, Y causes Y to do V") would yield forms where the benefactive argument would be expressed through a postpositional phrase or forms with the opposite scope relationship. Speakers only accept one kind of interpretation, namely that of the Causative having scope over the Applicative (consistent with the proposal (in §3.2.1) that the Causative has fixed scope over the Applicative). The preferred order of Causative and Applicative cannot be understood to be other than arbitrary, and must be morphotactically stipulated.

Even more strikingly, Causative and Desiderative, Desiderative and Associated Motion and Causative and Associated Motion, pairs of suffixes shown in §3.1 to display scope-based permutations, are also found in linear arrangements that do not correspond to their semantic interpretation. Examples of forms with non-compositional order between Causative and Desiderative are provided in (24).

24) Non-compositional order of Causative and Desiderative

V-Caus-Desid

a. ne mi haré wási mi'á-r**-ti-na**-ma
1sgN 2sgA some cows kill-Caus**-Caus-Desid**-Fut:sg
'I will make you want to kill some cows (for the party)'
'Te voy a hacer que quieras matar unas vacas (para la fiesta)'
[BF 06 2:43/Elicit]

b. nihé mi sú-r-**ti-na**-ma
1sgN 2sgA sew-Caus**-Caus-Desid**-Fut:sg
'I will make you want to sew'
'Voy a hacer que quieras coser' [BF 06 5:140/Elicit]

c. ti bimorí tamí rosowá-r-**ti-nir**-o
Det smoke 1sgA cough-Caus-**Caus-Desid**-Ep
'The smoke is making me want to cough'
'El humo me está haciendo querer toser' [BF 08 1:64/Elicit]

d. mísa tamí riná-**t-ni**-k-o
mass 1sgA yawn-**Caus-Desid**-Pst:1-Ep
'The mass made me want to yawn'
'La misa me dió ganas de bostezar' [BF 08 1:65/Elicit]

e. ko'á-r-**ti-ni**-sa
eat-Caus-**Caus-Desid**-Imp
'Let's make her want to eat'
'Hay que hacerla querer comer' [BF 08 1:65/Elicit]

Discussion of each one of the examples in (24) made it clear that speakers interpreted these forms with Causative having scope over Desiderative, i.e., with the meaning "X makes Y want to V". Notably, there were no forms recorded where the opposite suffix order (V-Desiderative-Causative) would also be found with non-compositional semantics. This was not the case with Causative and Associated Motion, as both orders of this pairs of suffixes were attested with a non-scopal interpretation. In (26a-c), the meanings conveyed are roughly translated as "X makes Y to go along doing V"), i.e., where Causative has scope over Associated Motion, but the Associated Motion morpheme is ordered after the Causative morpheme. In (25d) the opposite order of morphemes (V-Motion-Causative) does not correspond to the actual scopal relationship between these suffixes. The meaning for this sequence was unambiguously described as involving a causing event that took place while in motion.

25) Non-compositional order of Causative and Associated Motion

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V-Caus-Mot

a. čémale ko ne kayápi čukú-b-**ti-si**-a
Chémale Emph Int frequently Pos-Inch-**Caus-Mot**-Prog

inári martín
go Martin
'Chémale made Martin to go along stopping (the truck)'
'Chémale hizo que Martín se fuera parando (en la troca)'
[BF 08 1:90/Elicit]

b. mi=n piwá-**r-si**-mo rá
2sgA=1sgN smoke-**Caus-Mot**-Fut:sg Cer
'I'll make you go along smoking'
'Voy a hacer que vayas fumando' [BF 08 1:91/Elicit]

c. rosária ko tamí awí-**r-si**-niri
RosariaEmph 1sgA dance-**Caus-Mot**-Desid
'Rosaria wants to make me go along dancing'
'Rosaria quiere hacer que me vaya bailando' [SF 08 1:72/Elicit]

V-Mot-Caus

d.	nihé	mi	sú-**s-ti**-ma	sipúči,
	1sgN	2sgA	sew-**Mot-Caus**-Fut:sgskirt	

kíti	mi	yá	suní-ma
so	2sgN	already	finish-Fut:sg

‘I will go along making you sew the skirt, so that you will finish soon’
‘Te voy a ir haciendo que cosas la falda, para que ya termines’
[SF 08 1:121/Elicit]

Finally, Desiderative and Associated Motion were also attested in forms where their linear arrangement did not correspond to their scope. In (26a-b), Associated Motion has scope over Desiderative (“X goes along wanting to do V”), but the order of these suffixes is opposite to what we would expect if morpheme order would reflect scope. In (26c), the opposite scope (“X wants to go along V”) is also found with the unexpected order Desiderative-Motion.

26) Non-compositional order of Desiderative and Associated Motion

V-Mot-Desid

a.	ne	we	ko’á-**s-niri**
	1sgN	Int	eat-**Mot-Desid**

‘I’m going along wanting to eat’
‘Voy queriendo comer’ [SF 08 1:71/Elicit]

b.	ne=n	nará-**s-nir**-a	ináro
	Int=1sgN	cry-**Mot-Desid**-Prog	go

‘I’m going along wanting to cry’
‘Voy queriendo llorar’ [BF 08 1:89/Elicit]

V-Desid-Mot

c.	kurí	u’pá	naparí=n	ku	simí-ka
	just	last	Rel=1sgN	Rev	go-Ger

koči-**nál-si**-a=n	iná-ri
sleep-**Desid-Mot**-Prog=1sgN	go-Pst

‘La última vez que fui, quise irme durmiendo’ [SF 08 1:51/Elicit]

Thus, the same speakers that produce and identify verbal forms where there is a correlation between morpheme order and semantic compositionality also produce forms where the same suffix sequences cannot be reduced to any semantic principle.

Choguita Rarámuri patterns of arbitrary suffix order are summarized in (27).

27) Choguita Rarámuri arbitrary suffix interactions

a. The Causative-Applicative order is either scopal or arbitrary (the opposite order (Applicative-Causative) is always compositional).

b. The Causative-Desiderative order is either scopal or arbitrary (the opposite order (Desiderative-Causative) is always compositional).

c. Any order between Associated Motion and Causative and between Desiderative and Associated Motion can be found with compositional and non-compositional semantics.

7.3.4 Summary

Attested and unattested permutations between Causative, Applicative, Desiderative, Associated Motion and Evidential in Choguita Rarámuri are summarized in Table 33. Each cell in this Table indicates whether each particular attested interaction is compositional ("comp.") or not. In the case of unattested sequences, each cell indicates if this gap is due to fixed scope. The cells representing double exponence of the same suffix are not considered.[91]

[91] Cases of multiple exponence will be addressed in §7.5.2.

Table 33: Attested and unattested suffix orders in Syntactic and Aspectual Stem levels

2nd → 1st ↓	Caus	Appl	Desid	Mot	Ev
Caus	×	✓ non-comp.	✓ comp., non-comp.	✓ comp., non-comp.	✓ fixed scope
Appl	✓ comp.	×	✓ fixed scope	✓ fixed scope	✓ fixed scope
Desid	✓ comp.	× fixed scope	×	✓ comp., non-comp.	✓ fixed scope
Mot	✓ comp., non-comp.	× fixed scope	✓ comp., non-comp.	×	✓ fixed scope
Ev	× fixed scope	× fixed scope	✓ non-comp. phon-subcat	× fixed scope	×

The generalizations of Choguita Rarámuri suffix permutations are summarized in (28).

28) Choguita Rarámuri suffix permutations and their driving forces

a. Unattested permutations of Applicative and Evidential with other suffixes reflect their fixed scope.

b. The permutation of Desiderative and Evidential is conditioned by phonological subcategorization.

c. The ordering between Causative and Applicative is mostly arbitrary.

d. The ordering of Causative and Desiderative, Causative and Associated Motion and Desiderative and Associated Motion can either reflect scope or be arbitrary.

In the next section, I provide a formal account that models these generalizations.

7.4 The interaction of phonological subcategorization, scope and templatic constraints in Choguita Rarámuri suffix order

In order to account for the generalizations given above, Choguita Rarámutri affix order patterns can be analyzed as the result of the interaction between scope, phonological subcategorization and a language-specific template, formalized as violable constraints in an OT analysis. In this system, scope and templatic constraints are freely ranked, since the same suffixes found with compositional semantics are also found in arbitrary variable orderings. These constraints may be overriden by a phonological subcategorization requirement, stated as an alignment constraint.

As we have seen, many attested and unattested suffix permutations in Choguita Rarámuri fall out from the Scope Hypothesis. I adopt Condoravdi & Kiparsky's SCOPE constraint, defined in (29).

29) Scope constraint (Condoravdi & Kiparsky 1998)

SCOPE: Morphological constituency reflects scope

SCOPE interacts with arbitrary templatic constraints, since there are suffix sequences in this language that can only be understood as stemming from a language-specific morphological template. This system is thus analogous to the Mirror-Template system proposed by Hyman (2003) for Chichewa or the Pulaar mixed Scope-Template system proposed by Paster (2005). Hyman's (2003) analysis of Chichewa formalizes the morphological template through a single constraint TEMPLATE. An alternative adopted by Paster (2005) is to break down the TEMPLATE constraint into more specific constraints that specify each pair wise interaction. I follow Paster, and posit six local templatic constraints for Choguita Rarámuri. These constraints are defined in (30).

30) Choguita Rarámuri TEMPLATE

a. C > A: Causative precedes Applicative
b. C > D: Causative precedes Desiderative
c. C > M: Causative precedes Associated Motion
d. M > C: Associated Motion precedes Causative
e. D > M: Desiderative precedes Associated Motion
f. M > D: Associated Motion precedes Desiderative

Recall from §3.2.3 that the orders Applicative-Causative and Desiderative-Causative are all compositional (i.e., there are no attested Applicative-Causative or Desiderative-Causative sequences with non-scopal interpretations). Hence, I do not posit constraints like A > C or D > M. On the other hand, Causative and Associated Motion and Desiderative and Associated Motion can be found in any order with non-compositional semantics. I thus posit the constraints C > M (cf. (25a-c)) and M > C (cf. (25d)), as well as M > D (cf. (26a-b)) and D > M (cf. (26c)).

The tableaux in (31) and (32) show the need for ranking SCOPE above templatic constraints: both orders of Associated Motion and Desiderative (32) and Causative and Associated Motion (33) are attested. In each case, the order corresponds to semantic interpretation.

31) SCOPE >> TEMPLATE (Desiderative and Associated Motion)

a. ri'i-bú-**s-nare**
stone-Remove-**Mot-Desid**
'X wants to go along the road removing stones'

	/ri'ibú, -si, -nare/	SCOPE	M > D	D > M
☞ a.	ri'i-bú-s-nare			*
b.	ri'i-bú-n-simi	*!	*	

b. isíi-**n-si**
urinate-**Desid-Mot**
'X is going along wanting to urinate'

	/isí, -si, -na/	SCOPE	M > D	D > M
☞ a.	isíi-n-si		*	
b.	isíi-s-na	*!		*

32) SCOPE >> TEMPLATE (Causative and Associated Motion)

a. počí-**ti-si**
jump-**Caus-Mot**
'X goes along making Y jump'

	/počí, -ti, -si/	SCOPE	C > M	M > C
☞a.	počí-ti-si			*
b.	počí-si-ti	*!	*	

b. wikará-**s-ti**
sing-**Mot-Caus**
'X makes Y go along singing'

	/wikará, -ti, -si/	SCOPE	C > M	M > C
☞a.	wikará-s-ti		*	
b.	wikará-ti-si	*!		*

Regardless of the ranking between the templatic constraints M > D and D > M or C > M and M > C, the attested output will be determined by the satisfaction of the high ranked SCOPE constraint.

In the case of Desiderative and Evidential, on the other hand, I showed in §3.2 that it is the phonological subcategorization requirement of the Evidential which conditions the permutations of these suffixes. The subcategorization requirement of the evidential marker can be formalized in terms of Generalized Alignment (McCarthy & Prince 1993, Yu 2007), where an edge of a morphological constituent coincides with the edge of a phonological pivot.[92] This alignment constraint is defined in (33).

33)	Alignment of Evidential Construction
	Align($[\text{Ev}]_{\text{Af}}$, L, Ft', R): The left edge of the evidential marker is aligned to the right edge of the foot

This morphologically-specific alignment constraint is ranked above SCOPE, as satisfaction of the Evidential construction's phonological subcategorization frame takes precedence over semantic compositionality. The ranking is justified in the tableaux in (34). The Desiderative-Evidential order is favored in tableau (34a) through SCOPE, as both candidates satisfy the optimal alignment of the Evidential. In tableau (34b), on the other hand, the winning candidate (candidate (a)) has an optimal alignment of the Evidential, and is selected despite violating SCOPE.

[92] This alignment constraint is morphophonological in nature, and does not instantiate a P>>M ranking schema in OT (McCarthy & Prince 1993a, b). Crucially, this constraint does not imply any kind of optimization along a phonological scale, as would be predicted by this kind of model of the interaction between phonology and morphology.

34) Alignment (ALIGN$_{Ev}$) >> SCOPE

a. nakó-**n-čane**
fist.fight-**Desid-Ev**
'It sounds like they want to fist fight'

	/nakó, -na, -čane/	ALIGN$_{Ev}$	SCOPE
☞a.	(nakó-n)$_{Ft}$-čane		
b.	(nakó)$_{Ft}$ -ča-nare		*!

b. atís-**ča-nare**
sneeze-**Ev-Desid**
'It sounds like they want to sneeze'

	/atísi, -na, -čane/	ALIGN$_{Ev}$	SCOPE
☞a.	(atís)$_{Ft}$-ča-nare		*
b.	(atís)$_{Ft}$-na-čane	*!	

So far we have the following constraint ranking: ALIGN >> SCOPE >> TEMPLATE. Scope is only overriden by phonological requirements specified in the subcategorization frame of the Evidential suffix. Templatic constraints in these cases, do not play any role.

There are, however, interactions where SCOPE and TEMPLATE must be inversely ranked in order to yield the correct results. This, for instance, is the case of Causative and Applicative. In (35), the ranking SCOPE >> C > A yields the attested suffix order pattern: a form with the compositionally-sound order Applicative-Causative will outrank a morphotactically stipulated sequence of Causative-Applicative.

35) SCOPE >> TEMPLATE

mičí-**k-ti**
carve-**Appl-Caus**
'X makes Y carve sticks for Y'

	/mičí, -ti, -ki/	SCOPE	C > A
☞ a.	mičí-k-ti		*
b.	mičí-t-ki	*!	

In (36), however, the opposite ranking (C > A >> SCOPE) is required to derive the winning candidate (36b), which has the non-compositional Causative-Desiderative order.

36) TEMPLATE >> SCOPE

o'pés-**ti-ki**
vomit-**Caus-Appl**
'X makes Y throw up on Z'

	/o'pés, -ti, -ki/	C > A	SCOPE
a.	o'pés-ki-ti	*!	
☞ b.	o'pés-ti-ki		*

Scope is also outranked by a templatic constraint (C > D) in the cases of the non-compositional orderings of Causative and Desiderative exemplified in (24). There is no evidence that a constraint D > C operates in the language, as the non-compositional orders of this pair of suffixes exclusively involve the sequence Causative-Desiderative. A sample derivation is exemplified in tableau (37).

37) TEMPLATE >> SCOPE (Causative and Desiderative)

V-Caus-Desid

a. rosowá-r-**ti-nare**

cough-Caus-**Caus-Desid**

'X makes Y want to cough'

	/rosowár, -ti, -nale/	C > D	SCOPE
a.	rosowár-na-ti	*!	
☞ b.	rosowár-ti-nare		*

This ranking is reverted in the cases where the a-templatic Desiderative-Causative order happens to be compositional (cf. (13) above). This is exemplified in tableau (38).

38) SCOPE >> TEMPLATE (Causative and Desiderative)

bahí-**n-ti**

drink-**Desid-Caus**

'X makes Y want to drink water'

	/bahí, -ti, -na/	SCOPE	C > D
a.	bahí-ti-na	*!	
☞ b.	bahí-n-ti		*

Finally, we have seen that Causative and Associated Motion and Desiderative and Associated Motion are attested in variable orders, where the variation in placement does not correspond to scope (cf. (24-25) above). In these cases we must also posit that SCOPE is outranked by templatic constraints. Furthermore, templatic constraints that specify each attested suffix sequence must be freely ranked with respect to each other in order to obtain the correct results. This is exemplified in tableaux (39) and (40), with the ranking and evaluation for non-compositional Causative-Motion and Motion-Causative, respectively.

39) TEMPLATE >> SCOPE (**C > M** >> **M > C** >> SCOPE)

a. piwá-**r-si**
smoke-**Caus-Mot**
'X makes Y go along smoking'

	/piwá, -ri, -si/	C > M	M > C	SCOPE
a.	piwá-si-ri	*!		
☞ b.	piwá-r-si		*	*

40) TEMPLATE >> SCOPE (**M > C** >> **C > M** >> SCOPE)

sú-**s-ti**
sew-**Mot-Caus**
'X goes along making Y sew'

	/sú, -ti, -si/	M > C	C > M	SCOPE
a.	sú-ti-si	*!		
☞ b.	sú-s-ti		*	*

We have, then, that there are two coexisting constraint rankings operating in Choguita Rarámuri: ALIGN >> SCOPE >> TEMPLATE and ALIGN >> TEMPLATE >> SCOPE, where scope and templatic constraints are freely ordered, and always outranked by phonology through phonological subcategorization. Furthermore, templatic constraints are freely ranked as well, modeling the cases in which variable suffix order is arbitrary.

It is of course always possible to resort to an analysis in which templatic constraints are always overarching and scope only emergent (i.e., where TEMPLATE and SCOPE are never re-ranked). In such an alternative analysis we would also need to assume two rankings. A first ranking would be required to model the forms in which morpheme order reflects scope. In this ranking, exemplified in (41), higher-ranked templatic constraints would not be critically ranked with respect to each other, leaving scope an emergent role (that is, the wining candidates would crucially not violate the lower ranked SCOPE constraint).

41) Emergent SCOPE

ri'i-bú-**s-nare**
stone-Remove-**Mot-Desid**
'X wants to go along the road removing stones'

	/ri'ibú, -si, -nale/	M > D	D > M	SCOPE
☞ a.	ri'i-bú-s-nare		*	
b.	ri'i-bú-n-simi	*		*!

A second ranking would be necessary to account for the forms with arbitrary suffix sequences. Since such sequences include variable order as well, we would need to posit that the higher ranked templatic constraints would be freely ranked. These rankings are exemplified in (42).

42) Free ranking of templatic constraints

Mot-Desid
a. nará-**s-nare**
cry-**Mot-Desid**
'X goes along wanting to cry'

	/nará, -si, -nale/	M > D	D > M	SCOPE
☞ a.	nará-s-nare		*	*
b.	nará-n-simi	*!		

Desid-Mot
b. koči-**nár-si**
sleep-**Desid-Mot**
'X wants to go along sleeping'

	/koči, -si, -nale/	D > M	M > D	SCOPE
☞ a.	koči-nár-si		*	*
b.	koči-s-nare	*!		

We could thus conceive the Choguita Rarámuri case as one where templatic constraints always override scope: semantically compositional morpheme order would be emergent only when the templatic constraints would underdetermine the output. In such an analysis, however, we would miss the generalization that most cases of fixed suffix order (i.e. between Applicative and other suffixes and Evidential and other suffixes) reflect fixed scope. The fixed Template >> Scope analysis misses the generalizations captured by the proposed analysis, where scope, in effect, outranks the templatic constraints in a fair amount of cases.

If we in fact assume that in this system scope and templatic constraints are freely ranked, then this carries a typological implication: mixed scope/template systems have been alternatively analyzed as systems where templatic constraints are always emergent (Athabaskan; Rice 2000) or systems where scope may be outranked by templatic constraints (Chichewa, Hyman 2003;[93] Pulaar, Paster 2005). The Choguita Rarámuri system would thus instantiate a new type of mixed scope/template system, in which the relationship between these two driving forces of affix order is better characterized as one

[93] Though Hyman's (2003) analysis of Chichewa also involves different rankings between templatic constraints and "mirror" (scopal) constraints, he states that cases where morpheme order reflects semantic compositionality stem from "'exceptional' overrides" (2003:2); a Pan-Bantu default template is responsible for determining the attested suffix order patterns of Chichewa.

of variable ranking. I present data that point at both grammar-internal and grammar-external sources of this particular tension between scope and templates in Choguita Rarámuri.

7.5 Potential sources of arbitrary suffix sequences

While Choguita Rarámuri morphology cannot be characterized as position-class (§2), I have shown that this language has a 'relative-order template' (Good 2003), where templatic constraints operate in a defined area of the hierarchical structure of the verb. Recall that variable affix ordering, whether determined by scope, phonological subcategorization or templatic constraints, is restricted to two verbal domains, the Syntactic and the Aspectual Stem levels (4). In the proposed analysis, I have resorted to free ranking between templatic constraints to model the set of unconstrained pair wise permutations attested in this language (cf. Paster 2005). But while a useful descriptive device, we might want to ask if these morphotactic statements bear any relation with other components of Choguita Rarámuri's grammar. In the case of the Bantu relative-order template system, it has been proposed that the templatic restrictions on suffix order are linked to morphophonological conditions on the verb stem (Hyman 2003, Good 2006). In the case of Chintang free prefix order, it has been suggested that variability of prefix placement is linked to priming and social-model copying (Bickel et al. 2007:65). In the next subsection, I report on two phenomena that hint at both the grammar-external and grammar-internal conditions at play in conditioning arbitrary variable affix ordering in Choguita Rarámuri.

7.5.1 Arbitrary suffix sequences through priming

Some arbitrary suffix orderings in this language seem to be at least partially generated through priming effects. It is often the case that during elicitation of morphologically complex constructions, a particular morpheme sequence will become fixed and serve as the base for further suffixation when derived, more complex forms are elicited, regardless of the intended semantic interpretation. Consider for instance the transcribed sequence in (43), where the speaker (SF) produces a form with a semantically compositional order Causative-Motion ([X goes along [making Y jump]]) in the first answer, and uses the same morpheme order to express the opposite scopal relationship in the next answer ([X makes [y go along V]]).

43) Priming of Causative-Motion order [SF 07 2:38/Elicit]

GC: čú regá aniwá: “me vas a ir haciéndome que brinque?”
‘How do you say “will you go along making me go jump”?

Compositional Caus-Mot

SF:	muhé	á	tamí	čipó-**r-si**-ma?
	2sgN	Aff	1sgA	jump-**Caus-Mot**-Fut:sg

[X goes along [making Y jump]]

GC: a’rí: “te voy a hacer que le vayas pidiendo dinero”?
‘And: “I’ll make you go along asking her for money”?

Non-compositional Caus-Mot

SF:	ne	ko	á	mi	tá-**r-si**-ma	winomí
	1sgN	Emph	Aff	2sgA	ask-**Caus-Mot**-Fut:sg	money

[X makes [Y go along asking]]

In the transcribed sequence in (44) with a different speaker (BF), the first elicited response involves a causative stem (*rará-ri-ma* ‘buy-Caus-Fut:sg’). This same causative stem is used in the second response, in which a different inflectional marker is elicited (*rará-r-si* 'buy-Caus-Pst'). In a third response, the translation for the Spanish stimulus is a causative built of an applicative stem of the same root (*rarí-r-si* 'buy:Appl-Caus-Imp:pl'). In the fourth turn, the speaker produces a form where the same causative stem is used, followed by the Desiderative suffix (*rarí-r-niri-si* 'buy-Caus-Desid-Imp:pl). Crucially, this form features a non-compositional order between Causative and Desiderative. Discussion of the form produced made it clear that the intended meaning was one where an agent makes the causee feel the desire to buy something.

44) Priming of Causative-Desiderative order [BF 06 2:134/Elicit]

GC: ču riká aniwá "te voy a hacer que compres zapatos"?
'How do you say "I'll make you buy shoes"?

Root-Caus

BF:	mi	=ni	sapáto	rará-ri-ma	orá
	2sgA	=1sgN	shoes	buy-Caus-Fut:sg	Cer

GC: a'rí ču riká aniwá "te hice comprar zapatos"?
'And how do you say "I made you buy shoes"?'

Root-Caus:

BF:	mi	=ni	sapáto	rará-r-ki
	2sgA	=1sgN	shoes	buy-Caus-Pst:1'

GC: a'rí, "háganlos comprar frijol!"?
'And "make them buy beans!"?'

Root-Caus:

BF:	muní	rarí-r-si
	beans	buy:Appl-Caus-Imp:pl

'Make them buy beans (from you all)!'

GC: y cómo sería "háganlos querer comprar soda"...como antojándolos?
'And how would you say "make them want to buy soda"...like if you would tease them?'

Non-compositional Caus-Desid order (Root-Caus-):

BF: rarí-**r**-**niri**-si
buy-**Caus-Desid**-Imp:pl
[X makes [Y want to buy soda]]

The non-compositional order of Causative and Associated Motion in the second turn in (43) and the non-compositional order of Causative and Desiderative in the last turn in (44) exemplify a general pattern where morphologically complex constructions contain semantically arbitrary suffix sequences that mirror sequences previously produced.[94]

There are probably more factors involved in conditioning arbitrary suffix sequences in Choguita Rarámuri in addition to priming effects. The nature of any of these factors and their interaction could only be sorted out through a large-corpus study, which is at present still not available for this language. It is clear, however, that while the semantics in the reported cases is unambiguous, morpheme order did not reflect the actual semantic composition of the inflected verb, even though these same speakers produce morphologically complex forms with fully compositional semantics.

7.5.2 Multiple Exponence and non-compositional suffix ordering

Finally, scope is also challenged in this language by cases of multiple exponence (cf. Chapter 5), where the recursive exponence of, for instance, a causative suffix does not match a parallel recursive causative operation. ME thus challenges the Mirror Principle's

[94] In addition, the form *rarí-r-niri-si* in (44) is composed of a root with an *i*-vocalism, an alternative root form that is only available to a subset of verbal roots in Choguita Rarámuri with final unspecified vowels (Class 3 roots). These types of roots can either have a final-*a* (e.g., *rará* as in the first three responses in (44)), or a final-*i* allomorph (e.g., *rarí*, as in the form provided in the last answer). Choice of stem form is subject to inter-speaker variation, and can also be affected by priming effects.

proposal that morphological expressions are isomorphic with syntactic or semantic operations.

Recall from Chapter 5 that this mismatch between meaning and form is prosodically conditioned: final-stress stems optionally display ME (45a), but ME is never attested with forms where the base for affixation has pre-final stress (45b).

45) Prosodic conditions on ME

	Causative suffixation	*Causative doubling*	*Gloss*
	Causative doubling with final stress stems		
a.	mé-**r**-ma	mé-**r**-**ti**-ma	‘win-**Caus(-Caus)**-Fut:sg’/ ‘ganar-Caus(-Caus)-Fut:sg’
	ko’í-**ri**-ri	ko’í-**r**-**ti**-ma	‘kill:pl-**Caus(-Caus)**-Fut:sg’/ ‘matar:pl-Caus(-Caus)-Fut:sg’
	sirú-**ri**-ri	sirú-**r**-**t**-i	‘hunt-**Caus(-Caus)**-Impf’/ ‘cazar-Caus(-Caus)-Impf’
	bahí-**ri**-a	bahí-**r**-**ti**-po	‘drink-**Caus(-Caus)**-Fut:pass’/ ‘tomar-Caus(-Caus)-Fut:pass’
	aka-rá-**ri**-ma	aka-rá-**r**-**ti**-ma	‘sandal-Fact-**Caus(-Caus)**-Fut:sg’/ ‘huarache-Fact-Caus(-Caus)-Fut:sg’
	No causative doubling with prefinal stress stems		
b.	té̱k-**ti**-ma	*té̱k-**r**-**ti**-ma	‘be.drunk:pl-**Caus**-**Caus**-Fut:sg’/ ‘borracho:pl-Caus-Caus-Fut:sg’
	paní̱k-**ti**-ma	*paní̱k-**r**-**ti**-ma	‘wash.hands-**Caus**-**Caus**-Fut:sg’/ ‘lavar.manos-Caus-Caus-Fut:sg’
	opéš-**ti**-ma	*opéš-**r**-**ti**-ma	‘vomit-**Caus**-**Caus**-Fut:sg’/ ‘vomitar-Caus-Caus-Fut:sg’
	bačím-**ti**-po	*bačím-**r**-**ti**-po	‘sprinkle-**Caus**-**Caus**-Fut:pl’/ ‘rociar-Caus-Caus-Fut:pl’
	očóp-**ti**-po	*očóp-**r**-**t**i-po	‘stick-**Caus**-**Caus**-Fut:pl’/ ‘pegar-Caus-Caus-Fut:pl’

I have proposed in this dissertation that the synchronic motivation of ME in Choguita Rarámuri is structural well-formedness: general morphophonological properties (such as stress induced posttonic deletion in (45b)) make the inner exponents structurally defective (less susceptible to morphological segmentation), enforcing a well-formedness requirement at a subconstituent level (a 'slot' in the word) (cf. Inkelas & Zoll (2005) analysis of empty morphemes). The structurally defective stem is thus repaired through the addition of a second exponent which is aligned with a syllable rhyme (e.g., *mé-r****.-ti.****-ma* 'win-Caus-**Caus**-Fut:sg', *si.rú-r****.-ti.****-ma* 'hunt-Caus-**Caus**-Fut:sg', etc.).

This pattern of prosodically-driven mismatch between form and meaning also yields suffix sequences that are independent of compositionality. Consider, for instance, the examples in (46), where compositional orders are underlined, and non-compositional orders are highlighted with italics. In these cases, an inner sequence of Applicative followed by the Causative suffix *–ti* is compositional, but the sequence composed of Causative suffix *–ti* and a subsequent Applicative suffix *–ki* is not.

46) ME and non-compositional suffix order

a.	mi	=n	biré	sipúča	sú-n-*ti*-*ki*-ma	rá	jéni
	2sgA	=1sgN	one	skirt	sew-Appl-Caus-Appl-Fut:sg	Ce	Yeni

'I'll make you sew a skirt for Yeni'
'Te voy a hacer que le cosas una falda a Yeni' [BF 07 2:34/Elicit]

b.	mi=ni	dúlse	rarí-w-*ti*-*ki*-ma	jadíra
	2sgA=1sgN	candy	buy-Appl-Caus-Appl-Fut:sg	Yadira

'I'll make you buy candy for Yadira'
'Te voy a hacer que le compres dulces a Yadira' [SF 07 2:32/Elicit]

In (46), an inner Applicative exponent undergoes posttonic syncope, requiring a second Applicative exponent to be aligned with a syllable rhyme. As we have seen in §3.2.3, the order of the Causative *–ti* suffix and the Applicative *–ki* suffix is templatic. The second Applicative morpheme, whose exponence is morphophonologically conditioned, is ordered after an intervening Causative suffix, thus generating a non-compositional Causative-Applicative sequence.

These cases suggest that the factor that drives ME can concomitantly produce suffix orderings which are independent of semantic compositionality. Semantically vacuous suffix doubling and (at least some cases of) variable suffix permutation originate in the morphophonology, not the morphosyntax.

7.6 Conclusion

In this chapter, I have documented Choguita Rarámuri suffix order patterns and showed how most ordering restrictions in this language follow from scope, where the relative order of exponents is correlated with their semantic compositionality. Thus, as predicted by Rice's Scope Hypothesis, morphemes with fixed scope occur in a fixed linear order, and morphemes where scope can be reversed occur in variable order, with interpretation related to order (2000:79). I have also shown that there are two exceptions to these generalizations. First, there is variable ordering of suffixes that have a fixed scopal relationship, which is driven by phonological subcategorization. And second, there are suffix permutations that cannot be reduced to any general grammatical principle. Crucially, I have shown how these arbitrary permutations also occur with suffixes where scope-related variable order is also attested. The interaction between phonological subcategorization, scope and a partial morphological template was analyzed through free ranking between scope and templatic constraints, with overarching phonological subcategorization, formalized through morpho-prosodic alignment. I have discussed how the proposed analysis of Choguita Rarámuri suffix order expands the typology of mixed scope/template systems, first introduced by Hyman (2003), by presenting a system where scope and templatic constraints are variably ranked. Furthermore, I have suggested that these templatic restrictions are descriptive devices with possible sources in priming and morphophonological conditions on stems, two phenomena that have been previously documented as influencing variability in prefix placement (Bickel et al. 2007) and templatic suffix order (Hyman 2003, Good 2006), respectively.

Finally, this chapter has documented a new case of free affix ordering, a type of affix order system that has been sparsely documented to date. To my knowledge, unconstrained affix permutations have only been documented in Kiranti (Sino-Tibetan; Bickel et al. 2007) and Totonacan languages (McFarland 2006, Beck 2007). Other cases of less unconstrained types of arbitrary affix permutations have been reported in Quechua (Muysken 1988), Chichewa (Hyman 2003), and Pulaar (Paster 2005). There are still not enough cases for a typology of free affix order systems to be viable, and it is worth asking if the apparent rarity of these cases is an artifact of field methodologies that overlook variation. We might also ask if there any typological implications of this kind of system, i.e. how agglutinating-specific is this phenomenon? As documentation of endangered and less studied languages grows, potentially bringing new cases of free affix permutation to light, we might be able to start answering these questions.

Chapter 8: Conclusion

8.1 Piecing the puzzle together

In this study, I have presented the first description and analysis of a wide range of morphological and phonological phenomena of Choguita Rarámuri. While many issues are still unresolved, I have sought to identify the main characteristics of the system and to evaluate the complexities of this language and its interactions through the lens of developing theories of the phonology-morphology interface.

In Chapters 2 and 3, I characterized the general properties of the phonology and morphology. I showed how the phonological system features a small segment inventory, phonetic and phonological properties of a robust stress system, developing tonal contrasts, and complex patterns of allophonic variation, among other properties. Crucially, I showed the degree of complexity of the morphological system and how a great deal of phonological processes, including vowel harmony and compensatory lengthening, are morphologically conditioned. The proposed morphological structure is repeated in (1):

1) Choguita Rarámuri verbal stem levels

Position	Categories	Stem levels
α	Root + unproductive and semiproductive processes	Inner Stem
S1	Inchoative	Derived Stem
S2	Transitives	
S3	Applicative	Syntactic Stem
S4	Causative	
S5	Applicative	
S6	Desiderative	Aspectual Stem
S7	Associated Motion	
S8	Auditory Evidential	
S9	Voice/Tense/Aspect	Finite Verb
S10	Mood	
S11	TAM	
S12	Subordination	Subordinate Verb

I have proposed that morphological constituency is essential in understanding the complexity of each of the typologically-challenging phenomena addressed in the second part of this dissertation, which include the patterns of variable suffix order, juncture effects of multiple exponence, allomorph distribution and the facts about stress assignment.

Perhaps one of the most striking phenomena of this language is its complex stress system. I have argued that the most elegant analysis of this system requires assuming that phonological constraint rankings are associated to groups of morphological constructions:[95] suffixes are either associated with a Strong (stress-shifting) Cophonology

[95] There are also processes that distinguish constraint rankings on the basis of lexical class (cf. minimal word size constraint applying on verbs but not nouns (§)).

or a Weak (stress-neutral) Cophonology (§4.3). There is evidence for not one, but two default stress patterns.

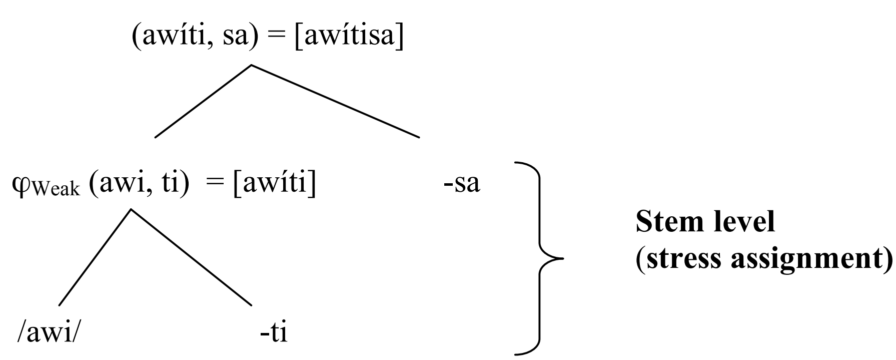
Stress assignment also gives evidence for general phonological constraints operating in different subconstituents of the word. As we have seen in Chapter 4 (§4.3.1), stress is assigned in a domain which includes the root and the first layer of morphology. I have proposed that the following constraints operate at this level, the Stem level:

2) Constraints operating at Stem level

a.	ALL-FT-L:	Every foot stands at the left edge of the prosodic word (PrWd).
b.	PARSE-σ:	Syllables must be parsed into feet.
c.	IAMB:	Feet have final prominence.
d.	TROCHEE:	Feet have initial prominence.
d.	MAX-IO:	Every segment in the input has a correspondent in the output.

The domain of application of construction-specific cophonologies in the branching morphological structure of the verb is depicted in (3):

3) Branching morphological structure



Choguita Rarámuri also provides evidence for a second layer of phonological evaluation. I have argued that Multiple Exponence, typically attributed to the morphosyntax in the literature, is synchronically motivated as a repair for morphophonological opacity at the juncture between the Stem level (depicted above) and the rest of the agglutinating verb. I argued that ME results from the interaction between the general markedness constraints operating at the Stem level (2) and the general markedness constraints at a later level, the DStem or IStem. The phonological constraints of this second level are listed in (4).

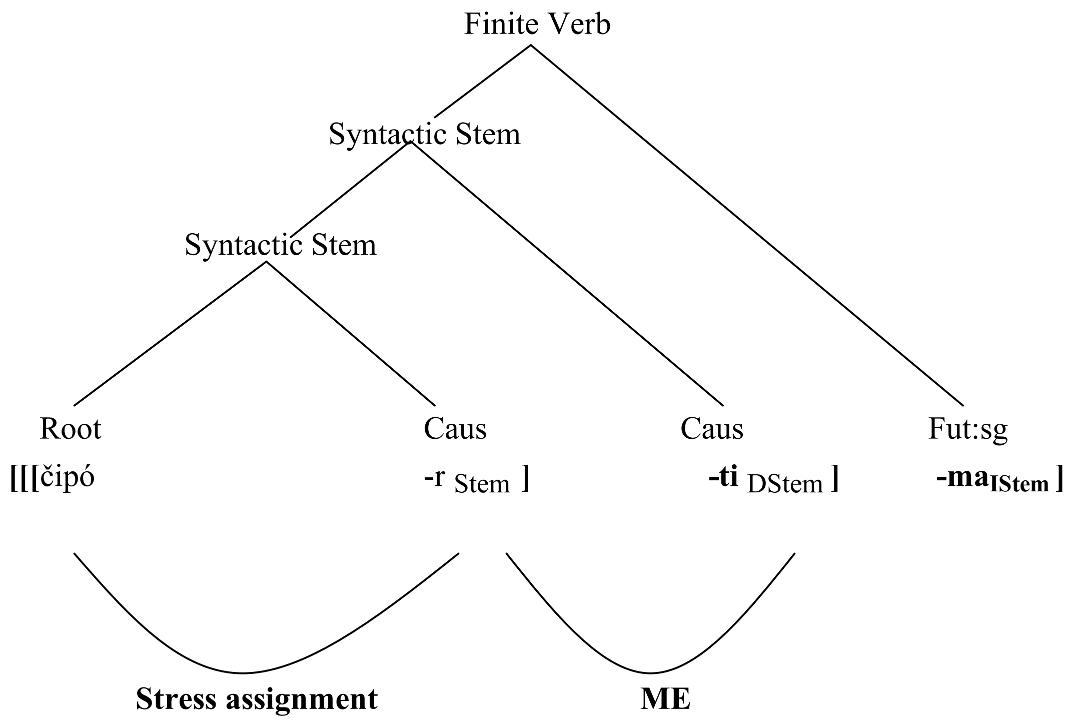
4) Constraints operating at the DStem/IStem level

a.	FINAL-V:	Every prosodic word is vowel-final (the logical counterpart of FINAL-C (McCarthy & Prince 1994:22)
b.	DEP:	Output segments must have input correspondents
c.	PARSE-σ:	Syllables must be parsed into feet.
d.	MAX-IO:	Every segment in the input has a correspondent in the output.

The schema in (5) illustrates the hierarchical structure of a word and the domain of application of the Stem level constraints and the DStem level constraints.

5) Morphological and prosodic structure of Multiple Exponence

a. Hierarchical morphological structure



That different rankings operate at different levels of the word is also evidenced in the analysis of patterns of allomorph selection, addressed in Chapter 6. I proposed that allomorph distribution in this language is determined by the fact that different allomorphs are added in different morphophonological subconstituents of the word. Specifically, I have argued that different morphoprosodic alignment constraints are sensitive to the distinction between stem levels which are bases for suffixation and stem levels that can be fed directly to the word level phonology. These alignment constraints are listed in (6).

6) Alignment of allomorphs to morphological subconstituents

a. ALIGN([σ σ]$_{Af}$, R, PrWd, R): The right edge of long allomorphs is aligned to the right edge of the prosodic word

b. ALIGN([σ]$_{Af}$, R, Stem, R): The right edge of short allomorphs is aligned to the right edge of the Stem

Finally, the distinction between a DStem level and an IStem level is made based on morphotactic evidence coming from the distribution of multiple exponence and variable suffix order. There is phonological, morphosyntactic and morphotactic evidence for positing three ordered blocks of suffixes, which I have labeled RStem, DStem and IStem. Suffixes belonging to any of these blocks may not follow suffixes belonging to a later stem. The correlation between verbal domains and ordered blocks proposed in Chapter 7 is repeated in (7).

7) Suffix order blocks and verbal domains

Position	**Stem level**	**Suffix blocks**
α	Inner Stem	RStem
S1	Derived Stem	
S2		
S3	Syntactic Stem	DStem
S4		
S5		
S6	Aspectual Stem	
S7		
S8		
S9	Finite Verb	IStem
S10		
S11		
S12	Subordinate Verb	

Variably ordered suffixes belong to the DStem, as well as the exponents displaying multiple exponence.

There is thus evidence for positing two co-existing structures in Choguita Rarámuri words, one which is morphologically defined (relevant to the linear placement of affixes, morphotactic restrictions and allomorph selection), and one which is phonologically defined (relevant for stress assignment, distribution of posttonic syncope, multiple exponence and distribution of suppletive allomorphs). While not isomorphic, I claim that these two structures are deeply interdependent.

8.2 Implications and questions for further research

8.2.1 Theoretical implications

There are several theoretically relevant issues raised by the Choguita Rarámuri data. I have addressed each of these issues in each individual chapter, but we can now consider more general questions.

One relevant discovery is that Choguita Rarámuri provides evidence for abandoning the Continuity of Strata Hypothesis (Mohanan 1982, 1986) (§4.3.4), since stress-shifting suffixes and stress-neutral suffixes are not distributed ordered modules (i.e., the linear placement does not correspond neatly to their phonological properties):

8) Distribution of stress-shifting and stress-neutral suffixes in the verb

Position	**Stress behavior of suffixes**	**Stem level**
S1	Stress-shifting	Derived Stem
S2		
S3	Stress-neutral	Syntactic Stem
S4		
S5		
S6	Stress-shifting	Aspectual Stem
S7	Stress-neutral	
S8		
S9	Stress-shifting	Finite Verb
S10		
S11	Stress-neutral	
S12	Stress-neutral	Subordinate Verb

We have also seen how this language provides evidence that supports the claim that there is no fixed number of stem types for phonological evaluation (Inkelas et al. 2006). This departs from the asumption made in LPM/Stratal OT that there is a fixed, universal set of constituent types (the Stem, Word and Phrase level) (Kiparsky 2000, 2003). Further study of Choguita Rarámuri and typologically similar languages should lead to additional evidence for answering the question: how many morphological subconstituents (stem levels) within the word are relevant for morphophonological evaluation?

Finally, another important implication of this dissertation was discussed in Chapter 6, where I considered outwardly conditioned allomorph selection. This phenomenon poses an interesting challenge to a key prediction made in any model of the morphology-phonology interface which respects morphological constituency.

Specifically, in any such model, words are conceived to be built in successive layers from the inside-out. Thus, no outer exponent will be able to condition the morphological identity of an inner affix, since the inner affix will be in place and attached to the stem before the outer suffix has any effect over the word. I have shown that the best predictor of the distribution of short and long allomorphs in this language is precisely the presence or absence of outer morphological material. It is not the case, however, that global output optimization drives allomorph selection either, as predicted by competing models where phonology takes precedence over morphology. The Choguita Rarámuri case suggests that a restrictive model of optimization, limited to stem levels (as proposed in Inkelas et al. 2006), achieves better empirical predictions than the subcategorization and P >> M models.

8.2.2 Typological implications

In this dissertation I have characterized Choguita Rarámuri as 'agglutinating', without clarifying the implications of this characterization. Agglutination is typically defined through the conflation of morphological fusion and flexion (agglutinating = concatenative-nonflexive), but it may be further characterized by a larger set of parameters. Some of these parameters, taken from Plank 1999, are summarized in Table 34:

Table 34: Agglutination vs. Flexion (Plank 1999)

Parameter	**Agglutinating languages**	**Inflectional languages**
Separatist exponents	✓	×
No flexivity	✓	×
Zero exponence	✓	×
No (or little) homonymous exponence	✓	×
Multiple exponence (through multiple affixation)	✓	×
Large paradigms	✓	×
Transparent morpheme boundaries	✓	×
Low degree of phonological cohesion	✓	×
Optional morphological marking	✓	×

Uto-Aztecan languages have been described as prototypically agglutinative, with a complex verbal morphology, mostly suffixing, a low degree of phonological cohesion between exponents, and a low degree of cumulation in morphological exponence (Langacker 1977:158). Choguita Rarámuri morphology, which is almost exclusively suffixing, displays the following agglutinating-like properties:

9) Agglutinating properties of the Choguita Rarámuri verb

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a. Mostly concatenative exponence (§3.5, §3.4)
b. Potentially long string of suffixes (§3.5.1)
c. Virtually no flexivity (§3.3.1.2)
d. Zero exponence (§3.5)
e. Little homonymous exponence (§3.5, Appendix 1)
f. Large derivational paradigms (§3.5, §5.3)
g. Multiple exponence (§5);
h. Abundant optional marking (§2-7)

Choguita Rarámuri departs from the 'agglutinating' type in that it has less transparent morpheme boundaries, due to a fair amount of phonological cohesion of exponents closer to the stem.[96] Choguita Rarámuri nonetheless shares several morphophonological properties and phenomena (e.g., multiple exponence, variable suffix order) with other morphologically complex languages that have been characterized as agglutinative. I have argued that some seemingly arbitrary properties of this language are explained by a general, functional principle of parsability or recoverability of morphological information in morphologically complex constructions (Broselow 2003; van Oostendorp 2004, 2006; Hay & Plag 2004; Hay & Baayen 2005). Further study of Choguita Rarámuri and other understudied 'agglutinating' languages should lead to a better understanding of the role of phonological cues (including assymetrical phonotactic patterns (Broselow 2003) and prosodic prominence (Rice 2005)) in parsing morphological complexity.

[96] As Anderson points out, "languages as wholes tend to involve greater or lesser mixtures of different sorts of processes…[and] it is individual rules and not entire languages that can be meaningfully called agglutinating" (1992:328-329). There is in fact a widespread view that morphological typology does not amount to any significant generalization, since the defining characteristics of agglutination are seemingly not dependent on any macroparameter (Haspelmath (to appear), Spencer (1991)). However, splits in expression of specific parameters of agglutination have been argued to be systematic, reinstating the validity of the agglutination/fusion distinction (Plank 1999).

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Appendix 2: Choguita Rarámuri Verbal Suffixes

Postion	Category	Suffix	Reference
S1	Inchoative	Inchoative *-ba* (Inch)	§1
S2	Transitives	Pluractional transitive *-ča* (Tr:pl)	§2.1
		Transitive *-na* (Tr)	§2.2
		Transitive *-bu* (Tr)	§2.3
S3	Applicatives	Applicative *-ni* (Appl)	§3.1
		Applicative *-si* (Appl)	§3.2
		Applicative *-wi* (Appl)	§3.3
S4	Causative	Causative *-ti* (Caus)	§4
S5	Applicative	Applicative *-ki* (Appl)	§5
S6	Desiderative	Desiderative *-nare* (Desid)	§6
S7	A. Motion	Associated Motion *-simi* (Mot)	§7
S8	A. Evidential	Auditory Evidential *-čane* (Ev)	§8
S9	Tense/Aspect/ Mood, Voice	Past Passive *-ru* (Pst:Pass)	§9.1
		Future Passive *-pa* (Fut:Pass)	§9.2
		Medio-Passive *-riwa* (MPass)	§9.3
		Conditional Passive *-suwa* (Cond:Pass)	§9.4
		Future Singular *-méa, -ma* (Fut:sg)	§9.5
		Future Plural *-po* (Fut:pl)	§9.6
		Motion Imperative *-me* (Mot:Imp)	§9.7
		(Active) Conditional *-sa* (Cond)	§9.8
		Irrealis singular *-me* (Irr:sg)	§9.9
		Irrealis plural *-pi* (Irr:pl)	§9.10
S10	Mood	Potential *-ra* (Pot)	§10.1
		Imperative sg. *-ka* (Imp:sg)	§10.2
		Imperative sg. *-sa* (Imp:sg)	§10.3
		Imperative pl. *-si* (Imp:pl)	§10.4
S11	Tense/Aspect/ Mood	Reportative *-ra* (Rep)	§11.1
		Past perfective *-li* (Pst)	§11.2
		Past perfective 1st person *-ki* (Pst:1)	§11.3
		Past imperfective *-e* (Impf)	§11.4
		Progressive *-a* (Prog)	§11.5
		Indirect causative *-nura*	§11.6
S12	Subordination	Temporal *-či* (Temp)	§12.1
		Epistemic *-o* (Ep)	§12.2
		Gerund *-ka* (Sim)	§12.3
		Purposive *-ra* (Pur)	§12.4
		Participial *-ame* (Ptcp)	§12.5

1. S1: Inchoative –*ba* suffix.
The inchoative suffix is productively used with positional or stative predicates to indicate a dynamic change of state; a state is turned into a process, meaning 'to become X'. This stress-shifting suffix is exemplified in (1).

1) Inchoative –*ba* suffix example

a.	ma	aka-**bá**-ča-na-ri		
	already	be.sweet-**Inch**-Tr:Pl-Tr-Pst		
	'It has been sweetened'			
	'Ya lo endulzaron'			[BF 05 2:56/Elicit]

b.	tamí	rata-**bá**-ča-ri	ko'wáami		
	1sgN	be.hot-**Inch**-Tr-Imp	food		
	'Heat up the food for me'				
	'Caliéntame la comida'				[LEL 06 4:151/Elicit]

2. S2: Transitive suffixes.
The transitive suffixes in S2 are semantically and lexically restricted suffixes of limited productivity. Transitive suffixes –*na* (§2.1) and -*ča* (§2.2) increase the valence of intransitive change of state predicates (described in Chapter 3, §3.3.3).

2.1 Transitive–*na* suffix.
This suffix is stress-shifting. The following examples show transitive derivations with suffix –*na* from intransitive change of state predicates. The intransitive (inchoative) forms are not suffixed (e.g., (2a)), and the corresponding transitive versions require the transitive suffix (e.g., (2b)).

2) Transitive –*na* suffix example

	Basic (intransitive) construction			
a.	ma	čiwá-ri	sipúča	
	already	tear-Pst	skirt	
	'The skirt already tore'			
	'Ya se rompió la falda'			[SF 07 1:17-21/Elicit]

	Transitive construction			
b.	á	riwé!	čiwa-**ná**-ra!	
	Aff	leave:Imp:sg	tear-**Tr**-Pot	
	'Leave it, you are going to tear it!'			
	'Déjalo! Lo vas a trozar!'			[SF 07 1:17-21/Elicit]

2.2 (Pluractional) transitive –*ča* suffix.

This stress-shifting suffix is a transitive suffix that can be found with the same change of state predicates that add transitive suffix *–na* (described above). This suffix, historically reconstructible to most Uto-Aztecan languages (Heath 1978), encompasses two senses: 1) an action is performed repeatedly (the succession or discernible, discrete events) or 2) more than one entity is affected by an event. Of limited productivity in Choguita Rarámuri, this suffix can still be found with a pluractional sense in this variety. Compare the transitive form with suffix *–na* in (3b) and the pluractional transitive form with suffix -*ča* in (3c) of the same base predicate *ku'rí* 'to turn'.

3) Pluractional transitive –*ča* suffix example

Basic (intransitive) construction

a. nihé ku'rí-ma
1sgN turn-Fut:sg
'I will turn (on my own axis)'
'Voy a dar vuelta (en mi propio eje)' [SF 05 1:140/Elicit]

Transitive construction

b. nihé ku'ru-**ná**-ma
1sgN turn-**Tr**-Fut:sg
'I will turn it (on its own axis)'
'Le voy a dar vuelta (en su propio eje)' [BF 05 1:187/Elicit]

Pluractional transitive construction

c. ma=ni ku'rí-**či**-ma
already=1sgN turn-**Tr:Pl**-Fut:sg
'I will now turn it several times (on its own axis)'
'Ya le voy a dar muchas vueltas (en su propio eje)' [BF 05 1:187/Elicit]

Non-pluractional uses of transitive *–ča* can also be found. An example of this is provided in (4b):

4) Non-pluractional form with transitive –*ča* suffix

Basic (intransitive) construction

a. pe napíči riké rata-bá-ma=m pa
just fire Dub heat-Inch-Fut:sg=Dem Cl
'Leaving it like that in the fire it will heat up'
'Así nomás en el fuego se va a calentar' [LEL tx68:7/Text]

Transitive construction

b. nihé rata-bá-**ča**-ma ko'-ámi
1sgN heat-Inch-**Tr:pl**-Fut:sg eat-Ptcp
'I'm going to heat up the food'
'Voy a calentar la comida' [LEL 06 4:151/Elicit]

2.3 Transitive *-bu* suffix.

There is a third transitivizing suffix, *-bu*, which is also unproductive and lexically restricted. This stress-shifting suffix is exemplified in (5):[97]

5) Transitive *–bu* suffix example

Basic (intransitive) construction

a. towí ma mó-ri
boy already go.up-Pst
'The boy already went up'
'Ya se subió el niño' [BF 06 4:189/Elicit]

Transitive construction

b. ma=ni mo-**búu**-ro
already=1sgN go.up-**Tr**-Pst:Pass
'I was already taken up'
'Ya me subieron' [BF 06 4:189/Elicit]

3. S3: Applicatives.

3.1 Applicative *–ni* suffix.

The Applicative *–ni* suffix increases the valency of the verb, adding a benefactive argument ('to do X for Y'). This suffix is unproductive and lexically conditioned by the roots to which it attaches. The contrast between a basic, two-place base predicate and its applicative derivation is exemplified in (6).

6) Applicative suffix *–ni* example

Basic constrruction (two-place predicate)

a. ne ma wí-ma sunú
1sgN now harvest-Fut:sg corn
'I'll harvest corn now'
'Ya voy a pizcar maíz' [LEL 06 4:151/Elicit]

[97] Lengthening of the transitive suffix vowel in example (5b) is triggered by the past passive suffix. This effect is discussed below (§9.1) and in Chapter 3 (§3.5.2.3).

Applicative construction (three-place predicate)

b.	wí-**ni**-mo=n	orá	ne	jé-ra	sunú
	harvest-**Appl**-Fut:sg=1sgN	Cer	1sgN	mom-Poss	corn

'I will harvest the corn for my mom'

'Le voy a pizcar el maiz a mi mamá' [BF 06 5:146/Elicit]

3.2 Applicative –*si* suffix.

The suffix –*si* is another unproductive, lexically conditioned applicative marker that increases the valency of the verb by adding a benefactive argument. A stress-neutral suffix, Applicative -*si* is exemplified in (7):

7) Applicative suffix –*si* example

Basic construction (two-place predicate)

a. pá-ka

throw-Imp:sg

'Throw it!'

'Tira!' [BF 06 5:147/Elicit]

Applicative construction (three-place predicate)

b.	tamí	ku	pá-**ši**-ri	pelóta
	1sgA	Rev	thow-**Appl**-Imp:sg	ball

'Throw the ball back at me!'

'Tírame la pelota de vuelta!' [BF 06 5:147/Elicit]

3.3 Applicative –*wi* suffix

A third Applicative suffix in position S3 is -*wi*, another stress-neutral, unproductive suffix that adds a benefactive argument to a transitive predicate. This suffix is exemplified in (8):

8) Applicative suffix –*wi* example

Basic construction (two-place predicate)

a.	wa'rú	na	ačá	biré	a'péri=ti	ané
	big	Prox	sit:Tr	one	lump=1plN	say

'They put (lit. sit) a lot of what we call an *a'péri* (a lump)'

'Ponen mucho de lo que le decimos una "moruca" (una bola con todo)'

[LEL tx19:33/Text]

Applicative construction (three-place predicate)

b.	mi=n	napíči	ačí-**w**-mo	rá	towí
	/mi=ni	napíči	ačí-**wi**-ma	orá	towí/
	2sgA=1sgN	fire	sit:Appl-**Appl**-Fut:sg	Cer	boy

'I will sit down your boy next to the fire'

'Te voy a sentar al niño cerca de la lumbre' [BF 06 6:146/Elicit]

4. S4: Causative *–ti* suffix.

The Causative *-ti* suffix is a stress neutral suffix that introduces an agent (causer) argument to the argument structure of a predicate. Causativization applies to both intransitive and transitive verbs. In the causative construction exemplified in (9b), the object corresponds to the subject argument of its basic, non-causative counterpart. The introduced agent argument causes the undergoer to perform the activity described by the verbal root.

9) Causative suffix example

Basic construction

a. ne mi rimé-ni-ra
1sgN 2sgA make.tortillas-Appl-Pot
'I can make you tortillas'
'Yo te hago tortillas' [BF 08 1:161/Elicit]

Causative construction

b. mi=n ne ono-rá rimée-n-**ti**-ma
2sgA=1sgN 1sgN father-Poss make.tortillas-Appl-**Caus**-Fut:sg
'I will make you make tortillas for my dad'
'Te voy a hacer que le hagas tortillas a mi papá' [BF 08 1:161/Elicit]

The Causative suffix has two lexically determined allomorphs, *-ti* and *–ri*. The allomorphy is also partially phonologically determined, since there is a phonological process that devoices voiced/lenis consonants after another consonant (a derived environment stemming from stress-conditioned syncope) (cf. Chapter 2, §2.2.4). Examples of the distribution of allomorph *–ti* are provided in (10).

10) Phonological distribution of Causative allomorph *-ti*

	Form	*Gloss*	*Unattested*	
a.	láan-**ti**-ki	'bleed-**Caus**-Pst:1'	*lán-**r**i-ki	[SF 05 1:102/Elicit]
b.	sikirép-**ti**-ki	'cut-**Caus**-Pst:1'	*sikirép-**ri**-ki	[BF 05 1:113/Elicit]
c.	o'péš-**ti**-a	'vomit-**Caus**-Prog'	*o'péš-**ri**-a	[BF 05 1:136/Elicit]

The Causative *–ti* suffix is extremely productive, displaying no restrictions as to the bases to which it can attach.

5. S5: Applicative *–ki* suffix.

The Applicative suffix *–ki* (S5) is another productive, stress-neutral suffix. This suffix introduces an additional argument to one-place or two-place predicates. The argument introduced is a benefactive or malefactive argument,[98] i.e., the object can be favorably or adversely affected.

11) Applicative suffix *–ki* example

Basic construction (two-place predicate)

a.	ma=n	rata-bá-či-ki	ko'wá-ami
	already=1sgN	heat-Inch-Tr:Pl-Pt:1	eat-Ptcp

'I already heated up the food'
'Ya calenté la comida' [BF 08 1:20/Elicit]

Applicative construction (three-place predicate)

b.	ne	mi	ba'wí	rata-bá-č-**ki**-ra?
	1sgN	2sgA	water	heat-Inch-Tr-**Appl**-Pot

'Shall I heat the water for you?'
'Te caliento el agua?' [BF 08 1:21/Elicit]

In (11b), the Applicative introduces a benefactive argument as an unmarked object (*mi* '2sgA') to a basic transitive predicate (an argument which would be expressed through a postpositional phrase in a non-applicative construction). I have not found any restrictions in the distribution of this suffix like the ones affecting the Applicative suffixes in S3 (cf. §3 above).

6. S6: Desiderative *–nare* suffix.

The disyllabic Desiderative suffix *–nare* is a stress-shifting suffix of agent-oriented modality. Derived from the verb *nakí* 'want', it has the meaning 'X wants to/feels like doing X', where the 'wanter' and the subject of the desideratum predication are correferent (when these two arguments are not correferent, a periphrastic construction must be used). Examples from context are shown in (12).

12) Desiderative suffix examples

---

a.	ne	biré	nijúrka	sebá-**nare**	ba
	Int	one	stubbornly	reach-**Desid**	Cl

'He really wanted to reach it'
'Lo quería alcanzar a fuerzas' [BF 07 tr191/Text]

[98] The cognates of Choguita Rarámuri Applicative suffixes in the closely related River Guarijío (Miller 1996) introduce other semantic roles in addition to benefactive/malefactive (e.g., instrumental)). There is however no evidence that the suffix *–ki* or any of the other Applicatives in Choguita Rarámuri introduce semantic roles other than the benefactive/malefactive.

b. a'rí na mo'očíki čukúri-ri čapi-**nár**-a
and then *cabecera* go.around-Pst grab-**Desid**-Prog
'...and then he was going around near the head wanting to get him'
'Y entonces andaba por la cabecera queriéndolo agarrar'
[LEL 06 tr5/Text]

Like other disyllabic suffixes in the language, the Desiderative suffix has a 'short' monosyllabic allomorph (/-*na*/) (cf. Chapter 6).

7. S7: Associated motion –*simi* suffix.

The Associated Motion suffix –*simi* (with short allomorph /–*si*/) is a stress-neutral suffix derived from the free-standing motion verb *simi* 'go (sg.)' (cf. Chapter 6, §6.2). This suffix is used when the event encoded by the verb is carried out while in motion (e.g., 'X goes along doing V').

13) Associated Motion –*simi* suffix

---

a. we ko'á-**simi**
Int eat-**Mot**
'They're going along eating'
'Van comiendo' [SF 08 1:71/Elicit]

b. towí we nári-**simi** bu'učími
boy Int ask-**Mot** road
'The boy is going along the road asking a lot of things'
'El niño va preguntando muchas cosas por el camino'
[SF 08 1:148/Elicit]

8. S8: Auditory Evidential –*čane* suffix.

The Auditory Evidential –*čane* suffix (with short allomorph /–*ča*/) is a productive epistemic modality marker that indicates that the evidence of the proposition encoded by the predicate has an auditory (i.e. non-visual) source ('it sounds like X is taking place'). This stress-neutral suffix is exemplified in (14).

14) Auditory Evidential suffix example

---

a. čéti torí ma toré-**čane**
Dem:pl chicken already cackle-**Ev**
'It sounds like the chiken are already cackling'
'Ya se oyen cacarear las gallinas' [SF 08 1:160/Elicit]

b. čoní-**čane** mačí
fight-**Ev** outside
'It sounds/it seems like fighting is happening outside'
'Se oye/parece que pelean afuera' [BF 08 1:17/Elicit]

In these constructions, the source for the evidence is the noise generated by the event itself that the predicate describes (e.g., 'cackling' or 'fighting' in (14a) and (14b), respectively). The evidence can also come indirectly from another event, as in example (15), where the speaker infers that dancing will take place because of other non-visual cues (i.e., sound of the rattles used in the dance, people talking about starting to dance, etc.).

15) Auditory Evidential, indirect evidence

---

nápi	ré	ma	awi-mé-**čani**	
Rel	Dub	already	dance-Fut:sg-**Ev**	

'It sounds like they are about to dance'
'Se oye como que van a bailar' [SF 07 1:140/Elicit]

9. S9: Tense, Aspect, Mood and Voice.

9.1 Past Passive –*ru* suffix.

This suffix is a productive, stress-neutral marker that fulfills a passive function, promoting the object argument of the active transitive base to subjecthood, while also encoding past tense. The subject of the active construction is not overtly expressed in the corresponding passive construction. As discussed in Chapter 3 (§3.5.2.3), the past passive suffix trigges lengthening of a preceding stressed syllable. Example (16b) illustrates the past passive sense and concomitant lengthening in the stressed vowel of the base.

16) Past passive suffix example

Active construction

a. tò-s-nare=ni
take-Mot-Desid=1sgN
'I want to go along taking them (the flowers)'
'Quiero írmelas llevando (las flores)' [BF 06 5:149/Elicit]

Passive construction

b. tòo-**ru** grabadóra
take-**Pst:Pass** recorder
'The recorder was taken'
'Se llevaron la grabadora' [SF 08 1:45/Elicit]

9.2 Future passive –*pa* suffix.

This is a productive, stress-shifting suffix that concomitantly marks a passive derivation and future tense. The following example illustrates the contrast between a basic active construction (17a) and a future passive construction (17b).

17) Future passive suffix example

Active construction

a.

píri=m	orá	čihá-ni-ri	namúti
why=2sgN	make	scatter-Tr-Pst	things

‘Why did you scatter everything?’
‘Por qué desparramaste las cosas?’ [SF 07 1:17-21/Elicit]

Passive construction

b.

napáči	čiha-ná-**ba**	ré
shirts	scatter-Tr-**Fut:Pass**	Dub

‘The shirts will be scattered’
‘Van a desparramar las blusas’ [SF 07 1:17-21/Elicit]

This productive suffix has two allomorphs, with a voiceless and voiced onset (*–pa* or *–ba*). Selection of past passive allomorphs is lexically conditioned but also follows general phonological rules (cf. Chapter 2, §2.2.4, §4 above).

9.3 Medio-passive *–riwa* suffix.

This suffix is used in constructions where the actor participant is backgorunded or left unspecified, and the undergoer participant is emphasized. The Medio-passive suffix has two allomorphs, *-riwa* and *–wa*. Both allomorphs are stress-shifting. Examples (18b-c) illustrate the medio-passive sense:

18) Medio-passive suffix examples

Active construction

a.

nihé	nurée-ri	margarita	rimé-ni-nura
1sgN	oblige-Pst:Pass	Margarita	tortillas-Appl-Caus:I

‘They sent me to make tortillas for Margarita’
‘Me mandaron que le hiciera tortillas a Margarita’ [SF 08 1:134/Elicit]

Medio-passive construction

b.

anáw-ka	birá	rupu-ná-**ruwa**	ba
measure-Ger	really	tear-Tr-**Mpass**	Cl

‘While measuring it, it is tore’
‘Se mide y se troza’ [BF 06 tx1/Text]

c.

nápi	ré	rimé-nu-**wa**	čém	federíko	remé
Rel	Dub	tortillas-Appl-**MPass**	Mr.	Federico	tortillas

‘It seems like tortillas are being made for Mr. Federico’
‘Como que le hacen tortillas a Don Federico’ [SF 07 2:69-72/Elicit]

9.4 Conditional passive *–suwa* suffix.

The conditional passive suffix *–suwa* is a stress-shifting suffix that is productively used in complex clauses cumulatively expressing a conditional relationship and passive voice. The predicate marked with the conditional passive is the predicate of the protasis clause (describing the condition), not the apodosis (describing the potential result). An active-conditional construction is contrasted with a passive conditional construction in (19).

19) Conditional passive suffix example

Active construction

a.	ne	a	mi	šú-n-ti-ki-sa	ró
	1sgN	Aff	2sgA	sew-Appl-Caus-Appl-Cond	Q

‘What if I made you sew her a skirt?’
‘Qué tal si te hago coserle una falda? [BF 08 1:28/Elicit]

Passive construction

b.	káči	a’rá	šú-bo	ré	riréki
	because:Neg	well	sew-Fut:pl	Dub	bottom
	bačá	šú-**šuwa**	ko	ba	
	first	sew-**Cond:Pass**	Emph	Cl	

‘Because we won’t sew it well if it is sewed from the bottom first’
‘Porque no vamos a coserle bien si se empieza a coser de abajo primero’ [BF 06 sipúcha/Text]

9.5 Future singular *–méa, -ma* suffix.

There are two future tense suffixes in Choguita Rarámuri: *-méa*, for future, singular subject, and *-bo* for future, plural subject. Historically, these suffixes developed from Proto-Sonoran **mi(l)a* ‘go, run, sg’, and **po* ‘go, run, pl’ (Miller 1996:133). The future singular suffix has an unstressed allomorph *–ma* and a stressed allomorph *-méa*. Both the unstressed and stressed allomorphs of the Future singular suffix are exemplified in (20).

20) Future singular suffix examples

---

a.	he	ná=ni	sipúča	sipu-tá-**mo**	rá
	it	Prox=1sgN	skirt	skirt-Vblz-**Fut:sg**	Cer

‘I will wear this skirt’
‘Me voy a poner esta falda’ [BF 07 Sept 6/Elicit]

b.	ma	muku-**méa**	rajénali
	already	die-**Fut:sg**	sun

‘There will be an eclipse’ (lit. ‘the sun will die’)
‘Va a haber un eclipse’ (lit. ‘se va a morir el sol’) [SF 05 2:63/Elicit]

As described in Chapter 3 (§3.6), Choguita Rarámuri has epistemic modality markers that indicate the degree of certainty speakers have towards the actuality of an event. These modal particles are frequently found in future tense constructions, as exemplified in (20a). This example also illustrates the phonological effect that these particles have on the inflected verb's final vowel, namely vowel deletion. Forms lacking such particles have a neutral interpretation with respect to the speaker's commitment to the expectation that the event encoded by the predicate will take place or not in the future.

9.6 Future plural *–po* suffix.

The Future Plural suffix *–po* is a stress-shifting suffix used when the subject is either first or second person plural. Clauses with a third person plural subject may optionally be marked with the Future Plural suffix or the Future Singular suffix. The Future Plural suffix is exemplified in (21). This suffix has two allomorphs, *-po* and *-bo*.

21) Future plural suffix examples

---

a. ke nakíw-**po** ru-wá tamí wí-ši-a ru-wá
Neg allow-**Fut:Pl** say-Mpass 1plA take-Mot-Prog say-MPass

éči ariwá-ra
Dem soul-Poss
'It's said that we can't let (the korimáka) get to us, because they say it goes along taking our souls'
'Dicen que no hay que dejarnos de él (del korimáka) porque dicen que nos roba el alma' [LEL 06 tx5/Elicit]

b. ru-**bó**
say-**Fut:Pl**
'They will say something'
'Van a decir' [JH 04 1:27/Elicit]

When used with the first person plural, the construction has a hortative reading ('let us do X'). The hortative use of the Future Plural suffix is illustrated in (22).

22) Examples of the hortative reading of the future plural suffix

---

a. ma=ti ila-rú-**po**
now=1plN cactus-gather-**Fut:Pl**
'Let's gather cactus now'
'Vamos juntando nopales' [SF 08 1:52/Elicit]

b. ma=ti počí-ti-si-a iná-r-ti-**po**?
already=1plN jump-Caus-Mot-Prog go-Caus-Caus-**Fut:Pl**
'Shall we go along making them jump?'
'Vamos haciéndolo que brinque?' [BF 07 2:32/Elicit]

9.7 The Motion Imperative *–me* suffix.

The Motion Imperative suffix *-me* is a stress shifting suffix. It is a productive suffix that often occurs in conjunction with the imperative suffix *–sa* (in position S8). Motion Imperative constructions with the suffix *–me* have the meaning 'go and do X!', used for a single addressee. When unstressed, the suffix vowel reduces to *i* or undergoes complete deletion, following the general unstressed vowel reduction and deletion processes operating in the language (cf. Chapter 2, §2.3.1.2).

23) Motion imperative construction examples

---

a. áa-**m**-sa
give-**Mot:Imp**-Imp:sg
'Go give it to her!'
'Ve y dáselo!' [RF 04 1:112/Elicit]

b. iší-**mi**
urinate-**Mot:Imp**
'Go and urinate!'
'Ve a orinar!' [BF 08 1:13/Elicit]

c. júr-ka osi-**mé**-ra ré [pr.]
take-IMP write-**Mot:Imp**-Pot Dub
'Go take him to see if he writes'
'Ve y llévalo a ver si escribe' [BF 08 1:94/Elicit]

When there are multiple adressees, the Motion Imperative Construction involves the stress-shifting suffix *–pi* (with stress-shifting allomorph *–bo,* homophonous to the Future Plural allomorph *–bo*), followed by the imperative plural suffix *-si*.

24) Motion imperative plural costruction

---

a. osi-**bó**-si
write-**Mot:Imp:pl**-Imp:pl
'You all go and write'
'Vayan a escribir!' [BF 05 2:94/Elicit]

b. tamí ku á-ki-**pi**-si
1sgA Rev look.for-Appl-**Mot:Imp:pl**-Imp:pl
'You all go and look for it for me!'
'Vayan a buscármelo!' [BF 08 1:164/Elicit]

9.8 Conditional suffix *-sa***.**

This is a productive, stress-shifting suffix used in constructions that express a conditional relationship in the active voice (cf. Conditional Passive suffix description in §9.4 above). The verbal predicate marked with the conditional suffix is the predicate of the protasis clause. Steele (1975:216) reconstructs the cognate form for Proto-Uto-Aztecan as meaning "must/speaker wish". This stress-shifting suffix is exemplified in (25).

25) Conditional suffix examples

---

a. we warín-ami ní-**sa** ko, á mahawá
Int light-Ptcp Cop-**Cond** Emph Aff be.affraid
'If she (the other runner) is really fast, she gets affraid'
'Si es muy ligera (la otra corredora), sí le tiene miedo'
[LEL 06 tx19/Text]

b. rihé uku-**sáa** ro, čú čé=timi rikám
hail rain-**Cond** Q how how=1plN like

mé-ra?
scare.away-Pot
'And when it would hail? How did you guys scare it away?'
'Y cuando llovía granizo? Cómo lo espantaban?' [SF 07 in 243/Interv]

9.9 Irrealis singular *–me* suffix.

The irrealis singular suffix is used in constructions where the speaker has no certainty that a particular event will take place in the future, or if a particular event holds true in a hypothetical or contingent world. This stress-shifting suffix is highly productive (I have not documented any restrictions on its occurrence), and is used when the subject argument is singular. Examples of its use are presented in (26).

26) Irrealis singular suffix examples

---

a. ko'-nári**-mi**
eat-Desid**-Irr:sg**
'She might want to eat'
'A lo mejor va a querer comer' [SF 08 1:122/Elicit]

b.	basarów-**mi**	ré	ma	ba'arí-o
	stroll.around-**Irr:sg**	Dub	perhaps	tomorrow-Ep

'Perhaps she will take a stroll tomorrow'
'A lo mejor va a pasear mañana' [BF 07 1:150/Elicit]

c.	suku-**mé**	ré	máo
	scratch-**Irr:sg**	Dub	perhaps

'Maybe he'll sratch himself'
'A lo mejor se va a rascar' [SF 08 1:45/Elicit]

9.10 Irrealis plural *–pi* suffix.

Irrealis constructions with a plural subject argument are marked with the suffix *–pi*. This suffix is stress-neutral and, like the irrealis singular suffix described above, is highly productive. This suffix has two allomorphs, with a voiced and a voiceless stop onset (*-pi* and *–bi*). Examples are shown in (27).

27) Irrealis plural suffix examples

---

a.	ma	tó-**bi**	ré	má
	already	bury-**Irr:pl**	Dub	perhaps

'Maybe they will bury it already'
'A la mejor ya lo van a enterrar' [SF 08 1:3/Elicit]

b.	ko'-nár-**pi**	ré=ti	máo
	eat-Desid-**Irr:pl**	Dub=1plN	perhaps

'Perhaps we might want to eat'
'A lo mejor vamos a querer comer' [BF 06 5:140/Elicit]

10. S10: Mood.

10.1 Potential *–ta* suffix.

This suffix is used in constructions expressing the possibility of occurrence of an event, ability or wishes (with an optative reading). This is a stress-shifting suffix with two allomorphs, *-ta* and *–ra*. Allomorph distribution is lexically and phonologically conditioned, governed by the conditions mentioned above (e.g., §4) and in Chapter 2 (§2.2.4).

28) Potential suffix examples

---

a.	éči	a	máal-**ta**	ré
	Dist	Aff	swim-**Pot**	Dub

'Let that one swim!'
'Déjenlo nadar!' [BF 05 1:154/Elicit]

b.	nuru-ría	birá	bačá	ará	náti-ka	énni-**ra**
	oblige-MPass	really	first	well	think-Ger	go.around-**Pot**

‘They are sent first to go around carefully (lit. thinking well)’
‘Primero los mandan a que se cuiden bien’ [BF 06 tx48/Text]

c. wiči-**rá**!
fall-**Pot**
‘You might fall!’
‘Te caes!’ (lit. ‘the puedes caer’)

10.2 Imperative singular *–sa* suffix.

Imperatives may be marked through the bare stem, but there are also affixal exponents of imperative mood. One of such markers is suffix *–sa*, a productive, stress-shifting suffix. This suffix is exemplified in (29).

29) Imperative singular *–sa* suffix example

---

a. ko’-**sá**!
eat-**Imp:sg**
‘Eat!’
‘Come!’

b. má**-sa**
run-Imp:sg
‘Run!’
‘Corre!’ [BF 04/11/06/Elicit]

10.3 Imperative sg *–ka* suffix.

Another imperative suffix used in constructions where the adressee is singular is *–ka*. This stress-shifting suffix is exemplified in (30).

30) Imperative singular *–ka* suffix

---

a.	kíti	nará**-ka**
	Neg	cry-**Imp:sg**

‘Don’t cry!’
‘No llores!’ [BF 05 2:89/Elicit]

b.	we	simi-**ká**
	Int	go:sg-**Imp:sg**

‘Go!’
‘Ve!’

10.4 Imperative plural *-si*.

Imperative constructions where the are multiple addressees are distinguished from imperatives with a single addressee with a productive, stress-shifting suffix, *-si*. Examples of this suffix are provided in (31).

31) Imperative plural suffix examples

---

a. ko-**sí** reméke!
eat-**Imp:pl** tortillas
'You all eat tortillas!'
'Coman tortillas!'

b. tamí ku riwí-i-**si**
1sgA Rev find-Appl-**Imp:pl**
'You all find it for me!'
'Vayan a encontrármelo!' [BF 08 1:16/Elicit]

11. S11: Tense, aspect, mood.

11.1 Reportative suffix *-ra*.

The reportative suffix is an evidential suffix that indicates that the speaker's source of information is hearsay. This productive marker, also used in direct quotation constructions, is a stress-neutral suffix which is added to the dependent verb of the complex sentence. When the notional subjects are correferential, the dependent verb is marked with the same referent reportative *-ro* suffix (32a-b). When the notional subjects are not correferential, the dependent verb suffixes the different referent reportative *–ra* suffix (32c-d).

32) Reportative constructions with same and different referents

---

Same referent

a. á birá ko aní magre nehé amačí-ko-**ro** ruá
Aff really Emph say nuns 1sgN pray-Appl-**Rep** say
'The nuns$_i$ say that they$_i$ prayed for me'
'Las monjas$_i$ dicen que (ellas$_i$) me rezaron'

b. manueli ko we birá rikú-**ro** ru
Manuel Emph Int really get.drunk:sg-**Rep** say
'Manuel$_i$ says he$_i$ got drunk'
'Manuel$_i$ dice que (él$_i$) se emborrachó'

Different referent

c. á birá oká=m čaní-a ne ka hémi
Aff really many=Dem sound-Prog Int ka here

isimáta-**ra** ruá čabé
pass:Pl-**Rep** say before
‘Many people$_i$ say that they$_j$ used to pass through here long time ago’
‘Muchas personas$_i$ dicen que por aquí pasaban$_j$ mucho antes’
[LEL 07 tx223/Text]

d. činá ba éči birá tòo-**ra** ruá
there Cl Dist really take:Pst:Pass-**Rep** say

ariwá-ra ba
soul-Poss Cl
‘They$_i$ say that that one$_j$ got his soul stolen there’
‘Cuentan$_i$ que a ese$_j$ ahí le llevó el alma’ [BF rihói mukúri 6/Text]

e. nápu riká rá=timi we ukú**-ra** ruá ní-am
Rel like Cer=2plN Int rain**-Rep** say Cop-Ptcp

čabée ko ba ní
before Emph Cl Cl
‘So you all say that it used to rain a lot ling time ago’
‘Pues así como dicen ustedes que llovía mucho antes’
[SF 07 in243/Interv]

This switch-reference system is restricted, as it is not generalized to all constructions involving dependent clauses in Choguita Rarámuri.

11.2 Past perfective suffix *-li*

The past perfective is marked by the suffix *–li,* a stress-neutral suffix. The past perfective both situates the event in a point prior to the time of the speech act and indicates that the event has been completed. Examples of this construction are given in (33).

33) Past perfective suffix examples

a. a’rí ko ma birá šiné-ami wiká sí-**ri**
and Emph already really every-Ptcp many arrive**-Pst**

čoná éči ná éči rihói bitériči
there Dem Prox Dem man house
‘And then everybody arrived there, to that man’s house’
‘Y ya llegaron todos ahí a la casa de ese señor’ [LEL 06 tx32/Text]

b. he ané aní-ši-a nawá-**ri** éči <u>namú nirá</u>
it say:Appl say-Mot-Prog arrive-Pst Dem relative

šuwá ba á ruwé-**ri**
everybody Cl Aff say:Appl-**Pst**
'He arrived saying that, that relative, he told everybody'
'Llegó diciendo un familiar, les dijo a todos' [LEL 06 tx5/Text]

11.3 Past perfective 1st person *–ki* suffix.

In past perfective constructions when the subject (34a) or object (34b) is first person, either singular or plural, the suffix used is *-ki*.

34) Past perfective 1st person suffix examples

---

a. mi bičé=ni karí pičí-nura nuré-**ki** ró
2sgA turn=1sgN house sweep-Caus:I oblige**-Pst:1** say
'I told you to sweep the house!'
'Te dije que barrieras la casa!' [BF 06 4:145/Elicit]

b. hitó ... éči tamí úr-**ki** ri'réti
yes Dem 1sgA take-**Pst:1** down
'Yes, isn't it true?....he took me down (the river)'
'Verdad?...Él me llevó para abajo' [FL 06 in61/Interv]

There is speaker variation with respect of this use, but *–ki* is mainly used when either the subect or object is first person. Some speakers use this suffix in constructions encoding a conjunct person (first person in declarative clauses (as in (34) above), and the addressee in questions (as in (35) below).

35) Conjunct use of suffix *-ki*

---

a. kabó mi rará**-ki** sapáto
when 2sgN buy**-Pst:1** shoes
'When did you buy the shoes?'
'Cuándo compraste los zapatos? [SF 05 1:74/Elicit]

11.4 Imperfective *-e.*

In contrast to the past perfective (discussed above), the imperfective emphasizes the internal duration of the event depicted by the predicate. Choguita Rarámuri imperfective constructions encode an incomplete or habitual event that takes place over a period of time. The imperfective is marked with the stress-neutral suffix *–e*, a marker which does not display any allomorphy or occurence restrictions, nor does it trigger any phonological effects on the base to which it attaches. Due to the general process of post-tonic vowel reduction, this suffix is realized as *-i*. Examples are provided in (36).

36) Imperfective suffix examples

a	naparí	ke	čo	narú-**i**	ko	sekundaria	ba
	Rel	Neg	yet	exist**-Impf**	Emph	secondary	Cl

‘When it didn’t use to be any secondary school yet’
‘Cuando todavía no había secundaria’ [SF 06 tx12/Text]

b. awí-si-nir-**i**
dance-Mot-Desid-**Impf**
‘She wanted to go along dancing’
‘Quería irse bailando’ [SF 07 2:72-73/Elicit]

c. húm-čan-**i**
take.off:pl-Ev**-Impf**
‘It sounded like they were taking off’
‘Se oía como que se arrancaban’ [SF 07 1:7/Elicit]

11.5 Progressive *–a* suffix.

The progressive is encoded by the stress-neutral suffix *–a*, and it indicates that the event described by the predicate is an ongoing process which is independent of time reference. Uses of this marker are exemplified in (37).

37) Progressive suffix examples

a.	a’rí	čihónsa	nári	wičó-nura	ma
	and	then	then	wash-Caus:I	also

nuru-ría	wičó**-a**
oblige-Mpass	wash**-Prog**

‘And then they are also sent to wash clothes’
‘Y también las mandan a lava ropa’ [BF 06 tx48/Text]

b. we birá=ti we kanír-ami hu tamuhé ko na
Int really=1plN Int happy-Ptcp Cop 1plN Emph Dem

umukí rowé-ti-**a**, iwé rowé-ti-**a**, kúuči
women race-Caus-**Prog** girls race-Caus-**Prog** small

kúruwi ma rarahíp-ti-**a**
children also race-Caus-**Prog**
'We like it a lot indeed, to make women, girls and also young children run a race'
'Nos gusta mucho hacer correr a las mujeres, a las niñas y a los niños chiquitos' [LEL 06 tx19/Text]

11.6 Indirect Causative suffix *–nura*.

In indirect causative constructions, a causer exerts indirect manipulation on a causee which retains certain degree of autonomy. Indirect causation is expressed through complement clause constructions, where the lower predicate is marked with the suffix *-nura*. This stress-neutral suffix is derived from the independent verb *nure* 'to oblige, to force', which is often the main predicate (e.g., (38a)). The main predicate can be inflected with any tense or aspect, but the lower predicate marked with *–nura* is closed to further suffixation. Examples of the indirect causative are provided in (38).

38) Indirect Causative suffix examples

---

a. a'rí čihónsa ko ma pe očéri-sa ko
and then Emph already little grow-Cond Emph

nuru-ría ba'wí tú-**nura**
oblige-MPass water bring-**Caus:I**
'And then when they grow a little they are ordered to bring water'
'Y entonces ya cuando crecen más los mandan a traer agua'
[BF 06 tx48/Text]

b. ma=n húa-ki rarí-**nura** tiéndači
already=1sgN send-Pst:1 buy-**Caus:I** store
'I already sent him to the store to buy'
'Ya lo mandé comprar a la tienda' [BF 06 2:48/Elicit]

The suffix *–nura* has a monosyllabic allomorph *-na*. The details of allomorph distribution and conditions of selection are addressed in Chapter 6.

12. S12: Subordination.

12.1 Temporal suffix *-či*.

This morpheme is a stress-neutral suffix added to predicates of adverbial clauses which encode a temporal relation between two events (translated into English as 'when' clauses). The base for affixation of this suffix is a verb inflected for progressive aspect. The following examples illustrate the use of this suffix.

39) Temporal suffix examples

---

a.

nápu	riká	omáwiri	ná=m	omowá-ru-a-**či**
Rel	like	parties	then=Dem	party-MPass-Prog-**Temp**

‘Like with parties, when parties are made’
‘Así como las fiestas, cuando hacen fiesta’ [SF 06 tx12/Text]

b.

ne	kreeliči	ši-méa	ma	šuwíb-a-**či**
1sgN	Creel	go:sg-Fut:sg	already	finish-Prog-**Temp**

hé	ná	tarári
it	this	week

‘Voy a ir a Creel cuando acabe esta semanana’

12.1.1 Epistemic *–o* suffix.

The Epistemic modality suffix marks lower predicates of complement clauses of main predicates that express a psychological or mental state, like ‘think’, ‘dream’, ‘sing’ or ‘say’. The use of this suffix is exemplified in the examples in (40).

40) Epistemic suffix examples

---

a.

rimú-i=ni	náp=tim	noká-**o**
dream-Impf=1sgN	Rel=2plA	move-**Ep**

‘I used to dream that you all were moving’
‘Yo soñaba que ustedes se movían’

b.

a’rí	na	kochi-ká	bu’í-r-**o**	mayé-ri
and	then	sleep-Ger	lay.down:sg-Pst-**Ep**	think-Pst

‘And then he thought he was asleep (laid down sleeping)’
‘Nomás que pensó que estaba dormido’ [LEL 06 tx5/Text]

12.1.2 Gerund *–ka* suffix.

Suffix *–ka* occurs in subordinate clauses and marks a non-finite verbal construction denoting an ongoing event which occurs simultaneous to another event. This stress-neutral suffix is exemplified in (41):

41) Gerund suffix examples

a. púra ko birá niwa-ría nári birí-n-**ka**
belt Emph really make-MPass then roll.up-Tr-**Ger**

bačá ba biré ta kuší-ti ba
first Cl one Det stick-Instr Cl
'The belt is made by rolling it up first with a stick'
'La faja se hace enrollándolo primero con un palo' [BF 06 tx1/Text]

b. a'rí na kochi-ká bu'í-r-**o** mayé-ri
and then sleep-Ger lay.down:sg-Pst-**Ep** think-Pst
'And then he thought he was asleep (laid down sleeping)'
'Nomás que pensó que estaba dormido' [LEL 06 tx5/Text]

12.1.3 Purposive –*ra* suffix.

The purposive suffix –*ra* is a stress-neutral suffix which derives a noun from a finite verb inflected for progressive aspect. The purposive indicates that the derived noun is an instrument or means involved in carrying out the event described by the predicate. This suffix is not limited to a few lexical items, and may be productively added to any finite verb inflected for progressive aspect.The forms in (42) exemplify this nominalization process.

42) Purposive suffix examples

a. pó-a-**ra**
cover-Prs-**Purp**
'Lid' (lit. 'for covering')
'Tapadera' (lit. 'para tapar') [SF 07 in242/Text]

b. osí-a-**ra**
write-Prog-**Purp**
'Pen' (lit. 'for writing')
'Pluma' (lit. 'para escribir')

Appendix 3: Narrative Texts

Title: *Kuči nururía*
Author: Bertha Fuentes
Recording date: November 22, 2006
Transcription: Bertha Fuentes & Gabriela Caballero
Date of transcription: November 22, 2006
Audio file: tx48

1:

ne	ko	birá	ani-mé	orá	ču	riká	nuru-ría
1sgN	Emph	really	say-Fut:sg	Cer	Q	like	order-MPass

kúuči ...	kúči	ka	hónsa
small:pl	small:pl	Cop	since

‘I am going to tell how children are send (and taught) to do things since they are small’
‘Yo voy a decir como a los niños los mandan (enseñan) a hacer cosas desde chiquitos’

2:

kúči	ka	birá	hónsa	ani-ría	píri	orá-sa	ré
small	Cop	really	since	say-MPass	what	do-Cond	Dub

píri	nočá-sa	ré	ba
what	work-Cond	Dub	Cl

‘since they are small they are told what to do, what to work on’
‘desde chiquitos les dicen qué deben de hacer o qué deben de trabajar’

3:

a’rí	čú	riká	tibú-sa	ré	abói	kíti	ko
and	how	like	take.care-Cond	Dub	Refl:pl	so	Emph

ke	namú	iki-méa
Neg	something	happen-Fut:sg

‘and how they should take care of themselves so that nothing will happen to them’
‘y cómo se deben de cuidar ellos mismos para que no les pase nada’

4:

nuru-ría	birá	bačá	a’rá...	a’rá	náti-ka	énni-ra	o...
order-MPass	really	first	well	well	think-Ger	go.around:pl-Pot	or

‘they are sent first to go around thinking well’
‘primero los mandan a que se cuiden bien (que piensen bien)’

5:

a’rá	tibú-nura	kúuči	ke	očó-ra	ré
well	take.care-Caus:I	small:pl	Neg	hit-Pot	Dub

‘they are told to take good care of the children, not to hit them’
‘que cuiden bien a los niños, que no les vayan a pegar’

6: a’rí čihónsa ko ma pe očéri-sa ko
and then Emph also little grow-Cond Emph

nuru-ría ba’wí túu-nura o...
order-MPass water bring-Caus:I or
‘and then when they grow up a little they are told to bring water or...’
‘y entonces ya cuando crecen más los mandan a traer agua o...’

7: o čuwé ku wí-nura mačí bití-ami hónsa ó nári...
or whatever wood bring-Caus:I outside Poss:lie-Ptcp from or then...
‘or bring whatever, bring wood from outside, or...’
‘o lo que quiera mandar traer, traer leña de afuera, o...’

8: wáas ma nisé-nura čiba ma borréko ma
cow and herd-Caus:I goat and lamb and

nisé-nura nuru-ría
herd-Caus:I order-Mpass
‘or they are told to herd cows, or goats or lamb’
‘o los mandan a cuidar las vacas, chivas o borregos’

9: kíti ko biné-ma kúči ka hónsa
so.that Emph learn-Fut:sg small:pl Cop since
‘so they will learn since they are small’
‘para que aprendan desde chiquitos’

10: éči riká birá nuru-ría kúči kúči ko ba
Dem like really order-MPass small:pl small:pl Emph Cl

kíti ko a’rá biné -ma
so.that Emph well lear-Fut:sg
‘that’s how thet are told, the children, so that they’ll learn well’
‘así los mandan los chiquitos para que aprendan’

11: a’rí iwé yén čo á čikóčo riká á ba’wí tú-nura
and girls Aff also Aff same like Aff water bring-Caus:I

čo
too
‘and the girls too, the same way, they are told to bring water too’
‘y las niñas también, igual, las mandan a traer agua’

12: a’rí... a’rí čihónsa a’rá kúči tibú-nura
and and then well small:pl take.care-Caus:I
‘and then also they are told to take good care of the children’
‘y también los mandan a que cuiden bien a los niños’

13: a’rí ma pe očéri-sa ko ma a’rá ani-ría
and already little grow-Cond Emph already well say-MPass

ču riká murú-sa ré
how like carry-Cond Dub
‘and then when they grow a little they are told how to carry things’
‘y ya cuando crecen más les dicen cómo deben de acarrear cosas’

14: ču riká na rimé-sa ré o ču riká
how like Dem tortillas-Cond Dub or how like

kisár-sa ré ko’wáami
cook-Cond Dub food
‘how to make tortillas or how to cook food’
‘cómo deben de hacer tortillas o cómo deben de guisar comida’

15: ču riká... ču riká na’á-sa ré
how like how like light.fire-Cond Dub

kíti ko ke wikótu-ma
so.that Emph Neg burn.intr-Fut:sg
‘and how they should light a fire so that they won’t get burnt’
‘y cómo deben de echar lumbre para que no se quemen’

16: a’rá birá ani-ría ba ka riká hápu nočá-ruwa
well really say-MPass Cl Cop like Rel work-MPass
‘they are thoroughly told what they should work on’
‘les dicen bien todo lo que deben de trabajar’

17: a’rí čihónsa nári ču riká... ču riká nári...
and then then how like how like then

ču riká tibú-sa ré abói
how like take.care-Cond Dub Refl:pl
‘and then they are told how to take care of themselves’
‘y cómo se deben de cuidar ellos mismos’

18: kíti ko a’rá mači-méa očér-sa
so.that Emph well know-Fut:sg grow-Cond
‘so that they will know well when they grow up’
‘para que sepa bien cuando crezcan’

19: ke ruyé-šua ko káči mači-méa ré ba
Neg tell:Appl-Cond:Pass Emph Neg know-Fut:sg Dub Cl
‘if they are not told they won’t know’
‘si no les dicen no van a saber’

20: nári... birá nuru-ría čo siné káči á čiba
then really order-MPass also some times Aff goat

puké-l-sa ko wénara
own.animals:pl-Caus-Cond Emph parents
‘and then sometimes they are also told if the parents own farm animals’
‘y en veces los mandan en veces si los padres tienen chivas’

21: číba čo birá nisé-nura nuru-ría iwé ba
goats also really herd-Caus:I order-MPass girls Cl
‘the girls are also told to take care of the goats’
‘también las mandan a las niñas a cuidar las chivas’

22: a’rí čihónsa nári wičó-nura ma... nuru-ría wičó... wičó-a
and then then wash-Caus:I already order-MPass wash wash-Prog
‘and then they are told to wash their clothes’
‘y también las mandan a lavar la ropa’

23: nári wičó-nura nuru-ría pe kúči ka hónsa
then wash-Caus:I order-MPass little small:pl Cop since
‘they are told to wash their clothes since they are small’
‘las mandan a lavar la ropa desde chiquitas’

24: a’rí čihónsa ba’wí čo ma tú-nura
and then water also already bring-Caus:I
‘and then also to bring water’
‘y también a traer agua’

25: a’rí nári pé sébiri á nuru-ría namúti kó’a-nura
and then just enough Aff order-MPass thing feed-Caus:I

kočí ma kóči ma kó’a-nura nuru-ría
dogs and pigs and feed-Caus:I order-MPass
‘and then they are told to feed the animals, the dogs and the pigs’
‘y también les mandan a darles comida a los animales, perros y marranos’

26: a’rí čihónsa kúruwi ko a’rá birá ru’u-ría
and then chldren Emph well really tell-Mpass

ču riká nočá-ma čo
how like work-Fut:sg also
‘y también a los niños les dicen cómo deben de trabajar bien’
‘and then the children are also told how to work well’

27: ču riká nóča rarámuri
how like work men
‘cómo trabajan los hombres’
‘how men work’

28: ču ru’u-ría ču riká wasará-ma
how tell-MPass how like plow-Fut:sg
‘they are told how to plow’
‘les dicen cómo van a barbechar’

29: ču riká na napón-ma pačí
how like then plow-Fut:sg corn
‘or how they will plow the corn’
‘o cómo van a escardar el maíz’

30: a’rí čihónsa ku murú-nura ma nuru-ría
and then wood gather-Caus:I already order-MPass

kúči ka hónsa biné-ru-wa
small:pl Cop since learn-Caus-MPass
‘and then they are told how to gather wood, they are taught since they are small’
‘o también los mandan a traer leña, desde chiquitos los enseñan’

31: ono-rá birá á yúa éna kúči káči ko ba
father-Poss really Aff with go:pl small:pl Cop:pl Emph Cl
‘the fathers go with them when they are small’
‘los papás andan con ellos cuando están chiquitos’

32:

ke	čo	oméra-či	kó	a’rá	ba
Neg	yet	be.able-Temp	Emph	well	Cl

‘when they are not able (to do it) well’
‘cuando todavía no pueden bien’

33:

a’rí	ma	a’rá	biné-sa	ko	ma	birá
and	already	well	learn-Cond	Emph	already	really

awéni	ši-méa	murú-shi-a	ku
alone:pl	go-Fut:sg	gather-Mot-Prog	wood

‘and when they already learn well, they go on their own to gather wood’
‘y ya cuando aprenden ya se van solos a traer leña’

34:

a’rí	ma	awéni	čo	éeni	wasarrá-a,
and	already	alone:pl	also	go.aroun:pl	plow-Prog

sonorré-a	ma	napó-a
cutting.rastrojo-Prog	already	plow-pres

‘then they go on their own plowing or cutting *rastrojo*’
‘ya andan solos barbechando, escardando o cortando rastrojo’

35:

sébiri	birá	a	biní...	biné-rua	ba
reach	really	Aff	bini	learn-MPass	Cl

‘eveything is learnt’
‘todas las cosas les enseñan’

36:

nápi	ki	nóči	kúruwi	ápi	ki	nočá-sa	ré
Rel	things	work	children	Rel	things	work-Cond	Dub

rarámuri
men

‘everything that children work at, everything that men have to work at’
‘todo lo que trabajan los niños, lo que deben de trabajar los hombres’

37:

a’rí	iwé	čikóčo	riká	birá	nuru-ría	ba
and	girls	same	like	really	order-MPass	Cl

‘and the girls also are also taught the same’
‘y a las niñas les enseñan igual’

38:

a’rá	biné-ru-wa	kúči	ka	hónsa
well	learn-Caus-MPass	small:pl	Cop	since

‘they are taught well since they are small’
‘y las niñas también les enseñan bien desde chiquitas’

38: čú riká nári... kíti ko a’rá nári a’rá nári
so.that like then so.that Emph well then well then

náam-ma ono-rá ke nimí-ki-ma
listen-Fut:sg father-Poss Neg disobey-Appl-Fut:sg
‘so that they will listen to their fathers, so that they won’t answer back rudely’
‘para que les hagan bien caso a sus papás para que no les rezonguen’

39: a’rí čihónsa harré ma ke nimí-ki-ma
and then others already Neg disobey-Appl-Fut:sg

harré rarámuri
other men
‘and also so that they won’t answer back rudely to others, to other people’
‘y también para que no les rezonguen a otros, a otras gentes’

40: a’rá nári... a’rá nári éni-ma a’rá kirí
well then well then go.around:pl-Fut:sg well quietly

ke nimí-ka
Neg disobey-Ger
‘so that they will go around quitely, without answering back rudely’
‘para que anden bien, quietos, sin rezongar’

41: éči riká birá ani-ría kúruwi ko ba
Dem like really say-MPass children Emph Cl
‘that’s how children are taught things’
‘así les dicen a los niños’

Title: *čo’má ko’áame*
Author: Sebastián Fuentes
Recording date: August 20, 2005
Transcription: Bertha Fuentes Loya, Gabriela Caballero
Date of transcription: August 20, 2005

1:

he’	ná	ko	birá	čabé	ki'á	birá	ko	ná
it	Prox	Emph	really	before	long	really	Emph	then

‘This happened long ago’
‘Esto fue antes’

2:

napawí-a	noká-ri	ré	éči	na	biré	rihó
get.together-Prog	move-Pst	Dub	Dem	Dem	one	man

a’rí	biré	čabóči	ší'i
and	one	mestizo	also

‘a (Rarámuri) man and a *mestizo* (mixed mexican) man got together’
‘se juntaron un hombre (rarámuri) y un mestizo’

3:

a’rí	birá	ko...	birá	ko	maníi-la	ru-á=m	ka
and	then	Emph	then	Emph	Pos:liquid-Rep	say-MPass=Dem	Emph

‘and then it is said they were given (a liquid)’
‘y entonces dicen que les pusieron (un líquido)’

4:

éči ...	éči...	éči	rihóo	a'rí	čihónsa	éči	čabóči	sí
Dem	Dem	Dem	man	and	then	Dem	mestizo	also

‘the man and also the *mestizo*’
‘al hombre y al mestizo’

5:

ná...	wahí-nira	čo	éči	ilá	ko	ru-ká	ke	ré	o...
Prox	drink-Caus:I	also	Dem	cactus	Emph	say-Ger	Neg	Dub	or

‘telling them to drink, saying it was cactus, perhaps, or...’
‘para que se lo tomaran, diciéndoles que eran nopales a lo mejor, o...’

6:

éči	čo’má	birá	bahí-ri-ra	ru-á	i-bíri	bitóri
Dem	snot	really	drink-Caus-Rep	say-MPass	Pl-one:pl	plates

‘but it is said that they were given snot to drink in some plates’
‘pero dicen que les dieron moco en unos platos’

7:

a’rí	birá	ko	ke	tási	biré	bahí-ra	ra=m
and	really	Emph	Neg	Neg	one	drink-Rep	say:MPass=Dem

éči	rihóo	ko	ba
Det	man	Emph	Cl

‘and the man didn’t drink it’
‘y el hombre no se lo tomó’

8:

a’rí	birá	ko	éči	čabóči	naríni	ne	ra'í-ra
and	really	Emph	Det	mestizo	but	Int	like-Rep

bahí-ra	rá=m	pa	éči
drink-Rep	say:MPass=Dem	Cl	Dem

‘but the *mestizo* did drink it happily’
‘pero el mestizo sí se lo tomó muy a gusto’

9:

a’rí	birá	ko	winomí-a-ti-la	ru-á=m	pa
and	really	Emph	money-Prog-Com-Rep	say-MPass=Dem	Cl

éči	čabóči	ba
Dem	mestizo	Cl

‘and that is why that *mestizo* became wealthy’
‘y por eso se hizo con dinero ese mestizo’

10:

he	birá	aní-a	ru-á	čabóči :
it	really	say-Prog	say-MPass	mestizo

“ah,	si	ne	a’rá	ka=m	ra’í-a	ka=m	pa
ah	Int	Int	good	Emph=Dem	like-Prog	Emph=Dem	Cl

nári...	bahí-ba	ba”
that	drink-MPass	Cl

‘and the *mestizo* was saying: “oh, it is so good and tasty to drink this”’
‘así dijo el mestizo: “ay, cómo está rico tomar esto”’

11:

he	birá	ko	aní-a	ru-á	éči	čabóči
it	really	Emph	say-Prog	say-MPass	Det	mestizo

ko	ba
Emph	Cl

‘that is what the *mestizo* would say’
‘así decía el mestizo’

12:

a’rí	éči	rihóo	ko	pe	birá	čihúna
and	Det	man	Emph	just	really	disgusted

‘and the man was disgusted’
‘y al hombre le dió asco’

13:	“čam	čihúnta	išimí	ti	čabóči”,
	ugly	disgusting	do	Det	mestizo

	he	aní-a	rá	ti	rihóo	ko	ini-ká	ba	čihúna

‘“how disgusting, what this *mestizo* is doing”, would say the man while watching him disgusted’
‘“ay, que asco lo que hace este *mestizo*”, decía el hombre viéndolo con asco’

14:	a’rí	čabóči	ne	birá	ra’íra	sí	a’rá	éči	bahí-a
	and	mestizo	Int	really	like	also	well	Dem	drink-Prog

	bitóriči	ba
	plate	Cl

‘and the *mestizo* was drinking it happily in a plate’
‘y el mestizo se lo estaba tomando muy a gusto en un plato’

15:	“ah,	sinéa=m	ra’ía=m	ká=m	pa	nári
	oh	all=Dem	tasty=Dem	Emph=Dem	Cl	Prox

	čo’má	ko	ba”,	aní-a	ru-á
	snot	Emph	Cl	say-Prog	say-MPass

‘“this snot is really tasty”, he would say’
‘“está muy rico este moco”, así decía’

16:	a’rí	birá	ko	pe	čihúnu-ra	ru-á	éči	ti	ba
	and	really	Emph	just	disgusted-Rep	say-MPass	Dem	Det	Cl

	rihóo	pe	birá
	man	just	really

‘and that is why the man was disgusted’
‘y por eso le tuvo asco el hombre’

17:	čihúna	wirí-ri	aré	éči	ri’té-a	ba
	disgusted	stand:sg-Pst	Dub	Dem	watch-Prog	Cl

‘he stood there disgusted, watching that’
‘estuvo parado con asco, viendo eso’

18:	a’rí	birá	ko	éči	riká	birá	ko
	and	really	Emph	Dem	that	really	Emph

‘and that is why like that’
‘y por eso así’

19: ikíi-ra ru-á=m pa éči... čabóči ba
happen-Rep say-MPass=Dem Cl Dem mestizo Cl
‘it is said that’s what happened with that *mestizo*’
‘dicen que eso pasó con ese mestizo’

20: kíti béri we winomí-wa ré ba
that.is.why really Int money-have Dub Cl
‘that is why he has so much money’
‘por eso tiene mucho dinero’

21: éči birá ko winomí kítara ní-ra ré éči...
Dem really Emph money because Cop-Rep Dub Dem

éči čo’má bahí-suwa ba
Dem snot drink-Cond:Pass Cl
‘it was because of that money that that snot was drinken’
‘fue por ese dinero que se ese moco habrá sido tomado’

22: kíti béri we winomí-ba ru-á=m
that.is.why really Int money-have say-MPass=Dem

éči čabóči ba
Dem mestizo Cl
‘that is why it is said that *mestizos* have a lot of money’
‘y por eso dicen que tienen mucho dinero los mestizos’

23: kíti béri we...
that.is.why really Int
‘that is why’
‘por eso’

24: a’rí čihónsa éči rihó bahí-sa ka éči čo’má
and then Dem man drink-Cond Emph Dem snot
‘and if the man would have drank the snot’
‘y si el hombre hubiera tomado el moco’

25: a’rí tamuhé birá ko narína we winomí-w-am
then 1plA really Emph then Int money-gave-Ptcp

ní-ra ru-ái pa
Cop-Rep say-MPass Cl
‘then we would have been the wealthy ones’
‘entonces nosotros hubiéramos sido los del dinero’

26: a'rí	éči	rihó	narína	pe	čihúna	wirí-r-am	pa
and	Det	man	but	just	disgusted	stand:sg-r-Ptcp	Cl

'but the man was disgusted'
'nomás que el señor le tuvo asco'

27: a'rí	birá	ko	ke	tási	winomí-bi	tamuhé	hípi	ba
and	really	Emph	Neg	Neg	money-have	1plN	today	Cl

'and that is why we don;t have money today'
'y por eso nosotros no tenemos dinero ahora'

28: ke=ti	biré	pe	tási	winomí-bi	tamuhé
Neg=1plN	one	just	Neg	money-have	1plN

naparí=ti	namúti	rari-náal	rú
Rel=1plN	things	buy-Desid	say

'we don't have money when we want to buy things'
'no tenemos dinero cuando queremos comprar algo'

29: a'rí	éči	čabóči	we	birá	winomí-wi	ba
and	Dem	mestizo	Int	really	money-have	Cl

'and the *mestizo* is really wealthy'
'y el mestizo tiene mucho dinero'

30: kíti	we	ríko	hu	harré	ba
because	Int	wealthy	Cop	some	Cl

'and that is why some are really wealthy'
'y por eso unos son muy ricos'

31: éči	ná	ti	béri	ko	kíti	ru-á
Dem	Prox	Det	really	Emph	because	say-MPass

winomí-wi	ru-wá	éči...	éči	ti	čabóči	ba
money-have	say-MPass	Dem	Dem	Det	mestizo	Cl

'and that is why the *mestizo* has money'
'y por eso tienen dinero esos mestizos'

32: pe	birá	risó	noko-ká	éni-ri	čó
just	really	struggle	move-Ger	go.aroun:pl-Pst	also

éči	rihó	á	bačá	bahí-sa	ka	éči	čo'má	ba
Dem	man	Aff	first	drink-Cond	Emph	Dem	snot	Cl

'they would go aroun struggling too if the man would have drank the snot first'
'anduvieran también batallando si el hombre hubiera tomado primero el moco'

33:	pe	birá	ko	nápu	riká	tamó	čo	á	níri	čó
	just	really	Emph	Rel	like	1plN	also	Aff	Cop	also

aré	ba
Dub	Cl

‘they would have been like us too’
‘hubieran sido como nosotros’

34:	a’rí	čihónsa	birá=ti	ke	tási	winomí-wa	rá
	and	then	really=1plN	Neg	Neg	money-have	say:MPass

tamuhé	ba	aní
1plN	Cl	say

‘and that is why they say we don’t have money’
‘y por eso dicen que nosotros no tenemos dinero’

35:	he	riká	birá	ko	ní-ra	rá=m	pa
	it	like	really	Emph	Cop-Rep	say:MPass=Dem	Cl

čabé	ki’á	ko
before	long	Emph

‘that’s how it was before’
‘así fue antes’

36:	náp	arí	í	birá...	napabú-a	nokí-ra	éči	čabóči
	Rel	then	here	really	gather-Prog	move-Rep	Dem	mestizo

a'rí	éči	rihó	úa	ba
and	Dem	man	with	Cl

‘when the man and the mestizo were gathered’
‘cuando los juntaron al hombre y al mestizo’

37:	he	birá	ko	riká=m	aní-a	ani-wá	éči	čabé
	it	before	Emph	like=Dem	say-Prog	say-MPass	Dem	before

aní-a	birá	ko	čaní-a	éči	očérami
say-Prog	really	Emph	say-Prog	Dem	elders

‘that’s what they use to say before the elders’
‘así decían antes los viejos’

38:	a’rí	birá	ko	winomí-wa	ru-á=m	éči	ta
	and	really	Emph	money-have	say-MPass=Dem	Dem	Det

čabóči	ba	ní
mestizo	Cl	Cl

‘and that is why they have money the mestizos, they say’
‘y por eso dicen que tienen dinero los mestizos’

39:

he	riká	birá	ko=m	aní-a	ani-wá
it	like	really	Emph=Dem	say-Prog	say-MPass

čabé	ba	ní
before	Cl	Cl

‘that is what they said before’
‘eso es lo que dicen antes’