

# Serial verb constructions in Barayin: Typology, description and Lexical-Functional Grammar



Joseph Lovestrand

Somerville College

University of Oxford

A thesis submitted for the degree of

*DPhil in General Linguistics and Comparative Philology*

Hilary Term 2018

*Dédié à la mémoire de Nassour Elias  
et ses contributions à la promotion  
et à la préservation de sa langue, le barain*

# Contents

Glossing abbreviations . . . . .	vi
Abstract . . . . .	vii
Acknowledgments . . . . .	viii
Preamble . . . . .	x
<b>1 Introduction</b>	<b>1</b>
1.1 The problem . . . . .	1
1.2 Organization . . . . .	3
1.3 General themes . . . . .	5
<b>A Serial verb constructions</b>	<b>7</b>
<b>2 Morphosyntactic features of SVCs</b>	<b>10</b>
2.1 SVC as a comparative concept . . . . .	11
2.2 More than one verb . . . . .	13
2.2.1 Lexical category . . . . .	14
2.2.2 Independent use . . . . .	15
2.2.3 Semantically-bleached verbs . . . . .	16
2.2.4 No non-finite verbal morphology . . . . .	17
2.2.5 Wordhood . . . . .	18
2.3 No linking morpheme . . . . .	19
2.4 One TAM . . . . .	20
2.5 One negation . . . . .	21
2.6 Shared arguments . . . . .	22
2.7 One event . . . . .	24
2.8 Single intonation contour . . . . .	25
2.9 Conclusion . . . . .	26
2.9.1 Summary: a working definition . . . . .	26
2.9.2 Potential variationist approaches for future research . . . . .	27
<b>3 Semantics and functions of SVCs</b>	<b>31</b>
3.1 Motion . . . . .	33
3.1.1 Simultaneous motion . . . . .	34
3.1.2 Sequential motion . . . . .	36
3.1.3 Purposive motion . . . . .	38
3.2 Posture and state . . . . .	39
3.3 Resultative . . . . .	40
3.4 Complement . . . . .	41
3.5 Comparative ('surpass') . . . . .	42

3.6	Valency-changing . . . . .	43
3.6.1	Instrumental ('take' and 'use') . . . . .	43
3.6.2	Benefactive ('give' and 'take') . . . . .	44
3.6.3	Causative ('make', 'take' and 'give') . . . . .	45
3.6.4	Valency-decreasing ('touch') . . . . .	46
3.7	Aspectual . . . . .	46
3.8	Idiomatic . . . . .	48
<b>4</b>	<b>Chadic languages</b>	<b>50</b>
4.1	Typological features of Chadic languages . . . . .	51
4.1.1	Phonology . . . . .	51
4.1.2	Morphology . . . . .	52
4.1.3	Syntax . . . . .	53
4.2	SVCs in Chadic languages . . . . .	54
4.2.1	Goemai (West Chadic) . . . . .	55
4.2.2	Mupun (or Mwaghavul, West Chadic) . . . . .	58
4.2.3	Lele (East Chadic) . . . . .	62
4.2.4	Potential SVCs in other Chadic languages . . . . .	64
4.3	SVCs in Chadian Arabic . . . . .	68
<b>B</b>	<b>Description of SVCs in Barayin</b>	<b>70</b>
<b>5</b>	<b>Introduction to Barayin</b>	<b>71</b>
5.1	Data and orthography . . . . .	73
5.2	Verbal morphology . . . . .	74
5.3	Pronouns . . . . .	76
5.4	Syntax . . . . .	78
<b>6</b>	<b>Morphosyntax of Barayin SVCs</b>	<b>81</b>
6.1	Composition: four semantic types of serial verbs . . . . .	82
6.2	Long distance dependencies . . . . .	84
6.2.1	Relativization . . . . .	86
6.2.2	Interrogative pronouns . . . . .	88
6.3	Negation . . . . .	90
6.4	Distribution tests . . . . .	94
6.4.1	Distribution of adverbs . . . . .	94
6.4.2	Distribution of Perfective particles . . . . .	96
6.4.3	Distribution of the plural reference marker . . . . .	97
6.5	Tense-aspect marking . . . . .	98
6.6	Argument structure and pronominal suffixes . . . . .	103
6.6.1	Pronominal marking . . . . .	104
6.6.2	Selectional restrictions on the subject . . . . .	106
6.6.3	Locatives in SVCs . . . . .	107
6.7	Answer ellipsis . . . . .	109
6.8	Conclusion . . . . .	112
<b>7</b>	<b>Semantics of SVCs in Barayin</b>	<b>114</b>
7.1	Deictic SVCs . . . . .	115
7.1.1	Prior and simultaneous motion . . . . .	115

7.1.2	Prior motion in narratives . . . . .	118
7.1.3	Prior motion and FETCH events . . . . .	123
7.2	Manner SVCs . . . . .	125
7.3	Take SVCs . . . . .	128
7.4	Stand SVCs . . . . .	131
7.5	From serial verb to adverb: <i>sul-o</i> ‘sit’ . . . . .	138
7.6	Conclusion . . . . .	139
<b>C</b>	<b>LFG analysis of Barayin SVCs</b>	<b>141</b>
<b>8</b>	<b>Lexical-Functional Grammar</b>	<b>143</b>
8.1	C-structure . . . . .	144
8.1.1	Phrase structure rules . . . . .	145
8.1.2	X-bar theory . . . . .	147
8.1.3	Minimal c-structure . . . . .	149
8.1.4	Templates, non-projecting words and adjunction . . . . .	153
8.2	F-structure . . . . .	159
8.3	S-structure . . . . .	162
8.4	Linking between levels of structure . . . . .	166
8.4.1	C-structure to f-structure: $\phi$ . . . . .	166
8.4.2	F-structure to s-structure: $\sigma$ . . . . .	169
<b>9</b>	<b>C-structure and f-structure of Barayin</b>	<b>173</b>
9.1	S: Clause structure . . . . .	174
9.2	N: Noun phrases . . . . .	177
9.3	P: Prepositional phrases . . . . .	179
9.4	V: Verb phrases . . . . .	181
9.5	CL: Post-verbal particles . . . . .	183
9.6	Adjuncts . . . . .	186
9.7	C: Conjunctions . . . . .	190
9.7.1	Subordinating conjunctions . . . . .	191
9.7.2	Background marker . . . . .	192
9.7.3	Quotatives . . . . .	193
9.7.4	Relative clauses . . . . .	195
9.8	Conclusion . . . . .	197
<b>10</b>	<b>Barayin SVCs in LFG</b>	<b>198</b>
10.1	Summary of the morphosyntax of Barayin SVCs . . . . .	199
10.2	C-structure of Barayin SVCs . . . . .	202
10.2.1	Serial verbs as non-projecting adjuncts . . . . .	204
10.2.2	Serial verbs in a flat structure . . . . .	208
10.2.3	Serial verbs as specifiers of the verb phrase . . . . .	210
10.2.4	SVCs as “VP complement” structures . . . . .	212
10.3	F-structure of Barayin SVCs . . . . .	213
10.4	S-structure of Barayin SVCs . . . . .	217
10.4.1	Manner SVC . . . . .	217
10.4.2	Deictic SVC . . . . .	220
10.4.3	Take SVC . . . . .	225
10.5	Conclusion . . . . .	227

<b>11 Complex motion predicates in LFG</b>	<b>232</b>
11.1 Predicate composition . . . . .	233
11.2 Lexical Conceptual Structure . . . . .	235
11.3 Wambaya . . . . .	238
11.3.1 Data . . . . .	238
11.3.2 LCS analysis . . . . .	240
11.3.3 Re-analysis in a connected s-structure . . . . .	246
11.3.4 Constraining temporal interpretations . . . . .	251
11.4 Choctaw . . . . .	255
11.4.1 Data . . . . .	255
11.4.2 LCS analysis . . . . .	257
11.4.3 Re-analysis in a connected s-structure . . . . .	262
11.4.4 Representing path of motion in s-structure . . . . .	265
11.5 Conclusion . . . . .	268
<b>12 Conclusion</b>	<b>270</b>
12.1 Summary . . . . .	270
12.2 Further research . . . . .	272
12.2.1 Typology of serial verb constructions . . . . .	272
12.2.2 SVCs in Barayin and other Chadic languages . . . . .	273
12.2.3 LFG s-structure . . . . .	274
<b>A XLE mini-grammar of Barayin SVCs</b>	<b>276</b>
<b>Bibliography</b>	<b>293</b>

# Glossing abbreviations

1	first person	INS	instrumental
2	second person	IPFV	imperfective
3	third person	IRR	irrealis
A	transitive subject	LOC	locative
ABL	ablative	M	masculine
ABS	absolutive	NEG	negation
ACC	accusative	NFUT	non-future
AOR	aorist	NOM	nominative
ASOC	associative preposition	NPST	non-past
BG	background marker	NSBJ	non-subject
CAUS	causative	OBJ	object
CM	class marker	OBL	oblique
COM	comitative	OBLIG	obligative
COMP	complementizer	PART	particle
COMPL	completive	PFV	perfective
COND	conditional	PL	plural
DAT	dative	POSS	possessive
DECL	declarative	PREP	oblique preposition
DEF	definite	PRF	perfect
DEM	demonstrative	PROG	progressive
DET	determiner	PRS	present
DETRZ	detransitivizer	PST	past
DU	dual	PURP	purposive
DUR	durative	Q	question marker
ERG	ergative	QUOT	quotative
EXCL	exclusive	REAL	realis
F	feminine	REDUP	reduplication
FOC	focus	REL	relative clause
FUT	future	REM.PST	remote past
GEN	genitive	S	intransitive subject
HAB	habitual	SBJ	subject
HORT	hortative	SBJV	subjunctive
IDEO	ideophone	SG	singular
IMM	immediate	SS	same subject
INCL	inclusive	TOP	topic
INF	infinitive		

# Abstract

Barayin is an East Chadic language spoken by around 5000 people in the Guera region of the Republic of Chad. This dissertation examines a particular type of syntactic construction in the language, serial verb constructions, from the perspectives of typological (or comparative) syntax, descriptive grammar, and the formal syntactic theory of Lexical-Functional Grammar (LFG). Typologically, serial verb constructions are problematic because they represent a heterogeneous set of multiverb constructions that have features that do not fit into traditional syntactic categories like subordination, conjunction and adjunction. Part A of this dissertation describes these problematic features in detail, providing a succinct overview of the literature which can serve as a resource for field linguists describing similar constructions. Part B of the dissertation gives a detailed description of the morphology, syntax and semantics of serial verb constructions in Barayin. These chapters contribute to our knowledge of the world's languages by documenting a complex syntactic phenomenon in an area of the world where most of the languages are significantly understudied. The most common type of SVC in Barayin involves a deictic motion verb. The motion is normally (but not always) understood to take place prior to the activity or state predicated by the main verb. The formal analysis of Barayin SVCs in Lexical-Functional Grammar in Part C uses recent developments in the theory to show how argument sharing in SVCs can be represented in a connected s-structure that conforms to the standard mechanisms of LFG. The approach is compared to two previous analyses of complex motion predicates in other languages which appeal to a non-standard formal mechanism to model complex predicates.

# Acknowledgments

For very practical reasons, this work would never have started without the generous support of Birla International Limited who funded the Basant Kumar and Sarala Birla Graduate Studentship at the Faculty of Linguistics, Philology and Phonetics of the University of Oxford. I hope my effort and results reflect my appreciation for their willingness to invest in higher education and the scientific study of language.

Along the way, more financial support has come from various places. I received a student fellowship from LSA to attend the 2015 LSA Summer Institute at the University of Chicago, and a mobility grant from Labex EFL to spend three months as a visitor at the *Laboratoire de linguistique formelle* (LLF) at the University of Paris 7. In my first research trip to Chad, a significant portion of the expenses were covered by the Hansell Fund at Somerville College, and another portion by the Faculty of Linguistics. My second research trip to Chad was funded by the Endangered Languages Documentation Programme (ELDP, Small Grant SG0431). The Faculty of Linguistics also regularly contributed to the cost of presenting my work at various conferences, in part from the Siddiki Travel Bursary. Some additional financial assistance was given by the Barbara Craig fund at Somerville College.

Research in Chad required a great deal of collaboration from a large number of people. At the University of Oxford, Dan Holloway and Sarah Ward handled the largest share of this burden. In Chad, I am grateful to Ahmat Mahamat Tolli (*Directeur de l'Intérieur pour le Ministre de l'Administration du Territoire et de la Sécurité Publique*) and Dr Moussa Isseini (*Directeur de la Recherche Scientifique et Technique*) for granting permission to work in Chad on behalf of the Chadian government. Logistical support for the visit was provided by CRASH (*Centre de Recherches en Anthropologie et Sciences Humaines*) with special thanks to Dr Hoinathy Remadji and Prof Khalil Alio, and by SIL, with thanks especially to Larry and Dianne Burke, Padeu Dakouli, Hissein Kodngargue, Emma Kuipers, Stefanie Seibel, Cindy Trotter, Caroline Tyler and Rineke van Rijn, among others. Work in the Guera region was facilitated by FAPLG (*Fédération des associations pour la promotion des langues du Guéra*). Thanks especially to Michel Karim, Sakine Ramat and Yaya Ali Ramat for their support and friendship.

During my time with the Barayin community, in particular in the ELDP video documentation project, well over 100 members of the Barayin community happily participated in the study of their language. Those who were willing to be recorded are listed in the metadata of the ELAR deposit.<sup>1</sup> Special thanks are due to Mahamout Patcha and Mahamat Hissebouna for their work as videographers and recordists. Ousmane Amine and Bourma Tchorama tirelessly represented ADPLB (*Association pour le développement et la promotion de la langue barain*) in helping coordinate the research and documentation efforts, as well as the ongoing mother-tongue literacy program. Nassour Elias (who passed away in 2017) and Moussa Adou were key language consultants with sharp linguistic intuitions. Soumaïne Ahmat was crucial in particular in his role as a

---

<sup>1</sup><https://elar.soas.ac.uk/Collection/MPI1035101> (accessed March 23, 2018)

transcriber and translator of Barayin recordings, among other roles. I thank the whole community for their welcome and the faith they showed in me by entrusting me with access to their lives and their language.

My supervisor, Mary Dalrymple, showed a great deal of faith in my ability to write this dissertation despite how much I would need to learn along the way. Her input into this project has been challenging and critical while simultaneously being positive and uplifting. Her vast working knowledge of linguistics is complemented by her genuine curiosity about new ideas and data. Her attention to detail and high standards are channeled through gracious communication. Her laid-back demeanor is balanced by how well-organized she is in regularly following up with her students. She has exemplified the ideal supervisor throughout this entire project.

Many other people have made contributions to the content of this dissertation. Many thanks go to my examiners, Ash Asudeh and Peter Austin, for reading the entire manuscript and giving their helpful perspective on the ideas developed in the dissertation and their presentation. Other people who gave insightful feedback on various sections throughout the writing process include: Sean Allison, Bernard Caron, Patrick Caudal, Berthold Crysmann, Jamie Findlay, Birgit Hellwig, Stephen Jones, John Lowe (who also introduced me to XLE), Louise Mycock, Rachel Nordlinger and Daniel Ross. I also received helpful feedback from audiences at various presentations at LLF, the Syntax Working Group at Oxford and SE-LFG meetings at SOAS. Mark Sebba and Edward Bendix both shared unpublished manuscripts. Florian Matter introduced me to his L<sup>A</sup>T<sub>E</sub>X template for abbreviations, saving me the hassle of trying to organize a list of abbreviations at the end of writing a dissertation.

The opportunity to write this dissertation, and all the help that made it possible to complete it, is one of the greatest gifts I have received in my life. I offer my heartfelt thanks to everyone who has been a part of this gift, and to all my friends and family who have enjoyed it with me along the way. Ultimately, I thank the one *from whom comes every good gift* (James 1:17), and who *gives good things to those who ask him* (Matthew 7:11).

# Preamble

On January 25, 1853, a 26-year-old missionary named Johan Gottlieb Christaller arrived on the shores of Ghana, then called the Gold Coast. The young German had been recognized for his linguistic talents while training with the Basel Mission, and was sent to study Twi (part of the Akan languages) and translate the Scriptures. Christaller returned to Europe in 1868 due to illness, but returned to Ghana with a Twi Bible in 1871. He continued his linguistic studies, publishing a lengthy grammar in 1875 and a dictionary in 1881. He was celebrated for the quality of his linguistic works, even hailed as the “founder of the scientific study of West African languages” (Jungraithmayr and Möhling 1983:62, as translated in Bearth 2000:83).

One of the reasons for Christaller’s linguistic legacy is a few pages in his Twi grammar describing a type of grammatical construction he called “combinations” (Christaller 1875:144). In these constructions, two or more verbs appear in a single clause to express a meaning that would be expressed by a one-verb sentence in an Indo-European language. It was one of the first publications to describe serial verb constructions, although they were not branded as such until much later.

On November 7, 2009, I flew to Chad for the first time as a 26-year-old working with SIL, echoing a long tradition of missionary-linguists. A small language community in the underdeveloped and sparsely populated Guera region had formed a committee, and I was invited to help them develop a writing system for their never-before-analyzed language. I spent the next year exploring the phonology, morphology and basic syntax of Barayin, and helped the community produce the materials needed to launch a pilot mother-tongue literacy program.

My research culminated in an MA thesis describing the language. In the conclusion, I wrote: “The brief introduction to a few complex syntactic structures in chapter 10 could be expanded, not only in depth, but also to cover more clause types that were not touched on in this study. One relatively common structure combines a verb of motion with another verb... this may be an example of a serial verb construction” (Lovstrand 2012b:215-216). This dissertation is the follow-up to that residue.

# Chapter 1

## Introduction

This brief introductory chapter provides some background on the motivation for this study (Section 1.1), an overview of the logic behind the organization of the dissertation (Section 1.2), and some general themes that are drawn out in the material that may motivate a reader to invest their time in this extended study of serial verb constructions (Section 1.3).

### 1.1 The problem

At the core of this dissertation is a particular type of construction in a particular language. However analyzing this construction raises questions with broad implications for the study of syntax. How does it compare to similar constructions in other languages? How should its particular morphological and syntactic features be diagnosed and described? What are the functions of this type of construction? How does this kind of construction fit into our understanding of Universal Grammar?

The construction is given the label “serial verb construction” and the data is from Barayin. Barayin is a Chadic language spoken by about 5,000 people in the Guera region in the middle of Chad. A more complete introduction to the language is given in Chapter 5. Research on Barayin began with a request from the community for assistance in putting together a proposal for an orthography of the language. That project grew into an MA thesis describing the basics of the phonology and grammar of the language (Lovstrand 2012b).

The point of departure for this dissertation is a syntactic pattern that was not addressed in that work. In some texts, there is a series of clauses where the narrator repeatedly adds either the verb ‘go’ or the verb ‘come’ immediately before the main verb of the sentence. The pattern can be seen in an extract from one of these texts shown in example 1.<sup>1</sup>

- (1) a. *kakkireŋ juk-eyi na ni kol-eyi jel-eyi mijjo dogo Botiki*  
 there stand.up-IPFV BG SBJ.3PL go-IPFV put-IPFV person until Botiki  
 From there they went [and] put someone as far as Botiki.
- b. *ni juk-eyi min Botiki na, ni s-eyi jel-eyi ŋ Dɔŋgɔr*  
 SBJ.3PL stand.up-IPFV from Botiki BG SBJ.3PL come-IPFV put-IPFV OBL Dɔŋgɔr  
 They went out from Botiki, and they came [and] put someone in Dɔŋgɔr.
- c. *min Dɔŋgɔr na, ni s-eyi jel-eyi Alaw*  
 from Dɔŋgɔr BG SBJ.3PL come-IPFV put-IPFV Alaw  
 From Dɔŋgɔr, they came [and] put someone at Alaw.
- d. *Alaw na, ni kol-eyi jel-eyi Wore*  
 Alaw BG SBJ.3PL go-IPFV put-IPFV Wore  
 From Alaw, they went [and] put someone in Wore.
- e. *Wore na, ni kol-eyi jel-eyi Bose*  
 Wore BG SBJ.3PL go-IPFV put-IPFV Bose  
 From Wore, they went [and] put someone at Bose.
- f. *Bose na, ni kol-eyi jel-eyi Bela*  
 Bose BG SBJ.3PL go-IPFV put-IPFV Bela  
 From Bose, they went [and] put someone at Bela.
- g. *ŋ Bela na, ni s-eyi jel-a-ti Mebra*  
 OBL Bela BG SBJ.3PL come-IPFV put-IPFV Mebra  
 From Bela, they came [and] put someone at Mebra. (bva303.27-33)

Adding to the perplexing nature of these examples is the fact that both verbs in the construction are in a finite form, and there is no coordination marker between them. What kind of construction is this? On top of these morphosyntactic questions, the translator of the text, who had shown himself to have impressive natural linguistic talents, invariably omitted these verbs in the free translation into French. What then is the point of these extra verbs? Why are they there?

---

<sup>1</sup>Linguistic data throughout this work are presented in the format of the Leipzig Glossing Rules. The first line is the language data with hyphens marking morpheme boundaries. Bold font is regularly used to draw attention to the particular elements under discussion. The second line is a morpheme-by-morpheme gloss. A full list of abbreviations is found in the front material. The final line is a free translation of the example.

## 1.2 Organization

The following ten chapters of this dissertation are divided into three parts. Part A addresses the question of how to talk about what type of construction this is. This sets the context for the description of the features and meanings of serial verb constructions in Barayin in Part B. This descriptive analysis is then extended into a formal analysis in Part C, which fits the construction into the approach to Universal Grammar known as Lexical-Functional Grammar.

Part A is, in large part, an overview of the descriptive and typological literature on similar constructions cross-linguistically. It does not take long to discover that the literature on serial verb constructions (SVCs) is fractured by contradicting claims that are not always applied to the same set of data. One only has to read two publications on SVCs to find a controversy—in some cases this is true even in two publications by the same author!

Chapter 2 works through most of the features commonly associated with SVCs in the literature. It concludes with delimiting a set of features that are relevant to the description of the construction to be examined in Barayin. This working definition can be seen as a type of comparative category. Chapter 3 transitions from form to function. It gives an overview of the most common functions of constructions that appear to have the features described in Chapter 2. These two chapters will be of interest to any field linguist analyzing a language with a construction that looks like an SVC. Chapter 4 further narrows the context to Chadic languages to give a more in-depth description of the state-of-the-art in describing SVCs in Chadic languages.

Having presented the relevant features and functions in Part A, Part B examines which of these features and functions exist in SVCs in Barayin. Chapter 5 gives a brief introduction to the language, its grammar and the data used in this analysis. Chapters 6 and 7 discuss the form and function of Barayin SVCs, in parallel to Chapters 2 and 3. It is probably not obvious in the three chapters of Part B, but the level of detail and precision in the descriptive analysis have been improved by the process of developing the formal analysis of Barayin SVCs presented in Part C.

Part C is aimed at a different (but overlapping) set of readers. The first three chapters bring the data on Barayin SVCs into the world of formal syntax. Chapter 8 introduces Lexical-Functional Grammar (LFG), a theory of generative syntax based on the pioneering work of Kaplan and Bresnan

(1982). The analysis explores the implications of two recent proposals in the formal representation of LFG. One is “minimal c-structure” (Lovestrand and Lowe 2017) which provides a more economical representation of constituent structures. The second is the representation of argument structure and other semantic information in a “connected s-structure” (Asudeh and Giorgolo 2012).

Chapter 9 contains an LFG analysis of some basic syntactic structures in Barayin. This provides a formal context for the LFG analysis of SVCs in Barayin in Chapter 10. The final chapter of this part, chapter 11, expands this approach to constructions with similar semantics in two unrelated languages. These constructions have previously been analyzed as requiring a special non-standard mechanism of “predicate composition”. In this chapter it is shown that the standard mechanisms of LFG are sufficient for an analysis of these constructions. Chapter 12 is a conclusion and review of issues raised for further research.

Figure 1.1 provides a simplified schematic overview of the organization of the dissertation. The arrows represent a chapter providing some context or background for another chapter. Through this dissertation, numbers used to refer to a section retain the number of the chapter the section occurs in. For example, a reference to Section 6.1 refers to the first section of the sixth chapter and Section 6.1.2 refers to the second subsection of that section.

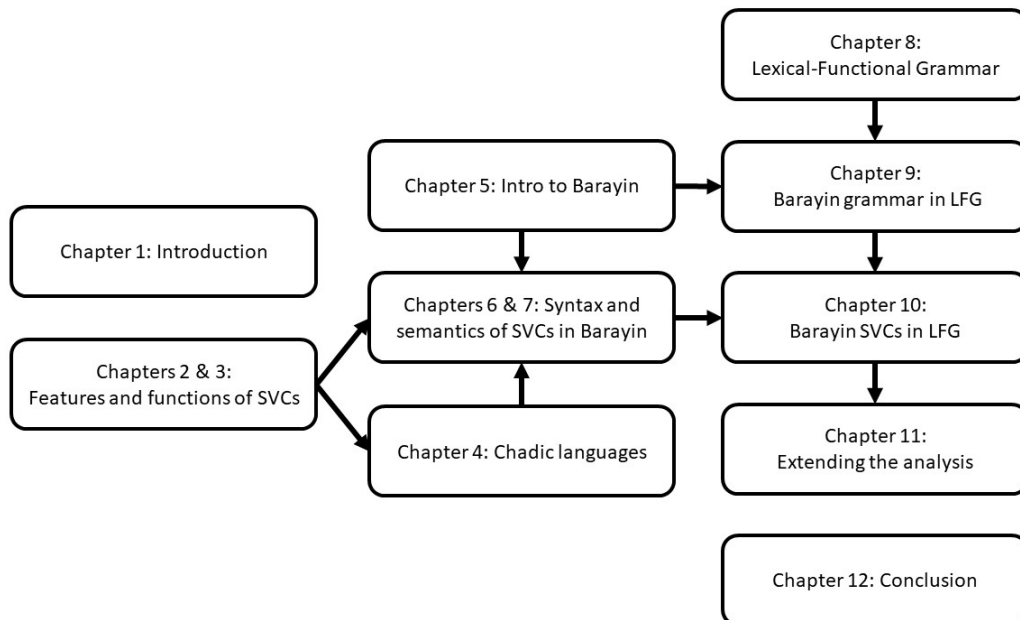


Figure 1.1: Schematic overview of the organization of the dissertation

### 1.3 General themes

Part A addresses the problem of figuring out what a particular construction is from a comparative perspective. SVC is a traditional category in a taxonomy of multiverb constructions that essentially no linguist finds satisfactory. The state of the literature makes it difficult to provide a cross-linguistic context to ground a work describing a particular construction in a particular language. As a temporary solution, a working definition (or comparative concept) is proposed to accommodate the needs of the moment, setting aside all of the “exceptional” constructions that do not meet the definition. However, various alternate criteria found in the literature are also discussed, providing a much broader view of the typological context of SVCs.

Part B addresses the question of “What is it?” by describing the features of a particular construction in Barayin in as much detail as possible. Perhaps the most striking characteristic of SVCs, what gives them their putative exoticism, is their form: SVCs have two verbs in a single clause. In the process of describing SVCs in Barayin, the intuitive notion of clausehood, rarely even thought worthy of a definition in descriptive linguistics, is broken down into more detailed features by a battery of syntactic and semantic tests applied to Barayin SVCs.

The fact that certain functions are relatively common in SVCs cross-linguistically raises the question of why this should be the case. While no ultimate causal explanation can be given for why the Barayin use SVCs when speakers of some closely related languages do not, there are some clear proximal motivations for using SVCs. This is particularly true of the most common type of SVC, Deictic SVCs. Deictic SVCs provide a mechanism for tracking the relative physical location of participants in a narrative, as in example 1 on page 2. They are also used to express the relatively common idea of ‘fetching’ an object. One motivation for another type of SVC, Manner SVCs, is to combine a manner of motion verb with a verb that can select a locational argument.

Part C addresses the question of “What is it?” from the perspective of Lexical-Functional Grammar. In doing so it tests the hypothesis that the universal set of forms, principles, and rules supplied by the theory is sufficient for an account of the syntactically relevant features of any construction or utterance in any language. LFG passes the test in the sense that the mechanisms used to account for

the SVCs are all part of the standard assumptions of the theory. The analysis builds on previously proposed ideas motivated by general syntactic principles.

It is not uncommon for a formal analysis of a particular construction to propose a modification to the syntactic theory to account for some previously unaccounted for data. Such proposals, to the degree that they are *ad hoc* solutions, could be interpreted as a failure of the theory. As Andrews and Manning (1999:31) write, “In common with most modern syntactic frameworks, we eschew the use of formal devices and principles which lack any prospect of applicability beyond a single construction type.”

In the final chapter of Part C, the analysis of Deictic SVCs in Barayin is extended to complex motion predicates in two other languages, Wambaya and Choctaw. In all of these constructions, a serial verb or some type of particle adds information about a path of motion to the semantics of the main verb. The published analyses of Wambaya and Choctaw appeal to a relatively construction-specific mechanism called predicate composition. These constructions can be re-analyzed in an approach that avoids predicate composition, strengthening the evidence that the standard theory of LFG is a feasible model of Universal Grammar.

## Part A

# Serial verb constructions

Linguists often give credit to Christaller (1875:144-145) for being the first linguist to attempt a description of serial verb constructions (SVCs) in his grammar of Akan (Niger-Congo), with the exception of Lord (1993:7, 51-56, 251) who points out that similar data were already documented by Riis (1853, 1854:103-104) in Akan and by Zimmermann (1858:45-49, 56-57) in Ga (Niger-Congo). These three linguists, as well as Westermann (1907:126-138) on Ewe (Niger-Congo), called the constructions they described “combinations”, “compounds” and “connections”. Outside of Africa, similar combinations of verbs had already been noticed by Hazlewood (1850:v-vi) in Fijian.<sup>2</sup> Schuchardt (1914; English translation: 1980:92) points out that SVCs occur in Surinamese creole. In addition, Dempwolff (1939; English translation: 2005) discusses SVCs in an Austronesian language, Yabem.<sup>3</sup>

The term *serial verbs* first appeared in print (in English) in 1929 (Balmer and Grant 1929), but for several decades, linguists used a diverse set of terminology to refer to these constructions. In a transformational analysis of SVCs in Akan, Stewart (1963) used the term “serial verbs construction”, and in the 1970s other scholars reached a consensus on this terminology. Essentially every journal article on the phenomenon during this period (mostly found in *Studies in African Linguistics* and the *Journal of West African Languages*) uses some version of the terms serial verb or

---

<sup>2</sup>Thanks to Daniel Ross for bringing this publication to my attention. There is some controversy as to whether Fijian has SVCs or not (Dixon 1988, 2006b; Schutz 1980).

<sup>3</sup>Dempwolff’s analysis of SVCs is discussed in Bradshaw (1982, 1983, 1999), Bisang (1986) and Durie (1988).

serialization (e.g., Awobuluyi 1973; Bamgboṣe 1973, 1974; George 1975, 1976; Hyman 1971; van Leynseele 1975; Lord 1973; Schachter 1974b; Stahlke 1970, 1974).

Since the 1970's there has been a trend towards identifying SVCs in more and more languages. Relatively early in the study of SVCs, Sebba (1987:141) claimed that he knew of twenty-two “serialising” languages. More recently, Dixon (2006b:338) speculated that SVCs might exist in one-third of the world's more than 6000 languages. Bendix (1972:3) might suggest that this increase is the result of vague terminology: “A working definition would sometimes seem to be any such series [of verbs] not found in the common European languages.” Seuren (1990:15) critiques the trend as the result of the “Me Too Principle”: “No sooner had the term been introduced than serial verb constructions were spotted left, right and center...” Bradshaw (1993:158) has a more positive perspective, presenting this as a case of more careful empirical study: “As more and more languages are examined for evidence of verb serialization, more and more varieties of the phenomenon have turned up.”

Whatever the cause of the proliferation of references to SVCs, it has resulted in a lack of clarity over what exactly is and is not an SVC.<sup>4</sup> This is a practical issue for anyone reading about SVCs. “It is not at all clear that all authors are referring to the same thing when they speak of ‘serial verbs’” (Sebba 1987:1). This is also problematic for formal syntax, since, if SVC is not a coherent concept, then “it does not seem possible to present one uniform solution for all the serial constructions, as has always been tried before” (Voorhoeve 1975). The vagueness is problematic for typological studies since it cannot be taken for granted that what is described as an SVC in one language is the same type of constructions as something called an SVC in another language. By now, many linguists have commented on the problematic nature of the definition of SVCs (e.g., Andrews and Manning 1999:108; Bisang 2009:811-812; Cleary-Kemp 2015:3; Crowley 2002:10, 18, 19; Enfield 2009; Foley 2008:153, 2010:79; Lord 1993:ix, 1; Osam 2003:14; Sebba 1987:86-87; Seiss 2009:503; Shibatani 2009:332; Stewart 2001:4, 10; van Staden and Reesink 2008:17; Zwicky 1990).

---

<sup>4</sup>Controversial definitions are, of course, also a problem for many other linguistic concepts. For example, auxiliary verbs: “This definition of auxiliary verb is admittedly somewhat vague. This is intentional. There is no, and probably cannot be, any specific, language-independent formal criteria that can be used to determine the characterization of any given element as a lexical verb or an auxiliary verb.” (Anderson 2006:6), clitics: “There’s an important sense in which we don’t actually believe in the existence of clitics. However, we do believe that it’s worthwhile to study in great detail the kinds of properties that have been ascribed to clitics.” (Spencer and Luís 2012:xiii), complex predicates: “What is a complex predicate? There is currently no widely accepted answer to this question, no agreed set of criteria which allow an analyst to classify Construction A as a ‘complex predicate’, and Construction B as ‘not a complex predicate’” (Amberber et al. 2010:1), and topics: “Linguists have essentially given up on a rigorous definition of topics” (Polinsky 1999:572).

Haspelmath (2016) sees the lack of clarity as the inevitable result of treating SVCs as a “natural kind” to be identified by the same diagnostics anywhere in the world when, in fact, there is no such natural kind. Bickel’s (2007:246) explanation is that concepts like serialization cannot be applied across languages because they “are much too coarse and lump together large sets of variables that have their own, often independent, distributions and historical profiles.” It is unsurprising that out of the many features of a putative SVC in one language, only some might be present in a putative SVC in another language. These features can vary independently of each other. “Things look often similar, but never identical” (Bickel 2007:246).

In Chapter 2, some possible typological approaches to the problem of defining SVCs are explored, and a working definition is proposed. The working definition is a type of comparative concept (Haspelmath 2010, 2016). Its criteria include a set of features traditionally associated with SVCs, and which are features of the construction to be studied in Barayin in Parts B and C of this dissertation. Chapter 3 reviews the most commonly discussed semantic or functional types of SVCs (based on the working definition) in the literature. This is not an exhaustive cross-linguistic typology of the semantics of SVCs. Rather, this chapter is part of a literature review giving the context for the description of the meaning and functions of SVCs in Chadic languages and in Barayin. Some semantic types of SVCs appear to be very common, while others appear to be less common. Having set the terminological and cross-linguistic context for an analysis of SVCs in Chapters 2 and 3, Chapter 4 gives a more local context by reviewing some of the common properties of Chadic languages, and summarizing the few reported cases of SVCs in Chadic languages.

## Chapter 2

# Morphosyntactic features of SVCs

There is a reasonably well-established set of morphosyntactic features that have been associated with serial verb constructions (SVCs) over the decades. Table 2.1 indicates how several publications have repeatedly discussed similar features.<sup>1</sup> However, the longstanding consensus on the relevant features of SVCs is significantly complicated by disagreement over the definition and diagnostics of these features, as well as their status as definitional criteria.

Table 2.1: Features of serial verb constructions

	Westermann (1930)	Bradshaw (1982)	Sebba (1987)	Lee (1992)	Muysken and Veenstra (1994)	Durie (1997)	Kroeger (2004)	Aikhenvald (2006b)
More than one verb	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No linking morpheme	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Single TAM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shared argument(s)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One event	?	Yes	?	Yes		Yes	Yes	Yes
One negation		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Single intonation contour		Yes			Yes	Yes	Yes	Yes

<sup>1</sup>Blank cells indicate that the issue is not directly addressed in that publication. A question mark indicates that the author's position is unclear.

Most of this chapter explores what has been said about these features in the literature, and clarifies how they are defined in the context of the working definition of SVCs used in this dissertation. Section 2.1 discusses the theoretical status of these features as criteria in a comparative concept. Sections 2.2 through 2.8 each contain a discussion of one of the features of SVCs from Table 2.1. Finally, Section 2.9 summarizes the criteria used in the working definition of SVCs, and briefly discusses two alternate approaches to the typology SVCs that could capture the variation seen in the discussion of the features of SVCs. The working definition established in this chapter is used to discuss SVCs in Chadic languages in Chapter 4, and to analyze serial verb constructions in Barayin in Part B.

## **2.1 SVC as a comparative concept**

Zwicky (1990:1) describes the common status of the definition of SVCs as a “pre-theoretical umbrella term, picking out a class of phenomena that are in some way problematic in theorizing.” There have been several types of responses to the vague, pretheoretical status of the definition of SVCs. In general, the options are either to provide a stricter and more narrow definition that results in a more homogeneous set of constructions, or to provide a systematic account for the variety of constructions that have the features associated with SVCs. Since this dissertation is focused on a particular construction in a particular language, there is no immediate need for a typology of all SVCs and SVC-like constructions (or, more broadly, of all multiverb constructions). However, Section 2.9.2 discusses how such a variationist typology could be approached, why a variationist approach is desirable, and why it is impractical for the current study.

Some of the early attempts to restrict the definition of SVCs are motivated by formal syntactic analyses which propose a single underlying explanation for a family of constructions. Any construction not accounted for by the proposal cannot be considered part of the class of constructions. For example, Baker (1989) selects a set of features that defines what he calls “true SVCs” implying that many constructions have falsely been identified as SVCs. Collins (1997:463) selects a different set of features, but echoes the mindset, stating that: “Many proposed analyses of SVCs do not meet this criterion and are therefore false.”

This approach results in a considerable amount of controversy, since different formal analyses will identify different sets of constructions. What is considered a “true SVC” by one author might be considered “false” by another. The disagreement cannot be resolved since there are few if any objective grounds for claims that one feature or another must be included or excluded in the definition of SVCs. “Any property that is picked as definitional will favor one type and make it the model for others. The fundamental problem is that there is no non-arbitrary choice” (Bickel 2010:54).<sup>2</sup>

For the current study, a working definition of SVCs is established to offer a clear and relatively precise picture of what is considered an SVC. Unlike some restrictive definitions of SVCs, it is not claimed or assumed that the definition necessarily identifies an innate cross-linguistic category or natural class. As Meyerhoff (2001:248) puts it: “Narrowing the focus of investigation like this is not a covert claim about what is or is not a “proper” SVC; it is simply a pragmatic decision to try and make sure the constructions being compared are indeed comparable in the face of this heterogeneity.”

Haspelmath (2010) promotes an approach to linguistic typology that recognizes that “comparative categories” used for cross-linguistic research are arbitrary in the sense that they are defined by linguists for the purpose of comparison and making generalizations. They are not immutable objects in nature to be discovered through careful diagnosis. Only language-specific “descriptive categories” can be discovered in this way. This means that “linguists should feel free to simply advance a definition and then work with it. If the resulting work turns out to be interesting and productive, then the definition has proved useful” (Haspelmath 2016:293). There is no need to debate if one definition is more correct than another.

Haspelmath (2016:292, 312) puts forward a particularly narrow definition of SVCs as a comparative concept “as a way of stimulating further work by descriptive linguists, not as a finished result of comparative research,” with the goal of formulating “interesting and testable generalizations.” Since the goals of this dissertation are different than that of Haspelmath (2016), the particulars of his proposal can be set aside without debating their merit.

---

<sup>2</sup>For an example of the arbitrary nature of definitions of SVCs, Aikhenvald (1999) excludes verbal compounding from the category of serialization, but in a later publication, Aikhenvald (2006b:5, 59) insists that verbal compounds be subsumed under serialization, while arguing against the inclusion of constructions with non-finite marking or any type of linking morpheme. More recently, Aikhenvald (2010:21) adopts a more flexible position on this point allowing an “empty morpheme” in serialization, but not including constructions which require a non-finite verb form.

The goal of this dissertation is not necessarily to formulate universal generalizations that hold of a particular construction type, but rather to describe a construction in a particular language in its cross-linguistic context, as well as the context of previous research. Since the morphosyntactic features of the construction in Barayin fit most closely with what is described in the literature as SVCs, the features of SVCs (Table 2.1) are used to create a comparative concept that encompasses the relevant morphosyntactic features of the construction to be described in Barayin in Part B. A secondary motivating factor for the definition of the comparative concept is to create minimal overlap with other traditional categories of multiverb constructions. For this reason, the working definition of SVCs excludes constructions with a non-finite verb form (Section 2.2.4), verbal compounds (Section 2.2.5), and constructions with any type of morphological linker (Section 2.3).

While no universally applicable generalizations are put forward for this comparative concept, Chapter 3 reviews what semantic functions are reported to most often correspond with SVCs. Note that, unlike Haspelmath's (2016) definition of SVCs, there are no semantic restrictions on what is considered an SVC in the definition used in this dissertation. In principle, any meaning can be expressed in an SVC. An explanation for the fact that certain types of meanings are so commonly reported for SVCs is an interesting issue to explore in future research.

The term "working definition" is used throughout this chapter instead of "comparative concept" in order to avoid any confusion with Haspelmath's proposed definition of SVCs, and to emphasize that the definition is designed for a more limited purpose than normally associated with comparative concepts. The working definition is established throughout this chapter, and summarized in Section 2.9.1.

## **2.2 More than one verb**

There are at least five types of issues relating to how to define what counts as a verb in an SVC: lexical category, independent use outside of SVCs, semantics, inflectional morphology, and wordhood.

### 2.2.1 Lexical category

Westermann (1930:129-130) realized early on that, in some cases, a lack of inflectional marking creates ambiguity between verbs and prepositions. This is a fairly common issue in describing SVCs. Ansre (1966) proposes the label, “verbid”, for such cases. Li and Thompson (1973, 1974) use the term “co-verb” for a similar phenomenon in Mandarin Chinese, and Durie (1988) presents a typology of “verbal-prepositions” in Oceanic languages. In the absence of distinctive verbal morphology, patterns of syntactic “movement” have been used to distinguish verbs and prepositions (e.g., Jansen et al. 1978; Li and Thompson 1974; Lord 1973). To avoid confusion with other lexical categories, a verb in an SVC must be distinguishable by morphological or syntactic properties.

For example, Jansen et al. (1978) argue that *nanga* in example 1 is a preposition because it must appear in the sentence-initial position when its object is an interrogative pronoun. In other words, prepositions exhibit pied-piping. In contrast, the word *go* in example 2b is in a sentence-final position even though what appears to be its argument is an interrogative pronoun in the sentence-initial position. Verbs in Sranan do not undergo pied-piping.<sup>3</sup>

**Sranan** (Creole; Jansen et al. 1978:141-142)

- (1) a. Kofi e koti a brede nanga a nefi  
Kofi PRS cut the bread with the knife  
Kofi cuts the bread with a knife.
- b. nanga san Kofi e kota a brede  
with what Kofi PRS cut the bread  
With what does Kofi cut the bread?
- c. \* san Kofi e koti a brede nanga  
what Kofi PRS cut the bread with
- (2) a. Meri e tyari a pikin go na en m'ma  
Mary PRS carry the baby go LOC her mother  
Mary takes the baby to her mother.

---

<sup>3</sup>The auxiliary *e* in examples 1 and 2 is glossed ASP (presumably for ‘aspect’) in the original. The gloss PRS is taken from Seuren (1981). The free translations in examples 1b and 2b were not provided in the original. For the sake of clarity, I have added them based on what I assume they mean compared to the examples that are given a free translation in the original.

- b. na suma Meri e **tyari** a pikin **go**  
 LOC who Mary PRS carry the baby go  
 Who does Mary take her baby to?
- c. \* **go** na suma Meri e **tyari** a pikin  
 go LOC who Mary PRS carry the baby

## 2.2.2 Independent use

A second issue of verbhood is whether a putative verb is “capable of appearing as the only verb in a simple sentence” (Sebba 1987:39). Strictly interpreted, this criterion rules out constructions that are among the earliest documented and most often discussed instances of SVCs. The “serial verb” *fi* ‘use’ in Yoruba (Carstens 2002:24) and *de* ‘take’ in Akan (Campbell 1996:86, 92) occur in instrumental SVCs (Section 3.6.1), but cannot be used on their own.

**Yoruba** (Niger-Congo; Carstens 2002:24)

- (3) a. Mo **fi** òbẹ **ge** bùrédì  
 I USE knife cut bread  
 I cut the bread with a knife.
- b. \* Mo fi òbẹ/ayò/bùrédì  
 I USE knife/joy/bread  
*for*: I used/took knife/joy/bread.

**Akan** (Niger-Congo, Kwa; Campbell 1996:86, 92)

- (4) a. Me-**de** nsuo **horoo**  
 I-TAKE water wash  
 I washed with water.
- b. \* Me-de nsuo  
 I-TAKE water  
*for*: I take water.

Guillaume (2013:24-25) criticizes the inclusion of these cases as serial verbs as a failure to distinguish synchronic and diachronic analyses. From a diachronic perspective, it is not surprising that a verb occurring in an SVC might lose its ability to occur on its own outside an SVC. It is expected that such a verb would also grammaticalize into some other lexical category.

For the sake of the working definition of SVCs, independent use will be considered just one test for verbhood, but not a necessary one. That is, if a word has all the phonological and morphosyntactic

properties of other serial verbs, then it can be included in that class even if it does not occur on its own in an independent clause. Such cases appear to be relatively rare.

### 2.2.3 Semantically-bleached verbs

A third issue of verbhood is whether or not to consider verb stems with identical forms to be the same verb even when the form in an SVC has a significantly different meaning. For example, the verb *lọ* ‘go’ in an independent clause with its own subject pronoun and TAM prefix in example 5a contributes a motion meaning, but in the SVC in example 5b it appears in a bare form and contributes an aspectual meaning.

**Yoruba** (Niger-Congo; Bamgboṣe 1974:31-32)

- (5) a. ó ñ-sùn; ó ñ-lọ  
       he IPFV-sleep he IPFV-go  
       He is sleeping and going.
- b. ó ñ-sùn lọ  
       he IPFV-sleep go  
       He is falling asleep.

In the much of the literature, the concept of serialization includes those cases where the serial verb would indisputably be said to have a different meaning from the same verb form used on its own, as in example 5. For example, Aikhenvald (2006b:22) states that “A grammaticalized ‘minor’ verb [in an SVC] can still retain full lexical status in the language outside the constructions in which it has been grammaticalized.”

However, Foley and Van Valin (1984:210) do not recognize aspectual SVCs as a legitimate type of serialization, and call aspectual serial verbs “an aspectual operator realized by a verb stem and a predicate within its scope.” Others have adopted a similar semantic criterion to disallow the category of aspectual SVCs. For example, Anderson (2006:144) includes semantically-bleached verbs in the category of auxiliary verb, but not serial verb (see also Cleary-Kemp 2015:224; Haspelmath 2016:302; Shibatani 2009:256).

While it is certainly relevant to analyze semantic differences between serial verbs and the same form occurring as a main verb, it is not always clear where to draw the line between “bleached” and “unbleached” (Enfield 2009). Another challenge for this view is that there are cases of apparent

ambiguity between an aspectual and non-aspectual interpretation of the same construction, as in examples 6 and 7 (see also Green (1995:278)). Heine (1993:48) calls this “overlap”. Should these cases be analyzed as two apparently identical constructions in separate typological categories based on their semantics?

**Ewe** (Niger-Congo; Essegbey 2004:474)

- (6) Kofi **va** **kpɔ** nɔvi-a  
 Kofi come see sibling-DEF  
 Kofi came and saw his sibling.  
*or* Kofi eventually saw his sibling.

**Yoruba** (Niger-Congo; Bamgboṣe 1974:34)

- (7) Olú **sáré wá** ilé  
 Olu ran come home  
 Olu ran and came home  
*or* Olu came home quickly.

This work assumes the broader view of SVCs which includes semantically-bleached verbs in the category of serial verbs. However, unlike Essegbey (2004), who argues that aspectual SVCs should not be considered auxiliary verbs, it is assumed that the morphosyntactically-defined category of serial verbs can overlap with a semantically-defined category, such as auxiliary verbs (Heine 1993:38, 40).

#### **2.2.4 No non-finite verbal morphology**

Serialization normally excludes any construction in which a verb is overtly marked as a non-finite form (e.g., infinitival or participle form). “Serial constructions are different from complex predicates and other multiverb sequences which are syntactically combined, but where neither component can function on its own, especially if one of them is a dependent or a nominalized form” (Aikhenvald 2006b:5).

However, it would be an oversimplification to assume that SVCs only involve finite verbs. Ross (2017) points out that there are three ways that morphological marking can show up in SVCs. The marking can be “agreeing” where identical marking is found on each verb. It can be “sharing”

where marking is found on only one verb, and the other verbs are in a bare or unmarked form. Or the construction can be “isolating” where there is no morphological marking on the verbs.<sup>4</sup>

It is not uncommon for linguists to ignore the restriction against explicitly non-finite verbs in serialization (e.g., Armoskaite and Koskinen 2014; Goddard 1988; Hale 1991; Jensen 1999; Lanz 2009; Shibatani 2009; Velázquez-Castillo 2004). In Korean, Li (1991:134) and Lee (1992:121-130) argue that examples like 8 and 9 are SVCs, claiming that what some view as a morphological linker (-*e* or -*a*) is better analyzed as an affix with no syntactic or semantic content.<sup>5</sup>

### **Korean (Kim 2010)**

- (8) Mia-ka hakkyo-ey **kel-e ka-ass-ta**  
Mia-NOM school-to walk-COMP go-PST-DECL  
Mia walked to school.
- (9) Mia-ka cwul-ul **cap-a tangki-ess-ta**  
Mia-NOM rope-ACC draw-COMP pull-PST-DECL  
Mia pulled a rope, drawing it.

Although all of the subtypes of morphological marking are fine-grained variables worthy of investigation and comparison in a typology of multiverb constructions, the type with non-finite marking will be excluded from the working definition of SVCs. This is in keeping with a more traditional view of SVCs, and is a practical choice given that such constructions do not occur in Barayin.

### **2.2.5 Wordhood**

Lord (1975) draws parallels between “verb compounds” in Igbo, where the multiple verb stems form a single grammatical word, and SVCs in other languages, where the verb stems are separate grammatical words. Lord demonstrates that there are functional similarities, but she clearly distinguishes compounding and serialization as separate categories. Many linguists continue to distinguish compounding and serialization as two distinct construction types (e.g., Crowley 2002:13-14; Creissels 2006; Déchaine 1993:809; Fedden 2011:414-416, Guillaume 2013).

---

<sup>4</sup>Aikhenvald (2006b) refers to “agreeing” marking as “concordant” and “sharing” as “singly-marked”. Isolating languages are discussed, but not included in the terminology used for classifying types of SVCs.

<sup>5</sup>This analysis is somewhat controversial among Koreanists (e.g., Hong (2014), Sohn (2008), Yeon and Brown (2011:460) and references therein).

The categorical distinction between verb-verb compounds and SVCs was challenged by Foley and Olson (1985:22) who used examples of two verb roots forming one morphological word as an argument for monoclausivity of SVCs: “A simple but compelling argument for the mono-clausal hypothesis is that in some languages such as Igbo, and, most strikingly, those of the Sepik basin of Papua New Guinea, serial verb constructions are grammatically one word.” Others have followed suit, viewing verb-verb compounds as a type of SVC (e.g., Aikhenvald 2006b; Durie 1997; Massam 2013; Nishiyama 1998; Owens 2011).

The working definition of SVCs used here adopts the more restrictive view. Verb-verb compounds are not considered a type of SVC. This is a convenient choice since verb-verb compounds do not exist in Barayin.

### 2.3 No linking morpheme

The absence of any morphological marker of subordination, coordination or complementation has been considered a feature of SVCs since the very first documentation of the phenomenon by Riis who described a “connection of sentences without any conjunction” (1854:103). As early as Hyman (1971), linguists have pointed out that there are constructions that appear to be identical to traditional examples of SVCs except for the presence of some type of linking morpheme. For example, in Fe’fe’ and Igbo the “consecutive construction” (examples 10a and 10b) uses the same verbs with the same meaning as instrumental, directional and comparative SVCs in Nupe (example 10c), only differing in that one verb is marked with a coordinating affix.

- (10) a. **Fe’fe’** (Niger-Congo, Bamileke; Hyman 1971)

à kà **láh** p̄ɛ **ncwēe** mbáa  
 he PST take knife and.cut meat  
 He cut the meat with a knife.

- b. **Igbo** (Niger-Congo, Kwa; Hyman 1971)

ó **wèrè** n̄mà **bèé** ánú  
 he took knife and.cut meat  
 He cut the meat with a knife.

c. **Nupe** (Niger-Congo, Kwa; Hyman 1971)

ū lá èbī bā nākà  
he take knife cut meat  
He cut the meat with a knife.

While Hyman (1971) does not suggest that these similarities undermine the distinction of the two categories, others either assume or argue that the absence of a linking marker should not be criterial for serialization (e.g., Aikhenvald 2010:21; Carlson 1994:283-289; Foley 1997:382; Shibatani 2009:256). Lord (1993:2) argues that “the meanings communicated by the Twi structures [with a “sequential” prefix] are comparable to meanings communicated elsewhere and in related languages by verb sequences without overt connectives. This makes the “no overt connectives” criterion look rather arbitrary.” As already mentioned, the cutoff points for which features are included in a discussion of SVCs are necessarily arbitrary. For the purposes of this study, the more restrictive view is adopted which excludes constructions with any type of linking morpheme.

## 2.4 One TAM

It is often said that an SVC can have only one value for tense, aspect and mood (TAM). As discussed in Section 2.2.4, in some languages there is clear “agreeing” morphology (e.g., the realis marking in example 11), and in other languages there is clear “sharing” morphology (e.g., the future marking in example 12).

**Paamese** (Oceanic; Crowley 1987:50)

- (11) kai **ngan** kumal **dal** tinvīs  
3SG 3SG-REAL-eat sweet.potato 3SG-REAL-be.with tinned.fish  
He ate sweet potato with tinned fish. (lit., He ate sweet potato; it was with tinned fish.)

**Ewe** (Niger-Congo; Collins 1997:463)

- (12) me a **fo** kadεgbε **gba**  
I FUT hit lamp break  
I will hit the lamp and break it.

However, there are also cases of different TAM marking on each verb. The first linguist to mention that the verbs in an SVC share the same TAM was also the first to note an apparent exception to the rule in Ewe: “All consecutive verbs are of the same tense or mood. But the ingressive is used

for main verbs only, and in this case the following verbs are in the future” (Westermann 1907, 1930:126).

In a similar manner, Crowley (1987:44) describes SVCs in Paamese where some inflections can only occur on the first verb, and not on the second verb: “...while there are six mood categories distinguished on the initial verb, there are only four categories marked on subsequent verbs...” Ameka (2001:6) remarks that in an Akan SVC, citing data from Christaller (1875:144), “the two verbs are marked for different but semantically compatible aspect values. The first verb is marked for the stative and the second for the progressive.” In the working definition of SVCs, constructions with different but compatible TAM marking will still be considered SVCs. This type of non-concordant TAM marking occurs in Barayin SVCs (Section 6.5).

## 2.5 One negation

Serial verb constructions are often said not to allow their verbs to be independently negated. There are at least two different approaches to understanding this restriction on negation (Lambert-Brétière 2010). In some cases, the restriction is described as a distributional restriction on the number of negation markers allowed structurally, but with the possibility of different scope interpretations (e.g., Aikhenvald 2006b; Banjo 1974; Foley and Olson 1985; Haspelmath 2016).

Scope of negation and constituency tests will often, but not always align. One example of misalignment is from Alamlak, where several verb roots form a single morphological word (i.e., verbal compound), yet the scope of negation is ambiguous. The one grammatical word is unequivocally a single syntactic constituent, yet it allows more than one scope of negation.

**Alamlak** (Sepik; Bruce 1988:27)

- (13) ritm fiñji tandhi-ak-ni-r-më-t-m  
insects NEG roast-get-go-IRR-REM.PST-3SG.F-3PL  
She did not roast (and) get the insects and go.  
*or* She took them unroasted.  
*or* She roasted the insects and went having left them (did not take them).  
*or* She roasted and got the insects but did not go.  
*or* She left them uncooked and went.  
*or* She roasted them, didn't take them and didn't go.

In other cases, the criterion is that negation must take scope over the entire predication (e.g., Baird 2008; Bodomo 1997; Collins 1997; Crowley 1990; Durie 1997; Hale 1991; Veenstra 1996). This is a narrower view since a single scope of negation in a construction implies that there will be only one negation marker (allowing for concordant inflectional marking or discontinuous marking).

One of the motivations for this more restrictive view relates to the idea that an SVC describes a single event (Section 2.7). Bradshaw (1982:28) cites a claim by Lord (1973:269) that SVCs refer to a single event, then goes on to say: “Of course, this semantic unity has syntactic consequences” including that the verbs of an SVC “may not contrast with regard to negativity, tense, mood, or illocutionary force.”

The working definition of SVCs used here does not insist on the more restrictive view. This is primarily a practical choice, to avoid checking for the possibility of a narrow scope of negation interpretation in every language where an SVC is described. However, if a construction *only* allows a narrow scope reading and shows no signs of allowing a broad scope interpretation over both verbs, such a construction will not be considered an SVC.

## 2.6 Shared arguments

The formulation “shared arguments” is an intentionally vague cover term for any patterns related to semantic arguments or grammatical functions in SVCs. Two common patterns are frequently mentioned in the literature. In his review of the literature on serialization, Sebba (1987:86-87) writes: “...serial verb constructions have at least the following properties: Either: the semantic subject of  $V_i$  [the first verb of a two-verb SVC] is the semantic subject of  $V_{i+1}$  [the second verb], or: the object of  $V_i$  is the semantic subject of  $V_{i+1}$ .”

These two patterns have remained the predominately recognized patterns in SVCs (e.g., Aikhenvald 2006b; Bradshaw 1993; Durie 1997; Foley and Olson 1985; Lord 1974). However, a few linguists have restricted the concept of SVCs to either the subject-sharing type (Ameka 2001; Welmers 1973:367) or a version of the switch-subject type called “object sharing” (Baker 1989; Collins 1997).

Besides the two most common patterns of argument sharing, there are other ways that the arguments of the verbs of an SVC might relate to each other (including no co-referentiality). One common type is instrumental SVCs (Section 3.6.1), where the object of one verb (what would be its semantic patient/theme in a simple clause) has a semantic role of instrument in the action predicated by the main verb. The main verb shares its subject/agent with the first, but has its own object/patient.

**Sranan** (Creole; Sebba 1987:89)

- (14) Kofi **teki** a nefi **koti** a brede  
 Kofi take the knife cut the bread  
 Kofi cut the bread with a knife.

There are several less common patterns of argument sharing attested in serializing languages. For example, Crowley (1987:48) notes a case of “cumulative subject” in Paamese where the subject of the second verb is a plural pronoun co-referential with both the subject and the object of the first verb.

**Paamese** (Oceanic; Crowley 1987:48)

- (15) **ma-kuri-ko lo-va-haa**  
 1SG.IMM-take-2SG 1DU.INCL-IMM-go  
 I will take you away with me. (lit., I take you we (dual) go)

A second issue related to argument sharing is how arguments are marked on the verbs. There are some cases where one verb in an SVC shows morphological agreement with an argument of the other verb, even though that particular argument does not appear to be semantically shared. This phenomenon is discussed by Schachter (1974a), citing an example from Christaller (1881). In example 16, the second verb *mi-gù* ‘flow’ is an intransitive verb whose argument is *abūrow* ‘corn’ which is third person singular. However, the subject-agreement marking on the verb is first-person singular, the same as the first verb.

**Akan** (Niger-Congo, Kwa; Christaller 1881:145)

- (16) **me-de** abūrow’ **mi-gù** n-súm`  
 1SG-take corn 1SG-flow in-water  
 I am pouring corn into the water.

Another type of irregular subject-marking pattern is reduced marking, such as that seen in Bislama SVCs. In Bislama, the marker *oli* agrees with a third-person plural subject. However, in an SVC, as in example 17, the second verb is always marked with the agreement marker *i* instead. The marker *i* elsewhere agrees with third-person non-plural subjects (singular, dual, trial) and first- and second-person non-singular subjects (dual, trial, plural). In an SVC, it is used as a type of default marking for all subjects.

**Bislama** (Creole, Vanuatu; Meyerhoff 2001:254)

- (17) *afta nao oli ron i kam*  
after now 3PL run I come  
And so they ran over

## 2.7 One event

It is often stated that an SVC encodes a single event (e.g., Aikhenvald 2006b:10; Baker 1989:547; Baker and Harvey 2010; Bradshaw 1982:26; Cleary-Kemp 2015:3; Crowley 1987; Dempwolff 1939:67; Foley and Olson 1985; Lord 1973:269). A few linguists have proposed that eventhood is in some sense criterial or foundational for serialization (Bisang 2009; Durie 1997). Others have raised questions about the practicality of describing, defining and diagnosing eventhood for grammatical analysis. Comrie (1995:36) complains that: “The claim that serial verb constructions encode a single event is made with great regularity in the literature on serial verbs, but is a claim that I find difficult to test in critical cases” (cf. Foley 2008; Haspelmath 2016:306; Welmers 1973:367).

Defina (2016) summarizes the different ways that eventhood has been defined and diagnosed: linguist’s intuition (e.g., Bradshaw 1982; Crowley 2002; Dempwolff 1939; Lord 1973; van Staden and Reesink 2008), translation as a single verb (or single lexical conceptual structure) (e.g., Baker and Harvey 2010; Durie 1997; Owens 2011), pauses (e.g., Givón 1991a,b), cultural conception of an event (e.g., Bruce 1979, 1988; Diller 2006; Durie 1997; Enfield 2002; Jarkey 1991, 2010, 2015), scope of temporal modifiers (e.g., Bisang 2009; Bohnemeyer et al. 2007; Bohnemeyer and Pederson 2011; Cleary-Kemp 2015), and Defina adds a study on eventhood using co-speech ges-

tures. The best of these methods show a very strong correlation between serialization and some property that can be conceived of as eventhood in some sense.

Nonetheless, even if eventhood is a necessary criterion for serialization, it is not sufficient. This point was made by Welmers (1973:367): “Another suggestion that may be made is that the actions in this case are inevitably simultaneous. That may be true, but it does not seem to be distinctive. In both Igbo and Efik, the consecutive may refer to a simultaneous action...” Since the research methods and definitions of eventhood are controversial, and the results inconsequential to diagnosing SVCs, it will be left out of the working definition, and considered epiphenomenal.

## **2.8 Single intonation contour**

There are relatively few references to prosody in early work on SVCs (Bendix 1972:23-24; Bradshaw 1982:28; Lauck 1976; Sebba 1987:62). Prosody takes center stage in the approach to SVCs of Givón (1991a,b). Givón proposes that prosodic phrases are a non-circular way to compare how events are construed cross-linguistically. Since Givón (1991a,b), it has become commonplace to include a reference to intonational units in a description or definition of SVCs. Claims about prosodic units are sometimes made in passing and left unexplored, having little or no impact on the analysis. However, there are several studies that do explore the implications of a prosodic analysis such as Good (2003:447-476) on Saramaccan, Hellwig (2006, 2011:91-92) on Goemai, Hyslop (2001:275) on North-East Ambae, and Nordlinger (2014:276) on Wambaya. Crowley (2002) cautions against depending on prosodic criteria in a definition of SVCs (cf. Himmelmann and Ladd 2008):

...I am concerned about the way in which judgments about what constitutes an intonational unit are sometimes arrived at. ... While many linguists may have quite good intuitions, it must be remembered that we are often applying them to other people's languages, and we may therefore be misleading ourselves (and others) as to what constitute intonational units.

Even if certain intonational properties correlate with serialization, in many languages they would not constitute a sufficient condition for diagnosing SVCs. Other types of multiverb constructions also form a single prosodic unit. In addition, since most descriptions of SVCs do not include a

detailed prosodic analysis, it is impractical to include intonational properties in a working definition of SVCs.

## **2.9 Conclusion**

This final concluding section of this chapter gives a summary of the working definition established in the preceding sections (Section 2.9.1), and it includes a brief discussion of potential variationist approaches to the typology of SVCs that would avoid the limitations of the restricted approach used here, albeit with a much more significant amount of resources required (Section 12.2.1).

### **2.9.1 Summary: a working definition**

The definition of SVCs elaborated in the preceding sections defines a somewhat arbitrary but clear set of constructions that can be compared to similar constructions in Barayin and other Chadic languages in the following chapters. The definition uses criteria that are traditionally associated with SVCs in previously published literature. Constructions included in this working definition meet the following criteria:

1. The construction has more than one verb.
  - A verb belongs to a class of words that have the phonological and morphosyntactic properties of verbs in that language, such as being used as a single verb in an independent clause (but not necessarily with identical semantics).
  - No verbs in an SVC have non-finite morphology (but the verb can be in a bare or unmarked form).
  - The verbs in an SVC form separate grammatical words.
2. There is no (construction-specific) marker or linking morpheme on one of the verbs or elsewhere in the construction.
3. TAM marking is “shared” or “agreeing” (unless verbs are not marked for TAM, i.e., “isolating”) with the possibility of non-identical, but restricted patterns of compatible but distinct TAM marking on each verb.

4. Only one negation marker can appear (unless concordantly marked on verbs, and allowing for discontinuous marking). It either has broad scope, or it is ambiguous between broad scope and narrow scope over a single verb (phrase).
5. At least one of the arguments of each verb is co-referential with an argument of another verb.

The final two features of SVCs, eventhood and prosody, are somewhat controversial in terms of their usefulness as a defining criteria of a grammatical construction. They are treated here as epiphenomenal, and not criterial. Note that point 1 excludes constructions with a non-finite verb form as well as compound verbs, and point 2 excludes consecutive constructions and pseudo-coordination.

The criteria used to define SVCs here are morphosyntactic features. In this approach, there are no general semantic criteria that a construction must have (or not have) to qualify as an SVC. Rather, having established the morphosyntactic form, the semantic functions commonly expressed in the form of an SVC can now be explored in Chapter 3.

## **2.9.2 Potential variationist approaches for future research**

From a typological perspective, one major problem with restrictive approaches to defining SVCs, like the working definition proposed above, is that they ignore constructions that inevitably fall into the typological gaps between SVCs and some SVC-like construction for failing to meet one or more of the criteria. While restrictive approaches can provide insights from a comparative perspective, restrictive definitions are not an effective way to provide a full typology of all of the variation found in multiverb constructions.

Some linguists have proposed a more inclusive approach to defining SVCs which is sometimes described as a prototype approach. For example, Aikhenvald (2006b:3) states that “in an individual language, SVCs are expected to have most, but not necessarily all, of these properties. This suggests a scalar, or continuum-type, approach to SVC—which can be either more or less like the prototype—which has maximal properties” (cf. Crowley 2002:19; Kroeger 2004:222).

The prototype approach has never been formalized, so, when it is proposed, it is not clear which criteria are optional or why. There are at least two approaches to formalizing this type of diver-

sity within linguistic typology: Canonical Typology and a “multivariate” analysis. This section briefly describes how these approaches could be applied to the typology of SVCs and multiverb constructions more generally. While these approaches have the potential to provide more precise accounts of the variation found in these constructions, they also require time and resources beyond the scope of this dissertation, and so are set aside as proposals for future research.

One possible approach to modeling the heterogeneity of SVCs is that of Canonical Typology (Brown et al. 2013; Corbett 2015). In this approach, a “base”, or area of research, is delimited for study, which in this case could be either SVCs or multi-verb constructions more broadly. Within this base, a “canonical ideal” is defined as meeting all of the criteria used to define the base. The base is then partitioned into possible less-canonical instances of the concept under investigation. This can be modeled by a boolean lattice, as shown in Figure 2.1.

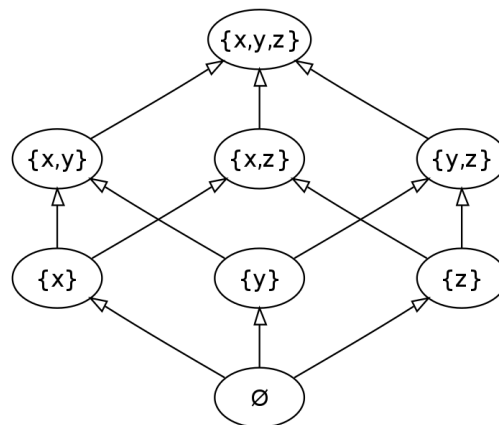


Figure 2.1: Hypothetical boolean lattice model (© KSmrq, CC BY-SA 2.5)

In Figure 2.1, the topmost oval has three letters in it, signifying that it represents examples that meet all three criteria used to define the base. This is the canonical ideal. The three ovals below the canonical ideal each have two letters, indicating that they each represent examples that meet a different combination of two of the three criteria. Likewise, the next three circles represent instances of only one criterion being met, and finally the bottom oval represents anything that does not meet any of the criteria of the base.

Canonical typology allows a way to define a theoretical space of possible types of SVCs or SVC-like constructions. It is up to the linguist to then determine whether such things have ever been documented. For example, a canonical SVC might have all of the five features listed in Section 2.9.1. A less canonical SVC might have four of the five features, but no shared arguments, for

example, “ambient serialization” (Crowley 1987:40), or it might have four of the five features, but include a linking morpheme, for example, “consecutivization”, (Hyman 1971).

It is not clear how practical the concept of SVCs is as a base for the Canonical Typology approach. If the canonical SVC has five features, there would be 30 types of possible non-canonical SVCs to look for.<sup>6</sup> The theoretical space would be even larger if criteria like eventhood (Section 2.7) and prosody (Section 2.8) were included. In addition, some criteria, such as wordhood (Section 2.2.5) and shared TAM marking (Section 2.4), are complex in their own right, and may require their own Canonical Typology.

In addition to the practical challenges of a Canonical Typology of SVCs, the approach can be criticized from a theoretical perspective for retaining the arbitrary nature of more restrictive definitions of SVCs. Why, for example, should the canonical construction be one without a linker instead of one with a linker (Section 2.3)? Or, more broadly, is the canonical multiverb construction one with identical (or agreeing) TAM marking, one with dependent morphological marking or one with bare forms? “There remains a sense of arbitrariness in such definitions, and, worse, a sense that those languages which happen to be studied by the most widely read linguists end up closest to the universal definition (often then said to provide the “prototype” of the phenomenon)” (Bickel 2007:247).

In order to avoid this type of arbitrariness, Bickel (2007, 2010) proposes the “multivariate approach” to linguistic typology. In contrast to a univariate analysis which would consider a single variable (or set of features) to define a single category in a taxonomy, the multivariate approach aims “to decompose terms like ‘cosubordination’ [and ‘serialization’] into sets of variables that capture all dimensions in which any given pair of structures may be identical or different – whether between languages or within languages” (Bickel 2010:55; *my addition in brackets*). In this sense, it is similar to Canonical Typology.

Unlike Canonical Typology, the multivariate approach is a bottom-up, data-driven approach to comparative linguistics. The ultimate goal of the multivariate approach is to study the distribution and correlations of cross-linguistically diagnosable features independently of traditional linguistic categories in order to determine whether there are any natural clusters of features that justify such

---

<sup>6</sup>2<sup>5</sup> is 32 minus the canonical SVC and constructions with none of the features of SVCs.

categories. “This shifts the burden from debating universal definitions to developing fine-grained, and therefore, increasingly precise, descriptive variables” (Bickel 2007:247).

In practice, carrying out a multivariate analysis requires an enormous amount of time and resources. The set of relevant variables is not necessarily given in advance, and determining the status of each variable can require detailed study (and possibly additional fieldwork) for each language in the sample. No multivariate analysis has been done for the features of SVCs, and it is unlikely that any such study will be completed in the near future. Such a study is beyond the scope of this dissertation. However, there is a tangential connection to multivariate analyses in that the detailed description of the morphological and syntactic features of Barayin SVCs in Chapter 6 are part of the groundwork for a multivariate analysis. “Fine-grained variables form just the right input for research on how structures distribute in the world, and, at the same time, they provide just the right tools for analyzing individual structures beyond futile naming exercises” (Bickel 2007:247).

## Chapter 3

# Semantics and functions of SVCs

There is a long-standing tradition in the literature distinguishing two types of serial verb constructions. Asymmetric SVCs restrict one of the verbs in the construction to a particular verb or class of verbs (e.g., motion verbs, posture verbs). Symmetric SVCs have no obvious restriction to a particular subclass of verbs.<sup>1</sup> In symmetric SVCs, the semantics of an SVC can be decomposed in a rather straightforward way as a set of (sub)events occurring in a temporal sequence or overlapping in their duration. Christaller's (1875) "accidental combinations" include examples of what might be called symmetric serialization, as in example 1.

**Twi (Akan)** (Niger-Congo, Kwa; Christaller 1875:145)

- (1) **O-soré-è      guaré-è      srá-è**  
3SG-arose-PST wash-PST anoint-PST  
He arose, washed (and) anointed himself.

There is, in principle, no limit to the number of verbs that can occur in this type of serialization. Arguments can be shared across multiple verbs in sequential SVCs with more than two verbs, as in examples 2 and 3.

---

<sup>1</sup>The terminology of "asymmetrical" and "symmetrical" is from Aikhenvald (2006b). She also adopts the terminology of "minor" verb to refer to a syntactic position in an SVC that is lexically restricted, and she uses "major" verbs for other positions in an SVC. This is similar to Sebba (1987:40) who calls the restricted subclass of verbs in an SVC "fixed" as opposed to "free" verbs. Durie is credited by Aikhenvald (2006b:21-22) with coining the term "unbalanced" for the restricted type in an unpublished 1995 seminar at the Australian National University entitled *Towards a Typology of Verb Serialisation*. As noted by Meakins (2010:8), the term is not used in the 1997 publication, so Durie presumably dropped the terminology after presenting it in 1995.

**Ewe** (Niger-Congo; Ameka 2001:14)

- (2) Áma **ku** te **ɖa ɖu**  
Ama dig yam cook eat  
Ama dug up yams, cooked [them, and] ate [them].

**Isu** (Grassfields Bantu; Kießling 2011:39)

- (3) Tsânj-Kây **wíy** <sup>↓</sup>mbám **zùw kwè fwú** nɛ vób k-íy kɛ kém-ó  
Tsang-Kay kill CM9.cobra skin cook chew and CM7.bone CM7-of NEG break-IPFV  
Tsang-Kay killed a cobra, skinned (it), cooked (it), ate (it) without a bone getting broken.

Typologically, it is not clear how symmetric SVCs differ from what is elsewhere called asyndetic coordination.<sup>2</sup> Andrews and Manning (1999:77) observe that “the semantics of symmetric serialization seems to be very similar or perhaps even identical to that of non-boolean verb coordination in English.” In any case, there is little discussion in the literature about the semantics of symmetrical SVCs. As Sebba (1987:41) notes, “obviously these [symmetric SVCs] are not amenable to classification in the same way as series with a fixed member.”

For the sake of making generalizations about the semantics and functions of SVCs the asymmetric types are especially relevant. It is common, both in descriptions of individual languages and in comparative studies, to find lists of types of (asymmetric) serial verb constructions according to their meaning or function (e.g., Aikhenvald 2006b; Bodomo 1997; George 1975; Givón 1991a; Jansen et al. 1978; Oyelaran 1982; van Staden and Reesink 2008; Stahlke 1970; Voorhoeve 1975). Semantic and functional labels in the literature are normally descriptive (not defining). They are usually specific to a particular language or group of languages. The variation in the length of each of these lists depends on the definition of serialization applied, and on decisions about splitting or grouping similar types of serialization.

Table 3.1 gives a simplified visual overview of the semantic/functional types of SVCs presented below. This visual aid is not meant to have any theoretical status. If serialization is defined morphosyntactically, there are, in principle, no restrictions on what types of meanings and functions can be encoded in an SVC. Table 3.1 first divides SVCs into those that are more and less “grammaticalized”, treating valency-changing, aspectual and idiomatic SVCs as distinct from other types of SVCs. The “non-grammaticalized” SVCs are divided into four groups along two parameters. One parameter is whether the activities associated with each verb are in a temporally sequential

---

<sup>2</sup>Thanks to Matthew Dryer and Adam Tillman for raising this point at the ALT17 workshop on Associated Motion.

relationship or temporally overlapping (simultaneous). The second parameter is whether the construction employs a motion verb. Motion is a particularly common semantic feature in SVCs. In the descriptions of each functional type of SVC, some attention is given to the linear order of the verbs in the construction. Verb order in SVCs is often said to be temporally iconic since, in most cases, each functional subtype shares a similar verb order pattern across languages with very different syntactic properties including left-headed (VO) languages and right-headed (OV) languages (e.g., Li 1993; Muysken 1988; Schiller 1989; Tai 1985).

Table 3.1: Semantic/functional types of SVCs

NON-GRAMMATICALIZED			GRAMMATICALIZED
	SEQUENTIAL	OVERLAPPING	valency-changing aspectual idiomatic
MOTION	prior/subsequent motion purposive motion	concurrent motion directional	
NON-MOTION	symmetric	posture/state resultative complement comparative	

### 3.1 Motion

Of all of the semantic types of serialization, motion serialization is said to be the most common (Aikhenvald 2006b:47; Crowley 1987:42; Durie 1997:310). Foley and Olson (1985:47) call motion verbs “the serializing verb type *par excellence*.” However, there are several subtypes of motion serialization.<sup>3</sup> Since not all languages have the same subtypes, motion serialization in one SVC is not necessarily semantically equivalent to motion serialization in another SVC, even within the same language.

There is some discussion in the literature concerning how motion serialization fits into Talmy’s typology of motion events which breaks down the semantics of a motion event into four primary semantic components: Motion, Figure, Path, Ground (Talmy 1985, 1991, 2000). Part of Talmy’s

<sup>3</sup>This section is restricted to SVCs where the motion verb retains its motion meaning. The use of motion verbs with grammaticalized aspectual meaning is discussed in Section 3.7.

typology differentiates “verb-framed” constructions, in which the Path component of a motion event is co-expressed with the Motion component in the main verb, and “satellite-framed” constructions, which express the Path component in a part of the clause other than the main verb. Schaefer (1986) and Lambert-Brétière (2009) analyze motion serialization as a type of satellite-framing, but several linguists have proposed that motion serialization is part of a third category of symmetrical coding called “equipollently-framed” (Ameka and Essegbey 2013; Beavers et al. 2010; Chen and Guo 2009; Croft et al. 2010; Fortis and Vittrant 2016; van Putten 2009, 2017; Slobin 2004; Zlatev and Yangklang 2004). Talmy (2008, revised in 2012) argues that some criterion can normally be found to distinguish one verb in an SVC as the main verb, so that equipollent framing is very rare, if it exists at all.

Some types of motion serialization, for example SVCs that express sequential motion (Section 3.1.2), do not necessarily fit into Talmy’s typology (Slobin 2004:20; Vittrant 2015). The semantics of these constructions is better accounted for by the category of “associated motion”. Koch (1984) describes associated motion markers that specify whether a translocative motion takes place before the main activity or state predicated by the main verb (prior), overlapping with it (concurrent), or following it (subsequent). Rose (2015:123) expands the typology of the relative timing of the motion in associated motion markers to include an “interrupted motion” marker which “denotes situations where the realization of the lexical event occurs between two stretches of motion.” In addition, the typology proposed by Guillaume (2016) considers whether the moving entity is the subject/agent or the object/patient of the main verb.

### **3.1.1 Simultaneous motion**

There are two types of simultaneous motion found in SVCs: directional and concurrent. In the most common type of simultaneous motion serialization, there is a verb that expresses a manner of motion such as ‘run’, ‘fly’ or ‘jump’, and a directional verb that expresses a path of motion, usually ‘go’ or ‘come’. This type of construction is sometimes called a directional SVC. The directional verb is nearly always found in the second position (Lovestrand and Ross 2017).

**Dagaare** (Niger-Congo, Gur; Bodomo 1997:83)

- (4) o da **zo wa-ε** la  
3SG PST run come-PRF FACTITIVE  
She/he ran here.

**Vitu** (Oceanic; Van den Berg and Bachet 2006:177)

- (5) pale hadora ia **raga zahe** kara hud-a hai  
so cuscus 3SG jump go.up to top-3SG tree  
So the cuscus jumped up into the tree.

In some languages, simultaneous motion SVCs are restricted to cases where the non-directional verb is a motion verb. In a relatively small number of languages, the non-directional verb does not have to be a motion verb (Lovestrand and Ross 2017). The activity associated with the first verb takes place concurrently with motion along a path, as in examples 6, 7 and 8.

**Yoruba** (Niger-Congo; Agbedor 1994:83)

- (6) Aje **sunkun lo** ile  
Aje weep go home  
Aje wept on his way home.

**Thai** (Diller 2006:169)

- (7) phi:<sup>2</sup>-sa:w<sup>4</sup> **nang<sup>2</sup>** rot<sup>3</sup> **pay** chiangmai<sup>1</sup>  
elder-sister sit car go Chiangmai  
My older sister took the bus to Chiangmai.

**Gurr-goni** (Non-Pama-Nyungan; Green 1995)

- (8) **awu-ba-rri** **awurr-ma-nay**  
3PL.ERG.3PL.DAT-eat-PST 3PL.ABS-go.along-PST  
They went along eating. (*or* They kept eating.)

While simultaneous motion SVCs often contain just two verbs, some languages allow multiple deictic verbs in a single SVC to give more complex information about the path of motion.

**Numbami** (Oceanic; Bradshaw 1993:148)

- (9) **ma-pa-andalowa** **ma-woti** **ma-ma** **ma-solonga** teteu  
1PL.EXCL-make.way 1PL.EXCL-descend 1PL.EXCL-come 1PL.EXCL-enter village  
We walked down here into the village.

**Thai** (Thepkanjana 1986:136)

- (10) khăw **wîŋ troŋ** **yɔ́n klàp khâw pay**  
he run go.straight reverse return enter go  
He ran along straight back in (away from the speaker's center of attention).

### 3.1.2 Sequential motion

Sequential motion SVCs are noteworthy as a separate category because they can appear in languages that do not have an unrestricted type of symmetric (sequential) SVC. The construction is restricted so that it always includes a motion verb. In the most common type of sequential motion SVC, a motion verb occurs before the main verb and indicates a change of location that occurs prior to the activity expressed by the main verb (Lovestrand and Ross 2017), as in examples 11 and 12.

**Dagaare** (Niger-Congo, Gur; Hiraiwa and Bodomo 2008:807)

- (11) ò dà wà dí lá kápàlá  
1SG PST come eat FOC fufu  
I came and ate fufu.

**Numbami** (Oceanic; Bradshaw 1993:146)

- (12) e i-ma teteu i-ndomoni aiya  
3SG 3SG-come village 3SG-look 2SG  
He came to the village and looked for you.

The verb order in sequential motion SVCs is normally iconic. The motion verb is first if the change of location occurs prior to the activity or state of the main verb, and second if the change of location occurs subsequent to the activity or state of the main verb. In example 13, a directional verb ('return') follows the main verb, and the verb order is still iconic. The change of location takes place after the activity of the main verb.

**Taba (East Makian)** (Austronesian; Bowden 2001:310)

- (13) n=tua yan n=mul  
3SG=buy fish 3SG=return  
He's returned from buying fish.

In the very first publication to describe serial verb constructions, Riis (1854:103-104) notes that Akan uses the "very frequent expressions: *Fa bera*, 'Take, come', i.e. 'Bring', – and *Ko fa bera*, 'Go, take, come', i.e. 'Fetch', e.g. *Ko fa ensu bera*, 'Fetch water'." These verb combinations are a relatively common way to express the concepts 'bring' and 'fetch' in serializing languages (Schalley 2003). Note that in some cases, as in example 16, motion verbs occur on each side of the main verb, creating a type of "interrupted motion" construction (Rose 2015).

**Loniu** (Oceanic; Hamel 1993:115)

- (14) opo an kile sih pelet **hoti** **kime**  
IRR.2SG.do water IRR.3SG.go one plate IRR.2SG.take IRR.3SG.come  
Put some water into a dish (and) bring it here.

**Yoruba** (Niger-Congo; Stahlke 1970:62)

- (15) mo **mú** gbogbo àwọn omódé **lọ** èkó  
I took all PL children went Lagos  
I took all the children to Lagos.

**Krio** (Creole; Nyampong 2015:75)

- (16) Duya una **go briņ** wata **kam** le una kam was mi  
please 2PL go bring water come COMP 2PL come wash 1SG  
Please go and get some water to bathe me.

In the above examples, the moving entity is understood to be the agent/subject of the main verb. It is also possible for the patient/object to be the moving entity. This is relatively common when the first verb has the semantics of propelling the theme/patient. In example 17, the serial verb *pay* ‘go’ expresses the path of motion of the letter, not the person who sent the letter. These motion SVCs are semantically similar to resultative SVCs (Section 3.3).

**Thai** (Thepkanjana 1986:146)

- (17) khăw **sòņ** còtmăay **pay** læáew  
he send letter go already  
He already sent a letter (away from the speaker’s center of attention).

**Tetun Dili** (Creole; Hajek 2006:243)

- (18) **tuda** bola **mai**  
throw ball come  
Throw the ball over here.

**Vitu** (Oceanic; Van den Berg and Bachet 2006:181)

- (19) **Vala** bua katiu **mai**  
give betelnut one come  
Give me a betelnut.

Exceptions to iconic word order in sequential motion SVCs are rare, but they are found in prior motion SVCs in some Sino-Tibetan languages, as in examples 20 and 21, and can occur in the Australian language Wambaya, as in example 22, where either order is possible. In each of these

examples the motion verb occurs following the main verb, even though the motion occurs before the activity of the main verb.

**Hakhun Tangsa** (Sino-Tibetan; Boro 2017:263)

- (20) hwé t̄x hím n̄y va? **nám ka** γ n̄i  
who family house LOC ABL borrow go 1SG Q  
From which family will I go and borrow (money)?

**Boro** (Sino-Tibetan; Boro 2012)

- (21) aŋ i=k<sup>h</sup>tu **nu p<sup>h</sup>ai-bai**  
1SG 3SG=OBJ see come-PRF  
I came here and saw him.

**Wambaya** (Non-Pama-Nyungan; Nordlinger 2014:267)

- (22) **Gulugbi** ng-u ngawurniji **yarru**  
sleep 1.SG.S-FUT 1.SG.NOM go  
I'm going off to sleep. (or I'll sleep while going [on the bus].)

### 3.1.3 Purposive motion

Most purposive SVCs are superficially similar to prior motion SVCs (Section 3.1.2). The first verb is a deictic verb of motion, 'come' or 'go', and the second verb indicates what the intended activity is when arriving at the destination.

**Thai** (Schiller 1989:415)

- (23) de'k **pay s̄ñ** khanǎm  
child go buy candy  
The child went to buy candy.

Although motion verbs are very common in purposive SVCs, other types of verbs can also occur in the first position of a purposive SVC such as *mièn* 'find' in example 24, *wan* 'catch' in example 25, and *pran* 'take' in example 26.

**Edo** (Niger-Congo; Baker and Stewart 2002:3)

- (24) Òzó ghá **mièn** iyán èvá lé  
Ozo FUT find yam two cook  
Ozo will find two yams to cook.

**Nupe** (Niger-Congo; Baker and Stewart 2002:3)

- (25) Musa **wan** nangi **ya** tsigbè  
Musa catch goat give medicine  
Musa caught a goat to give it medicine.

**Seselwa** (Seychellois Creole; Schiller 1989:411)

- (26) i ti **pran** kuto **kup** li be i pa kup li  
he PST take knife cut it but he didn't cut it  
He took the knife to cut it, but he didn't cut it.

Note that in examples 26 and 27, the activity associated with the second verb can be negated in a following clause. In contrast, in the prior motion SVC from Ewe in example 28 it is contradictory to conjoin a clause stating that the proposition associated with the second verb did not in fact take place.

Purposive SVC, **Sranan** (Creole; Sebba 1987:104)

- (27) mi ben **go trow** nanga a uma ma a no ben wani mi  
1SG PST go marry with DEF woman but 3SG NEG PST want 1SG  
I went to marry the woman but she didn't want me.

Sequential SVC, **Ewe** (Niger-Congo; Essegbey 2004:483)

- (28) Kofi **va de** nyɔnu-a (\*gake wo-gbe)  
Kofi come marry woman-DEF (but 3SG-refuse)  
Kofi came and married the woman (\*but she refused).

## 3.2 Posture and state

Some languages have a serial verb construction where one verb slot is restricted to verbs of posture and possibly other stative verbs. These SVCs are similar to simultaneous motion SVCs in that the activity or state expressed by one verb is understood to be simultaneous with that of the other verb.<sup>4</sup>

**Avatime** (Niger-Congo, Kwa; van Putten 2017)

- (29) **o-di ηwè**  
CM-sit drink  
He sits drinking.

---

<sup>4</sup>This section is restricted to SVCs where the posture verb retains its posture meaning. Grammaticalized uses of posture verbs in aspectual SVCs are discussed in Section 3.7.

**North-East Ambae** (Oceanic; Hyslop 2001:294)

- (30) *ngie mo toga mo bugogi*, Saravae  
 3SG REAL sit REAL sing Saravae  
 He sat singing, Saravae.

As in the above examples, nearly all posture SVCs place the posture verb in the first position. However, in a few cases, the posture verb is in the second position. In example 31 from Tariana, the verb *pi-wha* ‘sit’ is in the second position. In example 32 from Gurr-goni, the posture verb *a-yu-y* ‘lie’ is in the second position.

**Tariana** (North Arawak; Aikhenvald 2006a:185)

- (31) *pi-wapa pi-waha*  
 2SG-wait 2SG-sit  
 Sit and wait!

**Gurr-goni** (Non-Pama-Nyungan; Green 1995:267)

- (32) *A-gogini-Ø a-yu-y yigi-minabami*  
 3ABS-be.underwater-PST 3ABS-lie-PST LOC-water  
 He [a buffalo] was lying submerged underwater.

Other stative verbs (non-posture) which express a state that holds concurrently with the activity of the main verb can occur in the second position as well. In example 33 from Toqabaqita, the stative verb *taqaa* ‘be bad’ occurs in the second position describing the manner in which the activity of the verb *qilano-na* ‘pile’ was performed.

**Toqabaqita** (Austronesian; Lichtenberk 2006:259)

- (33) *wela e qilano-na taqaa baqu*  
 child 3SG.NFUT pile.soil.around-3OBJ be.bad banana  
 The child piled the soil around the banana tree badly.

### 3.3 Resultative

In a resultative SVC, one verb expresses a state or activity that is directly caused by the activity of the main verb. Common examples of resultative SVCs have the verb ‘die’ (examples 34 and 36) or ‘be full’ (examples 35 and 37 in the second position).

**Thai** (Thepkanjana 1986:22)

- (34) sùrii **viŋ** (nók) **taay**  
Suri shoot bird die  
Suri shot a bird dead.

- (35) sùrii **kin ʔim**  
Suri eat full  
Suri ate and became full.

**Yoruba** (Niger-Congo; Lord 1973:269)

- (36) é **nò** tsī **kú**  
he drank water died  
He drowned.

**Yoruba** (Niger-Congo; George 1975:81-83)

- (37) Àjàó **jeun yó**  
Ajao ate full  
Ajao ate and he is full.

### 3.4 Complement

The idea of a complement SVC may sound oxymoronic, since one of the regular claims about SVCs is that the two verbs are *not* in a complement relationship. Here “complement” is not referring to a type of syntactic structure, but to a semantic relationship, such as that between a verb of speech and reported speech, or between a verb of perception and the perceived state of affairs (Dixon 2006a:34). A complement SVC has all of the morphosyntactic properties of an SVC (i.e., there is no sign that one verb is structurally subordinated to the other), while one verb expresses an activity or state that can be understood to be semantically selected by the other verb. This type of SVC is reported in Asian languages, as in examples 38 and 39 (see also Sun 2012), but is also reported elsewhere, such as in the Amazonian language Tariana in example 40.

**Eastern Kayah Li** (Tibeto-Burman; Solnit 2006:153)

- (38) vē **kha** ʔirɛ dɯɯ á  
1SG promise work own.accord PART  
I promise to work myself.

**Thai** (Thepkanjana 1986:76)

- (39) sùrii **hěn** sùdaa **khamooy** nən  
Suri see Suda steal money  
Suri saw Suda steal money.

**Tariana** (North Arawak; Aikhenvald 2006b:182)

- (40) du-enipe-nuku            **dura**            **du-hña-pidana**  
3SGF-children-TOP.NSBJ 3SGF.order 3SGF-eat-REM.PST.HEARSAY  
She ordered her children to eat.

There are a few restrictive claims in the literature that in serialization “one verb can never be considered to function as the complement to another verb in the complex” (Butt 1995:225), or that the verbs in an SVC “are not related to each other through a predicate-argument relation” (Muansuwan 2001, cf. Haspelmath 2016:305). However, the working definition of SVCs used here (Section 2.9.1) does not restrict the category of SVC using this type of semantic criterion.

### 3.5 Comparative (‘surpass’)

Comparative SVCs are the functional equivalent of ‘than’ constructions in English. In this construction, the first verb attributes some quality to the subject—the “comparée” (Haspelmath and Buchholz 1998; cf. Caron 2012a). The second verb is something like ‘surpass’ or ‘exceed’. The complement of the second verb is the “standard”—the thing that has less of that quality compared to the subject.

**Yoruba** (Niger-Congo; Stahlke 1970:64)

- (41) Ayò **ní** oḡbón    **jù**        mí **lọ**  
Ayò has cleverness surpass me go  
Ayò is cleverer than I am.

**Logba** (Niger-Congo, Kwa; Dorvlo 2008:196)

- (42) a-bobi=é        **ó-to-klé**            **fiε**    a-táwalibi-wɔ  
CM-moon=DET SBJ.SG-HAB-shine exceed CM-star-PL  
The moon shines brighter than stars.

**Paamese** (Oceanic; Crowley 1990:74)

- (43) aut Honiara **mutin**        **lin**                    aut Vila  
place Honiara 3SG.REAL.hot 3SG.REAL.pass place Vita  
Honiara is hotter than Vila.

### 3.6 Valency-changing

The most common types of valency-changing SVCs are those in which one verb in the SVC has a specialized function of introducing a certain type of semantic argument in the construction. This is most commonly an instrument, a recipient/benefactive argument, or a causer. In a few languages, there is an SVC that has the function of decreasing the number of arguments normally expressed by the main verb. Each of these types of valency-changing SVCs will be exemplified in the following sections.

#### 3.6.1 Instrumental ('take' and 'use')

The most common type of instrumental SVC has the verb 'take' in the first position followed by the main verb, as in examples 44 and 45. The object of 'take' functions as the semantic instrument of the activity associated with the main verb, like the preposition 'with' in English.

**Gungbe** (Niger-Congo, Gbe; Aboh 2009:16-17)

- (44) Sétù **zé** kpò ló xò Kòjò  
Setu take stick DET hit Kojo  
Setu hit Kojo with the stick.

**Krio** (Creole; Nyampong 2015:30)

- (45) I **tek** kɔtɫas **kil** di snek  
3SG take cutlass kill DEF snake  
He killed the snake with a cutlass.

Less common, but still frequent, are instrumental SVCs which employ the verb 'use' to introduce the instrument, as in examples 46 and 47.

**Nupe** (Niger-Congo, Kwa; George 1975:316)

- (46) yígbèci **lá** èbi **tun** etsu  
thief used knife stabbed chief  
A thief used a knife to stab the chief.

**Thai** (Filbeck 1975:120)

- (47) sùk **cháy** phráa **khôn** tônmáy  
Sook use machete cut tree  
Sook chopped down the tree with a machete.

While instrumental SVCs with the serial verb ‘take’ always place the serial verb and the instrument before the main verb, many Malayo-Polynesian languages which employ the verb ‘use’ in instrumental SVCs have the opposite verb order. The verb ‘use’ and the instrument follow the main verb, as in examples 48 and 49.

**Taba (East Makian)** (Austronesian; Bowden 2001:295)

- (48) n=**pun** bobay n=**pake** sandal  
 3SG=kill mosquito 3SG=use sandal  
 He killed the mosquito with a sandal.

**Kupang Malay** (Creole; Jacob and Grimes 2011:342)

- (49) Dong **bekin** **mati** tikus **pake** batu  
 3PL make.CAUS die mouse use stone  
 They killed the mouse with a stone.

### 3.6.2 Benefactive (‘give’ and ‘take’)

Another common type of valency-increasing SVC employs the verb ‘give’ to introduce a benefactive or recipient argument. In these cases, the verb ‘give’ usually occurs in a position following the main verb.<sup>5</sup> In some cases, the object of a preceding verb is physically transferred to the complement of the verb ‘give’, as in example 50. In other cases, the complement of ‘give’ is a beneficiary who does not physically receive anything, as in examples 51 and 52.

**Yoruba** (Niger-Congo; Stahlke 1970:63)

- (50) mo **mú** iwé **wá** **fún** ẹ  
 I took book came gave you  
 I brought you a book.

**Logba** (Niger-Congo, Kwa; Dorvlo 2008:202)

- (51) u-dzɛ **ó-zu.iku** **tá** e-bítsi=é  
 CM-woman 3SG-sing.song give CM-child=DET  
 The woman sang for the child.

**Sranan** (Creole; Sebba 1987)

- (52) Mi **feti gi** mi kondre  
 I fight give my country  
 I fight for my country.

<sup>5</sup>The verb ‘give’ in the first position of an SVC is more likely to have a causative interpretation (Section 3.6.3).

Another type of SVC that deals with the transfer of a theme to a recipient or beneficiary (either literally or metaphorically) uses the verb ‘take’ in the first position, as in example 53. When ‘take’ is in the first position, other ditransitive verbs besides ‘give’ can occur in the second position, such as *femm* ‘lend’ in example 54 and *kplɔ́* ‘learn/teach’ in example 55.

**Haitian** (Creole; Carstens 2002:43)

- (53) Jan **pran** dlo **ba** Mari  
 John take water give Mary  
 John gave Mary water.

**Twí (Akan)** (Niger-Congo, Kwa; Stewart 1963:145)

- (54) ɔ-de nó **femm** me  
 he-take DEM lent me  
 He lent me it (lit., He took it and lent to me.)

**Fon** (Niger-Congo, Gbe; Lefebvre 1991b:39)

- (55) Kòkú **zé** flàsé **kplɔ́** Àsibá  
 Koku take French learn Asiba  
 Koku taught French to Asiba.

In beneficiary/recipient SVCs with ‘take’, the complement of ‘take’ can be either the theme (the thing being transferred) or the recipient/beneficiary. In Haitian, as seen in the examples in 56, either is possible (cf. Carstens 2002:45).

**Haitian** (Creole; Muysken and Veenstra 1994:297, 300)

- (56) a. Men **pran** liv la **montre** Jan  
 1SG take book the show John  
 I showed the book to John.  
 b. Jan **pran** Mari **montre** liv la  
 John take Mary show book the  
 John showed Mary the book.

### 3.6.3 Causative (‘make’, ‘take’ and ‘give’)

In the most common type of causative SVC, the agent/subject of the first verb is the causer, and its patient/object is the causee and the agent/subject of the second verb. The first verb in a causative SVC might be ‘make’, ‘take’ or ‘give’. Causative SVCs could potentially be seen as a subtype of complement SVCs (Section 3.4).

**Akan** (Niger-Congo, Kwa; Bodomo 1997:81)

- (57) a **ma-a** me **we-e** nsa paa  
3SG make-PST 1SG chew-PRF drink INTENSIFIER  
S/he made me drink a lot.

**Cantonese** (Sino-Tibetan; Matthews 2006:75)

- (58) ngo<sup>5</sup> **zing<sup>2</sup>** keoi<sup>5</sup> **dit<sup>3</sup>**  
I make 3SG fall  
I made him fall.

**Yoruba** (Niger-Congo; Oyelaran 1982:110)

- (59) òrò Múyíwá **mú** mi **şẹ** òré mi  
matter Muyiwa take me offend friend my  
Muyiwa's affair made me offend my friend.

### 3.6.4 Valency-decreasing ('touch')

While it is more common to use SVCs to increase the valency of a predicate as in the instrumental, benefactive and causative types of SVCs, there are a few examples of “valency-reducing” SVCs. In Kristang and Thai, examples 60 and 61, a verb which elsewhere means ‘touch’ is used to create a passive-like construction. The same construction also occurs in Lao (Enfield 2008:171-173). A similar construction in Hmong uses the verb *raug* ‘hit’ (Creswell and Snyder 2000).

**Kristang** (Portuguese Creole; Baxter 1988:211)

- (60) aké pesi ja **toka kumí** di gatu  
that fish PRF touch eat SOURCE cat  
The fish got eaten by the cat.

**Thai** (Thepkanjana 1986:100)

- (61) khăw **thuùk** mǎa kàt  
3SG.M touch dog bite  
He was bitten by a dog.

## 3.7 Aspectual

In aspectual SVCs (also called auxiliary or modal SVCs), one of the verbs in the construction has a grammaticalized or “bleached” meaning which often falls into one of the major types of tense,

aspect or mood categories. One of the common aspectual serial verbs is the verb ‘finish’ used to express perfect or completive aspect. This type of aspectual SVC was documented early on in Ewe (example 62) and Yabem (example 63).

**Ewe** (Niger-Congo, Kwa; Westermann 1930)

- (62) **me-qui** vɔ  
1SG-eat finish  
I have eaten it up.

**Yabem** (Austronesian; Dempwolff 1939; glosses from Bradshaw 1982:27)

- (63) bôc saleŋŋa **seŋ** aêàcma jaŋgom **gê-bacné**  
pig bush-of 3SG.eat 1PL-GEN maize 3SG-finish.up  
The forest pigs ate up our maize.

A common posture verb to find in aspectual SVCs is a verb which, outside of an SVC, has a meaning like ‘sit’, ‘stay’ or ‘live (somewhere)’. In an aspectual SVC, it can contribute some type of continuous or progressive meaning, as in examples 64 and 65 (cf. Austin 1998; Bower 2008:174).

**Gurr-goni** (Non-Pama-Nyungan; Green 1995:38)

- (64) **njibu-wu-ni** **njiwurr-ni-Ø** mi.lk  
1PL.ERG.3SG.ACC-give-REAL 1PL.ERG-sit-REAL milk.DUR  
We were giving her milk for such a long time.

**Yatye** (Niger-Congo; Stahlke 1970:65)

- (65) òdìde **ahyè ibí** ìtywi  
man squat come home  
The man is coming home.

The verb ‘come’ has another kind of temporal-aspectual meaning in Khwe, example 66, where it contributes a “proximative” meaning (“be about to do”) as a serial verb.

**Khwe** (Khoisan; Kilian-Hatz 2006:117)

- (66) nǎí ǀgèè-khòè-hè **yà** ǀ’ó-à-tè  
DEM female-person-3SG.F come die-I-PRS  
This woman is about to die.

While certain types of aspectual meanings are very common, there are a significant number of other types of meaning that can be expressed in an aspectual SVC. Other examples of motion

verbs in aspectual SVCs include the verb ‘wander’ to express habitual meaning (example 67), the verb ‘return’ with “repetitive” (to do again) meaning (example 68), and the verb ‘run’ to express ‘quickly’ (example 69).

**Yatye** (Niger-Congo; Stahlke 1970:65)

- (67) òdìde **aga** **ibí** itywi  
man wander come home  
The man usually comes home.

**Akan** (Niger-Congo, Kwa; Campbell 1996:87)

- (68) Kofí **san** **to** bOl no  
Kofí return throw ball that  
Kofí throws the ball again.

**Yoruba** (Niger-Congo; Bamgboṣe 1982:7)

- (69) ońjẹ nàà **sàré tán**  
food the ran finish  
The food finished quickly.

Although aspectual SVCs have been described as a part of the SVC phenomenon for nearly as long as it has been a topic in descriptive linguistics, there has been some recent discussion in the literature about the place of aspectual SVCs in the typology of multiverb constructions. Some writers (each for different reasons) propose that a word with verbal morphology but aspectual meaning should not count as a serial verb (Anderson 2006:144; Cleary-Kemp 2015:224; Haspelmath 2016:302). These constructions are instead considered a type of auxiliary construction. Essegbey (2004) argues the opposite position, that these are a type of SVC, and should not be considered a type of auxiliary construction. Heine (1993:38, 40) adopts a middle way in which SVCs and auxiliary verb constructions are overlapping categories: aspectual SVCs are both a type of SVC and a type of auxiliary construction. This approach aligns with the essentially morphosyntactic definition to SVCs adopted here (Section 2.9.1), while allowing semantically-defined categories to overlap (cf. Section 2.2.3).

### 3.8 Idiomatic

Idiomatic SVCs have the morphosyntactic properties of SVCs, but have non-compositional, lexicalized meaning. These idiomatic serial verb constructions have been called various names such as

“discontinuous lexical items” (Stewart 1963), “verb co-lexicalization” (Givón 1991a), and “splitting verbs” (Awobuluyi 1971).

**Fante (Akan)** (Niger-Congo, Kwa; Balmer and Grant 1929:115-116)

- (70) **me-gye** no **me-dzi**  
1SG-accept 3SG 1SG-eat  
I believe him.

**Yoruba** (Niger-Congo; Laniran and Sonaiya 1987, cited in Baker 1989:535)

- (71) Olú **rẹ́** Bólá **jẹ**  
Olu cut Bola eat  
Olu cheated Bola.

**Vagala** (Niger-Congo, Gur; Pike 1966)

- (72) ù **lé** ù **há**  
he get-PST him throw  
He saved him.

This chapter has reviewed some of the most common semantic functions of constructions that have the morphological and syntactic features of SVCs discussed in Chapter 2. The next chapter is the final chapter of Part A. It reviews previous studies on SVCs in Chadic languages. Even though there are relatively few studies of SVCs in Chadic languages, all of the functional types described in this chapter are found in at least one Chadic language. Part B will examine how the features and functions of SVCs look in a particular Chadic language, Barayin. The most common types of SVC in Barayin are motion SVCs.

## Chapter 4

# Chadic languages

The Chadic languages are a family of about 190 languages in the Afroasiatic phylum, spoken mainly in Nigeria, Cameroon, and Chad. The Chadic family is typically divided into four branches: West, Biu-Mandara, Masa, and East (Hammarström et al. 2017; Simons and Fenning 2017). However, it has been argued that Biu-Mandara and Masa should form a single Central branch (Blench 2006a; Shryock 1997; Tourneux 1990), as shown in Figure 4.1. The history, validity and nomenclature of the Chadic family are discussed by Barreteau and Newman (1978), Newman (1978; 1980; 2006), Diakonoff (1984), Ruhlen (1991), Blench (2006b), Jaggar (2006) and Frajzyngier and Shay (2012), among other works. Earlier classifications made a distinction between Chadic and Chado-Hamitic languages (e.g., Westermann and Bryan 1952). Those categories are considered erroneous and obsolete by the authors cited above.<sup>1</sup>

The West branch of Chadic includes around 70 languages spoken primarily in Nigeria. The Central branch (including around 10 Masa languages) is the largest, about 90 languages. Central Chadic languages are mostly spoken around the Lake Chad basin, on the borders between Nigeria, Cameroon and Chad. The East branch is the smallest, consisting of only about 35 languages, all spoken in the Republic of Chad.

The majority of Chadic languages remain significantly underdocumented, and many have never been studied. Some languages have only very recently been documented, and other languages

---

<sup>1</sup>Note that the adjective *Chadic* refers to the language family, and the adjective *Chadian* refers to the country. Most Chadic languages are spoken outside of Chad. There was some discussion about this terminology and its translation into French and German in the Chadic Newsletter (Jungrathmayr 1972, 1973).

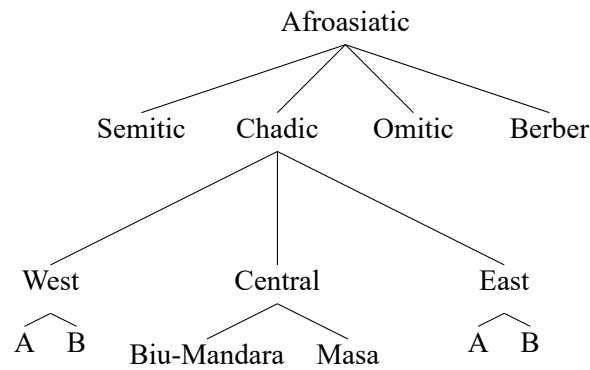


Figure 4.1: Classification of Chadic languages

on the list of Chadic languages now seem never to have existed (Blench 2016, 2017). Progress in linguistic analysis has been delayed over the years by problems of accessibility and the limited pool of linguists available to invest in this area of research. Therefore, the typological features discussed in Section 4.1 are somewhat tentative generalizations subject to change as we learn more about Chadic languages. Previous work on serial verb constructions, or clause-level syntax in general, is even more sparse. Section 4.2 is an overview of some of the few places where SVCs have been mentioned in the literature on Chadic languages.

## 4.1 Typological features of Chadic languages

Several authors have published short overviews of the grammatical features of Chadic languages (Creissels et al. 2008; Frajzyngier and Shay 2012; Jaggar 2006; Jungraitmayr 2012; Newman 1977, 2006; Schuh 2003; Wolff 2014). The following three subsections briefly highlight the most common phonological, morphological and syntactic features, based on our limited knowledge of Chadic languages.

### 4.1.1 Phonology

There is a considerable degree of variety in the phonemic inventory of Chadic languages, but, generally speaking, Chadic languages have three series of stops—voiced, voiceless and implosive—at up to four places of articulation. Many Chadic languages also have a set of prenasalized consonants. It is not uncommon for a Chadic language to have nasal phonemes at four places of articulation, as well as a set of fricatives and approximates.

Some Chadic languages have a notoriously complex vowel system in which a small number of underlying vowel phonemes (arguably as few as one) result in a much larger inventory of phonetic vowels in the language (Jungraithmayr 1992; Roberts 2001). These languages are analyzed as using word-level, auto-segmental features called “prosodies” which affect the pronunciation of both vowels and consonants across an entire word. The most common processes are called palatalization, which phonetically raises vowels and consonants, and labialization, which phonetically rounds vowels and consonants. East Chadic languages tend to have more transparent and phonologically-stable five-vowel systems (Lovestrand 2012a). Contrastive length of both vowels and consonants is ubiquitous in Chadic languages.

Chadic languages are tonal. There are often two contrastive levels of tone, sometimes three. In many languages there are relatively few lexical items that are minimally distinguished by tone. Tone is often found to have grammatical functions such as indicating the tense-aspect of a verb or the gender of a noun. Consonant-tone interference is found in many Chadic languages (Pearce 2006; Schuh 1988; Wolff 1987).

#### **4.1.2 Morphology**

Singular nouns in Chadic languages generally trigger two-way gender agreement (masculine, feminine), but plural agreement marking does not normally distinguish gender. Many Chadic languages use multiple strategies for forming plural nouns, including affixation, word-internal alternation, and reduplication (Frajzyngier 1977b).

The morphosyntactic class of adjectives or adverbs is often relatively limited, and arguably non-existent in some languages. However, as is typical of African languages in general, Chadic languages use a large inventory of “marked words depictive of sensory imagery” known as ideophones (Dingemanse 2012). In at least some cases, ideophones can be analyzed as a subclass of adjectives or adverbs (Newman 1968).

The most morphological complexity is generally found in the verbal system. In some cases, the verb root undergoes stem-internal alternations making it difficult to identify an underlying root form. One common pattern is for there to be two basic stem forms distinguishing perfective and imperfective TAM (Jungraithmayr 1977; Wolff 1977, 1979). Suffixes are added to these stem

forms to create more complex verb forms. In addition to tense-aspect morphology, there is normally a “mood of obligation with respect to the subject, in Chadic literature referred to as subjunctive” (Frajzyngier 1996:15), and a future-deontic form.

Another morphological marking commonly found on verbs is pluractionality, indicating repetitive action or a plural subject (Al-Hassan 1998). Object and indirect object pronominals are also commonly suffixed or encliticized to the verb. Subject marking on the verb is less common, but there is a pattern called “intransitive copy pronouns” in which subject agreement suffixes only occur in some types of intransitive clauses (Frajzyngier 1977a; Newman 1971). In addition, verbal systems in Chadic languages often have another class of suffixes or enclitics called “extensions” (e.g., Jungraithmayr and Tourneux 1987). The most common verbal extensions have some type of motion-related meaning.

There is often a minor class of verbs that have a root with only one consonant and either one vowel or none. These are sometimes called “monoverbs” or “monoconsonantal” verbs, and their set of suffixes can be a separate paradigm from other verbs (Jungraithmayr and Tourneux 1990). Finally, it is relatively common for a large set of verbs to be “labile” or “ambivalent” allowing both transitive and intransitive uses without any morphological marking distinguishing the two uses. In the transitive use, the subject is the agent and the object is the patient, while in the intransitive use, the subject is a patient.

### **4.1.3 Syntax**

Chadic languages are predominately SVO and left-headed. Indirect objects (recipients and beneficiaries), adjuncts and adverbials typically follow the direct object. However, when indirect objects are pronominal they can precede a full lexical direct object noun phrase. The most common negation strategy is a clause-final marker, sometimes accompanied by some type of pre-verbal or sentence-initial marker of negation or focus. Nouns generally precede any modifiers, including relative clauses.

The typical Chadic pronominal system consists of eight categories distinguishing grammatical gender in the second- and third-person singular forms, although not all Chadic languages have a gender distinction in the pronominal system. Some languages increase this inventory with an inclusive-

exclusive distinction in the first-person plural, and some also have a first-person dual inclusive pronoun.

Chadic languages often have a small inventory of conjunctions, and it is common for simple sentences to be juxtaposed with no grammatical marker indicating the discourse or logical relationship between the sentences. This fact, combined with the fact that in many cases an overt subject is optional, means that it is not uncommon to find strings of subjectless sentences or verb phrases in a text. It is not immediately obvious if such a string of verb phrases should be considered a single syntactic construction, or multiple independent sentences juxtaposed for discourse-related reasons.

## **4.2 SVCs in Chadic languages**

Serialization is not typically thought of as a feature of Chadic (or Afroasiatic) languages. However, only a minority of Chadic languages have been the subject of an analysis that addresses clause-level syntactic issues like serialization and complex sentences. Out of the 200 Chadic languages listed in the Glottolog (Hammarström 2010), 136 do not have any references listed that address clause-level syntactic issues. Only 64 languages (32%) have been investigated thoroughly enough to have potentially identified the features of serialization.

I was able to examine 24 grammars of Chadic languages, and found that eight report the existence of serialization, but they typically do not systematically examine the syntactic features of the construction. Other grammars do not use the terminology of serialization, but describe syntactic patterns that could potentially have the features of serialization.

Goemai is the only Chadic language where SVCs have been described in detail (Hellwig 2006, 2011). Section 4.2.1 is a summary of the work on SVCs in this West Chadic language. Frajzyngier (1996:15) claims, “It appears that most Chadic languages have or had serial verb constructions.” Section 4.2.2 looks at Frajzyngier’s description of SVCs in Mupun, and Section 4.2.3 his description of SVCs in Lele. Section 4.2.4 looks at other descriptions of Chadic languages where serialization has been mentioned, and a few publications where similar constructions are discussed, but not identified as SVCs.

### 4.2.1 Goemai (West Chadic)

Goemai is a West Chadic language spoken by about 200,000 people in the Jos Plateau area of Nigeria (Simons and Fenning 2017). Like most Chadic languages, the predominant word order is SVO, and constituents are left-headed. Verbal morphology in Goemai is relatively limited. “Goemai does not show bound TAM morphology, valence-changing morphology, or cross-referencing of arguments on the verb” (Hellwig 2006:89). Hellwig (2006, 2011) presents four types of serial verb constructions in Goemai: Inchoative, Configurational, Deictic, and Coordinate. The four types fall into two categories. The first three types clearly have the features associated with serialization, while Hellwig (2011:404) notes that “the coordinate serial structure in Goemai constitutes a very loose juncture.”

Although not used by Hellwig, the Role and Reference grammar terminology of “nuclear” SVCs (the first three types) and “core” SVCs (Coordinate SVCs) could be applied here (Foley and Olson 1985). The primary method for distinguishing the nuclear layer of the clause is that it does not allow narrow scope of operators, but the core layer does. In the nuclear-level Deictic SVC in example 1, a clause-final negation marker at the end of the clause cannot narrowly scope over a single verb. Instead it takes scope over the whole construction.

- (1) *mûep (...)* **doe na** *noemûat ba*  
3.PL      come see frog      NEG  
They (...) did not see the frog here. (Hellwig 2006:95)

Deictic SVCs in Goemai have the serial verb *dóe* ‘come’ in the first position. Unlike the sequential motion SVCs described in Section 3.1.2, “the deictic serial construction is used to code the deictic setting of an event, i.e., the construction does not express a sequence (e.g., ‘come and find’) but deixis (e.g., ‘find here’)” (Hellwig 2011:412). This is distinct from the more common type of SVC where a motion verb preceding the main verb expresses prior motion (Section 3.1.2). A sequential motion interpretation can be expressed by a motion verb in a Coordinate SVC (such as example 7 below).

- (2) **dóe kàt** *lóng yin ...*  
come find chief QUOT  
[He] found the chief here, saying ... (Hellwig 2011:412)

Both Inchoative and Configurational SVCs have a simultaneous interpretation (Section 3.2). Inchoative SVCs have the verb ‘fall’ or ‘rise’ in the first position followed by a verb indicating a change of state or posture, as in example 3. Configurational SVCs have a change-of-state verb in the first position followed by a posture or other stative verb, as in example 4.

- (3) k’úr t’á t’ó  
 tortoise fall.SG lie.SG  
 The tortoise lay down.

- (4) wáng k’óón t’óng k’à kùk sh’ép  
 pot become.face.down.SG sit.SG head.SG.GEN stump.GEN wood  
 The pot sits face down on the tree stump. (Hellwig 2011:410)

Deictic SVCs can be distinguished from Inchoative and Configurational SVCs by the fact that Deictic SVCs use a single, shared marker for all TAM marking. In contrast, Inchoative and Configurational SVCs use concordant marking on both verbs for Obligative, Progressive and Habitual TAM. In addition, in a Configurational SVC, the second verb can be marked by a pre-verbal auxiliary for durative aspect, as long as the first verb is in an unmarked form, as in example 5. “Despite their different markings, their aspectual values are semantically compatible” (Hellwig 2011:400). This type of constrained and compatible non-concordant TAM marking is included in the working definition of SVC used here (Section 2.4).

- (5) sh’ép rú yì d’yém ñ-yíl  
 wood enter.SG DUR stand.SG LOC-ground  
 The stick has entered [and] stands in the ground. (Hellwig 2011:400)

Core-level Coordinate SVCs in Goemai allow essentially any type of verb, in contrast with the nuclear SVCs in which there is a restriction on the types of verbs that can be used in the construction. SVCs that do not place any clear restriction on what verbs can occur are sometimes called symmetric SVCs, as opposed to asymmetric SVCs. As discussed in Chapter 3, there is a question about whether so-called symmetric SVCs can be distinguished from what is elsewhere called asyndetic coordination.

Many types of Coordinate SVCs in Goemai have similar semantic properties to asyndetic coordination. Purely symmetric Coordinate SVCs can have either a sequential or simultaneous interpretation, depending on whether the verbs are stative or non-stative. However, the same construction

also subsumes functional types common in asymmetrical serialization cross-linguistically. These semantic subtypes are not morphosyntactically distinguished from each other in Goemai, but distinguished by which verbs are used in the construction. Thus, some semantic subtypes of Coordinate SVCs are still asymmetric (restricted to a class of verbs) in regards to their function. Functionally asymmetric types include valency-increasing functions (instrumental, benefactive and locative, Section 3.6) and a comparative function with ‘surpass’ in the second position (Section 3.5). There is a type of resultative interpretation (Section 3.3) that occurs when a posture verb occurs in the second position. Finally, a Coordinate SVC can have a complement function (Section 3.4) when the first verb is ‘find’ or ‘see’.

The most obvious syntactic feature that distinguishes core-level Coordinate SVCs from nuclear SVCs is that, in a Coordinate SVC, a negation marker after both verbs can take scope over both verbs, but it can also clearly be interpreted as taking scope only over the second verb, as seen in examples 6 and 7. A more restricted definition of SVCs in regards to scope of negation would exclude these constructions (Section 2.5), but they are not excluded by the working definition of SVCs used here (Section 2.9.1).

- (6) *tó mén mòe= gáp mòe= háár bá*  
 okay 1.PL 1.PL.SBJ divide.SG 1.PL.SBJ gnaw NEG  
 Okay, we don’t divide [and] eat it.  
*or* Okay, we divide it, [but] don’t eat it. (Hellwig 2011:401)

- (7) *la hok mûaan ru d’i mou*  
 child.SG DEF go.SG enter.SG DEM NEG  
 The child did not go [and] enter there.  
*or* The child went [but] did not enter there. (Hellwig 2006:95)

There is also a distributional pattern that distinguishes Coordinate SVCs from nuclear SVCs. In a “consequence clause”, the verb phrase is preceded by a complementizer and followed by a “consequence particle” *yi*.

- (8) *de goe kat sool yi (...)*  
 so.that OBLIG find money CONSEQUENCE  
 So that [he] should find the money (...) (Hellwig 2006:99)

In a Deictic SVC, the Consequence particle follows the second verb. This pattern indicates that the two verbs form some type of syntactic constituent on a par with a verb and its complement (e.g., a verb phrase).

- (9) *dé d'óe t'óng yì*  
 so.that come sit.SG CONSEQUENCE  
 'So that (he) sits here.' (Hellwig 2011:404)

In a Coordinate SVC the Consequence particle must come between the two verbs, and not after both verbs as in the Deictic SVC. The distribution of *yì* indicates that these similar constructions have different underlying structures.

- (10) *dé ní d'áláng yì rú lú*  
 so.that 3.SG.SBJ pass.SG CONSEQUENCE enter.SG settlement  
 ...so that he passes (and) enters the town. (Hellwig 2011:404)

Hellwig also describes the prosody of SVCs. With regards to prosody, core and nuclear SVCs follow the same patterns. With respect to scope of negation and distributional patterns, core-level Coordinate SVCs are distinct—“a very loose juncture.” This illustrates the problem of the “coarseness” of the concept of serialization referred to in the introduction to Part A. Both core and nuclear SVCs meet the working definition of serialization, but they are clearly distinct in regards to the more fine-grained variable of scope of negation.

In addition to SVCs, Hellwig (2006:100) also identifies several TAM particles which appear to have grammaticalized from serial verbs: *kam* ‘resultative’ from *kam* ‘stay, be at’, *lat* ‘anterior’ from *lat* ‘finish’, and *t'ong* ‘irrealis’ from *t'ong* ‘sit’.

#### 4.2.2 Mupun (or Mwaghavul, West Chadic)

Frajzyngier (1993:229-248) describes SVCs in Mupun, a dialect of Mwaghavul, a West Chadic language in the Angas subgroup. Mupun is spoken in the Plateau State of Nigeria, southeast of Jos. Like most Chadic languages, the unmarked word order for both nominal and pronominal arguments is SVO (Frajzyngier 1993:viii, 86-87). The language does not have a sentential coordinator and allows subjects to be omitted (Frajzyngier 1993:x, 429).

Some of the constructions that Frajzyngier calls an SVC do not meet the criteria in the working definition of verbhood (Section 2.2). Frajzyngier (1993) writes, “The first verb of a serial verb construction will often have a phonologically reduced form.” In addition, these reduced forms do not appear to have singular and plural forms. This is the only morphologically distinctive feature of verbs in Mupun: “The formation of plural stems is the only morphological change that may affect the verb stem” (Frajzyngier 1993:54).<sup>2</sup> Nonetheless, even if these words are not verbs, the constructions are similar enough to SVCs to suggest that the forms grammaticalized from serial verbs in erstwhile SVCs. The constructions are still worth comparing with other Chadic languages.

Two examples of words that are possibly grammaticalized from serial verbs are *wa* from *baa* ‘return’ or ‘come back’, *se* from *seet* ‘depart’ or ‘go away’, and *yo* from *yool* ‘go’. These directional morphemes are normally found before a verb of motion.<sup>3</sup> They possibly indicate the deictic orientation of the motion, whether toward or away from the deictic center. They appear to have grammaticalized from some type of SVC with a simultaneous motion interpretation (Section 3.1.1).

(11) **wa** mu siam n-tulu  
 return 1PL descend PREP-home  
 We went down home.

(12) wu **se** siam n-panksin  
 3M depart go.down PREP-Pankshin  
 He went down to Pankshin. (Frajzyngier 1993:229-230)

In addition to the non-SVC directional construction, there are several other possible types of SVCs in Mupun. These fall under the categories of prior motion, manner of motion, comparative, and aspectual. One of the criteria that Frajzyngier proposes for SVCs is a single wide scope of negation over both verbs. “The evidence for the claim about conceptualization of one string of verbs as representing one proposition... is provided by structures involving negation” (Frajzyngier 1993:231).

---

<sup>2</sup>Plural verbs (or pluractionals) have several functions in Mupun. One is to mark a plural subject of an intransitive clause. In transitive clauses they usually mark the plurality of the action. Frajzyngier does not gloss verbs as singular or plural, and mentions that speakers do not always use the plural form with plural intransitive subjects (Frajzyngier 1993:62).

<sup>3</sup>Two examples are given of *wa* occurring on its own (Frajzyngier 1993:242). It can also co-occur with *baa*. The difference between the forms *wa* and *baa* is not clear.

The idea is that a single event can only be negated once even if it is represented by two verbs (see Section 2.5).

The test in Mupun is not only semantic, but also distributional. Mupun has a type of double-marked negation in which a marker *ba* precedes the predicate and a marker *kas* occurs at the end of the clause. Frajzyngier explicitly applies this test to the non-SVC directional constructions, not to other possible SVCs. However, two examples of putative SVCs found elsewhere in the grammar appear to meet the test, a prior motion SVC (example 13) and an aspectual SVC (example 14).<sup>4</sup>

- (13) *ba mo n-kutdĩ kə yool kwat nə kas*  
 NEG 3PL FUT-yet PREP go hunt DEF NEG  
 They will not continue with the hunt. (Frajzyngier 1993:510)

- (14) *ba me mat taa tok sik kə mo a ar kas*  
 NEG QUANTIFIER woman fall.SG greet ?? CONJUNCTION 3PL PREP road NEG  
 No woman will greet them on the way. (Frajzyngier 1993:509)

Prior motion SVCs place a verb of motion before another verb, indicating that a change of location takes place before the activity or state described by the second verb occurs (Section 3.1.2). Example 13 shows that a prior motion SVC can occur inside the two negation markers *ba* and *kas*. Another example of a putative prior motion SVC is given in example 15.

- (15) *mo dəm la*  
 3PL go.PL give.birth  
 They go and give birth. (Frajzyngier 1993:234)

When the second verb of a prior motion SVC is stative, the interpretation is similar to a resultative SVC, as in:

- (16) *pan a dəm jəŋ kə an*  
 little 2M go.PL be.far PREP 1SG  
 Go a little further from me. (Frajzyngier 1993:235)

In example 17, a prior motion SVC has lexicalized into an idiomatic SVC (Section 3.8).

- (17) *mota də mu miskoom sə ji yol*  
 car REL chief DEM come get.up  
 The car of the chief started. (Frajzyngier 1993:234)

<sup>4</sup>Words glossed as ?? do not have a clear gloss in the original.

Manner of motion SVCs are a type of directional SVC (Section 3.1.1) in which the first verb is restricted to a manner of motion verb. The second verb is a directional verb (example 18). Example 19 shows that the verb ‘run’ on its own does not allow a locative argument. The formation of manner of motion (or directional) SVCs is one strategy to allow for combining manner of motion and a locative argument.

(18) mo **sue seet**  
 3PL run.PL go.away  
 They ran away.

(19) \* wur su n-makaranta  
 3M run.SG PREP-school  
*for*: He runs to school. (Frajzyngier 1993:245)

Frajzyngier gives several examples of a putative comparative SVC in which the verb *met* ‘surpass’ follows another verb (Section 3.5). Example 20 shows a common cross-linguistic pattern in which the subject of the first verb is the “comparee” which has more of some quality than the “standard” which is the complement of the second verb.

(20) wa **cet mbise met** n-nəhən fen  
 3F cook food surpass PREP-mother 1SG  
 She cooks better than my mother. (Frajzyngier 1993:246)

There is also a putative aspectual SVC in Mupun. In example 21 the word *taa* glossed ‘fall’ does not have its lexical meaning of change of posture, but rather it somehow modifies the action of the second verb.<sup>5</sup> Similar constructions using the verbs *yol* ‘get up’ and *dɛl* ‘pass’ could potentially be aspectual SVCs or prior motion SVCs.

(21) mo **taa dee** n-panksin  
 3PL fall stay PREP-Pankshin  
 They stopped over in Pankshin. (Frajzyngier 1993:230)

There are several other interesting constructions which could potentially also be SVCs in Mupun. In example 22, the verb *maŋ* ‘take’ might be used to introduce a theme argument (Section 3.6.2). In example 23, the verb *sin* ‘give’ is combined with *ji* ‘come’ to express directionality.

<sup>5</sup>It is not clear why, in example 21, *taa* is apparently in a singular form when a plural might be expected to agree with a plural intransitive subject. Elsewhere the verb *tá* ‘fall’ is said to have a suppletive plural form *dōŋ* (Frajzyngier 1993:58).

(22) wur pe **maŋ sin** mo kələŋ  
3M FUT take give 3PL listen  
He will take it and give it to them to listen. (Frajzyngier 1993:235)

(23) n-**dul** akwati nə **sin ji** sà  
1SG-pull box DEF give come here  
I pulled the box in here. (Frajzyngier 1993:241)

In example 24, the activities expressed by the three verbs following *dəm* ‘go’ are interpreted as occurring simultaneously. Given that the language does not have sentential conjunctions and freely omits subjects, it is possible that each verb represents an independent sentence. However, note that the future marker takes scope over all four verbs.

(24) mo n-**dəm** **cir teer** **kok** dī  
3PL FUT-go.PL dance spend.the.night sing ??  
They will spend the night dancing and singing. (Frajzyngier 1993:512)

Without further research, it is not clear that all of these examples constitute productive syntactic constructions. The best candidates for SVCs in Mupun so far are the prior motion SVCs (which pass the negation test). Other SVCs or SVC-like constructions are fairly commonplace in the language, and probably include a directional SVC and a comparative SVC.

### 4.2.3 Lele (East Chadic)

Lele is an East Chadic language (group A) spoken around the town of Kélo in the southwest of Chad. The unmarked order for nominal arguments is SVO. First and second person pronominal subjects are also generally preverbal, but third person pronominal subjects more often follow the verb. Pronominal objects are suffixed to the verb. Subjects, especially third person, are regularly left unexpressed (Frajzyngier 2001:100). Verbs in Lele have four morphological forms labeled “past”, “future”, “nominal” and “imperative” (Frajzyngier 2001:43). Verbs can also have a plural stem form which indicates plurality of action, plurality of an intransitive subject, or plurality of the object (Frajzyngier 2001:124).

In Frajzyngier’s reference grammar of Lele there are six pages in a chapter on argument coding which present serial verb constructions (2001:118–123). None of the examples clearly meet the criteria of the working definition of SVC (Section 2.9.1). This is either because of questions about

the scope of negation (Section 2.5), or because of a scarcity of examples. The majority of putative SVCs presented in Lele have the verb *néy* ‘be a lot’ following another verb phrase, as in example 25.<sup>6</sup>

- (25) **dìgrì** dú kòrà **néy**  
 kill.PAST 3SG.F chicken be.a.lot.PAST  
 She killed many chickens. (Frajzyngier 2001:119)

The other type of putative SVC discussed in some detail has resultative semantics, as in example 26.

- (26) **wá** dí tòrò **dìgrì**  
 hit.PAST 3SG.F hen kill.PAST  
 She hit the hen and killed it. (Frajzyngier 2001:120)

Frajzyngier uses a scope of negation test (Section 2.5) to argue that in the ‘be a lot’ construction “the two verbs form one predicate, hence constitute a serial verb construction” (Frajzyngier 2001:119). Examples 27 and 28 are said to show broad scope of negation over both verbs. However, it is not the case that the negation must necessarily be interpreted as taking broad scope in these examples. This is illustrated by the potential alternative translations that I have added in italics below the original translations. A narrow scope of negation results in the same truth-conditional meaning.

- (27) **dìgrì** dú **nény** dé  
 kill.PAST 3SG.F be.a.lot.PAST NEG  
 She did not kill many (but she killed some).  
*She killed some, but (those that she killed are) not many.*

- (28) time **nè** gònì **nény** dé  
 hunger make.PAST hyena be.a.lot.PAST NEG  
 Hyena is not very hungry. (Frajzyngier 2001:119)  
*Hyena is hungry, but (his hunger is) not much.*

While the scope of negation test is inconclusive for the ‘be a lot’ construction, the second proposed type of SVC clearly fails the test. Compare example 29 with example 26 above. When an utterance-final negation marker is added, the scope is only over the second verb.

<sup>6</sup>Frajzyngier (2001:118) gives several examples to show that *néy* ‘be a lot’ is a verb, not an adverb. The word can take verbal inflection for future tense, and can be used as the sole predicate in an independent clause. Frajzyngier uses a cedilla to mark nasal vowels. I have modified his examples to follow Cope’s (1982; 1986) orthographic approach, writing an <n> following a nasal vowel. Some of the interlinear glosses have been modified to correct apparent errata, or so that each word has a consistent gloss. I have also added explicit TAM information to the “past” forms that are not glossed for TAM in the source.

- (29) **wá dí** tòrò **digrii** dé  
 hit 3SG.F hen kill.PAST NEG  
 She hit the hen, but did not kill it. (Frajzyngier 2001:119.117)

Isolated examples of other potential SVCs are presented, such as an aspectual SVC with a verb glossed ‘finish’ (example 30) and a resultative SVC (example 31). Not enough data is provided to establish whether these constructions meet the criteria of any definition of SVCs.

- (30) **lè** tàsí **kay** dé  
 eat.PAST shea.fruit finish.PAST NEG  
 He did not finish eating the shea fruit. (Frajzyngier 2001:119.114)

- (31) dàdù tu-ŋ **lèé** kàsùma **ɓàl-dù**  
 3SG.F goat-DEF eat.VN grass satisfy-3SG.F  
 As for Goat, it ate the grass to its satisfaction. (Frajzyngier 2001:123.133)

In a later paper, Frajzyngier (2018) mentions a type of manner of motion (directional) SVC in Lele. Example 32 is also potentially an example of a prior motion SVC. Notice that in example 33, the free translation does not make it clear whether è ‘go’ contributes any deictic information.

- (32) àlá **gìr è yàá** kolo-ŋ bé kùmbàlo  
 but run go tell word-DEF DAT chief  
 But instead she ran and informed the chief.

- (33) **gìr è jè** hàn  
 run go come here  
 He ran in here.

The evidence available for SVCs in Lele is inconclusive. There may be aspectual and motion SVCs in Lele, but these are not yet well enough documented to conclusively determine that they constitute a syntactic construction that meets any definition of serialization.

#### 4.2.4 Potential SVCs in other Chadic languages

There are several other works on Chadic languages where it is mentioned in passing that there is an SVC, or where a construction that could potentially be considered an SVC is described, but not labeled as such. This includes several Central Chadic languages and one East Chadic language.

The examples cited are superficially and functionally similar to motion SVCs, aspectual SVCs and comparative SVCs.

A three-page chapter of Frajzyngier’s (1989:250-252) grammar of Pero (West Chadic) contains a discussion of serial verb constructions. One of the constructions presented combines the verbs ‘take’ and ‘go’ to express ‘bring’ (Section 3.1.2), but it uses a “consecutive marker” and so does not fit the working definition of SVCs (Section 2.3). The other construction combines a manner of motion verb with a directional verb. This combination of verbs can be seen as a strategy for circumventing the fact that, in Pero, the manner of motion verb cannot occur on its own with a locative (e.g., run home). Four of five of the examples given of this construction also contain a morpheme glossed ‘make’, as in example 34. The fifth, example 35, is missing glosses which I have attempted to fill in.

**Pero** (West Chadic; Frajzyngier 1989:251)

(34) tà-yí-ù                    **tánà wáatò** mínà nín-cákkà  
 FUT-make-FORM.B run go home SBJ-3.M  
 He will run home.

(35) nì-à-yítù    **káyò wáat-tù** píccè-m  
 1SG-NEG-?? swim go-VENTIVE here-NEG  
 I did not swim here.

Caron mentions SVCs in Zaar (or Saya, West Chadic B) in a short grammatical sketch (Caron 2012b) and in a paper on comparative constructions (Caron 2012a). These publications are based on a relatively recent corpus-building project for Zaar. The comparative SVC that Caron cites is shown in example 36. It uses a verb glossed ‘surpass’ in the second position, as commonly seen in SVCs cross-linguistically (Section 3.5).

**Zaar** (West Chadic; Caron 2012a)

(36) wò    **ʃolák**    **mop**    kə  
 3SG.FUT be.smooth surpass 2SG.OBJ  
 He will look nicer than you.

In a short sketch of Zaar grammar, Caron (2012b) gives a list of “serializing verbs” that contribute some type of aspectual or adverbial meaning to the clause, such as *dap* ‘start’ from a verb meaning ‘follow’, *ban* ‘keep doing’ from a verb meaning ‘finish’, and *tə* ‘go and...’ (i.e., prior motion). The

list of fifteen verbs includes six loans from Hausa. The one SVC cited in the paper is shown in example 37.

**Zaar** (West Chadic; Caron 2012b)

- (37) ʃè: káwâj mà: **ɗap** mé **ɲom** hɛŋ  
 TAM merely 1PL.PFV follow 1PL.AOR take NEG  
 We haven't even started to fight...

Wandala (or Mandara) is a Central Chadic language spoken in Northern Cameroon and Eastern Nigeria. In a grammar of the language, Frajzyngier (2012:304) writes: “The coding of directionality with non-movement verbs involves a serial verb construction consisting of the main verb followed by a verb of movement.” A few examples of a serial verb construction are given, such as those in examples 38 and 39. Frajzyngier (1996:321) also mentions SVCs in this language.

**Wandala** (Central Chadic; Frajzyngier 2012:304)

- (38) yè **vlà-nà** **d-á** múrà  
 1SG send-3SG go-GOAL Mora  
 I sent it to Mora.
- (39) tà **vlà-nà** **sà-wá** múrà  
 3PL send-3SG come-VENTIVE Mora  
 They sent it from Mora. (Frajzyngier 2012:304)

Frajzyngier (2002) has also published a description of Hdi, another Central Chadic language spoken in the same area as Wandala. In a later paper, Frajzyngier (2018) gives an example of a manner of motion (directional) SVC in Hdi, shown in example 40.<sup>7</sup>

**Hdi** (Central Chadic; Frajzyngier 2018)

- (40) mbàd ká-'á kà **xwáyá-úgh-tà lá-ghú** dà zwán-i  
 then COMP-3SG SEQ run-SO-REF go-D.SO PREP child-PL  
 Then he fled and he went to his children.

Allison (2012:492–496) discusses several types of “asyndetic parataxis” in Makary Kotoko (or Mpade, Central Chadic). One type, shown in example 41, is similar to a prior motion SVC:

<sup>7</sup>Frajzyngier uses the following glossing abbreviations: D ‘dependent’, REF ‘referential marker’, SEQ ‘sequential marker’, SO ‘source orientation’.

Fairly often the verb of the first clause provides directional/positional information for the situation of the following clause, relative to the established spatial point of reference, generally derived from the preceding context. The verbs that most frequently occur in the first clause are: *dā (ni)* ‘go’, *lū* ‘come’, *ts’āga* ‘get up’, *te (he)* ‘return’, and *fā si he* ‘turn around’.

**Malary Kotoko** (Central Chadic; Allison 2012)

- (41) k’ani blō pāl ā                      **ts’āga** ā                      **sī** sāw gí ...  
 then man one 3SG.M.COMPL get.up 3SG.M.COMPL take stick COMP  
 Then one man got up and took a stick (in order) to ...

In a grammar of the Central Chadic language Margi, Hoffman (1963:210) describes “a tendency to use verbs of motion ‘pleonastically’ in a rather idiomatic way.” The examples cited appear similar to a prior motion SVC. There are also a number of “auxiliary verbs” that could equally be considered aspectual SVCs.

In another Central Chadic language, Muyang, Smith (2003) describes verb series where the first verb contributes an aspectual meaning. In example 42, the verb *tà-ra* ‘come’ contributes perfect aspectual meaning. In example 43 the verb *nə-bu* ‘exist’ contributes progressive aspectual meaning.

**Muyang** (Central Chadic; Smith 2002:12-13)

- (42) ... **tà-ra**                      **tə-zum-kaba** dāf                      a ...  
           3PL-come.PFV 3PL-eat-up.PFV millet.ball PFV  
           ...when they had eaten their meal...
- (43) nu **nə-bu**    **nə-zum** zlam  
       1SG 1SG-exist 1SG-eat thing  
       I’m just eating something.

Finally, in a study of the grammar of an East Chadic language, Dangla (or Dangaléat), Shay (1999) identifies serialization as a strategy for expressing comparison.

**Dangla** (East Chadic; Shay 1999)

- (44) Iisà **gín** riy oy **jaaf** Yúunùs  
       Issa make work well surpass Younous  
       Issa works harder than Younous.

In summary, in the few cases where SVCs or similar constructions are discussed in the Chadic literature, the functions of the constructions are most often prior motion (e.g., Goemai, Mupun,

Zaar, Makary Kotoko, Margi), simultaneous motion or directionality (e.g., Hdi, Lele, Mupun, Pero, Wandala), aspectual (e.g., Mupun, Zaar, Muyang), or comparison (e.g., Goemai, Mupun, Zaar, Dangla). All of these functions are common functions of serialization cross-linguistically (Chapter 3).

### 4.3 SVCs in Chadian Arabic

Chadian Arabic is the most widely-spoken of the more than 100 languages of Chad. It is the first language of over one million people, and it is the most common way for people of different language groups to communicate with each other. As a Semitic language, Chadian Arabic is also part of the Afroasiatic phylum, a distant relative of Chadic languages.

Very little study has been done on language contact and multilingualism in Chad, but it is clear that Chadian Arabic has had a significant influence on the Barayin lexicon. In a 17,000 word corpus of monologues in “pure” Barayin, about 5% of the words in the corpus are clearly of Arabic origin (Lovestrand 2017). By far the most frequent words of Arabic-origin in the Barayin corpus are conjunctions and interjections. Speakers use these words to structure and pace their discourse. Other frequent Arabic words are numbers and greetings. Nouns of Arabic origin often refer to concepts that arrived with modern technology, government and religion.

Even less can be said about grammatical issues of language contact in Chad. It seems likely that substrate Chadian languages have had an influence on the development of Chadian Arabic, and it is equally possible that Chadian Arabic has had an impact on the grammars of minority languages in Chad. For example, there are some clear correlations between asyndetic multiverb constructions in Chadian Arabic (potentially SVCs) and SVCs in Barayin.

Example 45 is a multiverb construction in Chadian Arabic that expresses prior motion, similar to the motion SVC in Barayin that is described in Section 7.1.1. The verb *maca* ‘go’ in the “accompli” tense-aspect form is followed by another verb with the same form. Roth (1979:56) reports that this is one use of ‘go’ in a multiverb construction in Chadian Arabic. It can also signal purpose and future tense.

- (45) **maca cara fûl**  
 go.3SG.PFV buy.3SGPFV peanuts  
 He went [and] bought peanuts. (Jullien de Pommerol 1999:237)  
 French: *Il est allé acheter des arachides. (On sous-entend qu'il est déjà revenu.)*

There is another construction in Chadian Arabic that appears to be a type of aspectual or adverbial SVC, similar to an SVC in Barayin discussed in Section 7.4. In example 46, the verb *gamma* ‘stand’ expresses inchoative aspect. The meaning of this construction is further explored in Section 7.4.

- (46) Askut, al wilêd **gamma bunûm**  
 quiet DEF child stand.3SG.PFV sleep.3SG.PFV  
 Quiet! The child just fell asleep. (Jullien de Pommerol 1999:207)  
 French: *Tais-toi, l'enfant a commencé à dormir.*

Hellwig (2006, 2011) suggests that SVCs in Goemai and other Chadic languages in Nigeria may have arisen from contact with neighboring Benue-Congo languages. The similarities between SVCs in Chadian Arabic and SVCs in Barayin suggest Chadian Arabic as a potential contact source for serialization in Barayin. It remains to be seen to what degree the presence of SVCs in Chadic languages can be explained by contact.

Since Chadic languages remain a relatively understudied language family, it is not surprising that data on SVCs and other types of multiverb constructions are quite rare. The in-depth study of SVCs in Goemai and references to possible SVCs in other Chadic languages suggest that SVCs may be as common in Chadic languages as they have been reported to be in other families of African languages. The description of SVCs in Barayin in Part B is another step towards a more complete picture of this part of Chadic syntax.

## **Part B**

# **Description of SVCs in Barayin**

The three chapters of the dissertation in Part B are dedicated to the description of serial verb constructions in Barayin. Chapter 5 briefly introduces the language and the data sources. It outlines some of the basic elements of the grammar that will be referenced in the analysis of SVCs. Chapter 6 describes the morphological and syntactic features of SVCs in Barayin, drawing from the discussion of the features in SVCs in chapter 2. SVCs are distinguished from other multiverb constructions in Barayin, and shown to have several properties associated with monoclausality. Chapter 7 describes the meanings of each type of SVC in Barayin, including their most common functions in the Barayin corpus of transcribed speech. Some of the functions of Barayin SVCs, in particular the motion-related SVCs (sections 7.1 and 7.2), are quite common cross-linguistically. On the other hand, the function of the Take SVC in Barayin (section 7.3) is much less common compared with the functions of the verb ‘take’ in SVCs cross-linguistically.

## Chapter 5

# Introduction to Barayin

Barayin (Barāin/Barein, [bva]) is an East Chadic language (Afroasiatic phylum) spoken by approximately 5000 people in the Guera region of the Republic of Chad (Figure 5.1), specifically in the town of Melfi and surrounding villages. Previous documentation of Barayin includes two short wordlists (Lukas 1937; Maass et al. 1996) and a superficial sketch of a few grammatical features (de Rendinger 1949). Lovstrand (2012b) is the first analysis of the phonology, morphology, and simple sentence structures of the language.

There are four dialects of Barayin: Jalkiya, Giliya, Komiya and Jalking (Lovstrand 2011). Each dialect uses their own name to refer to the language, while also accepting the Arabic name, Barayin, as an acceptable term for the whole language group. The Jalkiya and Giliya dialects are nearly identical, differing mainly in regards to a negligible percentage of lexical items. The Jalkiya dialect is the primary focus of this study, with additional data from the Giliya dialect. The Komiya and Jalking dialects differ so significantly from the other two (and from each other) that they can be considered separate languages.

This chapter contains background information for the description of Barayin serial verb constructions in Chapters 6 and 7. Section 5.1 describes the sources of data used in the analysis, and the orthographic conventions used to represent the data. The remaining sections introduce some basic grammatical facts about Barayin that are foundational to understanding serial verb constructions. Section 5.2 introduces verbal morphology. Section 5.3 presents the basic pronominal forms used



Figure 5.1: Political map of Chad highlighting the Guera Region by Eric Gaba, CC BY-SA 3.0 modified to show the locations of relevant cities. Available online at [https://commons.wikimedia.org/wiki/File:Chad\\_location\\_map.svg](https://commons.wikimedia.org/wiki/File:Chad_location_map.svg)

in the language. Finally, Section 5.4 briefly covers the basic clause structure, and the structure of relative clauses.

## 5.1 Data and orthography

The analysis of Barayin began with a ten-month research period between January 2010 and February 2011 under the auspices of SIL. This research primarily took place in Mongo, just north of the language area. The initial research goal was limited to proposing a provisional orthography, and this phase of fieldwork on Barayin was largely dominated by the “interview fieldwork” method (Aikhenvald 2014:22). The results of this work are published in Lovstrand (2012b), and include phonetic transcriptions of six monologues in the appendices. Fieldwork focused on serial verb constructions began with a three month visit to Chad in 2015. This work included a significant amount of elicitation to test grammaticality of different patterns in serial verb constructions. Eight unpublished transcriptions of monologues were collected during this phase.

The final visit to the language area in 2017 was largely focused on completing a video documentation project sponsored by the Endangered Languages Documentation Programme (ELDP). Over seventeen hours of video were collected during this time. 29 texts have been transcribed and translated. Two of these texts are dialogues. The rest are monologues. All of the recordings are semi-spontaneous. The speaker was invited to speak for the recording, but generally allowed to choose their topic, and spoke with little or no advanced preparation.

Transcriptions for 2017 fieldwork are referenced by a file name in the format *bva* followed by three digits, 0xx, 1xx or 2xx (where x is any digit). This is followed by a period and the line number in the transcription that the example is extracted from. Transcriptions from 2010 and 2011 fieldwork follow the same pattern with a file name like *bva3xx*. Transcriptions from 2015 are labeled *bva4xx*. All of these files are available for download from the website of the Endangered Languages Archive at SOAS.<sup>1</sup> Any examples of Barayin data that do not have an explicit reference are from additional field notes.

These 43 transcriptions are referred to as the corpus. Of the 41 monologues transcribed and translated, eleven are traditional folktales, called *sidiki*. The rest are a mix of memories of historical

---

<sup>1</sup><https://elar.soas.ac.uk/Collection/MPI1035101> (accessed March 23, 2018)

cultural practices, recent historical events, current issues, and procedural texts. Nine of the texts are from female speakers, the other 34 are from male speakers.

Barayin data is transcribed in an orthographic form based on the orthography proposed in Loves-trand (2012b). The graphemes are essentially IPA symbols with the exception of the palatal consonants. The voiced palatal stop /j/ is represented by <j>. The palatal nasal /ɲ/ is represented by <ɲ>. The palatal approximant /j/ is represented by <y>.

Although Barayin is a tonal language, the functional load of contrastive tone is relatively low. Minimal pairs are relatively infrequent. Many of the minimal pairs that exist are from different lexical categories, and can be distinguished in writing by context. The few cases where tone is marked in this orthography are in the pronominal system. In several places in the pronominal system, the second-person and third-person plural forms are distinguished by tone. The second-person plural form has a high tone, and is marked by an acute accent. The third-person plural form has low tone and is unmarked.

There are two words where a silent letter <i> is used to distinguish minimal pairs for tone. The first-person dual inclusive subject pronoun (SBJ.1DU.INCL) is written <iɲ>, but does not have a vowel phonologically or phonetically: /ɲ/. It is a minimal pair for tone with the first-person singular subject pronoun /ɲ/ (SBJ.1SG). The first-person dual inclusive suffix /ɲ/ is represented by <iɲ> as an orthographic convention for distinguishing the two pronouns instead of using a diacritic on a nasal consonant grapheme. The same principle applies to the associative preposition, <iɲ>, glossed ASOC, which is a minimal pair for tone with the oblique preposition, <ɲ>, glossed PREP.

## 5.2 Verbal morphology

Verbs in Barayin are bound roots which obligatorily take at least one suffix. There are no verbal prefixes. All verb stems end in a consonant. When an <i> or <u> appears at the end of a verb stem, it is an epenthetic vowel. There are two suffix slots in the verbal morphology template. The first suffix, adjacent to the root, encodes the tense, aspect and mood (TAM). There are four indicative TAM suffixes, two non-indicative TAM suffixes, and an infinitival/nominal suffix. Table 5.1 shows the verbal TAM suffixes for regular verbs, and for a minor class of verb stems that consist of a single consonant called “monoverbs” (Jungraitmayr and Tourneux 1990; Schuh 1998:77). There is one

notable dialectal difference in the corpus. The Giliya dialect has *-gi* as an Imperfective suffix that is not used in the Jalkiya dialect.

Table 5.1: Verbal TAM suffixes

<b>TAM</b>	<b>regular verbs</b>	<b>monoverbs</b>
Imperfective	STEM-eyi / STEM-gi	STEM-eyi / STEM-gi
Progressive	STEM-ga	STEM-ga
Perfective	STEM-a	STEM-aa
Perfect	STEM-e	STEM-etta
Subjunctive	STEM-u	STEM-aa
Hortative	STEM-ya	STEM-ya
Infinitive	STEM-o	STEM-ii

The labels for these suffixes, written with a capitalized first letter, are meant to refer to the general function of the suffix in an unmarked conversational context. However, the TAM forms have different functions in different contexts. The Imperfective suffix is the form used to talk about ongoing states or events, as well as habitual activities. However, speakers often choose to use the same Imperfective form for the mainline events of the narrative. When examples are extracted from these narratives, the free translation often does not reflect imperfective aspectual meaning.

These TAM suffixes always occur immediately following the verb stem and cannot co-occur. When followed by a pronominal suffix they are often suppletive or deleted, as shown in Table 5.2. Note that some of these suppletive TAM suffixes are homonyms with suffixes of a different TAM in another context (Table 5.1). For example, the suffix *-a* is a Perfective suffix when no pronominal suffix is present, a Perfect suffix when a third-person singular masculine direct object is present, and an Imperfective suffix when any other direct object pronoun suffix is present. Another thing to note is that when a polyverb takes a third-person singular masculine direct object suffix, the Imperfective form is marked by a floating mid tone (Lovestrand 2012b:61, 124).

In addition to the TAM suffixes, another common TAM construction is the Future construction, which also expresses deontic modality. This construction consists of a prepositional phrase headed by the oblique preposition *ŋ* followed by a verbal noun with the Infinitive suffix.

Table 5.2: TAM suppletion before a direct object suffix

		OBJ suffix (non-3.SG)	OBJ.3SG.M suffix
Progressive	Polyverb	STEM-Ø-OBJ	STEM-Ø-OBJ.3SG.M
Perfective			
Subjunctive	Monoverb	STEM-aa-OBJ	STEM-ii-OBJ.3SG.M
Hortative			
Imperfective	Polyverb	STEM-a-OBJ	STEM-[mid tone]-OBJ.3SG.M
	Monoverb	STEM-ega-OBJ	STEM-ii-OBJ.3SG.M
Perfect	Polyverb	STEM-e-OBJ	STEM-a-OBJ.3SG.M
	Monoverb	STEM-ee-OBJ	STEM-ee-OBJ.3SG.M

### 5.3 Pronouns

There are four primary paradigms of personal pronouns for different grammatical functions. These are called: independent pronouns, subject pronouns, (direct) object suffixes, and dative (or indirect object) suffixes. The last two are verbal suffixes, and have a dual function as pronouns and agreement markers (see Section 5.4). There is a fifth paradigm of personal pronouns that is also used for the function of direct object, but only for causative verbs. This paradigm is mostly identical to the regular direct object pronoun paradigm (Table 5.5).

Chadic languages most commonly have a personal pronoun system of nine categories including an inclusive-exclusive distinction in the first-person plural and distinct forms for masculine and feminine in the second- and third-person singular (Newman 2006:196). Barayin is one of a minority of Chadic languages that have a personal pronoun system of ten categories including a first-person dual inclusive (Lovstrand 2012a). The independent pronoun paradigm for Barayin is shown in Table 5.3.

The first-person dual inclusive and the first-person plural inclusive are always distinguished from one another by a morpheme *na* that appears in the plural form. This is called the “plural reference” marker, glossed PL.<sup>2</sup> The bimorphemic pronominal form is a residue of the historical process that created the first-person dual pronoun (Lovstrand 2018a). The bimorphemic nature of this pronoun

<sup>2</sup>I previously called this morpheme an *inclusive* marker (Lovstrand 2012b:158). This label is misleading since the dual pronoun is also inclusive, and because the marker has other uses outside of an inclusive context (Lovstrand 2018a).

Table 5.3: Independent pronouns in Barayin

	Singular	Dual	Plural
1	inu	aya (INCL)	aya=na (INCL)
		ane (EXCL)	
2	killa (M)	nílla	
	kella (F)		
3	kalla (M)	nilla	
	tilla (F)		

is most obvious in the subject pronoun paradigm. Subject pronouns occur before the verb without any subject agreement on the verb. The first-person plural inclusive subject pronoun is exceptional in that it is formed by a combination of a first-person dual inclusive pronoun form, *ij*, before the verb, and the marker *na* following the verb. This is demonstrated in the subject pronoun paradigm in Table 5.4.<sup>3</sup>

Table 5.4: Subject pronoun paradigm

1SG	ŋ d-eyi d-ii	I walk.
1DU.INCL	ij d-eyi d-ii	The two of us walk.
1PL.INCL	ij d-eyi= <b>na</b> d-ii	We all walk.
1PL.EXCL	ane d-eyi d-ii	We (not you) walk.
2SG.M	ki d-eyi d-ii	You (male) walk.
2SG.F	ke d-eyi d-ii	You (female) walk.
2PL	ní d-eyi d-ii	You all walk.
3SG.M	ka d-eyi d-ii	He walks.
3SG.F	ti d-eyi d-ii	She walks.
3PL	ni d-eyi d-ii	They walk.

The regular direct object suffixes, causative direct object suffixes, and dative (or indirect object) suffixes are listed in Table 5.5. A dative pronominal suffix can be followed by a third-person direct object pronoun, as in example 2 below. In addition to the personal pronoun suffixes, there is also a pronominal verbal suffix for other arguments, called an *oblique* suffix. This suffix is discussed in more detail in Section 6.6.1. It has various forms, and its referent can have a locative, temporal,

<sup>3</sup>The infinitival verb following the Imperfective verb in the examples is a “cognate complement” (Lovstrand 2012b:121).

Table 5.5: Verbal pronominal suffixes

	Direct object	Causative object	Dative
1SG	-nu	-gu	-aw
1DU.INCL	-ya	-ya	-aya
1PL.INCL	-ya=na	-ya=na	-aya=na
1PL.EXCL	-ne	-ne	-ane
2SG.M	-go	-go	-ago
2SG.F	-ge	-ge	-age
2PL	-íj	-giŋ	-aŋ
3SG.M	-ti	-tí	-eyi
3SG.F	-ga	-gi	-ati
3PL	-ŋ	-gá	-aga

comitative or instrumental role. In the same verbal slot in the verbal paradigm, there can also be a detransitivizing suffix *-jo* which can express passive, reflexive or reciprocal meaning.

## 5.4 Syntax

Barayin is generally, but not always SVO in its word order, as are most Chadic languages. Subjects normally occur immediately before the verb. An overt subject is not obligatory, and can be omitted in any case where the speaker deems the context clear enough for the hearer to discern the unstated subject. Direct and indirect object pronominals are suffixed to the verb. Direct and indirect object suffixes can have a pronominal function, as in examples 1 and 2.

- (1) Rama gom-e-ti  
 Rama hit-PRF-OBJ.3SG.F  
 Rama hit her. (Lovestrand 2012b:136)
- (2) Musa bed-aga-ti                      ta  
 Musa give-DAT.3PL-OBJ.3SG.M PART  
 Musa gave it to them. (Lovestrand 2012b:143)

Direct and indirect object suffixes can also occur when a co-referential lexical noun phrase follows the verb. In a type of differential object marking, direct object suffixes normally occur with a (co-referential) nominal direct object when the direct object is definite, but do not appear if the nominal direct object is indefinite, as in example 3.

- (3) a. Rama gom-a ta baṅa  
 Rama hit-PFV PART dog  
 Rama hit a dog.
- b. Rama gom-ga ta baṅa  
 Rama hit-OBJ.3SG.M PART dog  
 Rama hit the dog. (Lovestrand 2012b:136)

The predicate in a Barayin clause can be of any of the major lexical categories. Example 4 shows each of the different lexical categories functioning as a predicate. There is no copula or copular verb in Barayin.

- (4) a. **Verbal predicate**
- ka mot-e  
 SBJ.3SG.M die-PRF  
 He died. (Lovestrand 2012b:103, ex. 270)
- b. **Nominal predicate**
- nilla jalkiya ni  
 3PL Barayin DEM.3PL  
 They are Barayin. (Lovestrand 2012b:130, ex. 362)
- c. **Prepositional predicate**
- Musa ŋ maṅa  
 Musa PREP bush  
 Musa is in the bush. (Lovestrand 2012b:208, ex. 638)
- d. **Adjectival predicate**
- mijji wul-gu do  
 man kind-SG.M NEG  
 The man is not kind. (Lovestrand 2012b:184, ex. 546)
- e. **Adverbial (ideophonic) predicate**
- to dee-go tal do  
 COND father-POSS.2SG.M IDEO NEG  
 If your father is not responsible... (bva024.73)

Relative clauses in Barayin follow the head noun, as do all nominal modifiers. The relative clause begins with one of three clause-initial markers which agree in gender and number with the head noun: *ge* ‘SG.M’, *de* ‘SG.F’ or *ne* ‘PL’. Relative clauses often end with a demonstrative. When the head noun functions as the subject of the relative clause, there is normally no subject found in the

relative clause, as in example 5. Differential object marking is also found in relative clauses. When the relativized function is object, an object suffix occurs in the relative clause if the head noun is definite, as in example 6. If the relativized object head noun is indefinite, there is no object suffix on the verb in the relative clause, as in example 7.

(5) ka gi na nama ge gor-eyi maŋgo gi  
 SBJ.3SG.M DEM.SG.M BG child REL.SG.M buy-IPFV mango DEM.SG.M  
 This is the boy who bought a mango.

(6) nama de ŋ ep-a-ti tande di  
 child REL.SG.F SBJ.1SG punish-IPFV-OBJ.3SG.M yesterday DEM.SG.F  
 the girl that I punished yesterday

(7) nama ge ŋ ep-a tande gi  
 child REL.SG.M SBJ.1SG punish-PFV yesterday DEM.SG.F  
 a boy I punished yesterday (Lovstrand 2012b:189)

## Chapter 6

# Morphosyntax of Barayin SVCs

This chapter examines Barayin SVCs in light of the morphosyntactic features associated with SVCs cross-linguistically (Chapter 2), and also looks at language-specific issues about Barayin SVCs such as word order, morphology and argument structure. The functions and semantics of different types of Barayin SVCs are explored in Chapter 7. Throughout this chapter, it is shown that SVCs in Barayin meet the working definition of SVCs from Section 2.9.1. A simplified summary of the relevant criteria is:

1. The construction has more than one verb.
2. There is no construction-specific marker or linking morpheme.
3. TAM marking is “shared” or “agreeing”, however there may be restricted patterns of compatible but distinct TAM marking on each verb.
4. Only one negation marker can appear in the construction, and it can take wide scope over all verbs in the construction.
5. At least one of the arguments of each verb is co-referential with an argument of another verb.

The criteria for verbhood in Barayin is covered above as part of the introduction to Barayin grammar (Section 5.2). A verb in Barayin can be identified by its morphological status as a bound root that selects from a set of suffixes unique to verbs. Section 6.1 gives an overview of what verbs are used in different types of Barayin SVCs. In Section 6.2, SVCs are distinguished from superficially similar paratactic constructions through patterns regarding long distance dependencies between the

main verb in an SVC and its object. In Section 6.3, SVCs are further distinguished from paratactic constructions, as well as from other types of multiverb constructions, using scope of negation tests. SVCs only allow a single marker of negation with an obligatory wide scope. SVCs can also be distinguished from other types of multiverb constructions in Barayin by the fact that the verbs must be adjacent (Section 6.4). SVCs do not allow any type of linking marker. Tense-aspect marking on verbs in SVCs is discussed in Section 6.5. Section 6.6 covers argument structure and pronominal marking on verbs in SVCs. Finally, Section 6.7 gives further arguments for SVCs as a distinct construction type in Barayin by examining answer ellipsis in response to polar (yes/no) questions.

## 6.1 Composition: four semantic types of serial verbs

SVCs in Barayin are all of the “asymmetric” type. That is, they “...consist of one verb from a relatively large, open or otherwise unrestricted class, and another from a semantically or grammatically restricted (or closed) class” (Aikhenvald 2006b:21). In Barayin, it is always the first verb in a two-verb SVC (the serial verb, SV) that is restricted. The second verb (main verb, MV) is relatively unrestricted. The four types of SVCs, the type of serial verb they involve, are shown in Table 6.1.

Table 6.1: Restrictions on verbs in SVCs

Type	Serial verb(s)
Deictic SVC	<i>kol-o</i> ‘go’, <i>s-ii</i> ‘come’ or another deictic verb
Manner SVC	<i>gor-o</i> ‘run’ or another manner of motion verb
Stand SVC	<i>juk-o</i> ‘stand up’
Take SVC	<i>pid-o</i> ‘take’

The most common type of SVC is the Deictic SVC. Over 75% of SVCs in the corpus are of this type. In Deictic SVCs, the serial verb is nearly always one of the two basic deictic verbs, *kol-o* ‘go’ or *s-ii* ‘come’, and the main verb is unrestricted, as seen in examples 1 and 2.<sup>1</sup>

<sup>1</sup>Deictic SVCs in Barayin explicitly encode information about motion that is often left implicit in other languages. This creates a challenge for deciding what kind of free translation to give for examples of Deictic SVCs. Native Barayin speakers who provided translations into French either omitted the motion information or produced sentences of non-standard French that mirror the Barayin structure. (See Guillaume (2013:19, fn. 3) for a similar problem translating “associated motion” from a Bolivian language into Spanish, and Broadwell (2006:257) on translating Choctaw.) Partial omission of motion semantics is by no means abnormal in translation (Lane 2007; Slobin 1996). However, since Deictic SVCs are a major subject of this analysis, I have chosen a more explicit translation, even when it is somewhat unnatural.

(1) SV MV  
 ka kol-eyi d-eyi  
 SBJ.3SG.M go-IPFV kill-IPFV  
 He went [and] killed [something]. (bva305.16)

(2) SV MV  
 ni s-eyi t-eyi  
 SBJ.2PL come-IPFV eat-IPFV  
 They came [and] ate. (bva305.17)

In Manner SVCs, the serial verb is a manner of motion verb. In all seven instances of Manner SVCs that occur in the corpus, the serial verb is *gor-o* ‘run’, but other verbs (*d-ii* ‘walk’ and *wiir-o* ‘fly’) were accepted in elicitation. The main verb is normally a directional verb, as in 3, but can also be a non-motion verb as in example 4.

(3) SV MV  
 gor-e kol-e siidi  
 run-PRF go-PRF home  
 [He] ran (away) home. (bva404.26)

(4) SV MV  
 gor-u ep-aw-ti  
 run-SBJV grab-DAT.1SG=OBJ.3SG.F  
 Run [and] grab her for me! (bva404.31)

In a Stand SVC, the serial verb is *juk-o* ‘stand up’. The main verb is unrestricted.

(5) SV MV  
 ni juk-eyi gom-a-jo gom-o  
 SBJ.3PL stand.up-IPFV fight-IPFV-DETRZ fight-INF  
 They started fighting. (bva306.61)

(6) SV MV  
 kalla juk-eyi pidi-ga buno  
 3SG.M stand.up-IPFV take-OBJ.3SG.M flour  
 He took the flour. (bva406.13)

In a Take SVC, the serial verb is *pid-o* ‘take’. The main verb must be transitive, as in example 7.

---

Deictic SVCs are normally translated following the template: motion verb [and] main verb. The conjunction is in brackets to emphasize that the source text is not a coordinate structure.

- (7)           SV       MV  
ka       pid-a   t-ee-ga  
SBJ.3SG.M take-PFV eat-PRF-OBJ.3SG.M  
He took [and] ate it. (bva091.30)

There are a few examples in the corpus that appear to be SVCs with three verbs. Examples 8 and 9 have the (serial) verb *juk-o* ‘stand up’ followed by the (serial) verb *kol-o* ‘go’, and then a main verb. Example 10 has two deictic (serial) verbs, followed by a main verb.

- (8)           SV?           SV    MV  
ni       juk-eyi   kol-eyi dop-a-ŋ  
SBJ.3PL stand.up-IPFV go-IPFV find-IPFV-OBJ.3PL  
They went [and] found them. (bva306.7)

- (9)           SV?           SV    MV  
ŋ       juk-eyi   kol-eyi til-a-ŋ           jaar-a-tu  
SBJ.1SG stand.up-IPFV go-IPFV visit-IPFV-OBJ.3PL neighbor(Ar.)-PL-POSS.1SG  
I went [and] visited my neighbors (bva302.19)

- (10)          SV?       SV    MV  
ka       s-eyi   kol-eyi dopi-ga   giljim  
SBJ.3SG.M come-IPFV go-IPFV find-OBJ.3SG.M squirrel  
He came back [and] went out again [and] found the squirrel. (bva404.27)

It is not clear if these putative three-verb SVCs really constitute a single construction, or are rather a case of a single-verb clause juxtaposed to an SVC with no overt subject. The diagnostics for making this distinction are discussed in Sections 6.2 and 6.3. When these diagnostics were applied to three-verb SVCs, speakers’ judgments were inconsistent, and the results inconclusive. If such constructions exist, they are somewhat marginal in the grammar. Perhaps they are still a developing type of SVC, or are particularly context-sensitive and difficult to submit to syntactic tests in elicitation. Since the data on three-verb SVCs is inconclusive as to their status as a construction, they will be set aside in this analysis. However, the formal analysis of SVCs in Chapter 10 will show how they can be accounted for.

## 6.2 Long distance dependencies

Long distance dependencies are frequently mentioned in discussions of the syntax of SVCs. The main syntactic pattern of interest is one of “extraction” such that a serial verb intervenes between

the main verb and its object, which would appear adjacent to the main verb in an unmarked clause. The “extractability” of an object is not considered a feature of SVCs, but long distance dependencies are used to distinguish SVCs from superficially similar types of constructions in the same language.

For example, Jansen et al. (1978:133) use long distance dependencies to distinguish SVCs from a superficially similar structure of a verb followed by a prepositional phrase (Section 2.2.1). Verbs in Sranan cannot be morphologically distinguished from prepositions. The “extraction” test distinguishes verbs and prepositions syntactically. Verbs allow their object to be in a non-adjacent position, prepositions do not.

In a description of Yoruba SVCs, Stahlke (1970:79) uses long distance dependencies to distinguish SVCs from coordinate structures. SVCs allow the object of the main verb to occur in a non-adjacent position, separated from the main verb by a serial verb. Coordinated verb phrases in Yoruba do not allow a verb and its object to be separated by another verb. Many other linguists also use long distance dependencies to distinguish SVCs and coordinate structures (e.g., Baker 1989:514; Bisang 2009:276; Bradshaw 1993:145; Déchaine 1993:800; Francis and Matthews 2006:765). However, long distance dependencies are not a one-size-fits-all test for SVCs. It has been pointed out that in some languages there are constructions that are clearly distinct from SVCs which allow a verb and its object to be separated by another verb (Sebba 1987:99; Déchaine 1993:801; Haspelmath 2016:301).

For the purpose of the analysis of Barayin, long distance dependencies distinguish SVCs and other multiverb constructions from the coincidental juxtaposition of two verbs in a paratactic structure that does not form a single sentence. Paratactic structures that are superficially similar to SVCs regularly occur in Barayin because the subject of a clause is commonly omitted when the previous clause has the same subject. Barayin also uses relatively few sentential conjunctions. However, a paratactic structure does *not* allow the object of a verb to occur before a preceding verb in a long distance dependency. SVCs *do* allow a serial verb to occur between the main verb and its object when the object is relativized or an interrogative pronoun.

## 6.2.1 Relativization

The object of the main verb in an SVC can be the head of a relative clause, as in the Deictic SVCs in examples 11 and 12.

- (11) OBJ SV MV  
 suu ge ka kol-eyi t-eyi  
 meat REL.SG.M SBJ.2SG.M go-IPFV eat-IPFV  
 the meat that he went [and] ate
- (12) OBJ SV MV  
 suu ge ŋ kol-e mar-ga  
 animal REL.SG.M SBJ.1SG go-PRF hunt-[PRF]-OBJ.3SG.M  
 the animal I went [and] hunted

Example 13 is a **paratactic structure** superficially similar to a Take SVC, but with a semantic distinction. In example 13, the understood object of *pid-eyi* ‘take’ is an arrow, not the object of ‘shoot’. In a Take SVC, the understood object of ‘take’ must be the same as the object of the main verb (Section 7.3).

- (13) pid-eyi sodd-i-ga dudu  
 take-IPFV shoot-IPFV-OBJ.3SG.M antelope  
 [He] took [an arrow] [and] shot the antelope. (bva305.40)

By attempting to place the two verbs in a relative clause with the object of the second verb as the head, it becomes clear that this structure is distinct from an SVC. The relative clause in example 14 is either unacceptable, or has a significantly different (and bizarre) meaning. The head noun can only be interpreted as the thing taken into possession as well as the thing being shot. In contrast, the object of ‘take’ in example 13 is the (previously mentioned) arrow.

- (14) # dudu ge pid-eyi sodd-i-ga  
 antelope REL.SG.M take-IPFV shoot-IPFV-OBJ.3SG.M  
*for:* the antelope that [he] took [an arrow] [and] shot  
*possibly:* the antelope he took [and] shot

Relativization also distinguishes SVCs from constructions with a **finite sentential complement**. It is not possible for an argument of a finite sentential complement to be relativized. Example 15a is a sentence with a sentential complement. Example 15b is an ungrammatical attempt to relativize the

object of the verb in the embedded sentential complement. Likewise, the ungrammatical phrase in example 15b unsuccessfully attempts to relativize the subject of the sentential complement.

- (15) a.  $\eta$       wonn-eyi    Mariam    miŋ-ga      Musa  
 SBJ.1SG know-IPFV Mariam slap-OBJ.3SG.M Musa  
 I know that Mariam hit Musa.
- b. \* mijji ge       $\eta$       wonn-eyi    Mariam    miŋ-ga  
 man REL.SG.M SBJ.1SG know-IPFV Mariam slap-OBJ.3SG.M  
*for*: the man that I know Mariam hit
- c. \* mee    de       $\eta$       wonn-eyi (ti)      miŋ-ga      Musa  
 woman REL.SG.F SBJ.1SG know-IPFV SBJ.3SG.F slap-OBJ.3SG.M Musa  
*for*: the woman that I know hit Musa

In contrast, the object of an **infinitival verbal complement** can be relativized. In the following examples, the head noun is indexed by a possessive suffix on the infinitival verb. Possessive suffixes function as (personal) pronominal suffixes on infinitival verbs.

- (16) mijjo ge      ka      japp-a    gom-o-ji  
 person REL.SG.M SBJ.2SG.M want-PFV fight-INF-POSS.3SG.M  
 the person he wants to fight
- (17) immi ge      ti      wonn-eyi    gan-o-ji  
 sauce REL.SG.M SBJ.3SG.F know-IPFV make-INF-POSS.3SG.M  
 the sauce that she knows how to make
- (18) suu ge       $\eta$       kiss-eyi    mar-o-ji  
 animal REL.SG.M SBJ.1SG think-IPFV hunt-INF-POSS.3SG.M  
 the animal that I'm thinking about hunting

Just as seen with infinitival complements, the object of an infinitival verb in an **adverbial clause** can be relativized, as seen in the following examples.

- (19) mijjo ge       $\eta$       kol-eyi     $\eta$       buk-i-ji  
 person REL.SG.M SBJ.1SG go-IPFV PREP speak-INF-POSS.3SG.M  
 the person that I went to talk to
- (20) mee    de       $\eta$       s-eyi       $\eta$       omm-o-geti  
 woman REL.SG.F SBJ.1SG come-IPFV PREP marry-INF-POSS.3SG.F  
 the woman I came [here] to marry

- (21) mijjo ge        η        juk-eyi        η        buk-i-ji  
 person REL.SG.M SBJ.1SG stand.up-IPFV PREP speak-INF-POSS.3SG.M  
 the person that I stood up to talk to

In summary, a long distance dependency normally does not allow any finite verb to intervene between a relativized object and its verb in a relative clause. This is the case in both paratactic structures and constructions with a finite sentential complement. SVCs are exceptional in allowing a finite serial verb to occur between a main verb in a relative clause and its relativized object in a position before the serial verb.

## 6.2.2 Interrogative pronouns

In a simple one-verb sentence, when the object of the verb is an interrogative pronoun it can either occur *in situ* (following the verb) or in a sentence-initial position (before the subject). Words in angled brackets in this section represent alternate word order. Any one, and only one of the bracketed words must occur.<sup>2</sup>

- (22) <ma> Mariam miŋ-ga        <ma>  
 who    mariam slap-OBJ.3SG.M who  
 Who did Mariam hit?

In the same way, if the object of the main verb in an SVC is an interrogative pronoun, it can occur either *in situ* or in a sentence-initial position.

- (23)    SV        MV  
 <mo> ka    kol-eyi mar-eyi <mo>  
 what    SBJ.2SG.M go-IPFV hunt-IPFV what  
 What did he go [and] hunt?

- (24)    SV        MV  
 <mo> ki    s-eyi        t-eyi        <mo>  
 what    SBJ.2SG.M come-IPFV eat-IPFV what  
 What did you come [and] eat?

The same alternation is possible with a locative interrogative pronoun. In either position, the locative is understood in regards to the main verb, not the serial verb. In example 25, the locative

<sup>2</sup>The different positions of the interrogative pronoun presumably correlate with differences in information structure, which could be reflected in the English translation. However, not enough is known about information structure in Barayin in order to accurately reflect this difference in the translations.

cannot be interpreted as the source of the serial verb (Section 6.6.3). In example 26, the locative is the goal of the main verb, not the location of the stative serial verb.

(25)                               SV               MV  
 <alaŋ> ki           jaŋg-eyi   sul-eyi <alaŋ>  
 where SBJ.2SG.M descend-IPFV sit-IPFV where  
 Where did you come down [and] stay?

(26)                               SV               MV  
 <alaŋ> ka           juk-eyi   kol-eyi <alaŋ>  
 where SBJ.2SG.M stand.up-IPFV go-IPFV where  
 Where did he go?

Long distance dependencies between a verb and an interrogative argument are also allowed in constructions with a **finite sentential complement**. In examples 27 and 28, the object of the verb in the subordinate clause can appear in one of three positions: following the subordinate verb, before the subject of the subordinate clause, or before the subject of the matrix clause.

(27) <ma> ki           japp-a   <ma> Mariam   miŋ-ga           <ma>  
 who SBJ.2SG.M want-PFV who Mariam(F) slap-OBJ.3SG.M who  
 Who(SG.M) do you want Mariam to hit?

(28) <ma> ki           j-eyi   <ma> Burma   miŋ-a-ti           <ma>  
 who SBJ.2SG.M hear-IPFV who Burma slap-PFV-OBJ.3SG.F who  
 Who(SG.F) did you hear Burma hit?

The same pattern occurs in constructions with an **infinitival complement**. One difference is that the object of an infinitival verb must be marked with the oblique preposition when following the verb. When the object of an infinitival complement occurs in a sentence-initial position, it is no longer marked by the oblique preposition, as seen in the following examples.

(29) <mo> ni           japp-a   mar-o   <ŋ mo> ?  
 what SBJ.3PL want-PFV hunt-INF PREP what  
 What did they decide to hunt?

(30) <mo> ka           wonn-eyi   mar-o   <ŋ mo> ?  
 what SBJ.2SG.M know-IPFV hunt-INF PREP what  
 What does he know how to hunt?

(31) <ma> ki           kisseyi   buki   <ŋ ma> ?  
 who SBJ.2SG.M think-IPFV speak-INF PREP who  
 Who are you thinking about talking to?

In summary, when an argument is an interrogative pronoun, long distance dependencies are allowed between the main verb in an SVC and its object or locative argument. The same pattern is found in other multiverb constructions such as a construction with a finite sentential complement or an infinitival complement. This pattern does not distinguish SVCs from other types of multiverb constructions, but it does distinguish SVCs from coincidental parataxis which does not allow the object of one verb to occur before a verb from a preceding sentence.

### 6.3 Negation

SVCs in Barayin only allow one syntactic marker of negation. This correlates with the fact that no element (including a negation marker) is allowed between the two verbs of an SVC. The clause-final negation marker in an SVC takes scope over the entire construction, as in examples 32 and 33. Even though an SVC has two finite verbs, there is no ambiguity in the scope of a sentence-final negation marker. Negation must be understood to negate the entire construction—or to negate a single predicate composed of two verbs.

- (32)           SV           MV  
 ni    s-eyi    sul-eyi do  
 SBJ.3PL come-IPFV sit-IPFV NEG  
 They didn't come [and] stay.  
*not:* \*They came, but they did not stay.  
*not:* \*They didn't come, but they stayed.

- (33) SV    MV  
 kol-a wor-a ni    ni    do  
 go-PFV chat-PFV SBJ.3PL DEM.PL NEG  
 [She] didn't go [and] chat with them. (bva306.19)  
*not:* \*She went, but she didn't chat with them.  
*not:* \*She didn't go, but she chatted with them.

Scope of negation can help diagnose the difference between an SVC and a superficially similar **paratactic structure** of two unmarked juxtaposed independent clauses. Example 34 is identical to the SVC in example 32 except that a second subject pronoun appears between the two verbs. Even though this utterance contains two independent clauses, its meaning is indistinguishable from the SVC in example 35.

(34) ni s-eyi ni sul-eyi  
 SBJ.3PL come-IPFV SBJ.3PL sit-IPFV  
 They came, and they stayed.

(35) SV MV  
 ni s-eyi sul-eyi  
 SBJ.3PL come-IPFV sit-IPFV  
 They came [and] stayed.

The syntactic difference between the SVC in example 35 and the non-SVC in example 34 becomes clear when a sentence-final negation marker is added, as in examples 32 and 36. In the negated SVC in example 32, the scope of negation is over both verbs. When a second pronoun is present, as in example 36, the scope of negation can only be over the second verb. The interpretation of the sentence is that the activity represented by the first verb did occur, but the activity represented by the second verb did not.

(36) ni s-eyi ni sul-eyi do  
 SBJ.3PL come-IPFV SBJ.3PL sit-IPFV NEG  
 They came, but they didn't stay. (Lovestrand 2012b:216)

Scope of negation also distinguishes SVCs from other structures involving two finite verbs in Barayin. An utterance final-negation marker in a sentence with a **finite sentential complement** is ambiguous in scope. This ambiguity in scope likely correlates with a structural ambiguity. Either the negation marker is inside the sentential complement negating the verb of the subordinate clause, or it is in the main clause negating the matrix verb. This is illustrated in the following examples by brackets around the subordinate clause. The brackets either include the negation marker if the scope of negation is over the subordinate clause, or exclude the negation marker if the scope of negation is over the matrix verb.

In examples 37 and 38, a conjoined clause repeats one of the two verbs from the preceding biclausal sentence, but with a different subject. The conjoined clause facilitates a reading of the negation marker as taking scope over the verb that is repeated in the conjoined clause. This is because the conjunction creates an expectation of contrast between the negated verb and the positive verb in the conjunction. In example 37 the negation takes scope over the matrix verb. In example 38, negation takes scope over the subordinate verb.

(37) η wonn-eyi [ka kol-a] do wo Amma wonn-eyi  
 SBJ.1SG know-IPFV SBJ.3SG.M go-PFV NEG but Amma know-IPFV  
 I don't know if he left, but Amma knows.

(38) η wonn-eyi [ka kol-a do] wo Amma kol-e  
 SBJ.1SG know-IPFV SBJ.3SG.M go-PFV NEG but Amma go-PRF  
 I know that he didn't leave, but Amma left.

The same pattern is seen in the following pair of sentences.

(39) η j-aa je [ka kol-a] do wo Amma j-aa je  
 SBJ.1SG hear-PFV PART SBJ.3SG.M go-PFV NEG but Amma hear-PFV PART  
 I didn't hear that he left, but Amma heard [it/him].

(40) η j-aa je [ka kol-a do] wo Amma kol-e  
 SBJ.1SG hear-PFV PART SBJ.3SG.M go-PFV NEG but Amma go-PFV  
 I heard that he didn't leave, but Amma left.

This interpretation of semantic scope can be confirmed by a similar construction in example 41 in which the negation marker occurs immediately following the matrix verb. In this construction, the finite sentential complement is preceded by the conditional marker *to*. In this construction, negation can only be interpreted as taking scope over the matrix verb. It is acceptable to conjoin to this construction another clause which repeats the matrix verb with a different subject providing a natural contrast with the negated matrix verb. This parallels the interpretation of the scope of negation in examples 37 and 39.

(41) η wonn-eyi do [to ka kol-e] wo Amma wonn-eyi  
 SBJ.1SG know-IPFV NEG COND SBJ.3SG.M go-PRF but Amma know-IPFV  
 I don't know if he left, but Amma knows.

In the same construction, it is not acceptable to conjoin a clause which repeats the verb of the complement clause (with a different subject) following the negation marker. This is because the negation on the first verb creates an expectation of contrast in the following conjoined clause, but the conjoined clause and the negated clause do not share any common element to contrast. (Note that the English free translation is only acceptable with a stressed focus reading of 'Amma'.)

(42) # η wonn-eyi do [to ka kol-e] wo Amma kol-e  
 SBJ.1SG know-IPFV NEG COND SBJ.3SG.M go-PRF but Amma go-PRF  
*for:* I don't know if he left, but Amma left.

In constructions involving an **adverbial phrase** of a preposition and an infinitival verb (as in example 43a) negation takes scope over the closest verb. Structurally, a negation marker can occur either following the main verb before an adverbial prepositional phrase (as in example 43b) or in an utterance-final position (as in example 43c). In example 43b, with the negation marker immediately following the main verb, the interpretation is that the action of *s-eyi* ‘come’ did not take place. This entails that the activity predicated by the prepositional phrase will not take place either. In example 43c, with the negation marker following the prepositional phrase, the interpretation is that the action of *s-eyi* ‘come’ did take place, but it was for a different purpose than that expressed by the prepositional phrase.

- (43) a. ane            s-eyi        η    gan-o    η    kita  
           SBJ.1PL.EXCL come-IPFV PREP make-INF PREP work  
           We came to work. (Lovestrand 2012b:193)
- b. ane            s-eyi        do η    gan-o    η    kita  
           SBJ.1PL.EXCL come-IPFV NEG PREP make-INF PREP work  
           We didn’t come to work. (We stayed where we were.) (Lovestrand 2012b:194)
- c. ane            s-eyi        η    gan-o    η    kita do  
           SBJ.1PL.EXCL come-IPFV PREP make-INF PREP work NEG  
           We came, but not to work. (We came for something else.) (Lovestrand 2012b:195)

In summary, there is a clear difference in scopal properties between SVCs, paratactic structures, adverbial clauses and finite sentential complements. In an SVC, negation cannot narrowly scope over a single verb. In a paratactic structure and a sentence with an adverbial clause, negation can only scope over the closest verb. In a construction with a finite sentential complement, the scope of negation is ambiguous.

The situation is less clear in regards to constructions which involve an **infinitival complement**. Structurally, there is no way to directly negate an infinitival verb. This is one of the nominal properties of the infinitival verb (Lovestrand 2012b:184). The verbal meaning of the infinitive can only be negated as part of a larger constituent. In example 44, the sentence-final negation marker takes scope over the matrix verb *wonn-eyi* ‘know’. Unsurprisingly, it is not possible to negate the state of affairs expressed by the main verb while simultaneously asserting its complement.

- (44) *wonn-eyi buk-i nasarayan do*  
 know-IPFV speak-INF French NEG  
 I don't know how to speak French. (Lovestrand 2012b:196, ex. 590)

## 6.4 Distribution tests

The verbs in a Barayin SVC are always adjacent. In contrast, constructions that have a finite complement clause, an infinitival verbal complement or an adverbial phrase allow the verbs of the construction to be separated by an adverb (Section 6.4.1), a Perfective particle (Section 6.4.2), or the plural reference marker (Section 6.4.3).

### 6.4.1 Distribution of adverbs

The normal syntactic distribution of an adverb is either in a post-verbal position (following the direct object, but before negation and interrogative markers) or in a sentence-initial position (preceding the subject). An adverb cannot intervene between a verb and its direct object, but, as will be seen in the examples below, it can occur between a verb and a finite sentential complement, infinitival complement or adverbial clause. An adverb cannot occur between the two verbs of an SVC.

In examples 45 and 46, the adverb *tande* 'yesterday' occurs between the main verb and its **finite sentential complement**.

- (45) *ŋ duw-eyi tande Musa kol-e*  
 SBJ.1SG see-IPFV yesterday Musa go-PRF  
 I saw Musa leave yesterday.
- (46) *ni japp-a je tande ka kol-u*  
 SBJ.3PL want-PFV PART yesterday SBJ.3SG.M go-SBJV  
 They wanted him to leave yesterday.

In examples 47 and 48, the adverb 'yesterday' occurs between the main verb and its **infinitival complement**.

- (47) *ka japp-a je tande kol-o alan ?*  
 SBJ.3SG.M want-PFV PART yesterday go-INF where  
 Where did he want to go yesterday?

- (48) ka kot-a je tande kol-o ?  
 SBJ.3SG.M begin-PFV PART yesterday go-INF  
 Did he begin to leave yesterday?

In examples 49 and 50, an adverb can occur between the main verb and an **adverbial clause** with an infinitival verb.

- (49) ka kol-a ta tande η mar-o ?  
 SBJ.3SG.M go-PFV PART yesterday PREP hunt-INF  
 Did he go out to hunt yesterday?

- (50) ka s-aa ta tande η buk-i η ma ?  
 SBJ.3SG.M come-PFV PART yesterday PREP speak-INF PREP who  
 Who did he come to talk to yesterday?

In contrast to the examples above, the unacceptable examples 51 and 52 show that an adverb cannot occur between the two verbs of an **SVC**.<sup>3</sup>

- (51) \* ka s-eyi tande gan-eyi kita  
 SBJ.3SG.M come-IPFV yesterday make-IPFV work  
*for*: He came [and] worked yesterday.

- (52) \* ka kol-a tande mar-a je  
 SBJ.3SG.M go-PFV yesterday hunt-PFV PART  
*for*: He went hunting yesterday.

In order to add an adverb to an SVC, the adverb must occur in either a sentence-initial or sentence-final position.

- (53) SV MV  
tande ka s-eyi gan-eyi kita  
 yesterday SBJ.3SG.M come-IPFV make-IPFV work yesterday  
 He came [and] worked yesterday.

- (54) SV MV  
 ka kol-a mar-a je tande  
 SBJ.3SG.M go-PFV hunt-PFV PART yesterday  
 He went [and] hunted yesterday.

<sup>3</sup>Strictly speaking, two juxtaposed finite verbs are ambiguous between an SVC and two independent clauses in which the second has no overt subject (Sections 6.2 and 6.3). This predicts that examples 51 and 52 are not ungrammatical if they are read as two separate sentences. However, in this case, the speaker did not accept a paratactic reading, presumably due to semantic or pragmatic factors.

#### 6.4.2 Distribution of Perfective particles

There are two encliticizing particles that can only follow a verb in Perfective TAM: *je* and *ta*, both glossed PART. The meaning or function of these Perfective particles is not clear. They do not appear to have any TAM-related meaning. Speakers do not always have clear intuitions about the acceptability of the presence or absence of these particles. This is especially true when discussing a sentence in isolation, but is also true when discussing the use of the particles in transcribed texts. Syntactically, the Perfective particles are among the few words that can occur between a verb and a direct object. The particles nearly always occur immediately following the verb. In examples 55 and 56, the particle *je* occurs following a matrix verb and before a **finite sentential complement**.

(55) η j-aa je ka kol-a  
SBJ.1SG hear-PFV PART SBJ.3SG.M go-PFV  
I heard that he left.

(56) ni japp-a je ka kol-u  
SBJ.3PL want-PFV PART SBJ.3SG.M go-SBJV  
They want him to go.

A Perfective particle can also intervene between a verb and its **infinitival complement**, as seen in examples 57 and 58.

(57) η kot-a je waan-i  
SBJ.1SG begin-PRF PART fall.asleep-INF  
I began to fall asleep.

(58) golmo kot-a je ar-o  
house begin-PRF PART burn-INF  
The house began to burn.

In examples 59 and 60, the Perfective particle *ta* occurs following a verb and before an **adverbial clause** with purpose meaning in which an infinitival verb is preceded by an oblique preposition.

(59) ka kol-a ta η mar-o η mo  
SBJ.3SG.M go-PFV PART PREP hunt-INF PREP what  
He went in order to hunt what?

- (60) ka s-aa ta ŋ buk-i ŋ ma  
 SBJ.3SG.M come-PFV PART PREP speak-INF PREP who  
 Who did he come to talk to?

A Perfective particle cannot occur between the two verbs of an SVC. In the SVC in example 61, attempting to insert a Perfective particle between the verbs is unacceptable.

- (61) SV MV  
 ka kol-a (\*je/\*ta) mar-a je wosugo  
 SBJ.3SG.M go-PFV PART hunt-PFV PART far  
 He went far away [and] hunted.

In example 61, the adverb *wosugo* ‘far’ prevents an interpretation of the utterance as a paratactic structure. Without the locative adverb, the Perfective particle intervening between the two verbs would not render the utterance unacceptable. It would result in the paratactic structure in example 62 which is superficially similar to an SVC. The adverb *wosugo* ‘far’ forces an SVC interpretation because it requires a predicate with a path of motion. In the SVC interpretation, the adverb scopes over the whole construction which includes the path of motion from the serial verb. In a paratactic interpretation, the adverb can only scope over the second verb since semantic scope cannot cross sentence boundaries. The adverb *wosugo* is not compatible with the non-motion verb *mar-o* ‘hunt’, therefore, the paratactic interpretation is not available in example 61.

- (62) ka kol-a ta mar-a je mo  
 SBJ.3SG.M go-PFV PART hunt-PFV PART what  
 He left, and what did he hunt?

### 6.4.3 Distribution of the plural reference marker

The plural reference marker *na*, glossed PL, is a peculiar part of the Barayin reference system which has several related functions. One function is that it is one part of the bimorphemic first-person plural inclusive pronoun (Section 5.3). In the subject pronoun paradigm, the pronominal form *iŋ*, which is identical to the first-person dual inclusive subject pronoun, occurs before the verb, and the plural reference marker *na* occurs after the verb to create a first-person plural inclusive subject pronoun. In this context, a plural reference marker can occur between a finite verb and an infinitival verb in an **adverbial clause**, as in example 63.



- (67) a. SV MV  
 min      Duŋgur    na ni      s-eyi      jel-eyi    Alaw  
 from(Ar.) Doungour BG SBJ.3PL come-IPFV put-IPFV Alaw  
 From Doungour, they came [and] put [people] at Alaw.
- b. SV MV  
 Alaw na ni      kol-eyi jel-eyi    Wore  
 Alaw BG SBJ.3PL go-IPFV put-IPFV Wore  
 From Alaw, they went [and] put [people] at Wore. (bva303.8-9)

Because of the suppletion of TAM forms before a pronominal suffix (Section 5.2), the TAM values can be identical on both verbs of an SVC even when the forms are different, as in example 68.

- (68) SV MV  
 abba      sek      kol-eyi    ŋak-a-ti  
 father(Ar.) chief(Ar.) go-IPFV seek-IPFV-OBJ.3SG.F  
 The chief went [and] looked for her. (bva403.34)

Suppletive TAM marking can also result in cases where the TAM of the main verb is underspecified or ambiguous. In example 69, the main verb TAM marking is suppleted to null. This form of the verb is used for Progressive, Perfective and Subjunctive TAM. In this context, it is presumably a Perfective verb, matching the TAM of the serial verb.

- (69) SV MV  
 ni      s-aa      dopi-ti      badi    de      Balal  
 SBJ.3PL come-PFV find-OBJ.3SG.F valley REL.3SG.F Balili  
 They came [and] found the valley of Balili. (bva303.10)

There are some relatively rare cases where the verbs of an SVC do not have concordant TAM forms. The most common pattern of non-concordant TAM marking, occurring eleven times in the corpus, is for the first verb to have a Perfective form and the second verb to have a Perfect form. This can be seen in the Stand SVC in example 70, the Manner SVC in example 71 and the Deictic SVC in example 72.

- (70) SV MV  
 ka      juk-a      t-e-ŋ      ni      ni      panjira-ju  
 SBJ.3SG.M stand.up-PFV eat-PRF-OBJ.3PL SBJ.3PL DEM.3PL sesame-POSS.1SG  
 He ate my sesame seeds. (bva404.35)

(71) SV MV  
 gor-a s-etta siidi  
 run-PFV come-PRF home  
 [He] ran home. (bva405.249)

(72) SV MV  
 ni kol-a nar-a-ga Besso  
 SBJ.3PL go-PFV seek-PRF-OBJ.3SG.M Besso  
 The went [and] found Besso. (bva304.5)

It is not the case that serial verbs are always in the Perfective form when the main verb is in the Perfect form. The more common pattern is for an SVC with a Perfect main verb to also have a Perfect serial verb, as in examples 73 and 74 (see also example 3 in Section 6.1).

(73) SV MV  
 nilla na juk-e kol-e siidi  
 3PL BG stand.up-PRF go-PRF home  
 They went home. (bva405.95)

(74) SV MV  
 kalas ní kol-e dop-a-ga na ...  
 thats.it(Ar.) 2PL go-PRF find-PRF-OBJ.3SG.M BG  
 So once you've gone [and] found it... (bva401.57)

In elicited examples testing all possible combinations of TAM, the only other non-concordant TAM pair accepted was Imperfective followed by Progressive, as in examples 75 and 76.<sup>4</sup> In all cases of non-concordant marking, it is not clear that the marking of the serial verb makes any difference to the tense-aspect meaning.

(75) SV MV  
 ka kol-eyi topi-ga  
 SBJ.3SG.M go-IPFV enter-PROG  
 He goes [and] enters.

(76) SV MV  
 doo ge ka juk-eyi kol-ga gi  
 place REL.SG.M SBJ.3SG.M stand.up-IPFV go-PROG DEM.SG.M  
 the place where he is going

<sup>4</sup>One speaker of the Giliya dialect also once used a combination of Imperfective followed by Perfective, and once Imperfective followed by Perfect. These patterns are not possible in the Jalkiya dialect, and have not been tested with other speakers of the Giliya dialect, so it is not known if these are exceptional or productive patterns for Giliya speakers. Since the primary dialect under investigation is the Jalkiya dialect, these possible differing patterns from Giliya will be left aside.

There is one other place in the language where these same pairs of TAM (Perfective-Perfect and Imperfective-Progressive) pattern together. The four suffixes in these two pairs are the only four indicative TAM suffixes. Of the four indicative TAM suffixes, only two can normally be negated: Imperfective and Perfective. Speakers have a strong intuition that in order to negate a verb with Progressive TAM marking, it must be changed to Imperfective TAM marking, and in order to negate a verb with Perfect TAM marking, it must be changed to Perfective TAM. This is illustrated in Figure 6.1.

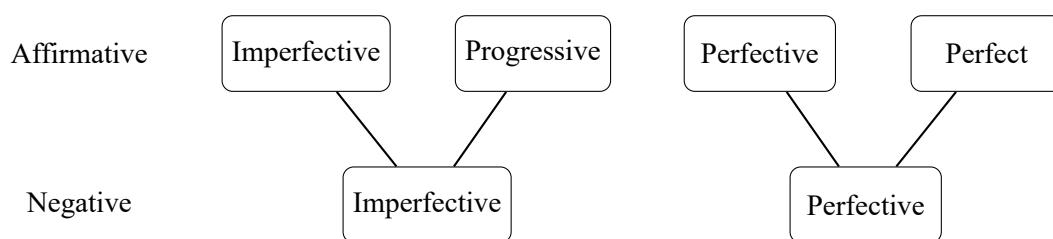


Figure 6.1: TAM marking under negation

Intuitively, these patterns suggest that the Progressive is a more specific form (or subtype) of Imperfective, and that the Perfect is a subtype of the Perfective. Cross-linguistic data from Chadic languages supports the intuition that the Imperfective and Perfective TAM should be considered more basic forms in some sense. Verbal systems in Chadic languages are generally characterized as making a basic binary distinction between perfective and imperfective forms (Jungrathmayr 1977; Newman 2006; Wolff 1977, 1979). In some Chadic languages, additional TAM markers can be attached to these forms to create composed TAM values. It is possible that the Progressive and Perfect TAM suffixes, as they exist in Barayin today, are amalgamations of a former bimorphemic TAM marking system. The Progressive suffix would be historically derived from the Imperfective plus some secondary marking. The Perfect would be historically derived from the Perfective plus some other secondary marking.

The idea of a basic-to-specific semantic relationship between Imperfective and Progressive is also supported by more general typological and diachronic descriptions of TAM systems around the world. Conceptually, and often morphologically, progressive is frequently treated as a subtype of imperfective which only describes dynamic events, excluding habitual and stative interpretations (Comrie 1976:25, 32-40; Bybee et al. 1994:138).



There is one other example of what appears to be a non-finite SVC. In example 81, two infinitival verbs follow a preposition *ta*. Each of the infinitival verbs has a Possessive suffix indexing the person and number values of the agent. This is a common construction with a single infinitival verb, but in this case there are two verbs, and the first verb, *juk-o* ‘stand up’, is used as a serial verb in finite Stand SVCs. It is not clear what the function of this construction is, but it is potentially an example of a nominalized SVC.

- (81)                                  SV?                                  MV?  
 kalas        ta    juk-o-jiŋ                                  kol-o-jiŋ  
 thats.it(Ar.) PURP stand.up-INF-POSS.2PL go-INF-POSS.2PL  
 So that’s your departure. (bva401.81)

## 6.6 Argument structure and pronominal suffixes

SVCs in Barayin are restricted to a single subject and a single object. The subject and object appear in the same position as they would if the two verbs in an SVC were replaced with one. The main verb assigns semantic roles to the subject and object (if transitive) as it would if there was no serial verb present. The serial verb can also predicate something about the argument expressed by the subject. In this sense, the subject is shared by the two verbs. In the case of Take SVCs, the serial verb also predicates something about the object of the main verb. In other words, in Take SVCs, the object is also semantically shared.

However, serial verbs do not select semantic arguments in an SVC in the same way that the full lexical forms of the same verb select arguments as the sole verb in a clause. It cannot be assumed that the argument structure of a serial verb and that of its full lexical counterpart are identical. The first difference is that serial verbs cannot take any sort of pronominal suffix (Section 6.6.1). The second is that serial verbs do not appear to place any selectional restriction on the subject of an SVC (Section 6.6.2). Third, the interpretation of the semantic role of locative arguments in an SVC is determined by the semantics of the main verb, not the serial verb (Section 6.6.3).

### 6.6.1 Pronominal marking

In Barayin, an SVC can have only one subject. It occurs before the first verb. It is common cross-linguistically for a language that expresses a pronominal subject as a separate word, and not an affix, to only allow a single expression of the subject in an SVC, as opposed to marking the subject on each verb (Aikhenvald 2006b:42).

Pronominal verbal suffixes (non-subject) are also marked only once in Barain SVCs. Any pronominal suffix occurs on the main verb of an SVC. A serial verb cannot take a pronominal suffix. This restriction can be demonstrated with the Oblique suffix, one of the few pronominal suffixes that can occur on both transitive and intransitive verbs. An Oblique suffix references constituents with instrumental, comitative, locative and temporal semantic roles. There are two forms of the Oblique suffix, each with two variants. One form is only attested with Perfective TAM and has the variants *-ro* and *-do*. The other form has only been attested with Perfect TAM and has the two variants *-eggo* and *-uggo*.<sup>5</sup> The oblique suffix commonly occurs in a relative clause referencing the head noun. In example 82, the head noun is the goal of the verb in the relative clause. The oblique suffix *-uggo* refers to the head noun.

- (82) doo ge ka kol-uggo gi  
place REL.SG.M SBJ.3SG.M go-OBL.PRF DEM.SG.M  
the place where he went

When an SVC occurs in a similar relative clause, the oblique suffix can occur on the main verb, but not the serial verb. In example 83a, the oblique suffix on the main verb indexes the head noun which is the location where the activity associated with the main verb takes place. Example 83b shows that the oblique suffix cannot occur on the serial verb.

- (83) a. SV MV  
doo ge ka kol-e dow-uggo gi  
place REL.SG.M SBJ.3SG.M go-PRF sleep-OBL.PRF DEM.SG.M  
the place where he went [and] slept

---

<sup>5</sup>The alternation between the the forms of the Oblique suffixes is not phonologically conditioned. The variation appears to be determined by the preference of the speaker, some speakers preferring one form over the other.

- b.                                      SV            MV  
 \*doo ge            ka            kol-uggo    dow-e  
 place REL.SG.M SBJ.3SG.M go-OBL.PRF sleep-PRF  
*for*: the place where he went [and] slept

The same pattern is seen in the examples in 84. The head noun has the relativized function of direct object, and is indexed by a direct object suffix on the main verb. Example 84a, where the serial verb only has a TAM suffix, is grammatical, but example 84b, where the serial verb has an oblique suffix, is ungrammatical.

- (84) a.                                      SV            MV  
 atibe ge            ka            kol-a    gow-a-ga  
 ash REL.SG.M SBJ.3SG.M go-PFV gather-PRF-OBJ.3SG.M  
 the ashes that he went [and] gathered

- b.    SV            MV  
 \*atibe ge            ka            kol-do    gow-a-ga  
 ash REL.SG.M SBJ.3SG.M go-OBL.PFV gather-PRF-OBJ.3SG.M  
*for*: the ashes that he went there [and] gathered

The Take SVC is the only type of SVC in Barayin with a serial verb that is transitive in its use as a sole verb in a clause. However, in an SVC, the verb ‘take’ cannot have a pronominal object suffix. Example 85a is a Take SVC. The object is a pronominal suffix on the main verb. In the ungrammatical example 85b, the object is co-indexed as a pronominal subject on the serial verb, as well as the main verb. Example 85c indexes the direct object on the serial verb and a different argument, the recipient, on the main verb, but this is also ungrammatical.

- (85) a.                                      SV            MV  
 ka            pid-a    bed-a-ga                                      ŋ    tilla  
 SBJ.3SG.M take-PFV give-PRF-OBJ.3SG.M PREP 3SG.F  
 He took [it and] gave it to her.

- b.    SV            MV  
 \* ka            pidi-ga            bed-a-ga  
 SBJ.3SG.M take-OBJ.3SG.M give-PRF-OBJ.3SG.M  
*for*: He took [it and] gave it.

- c.    SV            MV  
 \* ka            pidi-ga            bed-aw  
 SBJ.3SG.M take-OBJ.3SG.M give-DAT.1SG  
*for*: He took [it and] gave it to me.

While the serial verb in an SVC is an independent verb with an obligatory TAM suffix, it cannot take any pronominal suffixes.

### 6.6.2 Selectional restrictions on the subject

If serial verbs had the same argument structure as their non-serial counterparts, it would be expected that any selectional restriction that a verb places on its subject when the verb is used on its own in a simple clause would also hold when the verb form is used in an SVC. However, this does not appear to be the case. Example 86a shows that when the verb *kol-e* ‘go’ is used on its own in a simple clause, it does not normally allow an inanimate thing as its subject. In contrast, the verb *gal-e* ‘fall’ is naturally accepted when the subject is inanimate, as in example 86b. If this pattern of grammaticality judgments can be explained by selectional restrictions, then when both of these verbs combine in an SVC there is potential for a conflict. Example 86c shows that the verb ‘go’ in a Deictic SVC does not necessarily require that the subject of the SVC be animate. Any selectional restriction in an SVC is determined by the main verb. This is consistent with the analysis that a serial verb does not contribute to the argument structure in an SVC in the same way that it does when it is the sole verb in a clause.

- (86) a. \* koo kol-e  
           jar go-PRF  
           *for:* The jar went.
- b. koo gal-e  
           jar fall-PRF  
           The jar fell.
- c.     SV     MV  
           koo kol-e gal-e  
           jar go-PRF fall-PRF  
           The jar fell (in a path of motion away from the deictic center).

In a similar fashion, the verb *juk-e* ‘stand up’ as the sole verb in a clause cannot take an inanimate subject unless there is a metaphorical reading, as in example 87a. In the SVC in example 87b, ‘stand up’ as a serial verb is perfectly acceptable with an inanimate subject. In fact, the metaphorical reading is not possible in example 87b. It appears that the serial verb ‘stand up’ does not contribute to the argument structure of an SVC.

- (87) a. baya-ji           juk-e  
           field-POSS.3SG.M stand.up-PRF  
           His field is fertile again.
- b.                   SV           MV  
           baya-ji           juk-e       ar-e  
           field-POSS.3SG.M stand.up-PRF burn-PRF  
           His field burnt up.

### 6.6.3 Locatives in SVCs

The interpretation of the semantic role of a locative in Barayin is not normally determined by a preposition or any other marking on the locative constituent. The semantics of locatives are normally determined by the predicate (Lovestrand 2012b:172-176). For example, a locative that is a proper noun is unmarked. When an unmarked locative proper noun follows a stative (non-motion) verb, as in example 88a, it is interpreted as the location where the event occurs. If the verb is a motion verb indicating direction towards the deictic center, as in example 88b, the locative can be interpreted as the goal or source, depending on the context. With a motion verb indicating motion away from the deictic center, as in example 88c, the locative is interpreted as the goal of the path of motion.

- (88) a. ka           sul-e   Mongo  
           SBJ.3SG.M stay-PRF Mongo  
           He lives in Mongo.
- b. ka           s-eyi   Balal  
           SBJ.3SG.M come-IPFV Balili  
           He comes to/from Balili.
- c. ka           kol-eyi Balal  
           SBJ.3SG.M go-IPFV Balili  
           He goes to Balili.

The relationship between the verbs and locatives in the above examples can be analyzed as a case of subcategorization. Since most verbs are non-motion verbs, the static location is an unmarked default interpretation. The goal and source interpretations are lexically determined. How are locative arguments interpreted when a non-motion main verb and a motion serial verb combine in a Deictic SVC? If the locative were to be interpreted as having a role other than that of stative lo-

cation, that would be evidence that the serial verb alters the argument structure of the predicate. However, it turns out that locatives in this situation are only interpretable as the stative location of the state or activity predicated by the main verb. The motion semantics of the serial verb are added to the predicate in a way that does not modify the argument structure of the main verb.

Example 89 is a Deictic SVC with the motion serial verb *s-eyi* ‘come’ and the stative main verb *mar-eyi* ‘hunt’. The locative proper noun *Balili* is the location where the state or activity of the non-motion verb takes place. Since the goal of the path of motion and the location of the activity of the main verb are identical, the crucial point here is that the source interpretation is not available. If the motion verb in this SVC had the same argument structure that it has when it occurs on its own in an independent clause (as in example 88b), it would be expected that the source interpretation would be available.

- (89)           SV           MV  
           ka       s-eyi     mar-eyi balal  
           SBJ.3SG.M come-IPFV hunt-IPFV Balili  
           He came and hunted at Balili. (*not* he came from Balili and hunted)

The same pattern is true of the motion verb *jang-eyi* ‘descend’. The verb ‘descend’ follows the same pattern as the verb ‘come’, and adds a vertical dimension (high to low) to the path of motion. The location in these examples, Balili, is a village located in a valley up in a mountain of the same name. Because of the elevated location of the village, the locative in example 90 is most naturally interpreted as the source of the path of motion. It is much more natural to think of someone coming down the mountain from the village, than it would be to think of the rare situation when someone hiking in the rocks above the village descends into the village. Despite the fact that the source interpretation is strongly favored in this context, it is still not a possible interpretation of an SVC with ‘descend’ as a serial verb, as seen in example 91. This indicates that the motion verb ‘descend’ in an SVC does not have the same argument structure that it does when it occurs on its own in an independent clause (example 90).

- (90) ka       jang-eyi     Balal  
       SBJ.3SG.M descend-IPFV Balili  
       He came down from Balili.

- (91)           SV           MV  
ka       jaŋg-eyi   mar-eyi Balal  
SBJ.3SG.M descend-IPFV hunt-IPFV Balili  
He came down [and] hunted at Balili. (*not*: He came down from Balili and hunted)

The interpretation of locative arguments in Manner SVCs provides further evidence that the argument structure of an SVC is determined by the main verb. A manner of motion verb as the sole verb in a clause cannot take a source or goal argument, as seen in examples 92a and 93a. The Manner SVC provides a way to combine manner of motion and a goal, as in examples 92b and 93b.

- (92) a. \* ane           gor-gi   Rukum  
          SBJ.1PL.EXCL run-IPFV Roukoum  
*for*: We ran to Roukoum.
- b.           SV       MV  
ane       gor-gi   kol-gi   Rukum  
SBJ.1PL.EXCL run-IPFV go-IPFV Roukoum  
We ran to Roukoum.
- (93) a. \* ane       dee-gi   (ŋ/iŋ)   Andi  
          SBJ.1PL.EXCL walk-IPFV (PREP/ASOC) Andi  
*for*: We walked to Andi.
- b.           SV       MV  
ane       dee-gi   see-gi   Andi  
SBJ.1PL.EXCL walk-IPFV come-IPFV Andi  
We walked to Andi.

## 6.7 Answer ellipsis

This section contains data that corroborates the syntactic evidence that SVCs are distinct from other types of multiverb constructions in Barayin, and gives evidence that the final verb in an SVC is semantically the head of the construction. Polar questions were created with different types of multiverb constructions, and speakers were asked about the acceptability of responses that omit one of the verbs of the multiverb construction.<sup>6</sup> In response to a polar question with a finite sentential

<sup>6</sup>In most cases, interrogative mood is indicated by an intonational pattern that lengthens the final vowel and raises its tone. This is indicated by a question mark in the orthographic representation. In other cases, the question is formed with a sentence-final interrogative marker.

complement or an infinitival complement, the second (subordinate) verb is normally elided. In contrast, in response to a polar question with an SVC, the second verb (main verb) cannot be elided, but the serial verb can be elided.<sup>7</sup>

Examples 94a and 95a are polar questions with a **finite sentential complement**. The responses to these polar questions, examples 94b and 95b, can (and normally would) elide the entire sentential complement. This pattern holds whether the response is affirmative or negative.

- (94) a. ki        wonn-eyi Burma t-aa    je    ?  
           SBJ.2SG.M know-IPFV Burma eat-PFV PART  
           Q: Do you know that Burma ate?
- b. ee wonn-eyi (ka        t-aa    je)  
           yes know-IPFV SBJ.2SG.M eat-PFV PART  
           A: Yes, I know (that he ate).
- (95) a. ki        japp-a    ka        s-aa    η    bonte    ?  
           SBJ.2SG.M want-PFV SBJ.2SG.M come-PFV PREP tomorrow  
           Q: Do you want him to come tomorrow?
- b. ee η        japp-a    (ka        s-aa    η    bonte)  
           yes SBJ.1SG want-PFV SBJ.2SG.M come-PFV PREP tomorrow  
           A: Yes, I want (him to come tomorrow).

The same pattern is seen with **infinitival complements**. The infinitival verb is not normally repeated when responding to a question involving an infinitival complement.

- (96) a. ki        japp-a    t-ii    ?  
           SBJ.2SG.M want-PFV eat-INF  
           Q: Do you want to eat?
- b. η        japp-a    (do)  
           SBJ.1SG want-PFV NEG  
           A: I do. (I don't.)
- (97) a. ki        wonn-eyi buk-i    nasarayaη ?  
           SBJ.2SG.M know-IPFV speak-INF French  
           Q: Do you know how to speak French?
- b. η        wonn-eyi do  
           SBJ.1SG know-IPFV NEG  
           A: I don't.

<sup>7</sup>In another type of ellipsis test, Meyerhoff (2001:255) shows that the first verb in SVCs in Bislama cannot be elided in a coordinate structure.

In SVCs, the first verb (the serial verb) can be elided, but not the second verb. This is evidence that the second verb is not a semantic complement of the first in these constructions. Rather, the second verb is the semantic head, modified by the first. Examples 98a and 99a are polar questions with SVCs. In the affirmative responses in examples 98b and 99b, the second verb (main verb) cannot be omitted. The sentences would be grammatical, but they would not be an appropriate response to the question. In example 99b, it is possible to omit the serial verb in the response. The same pattern applies to the negative response in example 99c. The first verb can be omitted, but not the second.

- (98) a.           SV     MV  
 ki       kol-eyi t-eyi ?  
 SBJ.2SG.M go-IPFV eat-IPFV  
 Q: Did you go [and] eat?
- b.               SV     MV  
 ee η       kol-eyi t-eyi  
 yes SBJ.1SG go-IPFV eat-IPFV  
 A: Yes, I went [and] ate.
- (99) a.           SV           MV  
 ki       juk-a       buη-a   je ?  
 SBJ.2SG.M stand.up-PFV swim-PFV PART  
 Q: Did you swim?
- b.               SV           MV  
 ee η       (juk-a)    buη-a   je  
 yes SBJ.1SG stand.up-PFV swim-PFV PART  
 A: Yes, I swam.
- c.               SV           MV  
 aa η       (juk-a)    buη-a   je do  
 no SBJ.1SG stand.up-PFV swim-PFV PART NEG  
 A: No, I didn't swim.

The same pattern is seen in answer ellipsis involving Manner SVCs and Take SVCs.

- (100) a.           SV     MV  
 ka       gor-a s-etta sane  
 SBJ.3SG.M run-PFV come-PRF Q  
 Did he come running?

- b.           SV    MV  
ka       (gor-a) s-aa   do  
SBJ.3SG.M run-PFV come-PFV NEG  
He didn't come (running).
- c. # ka       gor-a   do  
      SBJ.3SG.M run-PFV NEG  
He didn't run. (*Inappropriate response to example 100a.*)
- (101) a.           SV    MV  
ka       pid-a   t-ee-ga           sane  
SBJ.3SG.M take-PFV eat-PRF-OBJ.3SG.M Q  
Did he take and eat it?
- b.           SV    MV  
ka       (pid-a) t-ii-ga           do  
SBJ.3SG.M take-PFV eat-PFV-OBJ.3SG.M NEG  
He didn't (take and) eat it.
- c. ? ka       pid-a   do  
      SBJ.3SG.M take-PFV NEG  
He didn't take it. (*Unnatural response to example 101a.*)

The first verb of an SVC can be omitted in response to a polar question. This is because the second verb is the semantic head of the construction. This contrasts with the other multiverb constructions in which the first verb (matrix verb) is the semantic head, and the second verb is a semantic complement that can be omitted in answer ellipsis.

## 6.8 Conclusion

Throughout this chapter it is shown that Barayin SVCs exhibit features that are associated with the pretheoretical umbrella concept of serialization. Although serial verbs are somewhat morphologically and semantically defective, their root forms are verbal and they take TAM suffixes that are only used with verbs. They are a subclass of the lexical category of verb.

Verbs in an SVC are both finite, and they agree in their TAM values. The apparent exceptions to this can be analyzed as cases of underspecified agreement, where the serial verb has a TAM marker with a value that is compatible with, but less specific than the TAM value of the main verb.

There is no coordinator, conjunction or construction-specific linking morpheme in SVCs in Barayin. In fact, the verbs of an SVC cannot be separated by anything. Only a single negation marker can occur in an SVC, and it takes scope over the whole predicate including both verbs.

The second verb of a Barayin SVC is semantically the main verb. The argument structure and links to grammatical relations are determined by the main verb, not the serial verb. Pronominal suffixes can only occur on the main verb. In answer ellipsis, the serial verb can be elided, but not the main verb.

This chapter has established what morphological and syntactic properties identify SVCs as a construction type in Barayin. Chapter 7 looks at the differences between types of SVCs, which are primarily semantic. The four types of SVC presented are Deictic SVCs, Manner SVCs, Stand SVCs and Take SVCs.

## Chapter 7

# Semantics of SVCs in Barayin

This chapter describes the meanings and functions of Barayin SVCs with an emphasis on the most common type, Deictic SVCs (Section 7.1). Deictic SVCs normally indicate movement prior to the activity or state predicated by the main verb. However, if the main verb is also a motion verb, the path of motion indicated by the serial verb can be simultaneous with the motion of the main verb. The expression of prior motion is particularly common in tracking the position of participants in a narrative. It is also used with a main verb meaning ‘bring’ to express the complex path semantics of a FETCH event.

Manner SVCs provide a strategy for combining a manner of motion verb with a locative argument, but are also used in other contexts to augment the description of an activity with manner information (Section 7.2). Take SVCs indicate that the patient argument is taken into possession by the agent before the activity of the main verb takes place (Section 7.3).

There are several possible interpretations of the meaning of Stand SVCs which correspond to the polysemy of the verb *juk-o* ‘stand up’ as the sole verb in an independent clause (Section 7.4). The most common meanings of *juk-o* are a change of posture (‘stand up’), a change of location (‘leave’), an inchoative meaning (‘begin’), or a more general meaning signaling a change in the discourse structure (‘then’). This type of serialization is also common in Arabic.

Section 7.5 briefly presents a pre-verbal adverb that has grammaticalized from a former serial verb, *sul-o* ‘sit’.

## 7.1 Deictic SVCs

The most common type of Deictic SVC expresses movement to or from a deictic center prior to the state or activity indicated by the main verb. However, as shown in Section 7.1.1, if the main verb in a Deictic SVC is also a motion verb, there is an ambiguity between a sequential and simultaneous interpretation. The expression of prior motion in a Deictic SVC has two common functions. One is to track the relative location of participants in a narrative (Section 7.1.2). The other is to combine with a verb meaning ‘bring’ to express the complex path semantics of *FETCH* events.

Deictic SVCs typically use the serial verbs *kol-o* ‘go’ (motion away from the deictic center) and *s-ii* ‘come’ (motion towards the deictic center). However, there are also examples in the corpus of a few other directional verbs in the serial verb position of a Deictic SVC, such as *tad-o* ‘go up’ in example 1 and *dekul-o* ‘go around’ in example 2.

- (1)
- |  |  |    |            |            |                     |
|--|--|----|------------|------------|---------------------|
|  |  | SV |            | MV         |                     |
|  | lulle  | na | tad-o      | tad-eyi    | dop-a-ti            |
|  | insect(sp.)                                      | BG | go.up-IPFV | go.up-IPFV | find-IPFV-OBJ.3SG.F |
|  | The insect went up [and] found her. (bva405.120) |    |            |            |                     |

- (2)
- |   |  |               |      |      |             |
|---|--|---------------|------|------|-------------|
| SV  |  |               |      | MV   |             |
| dekil-eyi   |  | dow-eyi       | η    | ara  | bay rok     |
| go.around-IPFV  |  | lie.down-IPFV | PREP | path | again again |
| [He] goes around [and] lies down on the path again. (bva031.37) |  |               |      |      |             |

In elicitation, speakers also accepted *jang-o* ‘go down’ as a serial verb in a Deictic SVC, as in example 3.

- (3)
- |  |                                   |           |              |          |  |
|--|-----------------------------------|-----------|--------------|----------|--|
|  |                                   | SV        |              | MV       |  |
|  | alaη                              | ki        | jang-eyi     | sul-eyi  |  |
|  | where                             | SBJ.2SG.M | go.down-IPFV | sit-IPFV |  |
|  | Where did you go down [and] stay? |           |              |          |  |

### 7.1.1 Prior and simultaneous motion

Over 90% of the Deictic SVCs in the corpus have a prior motion interpretation. The change of location associated with the serial verb takes place before the activity or state predicated by the main verb. This interpretation is particularly clear in SVCs where the main verb predicates a state

that normally requires a fixed location. The main verbs, *dow-e* ‘sleep’ in example 4 and *sul-e* ‘sit’ or ‘live’ in example 5, cannot be interpreted as overlapping with the motion. The motion expressed by the deictic serial verb takes place before the state or activity predicated by the main verb.

(4)                   SV    MV  
 ti           kol-a dow-e   ŋ   gergeti   siidi  
 SBJ.3SG.F go-PFV sleep-PRF OBL POSS..3SG.F home  
 She went [and] slept in her own hut. (bva306.21)

(5)                               SV        MV  
 wo ane                   s-etta    sul-e  
 but SBJ.1PL.EXCL come-PRF sit-PRF  
 But we moved here (lit., came sat). (bva300.6)

The main verb in a Deictic SVC can also be a motion verb. In this case there is potential for ambiguity between a prior motion interpretation (a sequence of two paths of motion), or a simultaneous interpretation (both verbs express movement along the same path). The clearest cases of a prior motion interpretation in a Deictic SVC with two motion verbs are those in which the serial verb and the main verb express diametrically opposed paths of motion.

There are two verbs that express the idea of moving with an object: *koor-o* ‘take away’, which expresses a path away from the deictic center, and *seer-o* ‘bring here’, which expresses a path toward the deictic center. In example 6, the serial verb *kol-o* ‘go’ expresses a path of motion away from the deictic center, and the main verb *seer-o* ‘bring here’ expresses a path of motion towards the deictic center.<sup>1</sup> The only possible interpretation is that there are two paths of motion, first away and then towards the deictic center. Deictic SVCs of this type are further discussed in Section 7.1.3.

(6)                   SV    MV  
 ki           kol-u   saar-u           puttuwi  
 SBJ.2SG.M go-SBJV bring.here-SBJV leaf  
 Go [and] bring some leaves. (bva091.205)

There are other contexts where a Deictic SVC with a motion main verb can only be given a simultaneous interpretation. In example 7 (repeated from Section 6.6.2), the inanimate subject *koo* ‘jar’ cannot be understood to be moving along a path before it falls. Rather, the downward motion

<sup>1</sup>The verb *seer-o* ‘bring here’ is morphologically irregular. Its root form is *saar-* in most finite forms of the verb.

predicated by the main verb, *gal-e* ‘fall’, is understood to be happening on a path of motion away from the deictic center.

- (7)           SV    MV  
 koo kol-e gal-e  
 jar go-PRF fall-PRF  
 The jar fell (in a path of motion away from the deictic center).

There are only a handful of clear-cut examples in the corpus of Deictic SVCs with a simultaneous interpretation. In example 8, the context is that the subject (children) have already gathered their neighbors’ goats, and are now leading them out to pasture. In this context, it is not possible to understand that the boys first ‘go out’, then ‘take away’ the goats. Since they are already in possession of the goats, the ‘going out’ and the ‘taking away’ must be occurring simultaneously.

- (8)           SV           MV  
 ni gus-eyi kor-a-gá           ŋ maŋa  
 SBJ.3PL go.out-IPFV take.away-IPFV-OBJ.3PL PREP bush  
 They leave [and] take them into the bush. (bva039.46)

Example 9 has a similar interpretation. In the context, the subject of the clause is two people who have gone out to seek food. Having found food, they bring it back to their village. It is not possible that they first ‘go back’ and then ‘bring here’ since they already have the food in their possession, and the place they are returning to is the deictic center.

- (9)           SV           MV  
 ni laaw-eyi seer-a-gi  
 SBJ.3PL go.back-IPFV bring.here-IPFV-OBJ.3SG.M  
 They returned [and] brought it. (bva403.58)

The distinction between a prior and simultaneous motion interpretation is not always clear. There are ten examples in the corpus of Deictic SVCs with the main verb *nar-o* ‘seek’, such as example 10. In these constructions, it could either be said that the subject leaves the deictic center before seeking, or that the subject is seeking as they go away from the deictic center.

- (10)           SV    MV  
 ŋ kol-eyi nar-eyi nopuno-ju  
 SBJ.1SG go-IPFV seek-IPFV goat-POSS.1SG  
 I go [and] look for a goat. (bva026.27)

### 7.1.2 Prior motion in narratives

Deictic SVCs in Barayin can be used in narrative texts to track the location of participants. This can be illustrated with examples from two texts. The first text is a monologue tracing the founding of each of the major Barayin villages from the time of the Barayin people's first migration southward to the Melfi area. The story was recorded in the village of Balili, a village located in the valley of a mountain. At one point in the story, there are nine consecutive sentences with a Deictic SVC (excluding the parenthetical comment in example 11i). These sentences are meant to be a chronological list of the founding of Barayin villages.

- (11) a. SV    MV  
 kakkireŋ juk-eyi        na ni        kol-eyi jel-eyi mijjo dogo Botiki  
 there    stand.up-IPFV BG SBJ.3PL go-IPFV put-IPFV person until Botiki  
 From there they went [and] put someone as far as Botiki.
- b. SV        MV  
 ni        juk-eyi        min Botiki na, ni        s-eyi        jel-eyi ŋ    Dũngur  
 SBJ.3PL stand.up-IPFV from Botiki BG SBJ.3PL come-IPFV put-IPFV OBL Dũngur  
 They went out from Botiki, and they came [and] put someone in Dũngur.
- c. SV        MV  
 min Dũngur na, ni        s-eyi        jel-eyi Alaw  
 from Dũngur BG SBJ.3PL come-IPFV put-IPFV Alaw  
 From Dũngur, they put someone at Alaw.
- d. SV        MV  
 Alaw na, ni        kol-eyi jel-eyi Wore  
 Alaw BG SBJ.3PL go-IPFV put-IPFV Wore  
 From Alaw, they went [and] put someone in Wore.
- e. SV        MV  
 Wore na, ni        kol-eyi jel-eyi Bose  
 Wore BG SBJ.3PL go-IPFV put-IPFV Bose  
 From Wore, they went [and] put someone at Bose.
- f. SV        MV  
 Bose na, ni        kol-eyi jel-eyi Bela  
 Bose BG SBJ.3PL go-IPFV put-IPFV Bela  
 From Bose, they went [and] put someone at Bela.
- g. SV        MV  
 ŋ    Bela na, ni        s-eyi        jel-a-ti Mebra  
 OBL Bela BG SBJ.3PL come-IPFV put-IPFV Mebra  
 From Bela, they came [and] put someone at Mebra.

- h. SV MV  
 min Mebra na, ni kol-eyi jel-eyi mejere Dakro  
 from Mebra BG SBJ.3PL go-IPFV put-IPFV people Dakro  
 From Mebra, they went [and] put some people at Dakro.
- i. dakk-i well-a-ti Betuwe  
 foot-POSS.3SG.M call-IPFV-OBJ.3SG.F Betuwe  
 The foot of Dakro is called Betuwe.
- j. SV MV  
 min Betuwe na, ni kol-eyi jel-eyi balli-ti de Mohol  
 from Betuwe BG SBJ.3PL go-IPFV put-IPFV side-POSS.3SG.F REL Mohol  
 From Betuwe, they went [and] put someone next to Mohol. (bva303.27-37)

The nine Deictic SVCs in this passage alternate between two serial verbs, *kol-o* ‘go’ and *s-ii* ‘come’. The choice of serial verb is determined by whether the location of the action described by the main verb takes place closer to or farther from the location of the narrator (in Balili) relative to the previous action. The location of the narrator serves as a deictic center. If carrying out the action in the narrative requires movement farther away from the deictic center relative to where the previous action was carried out, a Deictic SVC with ‘go’ describes that action. If carrying out the action requires movement towards the deictic center, a Deictic SVC with ‘come’ describes the action. This tracking of the relative location of events is illustrated in Figure 7.1.

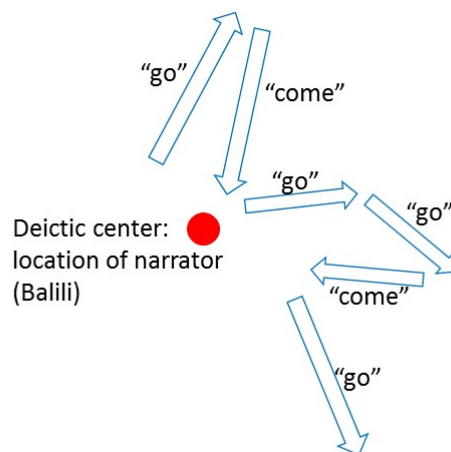


Figure 7.1: Illustration of movement expressed by Deictic SVCs in “History” text

The use of a Deictic SVC in this context is not grammatically required. This construction allows a speaker to overlay specific locative information on events in a narrative, but the speaker can also

choose to omit that information. Immediately preceding the nine Deictic SVCs in example 11 are the four sentences in 12. These sentences use the same main verb, *jel-o* ‘put’, as in the Deictic SVCs in example 11, but without a serial verb. One reason for omitting the locative information could be the relative proximity of the locations where these events occur. Gumi, Mosso and Tutuba (Melfi) are less than an hour from each other by foot.

- (12) a. ni      jel-eyi   mijjo   Gumi, well-a-ŋ           Gumi-ya  
           SBJ.3PL put-IPFV person Gumi call-IPFV-OBJ.3PL Gumi-PL  
           They put someone in Gumi. They called them Gumiya.
- b. ni      jel-eyi   mijjo   Mosso, ni      well-a-ŋ           Mosso-ya  
           SBJ.3PL put-IPFV person Mosso SBJ.3PL call-IPFV-OBJ.3PL Mosso-PL  
           They put someone in Mosso. They called them Mossoya.
- c. ni      jel-eyi   mijjo   Tutuba, ni      well-a-ŋ           Tutuba-ya  
           SBJ.3PL put-IPFV person Tutuba SBJ.3PL call-IPFV-OBJ.3PL Tutuba-PL  
           They put someone in Tutuba. They called them Tutubaya. (bva303.21-26)

A second text shows that the deictic center of a Deictic SVC is not always the location of the speaker. This text is a traditional folktale which offers an explanation for why humans and other carnivores do not live and work together. Near the beginning of the story, immediately following the introduction of all the characters, a gathering place is introduced, shown in example 13.

- (13) ni      ep-eyi      doo-jiga      paniŋ  
           SBJ.3PL gather-IPFV place-POSS.3PL together  
           They gathered together in their place. (bva305.9)

This gathering place becomes the deictic center for the next episode of the story, example 14. Actions that require movement away from the gathering place are encoded in a Deictic SVC with the verb ‘go’. Actions that require movement towards the gathering place are encoded in a Deictic SVC with ‘come’. The two sentences without a Deictic SVC, examples 14c and 14e, both have main verbs that express motion away from the deictic center.

- (14) a.           SV      MV  
           duwa kol-eyi d-eg-aga           suu  
           lion go-IPFV kill-IPFV-DAT.3PL animal  
           The lion went [and] killed an animal for them.



The Deictic SVCs in example 14 create a rhythm of movement away from and towards the deictic center. This pattern gives a sense of spatial cohesion to this opening episode in the narrative. The type of deictic movements expressed in this passage are illustrated in Figure 7.2.

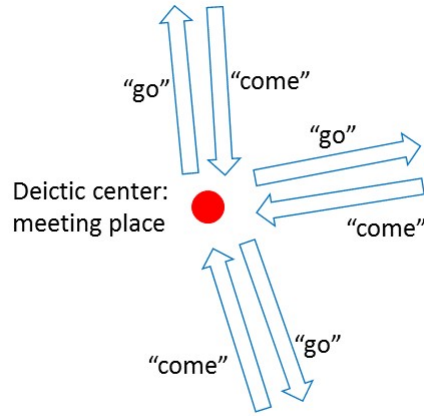


Figure 7.2: Illustration of movement expressed by Deictic SVCs in “Carnivores” text

The passages in examples 11 and 14 illustrate how a speaker can choose to use Deictic SVCs to make implicit information explicit throughout a portion of discourse. The meaning of Deictic SVCs is anchored to a relative deictic center assumed by the speaker and inferred by the hearer. The relative deictic center in example 11 is the location of the narrator. The relative deictic center in example 14 is the animals’ meeting place.

The relative deictic center can shift in a discourse. A striking example of this occurs in example 15 from the same narrative as example 11. At this point in the narrative, the Barayin have reached the foot of the mountain of Balili, the same mountain where the narrator sits telling the story, and are ready to climb it in order to establish a new village.

- (15) a. mejer-a-tiga      na sina   na juk-eyi      na naa  
 people-PL-POSS.3PL BG some BG stand.up-IPFV BG QUOT.3PL  
 Then some of our people said,
- b.                    SV      MV  
 ane      kol-u   duw-ga      jeedo      ge      luwa ka      gi  
 1PL.EXCL go-SBJV see-OBJ.3SG.M mountain REL.SG.M up    SBJ.3SG.M DEM  
 “We should go see the mountain up there.”

- c.           SV           MV  
 ni       s-eyi       duw-ga       jeedo       luwa ka       gi  
 SBJ.3PL come-IPFV see-OBJ.3SG.M mountain up   SBJ.3SG.M DEM.SG.M  
 They came [and] saw the mountain up here... (bva303.7-8)

The clause in example 15b is reported speech. The people express their intention to climb the mountain using a Deictic SVC with the serial verb ‘go’. The deictic center in this clause is the location of the speakers. They are moving away from this deictic center as they ascend into the mountain. In example 15c, the narrator states that the people have done as they intended. This is also stated with a Deictic SVC. However, in this clause, the serial verb is ‘come’. The narrator has shifted the deictic center back to himself (at Balili), and describes the travelers as moving towards his position.

### 7.1.3 Prior motion and FETCH events

There is a prominent pattern in Deictic SVCs where the serial verb *kol-o* ‘go’ is followed by the main verb *seer-o* ‘bring here’. There are nine cases of this type of Deictic SVC in the corpus, including examples 16 and 17. There are no examples of the converse, that is, a deictic serial verb *s-ii* ‘come’ followed by a main verb *koor-o* ‘take away’. The other four examples of Deictic SVCs with the main verb *koor-o* ‘take away’ or *seer-o* ‘bring here’ can all be interpreted as simultaneous motion, as in examples 8 and 9 in Section 7.1.1.

- (16)           SV    MV  
 ti       kol-a sar-a       de       paniŋ  
 SBJ.3SG.F go-PFV bring.here-PFV REL.F.SG one  
 She goes [and] brings one back. (bva082.35)

- (17)           SV    MV  
 ŋ       kol-eyi ser-a-gá  
 SBJ.1SG go-IPFV bring.here-IPFV-OBJ.3PL  
 I go [and] bring it here. (bva026.22)

The reason that the combination of *kol-o* ‘go’ and *seer-o* ‘bring here’ is a relatively common type of Deictic SVC is that it encodes a salient event: *FETCH*. Schalley (2003) divides *FETCH* events into three parts: *GO*, *TAKE* and *COME*. An agent leaves a point of reference, takes some object into possession, and returns to the point of reference.

Languages differ in the lexical and morphosyntactic means use to express a FETCH event. In some languages, there is a single verbal lexeme ‘fetch’ that conflates all three parts of the event: GO, TAKE and COME. At the other extreme is a strategy where three verbs ‘go’, ‘get’ and ‘come’ can be used in an SVC to express FETCH. This type of SVC is mentioned in the very first publication to describe SVCs. Riis (1854:103-104) notes that Akan uses the “very frequent expressions: *Fa bera*, ‘Take, come’, i.e. ‘Bring’, – and *Ko fa bera*, ‘Go, take, come’, i.e. ‘Fetch’, e.g. *Ko fa ensu bera*, ‘Fetch water’.” Barayin belongs to a group of languages that use a strategy that conflates the TAKE and COME subevents into one verb, *seer-o* ‘bring here’, and combines that verb in an SVC with another that expresses the GO subevent, *kol-o* ‘go’.

Example 18 is an exceptional way of expressing a FETCH event that occurs in a monologue, but it is at best a marginal, if not ungrammatical sentence. Speakers find the sentence comprehensible, but do not fluently reproduce it, and cannot productively modify the sentence. Even the speaker from the original recording was not confident about its grammaticality. That being said, this example is still striking for the way it expresses FETCH.

- (18)           SV?   SV?       MV  
           ni     kol-eyi s-eyi     gow-ga            suu-ga  
           SBJ.3PL go-IPFV come-IPFV gather-OBJ.3SG.M meat-POSS.3PL  
           They went [and] gathered their meat [and] came back. (bva305.65)

In example 18, there is a series of three finite verbs. The first two verbs are deictic, giving the appearance of a Deictic SVC with two serial verbs. The three verbs correspond to the three subevents of FETCH: GO, COME and TAKE, and the only interpretation given for this sentence in context is a FETCH event. What is striking is that the verbs in example 18 are not in temporally-iconic word order. In the temporal order of the event, TAKE precedes COME, but in the linear order of verbs, ‘come’ precedes ‘take’.

There are no other Deictic SVCs in Barayin that suggest that a deictic verb before a main verb can express motion subsequent to the event of the main verb. Deictic SVCs can only have prior or simultaneous motion interpretations. One possible explanation for this unusual sentence is that the speaker unintentionally swapped the order of verbs, but since all of the subevents of a salient FETCH event are expressed, hearers are able to accommodate the anomalous structure, and provide a comprehensible interpretation in context.

## 7.2 Manner SVCs

Manner SVCs have a manner of motion serial verb. The manner semantics are interpreted as simultaneous to the activity of the main verb. All eight Manner SVCs that occur in the corpus have the serial verb *gor-o* ‘run’. It is often followed by a directional main verb, as in examples 19 and 20. In these cases, the semantics of Manner SVCs are the same as what are cross-linguistically called directional SVCs (Section 3.1.2).

(19)           SV     MV  
           ka       gor-eyi s-eyi  
           SBJ.3SG.M run-IPFV come-IPFV  
           He ran back. (bva305.56)

(20)           SV     MV  
           kalla joo gor-e tad-e luwa η itti η doo-ji  
           3SG.M FOC run-PRF go.up-PRF above PREP tree PREP place-POSS.3SG.M  
           He ran up into the tree. (bva031.70)

The linear order of the verbs in a Manner SVC is fixed. When a speaker was asked about switching the order of the verbs in a Manner SVC with directional meaning, as in example 21, only the prior motion Deictic SVC interpretation was accepted.<sup>2</sup>

(21)           SV     MV  
           ? ane       kol-e gor-e  
           1PL.EXCL go-PRF run-PRF  
           ? We went [and then] ran.  
           *not:* We went away running.

In elicitation sessions, speakers also accepted Manner SVCs with *d-ii* ‘walk’ or *wiir-o* ‘fly’ as a serial verb, as in examples 22 and 23.

(22)           SV     MV  
           doo d-aa     s-aa     do  
           FOC walk-SBJV come-SBJV NEG  
           Don’t come walking over here!

---

<sup>2</sup>Note that when the main verb in a Deictic SVC is a motion verb, there is normally an ambiguity between a simultaneous interpretation and a sequential interpretation (Section 7.1.1). It is not clear why the simultaneous interpretation was not accepted here. Perhaps the obvious alternative of using a Manner SVC to express the same meaning was so salient to the speaker that the Deictic SVC could not be accepted.



This type of grammaticalized interpretation of ‘run’ is not possible in Barayin. In examples 26 through 28, a Manner SVC was constructed where the main verb predicates a state which is more likely to be done quickly than done while running. The examples appear to be syntactically well constructed, as a language consultant was able to find an interpretation without correcting the examples, but the interpretations were semantically odd to the point of being unacceptable. The reaction to example 27b was: *Quelqu’un ne peut pas dormir en courant*, ‘You can’t sleep while running’. Although the speaker found the ‘run’ interpretation unacceptable, he did not instead interpret the verb as meaning ‘quickly’, nor did he attempt to interpret the running of the serial verb and the activity of the main verb as sequential actions. These interpretations are not possible in a Manner SVC.

- (26) a. ka            tee-gi    iṅo  
           SBJ.3SG.M eat-IPFV *boule*  
           He ate *boule*.
- b.                    SV        MV  
       # ka            gor-gi    tee-gi    iṅo  
           SBJ.3SG.M run-IPFV eat-IPFV *boule*  
       # He ate *boule* while running. (*not* He ate *boule* quickly.)
- (27) a. ka            waan-e  
           SBJ.3SG.M sleep-PRF  
           He fell asleep.
- b.                    SV        MV  
       # ka            gor-e    waan-e  
           SBJ.3SG.M run-PRF sleep-PRF  
       # He ran while he fell asleep. (*not* He fell asleep quickly.)

In example 28, the speaker accepted the sentence, but only with a manner of motion interpretation. To express that someone died quickly, the ideophonic adverbial is used instead, as in example 28b.

- (28) a.                    SV        MV  
           ka            gor-e    mot-e  
           SBJ.3SG.M run-PRF die-PRF  
           He died while running. (*not* He died quickly.)
- b. ka            mot-e    peŋ peŋ  
           SBJ.3SG.M die-PRF IDEO IDEO  
           He died quickly.

A final remark related to the semantics of Manner SVCs is that serialization is not the only strategy speakers use for combining manner of motion and path information. Two independent juxtaposed sentences can also express different parts of a single, simple path of motion. The examples 29 through 31 were elicited by having the speakers watch a video clip of someone moving either towards or away from a camera, then performing an activity (in this case, sitting down). The motion expressed by the verb in the first clause (‘walk’ or ‘approach’) is understood to occur at the same time as the path of motion expressed by the serial verb of the Deictic SVC in the following sentence. The presence of the subject pronoun in each clause indicates a clause boundary between the two motion verbs (Section 6.3).

- (29) SV    MV  
ka        dee-gi    ka        kol-a    sul-e  
SBJ.3SG.M walk-IPFV SBJ.3SG.M go-PFV sit-PRF  
He walks. He went [and] sat down. (bva004.3)
- (30) SV        MV  
ka        dee-gi    ka        s-etta    sul-e  
SBJ.3SG.M walk-IPFV SBJ.3SG.M come-PRF sit-PRF  
He walks. He came [and] sat down. (bva004.4)
- (31) SV        MV  
ka        nett-eyi    wonto ka        s-aa        sul-e    wonto  
SBJ.3SG.M approach-IPFV close SBJ.3SG.M come-PFV sit-PRF close  
He comes close. He came [and] sat down close by. (bva006.4)

The same pattern is seen in example 32 from a transcribed folktale. The first clause (delimited by the background marker *na*) expresses a manner of motion that takes place simultaneously with the path expressed by the serial verb in the following clause.

- (32) SV        MV  
Barka-Jan-Jan na gor-eyi na kol-eyi dow-eyi    ŋ    ara  
BJJ                    BG run-IPFV BG go-IPFV lie.down-IPFV PREP path  
BJJ runs, goes [and] lies down on the path. (bva031.29)

### 7.3 Take SVCs

Take SVCs are the rarest type in the corpus. There is only one clear example of a Take SVC in the corpus.

- (33)           SV       MV  
ka       pid-a   t-ee-ga  
SBJ.3SG.M take-PFV eat-PRF-OBJ.3SG.M  
He took [and] ate it. (bva091.30)

More examples confirming the existence of Take SVCs were elicited from speakers. Note that in examples 35 and 36, the interrogative pronominal object of the main verb can appear in a position before the subject, as in other SVCs (Section 6.2).

- (34)           SV       MV  
Mamat pid-a   kor-gi=je  
Mamat take-PFV take.away-OBJ.3SG.M=PART  
Mamat took [it and] carried it away.

- (35)           SV       MV  
mo Mamat pid-a   d-ee-ga  
what Mamat take-PFV eat-PRF-OBJ.3SG.M  
What did Mamat take [and] kill?

- (36)           SV       MV  
<mo> Mamat pid-a   t-ee-ga           <mo>  
what Mamat take-PFV eat-PRF-OBJ.3SG.M what  
What did Mamat take [and] eat?

Cross-linguistically, ‘take’ verbs are common in instrumental SVCs where the object of ‘take’ is the instrument of a following verb (Section 3.6.1). However, they can also have other functions in SVCs cross-linguistically. As noted in Section 3.1, the verb ‘take’ is also commonly combined with motion verbs to express concepts like ‘bring’ and ‘fetch’ which do not have an instrumental component. The verb ‘take’ is also used in causative SVCs such as in Yoruba (Section 3.6.3). Lefebvre (1991b) proposes a unified account of different types of ‘take’ serialization in Fon (Niger-Congo, Gbe), as does Campbell (1996:91-96) for ‘take’ serialization in Akan. Shluinsky (2017) provides an overview of three different uses of ‘take’ in SVCs in Kwa languages.

Take SVCs in Barayin differ from more well-known types of ‘take’ SVCs in two ways. Semantically, the serial verb *pid-o* ‘take’ retains the meaning of acquiring or transfer of possession that is often lost in ‘take’ SVCs in other languages. Secondly, in Barayin the serial verb *pid-o* ‘take’ does not form a constituent with an object noun phrase or pronoun. As discussed in Section 6.6.1, serial verbs cannot have a pronominal suffix of any kind, as seen in example 37.

- (37)                   SV                   MV  
 \* ka           pidi-ga           bed-a-ga  
           SBJ.3SG.M take-OBJ.3SG.M give-PRF-OBJ.3SG.M  
*for*: He took it [and] gave it.

Further elicitation tests indicate that the serial verb ‘take’ cannot be directly followed by a direct object. Example 38a is superficially similar to a Take SVC, but with an object following ‘take’. In example 38b it can be seen that this utterance does not have the same syntactic properties as SVCs. Negation cannot take scope over the entire construction (Section 6.3). Speakers found example 38b to be unnatural and difficult to interpret.

- (38) a. pid-u   iño   t-ii-ga  
           take-SBJV *boule* eat-SBJV-OBJ.3SG.M  
           Take some *boule*! Eat it!
- b. # pid-u   iño   t-ii-ga                   do  
           take-SBJV *boule* eat-SBJV-OBJ.3SG.M NEG  
           ? Take some *boule*! Don’t eat it!

Speakers were asked about the acceptability of example 39b in comparison with example 39a. They found the word order in example 39b to be unnatural, and preferred correcting the example to the word order in example 39c.

- (39) a.                   SV                   MV  
           ka           pid-a   t-ii-ga                   iño  
           SBJ.3SG.M take-PFV eat-PFV-OBJ.3SG.M *boule*  
           He took [and] ate the *boule*.
- b.  
           ? ka           pid-a   iño   t-ii-ga  
           SBJ.3SG.M take-PFV *boule* eat-PFV-OBJ.3SG.M  
           ? He took some *boule*. He ate it.
- c.                   SV                   MV  
           iño   ka           pid-a   t-ii-ga  
           *boule* SBJ.3SG.M take-PFV eat-PFV-OBJ.3SG.M  
           It was the *boule* that he took [and] ate.

Even though the ‘take’ verb does not form a constituent with an object, it requires that the main verb be transitive. Cross-linguistically, ‘take’ commonly combines with a directional verb to express

‘take away’ or ‘bring here’. In elicitation, speakers rejected example 40 which attempts to combine ‘take’ with a directional verb. In a Take SVC, the main verb must be transitive.

- (40)  
 \* ka pid-a kol-a  
 Mamat take-PFV go-PFV  
*for*: Mamat took [it and] went.

The semantics of Take SVCs include the transfer of possession of the object to the agent. Example 41a is a Take SVC, and example 41b is the same construction without a serial verb. The semantics of the two constructions largely overlap. One clear difference is that the Take SVC in example 41a is not an appropriate command in a situation where the addressee already has the food in his or her possession. In that situation, the Take SVC would be commanding someone to acquire something they had already acquired. Example 41b does not specify anything about possession, and so can be used whether the addressee possesses the object or not.

- (41) a. SV MV  
 joo pid-u t-ii-ga do  
 FOC take-SBJV eat-SBJV-OBJ.3SG.M NEG  
 Don’t take [and] eat it!
- b. joo t-ii-ga do  
 FOC eat-SBJV-OBJ.3SG.M NEG  
 Don’t eat it!

The semantics of transfer of possession in Take SVCs also explain why example 42 was not accepted by speakers. The semantics of the main verb ‘fight’ suggest that the object is not in possession of the subject, but is free to move and defend or attack.

- (42) SV MV  
 # Mamat pid-a gom-ga  
 Mamat take-PFV fight-OBJ.3SG.M  
*for*: Mamat takes [and] fights him.

## 7.4 Stand SVCs

Before looking at the meaning of Stand SVCs, there is a need to explain the semantics of *juk-o* ‘stand up’ as the sole verb in a clause. There are at least four related meanings associated with this

verb, shown in 43.<sup>3</sup> The verb can have any of these four meanings when used on its own as the sole verb in a clause.

(43) **Meanings of *juk-o* ‘stand up’**

1. Change of posture: *stand up*
2. Change of location: *leave*
3. Change of state: *begin*
4. Change in narrative: *then*

The first meaning of *juk-o*, a literal change of posture, can be reinforced by the locational adverb *luwa* ‘above/up’, as in example 44. The context can also make clear that this meaning is intended, such as in example 45 where the verb is used in the sense of rising from sleep.

(44) **juk-u**            *luwa*    **juki-ya**            *luwa*  
 stand.up-SBJV above stand.up-HORT above  
 Stand up! Let’s stand up! (bva052.99)

(45) *ŋ*    *bodo* *ni*            *dow-eyi*    *na* *nopuno*    **juk-eyi**  
 PREP night SBJ.3PL sleep-IPFV BG goat    stand.up-IPFV  
 That night, while they were sleeping, the goat got up. (bva306.27)

The same verb can also indicate a change of location. This meaning is particularly clear when the clause includes a locative that is understood to be the source, such as the village *Baro* in example 46 and the village *Botiki* in example 47.

(46) *Jalkiya*    *na*    *dakk-iga*                                    *na*    **juk-eyi**            *Baro*  
 Barayin BG foundation-POSS.3.PL BG stand.up-IPFV Baro  
 The beginning of the Barayin was when they left Baro. (bva303.1)

(47) *ni*            **juk-eyi**            *min*            *Botiki*    *na*    *ni*            *s-eyi*            *jel-eyi*    *ŋ*    *Dungur*  
 SBJ.3PL stand.up-IPFV from(Ar.) Botiki BG SBJ.3PL come-IPFV put-IPFV PREP Dungur  
 They left Botiki, then they came [and] put [some people] at Dungur. (bva303.17)

The inchoative use of *juk-o*, a change of state, is reinforced when the adverb *sokka* ‘again’ is present in the clause. The context of examples 48 and 49 is that the hyena has challenged the crocodile to a fight. The hyena gets knocked over, losing the fight, then complains that a stone or a piece of wood tripped him, and that he should be allowed to restart the fight. The other animals concede, and allow him to start again.

<sup>3</sup>In contrast, the stative verb *weey-o* ‘stand (still)’ always refers to the state of being in a standing position. This verb is not used as a serial verb. All references to a Stand SVC refer to the serial verb *juk-o* ‘stand up’.

(48) inu η **juk-o** sokka  
 1.SG PREP stand.up-INF again  
 I am going to start again. (bva086.99)

(49) ni jekki-ga ka **juk-u** sokka  
 SBJ.3PL leave-OBJ.3SG.M SBJ.3SG.M stand.up-SBJV again  
 They let him start again. (bva086.101)

There are several instances in the corpus where the French translation does not have any correlate of the verb *juk-o* ‘stand up’. In most of these cases, the verb is marking a transition in the narrative in a similar way to the English connective ‘then’, or it is being used as a sort of hesitation device. Example 50 is taken from a narrative where the lion has just been killed by his abducted wife and her sisters. In 50a, the lion has passed away. The next sentence, 50b has a masculine pronoun, but other than the deceased lion, there are no clear masculine referents in the context. The French translation at this point is left blank. In the following line, 50c, the group of females are the subject of the clause. The most likely function of *juk-o* in 50b is that of a discourse connective or hesitation device.

(50) a. mot-e mot-e  
 die-PRF die-PRF  
 He died.

b. ka **juk-e**  
 SBJ.3SG.M stand.up-PRF  
*not translated*

c. ni bakk-a-ga ni gis-a-ga wure ni  
 SBJ.3PL skin-PRF-OBJ.3SG.M SBJ.3PL exit.CAUS-PRF-OBJ.3SG.M outside SBJ.3PL  
 bakk-a-ga  
 skin-PRF-OBJ.3SG.M  
 They skinned him. They took him outside, and they skinned him. (bva405.195-196)

Example 51 is another case where the verb *juk-o* is used as a marker of a shift in the narrative or as a hesitation device. In the preceding context, the (male) hyena has offered to care for the children of a female character so that she can work in her field. The female character agrees to this arrangement. In example 51a there are considerable pauses, and the narrator seems to first select the wrong word, *walla* ‘or’. The following line, example 51b, is translated ‘He gets up’ (*Il se lève*) with a masculine subject pronoun, even though there is no subject pronoun in the source. This indicates that the translator does not understand the action to be referring to anything the female

character is doing, even though she is the subject of the following sentence, 51c. It seems more likely that *juk-e* ‘stand’ in this context is used as a discourse device similar to the Chadian Arabic *baaden* ‘next’ in the preceding clause.

- (51) a. walla na baaden na  
 or(Ar.) BG next(Ar.) BG  
 And then next...
- b. juk-e na  
 stand.up-PRF BG  
 He gets up. (*possibly an overly literal translation*)
- c. ti kol-e ŋ maŋa na  
 SBJ.3SG.F go-PRF PREP bush BG  
 She went to the bush. (bva091.27-29)

The literature on the grammaticalization of ‘stand’ predominately focuses on the tendency for the stative verb, ‘stand still’ to grammaticalize into a continuous or durative marker (Heine and Kuteva 2002; Hopper and Traugott 2003; Kuteva 1999; Newman 2002). However, semantic extensions similar to those for ‘stand up’ in Barayin are attested in several languages around the world. In Shangaci (Eastern Bantu), the verb *lamuwa* now most frequently means ‘leave’, but its original meaning is ‘get up’ (Devos 2014:293). In Mandarin Chinese, the verbal morphemes *qi-lai* ‘get up’ are said to have grammaticalized into both a directional meaning and an inchoative meaning (Huang and Chang 1996). In North East Ambae (Oceanic), Hyslop (2001:430-431) describes the verb *maraga* ‘get up’ as grammaticalizing into a conjunction meaning ‘then’, also used as a hesitation device:

As a conjunction, *maraga* occurs clause initially to link two events which take place in succession. ...*maraga* may be completely unmarked, emphasizing its role as a discourse marker, lacking any status as a verbal predicate... *Maraga* is a common means of conjoining clauses in narrative discourse, particularly in traditional stories, but also when simply relating events. It is used by adults and children alike, but is particularly common in the speech of young children, who use it as a hesitation device when trying to recall the next part of a narrative or report.

The semantics of *juk-o* in Barayin are most directly related to, and potentially borrowed from similar uses of the verb *qama* ‘stand’ in Arabic. Versteegh (1984:101-103) cites several Arabic varieties where this occurs. In Egyptian Arabic, it can have inchoative meaning, it can mark narrative structure (‘then’), and it can also have a meaning of surprise or unexpectedness (Mitchell

1978:87-88; see also Pospíšil 2017:31). The same verb is said to have “an ingressive connotation” in North African dialects of Arabic (Versteegh 1984:101-102). Hussein (1990:349) mentions that the verb in Palestinian Arabic can express “instantaneous, inceptive or ingressive aspect”. There are similar descriptions of the cognate *gum* in Juba Arabic (Manfredi and Petrollino 2013:60; Tosco 1995:444-445). It is described in Syrian Arabic as signaling “the occurrence of a new, nondurative event in the past”, and is glossed as ‘then’ (Grotzfeld 1965 in Versteegh 2009).

The most interesting comparison is with the verb *gaam* ‘get up’ in Chadian Arabic, the primary language of wider communication for Barayin speakers. Hagège (1973:48) reports that *gaam* can have inchoative meaning when placed before another verb. Roth (1979:44, 55) describes *gaam* as having an inchoative meaning, but also functioning as a temporal marker ‘then’ in certain contexts, e.g., *gaam katal* ‘then, he killed’ (French: *Il tua alors.*). Jullien de Pommerol (1999:207, 237) describes the verb as “marking the beginning of an action”.<sup>4</sup> In Chadian Arabic, these extended uses of *gaam* appear to be restricted to its use in a multiverb constructions (Section 4.3).

Arabic is not the only possible source for this use of ‘stand up’ in Chadic languages. Lele is an East Chadic language spoken in the southern part of Chad where Chadian Arabic is still used, but is not the dominant regional language. Frajzyngier (2001:181) describes an “auxiliary verb” with “inceptive” meaning that is “identical to the verb ‘get up, rise’”: “The marker codes the beginning of a new event with respect to the preceding event.” In the Central Chadic language Masa, spoken in Northern Cameroon, Caitucoli (1986:36) describes an “inchoative/durative” use of the verb “get up”.

In Barayin, it is not clear exactly what range of meanings the verb *juk-o* ‘stand up’ has in a Stand SVC. In most instances of a Stand SVC in the corpus (31 of 43), the free translation does not have any word that directly correlates with one of the meanings of *juk-o*. This indicates that the translators normally view a Stand SVC as contributing grammaticalized meaning that does not have an obvious equivalent in French. In four examples the free translation has an explicit reference to a change of state (‘begin’). In eight examples the free translation refers to a change of posture (‘stand up’). These eight examples are potentially cases of overly literal translation.

Examples 52 and 53 are from the same narrative, and both contain a Stand SVC with the same main verb, *wonn-o* ‘attach’. In example 52, the free translation includes a change of posture (“gets up”).

---

<sup>4</sup>Pommerol’s translations into French are: *se mettre à, commencer, and se décider à.*

The same Stand SVC in example 53 does not include any word that correlates with the serial verb. This difference in translation could either be due to an overly literal translation of example 52, or due to an ambiguity in the meaning of Stand SVCs, such that the translator is forced to choose between a change of posture or other meaning according to the context.

(52)                   SV                   MV  
 kalla giljim na juk-a           wooni-ti           i-ji                   na lekeṅ lekeṅ lekeṅ  
 3SG.M squirrel BG stand.up-PRF attach-OBJ.3SG.F mother-POSS.3SG.M BG IDEO IDEO IDEO  
 The squirrel gets up [and] ties up his mother, but he doesn't do it well. (bva404.8)

(53)                   SV                   MV  
 tilla juk-eyi           wooni-ga           luwa ŋ           diŋ de           ŋ           gandi-ji  
 3SG.F stand.up-IPFV attach-OBJ.3SG.M above PREP trunk REL.SG.F PREP front-POSS.3SG.M  
  
 mak  
 IDEO  
 She attaches it to the trunk of the tree. (bva404.69)

There are some Stand SVCs where a change of posture interpretation is not possible because the subject is inanimate. This is clear in the elicited example 54, and can also be seen in examples 55 and 56 from narrative texts, as well as example 87a in Section 6.6.2.

(54)                   SV                   MV  
 ka           juk-e           mot-e  
 SBJ.3SG.M stand.up-PRF die-PRF  
 He died.

(55)                   SV                   MV  
 jeewa kalla na juk-a           kuus-a-ga                   ganda kakkireṅ  
 smoke 3SG.M BG stand.up-PFV suffocate-PRF-OBJ.3SG.M inside there  
 The smoke suffocates it. (bva029.53)

(56)                   SV                   MV  
 bune juk-eyi           iss-a-jo           sawat  
 sky stand.up-IPFV pour-IPFV-DETRZ IDEO  
 The Sky (God) began pouring out a heavy rain. (bva406.30)

Stand SVCs in the corpus often have a motion verb as a main verb. In this context, a change of location interpretation ('leave') and an inchoative interpretation are difficult to distinguish, since the beginning of the motion is a change of location. In example 57, the main verb is a manner of motion verb. The French translation uses the expression *prendre fuite* 'take flight, flee' which

suggests that the Stand SVC makes explicit that the running takes place in order to leave. In other words, the serial verb in example 57 appears to express a change of location.

- (57) SV                    MV  
 juk-a                    gor-a    je  
 stand.up-PFV run-PFV PART  
 [He] ran away. (French: *Il a pris fuite.*) (bva404.55)

The same French expression, *prendre fuite* ‘take flight, flee’, shows up in the translation of three other examples, each of which have the same three verbs: ‘stand up’ ‘run’ ‘allow/leave (alone)’. The repetition of the same phrase suggests a type of conventionalized expression for running away from something or someone. Again, in this context, the Stand SVC seems to highlight a change of location.<sup>5</sup>

- (58)                    SV                    MV  
 bulmi juk-gi            gor-gi    jekk-a-ti                    mee-ji                    ŋ    doo  
 hyena stand.up-IPFV run-IPFV allow-IPFV-OBJ.3SG.F woman-POSS.3SG.M PREP place  
  
 ka                    gi  
 SBJ.3SG.M DET.SG.M  
 The hyena ran away [and] left his wife there. (bva071.82)  
 (French: *L’hyene prend fuite et laissa la corps.*)

Finally, there is an additional meaning that the serial verb *juk-o* ‘stand up’ can have in a Stand SVC, that it does not seem to have when used as the sole verb in a clause. This is similar to the surprise or astonishment meaning described in Egyptian Arabic. One use of the Egyptian Arabic verb *qaam* with another verb “has the force of the somewhat jocular English ‘he upped and hit me’” (Mitchell 1978:87-88). Although this is not explicit in the free translation, the context of example 59 makes it clear that this is the most likely interpretation. The Stand SVC is reported speech where the Hyena is complaining about an incident in which the Squirrel stole his sesame seeds. An interpretation of the Stand SVC as change of posture or change of location is quite unlikely, especially since the Hyena did not see the event firsthand. The inchoative meaning is not likely since it is clear that the complaint is about the completion of the eating event, not its inception. The more general narrative use of Stand SVCs is also unlikely since this is a small section of reported

<sup>5</sup>In the Australian language Wagiman, the combination of ‘run’ and ‘leave’ in a coverb construction means ‘run away from’ (Wilson 1999:56).

speech. The most reasonable interpretation is that the Stand SVC is used to express shock, much like upward motion can be used in English: He up and ate my sesame seeds!

(59)

buk-i-ne		ti		de		ti		de		wo		ka
Speak-Inf-Poss.1PL.Excl		Subj.3SG.F		Rel.SG.F		Subj.3SG.F		Rel.SG.F		and/but		Subj.3SG.M
SV		MV										
juk-a		t-e-ŋ		ni		ni		paŋjira-ju				
stand.up-PFV		eat-PRF-Obj.3PL		Subj.3PL		DEM.PL		sesame-POSS.1SG				

Our agreement was like this, but he ate my sesame! (bva404.35)

In summary, the verb *juk-o* ‘stand up’, as the sole verb in a clause, has several meanings. It has two spatially-oriented meanings of change of posture (‘stand up’) and change of location (‘leave’) and two grammaticalized meanings of change of state (‘begin’) and change in the narrative (‘then’). In a Stand SVC, the serial verb usually has one of the grammaticalized meanings. In a few cases, it could be interpreted as having a spatially-oriented meaning, but it is not clear that this is necessarily the best interpretation of Stand SVCs. There is a fifth meaning, astonishment or surprise, that has been found in a Stand SVC, but for which there are no clear examples when the verb *juk-o* is the sole verb in a clause.

## 7.5 From serial verb to adverb: *sul-o* ‘sit’

It has long been observed that there is a particularly strong tendency for a serial verb in an SVC to grammaticalize, changing its lexical category, phonological shape, and meaning (Christaller 1875:76; Lord 1973; Westermann 1930:129-130). The result of this process could be incorporation into the verbal morphology, or a new syntactic category such as a type of auxiliary, or, in some cases, reanalysis as an adverb (Lord 1993:215, Crowley 2002:23). There is evidence that Barayin previously used the verb *sul-o* ‘sit’ as a serial verb, but the serial verb has since grammaticalized into an adverb. In this process it lost its verbal morphology, and replaced the function of the serial verb. The progressive adverb *sule* or *sile* is one of five adverbs that occur in a restricted position between the subject and the predicate, as in examples 60 and 61.

(60) ŋ      **sule**    iri-ga      ammi  
 SBJ.1SG PROG wait-PROG water  
 I’m waiting for the rain. (bva077.50)

- (61) *tilla na duw-ga duwa **sule** aji-ga*  
 3SG.F BG see-OBJ.3SG.M lion PROG come-PROG  
 She sees the lion coming. (bva405.21)

The verb *sul-o* ‘sit’ continues to function as a main verb with its primary meanings being that of a change of posture, as in example 62, and to live in a certain place, as in example 63.

- (62) *ka sul-e η turda*  
 SBJ.3SG.M sit-PRF PREP animal.path  
 He sat on the animal path. (bva305.35)
- (63) *ane sul-uggo η ganda Mango*  
 1PL.EXCL sit-OBL PREP inside Mongo  
 We live in Mongo. (bva300.2)

The proposed diachronic process begins with an erstwhile SVC with the serial verb *sul-o* ‘sit’. Like other serial verbs, the meaning of the verb was semantically bleached, likely encoding a progressive meaning, as is common in SVCs cross-linguistically (Section 3.7). This semantic bleaching resulted in a semantic similarity between the serial verb and pre-predicate adverbs such as *ganda*, which can also occur between a subject and its verb, and has a progressive meaning. On analogy with pre-predicate adverbs, the category of the serial verb was reanalyzed. This reanalysis was accompanied by a morphophonological change: the final vowel was lexically fixed as a mid-close front vowel [e] and, at least for some speakers, the first vowel shifted from a back vowel to a front vowel [i].

The path of grammaticalization from ‘sit’ to progressive or continuous meaning is well-attested cross-linguistically (Bower 2008:174; Camilleri and Sadler 2017; Heine and Kuteva 2002:276). A progressive meaning of ‘sit’ is also found in at least one other East Chadic language, Lele (Frajzyngier 2001:185-186), as well as in the language of wider communication, Chadian Arabic (Julien de Pommerol 1999:208).

## 7.6 Conclusion

SVCs in Barayin form a single construction type in terms of their syntactic and morphological properties. Within this type of construction there are a limited number of verbs that are used as

serial verbs. These can be classed into four semantic types of serial verb constructions: Deictic SVCs, Manner SVCs, Take SVCs and Stand SVCs.

Deictic SVCs typically have the verb *kol-o* ‘go’ or *s-ii* ‘come’ as a serial verb, but can also have other verbs of motion as a serial verb. The interpretation is normally that the motion predicated by the serial verb takes place before the activity or state of affairs predicated by the main verb. However, when the main verb is a motion verb it is also possible to interpret the Deictic SVC as a single simple path of motion.

Manner SVCs typically have the serial verb *gor-o* ‘run’ and a directional main verb. This construction combines manner of motion and path of motion. However, a manner serial verb like ‘run’ can also be combined with a non-directional main verb.

Take SVCs have the serial verb *pid-o* ‘take’. A Take SVC expresses that the object was brought into the possession of the subject before the action predicated by the main verb takes place. Take SVCs are the only type of SVC in Barayin that must be transitive.

Stand SVCs have the serial verb *juk-o* ‘stand up’. There are several possible interpretations of Stand SVCs. They can potentially indicate that the subject changes posture (‘stands up’) before the action of the main verb, or that a change of location (‘leave’) takes place alongside the action of the main verb. However, Stand SVCs more commonly have a function of expressing the beginning of an action (‘begin’) or a change in the discourse structure (‘then’).

## Part C

# LFG analysis of Barayin SVCs

This third part of the dissertation builds on the description of the grammar of Barayin SVCs (part B) to provide an account of those facts in the framework of Lexical-Functional Grammar (LFG). The following chapters connect the centuries-old tradition of grammatical description to the relatively modern efforts of generative grammar to understand what it is that all languages have in common. This connection brings new empirical data into the testing lab of LFG, and, in turn, the formal analysis sheds light on aspects of the basic linguistic description.

The first chapter in this part, Chapter 8 of the dissertation, introduces a relatively recent version of the architecture of Lexical-Functional Grammar featuring a connected s-structure, based on the proposal of Asudeh and Giorgolo (2012). In addition, the analysis of c-structure applies the meta-theory of “minimal c-structure” (Lovestrand and Lowe 2017). In incorporating these proposals, the analysis pushes the limits of the theory, taking advantage of the implications of recent developments in LFG to provide a new perspective on multiverb constructions and complex predicates.

Ultimately the goal of this formal analysis is to account for the linguistic patterns associated with SVCs in Barayin, but first, Chapter 9 proposes phrase structure rules for a range of common syntactic structures in the language, and demonstrates how the resulting c-structures and f-structures account for some basic syntactic patterns found in the language. This is meant to ground the SVC analysis in assumptions that also provide a coherent account of other structures in the language. It would be of little use to provide an account of a particular construction which makes incorrect predictions about the rest of the grammar.

Chapter 10 examines several approaches to phrase structure rules for SVCs in Barayin, comparing the advantages and disadvantages of each analysis. The preferred analysis treats serial verbs as non-projecting words with no PRED value. The syntactic contribution of serial verbs is primarily at the level of s-structure. Appendix A presents a partial implementation of the analysis of Barayin SVCs in XLE, a grammar development platform with algorithms for parsing and generating an LFG grammar (Crouch et al. 2011). This implementation demonstrates the consistency and accuracy of the analysis.

Finally, Chapter 11 extends the analysis of Barayin SVCs by applying a similar approach to complex predicates with a motion component in other languages. Previous analyses of this type of construction in LFG appeal to a process called “predicate composition” to account for how information about argument structure from distinct syntactic words can be combined in a complex predicate. In the LFG architecture of Asudeh and Giorgolo (2012), there is no need to appeal to predicate composition. Argument structure information can be combined through standard unification at the level of s-structure.

The connected s-structure is a recently revived concept that has not been fully developed. Previous analyses of complex motion predicates use a version of Lexical Conceptual Structure (LCS; Jackendoff 1990) to model how motion meaning combines with another predicate. Chapter 11 tests the limits of our current conception of the connected s-structure by examining how these complex predicates would be modeled in s-structure instead of LCS.

## Chapter 8

# Lexical-Functional Grammar

This analysis is presented in the framework of Lexical-Functional Grammar (LFG). The flagship publication in the launching of LFG is a large volume edited by Bresnan (1982b), especially the chapter by Kaplan and Bresnan (1982), reprinted in Dalrymple et al. (1995). Dalrymple et al. (1995:1-5) provide a brief overview of the history of ideas leading up to Bresnan (1982b). The most current reference works on LFG are Bresnan et al. (2016; first edition: Bresnan 2001) and Dalrymple et al. (forthcoming; first edition: Dalrymple 2001). Shorter publications introducing LFG include textbooks by Falk (2001) and Kroeger (2004), as well as succinct encyclopedia entries by Austin (2001), Dalrymple (2006) and Asudeh and Toivonen (2009). Past and recent work on a wide variety of issues can be found in the yearly proceedings of the LFG annual conference available online.<sup>1</sup>

LFG is concerned with accounting for Universal Grammar: “a set of primitives, axioms, and rules of inference (often unformalized) that characterizes the class of possible grammars of particular languages” (Bresnan and Kaplan 1982:xvii). LFG is one of a class of theories of generative syntax that reject the model of deriving one syntactic tree from another. In LFG, semantically-related alternations in word order and argument structure are not described as the “movement” of words around a tree structure, but as lexical alternations involving links between different levels of the modular structure. There are, in principle, no processes that derive one syntactic structure from another. Generalizations (both language-specific and universal) about semantic and syntactic structure are

---

<sup>1</sup><http://web.stanford.edu/group/cslipublications/cslipublications/LFG/>

made by rules (such as phrase structure rules), principled constraints, and the nature of the formal architecture of LFG.

This chapter gives a brief overview of the modular architecture of LFG. Other relevant aspects of the formalism are discussed throughout the analysis of Barayin in the following two chapters. In LFG, different types of linguistic information are represented in distinct modules. Each module has its own structure and primitives. The modules are linked. Following the proposal of Asudeh and Giorgolo (2012), this analysis primarily uses three modules, or levels of representation: c-structure (Section 8.1), f-structure (Section 8.2) and s-structure (Section 8.3). The relationship between these three modules is shown in Figure 8.1.

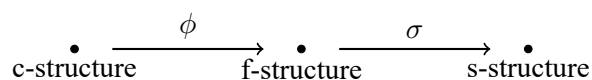


Figure 8.1: LFG architecture (Asudeh and Giorgolo 2012)

C-structure (constituent structure) accounts for constituency and word ordering. C-structure is linked to f-structure (functional structure), which models grammatical relations and agreement-sensitive features such as gender and number. F-structure is linked to s-structure (semantic structure), which models semantic information available to the syntax such as argument structure. Section 8.4 gives an introduction to the ways in which these modules share information in the LFG architecture.

## 8.1 C-structure

The primary formal object of c-structure is the phrase structure tree. “A constituent structure (or “c-structure”) is a conventional phrase structure tree, a well-formed labeled bracketing that indicates the superficial arrangement of words and phrases in the sentence” (Kaplan and Bresnan 1982:175). Generalizations over phrase structures, which can also be seen as constraints on possible phrase structures, are written as phrase structure rules. Section 8.1.1 present phrase structure rules in LFG, as well as the f-description annotations used to label and constrain them. As explained in Section 8.1.2, universal constraints on phrase structure in LFG are normally described in terms of the principles of X-bar theory, in particular, the principle of endocentricity. In order to avoid technical issues that are apparent in the standard use of X-bar theory in LFG, this work instead utilizes a new

approach to the theory of c-structure in LFG called minimal c-structure. The formal features of minimal c-structure are introduced in Section 8.1.3. In minimal c-structure, generalizations about common phrase structures make use of templates. The templates applied throughout the analysis in Chapters 9 and 10 are presented in Section 8.1.4.

### 8.1.1 Phrase structure rules

Well-formed phrase structures are those that conform to a given set of phrase structure rules, either universal or language-specific rules. Phrase structure rules are in the format of example 1 where a dominating (“mother”) node is the leftmost object followed by a right arrow pointing to the subordinate nodes (“daughters”). Unless otherwise noted, the dominated nodes (“sisters”) are given in linear order.

(1) **Format of phrase structure rules**

- a.  $X \rightarrow Y Z$
- b.  $Z \rightarrow A B$

The phrase structure rules in example 1 say that a well-formed structure can have a node X dominating two nodes: a node Y preceding a node Z, and it can have a node Z dominating nodes A and B in that order. Assuming that none of the nodes are optional, these two rules generalize over the three c-structures shown in Figure 8.2. One of the c-structures is the combination of these two phrase structure rules to create a more complex structure.

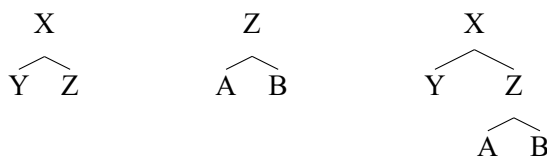


Figure 8.2: Trees licensed by phrase structure rules in example 1

In LFG, the words in a sentence appear as the terminal nodes in a c-structure tree. The nodes immediately dominating the words are called pre-terminal nodes. In Figure 8.3, there are three hypothetical words, *y-word*, *a-word* and *b-word*. These are the terminal nodes. They are dominated by the pre-terminal nodes Y, A and B. In standard LFG, a terminal node must be a word, and not an abstract grammatical feature or an affix.

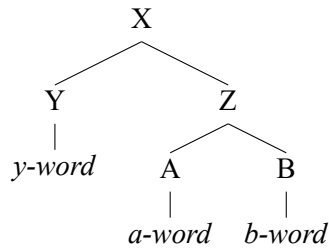


Figure 8.3: C-structure tree with words as terminal nodes

Nodes in a c-structure are said to “project” information to different levels of representation. The projection relationship is a mathematical function allowing a one-to-one or many-to-one relation between structures. It is possible for several c-structure nodes to correspond to the same projection, but not for one c-structure node to correspond to more than one projection. In this analysis, all of the levels of representation that are projected from c-structure nodes will be formally represented as attribute-value matrices (AVM). In an AVM, the formal name of an attribute is given on the left, followed immediately by its value. In this context, the attribute-value pair is referred to as a feature.<sup>2</sup>

One level of representation represented as an AVM is the bundle of information concerning the lexical category and level of structure of a c-structure node. This is called the l-structure. Although the l-structure is formally a projection of a c-structure node, and therefore a separate level of representation, it is so intrinsically linked to c-structure that it can be considered a part of c-structure. In l-structure, the feature [CAT N] would be projected from a nominal node, where N(oun) is the value of the attribute CAT(egory). The attribute CAT selects from a set of several possible values such as P(reposition), V(erb) or Adj(ective).<sup>3</sup> Following Kaplan (1989), the function  $\lambda$  applied to a certain c-structure node retrieves the l-structure AVM containing category information. We can refer to the l-structure by the expression  $\lambda(*)$ , where the asterisk refers to a particular c-structure node. In LFG, this same function can also be expressed by a subscript letter referring to the function:  $*_{\lambda}$ .

Constraints on what types of AVMs can be projected from a c-structure node come primarily from two sources: lexical entries of words and annotations on phrase structures. Equations that describe

<sup>2</sup>In some work in LFG, attributes are also referred to as features. In this work, in the context of the LFG analysis, a feature refers to an attribute-value pair, as in Bresnan et al. (2016).

<sup>3</sup>The category information can be decomposed into more primitive features (e.g., Bresnan et al. 2016:103). However, these decomposed features are not needed for the sake of the Barayin analysis, so the traditional atomic values will be used for the sake of simplicity.

and constrain the links between parts of a linguistic structure are called f-descriptions. The f-description stating that a node in c-structure has a nominal feature in its l-structure can be written as  $(*_{\lambda} \text{CAT}) = \text{N}$ . The f-description says that if you check this node's  $\lambda$  projection, and look for the attribute CAT, its value must be N. The phrase structure rule in example 2a annotates each node with an f-description about its l-structure attributes CAT(egory) and LEVEL of structure.

(2) **Format of phrase structure rules**

- a.                   \*                   →                   \*                   \*
- $(*_{\lambda} \text{CAT}) = \text{N}$                     $(*_{\lambda} \text{CAT}) = \text{N}$                     $(*_{\lambda} \text{LEVEL}) = 2$
- $(*_{\lambda} \text{LEVEL}) = 2$                     $(*_{\lambda} \text{LEVEL}) = 2$
- b.                   NP                   →                   NP                   XP

Annotations describing the lexical category and level of structure of a node are so intrinsic to c-structure that the most common notation for referring to a node refers directly to these types. Thus the more formally explicit rule in example 2a is normally written in the notation given in 2b. The letter N is a shorthand for a node linked to the feature [CAT N] and the following letter, -P, is a shorthand for a node linked to a certain level feature, normally [LEVEL 2]. Note that the use of X in this context means that the node is not necessarily linked to a specific category.<sup>4</sup> The primary categories used in this analysis are familiar from traditional grammar: N(oun), V(erb), Adj(ective), Adv(erb), and P(reposition). These are known as *lexical* categories. In addition to these lexical categories, there are *functional* categories: C(omplementizer), D(eterminer), and I(nflection). The functional categories are not crucial to the analysis of Barayin serial verb constructions, but the analysis of noun phrases includes a reference to the category D (Section 9.2), there is a brief discussion of the category C in Section 9.7, and a possible (but rejected) use of the category I is mentioned in Section 9.1. The category used in the analysis of the clause in Barayin is S (Section 9.1). In this work, S is assumed not to have any category or level features.

**8.1.2 X-bar theory**

Traditionally, LFG practitioners have assumed that c-structures are constrained by the principles of X-bar theory (e.g., Chomsky 1970; Jackendoff 1977). The primary principle of X-bar theory is that a mother node should be of the same category as one of its daughters, known as its head.

<sup>4</sup>However, the use of XP does not always imply that category information is unspecified. It can also represent a meta-category defined by a set of specific categories that does not necessarily include all categories (Dalrymple 2001:94).

This type of structure is called an endocentric structure. For example, when an adjective forms a constituent with a noun it modifies, that constituent belongs to the category of noun (not adjective). Its syntactic distribution is essentially the same as the distribution of an unmodified noun. In that case, the noun is the head of the endocentric structure.

In X-bar theory, the mother node in an endocentric structure is marked as one level higher in the structure such that if the head is level 0, the mother is 1, and if the head is 1, the mother is 2. This idea is shown in the phrase structure rules in 3a and 3b using the traditional notation  $X^0$  for level 0,  $X'$  for level 1, and  $XP$  for level 2. In example 3a, the node NP is called a specifier, and is defined as a level 2 daughter of the level 2 node IP and a sister of the level 1 head node  $I'$ . Note that the definition does not refer to the order of the head and specifier. In another phrase structure rule, the specifier could occur before the head. In the rule in example 3b, the node VP is called a complement, and is defined as the sister of a head of level 0, in this case, the node  $I^0$ , and as the daughter of a level 1 node,  $I'$ . Again, the linear order is irrelevant to the definition of the complement position.<sup>5</sup>

(3) a. **Hypothetical example of a specifier phrase structure rule**

$$\text{IP} \quad \rightarrow \quad \text{I}' \quad \text{NP}$$

*specifier*

b. **Hypothetical example of a complement phrase structure rule**

$$\text{I}' \quad \rightarrow \quad \text{I}^0 \quad \text{VP}$$

*complement*

Other X-bar theory assumptions include the idea that an endocentric structure must always have some given number of levels of structure, normally 2, and that the “specifier” and “complement” positions (sisters of  $X'$  and  $X^0$  respectively) can only be filled by a node of the highest level, a “maximal projection”, normally  $XP$  or level 2.<sup>6</sup> In addition to the endocentric structure which makes up X-bar theory in a narrow sense, some type of adjunction structure is also assumed as part of the theory. Adjunction structures are also endocentric, in the sense that the head and its mother must share the same category. The difference is that in an adjunction structure, the head and the

---

<sup>5</sup>Phrase structure rules without reference to linear order can be formalized as rules of Immediate Dominance that identify the members of a constituent while allowing for separate Linear Precedence rules to determine linear order as needed (Dalrymple 2001:96 and references therein). Since Immediate Dominance and Linear Precedence rules are not crucial to the analysis of Barayin, the formalism is not introduced here.

<sup>6</sup>The assumption that all endocentric structures have two levels of structure appears to have become the X-bar standard assumption with the publication of Chomsky (1986). There were a variety of earlier proposals, e.g., three levels (Jackendoff 1977) or one level for lexical categories and two levels for functional categories (Fukui 1986). See Muysken (1982) for an overview, and Kornai and Pullum (1990) for a critical review.

mother have the same level of structure. This is shown in the phrase structure rule in example 4.

(4) **Hypothetical example of an adjunction phrase structure rule**

$$\text{IP} \quad \rightarrow \quad \text{IP} \quad \text{NP}$$

*adjunct*

### 8.1.3 Minimal c-structure

Despite its ubiquity, X-bar theory is not an intrinsic part of LFG. “LFG’s X’ theory... is a metatheory with respect to the grammars permitted by the theory of formal structures...” (Bresnan 2001:120). Instead of the more familiar X-bar theory, a different metatheory of c-structure will be used in the analysis of Barayin. Nothing crucial to the analysis of Barayin SVCs hangs on this point. A new approach is used primarily because of more general formal and theoretical issues in the representation of c-structure. However, that is not to say that there are no analytical consequences to choosing one metatheory of c-structure over another.

Although the new approach used here preserves the key concept of endocentric structure, and thus can be seen as a version of X-bar theory, it is different enough to merit a distinguishing label: minimal c-structure. The motivations for minimal c-structure are laid out in Lovstrand and Lowe (2017). One motivation is that the standard formalization of X-bar theory (Bresnan 2001; unmodified in Bresnan et al. 2016) is inadequate for the analysis of non-projecting words (to be defined below) and single-level maximal projections (e.g, phrases that never have a specifier position,  $XP \rightarrow X^0 YP$ ).

The second motivation for minimal c-structure is a theoretical commitment to avoiding representations of c-structures with non-branching nodes of the same category, such as those seen in Figure 8.4.<sup>7</sup> The intuition that unnecessary structural representation should be avoided has been expressed in several places, including by some of the architects of X-bar theory. Jackendoff (1977:36) remarks that his own hypothesis comes “at the expense of some otherwise superfluous structure”, and Chomsky (1995:151) later writes that “...just as there can be no superfluous steps in derivations, so there can be no superfluous symbols in representations.”

---

<sup>7</sup>See Dalrymple et al. (2015) for a criticism of Bresnan’s approach to this issue.

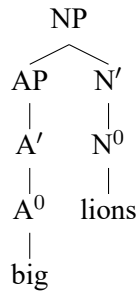


Figure 8.4: X-bar structure with non-branching nodes based on Bresnan et al. (2016:90)

Unlike standard X-bar theory, in minimal c-structure, an endocentric structure does not always have the same number of levels of structure. Endocentric structures are flexible. They appear to expand and contract so that they only contain the number of levels of structure necessary for the actual words in the constituent. This is done by formalizing the idea of levels of structure in two features: LEVEL (or L) and PROJECTION (or P). For the sake of simplicity, the attributes can be treated as having the value 0, 1 or 2.<sup>8</sup>

The feature LEVEL represents the actual level of a node in an endocentric structure. Intuitively, this feature is functionally similar to the use of the X-bar diacritics and the “level of structure” feature they represent. The feature PROJECTION is an innovation. It generally correlates with how many total levels of structure there are in a particular endocentric structure, with exceptions relating to adjunction structures. A bare word with no complement or specifier will have a P value of 0 since it does not project any levels of structure. The same word appearing in a structure with a complement but no specifier has the P value of 1, since it projects a single level of structure. Likewise, if both a complement and specifier are present in a structure, that structure’s P value is 2. The primary function of P is to allow the system to check whether any particular node is a maximal projection by checking if its L and P are identical.

For an illustration of how minimal c-structure works, consider the differences between the phrase structure rules for English in example 5 written in standard LFG X-bar notation and those same phrase structure rules written as minimal c-structure rules in example 6.

<sup>8</sup>These atomic values for L and P are a simplification for expositional ease. See the discussion of the templates @LDOWN and @PDOWN later in this section.

(5) **English phrase structure rules in standard LFG X-bar theory**

- a.  $IP \rightarrow NP \quad I'$
- b.  $I' \rightarrow I^0 \quad VP$
- c.  $VP \rightarrow V'$
- d.  $V' \rightarrow V^0 \quad (NP)$

In example 5, the information about the level of the node in the structure is given by the diacritics  $-^0$ ,  $-'$  and  $-P$ . Parentheses mean that a node is optional. The phrase structure rule directly selects the level of structure of its daughter nodes, and a node without that level is not permitted by the rule. Note also that the standard assumption that all heads project two levels of structure would require a rule like the one in example 5c even if there is never a sister of  $V'$  in the c-structure.

In contrast, in example 6, the annotations on the nodes in the rule do not directly specify a level of structure. Instead they specify their  $L$  and  $P$  values in relationship to each other, or in relationship to the  $L$  and  $P$  values of their mother node. The circumflex over an asterisk refers to the mother of a given node. For example, the f-descriptions below the  $I$  node on the right side of the phrase structure rule in example 6a can be read as: this node's value for the attribute  $L$  (in its  $\lambda$  projection) is one less than its mother's value for  $L$ , and this node and its mother have the same value for  $P$ .<sup>9</sup>

(6) **English (simplified) phrase structure rules in minimal c-structure**

- a.  $I \rightarrow \begin{array}{c} N \\ (*_{\lambda} L) = (*_{\lambda} P) \end{array} \quad \begin{array}{c} I \\ (*_{\lambda} L) = (\hat{*}_{\lambda} L) - 1 \\ (*_{\lambda} P) = (\hat{*}_{\lambda} P) \end{array}$
- b.  $I \rightarrow \begin{array}{c} I \\ (*_{\lambda} L) = (\hat{*}_{\lambda} L) - 1 \\ (*_{\lambda} P) = (\hat{*}_{\lambda} P) \end{array} \quad \begin{array}{c} V \\ (*_{\lambda} L) = (*_{\lambda} P) \end{array}$
- c.  $V \rightarrow \begin{array}{c} V \\ (*_{\lambda} L) = (\hat{*}_{\lambda} L) - 1 \\ (*_{\lambda} P) = (\hat{*}_{\lambda} P) \end{array} \quad \begin{array}{c} N \\ (*_{\lambda} L) = (*_{\lambda} P) \end{array}$

The consequence of directly specifying the level of structure in a phrase structure rule (as in traditional X-bar theory) is that a node with that level of structure must always be present in the c-structure representation, even when it is otherwise not needed. As already mentioned, the assumption that all endocentric heads project two levels of structure results in the non-branching node from  $VP$  to  $V'$ . Another type of non-branching node results from optionality in phrase structure rules. Consider the optional object in a sentence like *Suzy is eating (kale)*. The tree on the

<sup>9</sup>The use of subtraction ( $- 1$ ) in the phrase structure rules in example 6 is a temporary simplification for expositional purposes. A formally precise version of this simplification is given in the @LDOWN template in example 7 below.

left in Figure 8.5 represents this sentence with the object, and the tree on the right of the diagram represents this sentence without the object. Even though the object is not present in the second diagram, the structure of a  $V'$  node dominating a  $V^0$  node is still required by traditional X-bar theory phrase structure rules.

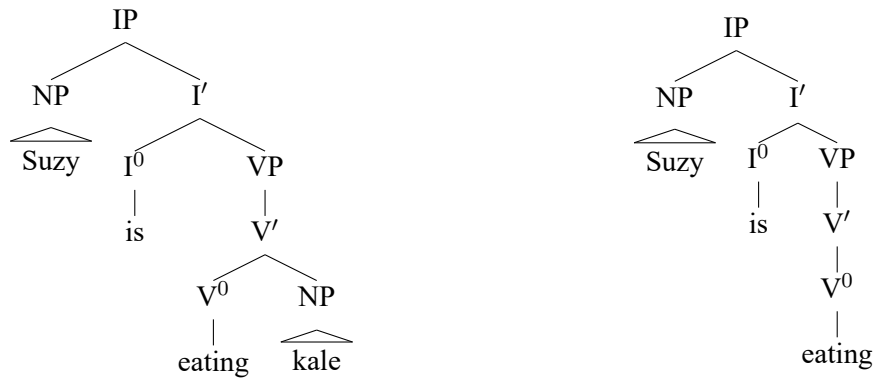


Figure 8.5: Trees licensed by X-bar rules in example 5

In contrast, when the level of structure is defined indirectly, the c-structure is only as large as needed for the number of words in the constituent. The same two sentences, *Suzy is eating (kale)*, are analyzed using minimal c-structure in the trees in Figure 8.6. The L and P values are given in a shorthand notation as a diacritic on the letter representing the category of a particular node. The number before the slash represents the L value. The number following the slash represents the P value. The V nodes are preceded by a subscripted letter *a*, *b* or *c* for expositional purposes. These are not part of the minimal c-structure notation.

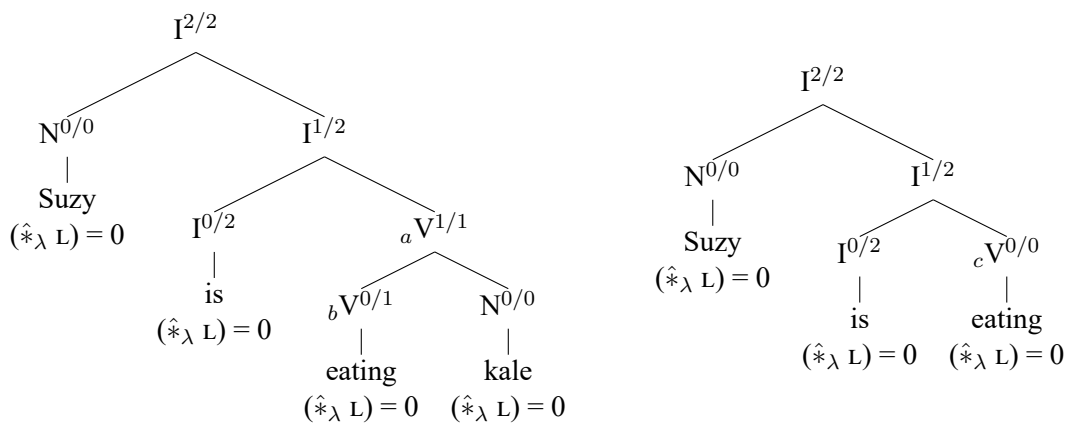


Figure 8.6: Trees licensed by minimal c-structure rules in example 6

How are the L and P values determined in the c-structures in Figure 8.6? In minimal c-structure, all words lexically define their mother node (the pre-terminal node) as having the l-structure feature

[L 0]. For example, the f-description  $(\hat{*}_\lambda L) = 0$  in the lexical entry for the complement-taking verb *eating* requires its mother, the pre-terminal node marked *b*, to have a value of 0 for the attribute L in l-structure. It follows from the phrase structure rule in example 6c that if the L value of node *b* is 0, the L value of its mother, node *a*, is 1. Then, following the rule in example 6b, if node *a*, the complement of I, has the L of 1, then it also has the P value of 1. Following the rule in 6c, the P value of node *b* must be the same as that of its mother, node *a*, in this case, 1.

The same phrase structure rules in example 6 apply to the sentence without an object. This is shown in the tree on the right side of Figure 8.6. The lexical entry of the verb assigns an L value of 0 to the pre-terminal node that dominates it, node *c*. When no object is present, the rule in example 6c is irrelevant. The pre-terminal node *c* is a complement of I in the rule in example 6b. This rule specifies that its V node must have an L feature which is the same as its P feature. It follows that the P value of node *c* is also 0. There is no need for any additional structure.

#### 8.1.4 Templates, non-projecting words and adjunction

Since the annotations describing the restrictions on L and P values can take up a lot of space if written out as individual f-descriptions, those annotations which are assumed to be most common cross-linguistically are written as templates (Dalrymple et al. 2004). These templates also provide a way to develop a theory about the formalism of minimal c-structure. The theory is that certain expressions of l-structure will be more common than others. These common expressions can be abbreviated by templates and tested cross-linguistically. The eleven templates used in this analysis are given in example 7.

##### (7) Minimal c-structure templates

- a.  $@PRJM \equiv (\hat{*}_\lambda L) = 0 \wedge (\hat{*}_\lambda P)$
- b.  $@NONPRJM \equiv (\hat{*}_\lambda L) = 0 \wedge \neg(\hat{*}_\lambda P)$
- c.  $@NONPRJ \equiv (*_\lambda L) = 0 \wedge \neg(*_\lambda P)$
- d.  $@LP \equiv (*_\lambda L) = (*_\lambda P)$
- e.  $@LDOWN \equiv (\hat{*}_\lambda L \text{ PLUS}) = (*_\lambda L)$
- f.  $@PDOWN \equiv (\hat{*}_\lambda P \text{ PLUS}) = (*_\lambda P)$
- g.  $@HEADX \equiv @LDOWN \wedge (*_\lambda P) = (\hat{*}_\lambda P)$
- h.  $@HEADA \equiv (*_\lambda L) = (\hat{*}_\lambda L) \wedge (*_\lambda P) = (\hat{*}_\lambda P)$
- i.  $@HEADM \equiv @LDOWN \wedge @PDOWN$
- j.  $@EXT \equiv @LP \wedge (\hat{*}_\lambda L) = (\hat{*}_\lambda P)$
- k.  $@INT \equiv @LP \wedge (\hat{*}_\lambda L) = 1$

The first two templates, @PRJM and @NONPRJM, are primarily used in lexical entries. All lexical entries define the pre-terminal node dominating a word as  $(*_{\lambda} L) = 0$ . In addition, @PRJM (projecting mother) requires its mother to have a value for P. In contrast, languages often have a closed class of words (or subclass of a category) that are not able to function as the head of an endocentric structure. Following the work of Toivonen (2001, 2003), these types of words are called non-projecting words. The theory of non-projecting words has been widely adopted in LFG, and they are a central part of the analysis of serial verb constructions in Barayin. The standard diacritic notation for non-projecting words in LFG is a circumflex accent:  $\hat{X}$ , proposed by Asudeh (2002).

In minimal c-structure, the lexical entry of a non-projecting word contains the template @NONPRJM (non-projecting mother) which specifies that its mother does not have a P feature. The lack of a P feature formally restricts what types of nodes a non-projecting word can combine with to form a constituent. Since a non-projecting word has an L value, but no P value, a non-projecting word can never head a maximal phrase where the L value is equal to the P value (@LP). In addition, phrase structure rules can use the @NONPRJ template to ensure that a particular node can only dominate a non-projecting word.

Toivonen (2003:25) proposes that the distribution of non-projecting words should be restricted to adjoining to the head of a projecting structure ( $X^0$  in X-bar theory) while noting that “the issue of head-adjunction is actually orthogonal to the question of whether or not non-projecting words actually exist.” In the analysis of Barayin, adjunction rules involving non-projecting words follow Toivonen’s proposal.<sup>10</sup> However, minimal c-structure also treats some words in non-adjunction structures as a type of non-projecting word.

Traditionally, some types of non-projecting words have been called “minor categories”, and their distribution is generally unrestricted. For example, Zaenen (1983) analyzes the English article as a Det node in the specifier position of NP. In the approach used here, the distribution of non-projecting words is not necessarily limited to adjunction structures. For example, the negation and

---

<sup>10</sup>Toivonen’s head-adjunction restriction is loosened by Spencer (2005) who analyzes Hindi case markers as non-projecting words adjoined to a maximal phrase (NP or DP in his analysis). Another expansion of the distribution of non-projecting words is proposed by Duncan (2007) and Arnold and Sadler (2013; cf. Sadler and Arnold 1994). These works propose an analysis in which a non-projecting word adjoins to another non-projecting word.

question markers in Barayin are considered non-projecting daughters of the clause-level node S (Section 9.1).

The @LP template is called by several other templates. It represents a node that is the equivalent of a “maximal projection”, XP, in X-bar theory. Its L value is the same as its P value. In other words, its level of structure is the highest level that is projected by the head. However, the LP template can also be satisfied by a node with no L or P values.<sup>11</sup> The @LP template can also be used in a phrase structure rule to ensure that the daughter of an exocentric node is a maximal phrase (see Section 9.1).

The @LDOWN and @PDOWN templates are an adaption of the “successor function” in mathematics (based on Peano’s axioms) to achieve the equivalent of basic arithmetic in a system without natural numbers. Both the formalism of LFG and the XLE parser treat numbers as symbols. In this system, it makes no more sense to add or subtract “1” than it does to add or subtract “\$” or any other arbitrary symbol. These templates have the effect of saying that the mother of a head must have a value of “one greater” than its head, but does so within the constraints of the formalism which treats numbers as symbols.

In this approach, the value of the attributes L and P is either 0 or an attribute-value matrix with the attribute PLUS. Likewise the value of PLUS is either 0 or another AVM with a PLUS attribute. The result in the l-structure is that what is intuitively represented as the number 1 is formally represented as [L [PLUS 0]], the number 2 is formally [L [PLUS [PLUS 0]]], and so on. For the sake of space, the c-structure notation will use numbers as an abbreviation of the formal representation.<sup>12</sup>

The templates in examples 7g-k are used to describe head, specifier and complement positions in phrase structure rules. The primary combinations of templates in phrase structure rules considered in this analysis are modeled in example 8. In these schematic representations, the linear order of the daughters is not relevant.

- (8) a. **Hypothetical specifier rule:**  

$$\begin{array}{ccc} X & \rightarrow & X \quad Y \\ & & @HEADX \quad @EXT \end{array}$$

<sup>11</sup>See footnote 2 in Section 9.1.

<sup>12</sup>In Lovstrand and Lowe (2017), a fixed sequence of numbers is modeled as a disjunction of paired features, i.e., @LDOWN  $\equiv \{ (*_{\lambda} L) = 0 \wedge (\hat{*}_{\lambda} L) = 1 \mid (*_{\lambda} L) = 1 \wedge (\hat{*}_{\lambda} L) = 2 \}$ . The disjunction approach allows a fixed maximum number of values for L and P, and results in a simpler l-structure. In the version of minimal c-structure used here, there is no fixed maximum value of L or P.

b. **Hypothetical complement rule:**

$$X \rightarrow \begin{array}{cc} X & Y \\ @HEADX & @INT \end{array}$$

c. **Hypothetical “XP” adjunction rule:**

$$X \rightarrow \begin{array}{cc} X & Y \\ @HEADM & @EXT \end{array}$$

d. **Hypothetical non-projecting adjunction rule:**

$$X \rightarrow \begin{array}{cc} X & Y \\ @HEADA & @NONPRJ \\ & @PRJM \end{array}$$

The @HEADX template marks the head of an endocentric projection, as in examples 8a and 8b. It requires that its mother have an L value of “one greater” than its own (@LDOWN). It also states that its mother has the same P value as it does. The @EXT(ernal) template in example 8a corresponds to the X-bar notion of specifier. It ensures that the node occurs at the highest part of an endocentric structure by requiring its mother node to be a maximal node. The same template can be used for adjunct nodes in combination with a different type of head node, as in example 8c.

The @INT(ernal) template corresponds to the X-bar notion of a complement. In combination with the @HEADX template, it ensures that the complement position is a sister of a head with an L value of 0. Its function is illustrated in the simplified phrase structure rule for English verb phrases in example 9, which licenses a verb phrase like the one shown in Figure 8.7. The @INT template requires the noun phrase to be a maximal phrase, and it stipulates that the mother’s L value is 1. On the left side of the phrase structure rule, the @HEADX template on the head calls the @LDOWN template. The @LDOWN template requires the head and its mother to have ascending L values. This indirectly ensures that the head has an L value of 0.

(9) **English (simplified) verb phrase rule**

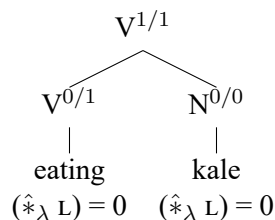
$$V \rightarrow \begin{array}{cc} V & N \\ @HEADX & @INT \end{array}$$


Figure 8.7: English (simplified) verb phrase structure

The phrase structure rule in example 8d constrains the adjunction of non-projecting words to only attaching to a head whose L value is 0. It does this via the template @PRJM, which requires the

mother node to have an L value of 0, in combination with the template @HEAD A, which requires the head to have the same L value as its mother.<sup>13</sup> For a concrete example, consider the adjective *mere* in English. As Arnold and Sadler (2013) point out, this adjective can precede a head noun, as in example 10, but it cannot be used in a predicational position with a copular verb, as in 11. Arnold and Sadler (2013) account for this distribution by analyzing *mere* as a non-projecting adjective. The phrase structure rule for non-projecting adjectives in example 12 converts their analysis to minimal c-structure. A phrase structure tree licensed by this rule is shown in Figure 8.8.

- (10) *They are mere boys.*  
 (11) \**They are mere.*  
 (12) **Non-projecting adjunction rule for English adjectives**  
 N → Adj N  
           @NONPRJ @HEAD A  
           @PRJM

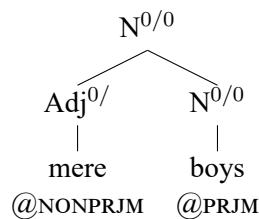


Figure 8.8: English non-projecting adjective in minimal c-structure

The template @NONPRJM in the lexical entry of the non-projecting adjective in Figure 8.8 determines its mother's L value to be 0, and prevents the pre-terminal node from having a value for P. This concurs with the @NONPRJ template in the phrase structure rule in example 12. On the right side of the structure, the template @PRJM in the lexical entry of the noun requires its mother node, the pre-terminal node, to have an L value of 0. The @HEAD A template requires the pre-terminal head noun to have the same L and P values as its mother node. Assuming that the top node in Figure 8.8 is embedded in a larger structure that requires it to be a maximal phrase (L = P), the P value of both N nodes must also be 0. Finally, the template @PRJM on the non-projecting adjective in the

<sup>13</sup>The phrase structure rule in example 8d prevents the adjunction of a non-projecting word to another non-projecting word. This is a different type of adjunction than the analysis of English non-projecting adjectives in Lovstrand and Lowe (2017) (see also Arnold and Sadler 2013; Duncan 2007). There the template @NONPADJ is used for annotating a non-projecting adjunct. The template @NONPADJ is defined as a combination of @NONPRJ and (\*<sub>λ</sub> L) = 0. In the analysis of English, a non-projecting adjunct does not require its mother to have a value for P. It is crucial for the analysis of Barayin that a non-projecting post-verbal clitic not be able to adjoin to a non-projecting verb (Section 10.2.1). Since the behavior of adjunction is different in Barayin, a different combination of templates is used for Barayin as compared to English. Yet another type of non-projecting adjunction is the adjunction of a non-projecting word to a maximal phrase (Spencer 2005). This requires a phrase structure rule like example 8c in which the @EXT annotation is replaced by a @NONPRJ annotation (see example 3d in Section 9.1).

phrase structure rule requires the mother node in this adjunction structure to have an L value of 0. This is indeed the case, so the structure is well-formed.

Whereas the @HEADM template ensures that the head and mother of the adjunction structure are identical, the @HEADM template seen in example 8c results in a mother and daughter that differ in their L and P values. The @HEADM template and the @PDOWN template it calls in its definition are additions to the proposal of Lovstrand and Lowe (2017) which assumed that @HEADM is adequate for marking the head of all types of adjunction. To offer a simple, concrete example of how the @HEADM template functions, consider the phrase structure rule for adjuncts attached to English nouns in example 13. Figure 8.9 shows a phrase structure tree based on this rule for the phrase *boys from apartment 319*. In this figure, it is assumed that the top node must be a maximal phrase.

(13) **Simplified phrase structure rule for English nominal adjuncts**

$$N \rightarrow N \quad P$$

$$\quad \quad \quad @HEADM \quad @EXT$$

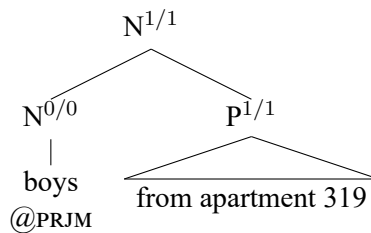


Figure 8.9: English “XP” adjunction in minimal c-structure

Since the head noun in Figure 8.9 does not have any complements or specifiers in its structure, its pre-terminal node has a value of 0 for both L and P. The @HEADM template ensures that the top node has L and P values that are one number larger. The reason why it is essential to modify the L and P values in this way relates to the distribution of non-projecting words. If the @HEADM template were used in the phrase structure rule in example 13 instead of the @HEADM, the top of the structure in Figure 8.9 would have the value of 0 for L and P. In that case, the non-projecting adjective, *mere*, would be allowed to appear above the adjunct prepositional phrase. Intuitively, this is not the right constituency structure, although that is not obvious from the word order. In the analysis of post-verbal particles in Barayin (Section 9.5), it is crucial to ensure that non-projecting words cannot adjoin above an adjunct phrase. That would result in the wrong word order. The @HEADM template ensures that the mother node of an adjunction structure is no longer a viable candidate for adjunction to the head of an endocentric projection.

The mechanism for sharing category information between a head and mother is not explicitly addressed in this work, but one possibility is that the templates for heads, @HEADX, @HEADM and @HEADA, include some f-description like  $(*_\lambda \text{ CAT}) = (\hat{*_\lambda} \text{ CAT})$ . Under that proposal, the informal use of a letter on the left side of the phrase structure rule to indicate the lexical category of the mother node becomes redundant.

## 8.2 F-structure

Unlike c-structure, f-structure (functional structure) does not represent linear order or constituency. “Functional structure is the abstract functional syntactic organization of the sentence, familiar from traditional grammatical descriptions, representing syntactic predicate-argument structure and functional relations like subject and object” (Dalrymple 2001:7). The role of f-structure is, in part, to mediate the relationship between what is said (c-structure) and what is meant (semantics). “The functional structure for a sentence encodes its meaningful grammatical relations and provides sufficient information for the semantic component to determine the appropriate predicate-argument formulas” (Bresnan and Kaplan 1982:176).

F-structure information is normally represented in the attribute-value matrix (AVM) format already introduced for l-structure. An example of an f-structure for the sentence “The tall, beautiful Samoan danced” is given in Figure 8.10.

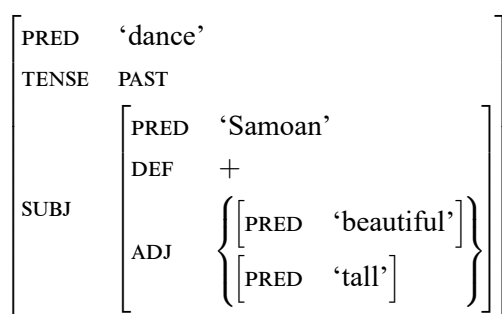


Figure 8.10: F-structure of “The tall, beautiful Samoan danced.”

Grammatical functions are a key element of f-structure. The primary role of grammatical functions is to provide a link between information that is lexically or syntactically encoded in the c-structure and a particular semantic role in the argument structure (Bresnan 1982a:348). The main inventory of grammatical functions assumed in LFG is: SUBJ, OBJ, OBJ<sub>θ</sub>, OBL<sub>θ</sub>, COMP, XCOMP, ADJ, XADJ

and POSS. Grammatical functions in LFG are taken to be theoretical primitives of the theory, in contrast to other theories of syntax in which grammatical functions are derived concepts (Bresnan 1982a:344-348).

A particular f-structure diagram is not necessarily comprehensive in its representation of all possible f-structure information. Only the relevant features are represented. In the f-structure in Figure 8.10, the attribute TENSE is presented as an attribute that selects an atomic value from a language-specific set of values (e.g., different types of tense such as PRES(ent), FUT(ure), or PAST). The value of an attribute can also be binary, as in the choice between the values + or – for DEF(initeness).

The value of an attribute does not have to be atomic. In Figure 8.10, the attribute SUBJ(ect), one of the grammatical functions, has another f-structure (represented as an AVM) as its value. This f-structure contains three attribute-value pairs. There are two other types of values possible. A value can be a set of f-structures, represented by one or more AVMs inside curly brackets, as in the case of the value of the grammatical function ADJ(unct) in Figure 8.10.

Finally, the PRED attribute always selects a semantic form as its value. A full discussion of the broad range of issues related to the nature of PRED and semantic forms is beyond the scope of this dissertation, but it will be useful to briefly explain what the working assumptions are. This special type of value is written in single quotes. This indicates that the semantic form is uniquely instantiated which means that it cannot be unified with any other value. The function of unique instantiation is still considered a crucial role of semantics forms, despite the fact that other functions that semantic forms were previously assumed to have are no longer considered necessary (Asudeh 2012:113; Dalrymple 2001:220).

Traditionally, semantic forms also include a subcategorization frame listing grammatical functions written between angled brackets, e.g., <(&uparrow; SUBJ)(&uparrow; OBJ)>. These represent what arguments the verb requires. In f-structure, the absence of a selected function violates the principle of Completeness, and the appearance of an unselected grammatical function violates the principle of Coherence (Kaplan and Bresnan 1982). The development of Glue semantics in LFG has long taken over the semantic role that the subcategorization frame was once assumed to have (Dalrymple 1999; Dalrymple et al. 1993b). However, Dalrymple (2001:221) points out two types of constructions

that seem to need a syntactic explanation for the appearance of arguments: syntactically optional arguments and expletive pronouns.

In a recent proposal, Asudeh and Giorgolo (2012) account for the optionality of an overt object using Glue semantics. The standard view of Bresnan (1977) is that a verb with an optional object argument essentially has two different subcategorization frames used in different contexts. In the proposal of Asudeh and Giorgolo (2012), the verb provides an optional meaning constructor that fills in a default argument when none is overtly expressed. This means that whether the verb has one or two syntactic arguments depends on whether or not the optional default argument is used in the semantics. The lexical entry of the verb does not need to express a syntactic ambiguity between a transitive and intransitive use (i.e., two subcategorization frames) because the alternation is constrained by the semantics.

Asudeh (2012:112–114) discusses potential strategies for handling cases where a verb requires a “dummy” or expletive subject pronoun (e.g., ‘rain’ in English). Since the expletive pronoun is presumably not linked to any semantic argument, the ungrammatically caused by its absence cannot be explained by appealing to the semantics of the verb. There is no consensus in the literature on whether this issue has been satisfactorily addressed. If it is, then it is arguably the case (and desirably so) that “the resource sensitivity of glue means that the principles of COMPLETENESS and COHERENCE, traditionally treated as well-formedness constraints on f-structure, are captured at the level of semantics, rendering them superfluous as f-structure constraints” (Lowe 2016:426).

The issue is not directly relevant to the analysis of Barayin, because constructions with expletive subjects are not considered. Since the LFG architecture used in this analysis is based on the proposal of Asudeh and Giorgolo (2012), the representation of semantic forms follows their representation, using single quotes (indicating unique instantiation) but no subcategorization frame (e.g., PRED ‘eat’), with the caveat that this approach does not provide an explicit account of expletive arguments.<sup>14</sup> The Glue semantics inherent to the architecture of Asudeh and Giorgolo (2012) will be assumed in the analysis of Barayin, but not included in any lexical entries or diagrams. For more discussion on the nature of PRED, see Dalrymple et al. (1993a:13–15), Kuhn (2001:11–13), Asudeh (2012:112–114) and Lowe (2016:426–429).

---

<sup>14</sup>In the implementation of the analysis of Barayin in XLE (Appendix A), subcategorization frames are included in the value of PRED as required by the parser. This demonstrates that the analysis of Barayin is equally valid in the more standard view of the role of subcategorization frames in f-structure.

### 8.3 S-structure

The original version of the modular architecture (Kaplan and Bresnan 1982) focused on only two levels of representation: c-structure and f-structure. A long-standing view in LFG has been that there is a level of a(rgument)-structure which is an intermediate level between c-structure and f-structure (e.g., Butt et al. 1997). This version of the LFG architecture is shown in Figure 8.11.

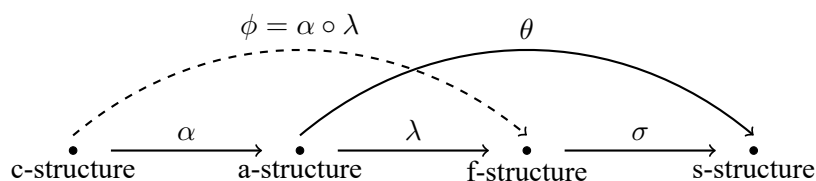


Figure 8.11: LFG architecture with a-structure

In the version of the LFG architecture with a-structure, there is a function  $\alpha$  from c-structure to a-structure, a function  $\lambda$  from a-structure to f-structure,<sup>15</sup> and a function  $\sigma$  from f-structure to s-structure. What was originally proposed as a function  $\phi$  from c-structure to f-structure is understood to be a composite of the two functions  $\alpha$  and  $\lambda$ . However, Asudeh and Giorgolo (2012) point out that, in this approach, “it is necessary to postulate a direct correspondence function  $\theta$  from argument structure to semantic structure, where the function  $\theta$  is not the composition of  $\lambda$  and  $\sigma$ .” For further discussion see Findlay (2016a:303-309).

Asudeh and Giorgolo (2012) return to a less complex architecture with no a-structure. C-structure maps to f-structure which maps to s-structure. This version of the LFG architecture is similar to an early proposal by Kaplan (1987, 1989). The relevant part of the architecture is shown in Figure 8.12 (repeated from Figure 8.1). Aspects of this proposal are further explored by Asudeh et al. (2014), Findlay (2016a), Lowe (2016) and Przepiórkowski (2017).

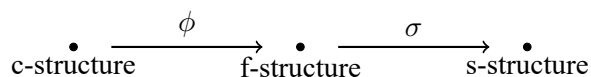


Figure 8.12: LFG architecture without a-structure (Asudeh and Giorgolo 2012)

<sup>15</sup>This should not be confused with the  $\lambda$  function linking c-structure and l-structure (Section 8.1).

The approach of Asudeh and Giorgolo (2012) differs from a previous proposal for a connected s-structure by Halvorsen and Kaplan (1988) in which s-structure is a projection of c-structure, instead of f-structure, and only indirectly related to f-structure by an inverse function. The architecture of Halvorsen and Kaplan (1988) is criticized by Andrews and Manning (1999:11) “because once the information required for semantic composition is scattered across two projections, it becomes quite unclear how to integrate it in a coherent manner” (see also Butt 1995:130). By arranging the architecture so that s-structure is a projection of f-structure, Asudeh and Giorgolo (2012) avoid this criticism.

The connected s-structure is a relatively unstudied level of representation, and the precise nature of its content is not yet clear. In general, the approach to representing argument structure and semantic structure in LFG is what Pinker (1989) calls the “grammatically relevant subsystem” approach (cf. Dalrymple 2001:197). To quote Pinker (1989:194):

Linguistic processes... would be sensitive only to parts of semantic representations whose elements are members of this set. The set would consist of symbols that have cognitive content, such as “causation” and “location,” but not all cognitively meaningful concepts are members of this privileged semantic machinery.

At a bare minimum, this level of representation must include semantic arguments of some kind. Findlay (2016a:313-315) argues that the connected s-structure should assume a set of ARG attributes along the lines of those proposed by Kibort (2004, 2010, 2014). The set of arguments assumed in this analysis, from Kibort (2014), is shown in example 14.

(14) **Semantic arguments:**

- a. ARG1: The first argument position is associated with the participant of whom the event or state is predicated.
- b. ARG2: If the predicator has any other dependents, the most prominent of the remaining semantic dependents of the predicator maps on the second argument position.
- c. ARG3: If the predicator has another semantic dependent (e.g., structural dative), it maps on the third argument position.
- d. ARG4: If the predicator has further semantic dependents which it selects, they map onto further argument positions (ARG4, ... , ARGn).

Other grammatically relevant elements are largely drawn from the work of semanticists Talmy (1985) and Jackendoff (1990), but more innovative semantic features have also been proposed to deal with particular construction types. Recent publications using the connected s-structure postulate several syntactically-relevant semantic attributes such as INSTRUMENT (Asudeh and Giorgolo

2012), PATH (Asudeh et al. 2013), BENEFICIARY (Asudeh et al. 2014), LOCATION (Findlay 2016b), PLACE, MANNER (Przepiórkowski 2017), EVIDENCE and EVIDENCE-HOLDER (Asudeh and Toivonen 2017).<sup>16</sup> Both PATH and MANNER features are used in the analysis of Barayin serial verb constructions.

Asudeh et al. (2008, 2013) also introduce an s-structure attribute, REL, which is described as “a REL meaning *R* specifying the nature of the event *e*, which is provided by the verb in the construction.” Little else has been published on the nature and function of REL in s-structure. In this dissertation, its function is minimally to identify unique s-structures, both for the sake of readability and to prevent unwanted unification of s-structures that have different values for REL. For this reason, it is useful to follow Lowe (2014:12) in explicitly stating that the attribute REL is not only part of the s-structure of a verb, but also part of the s-structure of other words, in particular, arguments of the predicate.<sup>17</sup> The nature of the correspondence between PRED in f-structure and REL in s-structure is discussed in the next section.

Most work on s-structure omits any details about the value of an ARG attribute, except to represent it as a single s-structure. The representations in this dissertation are slightly more detailed in that they include the REL attribute. More semantic details could be filled in to the value of an argument, such as information about the semantic gender or whether it is human or animate (Dalrymple and Nikolaeva 2011:79; Lowe 2014). Those details are omitted here since they are not relevant to the analysis.

Figure 8.13 is an example of an s-structure of the sentence *Tim flew to Jakarta from Manila*. The verbal predicate contributes a REL to the main s-structure. The subject noun phrase contributes a REL feature to the ARG1. Each of the prepositional phrases contribute an s-structure to the value of PATH each containing its own REL and its own arguments.

Note that the value of PATH in the s-structure of Figure 8.13 is a set (cf. Matsumoto 1996:299). This is because a path of motion can be complex, and its values can be derived from more than one word or phrase in a sentence. However, this is not the only way to represent a complex path in s-

---

<sup>16</sup>In an early discussion of argument structure, Bresnan (1982a:352) posits a similar list of argument types: “The specified types of arguments may include the thematic relations AG(ent), TH(eme), EXP(eriencer), SO(urce), GO(al), LOC(ation), DIR(ection), BEN(eficiary), INSTR(umental), as well as MNR (manner), MEANS (a secondary TH), CAUSEE (a secondary AG), PART, PATH, QUANT(ity), and PROP(ositional).”

<sup>17</sup>Lowe (2014) represents the value of REL as an s-structure, whereas other publications represents its value as a simple atomic value. I follow the simpler representation here, but without taking any position as to whether this is an oversimplification of a more complex representation of the value of REL.

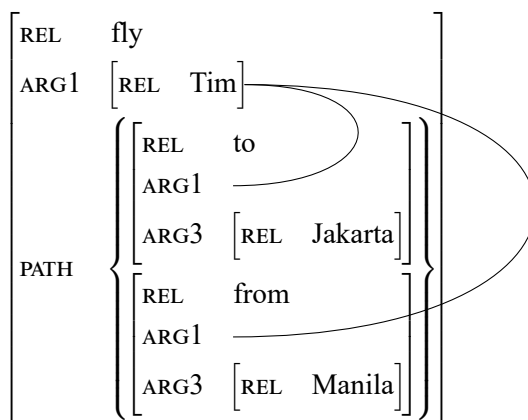


Figure 8.13: Example of an s-structure for the sentence *Tim flew to Jakarta from Manila*

structure. Section 11.4.4 presents an alternative approach to representing complex paths. Although not immediately relevant to the analysis of Barayin, there is also an open question of whether other semantic attributes, such as MANNER and INSTRUMENT should be represented as having a single s-structure or a set of s-structures as their value.

In Figure 8.13, each of the s-structures in the PATH feature has its own ARG1 that is co-referential with the ARG1 of the main s-structure. Since all of these s-structure are connected in a single structure, it is possible to use f-descriptions in a lexical entry to link one element of the s-structure to another, without any reference to grammatical relations. For example, a simplified version of such an f-description would be  $(\uparrow_{\sigma} \text{PATH ARG1}) = (\uparrow_{\sigma} \text{ARG1})$ , where the combination of the up arrow and sigma refers to the s-structure (Section 8.4).<sup>18</sup> This use of f-descriptions to link elements of the s-structure is crucial to the account of “argument sharing” in Barayin serial verb constructions.

Asudeh and Giorgolo (2012) also include the attribute EVENT in their representation of s-structure. The function and meaning of the EVENT attribute will not be considered in this analysis, except in Chapter 11 where it is pointed out that it would be useful for the value of EVENT (or some other s-structure attribute) to include a feature that identifies the semantic class of the event (e.g., motion, state, punctual).

<sup>18</sup>Because the value of PATH is a set, in a more complex example with multiple features in the set, reference to one of those features must be formally represented by a local name (Dalrymple 2001:146-148). For example,  $\%P \in (\uparrow_{\sigma} \text{PATH})$  says that there is some structure %P in the set of the value of PATH. A second equation,  $(\%P \text{ ARG1}) = (\uparrow_{\sigma} \text{ARG1})$ , says that the ARG1 of that s-structure, %P, is identical to the ARG1 of the s-structure. See Section 10.4.

## 8.4 Linking between levels of structure

Since the architecture of LFG places different types of information in different models at distinct levels of representation, a system is needed to constrain and predict how these levels of representation share information with each other. This returns to the idea of projections introduced in the discussion of the relationship between l-structure and nodes in c-structure (Section 8.1). A projection is a mathematical function in the sense that it allows a one-to-one or many-to-one relationship, but not a one-to-many relationship. In the LFG architecture used in this analysis, c-structure projects f-structure. F-structure projects s-structure.

### 8.4.1 C-structure to f-structure: $\phi$

The f-structure information that is projected from c-structure comes from the lexical entries of words and annotations on nodes in c-structure. The computational procedure behind this linking system is spelled out in detail in Bresnan et al. (2016:46-58). Each node in the c-structure projects an f-structure. In some cases, the f-structure that a certain c-structure node projects is defined as being equal to the f-structure projected by its mother node. In other cases, the f-structure projected by a c-structure node is defined as being the value of an attribute of another f-structure, such as a grammatical relation. In this way, the f-structures from multiple nodes in a c-structure correspond to a hierarchical f-structure in which one f-structure can be embedded in another as the value of a grammatical function.

The function that is applied to a c-structure node in order to get its f-structure is called  $\phi$  (Figure 8.12). Instead of representing the application of this function to a particular c-structure node, \*, as  $\phi(*)$  or  $*\phi$ , a down arrow ( $\downarrow$ ) is used in a phrase structure rule or tree to mean “the f-structure projection of this node”. The up arrow ( $\uparrow$ ) means “the f-structure of my mother node”, or  $\phi(\hat{*})$ . In many cases, one node’s f-structure is the same as its mother’s f-structure. This is indicated by an annotation below the c-structure node equating the two f-structures:  $\uparrow = \downarrow$ .<sup>19</sup>

---

<sup>19</sup>Phrase structure annotations are often written above the symbol for the node in the c-structure to make explicit which node the arrows are pointing to. However, in phrase structure rules these annotations typically appear below the node, and are written that way on the trees in these chapters.

Figure 8.14 illustrates how the syntactic information from different words (written below the words at the bottom of the tree) can contribute to the same f-structure. The lines show which c-structure nodes are connected to which f-structure(s). The lexical entry for *the* states that its mother node (the pre-terminal node D) has an f-structure with feature [DEF +]. The  $\uparrow = \downarrow$  annotation on the D node states that its f-structure (which includes the feature [DEF +] assigned to it by the lexical entry of the word it dominates) is also the f-structure of the node that dominates D, the node  $N^{1/1}$ . The same annotations are found above the word *piano*. So the f-structure for the whole tree, that of  $N^{1/1}$ , is the combination of both f-structures including features from both words.

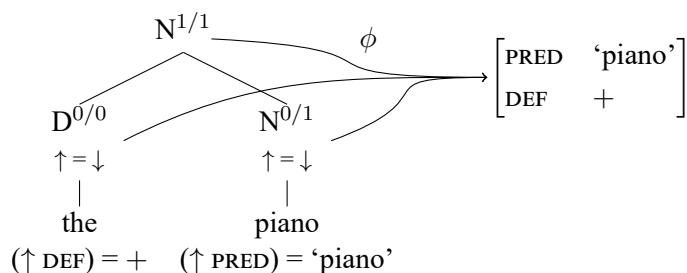


Figure 8.14: C-structure nodes contributing to the same f-structure

In many languages, grammatical functions are associated with a particular position in the c-structure. In these cases, a particular node is annotated with an f-description that identifies the f-structure of that node as the value of a grammatical function of a higher node. For example, in the simplified phrase structure rules for English in example 15a, the first node has the annotation:  $(\uparrow \text{SUBJ}) = \downarrow$ . The information in the parentheses on the left side of the equation can be read as: Look for the mother's f-structure ( $\uparrow$ ) and find the attribute SUBJ. As always, the down arrow on the right side of the equation refers to the f-structure of the annotated node.<sup>20</sup>

(15) **English (simplified) phrase structure with structure-function annotations**

a. Minimal c-structure:

- a.  $S \rightarrow N \quad V$   
 $(\uparrow \text{SUBJ}) = \downarrow$        $\uparrow = \downarrow$   
 $@\text{EXT}$                        $@\text{LP}$
- b.  $V \rightarrow V \quad N$   
 $\uparrow = \downarrow$                        $(\uparrow \text{OBJ}) = \downarrow$   
 $@\text{HEADX}$                        $@\text{INT}$

<sup>20</sup>A meticulous reader might notice that the S node in Figure 8.15 is not annotated for any L or P values, which may seem odd since the template  $@\text{EXT}$  requires that the mother node have equal L and P values. This issue is addressed in footnote 2 in Section 9.1.

b. Standard LFG X-bar theory:

a. S → NP VP  
 (↑ SUBJ) = ↓    ↑ = ↓

b. VP → V<sup>0</sup> NP  
 ↑ = ↓    (↑ OBJ) = ↓

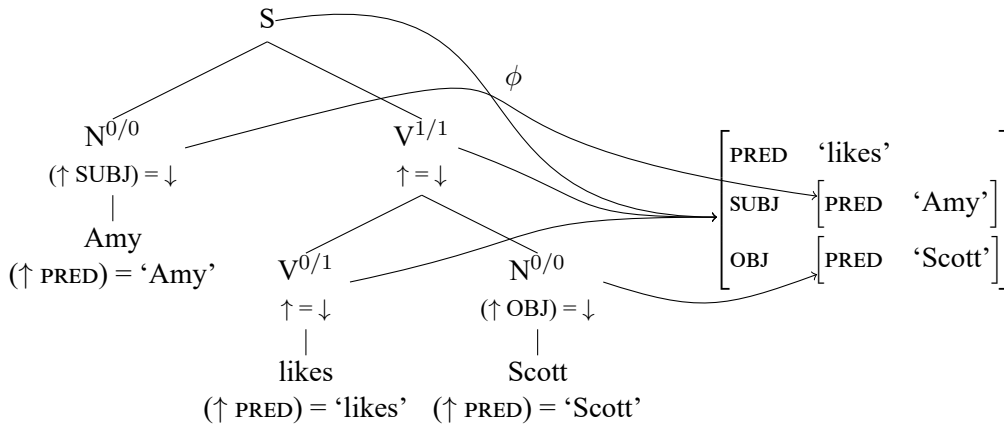


Figure 8.15: C-structure nodes annotated with grammatical functions

The c-structure and f-structure for the sentence *Amy likes Scott* licensed by the rules in example 15 are shown in Figure 8.15. Because the nominal position preceding the verb is annotated with an equation mentioning the grammatical function SUBJ, the f-structure information from the terminal node, namely its PRED, appears as the value of the attribute SUBJ in the main f-structure. Likewise since the noun following the verb whose pre-terminal node is annotated with the an equation mentioning the grammatical function OBJ, the f-structure information from the terminal node, its PRED, appears as the value of the attribute OBJ.

Zaenen (1983) defines three general principles for restricting where f-structure annotations appear in the c-structure (cf. Bresnan 1982a:353-355). The first principle is the “maximal category convention”. This restricts annotations which refer to a grammatical function, for example, (↑ SUBJ) = ↓, to only occurring on maximal projections. In minimal c-structure, maximal projections are nodes that are annotated with the l-structure template @LP, or templates that are defined by @LP, such as @EXT and @INT.

The second principle is the “head convention” which states that “the head of a major category... always carries the equation ↑ = ↓.” In minimal c-structure, this means that any node with one of the three templates @HEADX, @HEADA or @HEADM has an f-structure that is identified with the

f-structure of its mother. The final restriction is the “minor category convention” which states that non-projecting words should also be functional heads. This applies to any node in the c-structure annotated with @NONPRJ.<sup>21</sup>

Some additional “structure-function association principles” are proposed by Bresnan (2001; Bresnan et al. 2016:117). Some of these principles relate to categories headed by a functional category (I, D, C). These categories are not used in the analysis of Barayin clause structure.<sup>22</sup> Three of Bresnan’s principles are relevant to the analysis of Barayin clause structure. First, it is stated that a daughter of S may be a subject. Presumably other grammatical functions can also be daughters of S, but this is not explicitly licensed or forbidden. Second, “complements of lexical categories,” nodes annotated with @INT in minimal c-structure, “are the non-discourse argument functions or f-structure co-heads”, which include OBJ and OBL<sub>θ</sub>. Third, “constituents adjoined to phrasal constituents are optional non-argument functions” which include the function ADJ.

The last two of these “structure-function association principles” are problematic in the analysis of Barayin. There are locative constituents that are adjoined to the verb phrase, but semantically behave like an OBL<sub>θ</sub> argument. This issue will be discussed in Section 9.6.

To review, lexical entries have information about their category (e.g., N, V, P) and what type of structure they can occur in (@PRJM or @NONPRJM). They also share features with their mother’s f-structure (via the function  $\hat{*}_\phi$  or  $\uparrow$ ) such as whether they contain a PRED with a semantic form and if they have any grammatical features relevant to f-structure.

#### 8.4.2 F-structure to s-structure: $\sigma$

Lexical entries can also have information about the third level of representation that is used in this analysis, s-structure. There is no direct function (or projection) from c-structure to s-structure. S-structure is connected to c-structure by a function from f-structure. The projection from f-structure to s-structure is labeled  $\sigma$  (Figure 8.12). The notation for the s-structure associated with a particular

---

<sup>21</sup>There have been other proposals loosening this constraint on non-projecting words. According to Toivonen (2003:68) non-projecting words “adjoined to heads are co-heads or argument functions” such as xCOMP. In the analysis of adverbs and adjectives in Arnold and Sadler (2013), non-projecting words have the non-argument function ADJ. Bresnan et al. (2016:116) do not propose any restrictions on the functional annotations for non-projecting words.

<sup>22</sup>Bresnan proposes that the specifier of a functional category can be annotated for a “grammaticalized discourse function” such as SUBJ or TOPIC, and that the complement of a functional head is a f-structure co-head ( $\uparrow = \downarrow$ ).

node in c-structure is an up or down arrow (referring to an f-structure) with a subscript sigma referring to the s-structure projected from that particular f-structure:  $\uparrow_{\sigma}$ .

Asudeh and Giorgolo (2012) represent the links between grammatical functions in f-structure and arguments in s-structure using expressions like:  $(\uparrow \text{SUBJ})_{\sigma} = (\uparrow_{\sigma} \text{ARG1})$ . This is a simplified analysis that Findlay (2016a) elaborates in order to systematically represent the possible links (i.e., valency alternations) between grammatical relations and arguments. Following Kibort's (2004; 2010; 2014) approach to mapping between grammatical relations and arguments (Mapping Theory), Findlay (2016a) proposes templates with disjunctions that capture valency alternations. Valency alternations do not have any role in the analysis of Barayin serial verb constructions, so these more precise characterizations of the mapping between grammatical functions and arguments will be ignored, and instead simple f-descriptions will spell out the relevant links in each lexical entry, as done in the initial proposal of Asudeh and Giorgolo (2012).

Przepiórkowski (2017:354, fn. 7) points out that, in recent work on the connected s-structure, “the existence of the semantic attribute REL is assumed—but not formally introduced.” He formalizes the appearance of REL by adding an expression to the lexical entry, e.g.,  $(\uparrow_{\sigma} \text{REL}) = \text{devour}$ , in addition to the expression that introduces the PRED to f-structure, e.g.,  $(\uparrow \text{PRED}) = \text{'devour'}$ .

In this dissertation, REL is introduced in a more generalized way that formalizes the intuition that the value of REL always corresponds to a PRED value. Instead of each predicate having an expression in its lexical entry that states (arbitrarily) what its REL value is, predicates are assumed (by default) to have an expression that shows a systematic correspondence between a PRED and a REL:  $(\uparrow \text{PRED FN}) = (\uparrow_{\sigma} \text{REL})$ .

This expression borrows the attribute FN from the XLE version of LFG. XLE is a grammar development platform with algorithms for parsing and generating an LFG grammar (Crouch et al. 2011; Kaplan and Maxwell 1996). In XLE, the semantic form is broken down into different components, one of which is FN, the “function component” (Kaplan and Maxwell 1996:89).<sup>23</sup> The value of FN is the word(s) the linguist uses to identify the unique semantic form (normally an English gloss) without any quotes or subcategorization frame.

---

<sup>23</sup>Also in the section on Grammatical Notations in Crouch et al. (2011).

The projection of PRED FN to s-structure applies not only to the main predicate of a clause, but also to other words that have a PRED in f-structure and a REL in s-structure. The PRED FN value is projected from an f-structure to its corresponding s-structure, and an expression from Mapping Theory (or one of the simplified linking expressions used here) specifies where in the larger connected s-structure the s-structure of that word is embedded. This formalizes a generalization that a PRED in f-structure, whether the main predicate of the f-structure or the PRED of a grammatical function, will normally have a corresponding REL in s-structure.<sup>24</sup>

This practical method for systematically supplying a value of REL does not represent a specific theoretical claim about what precisely the nature of the “function component” of PRED is, or what its role is as the value of REL in s-structure. These questions are relatively unexplored in the literature, and are not an area of focus in this dissertation. This approach does not necessarily assume that the value of REL is uniquely instantiated, nor is it incompatible with such an assumption if necessary. In most cases, a REL value corresponds to a PRED, and the issue of uniqueness can be accounted for at the level of f-structure.<sup>25</sup> For the purposes of this dissertation, there are no clear advantages to assuming that the value of REL is uniquely instantiated and non-unifiable.

To illustrate the LFG architecture, Figure 8.16 puts together the c-structure, f-structure and s-structure for a simple sentence, *Tim flew*.

---

<sup>24</sup>There are potentially some words that have a PRED, but not a corresponding s-structure, such as copular verbs and light verbs, as well as adverbs and modifiers, depending on how their semantic contribution is analyzed in s-structure.

<sup>25</sup>The exception would be any word that contributes a REL but not a PRED, as in the analysis of serial verbs in Barayin (Section 10.4). In the hypothetical case where two such words each contribute an identical REL value but no PRED, it would be technically possible for the s-structures containing those REL values to unify.

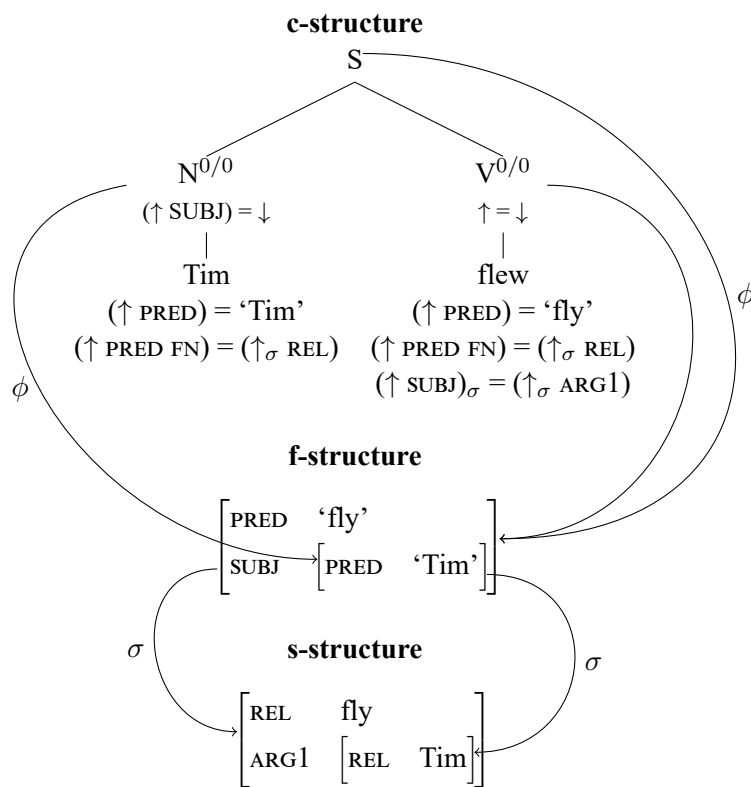


Figure 8.16: C-, f- and s-structure of *Tim flew*

## Chapter 9

# C-structure and f-structure of Barayin

This chapter covers some basic phrase structure rules and corresponding f-structures assumed in the analysis of Barayin as a foundation for the analysis of SVCs in Chapter 10. Section 9.1 introduces the exocentric category S as the root node of a basic clause. Section 9.2 describes noun phrases, and Section 9.3 describes prepositional phrases. The most relevant sections for the analysis of SVCs are Section 9.4, which describes verb phrases, and Section 9.5, which presents an analysis of postverbal clitics. Locative and adverbial adjuncts to the VP are discussed in Section 9.6. Section 9.7 briefly presents a c-structure analysis of several minor category words analyzed as being of the functional category C.

In order to ensure that the formal analysis works as intended for Barayin, many of the examples used in Chapters 9 and 10 are modeled in a mini-grammar in XLE, a grammar development platform with algorithms for parsing and generating an LFG grammar (Crouch et al. 2011). The phrase structure rules and lexical entries for the XLE grammar are given in Appendix A. No unwanted ambiguity was found in the c-structures of the examples parsed. Using minimal c-structure, these rules do not generate any non-branching nodes of a single lexical or functional category.

This chapter is focused on the levels of c-structure and f-structure. Representations of the s-structure are not included. However, the XLE implementation in Appendix A does include the connected s-structure.

## 9.1 S: Clause structure

S is an “exocentric” category. It is not endocentric. None of its daughters are its head. Formally, S does not have any category or level features in its l-structure.<sup>1</sup> The category S is prominent in descriptions of “nonconfigurational” or “free-order” languages, but that does not mean S always allows “free” ordering of its constituents.

The exocentric category S is not everywhere nonconfigurational, however, if by ‘non-configurational’ we mean ‘lacking a VP’ or other projection distinguishing subject position from complement position. Many languages have subject predicate constructions of the form [S → NP XP], where XP may be a predicate phrase of any of a range of categories VP, NP, AP, or PP (Bresnan et al. 2016:115).

In this analysis, the Barayin clause is modeled using the exocentric category S as defined in the phrase structure rule in 1. The phrase structure rules presented in this chapter and the next normally show the rule written in the minimal c-structure approach (Section 8.1), followed by the nearest equivalent rule written in the current standard LFG approach to X-bar theory (e.g., Bresnan et al. 2016).

### (1) S phrase structure rule (flat version)

a. Minimal c-structure:

$$\begin{array}{cccccc}
 S & \rightarrow & (N) & (Adv) & X & (Neg) & (Q) \\
 & & (\uparrow \text{SUBJ}) = \downarrow & \uparrow = \downarrow & \uparrow = \downarrow & \uparrow = \downarrow & \uparrow = \downarrow \\
 & & @EXT & @NONPRJ & @LP & @NONPROJ & @NONPROJ
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{cccccc}
 S & \rightarrow & (NP) & (\hat{Adv}) & XP & (\hat{Neg}) & (\hat{Q}) \\
 & & (\uparrow \text{SUBJ}) = \downarrow & \uparrow = \downarrow & \uparrow = \downarrow & \uparrow = \downarrow & \uparrow = \downarrow
 \end{array}$$

In the S phrase structure rule, there are five types of daughters of S, all of which are optional except for the predicate. The first position, a maximal projection of the category N, is the subject position.<sup>2</sup>

<sup>1</sup>This does not necessarily rule out the possibility of an exocentric category with a category feature. However, if a theory of category sharing is assumed such that the mother node normally has a category that is shared with its head, then it follows that exocentric phrases should not have any lexical category information, unless some other mechanism in the grammar is used to determine the lexical category of the phrase.

<sup>2</sup>The template @EXT annotating the subject noun phrase in the phrase structure rule in 1 requires that its mother’s L and P values be identical. In this context, the constraint is on the exocentric head node, S, which has no values for L or P. In XLE, an equation L = P is satisfied if there are no L or P features. However, Adam Przepiórkowski (*personal communication*) points out that this is not allowed in the theory described by Kaplan and Bresnan (1982). Under the assumptions of that theory, the @LP template would need to be a disjunction specifying that it is also satisfied by the following equation:  $\neg(*_{\lambda} L) \wedge \neg(*_{\lambda} P)$ . For the sake of simplicity, the XLE version is assumed here. See Lovstrand and Lowe (2017:300) for more discussion.

Following the subject is a position for a grammaticalized subclass of non-projecting adverbs. These five words that can appear in the position between a subject and predicate are shown in Table 9.1. It would be possible to posit that the pre-predicate adverbs are of the function category I, in which case they would be the head of the clause structure. However, these adverbs are semantically atypical of the type of words analyzed as members of the category I. Since pre-predicate adverbs are more often absent than present, the I analysis would also require the unnecessary complication of headless structures more often than not.

Table 9.1: Pre-predicate adverbials

<i>ta</i>	probably a type of epistemic modality indicating certainty
<i>ganda</i>	Progressive marker, also means ‘inside’
<i>sule</i> or <i>sile</i>	Progressive marker grammaticalized from the verb ‘sit’ (Section 7.5)
<i>ká</i>	Additive morpheme, ‘also’
<i>doo</i> or <i>joo</i>	Contrastive focus marker, glossed FOC, often used with sentence-final negation

The next position is the predicate, which can be of any category, excluding S.<sup>3</sup> There are two clause-final minor categories in the phrase structure rule: a negation marker (Neg) and an interrogative marker (Q). These can also be considered subclasses of Adv. When both are used in the same sentence, the negation marker precedes the interrogative marker. Note that there is no position in the S rule associated with the grammatical function OBJ. This position occurs inside the verb phrase (Section 9.4).

The position of the primary predicate in the clause is not specified for category. This rule allows a phrase of any category that has appropriate semantic content for a predicate to occur in this position of the clause (Section 5.4). Figure 9.1 shows the c-structure resulting from the rule in 1 with a verbal predicate from example 2a and with a prepositional predicate from example 2b (repeated from example 4 in Section 5.4). However, non-verbal predicates will not play a role in the analysis of serial verb constructions.

- (2) a. ka            **mot-e**  
           SBJ.3SG.M die-PRF  
           He died. (Lovestrand 2012b:103, ex. 270)

<sup>3</sup>The symbol X in this context might formally be unspecified for category, but lacking a fully formed theory of category sharing between nodes, it is simpler to treat it as metavariable defined by a disjunction of categories ( $X \equiv \{V \mid N \mid Adj \mid P \mid Adv\}$ ). This issue is ignored in the XLE implementation which does not provide an analysis of non-verbal predicates (Appendix A).

- b. Musa **ŋ** **maŋa**  
 Musa PREP bush  
 Musa is in the bush. (Lovestrand 2012b:208, ex. 638)

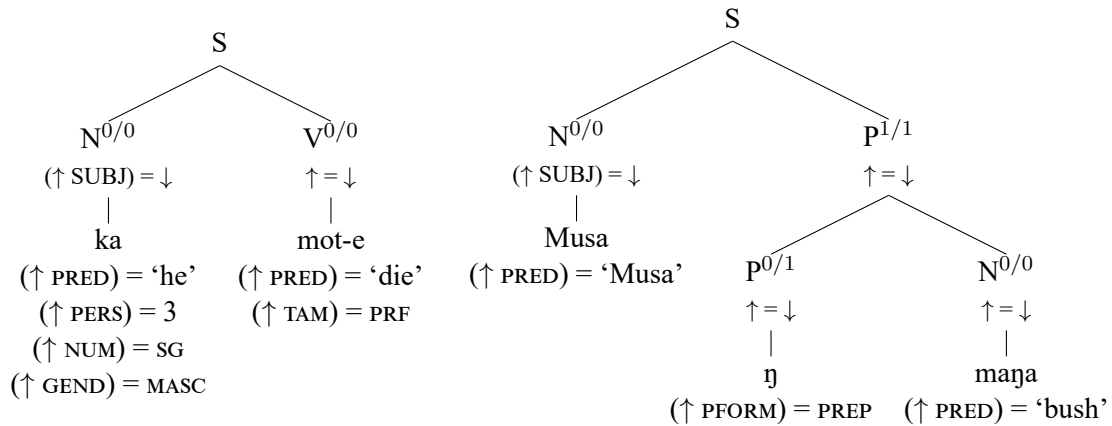


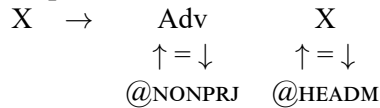
Figure 9.1: C-structures of verbal and prepositional predicates (examples 2a and 2b)

It would also be possible to posit a set of four binary phrase structure rules, as in example 3, instead of the flatter phrase structure proposed in example 1. The binary rules eliminate the need for optionality except for the subject position in rule 3a. In the implementation of minimal c-structure in XLE, optionality has to be modeled as a disjunction in order to avoid non-branching nodes (Lovestrand and Lowe 2017:301, Appendix A). The S phrase structure rule in example 1 has four optional daughters so it requires sixteen rules ( $2^4$ ) to capture the optionality. In this sense, the binary rules are simpler to implement. However, the relative simplicity of implementation is not necessarily a formal complication, but rather a side effect of what notational shortcuts the software provides. XLE allows the use of parentheses as the equivalent to a disjunction between the node and an empty string, but optionality still requires an underlying disjunction.

(3) **S phrase structure rules (binary version)**

- a. **Clause:**
- $$S \rightarrow (N) \quad X$$
- $$(\uparrow \text{SUBJ}) = \downarrow \quad \uparrow = \downarrow$$
- $$@\text{EXT} \quad @\text{LP}$$
- b. **Negation:**
- $$S \rightarrow S \quad \text{Neg}$$
- $$\uparrow = \downarrow \quad \uparrow = \downarrow$$
- $$@\text{NONPROJ}$$
- c. **Interrogative:**
- $$S \rightarrow S \quad Q$$
- $$\uparrow = \downarrow \quad \uparrow = \downarrow$$
- $$@\text{NONPROJ}$$

d. **Pre-predicate adverb:**



The primary analytical problem with the binary approach is that the phrase structure rule for pre-predicate adverbs (example 3d) needs to be further constrained so that the adverbs only adjoin to the predicate, and not other constituents. Another downside to the binary approach is that there is no evidence for the smaller constituents that these binary rules create. No syntactic operations appear to select these constituents. A binary approach would also require some additional mechanism to constrain the ordering of the Neg and Q nodes which are both adjoined to S. For these reasons, the flatter structure in example 1 will be used in the analysis of Barayin.

## 9.2 N: Noun phrases

The internal structure of noun phrases is not very clear from the available data, and nothing in the analysis of serial verb constructions depends on the structure of nominal phrases. What can be said about noun phrases is that the head noun is always in the leftmost position, and an adnominal demonstrative can occur in the rightmost position. There are three adnominal demonstratives in the language, a singular masculine. *gi*, a singular feminine. *di* and one plural, *ni*. Adnominal demonstratives can follow nouns and pronouns, as in example 4, including non-third person pronouns, as in example 5.

- (4) [ti        **di**]        na [non-ju        **di**]  
 SBJ.3SG.F DEM.SG.F BG child-POSS.1SG DEM.SG.F  
 This is my daughter. (Lovestrand 2012b:208, ex. 636)

- (5) killa mijjo [ki        **gi**]        na d-eyi ij mo  
 2SG.M person SBJ.2SG.M DEM.SG.M BG kill-IPFV PREP what  
 “You, man, you kill with what?” (Lovestrand 2012b:270, ex. 66)

A modifier such as an adjective, quantifier, relative clause, prepositional phrase or another noun can occur immediately following the noun before the demonstrative. It is not clear what other restrictions there are on the internal structure of noun phrases. It is difficult to find any examples of noun phrases with more than one modifier in natural texts. When asked directly about grammatical judgments on the order of modifiers, speakers tend to be ambivalent. Therefore, the internal

structure of the noun phrase presented in example 6 remains speculative.<sup>4</sup> The asterisk, or Kleene star, following a node means that any number of instances of that node are permitted by the phrase structure rule (including zero). The internal structures of prepositional phrases and relative clauses are analyzed in the following sections.

(6) **N phrase structure rule (modifiers)**

a. Minimal c-structure:

$$\begin{array}{rclcl}
 N & \rightarrow & N & \{ N \mid P \mid \text{Adj} \mid C \}^* & (D) \\
 & & \uparrow = \downarrow & \downarrow \in (\uparrow \text{ADJ}) & \uparrow = \downarrow \\
 & & @\text{HEADX} & @\text{INT} & @\text{NONPROJ}
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{rclcl}
 NP & \rightarrow & N^0 & \{ NP \mid PP \mid \text{AdjP} \mid CP \}^* & (\widehat{D}) \\
 & & \uparrow = \downarrow & \downarrow \in (\uparrow \text{ADJ}) & \uparrow = \downarrow
 \end{array}$$

When a noun has a possessive suffix, it can be followed by a prepositional phrase expressing the possessor, as in example 7. There is no clear evidence available about the order of a possessor phrase in relation to nominal modifiers or the demonstrative. Another speculative rule is proposed for noun phrases in example 8, which treats the possessor phrase as the specifier of the noun phrase.

- (7) l-eg-ati-ti                                  η    bend-eti                  η    mee    kak  
 send-IPFV-DAT.3SG.F-OBJ.3SG.F PREP leg-POSS.3SG.F PREP woman IDEO  
 [They] put it around the leg of the woman. (bva024.61)

(8) **N phrase structure rule (possessor)**

a. Minimal c-structure:

$$\begin{array}{rclcl}
 N & \rightarrow & N & P & \\
 & & \uparrow = \downarrow & (\uparrow \text{POSS}) = \downarrow & \\
 & & @\text{HEADX} & @\text{EXT} &
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{rclcl}
 NP & \rightarrow & N' & PP & \\
 & & \uparrow = \downarrow & (\uparrow \text{POSS}) = \downarrow &
 \end{array}$$

A final remark about prepositional phrases expressing a possessor is that possessor forms can also be used for an argument of an infinitival (or nominalized) verb. In example 9, the infinitival verb,

<sup>4</sup>One issue with this speculative analysis is that it treats modifiers (ADJ) as structural complements (@INT). This does not follow the structure-function association principles generally assumed in LFG (Section 8.4.1).

*ajogeti* ‘come’, has a possessive suffix which agrees with the single argument of the verb, *Amma*. Following Chisarik and Payne (2001), it is assumed that the grammatical functions of POSS and SUBJ are tightly linked, if not the same function.

- (9) Rama duw-e-ti                      Amma **aj-o-geti**                      ŋ      gera  
 Rama see-PRF-OBJ.3SG.F Amma come-INF-POSS.3SG.F PREP village  
 Rama saw Amma coming into the village (Lovestrand 2012b:122)

In example 10, there is again an infinitival verb with a possessive suffix. There is also a possessor prepositional phrase following the infinitival verb. In this case, it is not the agent argument that is marked as the possessor, but the patient. Even though the possessor is the patient of what appears to be a transitive verb, it can still be understood to have the grammatical function of SUBJ. Many verbs in Barayin are ambitransitive (or labile) (Lovestrand 2012b:124-126). Either the verb is understood to be bivalent, in which case the subject has an agent-like role and the object has a patient-like role, or the verb is understood to be monovalent, in which case the sole argument is the patient-like argument which is expressed as a subject. If the infinitival verb is an ambitransitive verb, and it does not express an agent, it can express its patient as a subject. This means that the patient of infinitival verbs is regularly expressed as a possessor. This analysis has not been systematically tested against the corpus or in elicitation, and is not further explored here.

- (10) ŋ              j-ee-ga                      **wool-o-geti**                      ŋ      mooso  
 SBJ.1SG hear-PRF-OBJ.3SG.M slaughter-INF-POSS.3SG.F PREP COW  
 I heard him slaughtering the cow. (Lovestrand 2012b:123)

### 9.3 P: Prepositional phrases

Prepositions are a closed class of words that are immediately followed by a noun phrase. Most prepositions are monomoraic. In many cases, a preposition and the following noun phrase can occur in multiple positions in a sentence, but not apart from each other (i.e., no preposition stranding). This is clear evidence of prepositional phrases as a syntactic constituent.

The two most common prepositions in Barayin are the associative preposition (glossed ASOC) and the oblique preposition (glossed PREP). Both prepositions consist of a single phonological segment,

a velar nasal, differing only in tone. The associative preposition carries a high tone, and is represented orthographically as *ij*. The oblique preposition, with low tone, is written orthographically as *η* (Section 5.1).

Associative is a traditional label in Chadic linguistics for a cross-linguistically common grammatical marker that marks constituents that have either an instrumental or comitative role, including nominal conjunction (Frajzyngier 1996:27), as in example 11.<sup>5</sup>

(11) **Associative prepositional phrases:**

a. **Conjunction**

inu **ij** **baa-ju** η kol-o  
 1SG ASOC relative-POSS.1SG PREP go-INF  
 My brother and I will go. (Lovestrand 2012b:87, ex. 226)

b. **Comitative**

inu η kol-o **ij** **killa**  
 1SG PREP go-INF ASOC 2SG.M  
 I will go with you. (Lovestrand 2012b:167)

c. **Instrumental**

ka t-eyi **ino** **ij** **att-i** **mesinga**  
 SBJ.3SG.M eat-IPFV *boule* ASOC hand-POSS.3SG.M left  
 He's eating *boule* with his left hand! (Lovestrand 2012b:168)

A comprehensive analysis of the associative preposition is not necessary for this sketch.<sup>6</sup> The phrase structure rule in 12 licenses the associated preposition to select its complement as an OBJ.

(12) **P phrase structure rule (associative preposition)**

a. Minimal c-structure:

$$\begin{array}{ccc} P & \rightarrow & P \quad N \\ & & \uparrow = \downarrow \quad (\uparrow \text{OBJ}) = \downarrow \\ & & @\text{HEADX} \quad @\text{INT} \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{ccc} PP & \rightarrow & P^0 \quad NP \\ & & \uparrow = \downarrow \quad (\uparrow \text{OBJ}) = \downarrow \end{array}$$

<sup>5</sup>The oblique preposition in these examples is functioning as part of a Future tense construction when followed by an infinitival verb.

<sup>6</sup>A more comprehensive analysis would require an introduction to Constructive Case which allows the preposition to lexically determine the grammatical function of the prepositional phrase (Nordinger 1998). The lexical entry for the associative preposition would include a disjunctive expression like: ( $\{\text{OBL}_{inst} \mid \text{OBL}_{com}\} \uparrow$ ). The associative preposition has at least three other uses. First, it occurs in some temporal adverbial phrases. Second, following some locative adverbs of relative location (such as 'close' and 'far'), an associative preposition precedes the noun phrase indicating the deictic center of the locative expression. Thirdly, it can precede a source argument when the source is a proper noun.

The oblique preposition is unlike the associative preposition in that the semantic role of its complement is not determined by the form of the preposition. In the following four examples, an oblique preposition precedes a stative location, a goal, a source, and a recipient. In each case, the semantic role of the argument marked by the oblique preposition is determined by the verb, not by the preposition.

(13) **Oblique prepositional phrases:**

a. **Stative location**

ka            gan-do kita    **ŋ**    **maja**  
 SBJ.3SG.M do-OBL work PREP bush  
 He worked in the bush.

b. **Goal**

ka            kol-do je        **ŋ**    **gera**  
 SBJ.3SG.M go-OBL PART PREP village  
 He went to the village.

c. **Source**

ti            s-eyi            **ŋ**    **maja**  
 SBJ.3SG.F come-IPFV PREP bush  
 She is coming from the bush. (Lovestrand 2012b:172)

d. **Recipient (dative/indirect object)**<sup>7</sup>

ka            l-eyi            je    korto **ŋ**    **Umar**  
 SBJ.3SG.M send-DAT.3SG.M PART pot    PREP Umar  
 He sent a pot to Umar. (Lovestrand 2012b:166)

This behavior suggests that the oblique preposition does not specify a semantic role. The implication of this for an LFG analysis is that it does not have a PRED feature in its lexical entry, and cannot select an OBJ. The phrase structure rule in example 12 needs to be augmented to allow a preposition and its complement to be functional co-heads, as shown in example 14.

(14) **P phrase structure rule (general)**

$$\begin{array}{c}
 P \rightarrow \quad P \qquad N \\
 \qquad \qquad \uparrow = \downarrow \quad \{(\uparrow \text{ OBJ}) = \downarrow \mid \uparrow = \downarrow\} \\
 \qquad \qquad @\text{HEADX} \qquad \qquad @\text{INT}
 \end{array}$$

## 9.4 V: Verb phrases

Verbs in Barayin are a major lexical class that can be identified by unique morphology (Section 5.2). Verbs, unlike nouns and most other categories, are bound roots. The primary verbal suffixes

<sup>7</sup>The dative (or indirect object) function can also be interpreted as a beneficiary with non-ditransitive verbs. In these cases the constituent has the grammatical function of OBL<sub>θ</sub> (Section 9.4). The oblique preposition also precedes possessors, and is used in some adverbial expressions.

are those encoding tense/aspect/mood (TAM) and pronominal suffixes indexing the number, person and gender features of what are traditionally called direct and indirect objects. Verbs head a constituent with up to two complements to the right. The first is the direct object (OBJ), which is prototypically a semantic patient or theme. The second is what Chadicists often call an indirect object. Indirect objects are preceded by an oblique preposition. Their person, number and gender features can be indexed on the verb by a suffix glossed DAT. The indirect object has the grammatical relation of  $OBL_{\theta}$ .<sup>8</sup> The two semantic roles for indirect objects are those of recipient, with a ditransitive verb (example 15), and beneficiary, with a monotransitive or intransitive verb (example 16).

- (15) 

	<b>object</b>	<b>indirect object (recipient)</b>
ka	l-eyi	je korto η Umar
SBJ.3SG.M	send-DAT.3SG.M	PART pot PREP Umar

 He sent a pot to Umar.

- (16) 

	<b>object</b>	<b>indirect object (beneficiary)</b>
ka	gan-eyi	kita η baa-ji
SBJ.3SG.M	do-DAT.3SG.M	work PREP relative-POSS.3SG.M

 He works for his brother. (Lovstrand 2012b:166-167, ex. 461 and 462)

Evidence for the existence of a verb phrase is primarily based on distribution and word order.<sup>9</sup> Direct and indirect objects do not occur with non-verbal predicates. Therefore, for the sake of phrase structure rules, it is simplest to assume that they occur in the same constituent as a verbal predicate. There is no need for a phrase structure rule that allows these positions with non-verbal predicates. In regards to word order, the direct object must directly follow the verb (with the exception of a small class of post-verbal particles, Section 9.5). Indirect objects immediately follow the direct object. Adjuncts and locatives, which are freely ordered with respect to each other, occur following the direct and indirect object. This word order can be accounted for by assuming that the direct and indirect objects occur inside of a verb phrase, and that adjuncts and locatives occur outside of the verb phrase. (The c-structure of adjuncts and locatives are accounted for in Section 9.6 and 9.5, as well as in the pre-predicate non-projecting adverb position in the phrase structure rule for S in example 1.)

<sup>8</sup>Alternatively the indirect objects could be analyzed as having the grammatical relation  $OBJ_{\theta}$ . The distinction depends on developing tests for objecthood in Barayin. Since this issue is not directly relevant for the analysis of serial verb constructions, it is not investigated here.

<sup>9</sup>It seems that Barayin syntax does not allow many of the tests traditionally used to establish constituency for verb phrases. There is no clear evidence of any anaphoric elements referring to a verb phrase, or of coordinated verb phrases.

Example 17 shows the phrase structure rule for verb phrases.<sup>10</sup> The complement positions in the verb phrase structure rule in 17 are annotated with the grammatical functions OBJ and OBL<sub>θ</sub>, in accordance with the structure-function association principles (Section 8.4). The c-structure and f-structure of the verb phrase in example 15 are given in Figure 9.2.

(17) **Verb phrase structure rule**

a. Minimal c-structure:

$$\begin{array}{ccccccc}
 V & \rightarrow & V & & (N) & & (P) \\
 & & \uparrow = \downarrow & & (\uparrow \text{OBJ}) = \downarrow & & (\uparrow \{ \text{OBL}_{rec} \mid \text{OBL}_{ben} \}) = \downarrow \\
 & & @\text{HEADX} & & @\text{INT} & & @\text{INT}
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{ccccccc}
 VP & \rightarrow & V^0 & & (NP) & & (PP) \\
 & & \uparrow = \downarrow & & (\uparrow \text{OBJ}) = \downarrow & & (\uparrow \{ \text{OBL}_{rec} \mid \text{OBL}_{ben} \}) = \downarrow
 \end{array}$$

## 9.5 CL: Post-verbal particles

There are three post-verbal clitics that can occur between a verb and a direct object. These words are clitics in the sense that they are phonologically bound (possibly all monomoraic words in Barayin are phonologically bound), but show signs of syntactic independence (occurring after all suffixes and alternating in order among themselves). They are particles in the sense that they are grammatical words that do not appear to belong to a paradigm.<sup>11</sup> Two of these clitics, *je* and *ta*, do not co-occur. They appear to have some sort of discourse-sensitive function, but their meaning has not been deciphered. They only occur in Perfective TAM contexts, as in examples 18 and 19.

- (18) ka            gan-a je    kita  
 SBJ.3SG.M do-PFV PART work  
 He worked. (Lovestrand 2012b:117, ex. 322)

<sup>10</sup>A more complete analysis of the verb phrase is needed to account for several types of complements not discussed here including finite sentential complements, adjectival complements of the verb *gan-o* ‘do/make’, and the secondary nominal complement of the verb *well-o* ‘call’ as in ‘to call somebody something’ (see example 12 in Section 7.1.2).

<sup>11</sup>This definition of particle is from Holger Diessel in his Introduction to Typology course at the 2015 LSA Summer Institute.

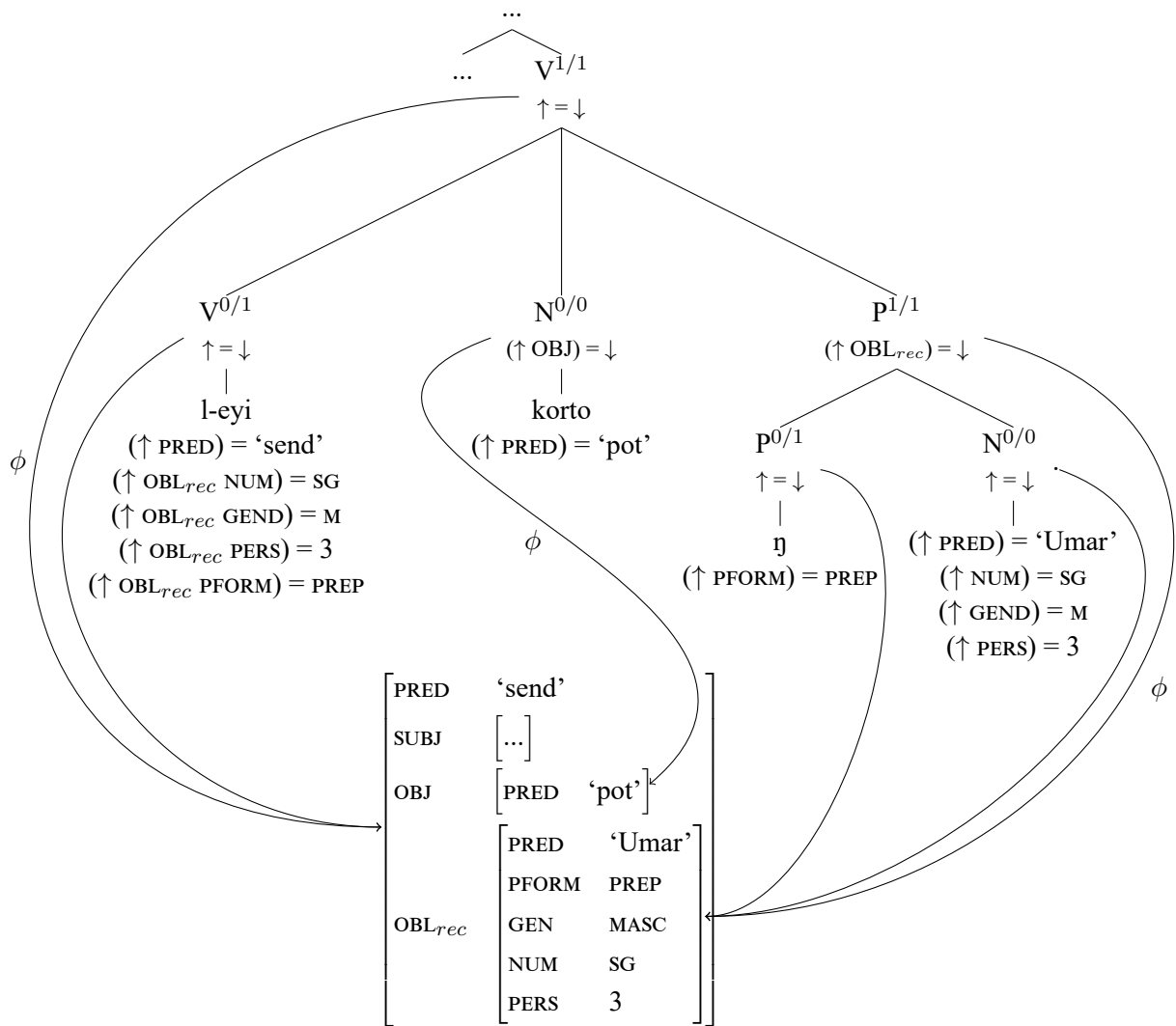


Figure 9.2: C-structure and f-structure of  $V$  with two complements (example 15)

- (19) ka gan-a ta kita  
 SBJ.3SG.M do-PFV PART work  
 He worked. (Lovstrand 2012b:117, ex. 323)

Section 5.3 introduces the plural reference marker *na*, glossed PL (pronounced with a low tone, not to be confused with the high-tone background marker *na*, glossed BG). This post-verbal enclitic is part of a bi-morphemic subject pronoun. Among other functions, it co-occurs with a first person dual inclusive subject pronoun before the verb in order to express a first person plural inclusive subject, as in example 20.

(20) *inj kol-a=na je Balal*  
 SBJ.1DU.INCL go-PFV=PL PART Balili

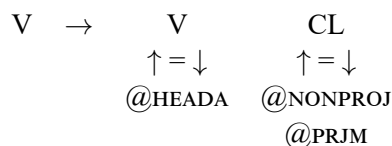
We (1PL.INCL) went to Balili. (Lovstrand 2012b:66, ex. 148)<sup>12</sup>

Besides its role in forming first person plural inclusive subjects, the plural reference marker *na* is also used in three other contexts. First, it distinguishes the second person plural imperative form (with *na*) from the second person singular imperative form (without *na*). Second, in a similar function, it can optionally occur following a Subjunctive verb in a non-imperative context when the subject is second person plural (but not with a third person plural subject) (Lovstrand 2012b:158). Thirdly, it distinguishes the first person plural hortative form (with *na*) from the first person dual hortative form (without *na*) (Lovstrand 2018a).

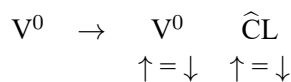
These three particles form a closed class of non-projecting words labeled CL (for clitic). Their distribution is accounted for with the adjunction phrase structure rule in 21. Since the post-verbal particles are always adjacent to the verb, their position in the phrase structure rule is annotated with @PRJM (projecting mother). This template states that the mother node has an L value of 0. In combination with the @HEADA template, which says that the mother and head share the same L value, this only allows the post-verbal particle to adjoin to the projecting head in a verb phrase.

(21) **Post-verbal particle phrase structure rule**

a. Minimal c-structure:



b. Standard LFG X-bar theory:



The phrase structure rule in example 21 allows for a recursive structure and multiple occurrences of post-verbal particles. The c-structure and f-structure of example 20 (which contains two post-verbal particles) are given in Figure 9.3. The lexical entries in Figure 9.3 show a unified analysis of all of the uses of the plural reference marker. This requires a decomposed approach to person and number features (Arka 2011; Nordlinger 2012; Sadler 2010), as shown in Tables 9.2 and 9.3.

<sup>12</sup>The vowel /a/ at the end of the verb stem in example 20 is elided when followed directly by the plural reference marker, /kol-a=na/ → [kolna] (Lovstrand 2012b:66-67, 161).

Table 9.2: Decomposed person features

	[PERS 1 +]	[PERS 1 -]
[PERS 2 +]	first-person inclusive	second person
[PERS 2 -]	first-person exclusive	third person

Table 9.3: Decomposed number features

	[NUM SG +]	[NUM SG -]
[NUM PL +]	dual	plural
[NUM PL -]	singular	NA

The clitic *na* has the features  $(\uparrow \text{NUM PL}) = +$  and  $(\uparrow \text{PERS 2}) = +$ . This allows *na* to occur in both a second-person plural and a first person plural inclusive context. In order for *na* to combine with a dual pronoun creating a plural pronoun, it is assumed that the dual pronoun has the number feature  $(\uparrow \text{NUM SG}) = -$  and the disjunction  $\{(\uparrow \text{NUM PL}) = - \mid (\uparrow \text{NUM PL}) =_c + \}$ . The result is that when the dual pronoun occurs on its own, it has a negative value for both number attributes, SG and PL, which are understood to be the features of dual number. When the dual pronoun co-occurs with *na*, the plural reference marker contributes a positive value for NUM PL, and the dual pronoun must agree with it to avoid conflicting values. This results in the features of a plural pronoun: SG = - and PL = +.

## 9.6 Adjuncts

After the predicate there can optionally be any number of constituents of the categories P, Adv or N. In example 22, the intensifying adverb *baata* appears between the verb and the negation marker. In example 23, the verb is followed by both a manner adverb, *panij* ‘together’, and a prepositional phrase *ij dante* ‘in the afternoon’ with temporal adverbial meaning.

- (22) ka            waan-eyi **baata** do  
 SBJ.3SG.M sleep-IPFV very NEG  
 He doesn't sleep much. (Lovstrand 2012b:87, ex. 225)

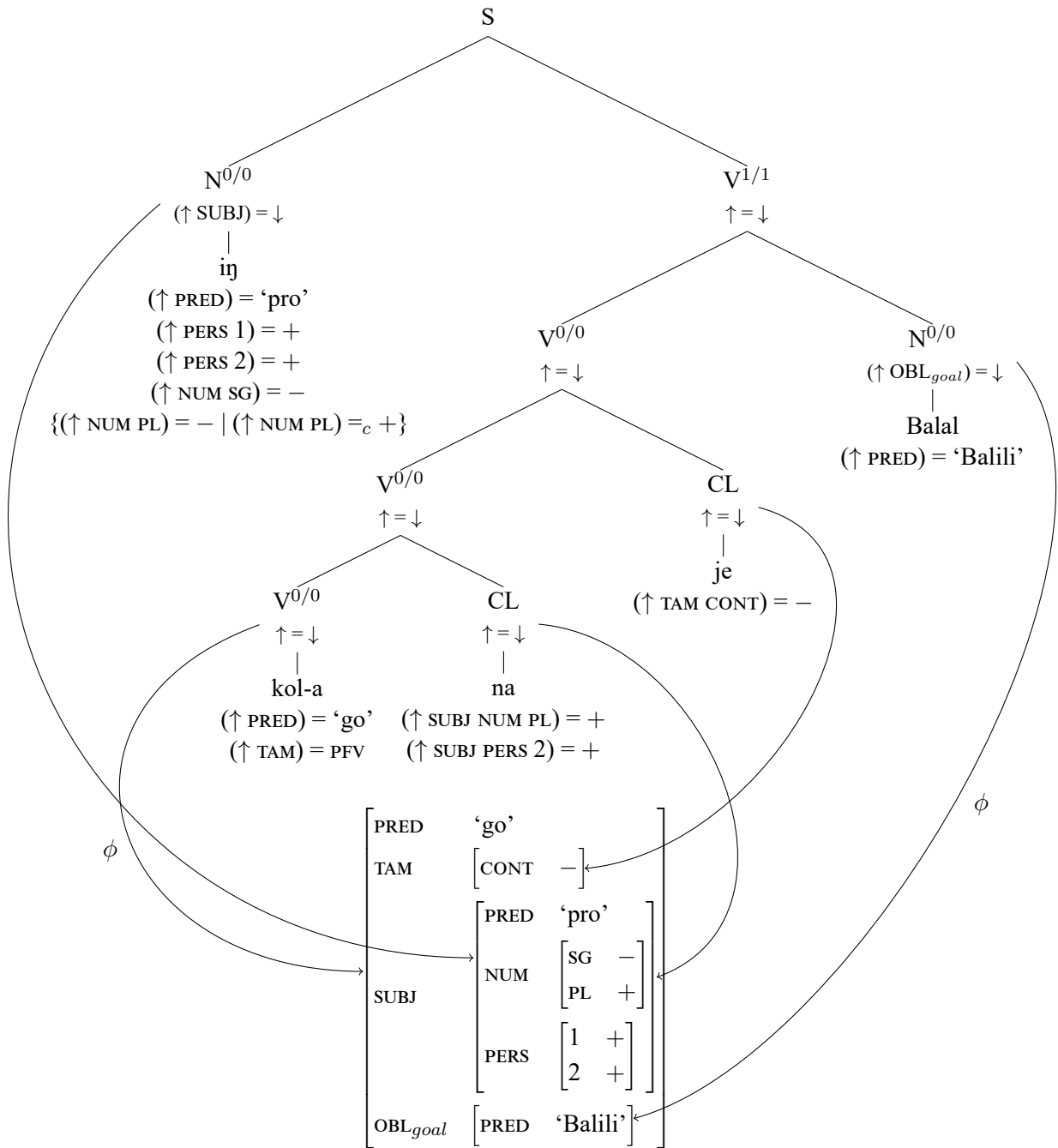


Figure 9.3: C-structure and f-structure of multiple post-verbal particles (example 20)

- (23) ane t-eyi [paniŋ] [iŋ dante]  
 1PL.EXCL eat-IPFV together ASOC afternoon

We eat together in the afternoons. (Lovestrand 2012b:180, ex. 527)<sup>13</sup>

The adverbial constituents in examples 22 and 23 can be analyzed in a straightforward way as adjoined to the verb phrase in a position annotated for the grammatical function ADJ:  $\downarrow \in (\uparrow \text{ADJ})$ , as in example 24.<sup>14</sup>

- (24) **Adjunct phrase structure rule:**

a. Minimal c-structure:

$$\begin{array}{ccc} V & \rightarrow & V \quad \{\text{Adv} \mid \text{P} \mid \text{N}\} \\ & & \uparrow = \downarrow \quad \downarrow \in (\uparrow \text{ADJ}) \\ & & @\text{HEADM} \quad @\text{EXT} \end{array}$$

b. Standard X-bar theory:

$$\begin{array}{ccc} \text{VP} & \rightarrow & \text{VP} \quad \{\text{AdvP} \mid \text{PP} \mid \text{NP}\} \\ & & \uparrow = \downarrow \quad \downarrow \in (\uparrow \text{ADJ}) \end{array}$$

The situation is more complex for locative constituents. In terms of syntactic distribution, locatives pattern like adverbial phrases. Locatives do not occur inside the verb phrase. Rather, locatives occur in alternating order with adverbial phrases which also occur to the right of the predicate. In example 25, the locative (semantically, the goal) precedes the adverb ‘tomorrow’. In example 26, the adverb ‘again’ precedes the locative argument. If an adverbial can occur between a verb and a locative constituent, that locative cannot be inside the verb phrase.

- (25) **locative adverb**  
 ŋ kol-eyi Rukum bonte do  
 SBJ.1SG go-IPFV Roukoum tomorrow NEG

I’m not going to Roukoum tomorrow. (Lovestrand 2012b:177, ex. 507)

- (26) **adverb locative**  
 ŋ kol-ga sokka Balal  
 SBJ.1SG go-PROG again Balili

I’m going to Balili again. (Lovestrand 2012b:177, ex. 510)

Although locatives in Barayin pattern syntactically like adverbials, they differ in that their semantic interpretation is determined primarily by the semantics of the predicate. This is demonstrated

<sup>13</sup>The word *paniŋ* also means ‘one’. It is treated here as having separate lexical entries of different lexical categories according to its function.

<sup>14</sup>There may be some cases where an adjunct can modify a non-verbal predicate. One example found is the intensifier *baata* following a nominalized adjective predicate.

by the different interpretations of locatives with identical marking in example 13 in Section 9.3. When the semantic role of a constituent, such as a goal or source, is determined by the predicate, it is generally analyzed as an argument (not an adjunct) with the grammatical function  $OBL_{\theta}$ . At the same time, following the structure-function association principles (Section 8.4), it is expected that these constituents would occur in the complement position, the sister of the head of a verbal phrase.

Given that locatives in Barayin have the syntactic properties of adjuncts, but the semantic properties of arguments, the standard LFG analysis is not possible. This situation merits a reconsideration of the argument-adjunct distinction in Barayin, and a potential reanalysis of the set of grammatical functions. Przepiórkowski (2016) proposes that the  $ADJ$  grammatical relation could be replaced with semantically specified attributes such as  $LOC(ative)$  and  $TEMP(oral)$ . A full exploration of this issue is tangential to the analysis of SVCs, and beyond the scope of this work.

As a simplistic solution, locatives will be treated as a case of irregular structure-function association. In Barayin, locatives are structural adjuncts that are annotated for the grammatical function  $OBL_{loc}$ , as in example 27, where  $loc(ative)$  is a metacategory for the thematic roles of source, goal and static location.<sup>15</sup> The c-structure and f-structure resulting from this analysis applied to example 26 are shown in Figure 9.4.

(27) **Locative adjunct phrase structure rule:**

a. Minimal c-structure:

$$\begin{array}{ccc} V & \rightarrow & V \quad \{P \mid N\} \\ & & \uparrow = \downarrow \quad (\uparrow OBL_{loc}) = \downarrow \\ & & @HEADM \quad @EXT \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{ccc} VP & \rightarrow & VP \quad \{PP \mid NP\} \\ & & \uparrow = \downarrow \quad (\uparrow OBL_{loc}) = \downarrow \end{array}$$

---

<sup>15</sup>Alternatively, the analysis could use the “thematic adjunct” grammatical function,  $ADJ_{\theta}$ , proposed by Rákosi (2006) which allows the interpretation of an adjunct to be determined by semantic roles selected by the predicate. While this analysis conforms to the structure-function association principles, it complicates the theory of mapping from grammatical function to semantic arguments. In the formalism proposed by Findlay (2016a), there is no link for  $ADJ$  or  $ADJ_{\theta}$ .



b. Standard LFG X-bar theory:

$$C' \rightarrow C^0 \quad S$$

$$\uparrow = \downarrow \quad \uparrow = \downarrow$$

### 9.7.1 Subordinating conjunctions

The subordinating conjunctions *wo* ‘but’ and *to* ‘when/if’ (glossed COND) occur in the initial position of a subordinate clause. As seen in the following examples, these subordinate clauses can occur either before or following the main clause.

- (29) inu ŋ ŋoom-o [ to ka gan-eyi kita ]  
 1SG OBL play-IPFV COND SBJ.3SG.F do-IPFV work  
 I am going to play while he works. (Lovestrand 2012b:203, ex. 617)

- (30) [ to ka t-aa je ] ka ŋ kol-o  
 COND SBJ.3SG.M eat-PFV PART SBJ.3SG.M OBL go-INF  
 Once he has eaten, he will leave. (Lovestrand 2012b:109, ex. 292)

The subordinate clauses in examples 29 and 30 are shown in Figure 9.5. In this structure, a C phrase is adjoined to the S node of a main clause. This is licensed by the phrase structure rule in example 31. The annotation on the adjunction rule indicates that the f-structure of each node in the adjunction structure is part of a set of f-structures. This allows the independent and dependent clause to each have their own separate f-structure, avoiding confusion over which grammatical functions are associated with which predicate. The comma indicates that either ordering is allowed.

(31) **C adjunction to S phrase structure rule**

a. Minimal c-structure:

$$S \rightarrow S \quad , \quad C$$

$$\downarrow \in \uparrow \quad \downarrow \in \uparrow$$

$$@\text{HEAD} \quad @\text{EXT}$$

b. Standard LFG X-bar theory:

$$S \rightarrow S \quad , \quad CP$$

$$\downarrow \in \uparrow \quad \downarrow \in \uparrow$$

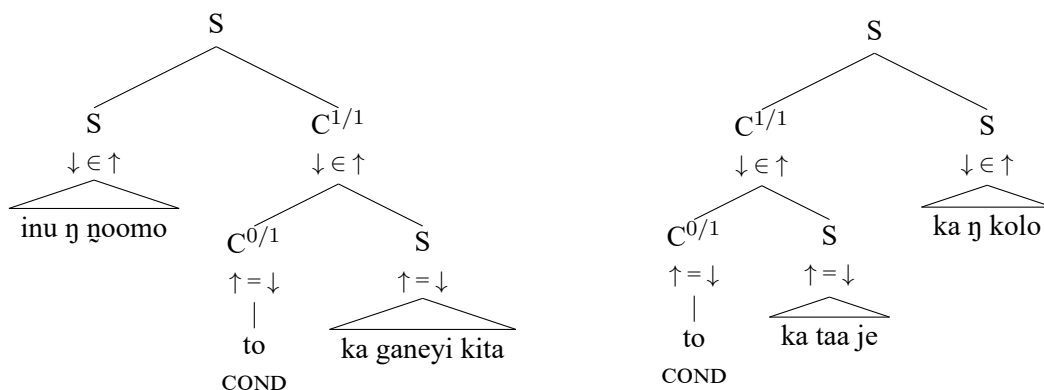


Figure 9.5: C-structures of subordinate clauses (examples 29 and 30)

### 9.7.2 Background marker

The background marker *na* (glossed BG) separates units of information in a sentence. The most concise description of the syntactic distribution of the background marker is that it is always followed by a clause. The structural relationship between a background marker and the following clause can be captured by analyzing it as a word of the functional category C, followed by an S complement. It most commonly occurs either between two clauses (example 32), or separating a single sentence-initial element of a clause from the remainder of the clause (example 33). See Lovstrand (2018b) for a more detailed description of the syntax and functions of the background marker.

- (32) ka t-aa je **na** ka kol-u  
 SBJ.3SG.M eat-PFV PART BG SBJ.3SG.M go-SBJV  
 When he has eaten, (then) he should leave. (Lovstrand 2012b:110, ex. 300)

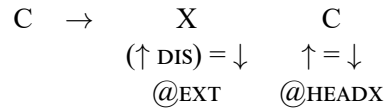
- (33) mijjo **na**, joo jel-ga=na iŋ nilla do  
 man BG NEG put-OBJ.3SG.M=PL with 2PL NEG  
 The man, you should not put him with you. (bva305.57-58)

The phrase structure rule proposed in example 34 accounts for the single constituent occurring before a background marker. Following Dalrymple and Nikolaeva (2011), the specifier position of the C phrase is labeled with an f-structure attribute DIS (for dislocation or long distance dependency). This attribute is an “overlay function”. It does not directly link to the s-structure of a clause in the way grammatical functions do (via linking or mapping, Section 8.4.2), but must be associated in the f-structure with another grammatical function. The mechanism for constraining the association

of the overlay function with a grammatical function is not discussed here. For more on overlay functions see Alsina (2008), Dalrymple and Nikolaeva (2011) and Asudeh (2012:72-74).

(34) **C phrase structure specifier rule**

a. Minimal c-structure:



b. Standard LFG X-bar theory:

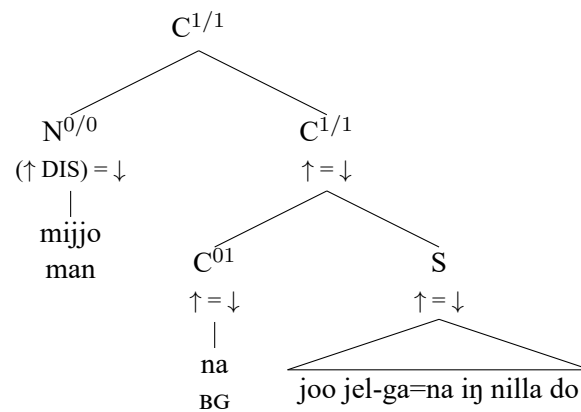
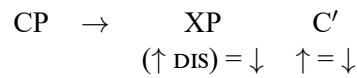


Figure 9.6: C-structure of Topic-marked NP (example 33)

### 9.7.3 Quotatives

Reported speech in Barayin is most often expressed without any verb of speech. Instead a quotative is used. In example 35, the word *naa* following the noun phrase referring to the speaker is a quotative.

- (35) ni ni **naa** marbo ti di na sent-eti aj-o  
 SBJ.3PL DEM.PL QUOT.3PL girl SBJ.3SG.F DEM.SG.F BG refusal-POSS.3SG.F come-INF  
 They said, “That girl refuses to come.” (bva306.23)

Quotatives are listed in Table 9.4. They index the number, person and gender of the speaker. Despite some initial attempts at elicitation, there is no evidence that the quotative paradigm includes first person plural speakers. Most quotatives have both a longer form which is normally the sub-

ject pronoun combined with *-ya*, and also a shorter form that is some sort of amalgamation of the subject pronoun and *-ya*.

Table 9.4: Quotatives

	Singular	Plural
1st	<i>iya / iniya</i>	???
2nd	<i>kiya (MASC)</i> <i>keya (FEM)</i>	<i>náa / níya</i>
3rd	<i>kaa / kaya (MASC)</i> <i>taa / tiya (FEM)</i>	<i>naa / niya</i>

When no verb of speech is present, the speaker is often expressed by a noun phrase preceding the quotative, as in example 35. This clause type can be analyzed as a two-tier C phrase in which the speaker appears in the specifier position, as shown in Figure 9.7. It would also be possible to analyze this structure as an S phrase with a nominal subject preceding a predicate of the category C.

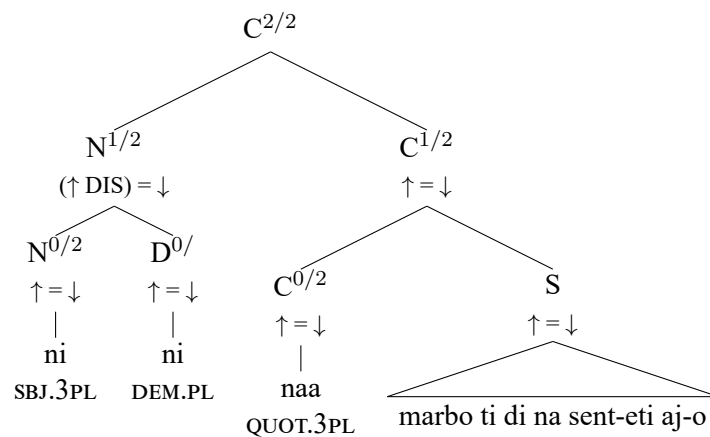


Figure 9.7: C-structure of quotative with speaker as specifier of C (example 35)

Quotatives can also follow a verb of speech, as in example 36. In this case they appear superficially to be a more general type of complementizer. However, quotatives are monofunctional. They are only used to mark reported speech, and cannot mark other types of verbal complements. In such cases it seems possible to add a C complement to the verb phrase structure rule (Section 9.4). However, example 37 shows that reported speech in Barayin does not necessarily occur inside the verb phrase. In this example, the verb of speech is followed by an indirect object and a clause-final negation marker, and then the reported speech.

- (36) ka gas-aw je **kaa** ka japp-eyi targudu na arka inj tarpa  
 SBJ.3SG.M say-DAT.1SG PART QUOT.3SG.M SBJ.3SG.M want-IPFV barter BG spear ASOC hoe  
 He tells me that he wants a spear and a hoe in exchange. (bva062.31)
- (37) Rama gas-ati η Amma do **kaa** Oto η aj-o  
 Rama say-DAT.3SG.F PREP Amma NEG QUOT.3SG.M Oto PREP come-INF  
 Rama did not say to Amma that Oto will come. (Lovestrand 2012b:201, ex. 612)

A similar structure to example 37 is seen in example 38 (repeated from example 41, Section 6.3). In this example, a clause with a negated verb of perception is followed by a sentential complement. However, if the negation marker precedes the sentential complement, then the complement must be preceded by the conditional marker (Section 9.7.1). This example is also an S constituent followed by a phrase headed by C. These structures can be accounted for by the phrase structure rule allowing a phrase headed by C to adjoin to S, as in example 31 in Section 9.7.1 above.

- (38) η wonn-eyi do **to** ka kol-e  
 SBJ.1SG know-IPFV NEG COND SBJ.3SG.M go-PRF  
 I don't know if he left.

#### 9.7.4 Relative clauses

There are three relative markers in Barayin, shown in table 9.5. They are indexed for the number (singular or plural) and gender (if singular) of the head noun.

Table 9.5: Relative markers

SG.MASC	ge
SG.FEM	de
PL	ne

Relative markers occur in the initial position of a relative clause. Relative clauses are post-nominal, as in all known Chadic languages (Frajzyngier 1996:416). Relative markers do not indicate the relativized function of the head noun in the relative clause. Most, if not all, of the governable grammatical functions of a simple clause can be relativized.

(39) **Relativized function: SUBJ**

nama ge gor-eyi mango gi  
boy REL.3SG.M buy-IPFV mango DEM.SG.M  
the boy who bought a mango (Lovstrand 2012b:189)

(40) **Relativized function: OBJ**

nama ge η ep-ga tande gi  
boy REL.3SG.M SBJ.1SG punish-OBJ.3SG.M yesterday DEM.SG.M  
the boy who I punished yesterday (Lovstrand 2012b:189)

(41) **Relativized function: OBL<sub>θ</sub>**

gera de ka s-etta  
village REL.SG.F SBJ.3SG.M come-PRF  
the village that he came to (Lovstrand 2012b:191)

(42) **Relativized function: POSS**

mijjo ge noŋ-ji miŋ-a-nu gi  
man REL.3SG.M child-POSS.3SG.M slap-IPFV-OBJ.1SG DEM.SG.M  
the man whose son hit me (Lovstrand 2012b:191)

Like other modifiers, relative clauses occur to the right of the modified noun. Relative clauses are commonly followed by a demonstrative, as in examples 39, 40 and 42. This indicates that the relative clause occurs inside the phrase headed by the noun it is modifying (or occurs inside a determiner phrase in an alternate “DP” analysis). The c-structure of this analysis is illustrated in Figure 9.8, based on the noun phrase structure rule in 6 given in Section 9.2 above.

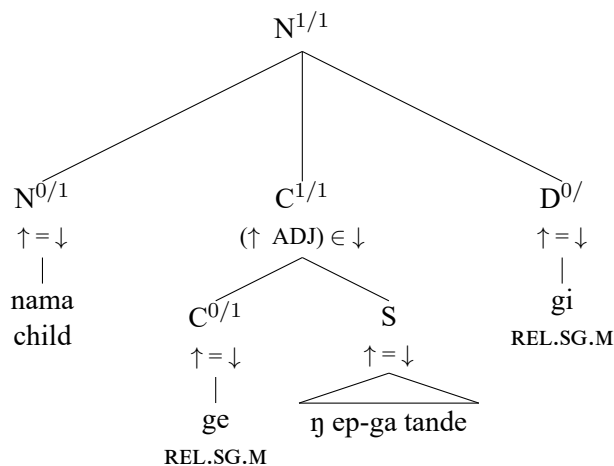


Figure 9.8: C-structure of relative clause with demonstrative (example 40)

## 9.8 Conclusion

This chapter has laid out a basic formal analysis of the Barayin clause to set the context for the formal analysis of serial verb construction in the following chapter. Parts of the analysis are also implemented in an XLE grammar shown in Appendix A. The analysis demonstrates how minimal c-structure can be used to model c-structure representations that do not have any unnecessary non-branching nodes. This is only the second language a minimal c-structure analysis has been applied to following the initial mini-grammar of English in Lovstrand and Lowe (2017).

The analysis of SVCs in Chapter 10 is primarily concerned with how a serial verb interacts with the rest of the verb phrase. The formal analysis of SVCs will also account for why the post-verbal clitics analyzed in Section 9.5, or any other adjunct, cannot occur between a serial verb and the main verb in an SVC.

## Chapter 10

# Barayin SVCs in LFG

Having introduced the formalism of Lexical-Functional Grammar (LFG) in Chapter 8, and laid the groundwork of a basic LFG analysis of Barayin clause structure in Chapter 9, this chapter turns to the formal analysis of the four types of serial verb constructions (SVCs) in Barayin. Section 10.1 contains a summary of the essential descriptive facts (from part B) to be captured in a formal analysis. Section 10.2 presents an analysis of the c-structure of SVCs in which serial verbs are non-projecting words adjoined immediately to the left of the main verb. The serial verb position is annotated as a functional co-head. Other possible analyses of the structure of SVCs require an *ad hoc* formal feature or annotation introduced specifically for analyzing this construction, or they create an unwanted bi-clausal f-structure. Section 10.3 explains why a monoclausal f-structure is a better analysis of SVCs, and posits that the reason that SVCs have a monoclausal f-structure is that serial verbs do not contribute a PRED to the f-structure. The same section includes an analysis of the TAM features that allow non-concordant TAM marking patterns in SVCs. Section 10.4 presents the s-structure of SVCs. The four types of SVCs in Barayin are indistinguishable at the levels of c-structure and f-structure. It is at the level of s-structure that the four types of SVCs differ. Serial verbs contribute a PATH or MANNER feature to the s-structure of the main verb. Argument sharing in SVCs is modeled in terms of f-descriptions in the lexical entry of serial verbs that equate arguments in a connected s-structure.

## 10.1 Summary of the morphosyntax of Barayin SVCs

To summarize from Chapters 6 and 7, there are four types of SVCs in Barayin: Deictic SVCs, Manner SVCs, Stand SVCs and Take SVCs. Each type of SVC can be identified by what type of serial verb (SV, the first verb in a two-verb SVC) it contains. In Deictic SVCs, the serial verb is restricted to a directional motion verb, almost always *kol-o* ‘go’ or *s-ii* ‘come’. The path of motion is normally understood to take place prior to the activity or state predicated by the main verb (MV), as in example 1, but when the main verb is a motion verb the path of motion can be understood to take place concurrently with the activity or state of the main verb, as in example 2.

(1) **Deictic SVC (prior):**

SV      MV  
kol-eyi dopi-ga      de-geti      η      nama  
go-IPFV find-OBJ.3SG.M father-POSS.3SG.F PREP child  
[He] goes [and] finds the father of the girl. (bva024.8)

(2) **Deictic SVC (directional):**

SV      MV  
koo kol-e gal-e  
jar go-PRF fall-PRF  
The jar fell (away).

In Manner SVCs, the serial verb is restricted to a manner of motion verb, such as *gor-o* ‘run’. The manner of motion predicated by the serial verb occurs contemporaneously with the activity or state predicated by the main verb. The main verb is normally a directional verb, as in example 3, but does not necessarily have to be, as in example 4.

(3) **Manner SVC (directional):**

SV      MV  
ka      gor-eyi s-eyi  
SBJ.3SG.M run-IPFV come-IPFV  
He runs back. (or He comes running.) (bva305.56)

(4) **Manner SVC (concurrent):**

SV      MV  
gor-u ep-aw-ti  
run-SBJV catch-DAT.1SG=OBJ.3SG.F  
Run and catch her for me! (bva404.51)

In Stand SVCs, the serial verb is *juk-o* ‘stand up’. There are several possible interpretations of the meaning of the construction which correspond to the polysemy of the verb *juk-o* ‘stand’ as the

sole verb in an independent clause. The most common meanings of *juk-o* are a change of posture ('stand'), a change of location ('leave'), an inchoative meaning ('begin', example 5), or a more general meaning signaling a change in the discourse structure ('then', example 6).

(5) **Stand SVC (inchoative):**

	SV	MV	
ni	juk-eyi	gom-a-jo	gom-o
SBJ.3PL	stand.up-IPFV	fight-IPFV-DETRZ	fight-INF

They started fighting. (bva306.61)

(6) **Stand SVC (discourse):**

	SV	MV	
ŋ	juk-a	l-e-ŋ	ger-jiga
SBJ.1SG	stand.up-PFV	send-PRF-OBJ.3PL	village-POSS.3PL

(Then) I sent them to their village. (bva302.16)

In Take SVCs, the serial verb is *pid-o* 'take'. This serial verb means that the agent/subject of the main verb takes possession of the patient/object before the activity of the main verb occurs. Take SVCs also place a restriction on the main verb. In Take SVCs, the main verb must be transitive.

(7) **Take SVC**

		SV	MV
nama ge	panij ka	pid-a	t-ee-ga
child REL.SG.M	one	SBJ.3SG.M take-PFV	eat-PRF-OBJ.3SG.M

He took [and] ate one of the children. (bva091.30)

There are at least six morphosyntactic characteristics of SVCs in Barayin (as detailed in Chapters 6 and 7) that a formal description must account for. In the following analysis, the first three characteristics are accounted for at the level of c-structure, the fourth and fifth at the level of f-structure, and the sixth at the level of s-structure.

1. **Restricted:** Serial verbs are restricted to a closed class of verbs.
2. **Linear:** The serial verb always precedes the main verb.
3. **Adjacent:** The verbs of an SVC are adjacent. No words can intervene.
4. **Monoscopal:** An SVC is treated as a single predicate in terms of semantic scope (e.g., negation and adverbs).

5. **Concordant TAM:** A serial verb is marked for the same tense-aspect-mood (TAM) as the main verb with two exceptional non-concordant patterns.
6. **Shared arguments:** An SVC has the same number of arguments as licensed by the main verb. A serial verb does not introduce any additional arguments, and cannot take pronominal suffixes, but it does predicate something about the first argument of the main verb. In the case of Take SVCs, the serial verb predicates something about both arguments of the main verb (which requires a transitive main verb).

To elaborate on those characteristics: The serial verb slot in an SVC is lexically restricted. Any attempt to switch the linear order of the verbs either renders the sentence completely unacceptable, or it is only interpretable as a sequence of two independent clauses with none of the grammatical features of SVCs. No word can occur between a serial verb and a main verb, including post-verbal particles which can normally occur between a verb and its complement (Section 9.5). As discussed in Section 6.1, it may be the case that it is possible for an SVC to have at least two serial verbs preceding the main verb: SV SV MV. The empirical data on this is inconclusive, but the formal analysis will provide a way to account for this possibility.

Serial verbs are a semantically-bleached form of their homophonous main verb counterpart. One clear difference between serial verbs and their main verb counterparts is in their argument structure. The argument structure of the SVC is determined entirely by the main verb (Section 6.6). The serial verb cannot take any pronominal suffixes. There is no evidence that serial verbs contribute additional arguments to a predication. However, the semantic information that they contribute is concerned with a specific argument or specific arguments of the main verb.

Semantic operators like negation and adverbials cannot narrowly scope over the meaning associated with just one of the verbs in an SVC. Semantic scope is always over the whole construction. This contrasts with cases of finite complements where a sentence-final negation marker can be ambiguous in scope over either the matrix verb or the embedded clause (Section 6.3).

The verbs in an SVC almost always have the same TAM value (although in some cases the TAM is not overt on the main verb due to suppletion triggered by a pronominal suffix). There are two exceptions to this concordant TAM marking. Of the four indicative TAM suffixes, an Imperfective

serial verb can be followed by a Progressive main verb, and a Perfective serial verb can be followed by a Perfect main verb. The order of this non-concordant marking cannot be switched.

## 10.2 C-structure of Barayin SVCs

This section presents the c-structure analysis of SVCs in Barayin. Figure 10.1 illustrates three possible structural analyses to be compared. Following Abeillé and Godard (2002), these are labeled “VP complement”, “verbal complex”, and “flat VP”.<sup>1</sup>

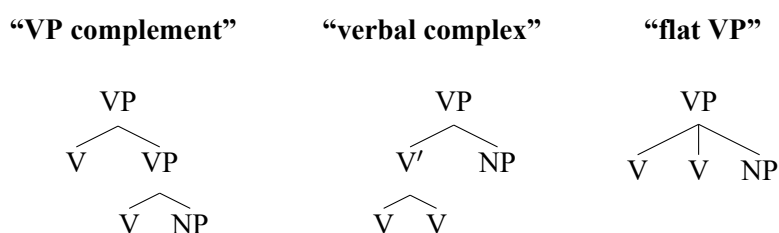


Figure 10.1: Three analyses of multiverb constructions (Abeillé and Godard 2002)

In the “VP complement” structure, one verb forms a maximal verb phrase (VP) constituent with its complement (NP). This verb phrase is, in turn, the complement of the other verb (e.g., matrix, auxiliary or serial verb). Similar structures are proposed for LFG (and HPSG) analyses of complex predicates in Romance (Alsina 1993), verb clusters in Dutch (Kaplan and Zaenen 2003), passives in French (Abeillé and Godard 2002), benefactive SVCs in Cantonese (Bodomo et al. 2003), SVCs in Thai (Sudmuk 2005) and SVCs in Zhuang (Pan 2010).

In the “verbal complex” approach, the verbs form a constituent that excludes any nominal complements. Similar structures are proposed for complex predicates in Urdu (Butt 1995; Butt et al. 2003) and Japanese (Matsumoto 1996). Andrews (1997) proposes a verbal complex analysis of SVCs in Tariana (see example 10 in Section 10.2.2).

In the “flat” structure, the two verbs and any complements are all dominated by the same mother node forming one verb phrase. Broadwell (2003) proposes a flat structure (under S) as one analysis

<sup>1</sup>There is a significant amount of discussion in the literature on the structure of SVCs that normally labels three types of constituency structure: complementation (or subordination), adjunction, and coordination (e.g., Cleary-Kemp 2015:224-229; Good 2003:408-416; Jensen 2014:196-207; Larson 1991; Lefebvre 1991a; Muysken 1994; 2006). These discussions typically assume a theory of syntax that implies a stronger link between structural configuration and semantics than that assumed in LFG, whereas the Head-Driven Phrase Structure Grammar (HPSG) approach of Abeillé and Godard (2002) is similar to LFG in that it looks for syntactic evidence of constituency using traditional constituency tests (Dalrymple 2001:46-52).

of auxiliary verb constructions in Zapotec (which appear to meet the criteria for aspectual SVCs). Nordlinger (2010) proposes a similar flat structure for motion SVCs in Wambaya (Chapter 11). Abeillé and Godard (2002) propose a “flat” analysis for tense auxiliaries in French.

Abeillé and Godard explore several constituency tests for distinguishing these three types of multi-verb structure. One type of diagnostic that they use is the extraction, pronominalization, or coordination of verb phrases. They also compare auxiliary structures in French to copular constructions and constructions with an infinitival VP complement. Similar syntactic operations that pronominalize or coordinate verb phrases have not been discovered in Barayin. Barayin has no copular verb. Finite complements in Barayin typically require (or at least allow) an overt subject, so they are analyzed as a sentential complement rather than a verb phrase complement. Non-finite (subjectless) verbal complements in Barayin are better analyzed as nominal phrases. There are no non-sentential finite verbal complement clauses to compare to SVCs in Barayin.

Other possible constituency tests are likewise not readily applicable. Distribution tests cannot reveal much about the relationship between a serial verb and the verb phrase. The only elements that unambiguously occur inside a verb phrase are always to the right of the main verb of an SVC, while the serial verb is always on the left. Intonation or prosody is another possible constituency test, but not enough is known about this part of the grammar to be able to construct trustworthy tests based on correlations between syntactic structures and prosody. Impressionistically, however, an SVC is typically a single prosodic unit.

In the absence of clear empirical evidence of constituency, the simplest analysis should be assumed. However, there are several conflicting ways of measuring simplicity. One type of analytical complication is positing abstract structure for which there is no direct empirical evidence. The burden of proof is on the analysis that creates more constituents to prove that those constituents are necessary. In the absence of evidence, the flattest structure should be assumed.

Another measure of simplicity is whether the analysis requires appealing to *ad hoc* devices to account for a particular construction. Positing construction-specific features undermines any effort to discover generalizations about a particular language or language as a universal. A final type of complication is how much structural ambiguity each analysis allows. The type of ambiguity

discussed below is restricted to ambiguity in c-structure that does not have any effect on meaning or other levels of structure.

By these criteria, the “verbal complex” analysis is the preferred analysis. It explains the characteristics of SVCs using syntactic features that are motivated elsewhere in the grammar as well. Other analyses require *ad hoc* annotations that are difficult to generalize, or they create complications in the analysis of the f-structure of SVCs.

### 10.2.1 Serial verbs as non-projecting adjuncts

The preferred analysis is that serial verbs are non-projecting verbs left-adjoined to the main verb, as shown in the phrase structure rule in example 8. The serial verb position is annotated with two minimal c-structure templates @NONPRJ and @PRJM (Section 8.1). The first template prevents the serial verb from having a value for P, and the second requires the mother node to have an L value of 0. The main verb is annotated as @HEAD A which requires that it have the same L and P values as its mother node. This indirectly restricts the serial verb to only adjoining to projecting verbs with an L value of 0 ( $\approx V^0$ ). The same type of phrase structure rule is proposed for the post-verbal particle (example 21, Section 9.5; repeated in example 11 below).

#### (8) Non-projecting verb adjunction phrase structure rule

a. Minimal c-structure:

$$\begin{array}{ccc}
 V & \rightarrow & V \quad V \\
 & & \uparrow = \downarrow \quad \uparrow = \downarrow \\
 & & @NONPRJ \quad @HEAD A \\
 & & @PRJM
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{ccc}
 V^0 & \rightarrow & \widehat{V} \quad V^0 \\
 & & \uparrow = \downarrow \quad \uparrow = \downarrow
 \end{array}$$

The c-structure resulting from the proposed adjunction phrase structure rule as applied to the SVC in example 9 is given in Figure 10.2. In a minimal c-structure tree, L and P values are shown in a superscript notation, with the L value to the left of the slash, and the P value to the right.

- (9)           SV       MV  
 duwa kol-eyi d-eg-aga       suu  
 lion go-IPFV kill-IPFV-DAT.3PL animal  
 The lion went [and] killed an animal for them. (bva305.11)

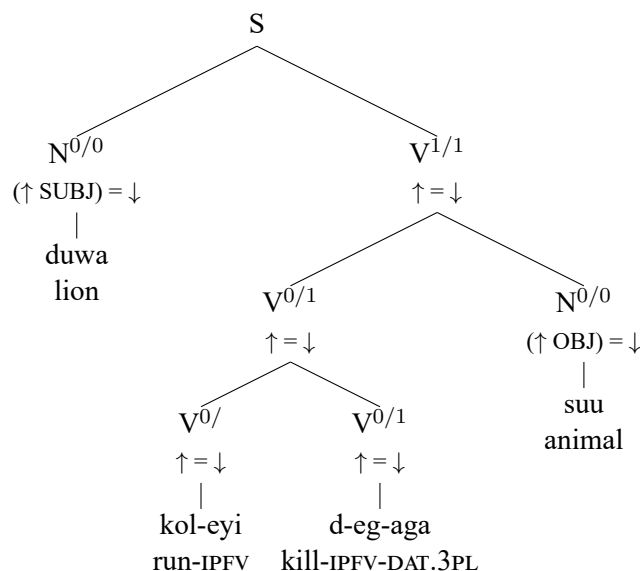


Figure 10.2: C-structure of the SVC in example 9 in the “verbal complex” analysis

The @NONPROJ annotation on the serial verb position provides a formal account for the **restricted** nature of the serial verb slot in the construction. Only verbs that are lexically marked as non-projecting can occur in this position. It also controls the **linear** order, requiring the serial verb (i.e., non-projecting verb) to occur before the main verb.

Non-projecting words can be of any lexical or functional category, including V (Toivonen 2003:24, 63). In an analysis of Swedish post-verbal particles, Toivonen (2003:2-3, 17, 89) includes non-projecting words of the category V, as proposed here for Barayin. Other LFG work on multiverb constructions that predates the terminology of non-projecting words has identified similar structures, as shown in example 10.

- (10) **Previously proposed phrase structure rules with adjacent verbs**
- a.  $\bar{V} \rightarrow V (V) (STAT) (AUX)$  (Butt 1995)
  - b.  $V_{asp} \rightarrow V_{main} V_{light}$  (Butt et al. 2003)
  - c.  $V^* \rightarrow V V$  (Matsumoto 1996:225)
  - d.  $V \rightarrow V^*$  (Andrews and Manning 1999)

In one possible configuration of Urdu complex predicates, Butt (1995) proposes an incomplete verb phrase ( $V'$  directly dominated by S with no VP) in which two verbs can appear adjacent

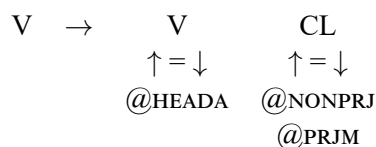
to each other, shown in example 10a. Butt et al. (2003) use a similar phrase structure rule for the same construction, but in which the mother node is  $V^0$ , not  $V'$  (example 10b). Matsumoto (1996) analyzes Japanese complex predicates by using a specially-marked mother node (not to be confused with a Kleene star) directly dominated by S (example 10c).<sup>2</sup> Andrews and Manning (1999:74), example 10d, propose a structure for SVCs in Tariana in which a  $V^0$  node dominates any number of identical nodes (here, the asterisk is a Kleene star).<sup>3</sup>

These proposed structures do not necessarily follow a standard X-bar theory of projection. They appear to have two structural heads in the same projection. In addition, an annotation is needed to control the linear order of the verbs, such as  $V_{light}$ . The non-projecting verb analysis gives a general and formalized way to describe verbal complexes that appear to have two structural heads, and avoids the need for any construction-specific annotation by distinguishing between an open class of projecting verbs and a closed class of non-projecting verbs.

The phrase structure rule in example 8 also requires the serial verb to always be **adjacent** to the main verb. There are no other phrase structure rules allowing any nodes to the left of a V node in a verbal constituent. In addition, the post-verbal particles cannot right-adjoin to a serial verb (and therefore occur between a serial verb and a main verb). Formally, this is because the right-adjunction rule proposed for the analysis of post-verbal clitics, repeated in example 11, only allows adjunction to the right of a verb with a P value. The template @PRJM requires the mother of the adjunction to have a value for P, and the template @HEADA on the verb requires the head to have that same value for P. This prevents it from having no value for P, therefore it cannot be a non-projecting word. A clitic cannot be right-adjoined to a non-projecting verb, and so it cannot intervene between a serial verb and a main verb in an SVC.

(11) **Post-verbal particle phrase structure rule**

a. Minimal c-structure:



<sup>2</sup>“The nature of the node dominating the complex motion predicate is not entirely clear. For lack of a better solution, I will use the  $V^*$  notation of Booij (1990)...” (Matsumoto 1996:225).

<sup>3</sup>Andrews (1997:3) also proposes the possibility of a recursive binary structure:  $V \rightarrow V V$ .

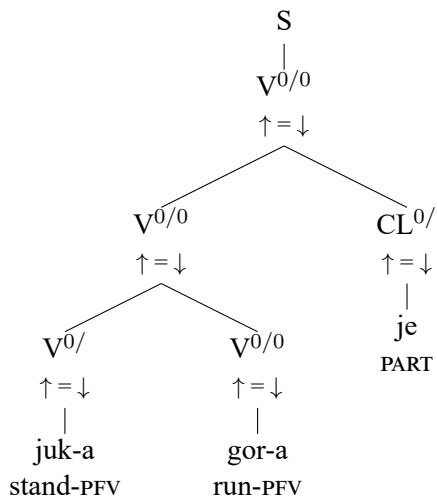
b. Standard LFG X-bar theory:

$$V^0 \rightarrow V^0 \widehat{CL}$$

$$\uparrow = \downarrow \quad \uparrow = \downarrow$$

The adjunction analysis inherently accounts for the possible appearance of multiple serial verbs. The empirical evidence for SVCs with more than two verbs is inconclusive, and no putative SVCs of more than three verbs are attested (Section 6.1). Under this analysis, it must be assumed that there are other reasons why multiple serial verbs are uncommon or problematic. This could be due to a semantic issue of working out the interpretation the contributions of each serial verb to the predicate, or a processing issue correlated with the increased complexity of multiple serial verbs making comprehension a more difficult task.

**Serial verb lower**



**Serial verb higher**

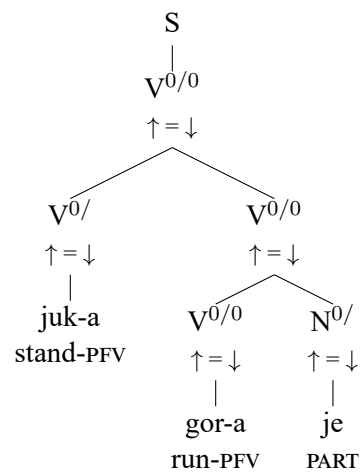


Figure 10.3: Two possible c-structures of SVC in example 12 in adjunction analysis

This approach does allow an insignificant type of ambiguity in the c-structure analysis. When both a left-adjoined serial verb and a right-adjoined post-verbal particle are present, there is no way to determine which adjunct is lower and which is higher. Consider example 12, repeated from example 57 in Section 7.4. There are two possible c-structure analyses of this sentence, shown in Figure 10.3. Since both structures result in the same word order and f-structure, and there are no constituency tests available to determine if only one is the correct structure, this ambiguity has no effect on the analysis.

- (12) SV            MV  
 juk-a            gor-a je  
 stand.up-PFV run-PFV PART  
 [He] ran away. (bva404.55)

### 10.2.2 Serial verbs in a flat structure

A possible alternative analysis of the c-structure of SVCs is a “flat” verb phrase structure rule in which a non-projecting verb can occur to the left of a projecting verb, shown in example 13. This rule is an augmentation of the verb phrase structure rule in Section 9.4. The c-structure of this analysis applied to example 9 is shown in Figure 10.2.

#### (13) “Flat” verb phrase analysis of SVCs

a. Minimal c-structure:

$$\begin{array}{cccc}
 V & \rightarrow & (V) & V & (N) & (P) \\
 & & \uparrow = \downarrow & \uparrow = \downarrow & (\uparrow \text{OBJ}) = \downarrow & (\uparrow \text{OBL}_\theta) = \downarrow \\
 & & @\text{NONPRJ} & @\text{HEADX} & @\text{INT} & @\text{INT} \\
 & & (\hat{*}_\lambda L) = 1 & & & 
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{cccc}
 VP & \rightarrow & (\hat{V}) & V^0 & (NP) & (PP) \\
 & & \uparrow = \downarrow & \uparrow = \downarrow & (\uparrow \text{OBJ}) = \downarrow & (\uparrow \text{OBL}_\theta) = \downarrow
 \end{array}$$

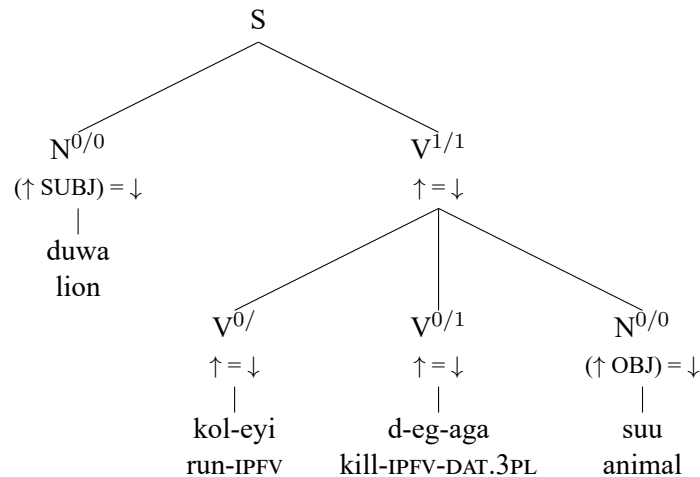


Figure 10.4: “Flat” analysis of c-structure of SVC example 9 (dispreferred)

In the same way as the adjunction analysis in Section 10.2.1, this “flat” analysis accounts for the **restricted** nature of the serial verb by the @NONPRJ annotation. This also controls the **linear** order

of the serial verb and the main verb. Since nothing can be adjoined to the right of a serial verb or to the left of a main verb, the two verbs will always be **adjacent**. In order to account for the possibility of multiple serial verbs, this rule would need to be modified to place a Kleene star on the serial verb instead of parentheses, indicating that the node occurs zero or more times in a fixed linear position.

There are two theoretical reasons for potentially rejecting this analysis. The first would be if there is any reason to hold to the assumption that non-projecting words are restricted to adjunction structures (e.g., Toivonen 2003). If this assumption is made, then the adjunction analysis in Section 10.2.1 must be the best analysis. All else being equal, adjunction-only is a more restrictive hypothesis, and is arguably worth preserving for that reason.

The second reason for potentially rejecting the “flat” analysis is that it requires an *ad hoc* annotation. Notice that the SV node in the phrase structure rule in example 13 has a second annotation:  $(\hat{*}_\lambda L) = 1$ . The reason for this is that without some additional restriction, there is an ambiguity in the c-structure of SVCs in a certain context. This is shown in Figure 10.5. Without a restriction on the L value of the mother node, it is possible to parse an SVC with a direct object as a two-level structure where the serial verb occupies the equivalent to a specifier position. This would mean that one phrase structure rule could ambiguously analyze the serial verb as either a complement or a specifier. This type of ambiguity conflates an important structural distinction between specifiers and complements, and therefore must be avoided.

The annotation  $(\hat{*}_\lambda L) = 1$  prevents this unwanted structural ambiguity. (Note that the mother of the serial verb in the unwanted c-structure analysis in Figure 10.5 has an L value of 2.) However, it is not clear where else in the phrase structure rules such an annotation would be needed. The same annotation does occur inside the @INT template (example 7 in Section 8.1), suggesting that the serial verb might be treated in the same way as internal complements. The problem with this approach is that the @INT template also calls the template @LP which conflicts with the non-projecting nature of the verb. The @LP template requires the same value for L and P, or no L and no P feature. The template @NONPROJ requires a value of 0 for L and no value for P.

This conflict could be formally resolved by altering the @INT template so that it allows either a maximal projection or a non-projecting word, while requiring that the mother node have an L value

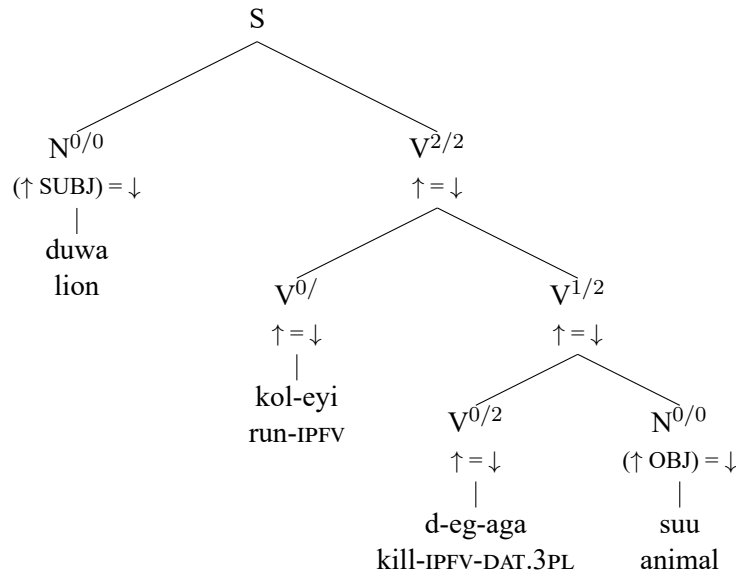


Figure 10.5: C-structure of SVC in example 9 without additional restriction on SV node (rejected)

of 1:  $@INT \equiv \{ @LP \mid @NONPRJ \} \wedge (\hat{*}_\lambda L) = 1$ . The first issue with this formal solution is that it requires the formal redundancy of repeating the  $@NONPRJ$  template or some similar annotation on the serial verb position in the phrase structure rule to prevent projecting verbs from occurring in this position. Secondly, it is not clear that conflating phrasal complements and non-projecting words into one template is a valid or useful cross-linguistic generalization.

Because of these formal and analytical complications, the adjunction analysis in Section 10.2.1 will be used for Barayin SVCs. Note that these complications only arise in the use of minimal c-structure and its commitment to avoiding non-branching nodes. In a view of c-structure that allows non-branching nodes, an optional serial verb can unproblematically be placed in a “flat” verb phrase structure rule.

### 10.2.3 Serial verbs as specifiers of the verb phrase

The third potential c-structure analysis assumes that the serial verb is always in the “specifier” position of the verb phrase, as in the phrase structure rule in example 14 and the c-structure analysis of the SVC in example 9 shown in Figure 10.6.

(14) “Specifier” analysis of serial verbs

a. Minimal c-structure:

$$\begin{array}{ccc}
 V & \rightarrow & V^+ \quad V \\
 & & \uparrow = \downarrow \quad \uparrow = \downarrow \\
 & & @_{\text{NONPRJ}} \quad @_{\text{HEADX}} \\
 & & (\hat{*}_\lambda L) = (\hat{*}_\lambda P)
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{ccc}
 VP & \rightarrow & \hat{V}^* \quad V' \\
 & & \uparrow = \downarrow \quad \uparrow = \downarrow
 \end{array}$$

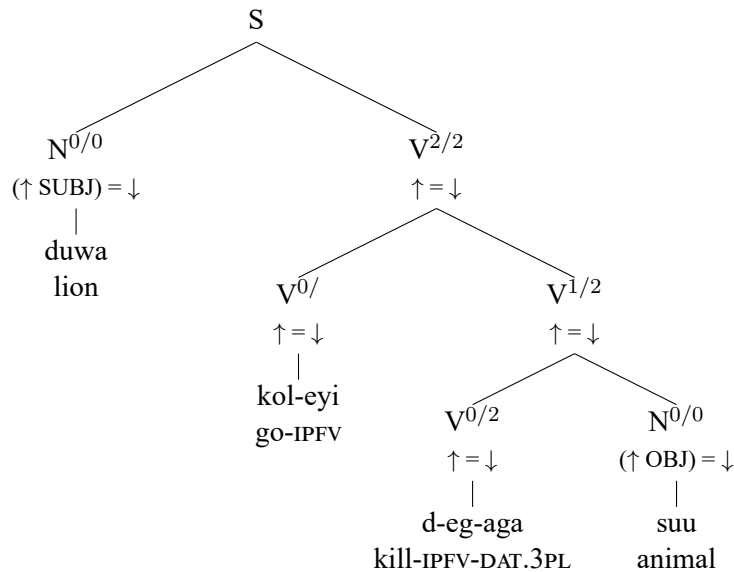


Figure 10.6: C-structure of SVC in example 9 in “specifier” analysis (dispreferred)

This approach is plausible in that it has the same empirical coverage as the “flat VP” and “verbal complex” approaches. However, like the “flat VP” approach, it requires an *ad hoc* annotation on the c-structure rule instead of the standard template for specifiers. The standard template for specifiers is @EXT (example 7 in Section 8.1). This template calls the template @LP which requires the L and P value of the nodes to be identical. However, under the current assumptions, non-projecting words define their mother node (the pre-terminal node) as having an L value of 0 and no P feature. Thus L and P cannot be equal, and the @EXT template conflicts with non-projecting words.

To avoid this problem, the phrase structure rule in example 14 uses a combination of templates not motivated elsewhere in the grammar. The @NONPROJ template restricts the position to non-projecting words. The equation  $(\hat{*}_\lambda L) = (\hat{*}_\lambda P)$  requires the mother node to be a maximal projection.

This results in the serial verb always being in a higher position in the structure than a complement of the verb. This solution is technically possible, but it is less elegant than the adjunction analysis in that it requires a construction-specific annotation that is not motivated from other structures analyzed in this language. In addition, the specifier analysis requires a Kleene plus annotation on the serial verb to allow the possibility of more than one serial verb (i.e., multiple specifiers).

#### 10.2.4 SVCs as “VP complement” structures

A final possible analysis of SVCs is the “VP complement” analysis. In this analysis the serial verb is a projecting verb. Since the serial verb cannot be annotated as @NONPRJ in this structure, some other mechanism must account for the restricted nature of the serial verb, its linear order before the main verb, and its position immediately adjacent to the main verb. One approach which accounts for some of these features is to assume that the main verb is selected by the serial verb. The position of the main verb can be annotated with the grammatical function xCOMP, as in example 15.

(15) “VP complement” phrase structure rule for SVCs with xCOMP (rejected)

a. Minimal c-structure:

$$\begin{array}{rcc}
 V & \rightarrow & V \quad V \\
 & & \uparrow = \downarrow \quad (\uparrow \text{ xCOMP}) = \downarrow \\
 & & @\text{HEADX} \quad @\text{INT}
 \end{array}$$

b. Standard LFG X-bar theory:

$$\begin{array}{rcc}
 VP & \rightarrow & V^0 \quad VP \\
 & & \uparrow = \downarrow \quad (\uparrow \text{ xCOMP}) = \downarrow
 \end{array}$$

This rule accounts for many of the features of SVCs. Since xCOMP is a governable grammatical function, only verbs that select an xCOMP can occur in the first position in the rule. By assuming that only serial verbs take V complements (other verbs take S and N complements), this accounts for the **restricted** nature of the serial verb position, and the **linear** order. Like the adjunction analysis in Section 10.2.1, the phrase structure rule in example 15 is recursive, allowing multiple serial verbs.

The fact that the serial verb and main verb are always **adjacent** is not directly accounted for since the phrase structure rule in example 15 does not prevent post-verbal particles from adjoining to the serial verb. Some other constraint, perhaps semantic, must be assumed to control the distribution

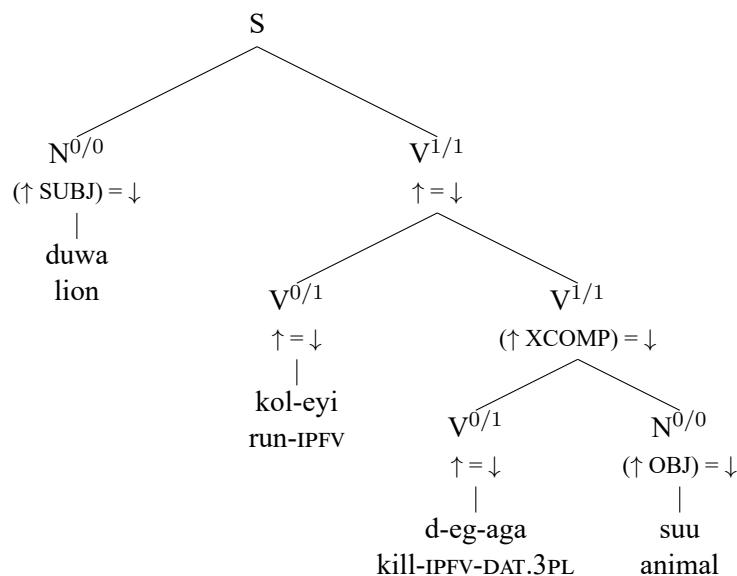


Figure 10.7: C-structure of SVC in example 9 in “VP complement” analysis (rejected)

of post-verbal particles. While this approach, with some assumed semantic restrictions, could succeed in capturing word order facts, it does so by creating a problematic bi-clausal f-structure. Section 10.3 explains why this is problematic.

### 10.3 F-structure of Barayin SVCs

There are two basic approaches to analyzing the f-structure of multiverb constructions.<sup>4</sup> In an analysis of English auxiliaries, Falk (1984, 2008) labels these two approaches “aux-predicate” and “aux-feature”. The “predicate” analysis can be described as a bi-clausal analysis, and the “feature” analysis can be described as a monoclausal analysis. These two analyses are shown in Figure 10.8 for the sentence *The children will take syntax*.

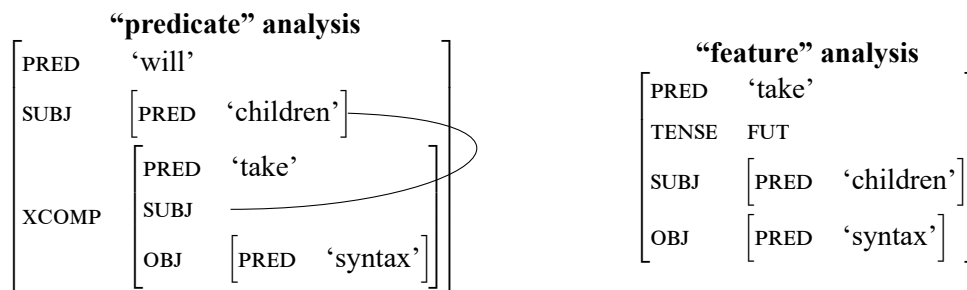


Figure 10.8: Two possible f-structure analyses of multiverb constructions (based on Falk 2008:866)

<sup>4</sup>A third possible type of analysis, predicate composition, is discussed in Chapter 11.

The essential question is whether the auxiliary and the main verb each contribute their own PRED. If they do then one must be embedded as a complement or adjunct within the main f-structure. This is because PRED values are non-unifiable “semantic forms” (Kaplan and Bresnan 1982:274). The “predicate” analysis is similar to the analysis of so-called “raising” predicates proposed by Bresnan (1982a). The auxiliary selects an XCOMP function. It requires its SUBJ to be functionally identified with the SUBJ of its XCOMP:  $(\uparrow \text{SUBJ}) = (\uparrow \text{XCOMP SUBJ})$ .

In the “feature” analysis, the auxiliary does not have a PRED. This allows the auxiliary and the main verb to both contribute directly to the same f-structure. They are functional co-heads. This type of approach was suggested for a multiverb construction by Dalrymple et al. (1993a:15) in their analysis of the Urdu “light verb” *diyaa* ‘let’:

...it would do as well to assume that the PRED value for a sentence with a complex predicate is contributed by the main verb..., and that the function of ‘let’ is to modify the argument structure but not to contribute to or change the PRED value of the construction.

Lowe (2016) makes a similar assumption about light verbs in Urdu, and Camilleri and Sadler (2017) propose a verb with no PRED in their analysis of an asyndetic multiverb construction in some varieties of Arabic in which a posture verb has an aspectual interpretation.

A monoclausal “feature” analysis of the f-structure of Barayin SVCs provides a natural way to enforce the **concordant** TAM marking patterns. The TAM values of each verb in the construction must be concordant because they are unified in a single f-structure (Lødrup 2014; Niño 1997; Sells 2004). In contrast, the use of an XCOMP feature, as in the “VP complement” analysis in Section 10.2.4, forces the biclausal “predicate” analysis of the f-structure of SVCs. The “predicate” analysis allows each verb to contribute its TAM features to a separate f-structure, therefore some additional constraint is needed to explain why these TAM values are almost always concordant. This could be done via a constraining equation such as, for an Imperfective serial verb:  $(\uparrow \text{XCOMP TAM CONT}) =_c +$ . Such a constraint makes the analysis more complex, and the issue becomes even more complex if two serial verbs are allowed.

In the monoclausal analysis, some additional explanation is required in order to account for the two exceptional non-concordant TAM-marking patterns described in Section 6.5. The non-concordant TAM marking pattern only concerns the four indicative TAM suffixes: Imperfective, Progressive,

Perfective and Perfect. Non-concordant TAM marking is allowed if the serial verb is in an Imperfective form, and the main verb is in a Progressive form, or if the serial verb is in a Perfective form, and the main verb is in a Perfect form. The linear order cannot be reversed. If SVCs have a monoclausal f-structure, an atomic analysis of the values of TAM features would not allow these non-concordant patterns. The values of indicative TAM markers must be decomposed in a way that allows some of them to be compatible.

As discussed in Section 6.5, the Progressive form can be analyzed as a more restricted form of the Imperfective form, and likewise the Perfect form can be analyzed as a more restricted form of the Perfective form. Table 10.1 shows the features that capture this analysis. Both Imperfective and Progressive TAM markers have a “continuous” feature [CONT +]. Both Perfective and Perfect have a feature [CONT –]. Progressive and Perfect are distinguished by a feature [NOW +]. This feature represents the semantic contribution that makes Progressive (current ongoing activity) more specific than Imperfective (ongoing activity), and Perfect (completed and effects felt now) more specific than Perfective (completed). This feature is not part of the Imperfective or Perfective TAM suffixes.<sup>5</sup>

Table 10.1: Features of indicative TAM suffixes

	[CONT +]	[CONT –]
[NOW +]	Progressive	Perfect
∅	Imperfective	Perfective

The second part of the analysis of concordant TAM marking is to assume that when a TAM marker is suffixed to a serial verb, it functions as an agreement marker. The only formal change is that the f-descriptions become constraining equations, as seen in example 16 compared with example 17.<sup>6</sup> Recall that serial verbs differ from main verbs in that they cannot take any pronominal suffixes. For this reason, serial verbs must be treated in the morphology as a lexical subclass of verbs. The subclass of serial verbs also takes these modified versions of the verbal TAM suffixes.

<sup>5</sup>It would also be possible to state (less elegantly) that the lexical entries for Imperfective and Perfective include a disjunction:  $\{(\uparrow \text{TAM NOW}) = - \mid (\uparrow \text{TAM NOW}) =_c +\}$ . This makes them compatible with Progressive and Perfect TAM respectively, just like assuming they are underspecified for the NOW feature.

<sup>6</sup>The constraining equation is only needed for the NOW feature, but, for the sake of consistency, the same change is made across the lexical entry.

## (16) TAM marking on serial verbs

- a. **Imperfective:**  
(↑ TAM CONT) =<sub>c</sub> +
- b. **Progressive:**  
(↑ TAM CONT) =<sub>c</sub> +  
(↑ TAM NOW) =<sub>c</sub> +
- c. **Perfective:**  
(↑ TAM CONT) =<sub>c</sub> -
- d. **Perfect:**  
(↑ TAM CONT) =<sub>c</sub> -  
(↑ TAM NOW) =<sub>c</sub> +

## (17) TAM marking on main verbs

- a. **Imperfective:**  
(↑ TAM CONT) = +
- b. **Progressive:**  
(↑ TAM CONT) = +  
(↑ TAM NOW) = +
- c. **Perfective:**  
(↑ TAM CONT) = -
- d. **Perfect:**  
(↑ TAM CONT) = -  
(↑ TAM NOW) = +

The reason for the non-concordant TAM marking patterns is directly derived from this analysis of the features of TAM suffixes. As an agreement marker, the TAM suffix on a serial verb places constraints on the TAM marking of a main verb. If the TAM marker on a serial verb is Progressive, it requires that the main verb have the features [CONT +] and [NOW +]. In other words, it requires the main verb to be Progressive. In the same way, Perfect marking on the serial verb requires the main verb to be Perfect. In contrast, Imperfective marking on the serial verb only requires the main verb to have the feature [CONT +]. There are two TAM suffixes that satisfy this constraint, so the main verb can be either Imperfective or Progressive. In the same way, the Perfective suffix on a serial verb only requires the main verb to have the feature [CONT -]. Either Perfective or Perfect satisfies that restriction.<sup>7</sup>

The “feature” approach to analyzing Barayin SVCs also provides a way to account for the restriction on the scope of negation and other predicate modifiers. Assuming that there is a correlation between having a PRED in f-structure and the interpretation of semantic scope, the monoclausal f-structure of the “feature” analysis explains why SVCs are **monoscopal**. Semantic operators like negation and adverbials cannot take narrow scope over just one verb in an SVC, because there is only one PRED value to be negated or modified. However, it should be noted that it is not clear how this generalization about semantic scope is formalized in LFG. It is also an open question as to whether this is a cross-linguistically valid generalization, or if there are some languages that allow a narrow scope of negation of just one part of some element that is represented by a single PRED in f-structure.

---

<sup>7</sup>This approach predicts that patterns like Progressive Imperfective Progressive should be allowed in a three-verb SVC. Intuitively, such patterns seem unlikely. However, there are not enough examples of three-verb SVCs in the corpus to expect to find this pattern, and it was not elicited during fieldwork.

## 10.4 S-structure of Barayin SVCs

At the level of c-structure and f-structure, all four types of SVCs in Barayin are structurally identical to each other. The contrast between different types of serial verbs is at the level of s-structure. As discussed in Section 8.3, s-structure is the representation of a “grammatically relevant subsystem” of the semantic content (Pinker 1989). In this context, the grammatically relevant elements are the basic units of meaning contributed by the serial verb and the apparent **argument sharing** between the verbs in an SVC.

Each serial verb has different s-structure information in its lexical entry. A serial verb in a Manner SVC contributes a MANNER feature (Section 10.4.1). In Deictic SVCs (Section 10.4.2) and Take SVCs (Section 10.4.3), the serial verb contributes a PATH feature to s-structure. A serial verb in a Stand SVC has several possible interpretations, one of which contributes a PATH feature, another which contributes a MANNER feature, and others that contribute to other levels of representation such as discourse structure, not included in this formal analysis.

When serial verbs contribute a feature to s-structure, they also place constraints on the identity of arguments in the s-structure. These constraints are in the form of f-descriptions.<sup>8</sup> The serial verb in a Deictic or Manner SVC identifies the ARG1 of the feature it contributes (PATH or MANNER) with the ARG1 of the s-structure that feature is embedded in. Take SVCs make the same link, and, in addition, identify the goal of the PATH feature, its ARG3, as identical to the ARG2 of the main s-structure.

### 10.4.1 Manner SVC

The first type of serial verb to consider is a Manner SVC, as shown in example 18. The s-structure of this SVC is shown in Figure 10.9, along with an s-structure for the same sentence without the serial verb.

---

<sup>8</sup>Halvorsen and Kaplan (1988:289) show linked arguments in a connected s-structure in their figures, but do not address the mechanism for creating the links, and do not further explore the implications. Manning (1992:38-40) also assumes arguments in s-structure can be linked. He describes them as a result of “argument fusion” (see Chapter 11) without further elaborating on how they are formed.

- (18) SV MV  
 ka gor-eyi s-eyi  
 SBJ.3SG.M run-IPFV come-IPFV  
 He runs back. (or He comes running.) (bva305.56)

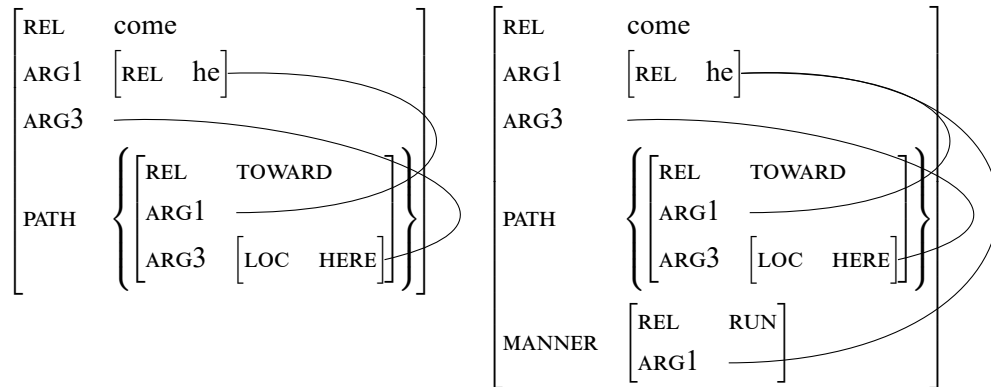


Figure 10.9: S-structure of Manner SVC in example 18, compared with simple clause

A partial lexical entry for the main verb *s-ii* ‘come’ is seen in example 19.

- (19) *s-ii* ‘come’ V  
 @PRJM  
 (↑ PRED) = ‘come’  
 (↑ PRED FN) = (↑<sub>σ</sub> REL)  
 (↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)  
 ((↑ OBL<sub>θ</sub>)<sub>σ</sub> = (↑<sub>σ</sub> ARG3))  
 %P ∈ (↑<sub>σ</sub> PATH)  
 (%P REL) = TOWARD  
 (%P ARG1) = (↑<sub>σ</sub> ARG1)  
 (%P ARG3 LOC) = HERE  
 (%P ARG3) = (↑<sub>σ</sub> ARG3)  
 $t_{path\ rel} \equiv t_{rel}$

In the second line of example 19, the template @PRJM distinguishes the main verb lexical entry from the serial verb which has the template @NONPRJM in its lexical entry. The third line of the lexical entry gives the PRED in f-structure, and the fourth line gives a REL in s-structure which corresponds to the PRED (Section 8.4.2). The fifth and sixth lines link arguments with grammatical functions. The verb can have two arguments in its main s-structure, ARG1 and ARG3. As a simplification, the entry states that the ARG1 value is projected from SUBJ, and the ARG3 value is projected from OBL<sub>θ</sub> (if present), ignoring the need for a more complex Mapping Theory to deal with valency alternations (Findlay 2016a; see Section 8.4.2).

The lexical entry also has a PATH feature. Since the value of PATH is a set, a local name (%P) is used here to identify a unique s-structure within that set (Dalrymple 2001:146-148). The value of PATH includes the attribute-value pair [REL TOWARD] which represents the translocative motion meaning of the verb. The verb *s-ii* ‘come’ in Barayin predicates movement in the direction of the deictic center, but does not necessarily imply that the path ends at the deictic center itself, hence the use of TOWARD instead of TO. The value of REL in this case is written in small caps to distinguish it from the value of a REL that is derived from a corresponding PRED. The use of small caps does not have any particular theoretical status. The PATH includes two arguments, its theme, ARG1, and a locative, ARG3.

The set of arguments proposed for this analysis (example 14 in Section 8.3, based on Kibort (2014)) do not directly represent thematic roles. For example, a prototypical theme can be either an ARG1 or an ARG2. Instead of using the same set of arguments, the PATH feature could use arguments named after semantic roles, such as THEME, GOAL and SOURCE. At this point in the development of the theory of s-structure, it is not clear what the implications of choosing between these options would be. Using the same set of arguments for subevents like PATH and MANNER as those used in the main s-structure is a more restrictive hypothesis. This more restrictive hypothesis should be used until some reason is given for positing a more elaborate set of arguments in s-structure.

In the second-to-last line of the lexical entry, an f-description identifies the ARG3 of the PATH with the ARG3 of the main s-structure. This may seem redundant, but it is crucial in Section 10.4.2 for explaining the interpretation of locative constituents (Section 6.6.3). Only when the main verb links its ARG3 to a goal or source in the PATH feature can the  $OBL_{\theta}$  grammatical function be used to express the goal or source. In Deictic SVCs, the s-structure can have a PATH feature where the goal or source of the path is *not* linked to the ARG3 of the main s-structure. In these cases the  $OBL_{\theta}$  grammatical function cannot be used to express the goal or source.

The final line of the lexical entry is an abbreviation for a more complex representation of the temporal semantics which require the path of motion ( $t_{path\ rel}$ ) to take place concurrently with the activity predicated by the main verb ( $t_{rel}$ ). In this case, it might be assumed as a default that the PATH REL component of the meaning should be understood to be concurrent with the REL of the larger s-structure, but this will not be the case in the analysis of Deictic SVCs and Take SVCs.

A partial lexical entry for the serial verb *gor-o* ‘run’ is shown in example 20. Recall from Section 10.3 that serial verbs do not contribute a PRED to the f-structure. Naturally (especially if the REL feature is thought of as a projection of PRED) they do not contribute a REL feature to main s-structure either.

- (20) *gor-o* ‘run’ V  
 @NONPRJM  
 ( $\uparrow_{\sigma}$  MANNER REL) = RUN  
 ( $\uparrow_{\sigma}$  MANNER ARG1) = ( $\uparrow_{\sigma}$  ARG1)  
 $t_{manner\ rel} \equiv t_{rel}$

The serial verb in a Manner SVC contributes a MANNER attribute with a single s-structure as its value. The value of MANNER could also be represented as a set, like the value of PATH. In the Barayin data analyzed here, there is no need for this, so it is not done for the sake of simplicity.<sup>9</sup> In order to account for argument sharing, the argument of the MANNER feature is functionally identified with the ARG1 of the main verb by an f-description in the fourth line of the partial lexical entry. Whatever ARG1 is contributed to the s-structure by the main verb will be identified as the ARG1 of the MANNER as well. Even though the arguments are from separate grammatical words, they are linked in a single s-structure.

This simple way of linking arguments echoes a proposal by Alsina (1997:8). Alsina decomposes PRED values to include an attribute called TERMS. The TERMS features can then be linked within the f-structure: ( $\uparrow$  TERMS) = ( $\uparrow$  ARG TERMS) (see also Andrews and Manning 1999:45). The assumption of a connected s-structure allows the same function without any need for the additional complication of decomposing the PRED value in the way Alsina proposes (see Chapter 11).

#### 10.4.2 Deictic SVC

The next type of SVC to consider is the Deictic SVC, as in example 21.

- (21) SV MV  
 kol-eyi dopi-ga de-geti  $\eta$  nama  
 go-IPFV find-OBJ.3SG.M father-POSS.3SG.F PREP child  
 [He] goes and finds the father of the girl. (bva024.8)

<sup>9</sup>See Section 11.4.4 for an alternative analysis of the value of PATH as a single s-structure, not a set.

The s-structure of the Deictic SVC in example 21 is shown in Figure 10.10, along with the s-structure of the same clause without a serial verb. The s-structure of the SVC represents the path of motion as part of the same s-structure as that of the main verb. In this view a single s-structure can represent a complex event. The practical reason for this representation is that it allows an argument of PATH to be identified with an argument of the larger s-structure. If the path of motion were represented in an s-structure that is not embedded in the s-structure of the main verb (e.g., in a set or in unconnected s-structures), any formal representation of the link between arguments would be much more complex.

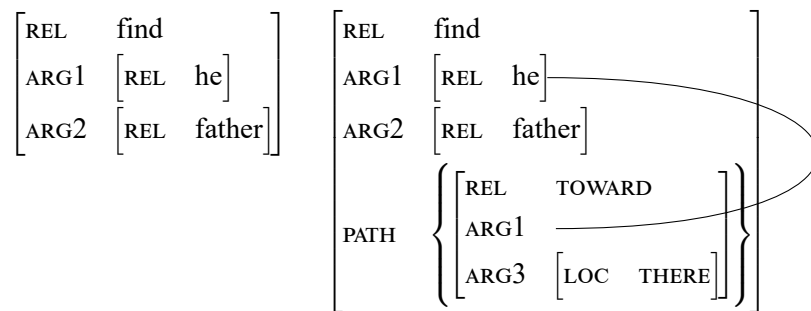


Figure 10.10: S-structure of Deictic SVC in example 21 compared with simple clause

A partial lexical entry for the main verb *dop-o* ‘find’ is shown in 22 that results in the s-structures in Figure 10.10. It is a standard transitive predicate with two arguments.

- (22) *dop-o* ‘find’ V  
 @PRJM  
 (↑ PRED) = ‘find’  
 (↑ PRED FN) = (↑<sub>σ</sub> REL)  
 (↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)  
 (↑ OBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG2)

A partial lexical entry for the serial verb *kol-o* ‘go’ is shown in example 23.

- (23) *kol-o* ‘go’ V  
 @NONPRJM  
 %P ∈ (↑<sub>σ</sub> PATH)  
 (%P REL) = TOWARD  
 (%P ARG1) = (↑<sub>σ</sub> ARG1)  
 (%P ARG3 LOC) = THERE  
 {*t<sub>path rel</sub>* < *t<sub>rel</sub>* | *t<sub>path rel</sub>* ≡ *t<sub>rel</sub>* }

As with the serial verb *gor-o* ‘run’ in example 20, this serial verb does not contribute anything to f-structure and does not contribute a REL directly to the main s-structure. It primarily contributes

a PATH feature. The expression in the fifth line of the lexical entry identifies the figure on the path of motion with the highest argument of the main verb.

The final line of the lexical entry is an abbreviation that accounts for part of the meaning that is not captured by the s-structure.<sup>10</sup> In Figure 10.10, a path of prior motion is represented inside the s-structure of the main verb in order to allow a straightforward link between the arguments. A consequence of this representation is that the temporal relationship between the PATH REL and the REL of the larger s-structure (or their corresponding EVENT features) cannot be derived from the s-structure itself. The potential temporal relationships between these components of the s-structure must be stated lexically. It is assumed that this aspect of the semantics is best represented by meaning constructors of Glue semantics in a manner similar to the approach of Lowe (2015). A full representation of temporal semantics is beyond the scope of this work, but the final line of example 23 is an abbreviation which states that the PATH REL can be understood to take place either simultaneously with the REL of the larger s-structure, or it can be understood to take place beforehand. Section 11.3.4 discusses some further issues in constraining the possible temporal interpretation of the path of motion in a complex event.

Compare the lexical entry for the projecting main verb *kol-o* ‘go’ in example 24a (cf. example 19) with the lexical entry for the non-projecting serial verb *kol-o* ‘go’ in example 24b (repeated from example 23).

- |  |  |
|--|--|
| <p>(24) <i>kol-o</i> ‘go’ V</p> <p>a. <b>Main verb:</b></p> <p>@PRJM</p> <p>(↑ PRED) = ‘go’</p> <p>(↑ PRED FN) = (↑<sub>σ</sub> REL)</p> <p>(↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)</p> <p>((↑ OBL<sub>θ</sub>)<sub>σ</sub> = (↑<sub>σ</sub> ARG3))</p> <p>%P ∈ (↑<sub>σ</sub> PATH)</p> <p>(%P REL) = TOWARD</p> <p>(%P ARG1) = (↑<sub>σ</sub> ARG1)</p> <p>(%P ARG3 LOC) = THERE</p> <p>(%P ARG3) = (↑<sub>σ</sub> ARG3))</p> <p><math>t_{path\ rel} \equiv t_{rel}</math></p> | <p>b. <b>Serial verb:</b></p> <p>@NONPRJM</p> <p>%P ∈ (↑<sub>σ</sub> PATH)</p> <p>(%P REL) = TOWARD</p> <p>(%P ARG1) = (↑<sub>σ</sub> ARG1)</p> <p>(%P ARG3 LOC) = THERE</p> <p><math>\{t_{path\ rel} \prec t_{rel} \mid t_{path\ rel} \equiv t_{rel}\}</math></p> |
|--|--|

The information in the lexical entry of the serial verb is essentially a subset of the information in the lexical entry of the main verb. The only differences are the l-structure properties in the first

<sup>10</sup>Similar expressions in regards to relative timing of parts of a complex motion event are used by Matsumoto (1996), Broadwell (2000) and Nordlinger (2010).

line and the allowance for a prior motion interpretation of the path of motion in the last line. The lexical entries of serial verbs provide a formal representation of how the meaning of serial verbs has changed, or been “bleached”, in comparison to the lexical entry for the corresponding main verb. In this approach, what makes serial verbs formally distinct from main verbs is that they are underspecified. The nature of their lexical entries makes it impossible for them to occur on their own without a main verb. This is a more elegant approach to modeling the nature of bleached verbs compared with past analyses in LFG that add an additional feature, a “transparent Event”, which arbitrarily prevents the verb from occurring on its own (Butt 1995:145; see Section 11.2). It also allows a model of the progressive nature of grammaticalization. For example, a serial verb that further grammaticalizes into an aspectual verb would have none of the information from example 24b in its lexical entry.

Furthermore, this approach to the lexical entry of serial verbs provides a natural account for the interpretation of locative constituents in SVCs, as described in Section 6.6.3. The main verb of an SVC, not the serial verb, determines the interpretation of locative constituents. In the second to last line of its lexical entry, the main motion verb links the ARG3 of its PATH feature to the ARG3 of the main s-structure, which is, in turn, linked to an OBL<sub>θ</sub> constituent. In contrast, with a deictic serial verb, the ARG3 of the main verb is not necessarily linked to any argument in the PATH feature. If the main verb of a Deictic SVC does not link its ARG3 to an argument of its PATH, then an OBL<sub>θ</sub> constituent can only have the default interpretation of a stative location, not a goal or a source, despite the motion semantics of the serial verb.

Since the value of PATH is a set, a serial verb in a Deictic SVC can still contribute a PATH feature even if the main verb already has a PATH feature, as in examples 25 and 26.<sup>11</sup> The main verbs in these examples, *koor-o* ‘take away’ and *saar-o* ‘bring here’, are directional motion verbs.

(25)           SV           MV  
 ni    gus-eyi    kor-a-ga                    ŋ   maŋa  
 SBJ.3PL go.out-IPFV take.away-IPFV-OBJ.3PL PREP bush  
 They leave, taking them into the bush. (bva039.46)

(26) SV    MV  
 kol-u   sar-u                ŋ   maŋjo  
 go-SBJV bring.here-SBJV PREP thing  
 Go [and] bring the thing here. (bva407.108)

<sup>11</sup>An alternative approach using MEANS for prior motion is proposed in Section 11.4.4.

The s-structures of examples 25 and 26 are shown in Figure 10.11. In the s-structure for example 25 on the left, the two PATH values are compatible, so can easily be understood to take place concurrently. In the s-structure for example 26, the values of PATH are not semantically compatible, one being towards the deictic center and the other away from it. Therefore only the prior motion interpretation is logically possible.<sup>12</sup>

**SVC in example 25:**

**SVC in example 26:**

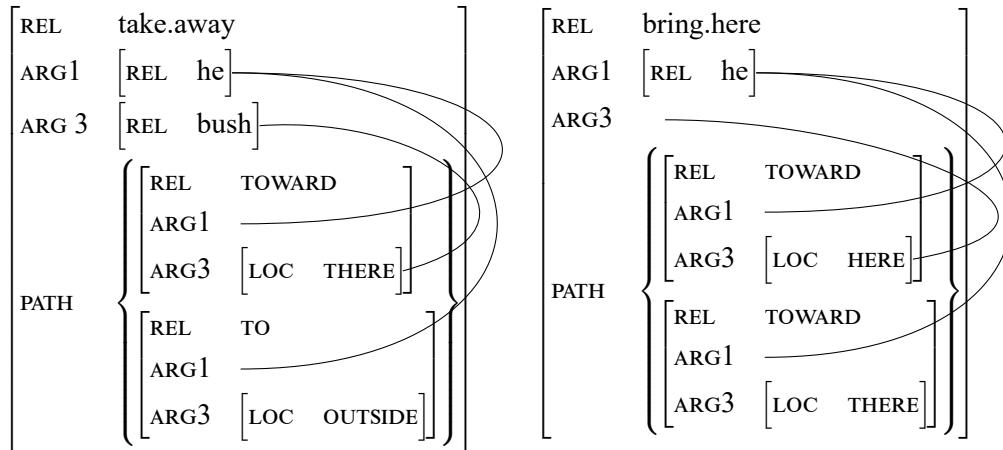


Figure 10.11: S-structures of Deictic SVCs in examples 25 and 26

This approach to the analysis of Deictic SVCs is supported by an anecdote concerning the Deictic SVC in example 27. Despite apparently being grammatically well-formed, the Barayin speaker who reviewed this text pointed out that there was something particularly strange about this sentence. In this SVC, both the serial verb and the main verb contribute identical path information, a PATH away from the deictic center. This makes the serial verb completely redundant, which could be an explanation for why the sentence seemed odd.

- (27)            SV    MV  
ka        kol-eyi kor-a-ti                    pusa-tu  
SBJ.3SG.M go-IPFV take.away-IPFV-OBJ.3SG.F good-SG.F  
He builds it well (lit., He goes [and] carries it away well.) (bva041.77)

Finally, note that the highest argument of verbs of motion is analyzed as ARG1, even though it could arguably be characterized semantically as a theme rather than as an agent. As discussed in Section 8.3, ARG1 is characterized as “the participant of whom the event or state is predicated”

<sup>12</sup>However, the illogical interpretation is still formally possible. Section 11.3.4 for a discussion of possible ways to formally constrain the possible interpretations.



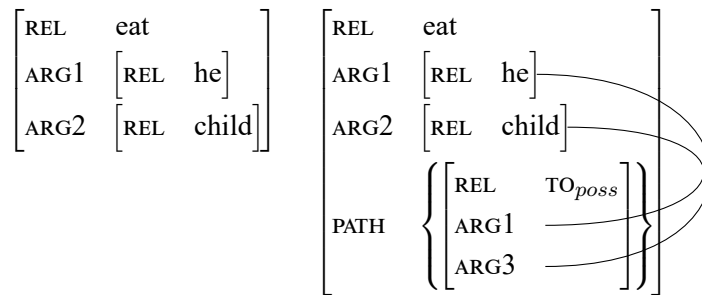


Figure 10.12: S-structure of “ate” compared with “took ate”

- (30) *t-ii* ‘eat’ V  
 @PRJM  
 (↑ PRED) = ‘eat’  
 (↑ PRED FN) = (↑<sub>σ</sub> REL)  
 (↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)  
 (↑ OBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG2)

The serial verb *pid-o* ‘take’ has a lexical entry that includes the information in 31.

- (31) *pid-o* ‘take’ V  
 @NONPRJM  
 %P ∈ (↑<sub>σ</sub> PATH)  
 (%P REL) = TO<sub>poss</sub>  
 (%P ARG1) = (↑<sub>σ</sub> ARG2)  
 (%P ARG3) = (↑<sub>σ</sub> ARG1)  
 $t_{path\ rel} \prec t_{rel}$

The serial verb *pid-o* ‘take’ introduces a path of motion whose theme is the second argument of the main verb. The REL value TO is annotated as a possessive path to indicate that it is only used in the context where the theme of the path is going into the possession of the goal of the path (cf. Broadwell 2000:124-126; Jackendoff 1990:62-63). The goal of the path of motion is the first argument of the main verb, its agent.

Again, the arguments in the s-structure are linked by f-descriptions. The expression linking the ARG1 of the PATH to the ARG2 of the main s-structure also ensures that there must be some ARG2 in the main s-structure. This explains the restriction requiring the main verb to be transitive.<sup>13</sup>

The final line of the partial lexical entry again abbreviates the semantic constraint on the temporal relationship between the path of motion and the activity predicated by the main verb. It is possible

<sup>13</sup>More precisely, this analysis proposes that the main verb must have both an ARG1 and ARG2, and would not allow a transitive verb that has an ARG1 and ARG3, but no ARG2. This possibility has not been explicitly tested.

to imagine a situation where a path of transfer of possession follows the activity of the main verb (e.g., John kicked the ball into his own hands), but such an interpretation does not seem possible in Take SVCs.

Finally, the types of Stand SVCs where the serial verb contributes to the s-structure, namely the change of posture ('stand') and change of location ('leave') interpretations, can be analyzed along the same lines as other types of SVCs. The change of posture interpretation can be seen as a type of MANNER feature, and the change of location interpretation clearly adds a PATH feature to the s-structure. Other types of Stand SVCs, namely the change in state ('begin') and the change in discourse ('then') interpretations, need a different type of analysis with a representation of aspectual and discourse information which is beyond the scope of this dissertation.

## 10.5 Conclusion

The three figures at the end of this chapter show a combined analysis of the c-structure, f-structure and s-structure of three SVCs. Figure 10.13 shows the structure of the Stand and Deictic SVC in example 32 (repeated from example 9 in Section 6.1). Figure 10.14 shows the structure of the Manner SVC in example 33 (repeated from example 3 in Section 10.1). Figure 10.15 shows the structure of the Take SVC in example 29 in Section 10.4.3.

(32)           SV?           SV    MV  
           ŋ       juk-eyi       kol-eyi til-a-ŋ                   jaar-a-tu  
           SBJ.1SG stand.up-IPFV go-IPFV visit-IPFV-OBJ.3PL neighbor(Ar.)-PL-POSS.1SG  
           I went [and] visited my neighbors (bva302.19)

(33)           SV       MV  
           ka       gor-eyi s-eyi  
           SBJ.3SG.M run-IPFV come-IPFV  
           He runs back. (*or* He comes running.) (bva305.56)

This analysis accounts for the **restricted** nature of serial verbs by analyzing them as members of a lexically-determined class of non-projecting verbs. Serial verbs are the only words that can be left-adjoined to a main verb with a LEVEL value of 0, which results in the correct **linear** order. Post-verbal particles and adverbials right-adjoin to main verbs, but not to non-projecting verbs, resulting in the serial verb and main verb always being **adjacent**. The adjunction structure allows for multiple serial verbs.

The serial verb does not contribute a PRED to f-structure, resulting in a single monoclausal f-structure for an SVC. This explains why the TAM marking on a serial verb must be **concordant** with the TAM marking on the main verb. A single PRED in f-structure also provides single locus of scope for semantic operators, which correlates with the **monoscopal** nature of SVCs. **Shared arguments** in an SVC are represented by f-descriptions that equate arguments in a connected s-structure. Arguments of a MANNER or PATH feature are equated with the arguments of the main s-structure.

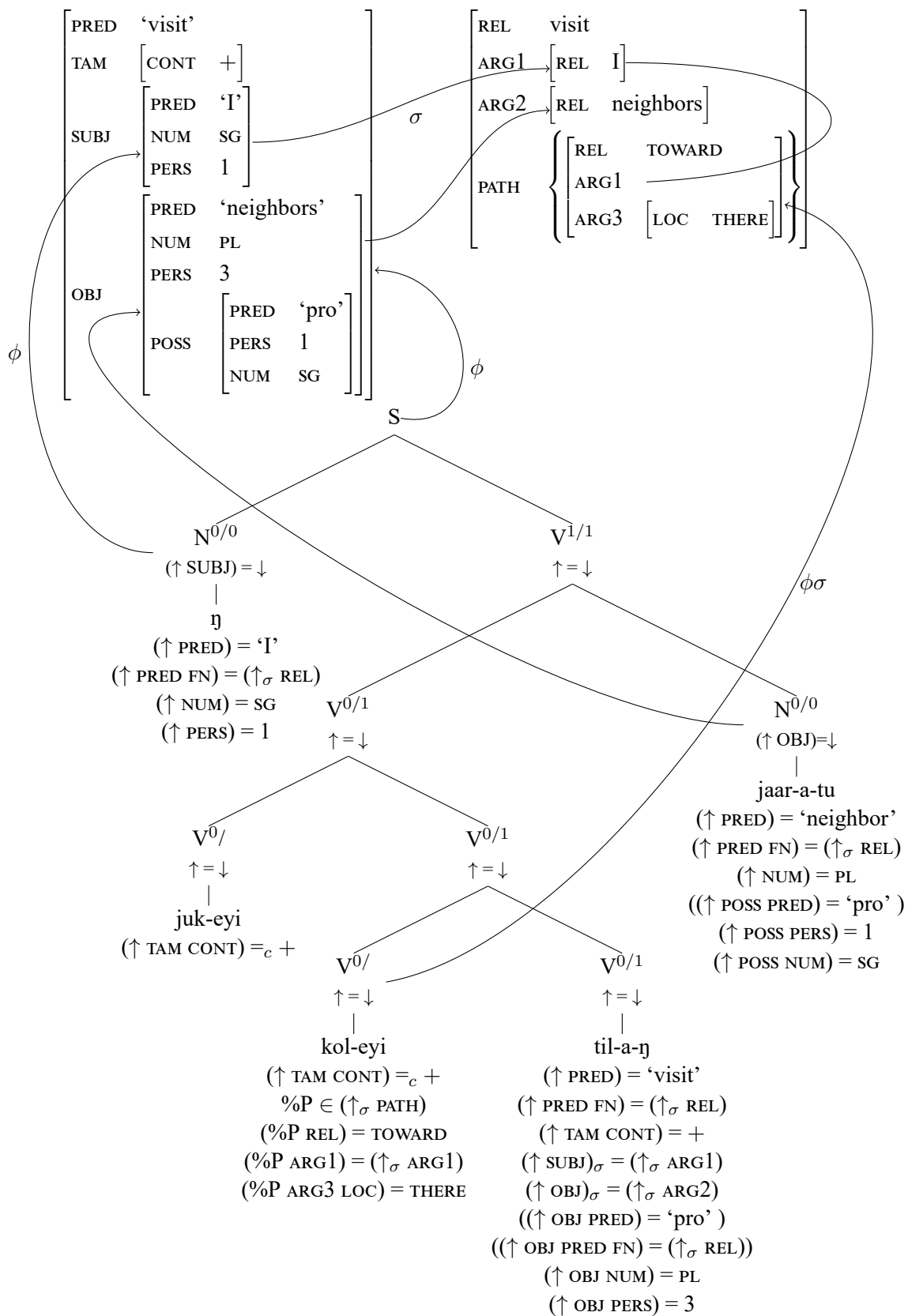


Figure 10.13: C-, f- and s-structure of Stand and Deictic SVC (example 32)

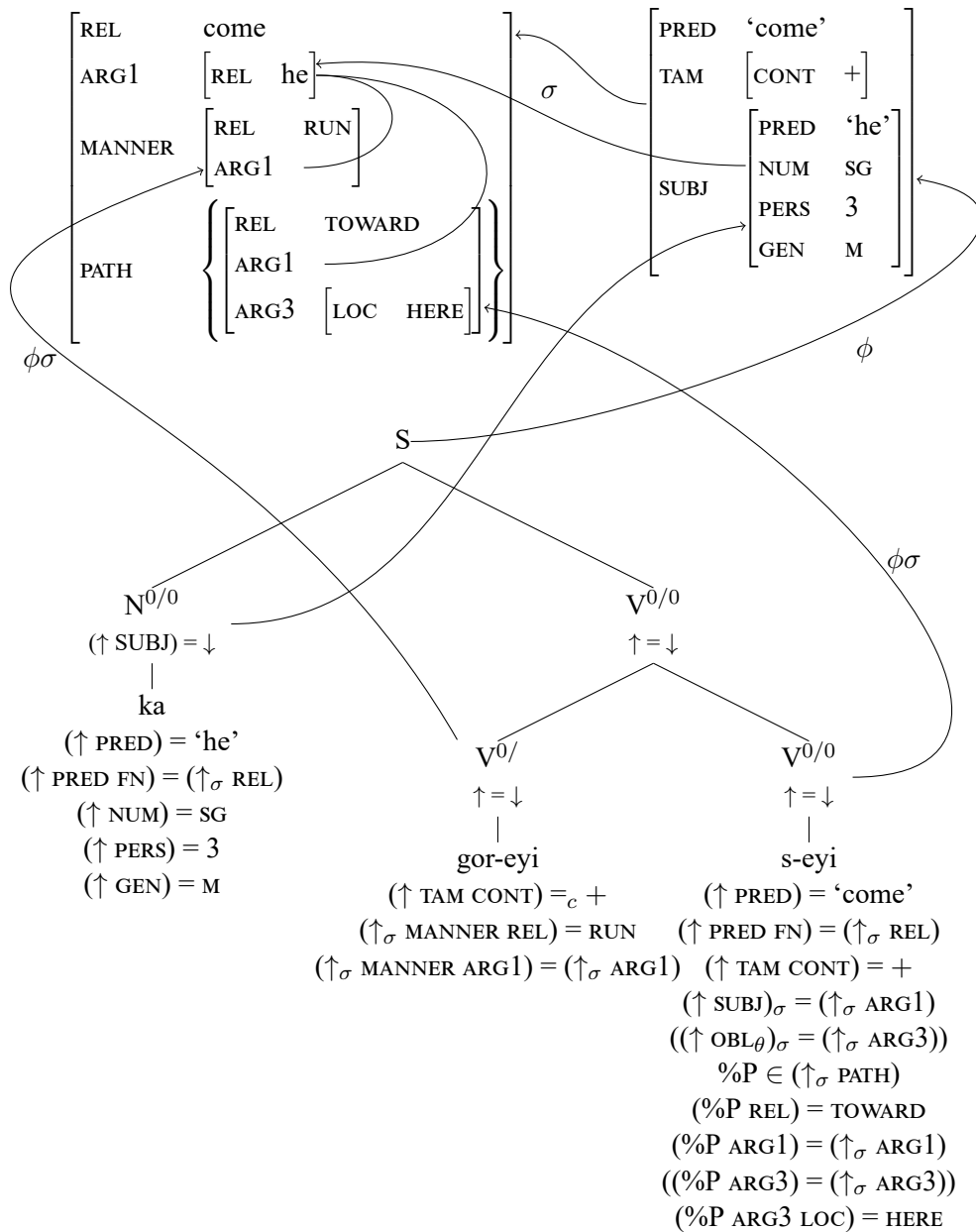


Figure 10.14: C-, f- and s-structure of a Manner SVC (example 33)

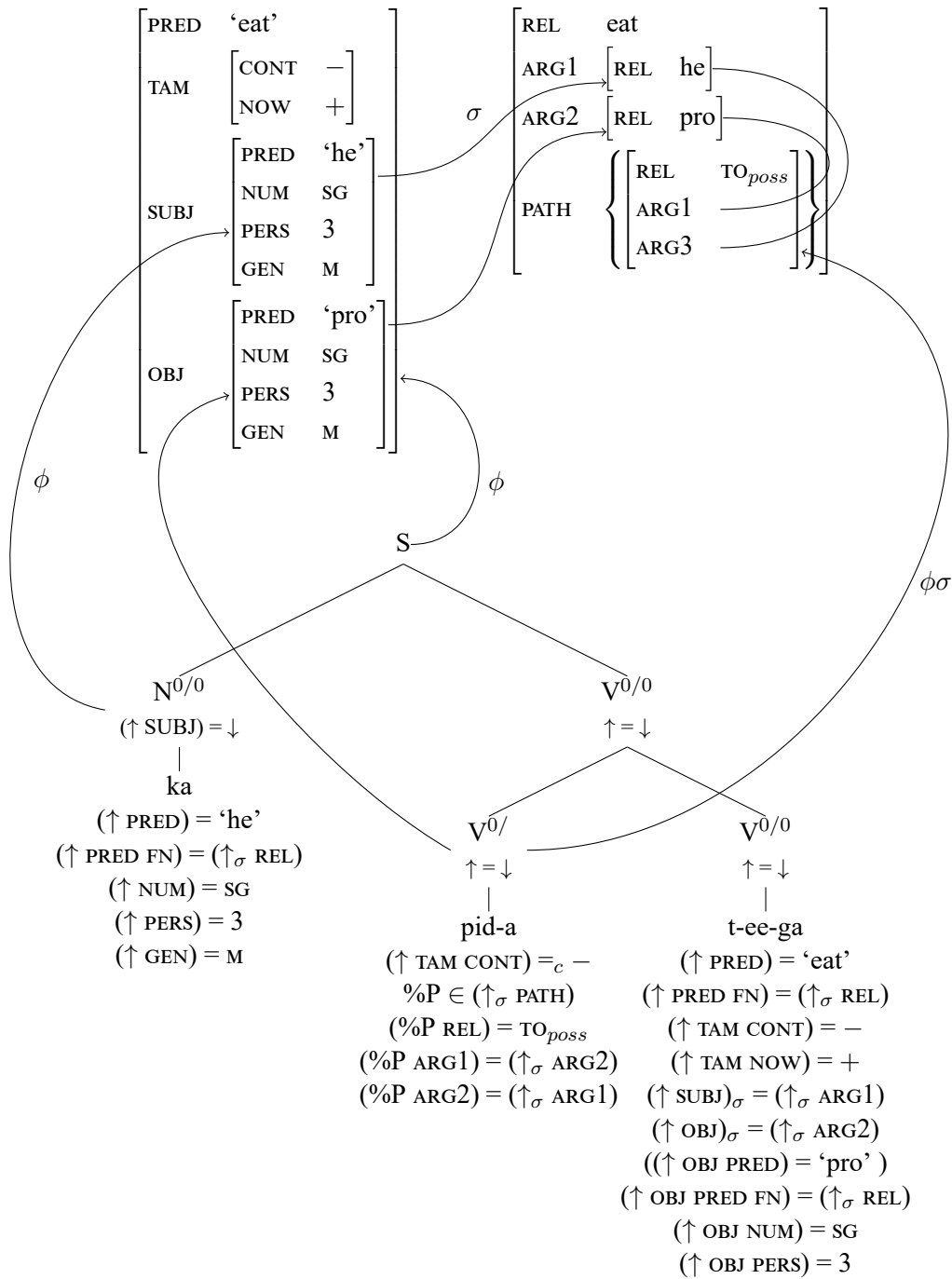


Figure 10.15: C-, f- and s-structure of Take SVC (simplified version of example 29)

## Chapter 11

# Complex motion predicates in LFG

This final chapter of Part C extends the analysis of Barayin Deictic SVCs in Chapter 10 to constructions in two unrelated languages that combine motion semantics with a main verb. The published LFG analyses of these constructions appeal to the problematic concept of predicate composition. In this chapter, an alternative LFG analysis without predicate composition is proposed.

The context and motivation for the concept of predicate composition is reviewed in Section 11.1. Section 11.2 introduces the formalism of Lexical Conceptual Structure that is used in the representation of predicate composition in the analyses to be reviewed. After setting the context, the next two sections present a re-analysis of multi-word predicates with motion semantics in two languages. Section 11.3 looks at SVCs and associated motion constructions in an Australian language, Wambaya, based on the work of Nordlinger (2010). Section 11.4 looks at directional and prior motion particles in a North American language, Choctaw, based on the work of Broadwell (2000).

In both cases, the constructions are re-analyzed without appealing to predicate composition. Instead, motion meaning and argument sharing is represented in a connected s-structure in the same way as the analysis of Barayin SVCs in Chapter 10. This approach expands the number of types of complex constructions that can be accounted for under standard LFG assumptions, and restricts the need for the concept of predicate composition.

The analysis of Wambaya raises an issue of overgeneration of possible temporal interpretations of complex motion predicates (Section 11.3.4), a problem that is common to both the predicate

composition and connected s-structure analyses. The analysis of Choctaw raises a question about the nature of the value of PATH (Section 11.4.4). In the analysis of the directional particle, it seems more elegant to assume that the value is a single s-structure, rather than a set.

## 11.1 Predicate composition

Figure 11.1 (repeated from Section 10.3) illustrates two basic approaches to analyzing the f-structure of multiverb constructions. One approach is the “feature” analysis, in which one of the verbs does not contribute a PRED, but contributes some type of feature to the f-structure or other level of structure. The other approach is the “predicate” analysis in which two PREDs appear in the f-structure. The PRED of one verb is embedded in an argument (e.g., XCOMP) of the PRED of the other verb.

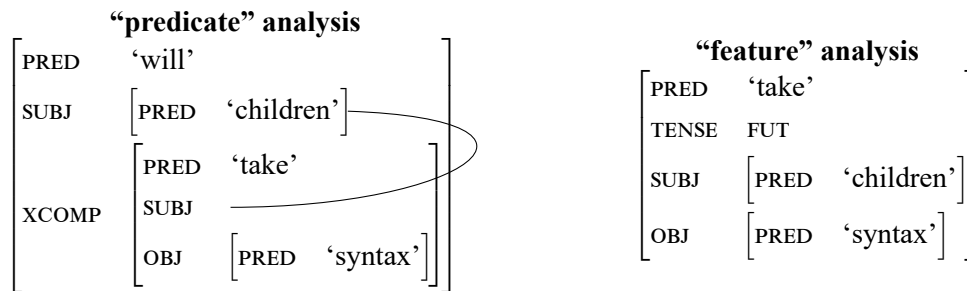


Figure 11.1: Two possible f-structure analyses of multiverb constructions (based on Falk 2008:866)

At least two linguists have argued extensively for a third type of analysis that is often discussed under the umbrella of “complex predicates”.<sup>1</sup> This type of formal analysis will be referred to as “predicate composition”. Alsina (1993, 1997) proposes predicate composition in work centered around the analysis of periphrastic causatives in Romance languages, as does Butt (1995; see also Butt et al. 1990; Butt et al. 2003; Butt and Ramchand 2005) in work on light verb constructions in Urdu/Hindi.

The predicate composition analysis is like the “feature” analysis in that it requires evidence for a monoclausal f-structure. However, the analysis is complicated by an assumption that if a verb (or

<sup>1</sup>There are different assumptions in the literature about whether serial verb constructions are a subtype of complex predicates or a separate category. Within LFG, Butt (1995:191, 224-225) proposes some formal criteria for making a distinction, and Seiss (2009) essentially defines serial verbs negatively as not being auxiliary or light verbs. Others working in LFG see SVCs as a subtype of complex predicates (Andrews and Manning 1999; Bodomo 1997; Durie 1997; Nordlinger 2010). Beermann and Hellan (2002) present them as distinct but overlapping categories. Outside of LFG the situation is similar. Aikhenvald (2006b) distinguishes SVCs and complex predicates by a morphological criterion, while others group SVCs as a type of complex predicate based primarily on semantic criteria (Baker and Harvey 2010; Bowerman 2008; Lefebvre 1991a). This is a non-issue of terminological convention since these categorical distinctions have very little empirical basis or analytical value (see the introduction to Part A).

other word) appears to contribute to the argument structure of the construction, it must have a PRED in its lexical entry. Alsina (1997:232) writes: “Assuming that the predicate information, that is, the a-structure, is represented as the value of the PRED attribute, the c-structure of a syntactically derived complex predicate, as in Romance causatives, will contain two (or more) PRED values, one for each of the verbs that make up the complex predicate.” The claim is that these constructions introduce multiple PREDs, but only have a single f-structure. “The problem is that... under Classic LFG assumptions, PRED values can never unify, and hence the f-structure would be ill-formed” (Andrews and Manning 1999:24). In response to this problem, Alsina and Butt propose a modification to the theory of LFG that allows some (but not all) PREDs to combine, abandoning the idea that semantic forms are always non-unifiable. Alsina (1997:232) writes: “I will suggest that it is possible to handle multiple PRED values not through unification, but through composition... Predicate composition applies both in the morphology and in the syntax by composing the predicate information of two sister constituents.”

The predicate composition approach has been applied to complex predicates in Japanese (Matsumoto 1996), SVCs in Dagaare (Bodomo 1997), coverb constructions in Wagiman (Wilson 1999), motion particles in Choctaw (Broadwell 2000), causatives and applicatives in Australian languages (Austin 2005), SVCs in Thai (Sudmuk 2005) and complex predicates in Wambaya (Nordlinger 2010). It has also been criticized both for gaps in its empirical coverage and for the formal complications it introduces (Andrews and Manning 1999; Frank 1996; Lowe 2016). As Andrews and Manning (1999:30) put it, “...although it would have to be accepted if there were no alternative, it would be desirable if possible, to remain within the traditional techniques of LFG.”

The version of the LFG architecture assumed in the preceding chapters, that of Asudeh and Giorgolo (2012), approaches argument structure in a way that is significantly different from the approaches to the LFG architecture that led to the proposal of predicate composition. Alsina’s (1997:232) view is that “the a-structure is represented as the value of the PRED attribute.” In contrast, the approach to LFG assumed throughout this work represents argument structure at the level of s-structure. Argument structure information in s-structure can be unified by standard LFG mechanisms, as is done in the analysis of Barayin SVCs. This approach could potentially allow for a re-analysis of all types of complex predicates without predicate composition, as anticipated by Asudeh and Giorgolo (2012:8, fn. 6).

This chapter will not address the issue of whether a mechanism of predicate composition is absolutely necessary for the types of complex predicates that Alsina and Butt are concerned with in their work. The focus is limited to cases where the predicate composition approach has been extended to constructions for which it is relatively straightforward to show that it is possible to “remain within the traditional techniques of LFG.”

The Wambaya and Choctaw constructions that are re-analyzed below involve a morpheme (verb or particle) with motion semantics that is combined with a verbal predicate. These constructions are simpler than the causative and permissive constructions that led Alsina and Butt to propose predicate composition. The motion morpheme does not increase the valency of the construction by contributing an additional argument to the predicate. This allows a re-analysis in a manner analogous to the analysis of Deictic SVCs in Barayin (Chapter 10).

The original analyses of Wambaya and Choctaw adopt the approach of Butt (1995) which represents predicate composition as the combination of Lexical Conceptual Structures (Jackendoff 1990). This model is briefly introduced in Section 11.2. Then the following sections present the re-analysis of serial verbs and associated motion constructions in Wambaya and directional and prior motion particles in Choctaw.

## **11.2 Lexical Conceptual Structure**

In the approach of Alsina (1993, 1997), predicate composition is represented as linking arguments in a relatively simple a-structure that essentially provides an ordered list of argument slots. Butt (1995) expands on this view by representing predicate composition as the combination of Lexical Conceptual Structures (LCS; Jackendoff 1990). Butt (1995:33, 133, 136, 173) considers LCS representations to be the value of PRED which is an “elaborated level of a-structure” containing within it “an abstract level of argument structure”. The details of the LCS formalism and its place in the architecture are not crucial to the point being made in this chapter. Under any representation and in any architecture, it still holds that an approach which does not unify (or compose) semantic forms is simpler than one that allows semantic forms to combine. This section simply facilitates the discussion of previous proposals by providing a basic introduction to the formalism before reviewing analyses that use it to analyze complex motion predicates.

LCS is borrowed from the (non-LFG) theory of Conceptual Semantics of Jackendoff (1990). Predicates are decomposed into more basic semantic units of “content” and “function” labeled by a “conceptual category”. Some of the relevant types of conceptual categories are EVENT, THING, PLACE and PATH (Jackendoff 1990:43). A simple unit of semantic content is written in square brackets. The type of conceptual category is written in subscript, and is followed by a word representing the content, for example: [*Thing* John ].

A function introduces an argument list where the argument positions are also defined by a conceptual category. An argument list is enclosed in parentheses. For example, a semantic unit of the type PLACE can either be content or a function. The function IN of the type PLACE takes a single argument of the type THING. This is represented as: [*Place* IN ([*Thing* ])].<sup>2</sup>

Certain functions are restricted to certain types of conceptual categories. For example, a conceptual category of the type PATH can be any of the following functions: TO, FROM, TOWARD, AWAY-FROM or VIA. Each of these functions takes a single argument which can be of the type THING or PLACE. A conceptual category of the type EVENT can be a function like GO or CAUSE. The function GO selects a list of two arguments, a THING and a PATH: [*Event* GO ([*Thing* ], [*Path* ])]. The function CAUSE selects two arguments, the first is either an EVENT or THING, and the second is an EVENT: [*Event* CAUSE ([*Thing* ], [*Event* ])].

Using this approach to semantic structure, Jackendoff analyses the sentence *John ran into the room* as: [*Event* GO ([*Thing* John ], [*Path* TO ([*Place* IN ([*Thing* room ]))])]). This representation is not an LFG representation, but Butt (1995:143, 158) points out that an LCS could also be represented as an attribute-value matrix (AVM) (see also Broadwell 2000:121, fn 9). Figure 11.2 shows the AVM approach to the above sentence based on the model of Wilson (1999:145).

While it is assumed that an LCS can be written as an attribute-value matrix, this is not often done, presumably for reasons of space. This is potentially problematic because as an LCS becomes more complex and novel elements are introduced, it becomes harder to visualize how the LCS would be represented in an AVM compatible with the formalism of LFG. Another formal issue that is

---

<sup>2</sup>In some LCS diagrams, including those of Jackendoff (1990), the parentheses are omitted when there is only a single argument in the argument list, and the conceptual category is not always given, presumably for reasons of space. In those cases, the parentheses and category have been reinserted in the representations below for the sake of consistency and clarity.

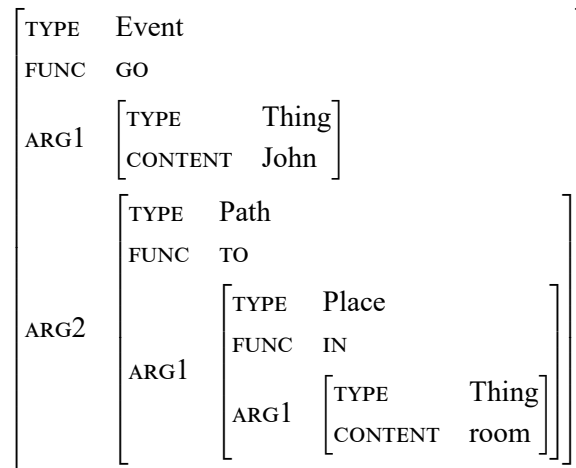


Figure 11.2: Lexical Conceptual Structure as an AVM (Wilson 1999:145)

left unexplained is what mechanism requires certain TYPE values to have a FUNC feature in their f-structure, while other TYPE values require a CONTENT feature in their f-structure.

The part of the LCS discussed so far is called the “thematic tier”. In addition, Jackendoff (1990:126) proposes an “action tier” marked AFF. Whereas thematic roles like theme, goal and source are represented in the thematic tier, the action tier represents actor-patient relationships, who is acting on who. The action tier provides an ordered representation of arguments without saying anything explicit about their semantic role. This is exploited in predicate composition as a way to refer to a more general argument position in an otherwise unspecified LCS. The action tier is generally omitted from the representation of an LCS unless needed.

Another difference in the formalism of LCS and LFG is the use of Greek letters ( $\alpha$ ,  $\beta$ , etc.) to co-index elements within an LCS, especially between the action tier and the thematic tier. In a standard LFG approach, the identities of elements in f-structure or s-structure would be constrained by f-descriptions and represented by a line connecting the positions or boxed numerals indexing the linked elements. Again, at least in most cases, it should be possible to rewrite co-indexation as expressions identifying features, but in more complex cases, especially those involving sets, it is not always immediately apparent how this works.

In predicate composition, one LCS is said to “fuse” with another LCS. Butt (1995:145) describes two types of fusion. In “event fusion” two units of the EVENT type are unified in the same way that AVMs are unified. Incompatible values cannot be unified in a single feature, resulting in an unacceptable structure. In “argument fusion” an LCS fuses with an EVENT that is contained within

another LCS, and at least one of the arguments of the embedded EVENT is co-indexed with an argument of the higher EVENT in the resulting complex LCS.

The final formal mechanism used frequently in predicate composition is the “transparent event”. Butt (1995:145) writes: “A transparent Event in contrast to a simple Event has something of a deficient nature, it cannot stand on its own and must unify with another event structure, or lean on it in some way.” Formally, the transparent event is essentially a diacritic that either marks an argument position in an LCS as requiring an EVENT type element from another predicate (triggering argument fusion), or it marks an entire LCS as semantically incomplete and incapable of serving as the sole predicate of a clause (triggering event fusion).

### 11.3 Wambaya

Wambaya is a Non-Pama-Nyungan language of Australia formerly spoken in the Barkly Tablelands region of the Northern Territory of Australia (Nordlinger 1998). Wambaya is a “non-configurational” language in which there is a high degree of variability in the order of syntactic constituents. The one syntactically fixed position is a second-position auxiliary that combines pronominal and TAM features. Nordlinger (2010) sketches an LFG analysis of a motion serial verb construction, as well as a grammaticalized associated motion construction.

#### 11.3.1 Data

Wambaya has a fixed second position auxiliary which combines person-marking morphemes with TAM markers. Some of the TAM markers are portmanteau morphemes which also contribute directional information in addition to TAM features. Nordlinger calls these “associated motion markers”. The associated motion markers come in pairs, either toward or away from the deictic center, as in examples 1 and 2. An associated motion marker cannot occur on its own as the sole predicate of a clause.

- (1) gannga mirnd-**amany**  
return 1.DU.INCL.S-PST.TOWARD  
We came back.

- (2) gannga mirnd-**any**  
 return 1.DU.INCL.S-PST.AWAY  
 We went back. (Nordlinger 2010:237)

When occurring with a verb of motion, as above, the associated motion markers appear to only contribute information about the deictic direction of the path of motion of the main verb. However, they can also occur with non-motion verbs, in which case the interpretation is that the subject/agent changes location before the action or state predicated by the main verb begins (i.e., prior motion).

- (3) bungmanyi-ni gin-**amany** yanybi  
 old.man-ERG 3.SG.M.A-PST.TOWARD get  
 The old man came and got her.

- (4) gajurru ng-**uba** irraga-yili  
 dance 1.SG-NPST.AWAY 3.PL.OBL-COM  
 I'm going to go there and dance with them. (Nordlinger 2010:238)

There are four types of SVCs in Wambaya (Nordlinger 2014). The SVC Nordlinger analyzes is the Motion SVC. Motion SVCs in Wambaya use the serial verb *yarru* 'go/come', a translocative motion verb without any deictic meaning. There are two possible interpretations of the temporal relationship between the motion associated with the serial verb and the activity or state expressed by the main verb. Either the motion is prior to the activity of state associated with the main verb, as in example 5, or the motion is simultaneous with the main verb, as in example 6. In all cases, it is the subject of the clause that is understood to be the thing moving.

- (5) **Yarru** ngurl-aji **lingba-lingba**  
 go 1.DU.EXCL.S-HAB.PST swim-REDUP  
 We used to go off to swim. (Nordlinger 2014:271)

- (6) Gayini g-a **yarru** ginkanyi **nanganangali?**  
 who.CM.I(NOM) 3.SG.S-PST go this.way sneak  
 Who went sneaking off this way? (Nordlinger 2010:251; 2014:271)

The order of the serial verb and the main verb is not fixed. The serial verb *yarru* can occur before the main verb, as in examples 5 and 6, or after the main verb, as in example 7. The same two interpretations are possible regardless of linear order. Example 7 is ambiguous between an interpretation in which the motion is prior to the state associated with the main verb, or simultaneous.

It is not possible to interpret the motion in example 7 as taking place after the state associated with the main verb (e.g., ‘slept and then left’).

- (7) **Gulugbi** ng-u ngawurniji **yarru**  
 sleep 1.SG.S-FUT 1.SG.NOM go  
 I’m going off to sleep.  
 or I’ll sleep while going (on the bus). (Nordlinger 2010:243; 2014:267)

Unlike the associated motion marker, the serial verb *yarru* can also be used on its own as the sole verb of an independent clause, as in example 8.

- (8) Injani ny-u yarru  
 where 2SG.S-FUT go  
 Where are you going?

There are three other types of SVCs that are not included in Nordlinger’s formal analysis. These will only be of secondary interest here. These three are an “adverbial manner” SVC (example 9), a “positional” SVC (example 10) and a “cause-effect” SVC (example 11).

- (9) **Warima** ng-a marrajana **yardugami**  
 hold 1.SG.A-PST pillow.CM.IV(ACC) make.strong  
 I held the pillow tightly. (Nordlinger 2014:269)
- (10) **Barngala** gi-n **mirra**  
 sit.with.legs.crossed 3.SG.S-PROG sit  
 He’s sitting with his legs crossed. (Nordlinger 2014:267)
- (11) **Daguma** ng-u **barlaj-ardi**  
 hit 1.SG.A-FUT be.unconscious-CAUS  
 I’ll kill him by hitting. (Nordlinger 2014:267)

### 11.3.2 LCS analysis

Nordlinger’s c-structure analysis of Wambaya is that the second-position auxiliary is the head of an IP structure (Figure 11.3). The head I node takes an exocentric S node as its optional complement. S has any number of daughter constituents. The position before the auxiliary is the specifier of the IP, and has a grammaticalized role of focus. The associated motion marker appears in the I position and is a functional co-head of the verb. In an SVC, both the serial verb and main verb are daughters of S, and are also functional co-heads.

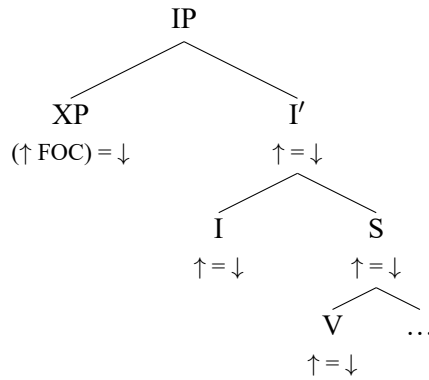


Figure 11.3: C-structure of Wambaya (Nordlinger 2010:245)

In the analysis of associated motion particles, Nordlinger proposes two LCS representations for each lexical entry. The LCS in example 12a is for its use as a directional marker with motion verbs. The LCS in example 12b is for when it indicates prior motion with a non-motion verb.

(12) *-amany* ‘PST.TOWARD’

- a.  $\left\{ \left[ \left[ \text{Event GO} \left( \left[ \text{Thing } \alpha \right], \left[ \text{Path TO} \left( \left[ \text{Place HERE} \right] \right) \right] \right) \right] \right\} E_T$
- b.  $\left[ \left[ \left[ \left[ \text{Event}_x \text{ GO} \left( \left[ \text{Thing } \alpha \right], \left[ \text{Path TO} \left( \left[ \text{Place HERE} \right] \right) \right] \right) \right] \right] \right] \right]$   
 $\left\{ \left[ \left[ \text{Event}_y \right] \right\} E_T$   
 $\left[ \left[ \left[ \text{AFF} \left( \left[ \alpha \right], \right) \right] \right] \right]$   
 $\left[ \text{TEMP: } \text{Event}_x \prec \text{Event}_y \right]$

When the associated motion marker co-occurs with a verb of motion, the LCS in example 12a is used. A motion verb has an LCS with a GO function, like the one in example 13. Note that the verb *yarru* ‘go/come’ does not specify its deictic orientation, so its PATH element is underspecified. When two LCSs share the same EVENT function, in this case, GO, they can undergo the event fusion required by the transparent event marker. The result of the LCS of *yarru* ‘go/come’ in example 13 fused with the associated motion marker *-amany* is identical to the more specific of the otherwise identical LCSs which looks like example 12a without the transparent event marker.

(13) *yarru* ‘go/come’

$$\left[ \text{Event GO} \left( \left[ \text{Thing} \right], \left[ \text{Path} \right] \right) \right]$$

Nordlinger does not propose an analysis of the LCS of the verb *gannga* ‘return’ in examples 1 (repeated in example 14) and 2. This verb might be distinguished from the more generic motion verb *yarru* ‘go/come’ by some content in its PATH or PLACE element, such as PREVIOUS.LOCATION in the hypothetical LCS proposed in example 15.

(14) *gannga mirnd-amany*

return 1.DU.INCL.S-PST.TOWARD

We came back.

(15) *gannga* ‘return’

$$\left[ \text{Event GO} \left( \left[ \text{Thing} \right], \left[ \text{Path TO} \left( \left[ \text{Place PREVIOUS.LOCATION} \right] \right) \right] \right) \right]$$

If the LCS in example 15 is a reasonable analysis of the the semantics of *gannga* ‘return’, this raises the question of how this LCS fuses with the LCS of *amany* ‘TOWARD’. If both HERE and PREVIOUS.LOCATION are atomic values, then the two LCSs should not be able to unify. However, example 14 shows that this is possible. A solution is suggested by Jackendoff’s (1990:171) analysis of the complex path in the sentence: *Bill entered the room through the window* shown in example 16.

(16) Jackendoff’s (1990:171) analysis of *Bill entered the room through the window*.

$$\left[ \text{Event GO} \left( \left[ \text{Thing Bill} \right], \left[ \text{Path TO} \left( \left[ \text{Place IN} \left[ \text{Thing room} \right] \right) \right] \text{ VIA} \left( \left[ \text{Place IN} \left[ \text{Thing window} \right] \right) \right) \right] \right) \right]$$

The PATH in example 16 contains two functions, TO and VIA. Jackendoff (1990) calls this an “Adjunct Rule”. In a standard LFG AVM analysis, conflicting values can only co-occur if they are embedded in different parts of the AVM. In the approach of Wilson (1999:145) shown in Figure 11.2, this would be done by assuming that the function TO can take multiple arguments. Otherwise it can be done, as in the analysis of Barayin SVCs, by assuming that the path information occurs in a set. Either way, a complex representation of the path is needed.

The LCS for *-amany* in example 12b is used when the main verb does not have the type of EVENT that allows event fusion. In example 17 (repeated from example 3), the associated motion marker co-occurs with the non-motion verb *yanybi* ‘get’.

- (17) *bungmanyi-ni gin-amany yanybi*  
 old.man-ERG 3.SG.M.A-PST.TOWARD get  
 The old man came and got her.

The LCS of the verb *yanybi* ‘get’ is shown in example 18. An agent acts to bring about the state of affairs that something is in its possession. The action tier, AFF, specifies that the causer is also the highest argument in the argument structure.

- (18) *yanybi* ‘get’
- $$\left[ \begin{array}{l} \text{Event CAUSE} \left( \left[ \left[ \right]^{\beta}, \left[ \text{State BE} \left( \left[ \left[ \right], \left[ \text{Place AT} \left( \left[ \left[ \right]^{\beta} \right] \right) \right] \right) \right] \right) \right] \right) \\ \text{AFF} \left( \left[ \left[ \right]^{\beta}, \right) \right) \end{array} \right]$$

The fused LCS for the associated motion construction in example 17 is a set of two LCSs, shown in example 19.

- (19) ‘come and get’
- $$\left[ \left[ \left[ \begin{array}{l} \text{Event}_x \text{ GO} \left( \left[ \text{Thing } \alpha \right], \left[ \text{Path TO} \left( \left[ \text{Place HERE} \right] \right) \right) \right] \right] \right. \\ \left. \left[ \begin{array}{l} \text{Event}_y \text{ CAUSE} \left( \left[ \left[ \right]^{\beta}, \left[ \text{State BE} \left( \left[ \left[ \right], \left[ \text{Place AT} \left( \left[ \left[ \right]^{\beta} \right] \right) \right] \right) \right] \right) \right] \right) \right. \\ \left. \left[ \text{AFF} \left( \left[ \left[ \right]^{\alpha\beta}, \right) \right) \right. \right. \right. \\ \left. \left. \left. \text{TEMP: } \text{Event}_x \prec \text{Event}_y \right. \right. \right. \end{array} \right] \right]$$

The first LCS is a standard motion event. An alpha notation,  $\alpha$ , links the first argument in this EVENT to the first argument on the thematic tier (AFF) of the other EVENT. The LCS of *yanybi* ‘get’ fuses with the second EVENT, the one marked as a transparent event in example 12b. Since the LCS of *yanybi* ‘get’, indicates that its causer is also its first argument on the thematic tier, this indirectly

links the causer with the figure on the path of motion in the first LCS. Since one LCS has fused with a transparent event within the LCS of the main verb and linked an argument with an argument of the main verb, this is a case of argument fusion.

The final line of the LCS in example 19 represents the temporal ordering of the two events. This line is similar to the informal representation of temporal meaning in Barayin SVCs (Chapter 10), which would formally be accounted for by meaning constructors in Glue semantics.

The analysis of the serial verb *yarru* ‘come/go’ is similar to the analysis of the associated motion construction. There are two distinct LCS representations shown in example 20. Nordlinger’s original analysis does not include a TEMP tier, which has been added to example 20b for reasons to be discussed below.

(20) *yarru* ‘go/come’

$$\begin{array}{l}
 \text{a. } \left\{ \left[ \left[ \text{Event GO} \left( \left[ \begin{array}{l} \text{Thing} \\ \text{Path} \end{array} \right] \right) \right] \right] \right\} (E_T) \\
 \text{b. } \left[ \left[ \left[ \text{Event}_x \text{ GO} \left( \left[ \begin{array}{l} \text{Thing } \alpha \\ \text{Path} \end{array} \right] \right) \right] \right] \right. \\
 \left. \left\{ \left[ \left[ \text{Event}_y \right] \right] \right\} \right. \\
 \left. \left\{ \left[ \left[ \text{AFF} \left( \left[ \begin{array}{l} \alpha \\ \end{array} \right] \right) \right] \right] \right\} \right\} E_T \\
 \left. \left[ \text{TEMP: } \left\{ \text{Event}_x \prec \text{Event}_y \mid \text{Event}_x \equiv \text{Event}_y \right\} \right] \right]
 \end{array}$$

The parentheses around the  $E_T$  (transparent event) in example 20a indicates that it is optional. When the transparent event is absent, the verb *yarru* can stand on its own as the sole verb in a clause, as in example 8. When the transparent event is present, the LCS can and must combine with another LCS.

The transparent event version of this LCS can only combine with a main verb that also has a function GO. This is event fusion, just as in the first lexical entry for the associated motion marker. All of the features unify, including the argument lists of each EVENT. This yields a single LCS which is assumed to also have a “single event” interpretation in which the path of motion is concurrent with the activity or state predicated by the main verb.

The LCS of the SVC in example 21 (repeated from example 6) is shown in example 22. This LCS is identical to the LCS of the verb *nanganangali* ‘sneak’ on its own without a serial verb. The verb *nanganangali* ‘sneak’ is analyzed as a manner of motion verb that has an EVENT with two functions, GO and BY, where BY represents the manner of motion.<sup>3</sup> Since all of the information in the LCS of *yarru* in example 20a is already contained in the LCS of *nanganangali* ‘sneak’, event fusion results in no changes to the LCS.

- (21) Gayini            g-a            **yarru** ginkanyi **nanganangali**?  
 who.CM.I(NOM) 3.SG.S-PST go    this.way sneak  
 Who went sneaking off this way? (Nordlinger 2010:251; 2014:271)

- (22) ‘go sneak’
- $$\left[ \begin{array}{l} \text{GO} \left( \left[ \begin{array}{l} \text{Thing} \\ \text{Path} \end{array} \right] \right) \\ \text{Event BY} \left[ \text{MOVE}_{\text{sneak}} \left( \left[ \alpha \right] \right) \right] \\ \text{AFF} \left( \left[ \alpha \right] \right) \end{array} \right]$$

The LCS of the SVC in example 23 (repeated from example 7) is shown in 24. The verb *gulugbi* ‘sleep’ does not have the function GO, so it cannot undergo event fusion with the serial verb *yarru*. Instead it combines with the second LCS for the serial verb in example 20b to yield the set of EVENTS shown in example 24.

- (23) **Gulugbi** ng-u            ngawurniji **yarru**  
 sleep    1.SG.S-FUT 1.SG.NOM go  
 I’m going off to sleep.  
 or I’ll sleep while going (on the bus). (Nordlinger 2010:243; 2014:267)

In the lexical entry for *gulugbi* ‘sleep’, the first argument in the argument list of the function MOVE is linked to the first argument in its thematic tier. This link is represented by the beta,  $\beta$ , in example 24. In this way the first argument of MOVE, the first person pronoun, is linked to the first argument of GO via its thematic tier.

<sup>3</sup>This is another case of an “Adjunct Rule” from Jackendoff (1990:171, 214) which complicates the idea that any LCS can be unproblematically translated into a standard AVM representation in LFG.

(24) ‘sleep go’

$$\left[ \left[ \left[ \begin{array}{l} \text{Event}_x \text{ GO} \left( \left[ \begin{array}{l} \text{Thing } \alpha \\ \text{Path} \end{array} \right] \right) \\ \text{Event}_y \text{ MOVE}_{\text{sleep}} \left( \left[ \begin{array}{l} \text{Thing I} \\ \beta \end{array} \right] \right) \\ \text{AFF} \left( \left[ \begin{array}{l} \alpha \\ \beta \end{array} \right] \right) \end{array} \right] \right] \right] \\ \left[ \text{TEMP: } \left\{ \text{Event}_x \prec \text{Event}_y \mid \text{Event}_x \equiv \text{Event}_y \right\} \right]$$

Nordlinger’s analysis does not constrain the temporal ordering, allowing either a prior or simultaneous interpretation. However, this also allows for a subsequent motion interpretation. In order to prevent this unattested interpretation, it seems necessary to add a TEMP tier, as done in example 24, or to posit some other constraint on the temporal ordering. The question of constraining temporal interpretation is further discussed in Section 11.3.4.

The LCS analysis provides reasonable empirical coverage of the meanings of the associated motion marker and *yarru* serialization. There are a few ways that this formal analysis could be made more robust, for example, by providing an LCS of *gannga* ‘return’ combined with an associated motion marker, and by clarifying the formal status of the TEMP tier and the subscript notation on events. However, the most significant formal issue is that it assumes a mechanism of predicate composition in the syntax that allows PRED values, represented as LCSs, to combine. Predicate composition is a significant complication that should be avoided if possible.

### 11.3.3 Re-analysis in a connected s-structure

It is possible to avoid predicate composition by assuming that the serial verb *yarru* and the associated motion markers do not have a PRED. Their contribution of a path of motion to the predicate, as well as restrictions on what arguments can be moving along that path, can be modeled in a more standard LFG mechanisms way in a connected s-structure.

A partial lexical entry of the verb *yarru* is given in example 25. There are two separate but related entries, one for *yarru* as a main verb, and one as a serial verb. As in the analysis of serial verbs in Barayin, the bleached nature of the serial verb is clearly seen in the comparison of the two lexical entries. The defective nature of the verb is represented by underspecification. This is a more

elegant representation than the predicate composition approach which uses the transparent event marker to represent a bleached verb.

In the main verb entry, there is a PRED, a REL, and an f-description which links the SUBJ in f-structure to the first argument of the main verb. These three lines are not part of the lexical entry for the serial verb. When used as a serial verb, the PRED of *yarru* would conflict with that of the main verb, so it must be omitted. Both lexical entries contribute the same PATH feature to the s-structure, and they both link the figure on the path of motion to the first argument of the main s-structure.<sup>4</sup>

- (25) *yarru* ‘go/come’ V
- |   |   |
|---|---|
| <p>a. <b>Main verb:</b><br/>         (↑ PRED) = ‘go’<br/>         (↑ PRED FN) = (↑<sub>σ</sub> REL)<br/>         (↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)<br/>         %P ∈ (↑<sub>σ</sub> PATH)<br/>         (%P REL) = TOWARD<br/>         (%P ARG1) = (↑<sub>σ</sub> ARG1)<br/> <math>t_{path\ rel} \equiv t_{rel}</math></p> | <p>b. <b>Serial verb:</b><br/>         %P ∈ (↑<sub>σ</sub> PATH)<br/>         (%P REL) = TOWARD<br/>         (%P ARG1) = (↑<sub>σ</sub> ARG1)<br/> <math>\{t_{path\ rel} \prec t_{rel} \mid t_{path\ rel} \equiv t_{rel}\}</math></p> |
|---|---|

The final line of the lexical entry is an abbreviation for temporal constraints that, in a complete representation of the meaning, would be provided by meaning constructors in Glue semantics. Since it is not possible to interpret the motion as taking place subsequent to the main event, the temporal interpretation needs to be lexically constrained. In the main verb entry, the path of motion must be understood as simultaneous to the main event. As a serial verb, the time of the PATH REL is either before the activity or state associated with the REL in the main s-structure, or concurrent with it.

Figure 11.4 shows the s-structure of the verb *gulugbi* ‘sleep’ on its own compared with the same verb in a *yarru* SVC (example 26, repeated from example 7). The serial verb *yarru* adds a PATH with an undefined goal to the s-structure, and specifies that the thing moving is also the first argument of the main verb.<sup>5</sup> The s-structure is ambiguous in regards to whether the PATH is completed before or during the state associated with the main verb, as is the interpretation in example 26.

<sup>4</sup>In Barayin, it is crucial to analyze the serial verb as non-projecting and the main verb as projecting in order to constrain the word order. In Wambaya, there is no ordering constraint and no evidence that any verbs form a constituent with their complements. In that sense, perhaps all verbs are non-projecting in Wambaya.

<sup>5</sup>No ARG3 is shown in the representation of the s-structure of the SVC. Presumably the PATH introduced by *yarru* includes an ARG3 whose meaning might be introduced by an optional meaning constructor in Glue semantics when no overt locative argument is present (Asudeh and Giorgolo 2012). Goal and source arguments in Wambaya are licensed by allative and ablative case marking which could potentially be analyzed as contributing an ARG3 to the s-structure which is linked to an ARG3 embedded in the value of PATH.

- (26) **Gulugbi** ng-u      ngawurniji **yarru**  
 sleep    1.SG.S-FUT 1.SG.NOM go  
 I'm going off to sleep.  
 or I'll sleep while going (on the bus). (Nordlinger 2010:243; 2014:267)

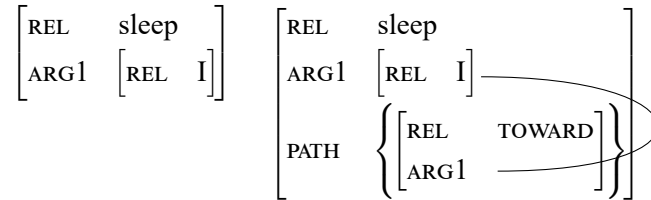


Figure 11.4: S-structure of the SVC in example 26 compared with simple clause

An s-structure for the SVC in example 27 (repeated from example 6) is shown in Figure 11.5. In this analysis, the main verb *nanganangali* ‘sneak’ is treated like manner verbs in Barayin and other languages in that it does not select goal or source arguments. In the s-structure, this means there is no PATH feature, the place where goal and source arguments appear.

- (27) **Gayini**      g-a      **yarru** ginkanyi **nanganangali** ?  
 who.CM.I(NOM) 3.SG.S-PST go    this.way sneak  
 Who went sneaking off this way? (Nordlinger 2010:251; 2014:271)

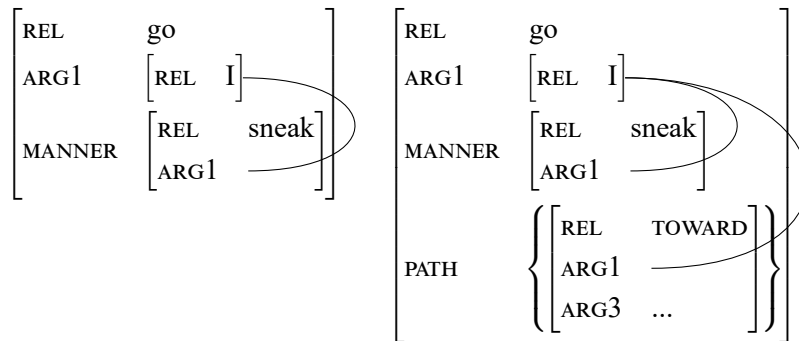


Figure 11.5: S-structure of the SVC in example 27 compared with simple clause

Note that the s-structure does not specify that the temporal duration of the PATH must be co-extensive with ‘sneak’, even though this appears to be the only interpretation available in example 27. This cannot be taken to be a lexical property of the serial verb, since in example 26 the interpretation is ambiguous. However, the current analysis of the SVC in example 27 is not ideal in that it allows more possible interpretations than those attested. This issue is discussed in Section 11.3.4.

Before continuing to the analysis of associated motion markers, it is worth noting that this analysis could potentially be extended to other types of SVCs in Wambaya, such as the “positional” SVC in example 28 and the “cause-effect” SVC in example 29 (repeated from examples 10 and 11). The proposed s-structures of examples 28 and 29 are shown in Figure 11.6

- (28) **Barngala**                    gi-n                    **mirra**  
 sit.with.legs.crossed 3.SG.S-PROG sit  
 He’s sitting with his legs crossed. (Nordlinger 2014:267)
- (29) **Daguma** ng-u                    **barlaj-ardi**  
 hit                    1.SG.A-FUT be.unconscious-CAUS  
 I’ll kill him by hitting. (Nordlinger 2014:267)

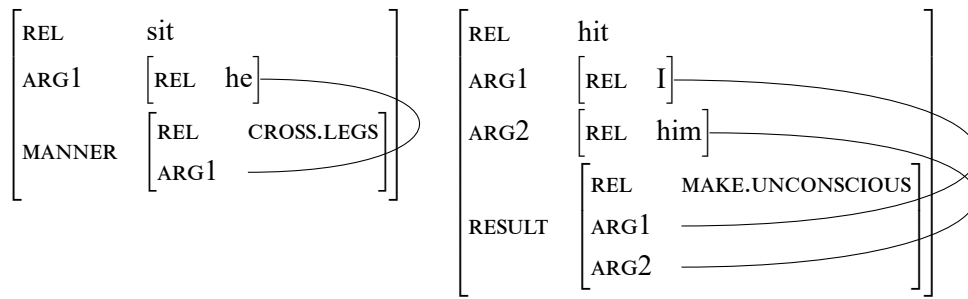


Figure 11.6: S-structure of SVCs in examples 28 and 11

Assuming that these SVCs also have a monoclausal f-structure, one of the verbs in the SVC can be analyzed as bleached of its PRED value. While the serial verb *yarru* contributes a PATH feature to the s-structure, the other types of serial verbs contribute either a MANNER or RESULT feature to the s-structure. This analysis assumes that the serial verbs in these constructions are *barngala* ‘sit with legs crossed’ and *barlajardi* ‘make unconscious’ but more analysis is needed to justify that assumption. Partial lexical entries for the main verbs and serial verbs from examples 28 and 29 are given in examples 30 and 31.

- (30) a. *mirra* ‘sit’ V  
 (↑ PRED) = ‘sit’  
 (↑ PRED FN) = (↑<sub>σ</sub> REL)  
 (↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)
- b. *barngala* ‘sit with legs crossed’ V  
 (↑<sub>σ</sub> MANNER REL) = CROSS.LEGS  
 (↑<sub>σ</sub> MANNER ARG1) = (↑<sub>σ</sub> ARG1)  
 $t_{manner\ rel} \equiv t_{rel}$

- (31) a. *daguma* ‘hit’ V  
 (↑ PRED) = ‘hit’  
 (↑ PRED FN) = (↑<sub>σ</sub> REL)  
 (↑ SUBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG1)  
 (↑ OBJ)<sub>σ</sub> = (↑<sub>σ</sub> ARG2)
- b. *barlajardi* ‘make unconscious’ V  
 (↑<sub>σ</sub> RESULT REL) = MAKE.UNCONSCIOUS  
 (↑<sub>σ</sub> RESULT ARG1) = (↑<sub>σ</sub> ARG1)  
 (↑<sub>σ</sub> RESULT ARG2) = (↑<sub>σ</sub> ARG2)  
 $t_{rel} \prec t_{result\ rel}$

Turning to the analysis of the associated motion markers, the partial lexical entry for the marker *-amany* ‘PST.TOWARD’ in example 32 shows how the components of its meaning can be represented without predicate composition. Like the serial verb, the associated motion marker does not have a PRED. It contributes a PATH feature directly to the s-structure. The figure on this path, its ARG1, is identified as the ARG1 of the main s-structure. Again the two possible temporal interpretations are informally noted in the last line.

- (32) *-amany* ‘PST.TOWARD’  
 %P ∈ (↑<sub>σ</sub> PATH)  
 (%P REL) = TOWARD  
 (%P ARG1) = (↑<sub>σ</sub> ARG1)  
 (%P ARG3 LOC) = HERE  
 { $t_{path\ rel} \prec t_{rel} \mid t_{path\ rel} \equiv t_{rel}$ }

The s-structures that result from the combination of an associated motion marker with the verbs in examples 33 and 34 (repeated from examples 1 and 3) are shown in Figure 11.7.

- (33) *gannga mirnd-amany*  
 return 1.DU.INCL.S-PST.TOWARD  
 We came back.
- (34) *bungmanyi-ni gin-amany yanybi*  
 old.man-ERG 3.SG.M.A-PST.TOWARD get  
 The old man came and got her.

The verb *gannga* ‘return’ from example 33 is analyzed as a verb that has a path of motion feature in its s-structure specifying movement to a previous location (PREV.LOC). Since the value of PATH is a set, the associated motion marker can insert another value for PATH which states that there is movement occurring in the direction of the deictic center. These two movements are logically compatible and can be understood as taking place simultaneously.

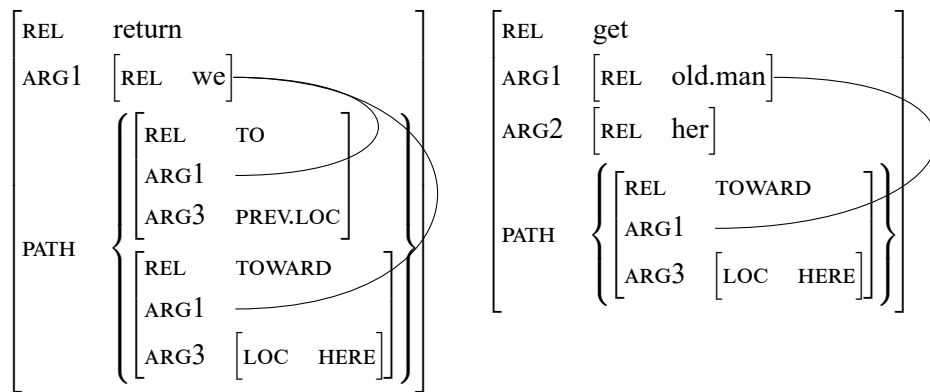


Figure 11.7: S-structures of examples 33 and 34

The verb *yanybi* ‘get’ from example 34 is a transitive verb with two arguments. It does not have a PATH feature. The associated motion marker adds a PATH feature to the s-structure and identifies the first argument as the figure on the path of motion.

Again, the s-structure representations in Figure 11.7 do not constrain the temporal order of the path of motion relative to the main activity of the s-structure. In one case (example 33), the interpretation is that the path of motion is simultaneous with the main event. In the other case (example 34), the interpretation is that the path of motion is prior to the main event. The next subsection addresses the issue of constraining the possible temporal interpretations.

### 11.3.4 Constraining temporal interpretations

There are some contexts in which the two analyses of Wambaya, both Nordlinger’s LCS analysis and the connected s-structure analysis, predict a larger number of possible interpretations than those attested. The SVC in example 27, repeated in example 35, has an s-structure analysis (Figure 11.5) that allows either a simultaneous ‘go sneaking’ interpretation, or a prior motion interpretation, ‘go and (then) sneak’. However, only the simultaneous interpretation seems possible.

- (35) Gayini            g-a            **yarru** ginkanyi **nanganangali**?  
 who.CM.I(NOM) 3.SG.S-PST go    this.way sneak  
 Who went sneaking off this way? (Nordlinger 2010:251; 2014:271)

Likewise, Nordlinger (2010:251, fn 20) notes that there is an unwanted ambiguity in the LCS analysis: “This analysis does not rule out the possibility that a motion verb could combine with

the associated motion marker in dual event function (i.e. filling the transparent event slot).” It is suggested that it “may well be that there is a strong preference for interpreting motion verbs with associated motion markers as single event structures, ruling out dual event structures on pragmatic grounds.”

The intuition is that there is something about the lexical semantics of the main verb that constrains the interpretation of these constructions. This intuition can be generalized in the following prediction:

- (36) **Motion verb constraint on path interpretation:** If a morpheme that contributes path of motion information to another predicate is ambiguous between a simultaneous interpretation and some other temporal interpretation, it must have the simultaneous interpretation when the main verb is a motion verb.

There is a straightforward way to translate this predication into the LCS approach. A general constraint can be proposed that prioritizes event fusion over argument fusion. If the main verb has an LCS with the function GO, as does the morpheme adding motion semantics, then the two LCSs must undergo event fusion, and the temporal interpretation will presumably always be simultaneous. A similar approach could be applied to the connected s-structure analysis, but only if the s-structure is assumed to contain some feature (perhaps in the s-structure of the EVENT attribute) that identifies what semantic subclass a verb belongs to. Verbs of a certain subclass would prefer a simultaneous interpretation over a sequential interpretation.

One type of exception to this prediction is the ‘fetch’ SVC construction like the Barayin Deictic SVC in example 37. The main verb in this example is a motion verb that indicates motion towards the deictic center. The serial verb indicates motion away from the deictic center. Naturally, a simultaneous interpretation of paths of motion in opposite directions is not possible.

**Barayin** (Sections 7.1 and 10.4.2)

- (37) **kol-u**        **sar-u**        η    maŋjo  
 go.away-SBJV bring.here-SBJV PREP thing  
 Go [and] bring the thing here. (bva407.108)

Assuming the LCS of the verb *sar-u* ‘bring here’ in example 38, the GO event of the verb *kol-u* ‘go’ should fuse with the embedded GO event in the causative verb *sar-u* ‘bring here’ (cf. example 54

in Section 11.4). The result would be a complex path licensed by the “Adjunct Rule” (cf. example 16 in Section 11.3.2) which contains both the path away from and the path toward the deictic center.

(38) *sar-u* ‘bring here’ (in Barayin)

$$\left[ \begin{array}{l} \text{Event CAUSE} \left( \left[ \text{Thing } \alpha \right], \left[ \text{Event GO} \left( \left[ \text{Thing } \alpha \beta \right], \left[ \text{Path TO} \left( \left[ \text{Place HERE} \right] \right) \right] \right) \right] \right) \\ \text{AFF} \left( \left[ \right] \alpha, \left[ \right] \beta \right) \end{array} \right]$$

This raises two analytical issues. The first is that event fusion and the “Adjunct Rule” seem to require a simultaneous interpretation, which is not the correct interpretation, or even a hypothetically possible one. Some mechanism for preventing conflicting path information in the same event must be assumed in order to prevent event fusion in this case.

The second issue is that, in event fusion, both arguments would be associated with a single figure which moves on a path both toward and away from the deictic center. This is true of the first argument, but not the second. The AFF tier of the verb *sar-u* ‘bring here’ in example 38 specifies that its second argument ( $\beta$ ) is the THING moving along the path of motion. If the serial verb adds a second function to the PATH ([TO ([Place THERE]))], then the single figure that the second argument is associated with must be assumed to be moving in both directions. Event fusion gives the wrong interpretation.

Example 37 also complicates an attempt to restrict possible interpretations in the connected s-structure analysis. A general rule could be formulated stating that the simultaneous interpretation is required in the case that the main verb that has some feature indicating that is a motion verb. However, in that case, example 37 would trigger the incorrect interpretation. In both the LCS and connected s-structure analyses, this example shows that the intuitive generalization in example 36 is not as easy to formalize as it first seems. Since there is no straightforward way to formally constrain the temporal interpretation, a system that overgenerates the number of possible interpretations is better than one that cannot account for constructions like the one in example 37.

There are other apparent exceptions to the generalization in example 36. In the Berber language Taqbaylit, the ventive marker *d* can be used with verbs of motion, such as *t-jjlb* ‘jump’ in example

39, to indicate the direction of the motion of the main verb. When the same marker occurs with non-motion verbs, it indicates subsequent motion. However, in example 40, the ventive marker occurs with an apparent motion verb and is interpreted as subsequent motion, not simultaneous motion. There is no event fusion in example 40 even though the main verb appears to be a motion verb, and there are no conflicting deictic values preventing event fusion.

**Taqbaylit** (Berber; Belkadi 2016)

(39) t-jjlb                    =d            γr tabla  
 3SG.F-jump.PRF =VENTIVE to table  
 She jumped on the table (in the direction of the speaker).

(40) i-ɣum                    =d  
 3SG.M-SWIM.PRF =VENTIVE  
 He (went somewhere) swam and came back (to the location of the speaker or to his house).  
 \*He swam (towards or to the location of the speaker).

If it is the lexical semantics of the main verbs that determines the possible interpretations, then it would have to be claimed that the verb *i-ɣum* ‘swim’ is lexicalized in Taqbaylit as a non-motion verb in terms of its lexical semantics. This claim would then have to be backed up by some non-circular criteria that defines motion verbs, but such evidence for this claim is not currently available.

The Taqbaylit data in examples 39 and 40 also give evidence for the need for language-specific semantic restraints on possible interpretations of complex motion predicates. If the ambiguity in the temporal interpretation was always between prior and simultaneous, then it might be postulated that this ambiguity should be captured by a general pragmatic constraint that applies cross-linguistically. However, such a constraint would not account for the impossibility of the subsequent motion interpretation in SVCs in Barayin and Wambaya, or for the impossibility of a prior motion interpretation of directional affixes in Taqbaylit. The potential temporal interpretations must be accounted for in each individual language.

A more careful analysis of the differences between constructions that express different types of motion meaning could potentially reveal patterns that predict what type of temporal interpretations are possible in a given construction. Such an analysis would require a broad typological study on what types of ambiguities exist in complex motion predicates cross-linguistically. We know, for example, from Barayin and Wambaya that the temporal interpretation of the path of motion contributed by a secondary morpheme can be ambiguous between a simultaneous motion and a

prior motion. We know from Taqbaylit that there can be an ambiguity between a simultaneous and subsequent motion interpretation. However there is no typological study available that shows what other types of ambiguity are possible.

Even though it may not be possible to formalize the generalization in example 36, this issue highlights the fact that LCS has a formal mechanism for distinguishing semantic subtypes of predicates in a way that has not been made explicit in the bare-bones version of a connected s-structure used in the analysis of Barayin. A general constraint can be posited which prefers the simultaneous interpretation when the main verb is a motion verb, but there is no formal equivalent of a motion verb, or any other semantic class of verb in s-structure. One possibility is that the different event “functions” in LCS, such as GO, CAUSE and BE, should be represented in the value of EVENT.

The next section turns to another language, Choctaw, showing how the complex motion construction can be reanalyzed without predicate composition, while also further highlighting the need to refine the theory of s-structure.

## 11.4 Choctaw

Choctaw is a Muskogean language spoken in Mississippi and Oklahoma (Broadwell 2006). In Choctaw there is a set of preverbal particles with motion meaning. Broadwell (2000) proposes a formal analysis of these particles using LFG and LCS. The uninflected particles do not have the morphosyntactic properties of verbs, so the construction in question is not considered a serial verb construction. However, semantically the construction is similar to motion serialization in that the motion meaning of the preverbal particle is combined with the meaning of the main verb in a single clause.

### 11.4.1 Data

The four particles come in two pairs. First, there are two associated motion particles, ot and at, that express prior motion away from or toward the deictic center.<sup>6</sup> The label “associated motion”

---

<sup>6</sup>Following the orthographic representation in Broadwell (2000), nasalized vowels are underlined.

is based on descriptive work in Australian and South American languages (e.g., Guillaume 2016; Koch 1984). Broadwell calls these “dual-event directionals”.

(41) oklah Amazing Grace **ot** taloow-aachi-h  
 PL Amazing Grace GO& sing-IRR-TENSE  
 They’re gonna go sing Amazing Grace. (Broadwell 2000:115)

(42) hattak-at tachi’ **at** apa=tok  
 man-NOM corn COME& eat=PST  
 The men came and ate the corn. (Broadwell 2000:114)

There are also two directional particles, *pit* and *iit*, that regularly co-occur with motion verbs, such as the verb *kanalli* ‘move’, in example 43. The directional particles add deictic meaning. Broadwell calls these “single-event directionals”.

(43) chokka’ ĩla-h **pit** kanalli=tok  
 house other-TENSE away move=PST  
 They moved to a different house. (Broadwell 2000:112)

With verbs of induced motion (patient = theme), such as *am-aa* ‘give’ and *pila-h* ‘throw’, the directional particle contributes deictic information about the path of the patient/object, not the agent/subject, as in examples 44 and 45. With a directional particle, the figure on the path of motion is always the theme. In contrast, with an associated motion particle, it is always the agent/subject that is the figure on the path of motion regardless of the argument structure of the main verb.

(44) chifak-mā ĩishi-cha palláska’ **iit** isht am-aa=tok  
 fork-ACC take.1-SS bread toward INS 1SG.DAT-give-PST  
 He passed me the bread with a fork. (Broadwell 2000:117)

(45) **pit** pila-h  
 away throw-TENSE  
 He threw it away (from himself/me). (Broadwell 2000:120)

Broadwell (1996, 2000) notes that directional motion particles are compatible with a range of verbs that extend beyond prototypical verbs of motion. These include, unsurprisingly, verbs of transfer such as *am-aa* ‘give’, but also verbs of speech and thought, such as *im-anooli-h* ‘tell’ in example 46, as well as verbs of orientation, perception and emotions, such as *pisa-tok* ‘see’ example 47.

- (46) **pit** im-anooli-h  
 away DAT-tell-TENSE  
 Tell him! (Broadwell 2000:129)
- (47) Leslie-at Sandy (**pit**) pisa-tok  
 Leslie-NOM Sandy away see-PST  
 Leslie saw Sandy. (Broadwell 2000:126)

With stative predicates, such as the verb *homma* ‘be red’, combining the verb with a directional particle *pit* renders the sentence unacceptable to native speakers.

- (48) \* Ofi-yat **pit** homma-h  
 dog-NOM away be.red-TENSE  
*for*: The dog is red. (Broadwell 2006:344)

There are also cases where it is not clear if the directional particle is acceptable or not. Example 49, with the verb *taloowa-h* ‘sing’, is marked with a question mark, and example 50, with the verb *i-nokoowa-h* ‘be angry’, is marked with a percentage sign to indicate that the sentence is accepted by some speakers but not others.

- (49) ? John-at **pit** taloowa-h  
 John-NOM away sing-TENSE  
 John sang. (Broadwell 2000:131)
- (50) % John-at Bill **pit** i-nokoowa-h  
 John-NOM Bill away DAT-be.angry-TENSE  
 John is mad at Bill. (Broadwell 2006:348)

None of the four motion particles can co-occur, which may suggest that they are affixes in a single morphological slot. However, Broadwell (2000:114-117) gives two strong pieces of evidence for treating them as separate syntactic words. First, the motion particles do not trigger word-internal morphophonological processes. Second, there is a small class of other syntactically independent words that can occur between a motion particle and the verb, such as the instrumental marker *isht* in example 44.

#### 11.4.2 LCS analysis

Broadwell’s analysis of the c-structure treats motion particles as non-projecting words, although his analysis predates the popularization of that terminology (Toivonen 2001, 2003). The particle is

adjoined to the left of the verb, as shown in the c-structure in Figure 11.8. An adjunction analysis of the particles provides an explanation for why they can appear in more than one order with respect to other preverbal modifiers that also presumably adjoin to the verb. However, it leaves unexplained why only one particle can occur in a sentence.<sup>7</sup>

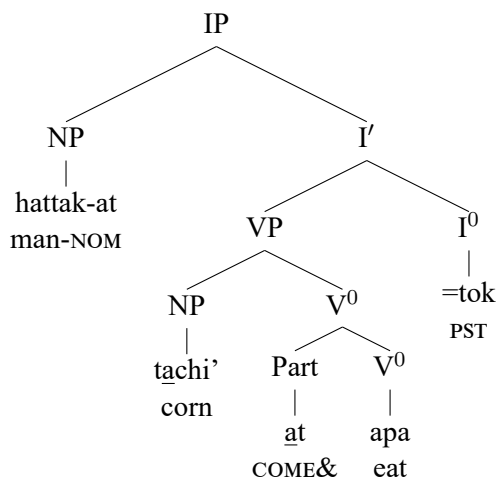


Figure 11.8: C-structure of example 42 (Broadwell 2000:116)

Broadwell uses LCS to model how the meaning of a motion particle combines with the meaning of the verb in predicate composition. The lexical entries Broadwell uses also show information about phonological form, lexical category, and explicit mapping from argument position in the LCS to grammatical functions. These details are not immediately relevant, and have been omitted for the sake of simplicity.

Example 51 is Broadwell's LCS analysis of the directional particle *pit* 'away'. The LCS of the other directional particle, *iit* 'toward', is identical except that the content of the PLACE element is HERE (deictic center) instead of THERE (not deictic center). This LCS only differs from the LCS of a (hypothetical) predicate meaning 'go away' by being marked as a transparent event ( $E_T$ ). The transparent event notation requires it to be combined with another LCS. Essentially, Broadwell analyzes the semantics of these particles as identical to a verbal motion predicate, and then uses a transparent event diacritic to prevent the particles from having the function of the sole predicate in a clause. One difference is that there is no AFF tier indicating which argument the moving entity should be linked to.

<sup>7</sup>This overgeneration in Broadwell's analysis is not resolved in the re-analysis presented below.

$$(51) \text{ } \underline{pit} \text{ 'away'}$$

$$\left\{ \begin{array}{l} \text{GO} \left( \left[ \begin{array}{l} \text{Thing} \\ \alpha \end{array} \right], \left[ \begin{array}{l} \text{Path} \\ \text{TO} \left( \left[ \begin{array}{l} \text{Place} \\ \text{THERE} \end{array} \right] \right) \right] \right) \\ E_T \end{array} \right\}$$

Broadwell's LCS analysis of the prior motion particle *ot* 'go and' is shown in example 52. This LCS has two EVENTS. One is some type of subevent to the other. The main EVENT is the standard GO function. The second EVENT, as in the analysis of Wambaya SVCs (Section 11.3), is underspecified, but it marks an argument on its thematic tier, AFF, as co-indexed with the first argument of the GO function. The LCS of the other prior motion particle, *at* 'come and', is identical except that it changes THERE to HERE.

$$(52) \text{ } \underline{ot} \text{ 'go and'}$$

$$\left\{ \begin{array}{l} \left[ \begin{array}{l} \text{Event} \\ \text{GO} \left( \left[ \begin{array}{l} \text{Thing} \\ \alpha \end{array} \right], \left[ \begin{array}{l} \text{Path} \\ \text{TO} \left[ \begin{array}{l} \text{Place} \\ \text{THERE} \end{array} \right] \right] \right) \end{array} \right]; \left[ \begin{array}{l} \text{Time} \\ t_p \end{array} \right] \end{array} \right] \\ \left[ \begin{array}{l} \text{Event} \\ \text{---} \end{array} \right]; \left[ \begin{array}{l} \text{Time} \\ t_q \end{array} \right] \\ \text{AFF} \left( \alpha, \quad \right) \\ t_p \prec t_q \\ E_T \end{array} \right\}$$

The LCS in example 52 also introduces a TIME type of conceptual category. Each EVENT is marked by a TIME element *t*. The expression  $t_p \prec t_q$  states, in a simplified notation, that the motion takes place before the activity or state predicated by the main verb.

The LCS of the verb *pilah* 'throw' is shown in example 53. In this LCS, the main EVENT is the CAUSE function. Its first argument is of the type THING, and its second argument is another EVENT of the function GO, which in turn selects an argument list of a THING and a PATH. The LCS includes an AFF tier in which the first argument is co-indexed with the first argument of the CAUSE function. This is to allow co-indexing with an argument of the associated motion particle.

(53) *pilah* ‘throw’

$$\left[ \begin{array}{l} \text{Event CAUSE} \left( \left[ \text{Thing } \beta \right], \left[ \text{Event GO} \left( \left[ \text{Thing } \quad \right], \left[ \text{Path TO} \left( \left[ \text{Place } \quad \right] \right) \right] \right) \right] \right) \\ \text{AFF} \left( \beta, \quad \right) \end{array} \right]$$

When the LCS of *pit* ‘away’, example 51, combines with the LCS of *pilah* ‘throw’, example 53, the result is event fusion. The resulting LCS is shown in example 54. The two LCSs cannot fuse at the highest EVENT, since those are of different functions, but the particle and verb can fuse at the second highest EVENT of the verb. The transparent event notation disappears, and the identical GO events are fused. In regards to the PLACE element, the verb *pilah* ‘throw’ is underspecified, so the content of the directional particle, THERE, is filled in. The AFF tier is omitted here since it is not relevant to event fusion.

(54) *pit pilah* ‘throw (away)’

$$\left[ \begin{array}{l} \text{Event CAUSE} \left( \left[ \text{Thing } \quad \right], \left[ \text{Event GO} \left( \left[ \text{Thing } \quad \right], \left[ \text{Path TO} \left( \left[ \text{Place THERE} \right] \right) \right] \right) \right] \right) \end{array} \right]$$

When the LCS of *ot* ‘go and’, example 52, combines with *pilah* ‘throw’, example 53, the result is the LCS in example 55. The CAUSE event of the verb fuses with the underspecified event in the LCS of the motion particle. This causes the transparent event notation to disappear. The highest EVENTS cannot fuse, since they are different functions. The LCS of *ot* ‘go and’ links one of its arguments to the first argument of the AFF tier of its subevent, marked by  $\alpha$ . The LCS of the verb links the first argument of the CAUSE function to the same argument in the AFF tier. This connects the arguments from the two events, an example of argument fusion. Presumably, the GO event of the particle does not fuse with the GO event of the verb because that would leave the other event underspecified and uninterpretable.

(55) *ot pilah* ‘go and throw’

$$\left[ \begin{array}{l} \left[ \begin{array}{l} \text{Event GO} \left( \left[ \begin{array}{l} \text{Thing } \alpha \end{array} \right], \left[ \begin{array}{l} \text{Path TO} \left( \left[ \begin{array}{l} \text{Place THERE} \end{array} \right] \right) \end{array} \right] \right); \left[ \begin{array}{l} \text{Time } t_p \end{array} \right] \\ \text{Event CAUSE} \left( \left[ \begin{array}{l} \text{Thing } \beta \end{array} \right], \left[ \begin{array}{l} \text{Event GO} \left( \left[ \begin{array}{l} \text{Thing } \quad \end{array} \right], \left[ \begin{array}{l} \text{Place } \quad \end{array} \right] \right) \end{array} \right] \right); \left[ \begin{array}{l} \text{Time } t_q \end{array} \right] \\ \text{AFF} \left( \alpha\beta, \quad \right) \\ t_p \prec t_q \end{array} \right]$$

Broadwell also offers an account for the appearance of a directional particle with verbs that are not typical motion verbs, such as in examples 46, 47 (repeated in example 56), 49 and 50.

(56) Leslie-at Sandy (**pit**) pisa-tok  
 Leslie-NOM Sandy away see-PST  
 Leslie saw Sandy. (Broadwell 2000:126)

In Broadwell’s analysis, verbs that can combine with a directional particle are assumed to contain a go event in their LCS. In other words, the semantics of these verbs are lexicalized in a different way than their corresponding English glosses. Broadwell’s analysis of the LCS of the verb *pisah* ‘see’ in Choctaw is shown in example 57. The meaning of the verb lexicalizes an abstract concept GAZE as a figure on a path of motion away from the seer and towards the seen object.<sup>8</sup> The directional particle is said to fuse with this LCS resulting in a more detailed specification of the PLACE in the function TO.

(57) *pisah* ‘see’

$$\left[ \begin{array}{l} \text{Event GO} \left( \left[ \begin{array}{l} \text{Thing GAZE} \end{array} \right], \left[ \begin{array}{l} \text{Path TO} \left( \left[ \begin{array}{l} \text{FROM} \left( \left[ \begin{array}{l} \text{Place } \alpha \end{array} \right] \right) \right] \right) \right] \right) \right) \\ \text{AFF} \left( \left[ \begin{array}{l} \alpha \end{array} \right], \left[ \begin{array}{l} \beta \end{array} \right] \right) \end{array} \right]$$

<sup>8</sup>Broadwell’s representation does not use an AFF tier. Instead he uses a subscript notation to link the PLACE elements of the PATH directly to grammatical functions: (SUBJ<sub>i</sub>, OBJ<sub>j</sub>). The AFF tier is used in the representation here for the sake of consistency and to allow for possible valency alternations in these constructions.

### 11.4.3 Re-analysis in a connected s-structure

The motion particle constructions in Choctaw can be re-analyzed without predicate composition by representing the contribution of the particle in a connected s-structure. A partial lexical entry for the prior motion particle is shown in example 58. The analysis is similar to the Deictic SVC in Barayin (Section 10.4.2) and the motion SVC in Wambaya (Section 11.3). One difference is that, in Choctaw, the interpretation of the timing of the path of motion relative to the activity or state of the main verb is never ambiguous. It is fixed by the meaning of the particle. The s-structure of a predicate with a prior motion particle, example 41, is shown in Figure 11.9.

- (58) *ot* ‘go and’  
 %P ∈ (↑<sub>σ</sub> PATH)  
 (%P REL) = TO  
 (%P ARG1) = (↑<sub>σ</sub> ARG1)  
 (%P ARG3 LOC) = THERE  
 $t_{path\ rel} \prec t_{rel}$

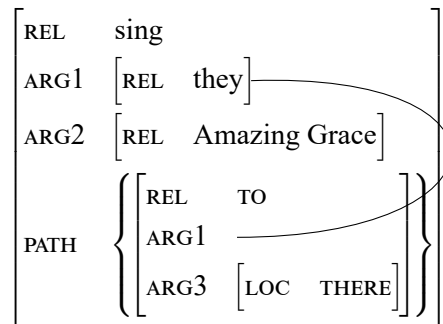


Figure 11.9: S-structure of example 41, ‘go and sing’

If the same approach is applied to the directional particle, there is a problem with formally constraining the identity of the figure on the path of motion, the ARG1 of TOWARD. In example 59 the identity of the theme is provisionally represented by a question mark. With the directional particle, the figure on the path (PATH ARG1) can be ARG1 of the main s-structure (example 43), ARG2 of the main s-structure (examples 44 and 45), or something else (examples 46 and 47).

- (59) *pit* ‘away’  
 %P ∈ (↑<sub>σ</sub> PATH)  
 (%P REL) = TO  
 (%P ARG1) = ?  
 (%P ARG3 LOC) = THERE  
 $t_{path\ rel} \equiv t_{rel}$

Descriptively, the identity of the figure on the path of motion is always the theme of the main verb. However, in the approach to argument structure used here (Section 8.3), a theme can be either an ARG1 or an ARG2, depending on the lexical semantics of the verb. In the case of metaphorical motion, the theme can also be an abstract entity that is not identified with any argument of the verb.

It appears to be the case that an ARG1 can only be the theme when there is no ARG2 present. If that holds true, then the alternation between these two possibilities can be represented by the following disjunctive expression which replaces the entire expression with the question mark in example 59:  $\{(\%P \text{ ARG1}) = (\uparrow_{\sigma} \text{ ARG2}) \mid (\%P \text{ ARG1}) = (\uparrow_{\sigma} \text{ ARG1}) \wedge \neg(\uparrow_{\sigma} \text{ ARG2})\}$ . The left side of the disjunction identifies the ARG2 as the theme, and the right side of the disjunction identifies the ARG1 as the theme, but only in the case that there is no ARG2. This allows the alternation without predicting any cases of ambiguity.<sup>9</sup> This analysis can be applied to the construction with a directional particle in example 60 (repeated from example 45) resulting in the s-structure in Figure 11.10.<sup>10</sup>

- (60) pit pila-h  
 away throw-TENSE  
 He threw it away (from himself/me). (Broadwell 2000:120)

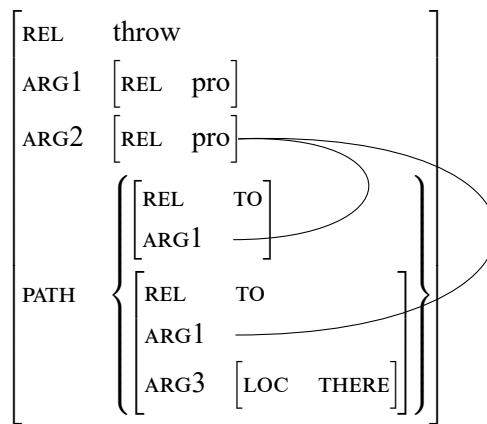


Figure 11.10: S-structure of example 60, ‘throw away’

It remains to account for the cases of metaphorical motion when the figure on the path of motion is understood to be something other than ARG1 or ARG2. Assuming Broadwell’s analysis of lexical

<sup>9</sup>A further complication is that the left of the disjunction could be used to insert an ARG2 attribute in the main s-structure of an intransitive verb. This complication can be dealt with by assuming that an s-structure is not well-formed if two attributes are identified, but neither attribute has any value. In the case where the verb does not provide any value for  $(\uparrow_{\sigma} \text{ ARG2})$ , the link would be semantically vacuous.

<sup>10</sup>Figure 11.10 does not have an ARG3 attribute in the first PATH value, the one contributed by the main verb. This does not mean that there is no ARG3. The verb must fill in some default meaning of the ARG3 such as ‘salient location’.

semantics of verbs of metaphorical motion, verbs with a metaphorical motion interpretation contribute some abstract theme on a path of motion. The value ABSTRACT serves here as a provisional way of generalizing this abstract theme across all verbs expressing metaphorical motion.

Using this value, the s-structure of example 56 is shown in Figure 11.11. The verb *pisa-h* ‘see’ contributes two values for PATH, each with the value of ABSTRACT for the ARG1 and with a link between its ARG3 and one of the arguments of the main s-structure. The directional particle contributes another value for PATH whose ARG1 value should be ABSTRACT, and whose ARG3 indicates motion away from the deictic center.

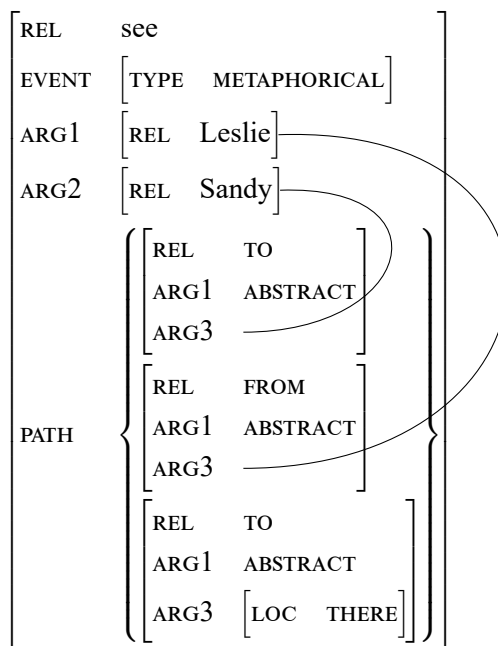


Figure 11.11: S-structure of example 56, ‘see away’

In order to get the directional particle to fill in the ABSTRACT value only when the verb expresses metaphorical motion, some feature such as [TYPE METAPHORICAL] can be assumed to exist as part of the value of EVENT or elsewhere in the s-structure. Assuming all of this, the expression in example 61 can formally capture the choice between these three possible values for the figure on the path of motion contribute by a directional particle.

$$\begin{aligned}
 (61) \quad & \{ (\uparrow_{\sigma} \text{ EVENT TYPE METAPHORICAL}) \wedge (\uparrow_{\sigma} \text{ PATH ARG1}) = \text{ABSTRACT} \\
 & \mid \neg(\uparrow_{\sigma} \text{ EVENT TYPE METAPHORICAL}) \wedge (\uparrow_{\sigma} \text{ PATH ARG1}) = (\uparrow_{\sigma} \text{ ARG2}) \\
 & \mid \neg(\uparrow_{\sigma} \text{ EVENT TYPE METAPHORICAL}) \wedge \neg(\uparrow_{\sigma} \text{ ARG2}) \wedge (\uparrow_{\sigma} \text{ PATH ARG1}) = (\uparrow_{\sigma} \text{ ARG1}) \}
 \end{aligned}$$

Instead of further elaborating on this approach, the next section proposes an alternate view of the nature of the path of motion in s-structure which allows a more elegant analysis of the s-structure and lexical entry of the directional particles in Choctaw, but which raises further questions about the nature of s-structure.

#### 11.4.4 Representing path of motion in s-structure

Note that in the analysis of the directional particle, it only combines with verbs that already have a PATH feature in their s-structure, and the PATH of the directional particle is always temporally identical to the PATH of the main verb. In the analysis of Barayin and Wambaya there is more than one possible temporal interpretation, which motivates a more complex representation of the path of motion. In Choctaw, consistently representing directional particles as contributing an additional concurrent PATH to the s-structure of verbs that already have a PATH seems like representational overkill.

An alternative approach is to assume that the value of PATH is not a set, but a single s-structure. This allows PATH information from one lexical entry to unify with PATH information from another lexical entry. Intuitively, the directional particle does not contribute information about an entire path of motion, but only specifies the direction of a path of motion in the meaning of the verb. This intuition is formalized in example 62. The directional particle *pit* has a simple lexical entry that only provides information about the location of the goal of a path of motion. This lexical entry can unify with a lexical entry like the one for the verb *pilah* ‘throw’ in example 63. The result of the unification of these two entries is shown in the s-structure in Figure 11.12.

(62) *pit* ‘away’  
 $(\uparrow_{\sigma} \text{ PATH ARG3 LOC}) = \text{THERE}$

(63) *pilah* ‘throw’  
 $(\uparrow \text{ PRED}) = \text{‘throw’}$   
 $(\uparrow \text{ PRED FN}) = (\uparrow_{\sigma} \text{ REL})$   
 $(\uparrow \text{ SUBJ}) = (\uparrow_{\sigma} \text{ ARG1})$   
 $(\uparrow \text{ OBJ}) = (\uparrow_{\sigma} \text{ ARG2})$   
 $(\uparrow_{\sigma} \text{ PATH REL}) = \text{TO}$   
 $(\uparrow_{\sigma} \text{ PATH ARG1}) = \text{ARG2}$   
 $t_{rel} \prec t_{path \text{ rel}}$

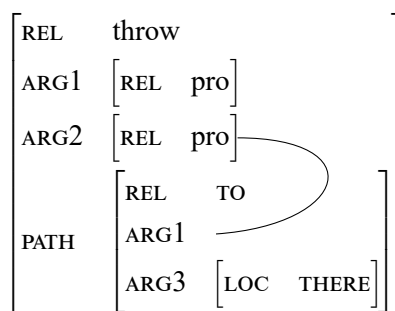


Figure 11.12: Alternative s-structure analysis of example 60, ‘throw away’

Examples 62 and 63 assume a significantly different approach to representing motion information in s-structure where the value of `PATH` is a single s-structure, not a set. This is because if the value of `PATH` is a set there would be a potential for ambiguity about which s-structure in the set the information from the directional particle should unify with. This unwanted ambiguity is avoided if the value of `PATH` is a single s-structure.<sup>11</sup>

One reason why this approach is more elegant is that there is no longer any need for the lexical entry of the directional particle to specify which argument of the verb is the theme of the path of motion. The fact that the  $(\uparrow_{\sigma} \text{PATH ARG1})$  in the s-structure in Figure 11.12 is linked to  $(\uparrow_{\sigma} \text{ARG2})$  is completely determined by the lexical entry of the main verb, just as it would be if it were linked to `ARG1`.

The same simple lexical entry can be applied to the case of metaphorical motion, as shown in the s-structure Figure 11.13. However, this s-structure also shows that the consequence of not representing the value of `PATH` as a set is the proliferation of attributes in s-structure for representing information about the path of motion. The s-structure indicating the source of motion cannot be part of the value of `PATH` so it is given a separate `SOURCE` attribute. Naturally this suggests that `PATH` should be relabeled `GOAL`, but the label `PATH` is retained for the sake of consistency in the discussion.

In this alternative approach, more attributes in s-structure are needed to represent prior motion and subsequent motion. A motion predicate embedded in a `MEANS` feature could be thought of as roughly approximate to prior motion, and a motion predicate embedded in a `RESULT` feature could

<sup>11</sup>A less elegant alternative would be to allow for the formal possibility of ambiguity, but assume that it is very rare. The possibility for ambiguity could be limited by including a constraining equation in the lexical entry of the directional particle that selects for a specific `REL` value, such as:  $(\%P \text{REL} =_c \text{TO})$ . Perhaps the way that path information is lexicalized in Choctaw makes it very rare for a `PATH` to contain two s-structures with identical values for `REL`.

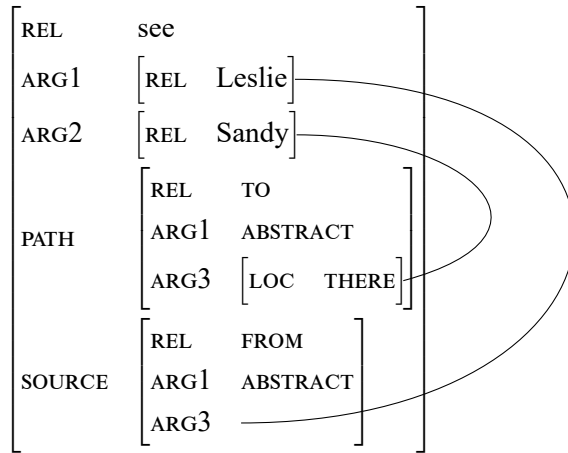


Figure 11.13: Alternative analysis of the s-structure of example 56, ‘see away’

be thought of as roughly approximate to subsequent motion. This approach is applied to the lexical entry of the prior motion particle *ot* ‘go and’ in example 64. Instead of contributing a value for PATH, as in the lexical entry in example 58, this lexical entry contributes a MEANS feature.

- (64) *ot* ‘go and’  
 $(\uparrow_{\sigma} \text{ MEANS REL}) = \text{TO}$   
 $(\uparrow_{\sigma} \text{ MEANS ARG1}) = (\uparrow_{\sigma} \text{ ARG1})$   
 $(\uparrow_{\sigma} \text{ MEANS ARG3 LOC}) = \text{THERE}$   
 $t_{\text{means rel}} \prec t_{\text{rel}}$

Figure 11.14 is an s-structure analysis recasting the LCS analysis of the expression *ot pilah* ‘go and throw’ (example 55). The main verb includes a PATH as shown in example 63, and the prior motion particle *ot* contributes a MEANS feature.

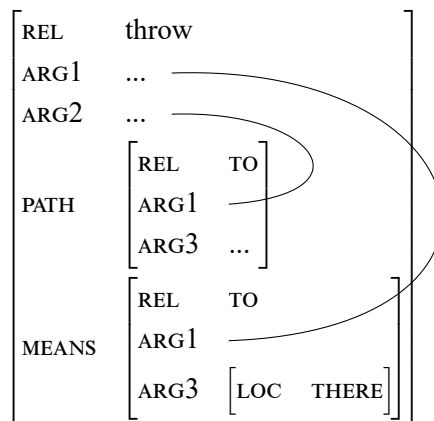


Figure 11.14: S-structure of *ot pilah* ‘go and throw’

## 11.5 Conclusion

This brief consideration of complex motion predicates in just two languages demonstrates the potential of a connected s-structure for modeling the semantics of complex motion using the standard mechanisms of LFG. The connected s-structure is a valuable analytical tool for complex predicates because it provides a level of representation in which standard LFG f-descriptions can be used to model argument sharing. Previously, argument sharing was assumed to require a special mechanism of predicate composition. The issues that arise in applying this approach to Wambaya and Choctaw do not undermine this fundamental contribution to the study of complex predicates.

Modeling argument sharing via f-descriptions in a connected s-structure is a mechanism that can apply equally to morphological complex predicates as to syntactically-formed complex predicates. For example, the same analysis applied to motion SVCs and motion particles in this chapter can be directly applied to constructions with similar meanings expressed by morphology, such as associated motion and directional affixes (e.g., Belkadi 2016; Guillaume 2016; Koch 1984). Since this analytical approach, which only uses stand LFG mechanisms, is equally applicable to morphology and syntax, it removes part of the justification for a predicate composition mechanism in syntax. Alsina (1993:98) claims, “Most languages have some predicate composition in the lexicon; in other words, they have some word formation operations involving the composition of PRED values.” If a predicate composition mechanism allowing PRED values to unify is not needed in the lexicon, then this argument for predicate composition in syntax is rendered moot.

The analysis of Wambaya and Choctaw raises interesting questions about the representation of a path of motion in s-structure. One issue in the analysis of Wambaya (as well as in Barayin) is that it appears that a certain semantic subclass of main verbs (motion verbs) only allows one of two possible temporal interpretations of the path of motion in the complex motion predicate. Even though there are some exceptional cases that challenge this generalization, formulating an account of the temporal semantics of complex motion in LFG most likely requires some formal mechanism in s-structure that identifies the semantic subclass of a predicate.

The main issue in the analysis of Choctaw is that applying the analysis of Barayin Deictic SVCs to the directional particle in Choctaw makes the representation of the value of PATH seem exces-

sive and cumbersome. A more elegant approach to that particular construction is to assume that the value of `PATH` is a single s-structure, not a set. The trade-off to this approach is that it requires a larger number of attributes in s-structure for representing a path of motion. This raises a much broader question of how path should be represented in s-structure cross-linguistically, and whether there is a single universal approach, or if different languages have different methods for representing motion in s-structure.

For many years LFG practitioners have been appealing to Lexical Conceptual Structure to meet the need for a way to represent lexical semantics and thematic roles. However, this approach has never been fully integrated into a standard LFG architecture. The connected s-structure is a level of structure that has the potential to incorporate the insights from LCS into a fully formalized representation of lexical semantics and thematic roles in LFG.

## Chapter 12

# Conclusion

This final chapter of the dissertation briefly summarizes the preceding ten chapters, and reiterates some areas further research that were raised throughout the dissertation.

### 12.1 Summary

What are serial verb constructions (SVCs) in Barayin? Of course, the name implies that they are like constructions that have been called SVCs in other languages. However, SVCs in the literature are a heterogeneous group with fuzzy borders. Since SVCs do not represent a universal category or a natural kind, Chapter 2 lays out a working definition of SVCs (a type of comparative concept), and provides a detailed discussion of the syntactic and morphological features that are associated with SVCs. It is shown in Chapter 6 (along with Section 5.2 on verbhood) that the same features are found in Barayin SVCs, establishing the comparability of Barayin SVCs with other constructions referred to by that label in the literature.

What do SVCs mean? Given that SVCs are not a universal category, there is no definitive answer to this question. In the literature there are certain semantic functions that are repeatedly associated with SVCs. To some degree these may simply be common semantic functions in general, or they may represent a reporting bias. Yet they are still a useful starting point for what functions are expected to be found in these types of constructions. Chapter 3 gives examples of the most commonly reported semantic functions of SVCs (that meet the working definition of SVCs es-

established in Chapter 2). Chapter 4 shows that all of these functions have also been reported for SVCs in Chadic languages. In Part B, Chapter 7 is a detailed description of the meaning of SVCs in Barayin which include some common semantic types, but also some less commonly reported functions.

Parts A and B are a useful resource for those working on the description of SVCs, both field linguists in general and Chadicists in particular. Chapter 2 does not simply lay out a set of features found in SVCs, but also demonstrates various ways that those features have been diagnosed, as well as discussing some of the alternative features that have been proposed in the literature. Chapter 4 lays out the majority of the work done in SVCs in Chadic languages, including what language-specific criteria have been used for diagnosing different types of constructions. Part B sets out, for the first time, robust evidence for productive SVCs in an East Chadic language. This should encourage other Chadicists to check for similar constructions in their data. These chapters also demonstrate tests for distinguishing SVCs from other construction types in Chadic languages.

The formal analysis of Barayin SVCs in Part C introduces a state-of-the-art version of the architecture of Lexical-Functional Grammar. The theory of minimal c-structure from Lovstrand and Lowe (2017) is applied and refined. This theory allows an analysis of Barayin c-structure in Chapters 9 and 10 that avoids any unnecessary non-branching nodes without appealing to any special derivational mechanisms to remove nodes from well-formed tree structures. Minimal c-structure includes a formal approach to non-projecting words which is applied to post-verbal particles in Chapter 9 and to serial verbs in Chapter 10.

The LFG analysis also applies and refines the architecture proposed by Asudeh and Giorgolo (2012) in which argument structure and other syntactically-relevant semantic content is represented at the level of s-structure, projected from f-structure. In the analysis of Barayin SVCs, the serial verb does not contribute a PRED to f-structure. Similar analyses have been proposed in a few other works on complex predicates. The novelty of the approach in Chapter 10 is that the semantic contribution of the serial verb, including information about which argument of the main verb is also an argument of the serial verb (i.e., argument sharing), is modeled using standard LFG f-descriptions at the level of s-structure. The use of the connected s-structure to model argument sharing is one of the key contributions of this work to the analysis of complex predicates in LFG. Previous LFG analyses

of similar constructions have appealed to predicate composition and Lexical Conceptual Structure. Chapter 11 shows how at least two previous analyses can be recast in a more standard LFG model using the connected s-structure. These re-analyses also raise some questions for further research which are discussed in the next section.

## **12.2 Further research**

The main research questions that are raised in this dissertation are presented here in three subsections representing the three parts of the dissertation.

### **12.2.1 Typology of serial verb constructions**

The study of serial verb constructions remains a current research topic because there is still plenty of room for further empirical research in this field, and in the description of multiverb constructions more generally. There is a growing consensus that categorizing multiverb constructions into a small number of construction types is an inherently flawed approach that fails to provide valid insights into the relationship between form and function that comparative linguists aim to discover.

One area of need in the comparative study of multiverb constructions is for detailed descriptions of all types of multiverb constructions in more languages, particularly in families that are not well described, like the Chadic languages. Part A contributes to this need by systematically laying out the main issues that need to be addressed by linguists describing SVCs and SVC-like constructions. Chapters 6 and 7 contribute to this need by describing SVCs in Barayin. This sets a precedent for future work on multiverb constructions in East Chadic languages.

The other area of need in the comparative study of multiverb constructions is for the development of a theory of which syntactic, morphological and semantic features are relevant to a comparative study of multiverb constructions. Traditional categories depend largely on morphological features like the form of the verb: SVCs have finite forms, light verb constructions have one verb in a non-finite form, verbal compounds form a single grammatical word, pseudo-coordination has an extra linking form, etc.

There are other equally relevant typological criteria that are sometimes overlooked. The criterion of whether or not the multiverb construction is valency-increasing is generally used to subcategorize within these categories. One verb might not add any arguments or one verb might add just one additional argument (e.g., causer or instrument) to the argument structure of the other verb. A third possibility is that a multiverb construction might allow each verb to maintain its own argument structure just as when it is used as the sole verb of a clause.

Multiverb constructions are often described as monoclausal, but there are several different ways that monoclausality is diagnosed which could also be treated as separate criteria. A construction might be monoclausal in terms of not allowing a narrow semantic scope (e.g., nuclear clause in Role and Reference Grammar). Secondly, a construction might be monoclausal in terms of the set of grammatical relations allowed (e.g, f-structure in LFG). Thirdly, a clause might be monoclausal in terms of its constituent structure in which the verbs form the tightest possible structural unit. If these types of monoclausality are treated as binary features that vary independently of each other, then there are seven possible combinations of monoclausal features ( $2^3 = 8$ , minus the one that has none of the three types of monoclausality).

If all of these criteria are treated as being able to vary independently of each other (i.e., a multivariate analysis), then it is possible to establish a more precise inventory of multiverb construction types. For example, if there are four types of multiverb constructions based on morphological criteria (finite, non-finite, single word, linking morpheme) and three types based on argument structure (one verb does not affect valency, valency-changing, each verb has its own arguments) and seven ways in which a construction can be monoclausal, then that predicts up to 84 types of monoclausal multiverb constructions based on the possible combinations of these features varying independently from each other ( $4 \times 3 \times 7$ ). Testing which of these 84 combinations of features are attested is an ambitious goal for future research.

### **12.2.2 SVCs in Barayin and other Chadic languages**

Since Deictic SVCs (Section 7.1) are the most common type of SVC in the corpus of Barayin, their functions are fairly well understood. The other types of SVCs are much less common, and there may be accidental gaps in the data in regards to their possible functions. Only one Take SVC

shows up in the corpus. Perhaps there are still yet other types of SVCs in Barayin that are just as rare and have not yet been discovered.

Apparent SVCs with two serial verbs (plus a main verb) are also fairly rare in the corpus, and are difficult to elicit. It remains unknown if these are truly productive constructions. If they are, further research into what combinations of serial verbs are possible may provide insights into the analysis of the s-structure of SVCs. There are also possible cases of non-finite SVCs (Section 6.5). These have not been systematically studied, and they cannot be accounted for in the current formal analysis of SVCs since non-finite verbs in Barayin are treated as nouns.

Research into the other dialects of Barayin and closely related languages can help answer the question of whether SVCs in Barayin are a relatively recent contact-induced phenomenon, or if there is evidence for SVCs further back in the genetic history. A brief, informal study of three closely related languages, Dangla, Migaama and Bidiya, shows that these languages do not use motion SVCs to express prior motion in the same way that Barayin does.

### **12.2.3 LFG s-structure**

The main issue explored in this work in regards to the nature of s-structure has to do with the representation of translocative motion semantics. The representation of motion semantics needs to be decomposed in such a way that motion information from separate words can be combined in a single predicate. In Chapter 10, motion information is represented as a set which is the value of an s-structure attribute `PATH`. While this approach works for Barayin, there are some complications in the analysis of Choctaw (Section 11.4) which are better dealt with in an alternative approach. The issue is that the directional particle in Choctaw is most efficiently analyzed as adding information about the location ('here' or 'there') of the goal of a path of motion that is already predicated by the verb. However, if the value of `PATH` is a set, there is no way to be certain that the feature contributed by the directional particle will be inserted in the correct s-structure. If the value of `PATH` is not a set, separate features (such as `SOURCE`, `MEANS` and `RESULT`) are needed to represent a complex path or complex motion event. However, the same question must be asked of these and similar s-structure features. Should the value of `MEANS` and `RESULT` be a set or a single s-structure? More generally we might ask how universal the nature of s-structure is. Perhaps some languages are best represented

as allowing their `PATH` attribute to have a set as its value, while other languages only have a single s-structure as the value of `PATH`.

A related question is how the temporal relationships between parts of an s-structure should be represented. Throughout this work, the assumption has been that there needs to be a lexically-specified meaning constructor that determines what the possible interpretations are. The issue with this approach is that it overgenerates the number of possible interpretations in some cases. The alternative approach to representing complex paths, not as a set, but as separate features, also allows an alternative approach to constraining temporal interpretation. Certain features can be assumed to only allow certain types of temporal interpretations. For example, a `RESULT` must always be interpreted as subsequent to the event associated with the main `REL` of the s-structure. This would be hardwired into the nature of s-structure, and would not have to be lexically specified.

If temporal interpretation is hard-wired into (some) s-structure attributes, then ambiguities in the temporal interpretation of complex motion predicates would either be understood as an alternation in the lexical entry (e.g., { `MANNER` | `RESULT` }), or the s-structure itself could be assumed to allow different interpretations based on the lexical semantics of the main event. For example, the contribution of a motion verb in a Deictic SVC in Barayin, which is normally prior motion, would be represented as a `MEANS` feature. The nature of s-structure would then interpret `MEANS` as preceding the main action, unless the `EVENT` of the main s-structure contains some element that triggers a simultaneous interpretation (e.g., with a motion predicate). For this to work, `EVENT` (or some other part of s-structure) must be assumed to have a feature that identifies semantic classes of predicates in similar way that functions do in Lexical Conceptual Structure.

These areas of further research highlight the ways in which the study of SVCs in Barayin has pushed the limits our understanding of SVCs from a typological and formal perspective. For a deeper understanding of SVCs, we also need a broader understanding of multiverb constructions and complex motion predicates cross-linguistically.

## Appendix A

# XLE mini-grammar of Barayin SVCs

XLE is linguistic software with algorithms for parsing natural language based on an LFG analysis. It grew out of the Grammar Writer's Workbench (Kaplan and Maxwell 1996). Crouch et al. (2011) provide a detailed description of the XLE software with step-by-step instructions for implementing a basic LFG analyses in XLE. The software can be downloaded for free for non-commercial use, with a required license agreement.<sup>1</sup>

A portion of the LFG analysis of Barayin, including the analysis of SVCs, has been implemented in XLE. The entire grammar is reproduced here to document how this has been achieved. A digital copy of the mini-grammar and test corpus is also currently available online.<sup>2</sup> Readers who are familiar with XLE should be able to reduplicate the same results in XLE, if they so desire.

Besides the more limited scope, there are some minor differences between the fuller analysis of Barayin presented in the dissertation and what has been implemented in the XLE mini-grammar. XLE does not allow a full range of unicode characters, so the digraph <ng> has been used instead of the grapheme <ŋ>. The XLE mini-grammar does not include a level of morphology, so different forms of the same verb are instead represented as separate lexical entries. XLE cannot implement the Glue semantics that accounts for optional argument selection in verbs, so this optionality is represented as a polysemous lexical entry for the verb. The account of noun phrases is simplified so that it does not account for the full range of possible modifiers. The analysis also excludes non-verbal predicates and several types of complex sentences.

The XLE mini-grammar has been tested against the following 22 sentences of Barayin. All of the optionality marked by parentheses is accounted for without generating any non-branching nodes in the c-structure. Only a minimal amount of ambiguity remains. In example 6, the final prepositional phrase is ambiguous between a nominal complement and the correct interpretation of an oblique recipient. This would be resolved semantically as a proper noun cannot be a complement of 'pot'. In examples 10 and 19 the main verb is underspecified for TAM resulting in an ambiguous f-structure if another element, such as a serial verb, does not constrain the TAM interpretation. This is a true ambiguity in the data, not an artifact of the analysis. Finally, in example 21, there is a c-structure ambiguity resulting from the fact that both the serial verb and the post-verbal particle adjoin to the head. The words can be adjoined in either order with no change to the linear order, f-structure or s-structure (see Figure 10.3 in Section 10.2.1).

---

<sup>1</sup>For more information on accessing XLE software, visit: <http://www2.parc.com/isl/groups/nltt/xle/> and <http://ling.uni-konstanz.de/pages/xle/> (accessed August 6, 2018).

<sup>2</sup><https://oxford.academia.edu/JoeyLovestrand/XLE> or <http://users.ox.ac.uk/~some3553/xle.html>

- (1) (ka) waaneyi (baata) (do)  
SBJ.3SG.M sleep.IPFV much NEG  
He doesn't sleep much. (example 22 in Section 9.6)
- (2) (ane) teyi (paning) (ing dante)  
1PL.EXCL eat.IPFV together ASOC afternoon  
We eat together in the afternoons. (example 23 in Section 9.6)
- (3) (ka) koldo (je) (ng gera)  
SBJ.3SG.M go.OBL PART PREP village  
He went to the village. (example 13b in Section 9.3)
- (4) (ka) gando kita (ng manga)  
SBJ.3SG.M do.OBL work PREP bush  
He worked in the bush. (example 13a in Section 9.3)
- (5) (ka) teyi (inyo) (ing atti mesinga)  
SBJ.3SG.M eat.IPFV *boule* ASOC hand.POSS.3SG.M left  
He's eating *boule* with his left hand! (example 11c in Section 9.3)
- (6) (ka) leyi (je) (korto) (ng Umar)  
SBJ.3SG.M send.DAT.3SG.M PART pot PREP Umar  
He sent a pot to Umar. (example 15 in Section 9.4)
- (7) (ng) koleyi (Rukum) (bonte) (do)  
SBJ.1SG go-IPFV Roukoum tomorrow NEG  
I'm not going to Roukoum tomorrow. (example 25 in Section 9.6)
- (8) (ng) kolga (sokka) (Balal)  
SBJ.1SG go.PROG again Balili  
I'm going to Balili again. (example 26 in Section 9.6)
- (9) SV MV  
(ane) (goreyi) koleyi (Rukum)  
SBJ.1PL.EXCL run.IPFV go.IPFV Roukoum  
We ran to Roukoum. (example 92b in Section 6.6.3 with TAM suffixes changed to Jalkiya forms.)
- (10) SV MV  
(koleyi) dopiga (degeti)  
go.IPFV find.OBJ.3SG.M father.POSS.3SG.F  
[He] goes [and] finds her father (of the girl). (example 1 in Section 10.1 without possessor PP)
- (11) SV MV  
(ni) (seyi) teyi  
SBJ.2PL come.IPFV eat.IPFV  
They came [and] ate. (example 2 in Section 6.1)
- (12) SV MV  
(ka) (goreyi) seyi  
SBJ.3SG.M run.IPFV come.IPFV  
He runs back. (example 19 in Section 7.2)

- (13) SV MV  
 (ka) (gore) mote  
 SBJ.3SG.M run.PRF die.PRF  
 He died while running. (example 28 in Section 7.2)
- (14) SV MV  
 (ka) (pida) teega (nama)  
 SBJ.3SG.M take.PFV eat.PRF.OBJ.3SG.M  
 He took [and] ate it. (example 33 in Section 7.3)
- (15) SV MV  
 (ka) (juka) mote  
 SBJ.3SG.M stand.up.PRF die.PRF  
 He died. (example 54 in Section 7.4)
- (16) SV MV  
 (ni) (guseyi) koraga (ng manga)  
 SBJ.3PL go.out.IPFV take.away.IPFV.OBJ.3PL PREP bush  
 They leave, taking them into the bush. (example 25 in Section 10.4.2)
- (17) SV MV  
 (ka) koleyi (deyi)  
 SBJ.3SG.M go.IPFV kill.IPFV  
 He went [and] killed [something]. (example 1 in Section 6.1)
- (18) SV MV  
 (kolu) saru (manjo)  
 go.SBJV bring.here.SBJV PREP thing  
 Go [and] bring the thing here. (example 77 in Section 6.5)
- (19) SV MV  
 (goru) epawti  
 run.SBJV grab.DAT.1SG.OBJ.3SG.F  
 Run and grab her for me! (example 24 in Section 7.2)
- (20) SV MV  
 (duwa) (koleyi) degaga (suu)  
 lion go.IPFV kill.IPFV.DAT.3PL animal  
 The lion went [and] killed an animal for them. (example 9 in Section 10.2.1)
- (21) SV MV  
 (juka) gora (je)  
 stand.up.PFV run.PFV PART  
 [He] ran away. (example 57 in Section 7.4)
- (22) SV SV MV  
 (ng) (jukeyi) (koleyi) tilang (jaaratu)  
 SBJ.1SG stand.up.IPFV go.IPFV visit.IPFV.OBJ.3PL neighbor.PL.POSS.1SG  
 I went [and] visited my neighbors (example 9 in Section 6.1)

In addition to accounting for those grammatical sentences, the XLE grammar also rules out the following ungrammatical sentences. There are no possible parses for these examples.

- (23) **Negation must be clause-final** (cf. example 1)  
 \* ka        waaneyi do baata  
 SBJ.3SG.M sleep.IPFV NEG much
- (24) **Post-verbal particle must be adjacent to verb** (cf. example 6)  
 \* ka        leyi                korto je ng Umar  
 SBJ.3SG.M send.DAT.3SG.M PART pot PREP Umar
- (25) **Manner of motion verb cannot take a locative** (cf. example 9)  
 \* ane                goreyi Rukum  
 SBJ.1PL.EXCL run.IPFV Roukoum
- (26) **Serial verb must precede main verb** (cf. example 11)  
 \* ni        teyi        seyi  
 SBJ.2PL eat.IPFV come.IPFV
- (27) **Imperfective SV must be followed by Imperfective/Progressive MV** (cf. example 13)  
 \* ka        goreyi mote  
 SBJ.3SG.M run.IPFV die.PRF
- (28) **Post-verbal particle must follow main verb, not SV** (cf. example 21)  
 \* juka                je gora  
 stand.up.PFV PART run.PFV
- (29) **Post verbal particle must be adjacent to main verb**  
 \* kola Rukum je  
 go.PFV Roukoum PART

For those unfamiliar with XLE, it will be useful to know a few basics about how XLE grammars are formatted. The first few lines (TOY BARAYIN CONFIG) specify some configurational settings that can be adjusted on a grammar-by-grammar basis. The settings used for the Barayin mini-grammar are essentially the default settings. The next section, TOY BARAYIN RULES, give the XLE version of LFG phrase structure rules. Some of the key notational differences between LFG and XLE are shown in Table A.1.

Table A.1: Corresponding LFG symbols in XLE

LFG symbol	XLE symbol
↑	^
↓	!
∈	\$
$\sigma(*)$	s::
$\lambda(*)$	l::

The XLE implementation of a portion of the LFG analysis of Barayin in this dissertation is as follows:

```

TOY BARAYIN CONFIG (1.0)
ROOTCAT S.
FILES .
LEXENTRIES (TOY BARAYIN).
RULES (TOY BARAYIN).
TEMPLATES (TOY BARAYIN).
GOVERNABLERELATIONS SUBJ OBJ OBL OBLloc.
SEMANTICFUNCTIONS ADJUNCT.
NONDISTRIBUTIVES .
EPSILON e.
OPTIMALITYORDER NOGOOD.

```

- - - -

TOY BARAYIN RULES (1.0)

```

S - -> { N:    (^ SUBJ)=! "Basic clause structure"
          @EXT
        | e:    (^ SUBJ PRED)='pro'
          (^ SUBJ PRED FN)=(s::^ ARG1 REL)}3
        V:      ^=!
          @LP;
          (Neg: ^=!
          @NONPRJ).

N - -> N:      ^=!
          @HEADM;
        Adj:    ! $ (^ ADJUNCT)
          @EXT.

V - -> {V:      ^=!
          @HEADX ;
        N:      (^ OBJ)=!
          @INT ;
        P:      (^ OBL)=! 4
          @INT
        |V:     ^=!
          @HEADX ;
        P:      (^ OBL)=!
          @INT

```

<sup>3</sup>This is a slight modification of a standard approach in XLE to handling non-overt subjects which the verb still requires in the f-structure (See the section on “primitive terms” in Crouch et al. 2011). The *e* represents an empty node which is used to introduce the SUBJ grammatical function with a default PRED value just in those cases when no overt subject is present. The second equation links the PRED to a REL in s-structure. Normally this is done by an expression in a lexical entry, but in this case the PRED is introduced without a lexical entry.

<sup>4</sup>Unmarked OBL represents the grammatical functions *OBL<sub>rec</sub>* and *OBL<sub>ben</sub>* which occur inside the verb phrase (chapter 9.4). This is contrasted with *OBL<sub>loc</sub>* below.

```

|V:  ^=!
      @HEADX ;
N:   (^ OBJ)=!
      @INT

|V:  ^=!          "Serial verb adjunction"
      @NONPRJ
      @PRJM ;
V:   ^=! @HEADA
|V:  ^=!          "Enclitic adjunction rule"
      @HEADA ;
CL:  ^=!
      @NONPRJ
      @PRJM

|V:  ^=!          "Adjunction to VP"
      @HEADM ;
{P:  ! $ (^ ADJUNCT)
      @EXT
|Adv: ! $ (^ ADJUNCT)
      @EXT
|P:  (^ OBLloc)=! 5
      (! LOC) =c +
      @EXT
|N:  (^ OBLloc)=!
      (! LOC) =c +
      (! PROPERN) =c +6
      @EXT } }.

P - -> {P:  ^=!          "Prepositional phrase"
      @HEADX;
N:   ^=!
      @INT
|P:  ^=!
      @HEADX;
N:   (^ OBJ)=!
      @INT }.

```

- - - - -

## TOY BARAYIN TEMPLATES (1.0)

"l-structure"

```

PRJM =    (l::M* L)=0
          (l::M* P).

```

---

<sup>5</sup>The function OBLloc represents source, goal and stative location arguments. These occur outside of the verb phrase as shown by the fact that they alternate in word order with adverbials (Section 9.6).

<sup>6</sup>Essentially only proper nouns can be locatives in a nominal phrase with no prepositional marking. This restriction prevents XLE from analyzing common nouns without a preposition as a goal or source.

NONPRJM = (l::M\* L)=0  
           ~(l::M\* P).  
 NONPRJ = ~(l::\* P).  
 LP = (l::\* L)=(l::\* P).  
 LDOWN = (l::M\* L PLUS)=(l::\* L).  
 PDOWN = (l::M\* P PLUS)=(l::\* P).  
 HEADX = @LDOWN  
           (l::M\* P)=(l::\* P).  
 HEADM = @LDOWN  
           @PDOWN.  
 HEADA = (l::M\* P)=(l::\* P)  
           (l::M\* L)=(l::\* L).  
 EXT = (l::M\* L)=(l::M\* P)  
         @LP.  
 INT = (l::M\* L PLUS)=0  
         @LP.

"agreement features"

SG = (^ NUM SG)=+  
       (^ NUM PL)=-.

PL = (^ NUM SG)=-  
       (^ NUM PL)=+.

DU = (^ NUM SG)=-  
       {(^ NUM PL)=- | (^ NUM PL) =c +}.

FIRSTE = (^ PERS ONE)=+  
           (^ PERS TWO)=-.

FIRSTI = (^ PERS ONE)=+  
           (^ PERS TWO)=+.

SECOND = (^ PERS ONE)=-  
           (^ PERS TWO)=+.

THIRD = (^ PERS ONE)=-  
           (^ PERS TWO)=-.

1SG = @SG  
 @FIRSTE.  
  
 1PLE = @FIRSTE  
 @PL.  
  
 2SGM = @SG  
 @SECOND  
 (^ GEN)=M.  
  
 3SGM = @SG  
 @THIRD  
 (^ GEN)=M.  
  
 3SGF = @SG  
 @THIRD  
 (^ GEN)=F.  
  
 3PL = @PL  
 @THIRD.

"mapping theory"

SUBJ = s::(^ SUBJ)=(s::^ ARG1).  
  
 OBJ = s::(^ OBJ)=(s::^ ARG2).  
  
 OBJPRO = {(^ OBJ PRED)='pro'}  
 (^ OBJ PRED FN)=(s::^ ARG2 REL).  
  
 OBLPRO = {(^ OBL PRED)='pro'}  
 (^ OBL PRED FN)=(s::^ ARG3 REL).  
  
 OBLLOC = s::(^ OBLloc)=(s::^ ARG3)  
 (s::^ ARG3)=(%P ARG3).

"pred and valency"

PREDREL(Q) = REDREL(Q)=(^ PRED)='Q'  
 (^ PRED FN)=(s::^ REL).  
  
 INTRANS(Q) = (^ PRED)='Q<(^ SUBJ)>'  
 (^ PRED FN)=(s::^ REL)  
 @SUBJ.

TRANS(Q) = (^ PRED)='Q<(^ SUBJ)(^ OBJ)>'  
(^ PRED FN)=(s::^ REL)  
@SUBJ  
@OBJ.

TRANSOBJPRO(Q) = (^ PRED)='Q<(^ SUBJ)(^ OBJ)>'  
(^ PRED FN)=(s::^ REL)  
@SUBJ  
@OBJPRO.

DITRANS(Q) = (^ PRED)='Q<(^ SUBJ)(^ OBJ)(^ OBL)>'  
(^ PRED FN)=(s::^ REL)  
@SUBJ.

TRANSOBL(Q) = (^ PRED)='Q<(^ SUBJ)(^ OBL)>'  
(^ PRED FN)=(s::^ REL)  
@SUBJ.

DITRANSMOTION(Q) = (^ PRED)='Q<(^ SUBJ)(^ OBJ)(^ OBLloc)>'  
(^ PRED FN)=(s::^ REL)  
@SUBJ  
@OBLLOC.

MOTION(Q) = (^ PRED)='Q<(^ SUBJ)(^ OBLloc)>'  
(^ PRED FN)=(s::^ REL)  
@SUBJ  
@OBLLOC.

PATHAWAY = %P \$ (s::^ PATH)  
(%P REL)=toward  
(%P ARG1)=(s::^ ARG1)  
(%P ARG3 LOC)=there.

PATHHERE = %P \$ (s::^ PATH)  
(%P REL)=toward  
(%P ARG1)=(s::^ ARG1)  
(%P ARG3 LOC)=here.

MANNERRUN = (s::^ MANNER REL)=run  
(s::^ ARG1)=(s::^ MANNER ARG1).

- - - -

TOY BARAYIN LEXICON (1.0)

ng        P \*     (^ PFORM)=OBL        "P ronouns and prepositions"  
                 @PRJM ;  
             N \*     @(PREDREL I)  
                 (^ CASE)=NOM

		@1SG @PRJM.	
ing	P *	(^ PRED)='with<(^ OBJ)>' @PRJM ;	
	N *	@(PREDREL we-incl) @DU @FIRSTI (^ CASE)=NOM @PRJM.	
ane	N *	@(PREDREL we-excl) @1PLE @PRJM.	"Pronouns"
ka	N *	@(PREDREL he) @3SGM @PRJM.	
ni	N *	@(PREDREL they) @3PL @PRJM.	
Rukum	N *	@(PREDREL Roukoum) (^ LOC)=+ (^ PROPERN)=+ @PRJM.	"Proper nouns"
Balal	N *	@(PREDREL Balili) (^ LOC)=+ (^ PROPERN)=+ @PRJM.	
Umar	N *	@(PREDREL Umar) @PRJM (^ PROPERN)=+.	
atti	N *	@(PREDREL his-hand) (^CASE)=POSS @PRJM.	"Common nouns"
dante	N *	@(PREDREL afternoon) @PRJM.	
degeti	N *	@(PREDREL her-father) (^CASE)=POSS @PRJM.	

duwa	N *	@(PREDREL lion) @PRJM.	
gera	N *	@(PREDREL village) (^ LOC)=+ @PRJM.	
inyo	N *	@(PREDREL boule) @PRJM.	
jaaratu	N *	@(PREDREL my-neighbors) (^CASE)=POSS @PRJM.	
kita	N *	@(PREDREL work) @PRJM.	
korto	N *	@(PREDREL pot) @PRJM.	
manga	N *	@(PREDREL bush) (^ LOC)=+ @PRJM.	
manjo	N *	@(PREDREL thing) @PRJM.	
nama	N *	@(PREDREL child) @PRJM.	
suu	N *	@(PREDREL animal) @PRJM.	
degaga	V *	@(DITRANS kill) @OBJ @OBLPRO (^ TAM CONT)=+ @PRJM;	"Verbs"
	V *	@(TRANSOBL kill) @OBLPRO (^ TAM CONT)=+ @PRJM.	
deyi	V *	@(INTRANS kill) (^ TAM CONT)=+ @PRJM;	
	V *	@(TRANS kill) (^ TAM CONT)=+ @PRJM.	

dopiga V \* @(TRANSOBJPRO find-him)  
 {(^ TAM)=SBJV | (^ TAM CONT)=- | (^ TAM CONT)=+}  
 @PRJM.

epawti V \* @(DITRANS catch)  
 @OBJPRO  
 @OBLPRO  
 {(^ TAM)=SBJV | (^ TAM CONT)=- | (^ TAM CONT)=+}  
 @PRJM.

gando V \* @(TRANS do)  
 @PRJM.

koldo V \* @(INTRANS go)  
 @PATHAWAY  
 (^ TAM CONT)=-  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* @(MOTION go)  
 @PATHAWAY  
 (^ TAM CONT)=-  
 ~(^ ADJUNCT LOC)=+  
 @PRJM.

koraga V \* @(TRANSOBJPRO take-them-away)  
 @PATHAWAY  
 (^ TAM CONT)=+  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* @(DITRANSMOTION take-away)  
 @PATHAWAY  
 @OBJPRO  
 (^ TAM CONT)=+  
 ~(^ ADJUNCT LOC)=+  
 @PRJM.

leyi V \* @(TRANSOBL send)  
 @OBLPRO  
 @PRJM;  
 V \* @(DITRANS send)  
 @OBJ  
 @OBLPRO  
 @PRJM.

mote V \* @(INTRANS die)  
 (^ TAM CONT)=-  
 (^ TAM NOW) = +  
 @PRJM.

saru	V *	@(INTRANS bring-here) @PATHHERE (^ TAM)=SBJV ~(^ ADJUNCT LOC)=+ @PRJM;	
	V *	@(TRANS bring-here) @PATHHERE (^ TAM)=SBJV ~(^ ADJUNCT LOC)=+ @PRJM;	
	V *	@(MOTION bring-here) @PATHHERE (^ TAM)=SBJV ~(^ ADJUNCT LOC)=+ @PRJM;	
	V *	@(DITRANSMOTION bring-here) @PATHHERE (^ TAM)=SBJV ~(^ ADJUNCT LOC)=+ @PRJM.	
teyi	V *	@(INTRANS eat) (^ TAM CONT)=+ @PRJM;	
	V *	@(TRANS eat) (^ TAM CONT)=+ @PRJM.	
teega	V *	@(TRANSOBJPRO eat-it) @PRJM (^ TAM CONT)=- (^ TAM NOW)=+.	
tilang	V *	@(TRANSOBJPRO visit-them) @PRJM (^ TAM CONT)=+.	
waaneyi	V *	@(INTRANS sleep) (^ TAM CONT)=+ @PRJM.	
koleyi	V *	@(INTRANS go) @PATHAWAY (^ TAM CONT)=+ ~(^ ADJUNCT LOC)=+ @PRJM;	"deictic (serial) verbs"
	V *	@(MOTION go) @PATHAWAY	

(^ TAM CONT)=+  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* (^ DEICTICSVC)=+<sup>7</sup>  
 @PATHAWAY  
 (^ TAM CONT) =c +  
 @NONPRJM.

kolga V \* @(INTRANS go)  
 @PATHAWAY  
 (^ TAM CONT)=+  
 (^ TAM NOW)=+  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* @(MOTION go)  
 @PATHAWAY  
 (^ TAM CONT)=+  
 (^ TAM NOW)=+  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* (^ DEICTICSVC)=+  
 @PATHAWAY  
 (^ TAM CONT) =c +  
 (^ TAM NOW) =c +  
 @NONPRJM.

kolu V \* @(INTRANS go)  
 @PATHAWAY  
 (^ TAM)=SBJV  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* @(MOTION go)  
 @PATHAWAY  
 (^ TAM)=SBJV  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;  
 V \* (^ DEICTICSVC)=+  
 @PATHAWAY  
 (^ TAM) =c SBJV  
 ~(^ ADJUNCT LOC)=+  
 @NONPRJM.

seyi V \* @(INTRANS come)  
 @PATHHERE  
 (^ TAM CONT)=+  
 ~(^ ADJUNCT LOC)=+  
 @PRJM;

---

<sup>7</sup>This is a meaningless feature used a bookkeeping device to show in the f-structure which lexical entry the parser has selected. The same applies to the features MANNERSVC, TAKESVC, and STANDSVC.

V \*     @(MOTION come)  
           @PATHHERE  
           (^ TAM CONT)=+  
           ~(^ ADJUNCT LOC)=+  
           @PRJM;

V \*     (^ DEICTICSVC)=+  
           @NONPRJM  
           @PATHHERE  
           (^ TAM CONT) =c +.

guseyi V \*     @(MOTION go-out)  
           %P \$ (s::^ PATH)  
           (%P REL)=from  
           (%P ARG3 LOC)=inside  
           (%P ARG1)=(s::^ ARG1)  
           (^ TAM CONT)=+  
           ~(^ ADJUNCT LOC)=+  
           @PRJM;

V \*     (^ DEICTICSVC)=+  
           @NONPRJM  
           %P \$ (s::^ PATH)  
           (%P REL)=from  
           (%P ARG1)=(s::^ ARG1)  
           (%P ARG3 LOC)=inside  
           ~(^ ADJUNCT LOC)=+  
           (^ TAM CONT) =c +.

jukeyi V \*     (^ STANDSVC)=+                   "Stand (serial) verb"  
           (^ TAM CONT) =c +  
           @NONPRJM.

juke    V \*     (^ STANDSVC)=+  
           (^ TAM CONT) =c -  
           (^ TAM NOW) =c +  
           @NONPRJM.

juka    V \*     (^ STANDSVC)=+  
           (^ TAM CONT) =c -  
           %P \$ (s::^ PATH)  
           (%P REL)=from  
           (%P ARG1)=(s::^ ARG1)  
           (%P ARG3)=here  
           @NONPRJM.

gora    V \*     (^ MANNERSVC)=+                "Manner (serial) verb"  
           @NONPRJM  
           @MANNERRUN  
           (^ TAM CONT)=c -;

V \*     @(INTRANS run)

		@MANNERRUN (^ TAM CONT)=- @PRJM.	
goreyi	V *	(^ MANNERSVC)=+ @NONPRJM @MANNERRUN (^ TAM CONT)=+; V * @(INTRANS run) @MANNERRUN (^ TAM CONT)=c+ @PRJM.	
gore	V *	(^ MANNERSVC)=+ @NONPRJM @MANNERRUN (^ TAM CONT)=c- (^ TAM NOW)=c+; V * @(INTRANS run) @MANNERRUN (^ TAM CONT)=- (^ TAM NOW)=+ @PRJM.	
goru	V *	(^ MANNERSVC)=+ @NONPRJM @MANNERRUN (^ TAM)=c SBJV; V * @(INTRANS run) @MANNERRUN (^ TAM)=SBJV @PRJM.	
pida	V *	@(INTRANS run) @PRJM;	"Take (serial) verb"
	V *	(^ TAKESVC)=+ @NONPRJM %P \$ (s::^ PATH) (%P REL)=to-poss (%P ARG1)=(s::^ ARG2) (%P ARG3) =(s::^ ARG1) (^ TAM CONT)=c-.	
mesinga	Adj *	(^ PRED)='left' @PRJM.	"Adjectives"
baata	Adv *	(^ PRED)='much' @PRJM.	"Adverbs"

bonte Adv \* (^ PRED)='tomorrow'  
@PRJM.  
paning Adv \* (^ PRED)='together'  
@PRJM.  
sokka Adv \* (^ PRED)='again'  
@PRJM.  
do Neg \* (^ NEG)=+  
@NONPRJM.  
je CL \* (^ TAM CONT)=-  
@NONPRJM.

- - - -

# Bibliography

- Abeillé, Anne and Godard, Danièle (2002). The syntactic structure of French auxiliaries. *Language*, 78(3):404–452.
- Aboh, Enoch Oladé (2009). Clause structure and verb series. *Linguistic Inquiry*, 40(1):1–33.
- Agbedor, Paul (1994). Verb serialization in Ewe. *Nordic Journal of African Studies*, 3(1):115–135.
- Aikhenvald, Alexandra Y. (1999). Serial constructions and verb compounding: Evidence from Tariana (North Arawak). *Studies in Language*, 23(3):469–497.
- Aikhenvald, Alexandra Y. (2006a). Serial verb constructions in Tariana. In Aikhenvald, Alexandra Y. and Dixon, Robert M.W., editors, *Serial Verb Constructions: A Cross-linguistic Typology*, pages 178–201. Oxford University Press, Oxford; New York.
- Aikhenvald, Alexandra Y. (2006b). Serial verb constructions in typological perspective. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 1–68. Oxford University Press, Oxford; New York.
- Aikhenvald, Alexandra Y. (2010). Multi-verb constructions: Setting the scene. In Aikhenvald, Alexandra Y. and Muysken, Pieter, editors, *Multi-verb Constructions: A View from the Americas*, pages 1–26. Brill.
- Aikhenvald, Alexandra Y. (2014). *The art of grammar: A practical guide*. Oxford University Press, Oxford.
- Al-Hassan, Bello S.Y. (1998). *Reduplication in the Chadic languages: A study of form and function*. Peter Lang, Frankfurt am Main.
- Alagappan, Muthu (2013). The new positions of basketball [video file]. TEDx: Saint George's School, Spokane, WA. Available online at <https://www.youtube.com/watch?v=E-gpSQQe3w8> (accessed Feb. 26, 2018).
- Allison, Sean (2012). *Aspects of a grammar of Makary Kotoko (Chadic, Cameroon)*. PhD dissertation, University of Colorado.
- Alsina, Alex (1993). *Predicate composition: A theory of syntactic function alternations*. PhD dissertation, Stanford University.
- Alsina, Alex (1997). A theory of complex predicates: Evidence from causatives in Bantu and Romance. In Alsina, Alex, Bresnan, Joan, and Sells, Peter, editors, *Complex predicates*, pages 203–246. CSLI Publications, Stanford.
- Alsina, Alex (2008). A theory of structure-sharing: Focusing on long-distance dependencies and parasitic gaps. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG08 Conference*, pages 5–25. CSLI Publications.

- Amberber, Mengistu, Baker, Brett, and Harvey, Mark, editors (2010). *Complex predicates: Cross-linguistic perspectives on event structure*. Cambridge University Press, New York.
- Ameka, Felix K (2001). Multiverb constructions in a West African areal typological perspective. unpublished manuscript.
- Ameka, Felix K and Essegbey, James (2013). Serialising languages: Satellite-framed, verb-framed or neither. *Ghana Journal of Linguistics*, 2(1):19–38.
- Anderson, Gregory D.S. (2006). *Auxiliary verb constructions*. Oxford University Press, Oxford.
- Andrews, Avery D (1997). Complex predicates and nuclear serial verbs. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG97 Conference*, Stanford. CSLI Publications.
- Andrews, Avery D. and Manning, Christopher D. (1999). *Complex predicates and information spreading in LFG*. CSLI Publications, Stanford, CA.
- Ansre, Gilbert (1966). The verbid - A caveat to ‘serial verbs’. *Journal of West African Languages*, 3(1):29–32.
- Arka, Wayan (2011). Constructive number systems in Marori and beyond. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG2011 Conference*. CSLI Publications.
- Armoskaite, Solveiga and Koskinen, Päivi (2014). Serial verbs in Finnish. *Linguistic Discovery*, 12(1):1–27.
- Arnold, Doug and Sadler, Louisa (2013). Displaced dependent constructions. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG13 Conference*. CSLI Publications.
- Asudeh, Ash (2002). The syntax of preverbal particles and adjunction in Irish. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG02 Conference*. CSLI Publications.
- Asudeh, Ash (2012). *The logic of pronominal resumption*. Oxford University Press, Oxford.
- Asudeh, Ash, Dalrymple, Mary, and Toivonen, Ida (2008). Constructions with lexical integrity: Templates as the lexicon–syntax interface. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG08 Conference*. CSLI Publications.
- Asudeh, Ash, Dalrymple, Mary, and Toivonen, Ida (2013). Constructions with lexical integrity. *Journal of Language Modelling*, 1(1):1–54.
- Asudeh, Ash and Giorgolo, Gianluca (2012). Flexible composition for optional and derived arguments. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG12 Conference*, pages 64–84. CSLI Publications.
- Asudeh, Ash, Giorgolo, Gianluca, and Toivonen, Ida (2014). Meaning and valency. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG14 Conference*, pages 68–88. CSLI Publications.
- Asudeh, Ash and Toivonen, Ida (2009). Lexical-Functional Grammar. In Heine, Bernd and Narrog, Heiko, editors, *The Oxford Handbook of Linguistic Analysis*, page 425–458. Oxford University Press, Oxford.
- Asudeh, Ash and Toivonen, Ida (2017). A modular approach to evidentiality. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG17 Conference*, pages 45–65, Stanford, CA. CSLI Publications.

- Austin, Peter (1998). Crow is sitting chasing them: Grammaticalization and the verb ‘to sit’ in the Mantharta languages, Western Australia. In Siewierska, Anna and Song, Jae Jung, editors, *Case, typology and grammar: In honor of Barry J. Blake*, pages 19–36. John Benjamins, Amsterdam.
- Austin, Peter (2001). Lexical Functional Grammar. In Smelser, Neil J. and Baltes, Paul, editors, *International Encyclopedia of the Social and Behavioral Sciences*, pages 8748–8754. Elsevier.
- Austin, Peter (2005). Causative and applicative constructions in Australian aboriginal languages. In Matsumura, Kazuto and Hayashi, Tooru, editors, *The dative and related phenomena*, pages 165–225. Hitsuji Shobo, Tokyo.
- Awobuluyi, Oladele (1971). “Splitting verbs” in Yoruba. In *Actes du 8<sup>e</sup> congrès de la société linguistique de l’Afrique occidentale*, volume 1 of *Annales de l’Université d’Abidjan, Série H: Linguistique*, pages 151–164, Abidjan.
- Awobuluyi, Oladele (1973). The modifying serial construction: A critique. *Studies in African Linguistics*, 4(1):87–111.
- Baird, Louise (2008). Motion serialisation in Keo. In Senft, Gunter, editor, *Serial verb constructions in Austronesian and Papuan languages*, pages 55–74. Australian National University, Canberra.
- Baker, Brett and Harvey, Mark (2010). Complex predicate formation. In Amberber, Mengistu, Baker, Brett, and Harvey, Mark, editors, *Complex predicates: Cross-linguistic perspectives on event structure*, pages 12–48. Cambridge University Press, New York.
- Baker, Mark (1989). Object sharing and projection in serial verb constructions. *Linguistic Inquiry*, 20(4):513–553.
- Baker, Mark and Stewart, Osamuyimen T. (2002). A serial verb construction without constructions. unpublished manuscript, Rutgers University.
- Balmer, W.T. and Grant, F.C.F. (1929). *A grammar of the Fante-Akan language*. Atlantis Press, London.
- Bamgboṣe, Ayo (1973). The modifying serial construction: A reply. *Studies in African Linguistics*, 4(2):207–217.
- Bamgboṣe, Ayo (1974). On serial verb constructions and verbal status. *Journal of West African Languages*, 9(1):17–48.
- Bamgboṣe, Ayo (1982). Issues in the analysis of serial verbal constructions. *Journal of West African Languages*, 12(2):3–21.
- Banjo, Ayo (1974). Sentence negation in Yoruba. *Studies in African Linguistics*, Supplement 5:35–47.
- Barreteau, Daniel and Newman, Paul (1978). Les langues tchadiques. In Barreteau, Daniel, editor, *Inventaire des études linguistiques sur les pays d’Afrique d’expression française et sur Madagascar*, pages 291–330. SELAF, Paris.
- Baxter, Alan N (1988). *A grammar of Kristang (Malacca Creole Portuguese)*. Pacific Linguistics, Canberra.
- Bearth, Thomas (2000). J.G. Christaller: A holistic view of language and culture—and C.C. Reindorf’s “History”. In Jenkins, Paul, editor, *The recovery of the West African past: African pastors and African history in the nineteenth century: C.C. Reindorf & Samuel Johnson: Papers from*

- an international seminar held in Basel, Switzerland, 25-28th October 1995 to celebrate the centenary of the publication of C.C. Reindorf's History of the Gold Coast and Asante*, pages 83–102. Basler Afrika Bibliographien, Basel.
- Beavers, John, Levin, Beth, and Tham, Shiao Wei (2010). The typology of motion expressions revisited. *Journal of Linguistics*, 46(02):331–377.
- Beermann, Dorothee A and Hellan, Lars (2002). VP-chaining in Oriya. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG02 Conference*. CSLI Publications.
- Belkadi, Aicha (2016). Associated motion constructions in African languages. *Africana Linguistica*, 22:43–70.
- Bendix, Edward H. (1972). Serial verbs in the Caribbean and West Africa: Their semantic analysis in Papiamentu. unpublished manuscript, Hunter College of the City University of New York.
- Bickel, Balthasar (2007). Typology in the 21st century: Major current developments. *Linguistic Typology*, 11(1):239–251.
- Bickel, Balthasar (2010). Capturing particulars and universals in clause linkage: A multivariate approach. In Bril, Isabelle, editor, *Clause linking and clause hierarchy: Syntax and pragmatics*, pages 51–101. John Benjamins, Amsterdam.
- Bisang, Walter (1986). Die verb-serialisierung im Jabêm. *Lingua*, 70(2):131–162.
- Bisang, Walter (2009). Serial verb constructions. *Language and Linguistics Compass*, 3(3):792–814.
- Blench, Roger (2006a). The Afro-Asiatic languages: Classification and reference list. Available online at <http://www.rogerblench.info/Language/Afroasiatic/General/AALIST.pdf>.
- Blench, Roger (2006b). *Archaeology, language, and the African past*. AltaMira Press, Lanham, MD.
- Blench, Roger (2016). Five unexpected Chadic languages and the sorry tale of Jorto. Paper presented at CALL, Leiden, 28 September 2016.
- Blench, Roger (2017). New approaches to the West Chadic A3 languages. Paper presented at BICCL, LLACAN Villejuif, 8 September 2017.
- Bodomo, Adams. (1997). *Paths and pathfinders: Exploring the syntax and semantics of complex verbal predicates in Dagaare and other languages*. PhD dissertation, Norwegian University of Science and Technology.
- Bodomo, Adams B., Lam, Olivia SC, and Yu, Natalie SS (2003). Double object and serial verb benefactive constructions in Cantonese. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG03 Conference*, pages 59–74, Stanford, CA. CSLI Publications.
- Bohnemeyer, Jürgen, Enfield, Nicholas J, Essegbey, James, Ibarretxe-Antuñano, Iraide, Kita, Sotaro, Lüpke, Friederike, and Ameka, Felix K (2007). Principles of event segmentation in language: The case of motion events. *Language*, pages 495–532.
- Bohnemeyer, Jürgen and Pederson, Eric, editors (2011). *Event representation in language and cognition*. Number 11 in Language, Culture, and Cognition. Cambridge University Press, Cambridge ; New York.
- Booij, Geert (1990). The boundary between morphology and syntax: Separable complex verbs in Dutch. *Yearbook of Morphology*, 3:45–64.

- Boro, Krishna (2012). Serialized verbs in Boro. In Hyslop, Gwendolyn, Morey, Stephen, and Post, Mark W., editors, *North East Indian Linguistics*, volume 4, pages 83–103. Cambridge University Press India, New Delhi.
- Boro, Krishna (2017). *A Grammar of Hakhun Tangsa*. PhD dissertation, University of Oregon.
- Bowden, John (2001). *Taba: Description of a South Halmahera language*. Pacific Linguistics.
- Bowern, Claire (2008). The diachrony of complex predicates. *Diachronica*, 25(2):161–185.
- Bradshaw, Joel (1982). *Word order change in Papua New Guinea Austronesian languages*. PhD dissertation, University of Hawaii.
- Bradshaw, Joel (1983). Dempwolff's description of verb serialization in Yabem. In Halim, Amram, Carrington, Lois, and Wurm, S. A., editors, *Papers from the Third International Conference on Austronesian Linguistics: Thematic variation*, volume 4, pages 177–198. Australian National University, Canberra.
- Bradshaw, Joel (1993). Subject relationships within serial verb constructions in Numbami and Jabêm. *Oceanic Linguistics*, pages 133–161.
- Bradshaw, Joel (1999). Null subjects, switch-reference, and serialization in Jabêm and Numbami. *Oceanic Linguistics*, 38(2):270–296.
- Bresnan, Joan (1977). A realistic transformational grammar. In Halle, Morris, Bresnan, Joan, and Miller, George A., editors, *Linguistic theory and psychological reality*, pages 1–59. MIT Press.
- Bresnan, Joan (1982a). Control and complementation. *Linguistic Inquiry*, 13(3):343–434. Also appears in: Bresnan, Joan (ed.). 1982. *The mental representation of grammatical relations*. MIT Press. pages 282–390.
- Bresnan, Joan, editor (1982b). *The mental representation of grammatical relations*. The MIT Press.
- Bresnan, Joan (2001). *Lexical-functional syntax*. Blackwell, Malden, Mass.
- Bresnan, Joan, Asudeh, Ash, Toivonen, Ida, and Wechsler, Stephen (2016). *Lexical-functional syntax*. Wiley-Blackwell, Hoboken, 2nd edition.
- Bresnan, Joan and Kaplan, Ronald M (1982). Introduction: Grammars as mental representations of language. In Bresnan, Joan, editor, *The mental representation of grammatical relations*, pages xvii–lii. The MIT Press.
- Broadwell, George Aaron (1996). Directional particles and abstract motion in Choctaw. In *Proceedings of the 1996 Mid-America Linguistics Conference*, pages 53–66.
- Broadwell, George Aaron (2000). Choctaw directionals and the syntax of complex predication. In Butt, Miriam and King, Tracy Holloway, editors, *Argument realization*, pages 111–133. CSLI Publications, Stanford.
- Broadwell, George Aaron (2003). Optimality, complex predication, and parallel structures in Zapotec. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG03 Conference*, pages 75–91, Standford. CSLI Publications.
- Broadwell, George Aaron (2006). *A Choctaw reference grammar*. U of Nebraska Press.
- Brown, Dustan, Chumakina, Marina, and Corbett, Greville G., editors (2013). *Canonical morphology and syntax*. Oxford University Press.

- Bruce, Les (1979). *A grammar of Alambalak (Papua New Guinea)*. PhD dissertation, The Australian National University.
- Bruce, Les (1988). Serialization: From syntax to lexicon. *Studies in Language*, 12(1):19–49.
- Butt, Miriam (1995). *The structure of complex predicates in Urdu*. CSLI Publications, Stanford.
- Butt, Miriam, Dalrymple, Mary, and Frank, Anette (1997). An architecture for linking theory in LFG. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG97 Conference*, pages 1–16.
- Butt, Miriam, Isoda, Michio, and Sells, Peter (1990). Complex predicates in LFG. Stanford University manuscript.
- Butt, Miriam, King, Tracy Holloway, and Maxwell III, John T (2003). Complex predicates via restriction. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG03 Conference*, pages 92–104. CSLI Publications.
- Butt, Miriam and Ramchand, Gillian (2005). Complex aspectual structure in Hindi/Urdu. In Erteschik-Shir, Nomi and Rapoport, Tova, editors, *The syntax of aspect: Deriving thematic and aspectual information*, pages 117–153. Oxford University Press, Oxford.
- Bybee, Joan, Perkins, Revere, and Pagliuca, William (1994). *The evolution of grammar: Tense, aspect, and modality in the languages of the world*. University of Chicago Press, Chicago.
- Caitucoli, Claude (1986). *Douze contes masa: Avec une introduction grammaticale*. Dietrich Reimer Verlag.
- Camilleri, Maris and Sadler, Louisa (2017). Posture verbs and aspect: A view from vernacular Arabic. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG17 Conference*, pages 167–187, Stanford, CA. CSLI Publications.
- Campbell, Richard (1996). Serial verbs and shared arguments. *Linguistic Review*, 13(2):83–118.
- Carlson, Robert (1994). *A grammar of Supyire*, volume 14. Walter de Gruyter.
- Caron, Bernard (2012a). Comparison, similarity and simulation in Zaar, a Chadic language of Nigeria. In *Expressions de similarité dans une perspective africaniste et typologique*.
- Caron, Bernard (2012b). Zaar grammatical sketch. In Mettouchi, Amina, Vanhove, Martine, and Caubet, Dominique, editors, *The CorpAfroAs Corpus*.
- Carstens, Vicki (2002). Antisymmetry and word order in serial constructions. *Language*, 78(1):3–50.
- Chen, Liang and Guo, Jiansheng (2009). Motion events in Chinese novels: Evidence for an equipollently-framed language. *Journal of Pragmatics*, 41(9):1749–1766.
- Chisarik, Erika and Payne, John (2001). Modelling possessor constructions in LFG: English and Hungarian. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG01 Conference*. CSLI Publications.
- Chomsky, Noam (1970). Remarks on nominalization. In Jacobs, Roderick A. and Rosenbaum, Peter S., editors, *Readings in English Transformational Grammar*, pages 184–221. Ginn, Boston.
- Chomsky, Noam (1986). *Barriers*. MIT press.

- Chomsky, Noam (1995). Bare phrase structure. In Campos, Héctor and Kempchinsky, Paul, editors, *Evolution and revolution in linguistic theory*, pages 51–109. Georgetown University Press, Washington, DC.
- Christaller, Johann Gottlieb (1875). *A grammar of the Asante and Fante language called Tshi [Chwee, Twi] based on the Akuapem dialect with reference to the other (Akan and Fante) dialects*. Basel Evangelical Mission Society, Basel.
- Christaller, Johann Gottlob (1881). *Dictionary of the Asante and Fante language called Tshi (Twi)*. Basel Evangelical Mission Society, Basel.
- Cleary-Kemp, Jessica (2015). *Serial Verb Constructions Revisited: A Case Study from Koro*. PhD dissertation, University of California, Berkeley.
- Cohen, Ben (2012). How to build an NBA championship team. GQ online. Available online at <https://www.gq.com/story/muthuball-mit-sloan-sports-analytics-conference>.
- Collins, Chris (1997). Argument sharing in serial verb constructions. *Linguistic Inquiry*, 23(3):461–497.
- Comrie, Bernard (1976). *Aspect*. Cambridge University Press, Cambridge.
- Comrie, Bernard (1995). Serial verbs in Haruai (Papua New Guinea) and their theoretical implications. In Bouscaren, Janine and Culioli, Antoine, editors, *Langues et langage: Problèmes et raisonnement en linguistique; mélanges offerts à Antoine Culioli*, pages 25–38. Presses Univ. de France, Paris.
- Corbett, Greville G (2015). Morphosyntactic complexity: A typology of lexical splits. *Language*, 91(1):145–193.
- Creissels, Denis (2006). *Syntaxe générale, une introduction typologique*, volume 1, Catégories et constructions. Hermès – Lavoisier, Paris.
- Creissels, Denis, Dimmendaal, Gerrit, Frajzyngier, Zygmunt, and König, Christa (2008). Africa as a morphosyntactic area. In Heine, Bernd and Nurse, Derek, editors, *A linguistic geography of Africa*. Cambridge University Press, Cambridge.
- Creswell, Cassandre and Snyder, Kieran (2000). Passive and passive-like constructions in Hmong. In Billerey, Roger and Lillehaugen, Brook Danielle, editors, *WCCFL 19: Proceedings of the 19th West Coast Conference on Formal Linguistics*, pages 71–82.
- Croft, William, Barðdal, Jóhanna, Hollmann, Willem, Sotirova, Violeta, and Taoka, Chiaki (2010). Revising Talmy's typological classification of complex event constructions. In Boas, Hans C, editor, *Contrastive studies in construction grammar*, pages 201–235. John Benjamins.
- Crouch, Dick, Dalrymple, Mary, Kaplan, Ronald M., King, Tracy Holloway, Maxwell III, John T., and Newman, Paula (2011). XLE documentation. Available online at [http://www2.parc.com/isl/groups/nltt/xle/doc/xle\\_toc.html](http://www2.parc.com/isl/groups/nltt/xle/doc/xle_toc.html).
- Crowley, Terry (1987). Serial verbs in Paamese. *Studies in Language*, 11(1):35–84.
- Crowley, Terry (1990). Serial verbs and prepositions in Bislama. In Verhaar, John W.M., editor, *Melanesian Pidgin and Tok Pisin: Proceedings of the First International Conference of Pidgins and Creoles in Melanesia*, number 20 in Studies in Language Companion Series, pages 57–89. John Benjamins.

- Crowley, Terry (2002). *Serial verbs in Oceanic: A descriptive typology*. Oxford University Press, Oxford/New York.
- Dalrymple, Mary, editor (1999). *Semantics and syntax in Lexical Functional Grammar: The resource logic approach*. MIT Press.
- Dalrymple, Mary (2001). *Lexical Functional Grammar*. Academic Press, San Diego.
- Dalrymple, Mary (2006). Lexical Functional Grammar. In Brown, Keith, editor, *Encyclopedia of Language and Linguistics*, page 82–94. Elsevier, Amsterdam, 2nd edition.
- Dalrymple, Mary, Hinrichs, Angie, Lamping, John, and Saraswat, Vijay (1993a). The resource logic of complex predicate interpretation. In *Proceedings of the 1993 Republic of China Computational Linguistics Conference (ROCLING)*, pages 3–21. Computational Linguistics Society of Republic of China, Hsitou National Park, Taiwan. Also published as Xerox Technical Report ISTL-NLTT-1993-08-03.
- Dalrymple, Mary, Kaplan, Ronald M, and King, Tracy Holloway (2004). Linguistic generalizations over descriptions. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG04 Conference*, pages 199–208. CSLI Publications.
- Dalrymple, Mary, Kaplan, Ronald M., and King, Tracy Holloway (2015). Economy of Expression as a principle of syntax. *Journal of Language Modelling*, 3(2):377–412.
- Dalrymple, Mary, Kaplan, Ronald M., Maxwell III, John T., and Zaenen, Annie, editors (1995). *Formal issues in Lexical-Functional Grammar*. CSLI Publications, Stanford.
- Dalrymple, Mary, Lamping, John, and Saraswat, Vijay (1993b). LFG semantics via constraints. In *Proceedings of the Sixth Conference on European Chapter of the Association for Computational Linguistics*, pages 97–105. Association for Computational Linguistics.
- Dalrymple, Mary, Lowe, John, and Mycock, Louise (forthcoming). *Lexical Functional Grammar*. 2nd edition.
- Dalrymple, Mary and Nikolaeva, Irina (2011). *Objects and information structure*. Number 131 in Cambridge studies in linguistics. Cambridge University Press, Cambridge ; New York.
- Déchaine, Rose-Marie (1993). Serial verb constructions. In Jacobs, Joachim, von Stechow, Arnim, and Vennemann, Theo, editors, *Syntax: Ein internationales Handbuch zeitgenössischer Forschung = An international handbook of contemporary research*, pages 799–825. Walter de Gruyter, Berlin; New York.
- Defina, Rebecca (2016). Do serial verb constructions describe single events?: A study of co-speech gestures in Avatime. *Language*, 92(4):890–910.
- Dempwolff, Otto (1939). *Grammatik der Jabem-Sprache auf Neuguinea*. Friederichsen, de Gruyter, Hamburg.
- Dempwolff, Otto (2005). *Otto Dempwolff's Grammar of the Jabem language in New Guinea (Bradshaw, J. and Czobor, F., Trans.)*. University of Hawai'i Press, Honolulu.
- Devos, Maud (2014). Motion verbs in Shangaci: Lexical semantics and discourse functions. In Devos, Maud and van der Wal, Jenneke, editors, *COME and GO off the Beaten Grammaticalization Path*, volume 272, pages 281–320. Walter de Gruyter.

- Diakonoff, Igor M. (1984). Letter to the conference regarding recent work in the USSR on the comparative historical vocabulary of Afrasian. In Bynon, James, editor, *Current progress in Afro-Asiatic linguistics*, pages 1–10. Benjamins, Amsterdam.
- Diller, Anthony VN (2006). Thai serial verbs: Cohesion and culture. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 160–177. Oxford University Press, Oxford; New York.
- Dingemans, Mark (2012). Advances in the cross-linguistic study of ideophones. *Language and Linguistics Compass*, 6(10):654–672.
- Dixon, Robert M. W. (1988). *A grammar of Boumaa Fijian*. University of Chicago Press.
- Dixon, Robert M. W. (2006a). Complement clauses and complementation strategies in typological perspective. In Dixon, Robert M.W. and Aikhenvald, Alexandra Y., editors, *Complementation: A cross-linguistic typology*, pages 1–48. Oxford University Press, Oxford.
- Dixon, Robert M. W. (2006b). Serial Verb Constructions: Conspectus and Coda. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 338–350. Oxford University Press, Oxford; New York.
- Dorvlo, Kofi (2008). *A grammar of Logba (Ikpana)*. PhD dissertation, Netherlands Graduate School of Linguistics (LOT), Leiden University.
- Duncan, Lachlan (2007). Analytic noun incorporation in Chuj and K'ichee' Mayan. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG07 Conference*, pages 163–183. CSLI Publications.
- Durie, Mark (1988). Verb serialization and “verbal-prepositions” in Oceanic languages. *Oceanic linguistics*, pages 1–23.
- Durie, Mark (1997). Grammatical structures in verb serialization. In Alsina, Alex, Bresnan, Joan, and Sells, Peter, editors, *Complex predicates*, pages 289–354. CSLI Publications, Stanford.
- Enfield, N.J. (2002). Cultural logic and syntactic productivity: Associated posture constructions in Lao. In Enfield, N.J., editor, *Ethnosyntax*, pages 231–258. Oxford University Press, Oxford.
- Enfield, N.J. (2008). Verbs and multi-verb constructions in Lao. In Diller, A.V., Edmondson, J.A., and Luo, Y., editors, *The Tai-Kadai Languages*, pages 83–183. Routledge, London.
- Enfield, N.J. (2009). Review of the book *Serial verb constructions: A cross-linguistic typology* ed. by Alexandra Y. Aikhenvald and R. M. W. Dixon. *Language*, 85(2):445–451.
- Essegbey, James (2004). Auxiliaries in serialising languages: On COME and GO verbs in Sranan and Ewe. *Lingua*, 114(4):473–494.
- Falk, Yehuda N. (1984). The English auxiliary system: A lexical-functional analysis. *Language*, pages 483–509.
- Falk, Yehuda N. (2001). *Lexical-Functional Grammar: An introduction to parallel constraint-based syntax*. CSLI Publications, Stanford.
- Falk, Yehuda N. (2008). Functional relations in the English auxiliary system. *Linguistics*, 46(5):861–889.
- Fedden, Sebastian (2011). *A grammar of Mian, a Papuan language of New Guinea*. de Gruyter Mouton, Berlin/Boston.

- Filbeck, David (1975). A grammar of verb serialization in Thai. In Harris, J.G. and Chamberlain, J.R., editors, *Studies in Tai linguistics in honor of William J. Gedney*, pages 112–129. Central Institute of English Language.
- Findlay, Jamie (2016a). Mapping theory without argument structure. *Journal of Language Modelling*, 4(2):293–338.
- Findlay, Jamie (2016b). The prepositional passive in Lexical Functional Grammar. In Arnold, Doug, Butt, Miriam, Crysmann, Berthold, King, Tracy Holloway, and Muller, Stefan, editors, *Proceedings of the Joint 2016 Conference on Head-driven Phrase Structure Grammar and Lexical Functional Grammar*, pages 255–275.
- Foley, William A. (1997). Polysynthesis and complex verb formation: The case of applicatives in Yimas. In Alsina, Alex, Bresnan, Joan, and Sells, Peter, editors, *Complex predicates*, pages 355–395. CSLI Publications, Stanford.
- Foley, William A. (2008). The notion of ‘event’ and serial verb constructions: Arguments from New Guinea. In Khanittanan, Wilaiwan and Sidwell, Paul, editors, *Papers from the 14th meeting of the Southeast Asian Linguistics Society 2004*, pages 129–156.
- Foley, William A. (2010). Events and serial verb constructions. In Amberber, Mengistu, Baker, Brett, and Harvey, Mark, editors, *Complex predicates: Cross-linguistic perspectives on event structure*, pages 79–109. Cambridge University Press, New York.
- Foley, William A. and Olson, Mike (1985). Clausehood and verb serialization. In Nichols, Johanna and Woodbury, Anthony C, editors, *Grammar inside and outside the clause*, pages 17–60. Cambridge University Press, Cambridge.
- Foley, William A. and Van Valin, Robert D. (1984). *Functional syntax and universal grammar*. Number 38 in Cambridge studies in linguistics. Cambridge University Press, Cambridge ; New York.
- Fortis, Jean-Michel and Vittrant, Alice (2016). Path-expressing constructions: Toward a typology. *STUF-Language Typology and Universals*, 69(3):341–374.
- Frajzyngier, Zygmunt (1977a). On the intransitive copy pronouns in Chadic. *Studies in African Linguistics*, Supplement 7:73–84.
- Frajzyngier, Zygmunt (1977b). The plural in Chadic. In Newman, Paul and Ma Newman, Roxana, editors, *Papers in Chadic linguistics*, pages 37–56. Afrika-Studiecentrum, Leiden.
- Frajzyngier, Zygmunt (1989). *A grammar of Pero*. Reimer, Berlin.
- Frajzyngier, Zygmunt (1993). *A grammar of Mupun*. Reimer, Berlin.
- Frajzyngier, Zygmunt (1996). *Grammaticalization of the complex sentence: A case study in Chadic*. John Benjamins, Philadelphia.
- Frajzyngier, Zygmunt (2001). *A grammar of Lele*. CSLI Publications, Stanford, CA.
- Frajzyngier, Zygmunt (2002). *A grammar of Hdi*. Walter de Gruyter, Berlin.
- Frajzyngier, Zygmunt (2012). *A grammar of Wandala*. De Gruyter Mouton, Berlin.
- Frajzyngier, Zygmunt (2018). Locative predication in Chadic. In *Afroasiatic: Data and perspectives*, pages 203–234. John Benjamins.

- Frajzyngier, Zygmunt and Shay, Erin (2012). Chadic. In Frajzyngier, Zygmunt and Shay, Erin, editors, *The Afroasiatic languages*, pages 236–341. Cambridge University Press, Cambridge; New York.
- Francis, Elaine J. and Matthews, Stephen (2006). Categoriality and object extraction in Cantonese serial verb constructions. *Natural Language & Linguistic Theory*, 24(3):751–801.
- Frank, Anette (1996). A note on complex predicate formation: Evidence from auxiliary selection, reflexivization and past participle agreement in French and Italian. *Proceedings of the LFG96 Conference*.
- Fukui, Naoki (1986). *A theory of category projection and its applications*. PhD dissertation, Massachusetts Institute of Technology.
- George, Isaac (1975). Typology of verb serialization. *Journal of West African Languages*, 10(1):78–97.
- George, Isaac (1976). Verb serialization and lexical decomposition. *Studies in African Linguistics*, Supplement 6:63–72.
- Givón, Talmy (1991a). Serial verbs and the mental reality of “event”: Grammatical vs. cognitive packaging. In Traugott, Elizabeth Closs and Heine, Bernd, editors, *Approaches to grammaticalization*, pages 81–128. John Benjamins, Amsterdam/Philadelphia.
- Givón, Talmy (1991b). Some substantive issues concerning verb serialization: Grammatical vs. cognitive packaging. In Lefebvre, Claire, editor, *Serial Verbs: Grammatical, Comparative and Cognitive Approaches*, pages 137–184. John Benjamins, Amsterdam.
- Goddard, Cliff (1988). Verb serialisation and the circumstantial construction in Yankunytjatjara. In Austin, Peter, editor, *Complex Sentence Constructions in Australian Languages*, Typological Studies in Language, pages 177–192. John Benjamins.
- Good, Jeffrey (2003). *Strong linearity: Three case studies towards a theory of morphosyntactic templatic constructions*. PhD dissertation, University of California, Berkeley.
- Green, Rebecca (1995). *A grammar of Gurr-goni*. PhD dissertation, Australian National University.
- Grotzfeld, Heinz (1965). *Syrisch-Arabisch grammatik*. O. Harrassowitz, Wiesbaden.
- Guillaume, Antoine (2013). Algunas reflexiones sobre las construcciones de verbos seriales ‘continguas e incorporantes’ y el sistede movimiento asociado en cavineña. In Ospina Bozzi, A.M., editor, *Expresión de nociones espaciales en lenguas amazónicas*, pages 17–37. Instituto Caro y Cuervo, Bogotá.
- Guillaume, Antoine (2016). Associated motion in South America: Typological and areal perspectives. *Linguistic Typology*, 20(1):81–177.
- Hagège, Claude (1973). *Profil d’un parler arabe du Tchad*. Geuthner, Paris.
- Hajek, John (2006). Serial verbs in Tetun Dili. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial Verb Constructions: A Cross-Linguistic Typology*, pages 239–253. Oxford University Press.
- Hale, Ken (1991). Misumalpan verb sequencing constructions. In Lefebvre, Claire, editor, *Serial verbs: Grammatical, comparative and cognitive approaches*, pages 1–35. John Benjamins, Amsterdam.

- Halvorsen, Per-Kristian and Kaplan, Ronald M (1988). Projections and semantic description in Lexical-Functional Grammar. In *Proceedings of the International Conference on Fifth Generation Computer Systems*, pages 1116–1122, Tokyo. Institute for New Generation Computer Technology. Also published in Mary Dalrymple, Ronald M. Kaplan, John T. Maxwell III and Annie Zaenen (eds.) 1995. *Formal Issues in Lexical-Functional Grammar*, 279–292, CSLI Publications.
- Hamel, Patricia J (1993). Serial verbs in Loniu and an evolving preposition. *Oceanic linguistics*, pages 111–132.
- Hammarström, Harald (2010). The status of the least documented language families in the world. *Language Documentation & Conservation*, 4:177–212.
- Hammarström, Harald, Forkel, Robert, and Haspelmath, Martin (2017). *Glottolog 3.0*. Max Planck Institute for the Science of Human History, Jena. Available online at <http://glottolog.org>, Accessed on 2017-09-26.
- Haspelmath, Martin (2010). Comparative concepts and descriptive categories in crosslinguistic studies. *Language*, 86(3):663–687.
- Haspelmath, Martin (2016). The serial verb construction: Comparative concept and cross-linguistic generalizations. *Language and Linguistics*, 17(3):291–319.
- Haspelmath, Martin and Buchholz, Oda (1998). Equative and similative constructions in the languages of Europe. In van der Auwera, Johan, editor, *Adverbial constructions in the languages of Europe*, pages 277–334. Mouton de Gruyter, Berlin.
- Hazlewood, David (1850). *A Feejeean and English dictionary: With examples of common and peculiar modes of expression and uses of words. Also containing brief hints on native customs, proverbs, the native names of the natural production of the islands, notices of the islands of Feejee, and a list of foreign words introduced*. Wesleyan Mission Press, Vewa, Fiji.
- Heine, Bernd (1993). *Auxiliaries: Cognitive forces and grammaticalization*. Oxford University Press.
- Heine, Bernd and Kuteva, Tania (2002). *World lexicon of grammaticalization*. Cambridge University Press.
- Hellwig, Birgit (2006). Serial verb constructions in Goemai. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 88–107. Oxford University Press, Oxford; New York.
- Hellwig, Birgit (2011). *A grammar of Goemai*. De Gruyter Mouton, Berlin; Boston.
- Himmelman, Nikolaus P. and Ladd, D. Robert (2008). Prosodic description: An introduction for fieldworkers. *Language Documentation & Conservation*, 2(2).
- Hiraiwa, Ken and Bodom, Adams (2008). Object-sharing as symmetric sharing: Predicate clefting and serial verbs in Dàgáàrè. *Natural Language & Linguistic Theory*, 26(4):795–832.
- Hoffman, Carl (1963). *A grammar of the Margi language*. Oxford University Press, London.
- Hong, Young Yeah (2014). Non-serializing approach to the so-called serial verb constructions in Korean. *Hyeon-dae-mun-beo-byeon-gu*, 81:43–63.
- Hopper, Paul J and Traugott, Elizabeth Closs (2003). *Grammaticalization*. Cambridge University Press.

- Huang, Churen and Chang, Shen-ming (1996). Metaphor, metaphorical extension and grammaticalization: A study of Mandarin Chinese *-qilai*. In Goldberg, Adele E., editor, *Conceptual Structure, Discourse, and Language*, pages 201–216. CSLI Publications, Stanford.
- Hussein, Lutfi (1990). Serial verbs in colloquial Arabic. In Joseph, Brian D. and Zwicky, Arnold M., editors, *When verbs collide: Papers from the Ohio State Mini-Conference on Serial Verbs*, pages 340–354. Ohio State University.
- Hyman, Larry M. (1971). Consecutivization in Fe<sup>3</sup>fe<sup>3</sup>. *Journal of African Languages*, 10(2):29–43.
- Hyslop, Catriona (2001). *The Lolovoli dialect of the North-East Ambae language, Vanuatu*. Pacific Linguistics, Canberra.
- Jackendoff, Ray (1977). *X̄ syntax: A study of phrase structure*. Number 2 in Linguistic Inquiry Monographs. MIT Press, Cambridge.
- Jackendoff, Ray (1990). *Semantic structures*. MIT press.
- Jacob, June A and Grimes, Charles E (2011). Aspect and directionality in Kupang Malay serial verb constructions: Calquing on the grammars of substrate languages. In Lefebvre, Claire, editor, *Creoles, their substrates, and language typology*, pages 337–366. John Benjamins.
- Jaggar, P.J. (2006). Chadic languages. In Brown, Keith and Ogilvie, Sarah, editors, *Concise Encyclopedia of Languages of the World*, pages 206–208. Elsevier, Oxford.
- Jansen, Bert, Koopman, Hilda, and Muysken, Pieter (1978). Serial verbs in the Creole languages. *Amsterdam Creole Studies*, 2:125–159.
- Jarkey, Nerida (1991). *Serial verbs in White Hmong: A functional approach*. PhD dissertation, University of Sydney.
- Jarkey, Nerida (2010). Cotemporal serial verb constructions in White Hmong. In Amberber, Mengistu, Baker, Brett, and Harvey, Mark, editors, *Complex predicates: Cross-linguistic perspectives on event structure*, pages 110–134. Cambridge University Press, New York.
- Jarkey, Nerida (2015). *Serial verbs in White Hmong*. Brill.
- Jensen, Cheryl (1999). Tupí-Guaraní. In Dixon, R.M.W. and Aikhenvald, Alexandra, editors, *The Amazonian languages*, pages 125–163. Cambridge University Press, Cambridge.
- Jensen, Joshua (2014). *Jarai clauses and noun phrases syntactic structures in an Austronesian language*. De Gruyter Mouton.
- Jullien de Pommerol, Patrice (1999). *Grammaire pratique de l'arabe tchadien*. Karthala, Paris.
- Jungraithmayr, Herrmann (1972). Chadic newsletter, vol. 4. West African Linguistic Society. Available online at <https://chadicnewsletter.wordpress.com/download/>.
- Jungraithmayr, Herrmann (1973). Chadic newsletter, vol. 5. West African Linguistic Society. Available online at <https://chadicnewsletter.wordpress.com/download/>.
- Jungraithmayr, Herrmann (1977). Apophony and grammatical tone in the tense system of Chadic languages. *Afrika and Übersee*, 60:79–82.
- Jungraithmayr, Herrmann (1992). On vowel systems in Chadic: A typological overview. *Folia Orientalia*, 29:119–129.
- Jungraithmayr, Herrmann (2012). Chadic. In Edzard, Lutz, editor, *Semitic and Afroasiatic: Challenges and Opportunities*, pages 296–368. Harrassowitz Verlag, Wiesbaden.

- Jungraithmayr, Herrmann and Möhling, Wilhelm J.G. (1983). *Lexikon der Afrikanistik: Afrikanische Sprachen und ihre Erforschung*. Dietrich Reimer.
- Jungraithmayr, Herrmann and Tourneux, Henry, editors (1987). *Études tchadiques, Classes et extensions verbales*. Geuthner, Paris.
- Jungraithmayr, Herrmann and Tourneux, Henry, editors (1990). *Études tchadiques: Verbes monoradicaux suivis d'une note sur la negation en haoussa*. Librairie Orientaliste Paul Geuthner, Paris.
- Kaplan, Ronald M (1987). Three seductions of computational psycholinguistics. In Whitelock, Peter, McGee Wood, Mary, Somers, Harold L., Johnson, Rod, and Bennett, Paul, editors, *Linguistic Theory and Computer Applications*, pages 149–181. Academic Press, London. Also published in Mary Dalrymple, Ronald M. Kaplan, John T. Maxwell III and Annie Zaenen (eds.) 1995. *Formal Issues in Lexical-Functional Grammar*, 339–367, CSLI Publications.
- Kaplan, Ronald M. (1989). The Formal Architecture of Lexical-Functional Grammar. In Huang, Chu-Ren and Chen, Keh-Jiann, editors, *ROCLING II: Proceedings of the Computational Linguistics Conference*, pages 3–18. The Association for Computational Linguistics and Chinese Language Processing (ACLCLP), Tapei. Also published in 1989. *Journal of Information Science and Engineering* 5. 305–322, and in Mary Dalrymple, Ronald M. Kaplan, John T. Maxwell III and Annie Zaenen (eds.) 1995. *Formal Issues in Lexical-Functional Grammar*, 7–27, CSLI Publications.
- Kaplan, Ronald M and Bresnan, Joan (1982). Lexical-Functional Grammar: A formal system for grammatical representation. In Bresnan, Joan, editor, *The mental representation of grammatical relations*, pages 29–130. MIT Press.
- Kaplan, Ronald M and Maxwell, John T. III (1996). Grammar writer's workbench. Technical Report, Xerox PARC.
- Kaplan, Ronald M. and Zaenen, Annie (2003). West-Germanic verb clusters in LFG. In Seuren, Pieter A. M. and Kempen, Gerard, editors, *Verb constructions in German and Dutch*, pages 127–150. John Benjamins, Amsterdam/Philadelphia.
- Kibort, Anna (2004). *Passive and passive-like constructions in English and Polish*. PhD Dissertation, University of Cambridge.
- Kibort, Anna (2010). Towards a typology of grammatical features. In Kibort, Anna and Corbett, Greville G., editors, *Features: Perspectives on a key notion in linguistics*, pages 64–106. Oxford University Press, Oxford ; New York.
- Kibort, Anna (2014). Mapping out a construction inventory with (Lexical) Mapping Theory. In Butt, Miriam and Holloway King, Tracy, editors, *Proceedings of the LFG14 Conference*. CSLI Publications, Stanford.
- Kießling, Roland (2011). *Verbal serialisation in Isu (West-Ring) – a Grassfields language of Cameroon*. Köppe, Köln.
- Kilian-Hatz, Christa (2006). Serial verb constructions in Khwe (Central-Khoisan). In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 108–123. Oxford University Press.
- Kim, Jong Bok (2010). Argument composition in Korean serial verb constructions. *Hyeon-daemun-beo-byeon-gu*, 61:1–24.

- Kiparsky, Paul (2002). Event structure and the perfect. In Beaver, David, Casillas Martinez, Luis, Clark, Brady, and Kaufmann, Stefan, editors, *The construction of meaning*, pages 113–135. CSLI Publications.
- Koch, Harold (1984). The category of ‘associated motion’ in Kaytej. *Languages in Central Australia*, 1:23–34.
- Kornai, Andras and Pullum, Geoffrey K (1990). The X-bar theory of phrase structure. *Language*, pages 24–50.
- Kroeger, Paul (2004). *Analyzing syntax: A lexical-functional approach*. Cambridge University Press, Cambridge; New York.
- Kuhn, Jonas (2001). Resource sensitivity in the syntax-semantics interface and the German split NP construction. In Meurers, W. Detmar and Kiss, Tibor, editors, *Constraint-based approaches to Germanic syntax*, pages 75–117. CSLI Publications, Stanford, CA.
- Kuteva, Tania A (1999). On ‘sit’/‘stand’/‘lie’ auxiliation. *Linguistics*, 37(2):191–213.
- Lambert-Brétière, Renée (2009). Serializing languages as satellite-framed: The case of Fon. *Annual Review of Cognitive Linguistics*, 7(1):1–29.
- Lambert-Brétière, Renée (2010). Séries verbales: Le critère de la négation revisité. In Floricic, Frank and Lambert-Brétière, Renée, editors, *La négation et les énoncés non susceptibles d’être niés*, pages 211–223. Éditions du CNRS, Paris.
- Lane, Jonathan (2007). *Kalam serial verb constructions*. Pacific Linguistics, Research School of Pacific and Asian Studies, The Australian National University. [1991 MA thesis].
- Laniran, Y. and Sonaiya, O. (1987). Problems in the syntax and semantics of serial verb constructions in Niger-Congo: The Yoruba example. paper presented at the 1st Niger-Congo Syntax and Semantics Workshop, Boston University, April 1987.
- Lanz, Linda A (2009). Diachrony of complex predicates in Japanese. *Rice Working Papers in Linguistics*, 1.
- Larson, Richard K. (1991). Some issues in verb serialization. In Lefebvre, Claire, editor, *Serial Verbs: Grammatical, comparative and cognitive approaches*, pages 185–211. John Benjamins, Amsterdam; Philadelphia.
- Lauck, Linda M (1976). Patep sentences. *Workpapers in Papua New Guinea languages*, 17:5–122.
- Lee, Sookhee (1992). *The syntax and semantics of serial verb constructions*. University of Washington.
- Lefebvre, Claire, editor (1991a). *Serial verbs: Grammatical, comparative and cognitive approaches*, volume 8. John Benjamins.
- Lefebvre, Claire (1991b). Take serial verb constructions in Fon. In Lefebvre, Claire, editor, *Serial Verbs: Grammatical, Comparative and Cognitive Approaches*, pages 37–78. John Benjamins, Amsterdam.
- van Leynseele, Hélène (1975). Restrictions on serial verbs in Anyi. *Journal of West African Languages*, 10(2).
- Li, Charles N. and Thompson, Sandra A. (1973). Serial verb constructions in Mandarin Chinese: Co-ordination or subordination? In *You Take the High Node and I’ll Take the Low Node: Papers from the Comparative Syntax Festival*, pages 96–103, Chicago. Chicago Linguistic Society.

- Li, Charles N. and Thompson, Sandra A. (1974). Co-verbs in Mandarin Chinese: Verbs or prepositions? *Journal of Chinese Linguistics*, 2(3):257–278.
- Li, Yafei (1991). On deriving serial verb constructions. In Lefebvre, Claire, editor, *Serial Verbs: Grammatical, Comparative and Cognitive Approaches*, pages 103–35. John Benjamins, Amsterdam.
- Li, Yafei (1993). Structural head and aspectuality. *Language*, 69(3):480–504.
- Lichtenberk, Frantisek (2006). Serial verb constructions in Toqabaqita. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 254–272. Oxford University Press.
- Lødrup, Helge (2014). How can a verb agree with a verb? Reanalysis and pseudocoordination in Norwegian. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG14 Conference*. CSLI Publications.
- Lord, Carol (1973). Serial verbs in transition. *Studies in African Linguistics*, 4(3):269–296.
- Lord, Carol (1974). Causative constructions in Yoruba. *Studies in African Linguistics*, Supplement 5:195–204.
- Lord, Carol (1975). Igbo verb compounds and the lexicon. *Studies in African linguistics*, 6(1):23.
- Lord, Carol (1993). *Historical change in serial verb constructions*, volume 26 of *Typological studies in language*. John Benjamins, Amsterdam/Philadelphia.
- Lovestrand, Joseph (2011). The dialects of Baraïn (East Chadic). *SIL Electronic Working Papers*, 2011-011.
- Lovestrand, Joseph (2012a). Classification and description of the Chadic languages of the Guéra (East Chadic B). *SIL Electronic Working Papers*, 2012-004.
- Lovestrand, Joseph (2012b). The linguistic structure of Baraïn (Chadic). MA thesis, Graduate Institute of Applied Linguistics.
- Lovestrand, Joseph (2017). The influence of Chadian Arabic on Barayin. Presented at the Cambridge Endangered Languages and Cultures Group (CELC) Postgraduate Workshop, University of Cambridge, July 3.
- Lovestrand, Joseph (2018a). The plural addressee marker and grammaticalization in Barayin. *Journal of Afroasiatic Languages and Linguistics*, 10(1).
- Lovestrand, Joseph (2018b). The background marker *na* in Barayin. *Journal of African Languages and Linguistics*, 39(1).
- Lovestrand, Joseph and Lowe, John J. (2017). Minimal c-structure: Rethinking projection in phrase structure. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG17 Conference*, pages 285–305, Stanford, CA. CSLI Publications.
- Lovestrand, Joseph and Ross, Daniel (2017). Serial verb constructions and the semantics of associated motion. Presented at the workshop on Associated Motion, 12th Conference of the Association for Linguistic Typology (ALT), Canberra, Australia, December 15.
- Lowe, John J. (2014). Gluing meanings and semantic structures. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG14 Conference*. CSLI Publications.

- Lowe, John J (2015). *Participles in Rigvedic Sanskrit: The syntax and semantics of adjectival verb forms*. Oxford University Press.
- Lowe, John J (2016). Complex predicates: An LFG+glue analysis. *Journal of Language Modelling*, 3(2):413–462.
- Lukas, Johannes (1937). *Zentralsudanische Studien*. Wörterverzeichnisse der Deutschen Zentral-Afrika-Expedition 1910-11, nachgelassene Aufnahmen von Gustav Nachtigal und eigene Sammlungen. Hansische Universität Abhandlungen aus dem Gebiet der Auslandskunde 45, Reihe B, Band 24. de Gruyter, Hamburg.
- Maass, Antje, Grant, Caroline, Huey, Paul, and Dakouli, Padeu (1996). *Rapport d'enquête sociolinguistique : Première évaluation parmi les Baraïn du Guéra*. SIL, N'Djamena, Chad. 2008 version: Available online at <http://sil.org/silesr/2008/silesr2008-004.pdf>.
- Manfredi, Stefano and Petrollino, Sara (2013). Juba Arabic. In Michaelis, Susanne Maria, Maurer, Philippe, Haspelmath, Martin, and Huber, Magnus, editors, *The survey of Pidgin and Creole Languages: Contact languages based on languages from Africa, Australia, and the Americas*, volume III, pages 54–65. Oxford University Press.
- Manning, Christopher (1992). *Romance is so complex*. Technical Report CSLI-92-168. CSLI Publications, Stanford.
- Massam, Diane (2013). Nuclear complex predicates in Niuean. *Lingua*, 135:56–80.
- Matsumoto, Yo (1996). *Complex predicates in Japanese: A syntactic and semantic study of the notion 'word'*. CSLI Publications ; Kurocio Publishers, Stanford; Tokyo.
- Matthews, Stephen (2006). On serial verb constructions in Cantonese. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 69–87. Oxford University Press, Oxford; New York.
- Meakins, Felicity (2010). The development of asymmetrical serial verb constructions in an Australian mixed language. *Linguistic Typology*, 14(1):1–38.
- Meyerhoff, Miriam (2001). Another look at the typology of serial verb constructions: The grammaticalization of temporal relations in Bislama (Vanuatu). *Oceanic Linguistics*, 40(2):247–268.
- Mitchell, Terence Frederick (1978). *An introduction to Egyptian Colloquial Arabic*. Oxford University Press.
- Muansuwan, Nuttanart (2001). Directional serial verb constructions in Thai. In Flickinger, Dan and Kathol, Andreas, editors, *Proceedings of the 7th International HPSG Conference*, pages 229–246. CSLI Publications.
- Muysken, Pieter (1982). Parameterizing the notion 'head'. *Journal of Linguistic Research*.
- Muysken, Pieter (1988). Parameters for serial verbs. In Manfredi, Victor, editor, *Niger-Congo Syntax and Semantics 1*, pages 65–75. Boston University African Studies Center, Boston.
- Muysken, Pieter and Veenstra, Tonjes (1994). Serial verbs. In Arends, Jacques, Muysken, Pieter, and Smith, Norcal, editors, *Pidgins and Creoles: An introduction*, pages 289–302. John Benjamins.
- Muysken, Pieter and Veenstra, Tonjes (2006). Serial verbs. In Everaert, Martin and van Riemsdijk, Henk, editors, *The Blackwell Companion to Syntax*, volume 4, page 234–270. Blackwell, Oxford.

- Newman, John, editor (2002). *The linguistics of sitting, standing and lying*. John Benjamins.
- Newman, Paul (1968). Ideophones from a syntactic point of view. *Journal of West African Languages*, 2:107–117.
- Newman, Paul (1971). Transitive and intransitive in chadic languages. In Six, Veronika, Cyffer, Norbert, Wolff, Ekkehard, Gerhardt, Ludwig, and Meyer-Bahlburg, Hilke, editors, *Afrikanische Sprachen und Kulturen: Ein Querschnitt (Festschrift J. Lukas)*, pages 188–200. Deutsches Institut für Afrika-Forschung, Hamburg.
- Newman, Paul (1977). Chadic classification and reconstructions. *Afroasiatic Linguistics*, 5(1):1–42.
- Newman, Paul (1978). Chado-Hamitic “adieu”: New thoughts on Chadic language classification. In Fronzaroli, Pelio, editor, *Atti del Secondo Congresso Internazionale di Linguistica Camito-Semitica*, pages 389–397. Instituto de Linguistica e di Lingue Orientali, Università di Firenze, Florence.
- Newman, Paul (1980). *The classification of Chadic within Afroasiatic*. Universitaire Pers Leiden, Leiden.
- Newman, Paul (2006). Comparative Chadic revisited. In Newman, Paul and Hyman, Larry, editors, *West African linguistics: Papers in honor of Russell G. Schuh*, pages 188–202. Ohio State University, Columbus.
- Niño, Maria-Eugenia (1997). The multiple expression of inflectional information and grammatical architecture. In Corblin, Francis, Godard, Danièle, and Marandin, Jean-Marie, editors, *Empirical issues in formal syntax and semantics*. Peter Lang, Bern.
- Nishiyama, Kunio (1998). V-V compounds as serialization. *Journal of East Asian Linguistics*, 7(3):175–217.
- Nordinger, Rachel (1998). *Constructive case: Evidence from Australian languages*. CSLI Publications, Stanford.
- Nordlinger, Rachel (1998). *A grammar of Wambaya, Northern Australia*, volume 140. Pacific Linguistics.
- Nordlinger, Rachel (2010). Complex predicates in Wambaya: Detaching predicate composition from syntactic structure. In Amberber, Mengistu, Baker, Brett, and Harvey, Mark, editors, *Complex predicates: Cross-linguistic perspectives on event structure*, pages 237–258. Cambridge University Press.
- Nordlinger, Rachel (2012). Number marking in the Daly languages (Australia). In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG12 Conference*, pages 422–439. CSLI Publications.
- Nordlinger, Rachel (2014). Serial verbs in Wambaya. In Pensalfini, Rob, Turpin, Myfany, and Guillemin, Diana, editors, *Language Description Informed by Theory*, pages 263–282. John Benjamins, Amsterdam.
- Nyampong, Beatrice Owusua (2015). *Serial verb constructions in Krio and Akan*. MA thesis, Norwegian University of Science and Technology.
- Osam, E. Kweku (2003). An introduction to the verbal and multi-verbal system of Akan. In Beer-mann, Dorothee and Hellan, Lars, editors, *Proceedings of the Workshop on Multi-Verb Constructions*.

- Owens, Melanie (2011). *Serial verb constructions: Argument structural uniformity and event structural diversity*. PhD dissertation, Stanford University.
- Oyelaran, Olosope (1982). On the scope of the serial verb construction in Yoruba. *Studies in African Linguistics*, 13(2):109–146.
- Pan, Yanhong (2010). *On the verb phrase in Qinzhou Zhuang: An LFG analysis of serial verb constructions*. PhD dissertation, The University of Hong Kong.
- Pearce, Mary (2006). The interaction between metrical structure and tone in Kera. *Phonology*, 23(2):259–286.
- Pike, Kenneth (1966). *Tagmemic and matrix linguistics applied to selected African languages*. SIL International.
- Pinker, Steven (1989). *Learnability and cognition: The Acquisition of argument structure*. MIT Press.
- Polinsky, Maria (1999). Review of “Information structure and sentence form: Topic, focus, and the mental representation of discourse referents” by Knud Lambrecht. *Language*, 75(3):567–582.
- Pospíšil, Adam (2017). *Serial verb constructions in Arabic*. MA thesis, Univerzita Karlova.
- Przepiórkowski, Adam (2016). How not to distinguish arguments from adjuncts in LFG. In Arnold, Doug, Butt, Miriam, Crysmann, Berthold, King, Tracy Holloway, and Muller, Stefan, editors, *Proceedings of the Joint 2016 Conference on Head-driven Phrase Structure Grammar and Lexical Functional Grammar*, pages 560–580. CSLI Publications.
- Przepiórkowski, Adam (2017). Hierarchical lexicon and the argument/adjunct distinction. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG17 Conference*, pages 348–367. CSLI Publications, Stanford, CA.
- van Putten, Saskia (2009). *Talking about motion in Avatime*. MA thesis, Leiden University.
- van Putten, Saskia (2017). Motion in serializing languages revisited: The case of Avatime. *STUF – Language Typology and Universals*, 70:303–329.
- de Rendinger, Général (1949). Contribution à l’étude des langues nègres du Centre-africain. *Journal de la Société des Africanistes*, 19(2):143–194.
- Riis, Hans Nicolaus (1853). *Elemente des Akwapim-Dialects der Odschi-Sprache, enthaltend grammatische Grundzüge und Wörtersammlung nebst Sammlung von Sprüchwörtern der Eingeborenen*. Bahnmaier, Basel.
- Riis, Hans Nicolaus (1854). *Grammatical outline and vocabulary of the Oji-language, with especial reference to the Akwapim-dialect, together with a collection of proverbs of the natives*. Bahnmaier, Basel.
- Rákosi, György (2006). On the need for a more refined approach to the argument-adjunct distinction: The case of dative experiencers in Hungarian. In Butt, Miriam and King, Tracy Holloway, editors, *Proceedings of the LFG06 Conference*. CSLI Publications.
- Roberts, James (2001). Phonological features of Central Chadic languages. In Mutaka, Ngessimo and Chumbow, Sammy, editors, *Research mate in African linguistics*, pages 93–118. Rüdiger Köppe, Köln.
- Rose, Françoise (2015). Associated motion in Mojeño Trinitario: Some typological considerations. *Folia Linguistica*, 49(1):117–158.

- Ross, Daniel (2017). Pseudocoordination, multiple agreement constructions, and morphological variation. Presented at the Workshop on Pseudo-Coordination and Multiple Agreement Constructions, Venice, Italy.
- Roth, Arlette (1979). *Esquisse grammaticale du parler arabe d'Abbéché, Tchad*. Atlas Linguistique du Monde Arabe. Geuthner, Paris.
- Ruhlen, Merritt (1991). *A guide to the world's languages: Classification, vol. 1*. Stanford University Press, Stanford.
- Sadler, Louisa (2010). Indeterminacy, complex features and underspecification. *Morphology*, 21(2):379–417.
- Sadler, Louisa and Arnold, Douglas J (1994). Prenominal adjectives and the phrasal/lexical distinction. *Journal of linguistics*, 30(1):187–226.
- Schachter, Paul (1974a). A non-transformational account of serial verbs. *Studies in African Linguistics*, Supplement 5:253–270.
- Schachter, Paul (1974b). Serial verbs as verbs: A reply to a reply. *Studies in African Linguistics*, Supplement 5:278–282.
- Schaefer, Ronald (1986). Lexicalizing directional and nondirectional motion in Emai. *Studies in African Linguistics*, 17(2):177–198.
- Schalley, Andrea C (2003). A cross-linguistic comparison of the event-structure of FETCH: Possible coding alternatives and their realizations. *Views & Voices—Inquiries into the English Language and Literature*, 1(2):69–92.
- Schiller, Eric (1989). On the phrase structure of serial verb constructions. In Wiltshire, Caroline, Graczyk, Randolph, and Music, Bradley, editors, *CLS 25: Papers from the 25th Annual Regional Meeting of the Chicago Linguistic Society*, pages 405–419. Chicago Linguistic Society.
- Schuchardt, Hugo (1914). *Die Sprache der Saramakkaneger in Surinam*. Johannes Müller, Amsterdam.
- Schuchardt, Hugo (1980). The language of the Saramacca Negroes in Surinam (1914c, i-xxxvi). In Gilbert, Glenn G., editor, *Pidgin and Creole languages: Selected essays by Hugo Schuchardt*, pages 89–126. Cambridge University Press, New York. [Translation of Schuchardt (1914) from the German by Gilbert, Glenn G.].
- Schuh, Russell (1988). Tone rules. In Fromkin, Victoria A, editor, *Tone: A linguistic survey*, pages 221–256. Academic Press, New York.
- Schuh, Russell (1998). *A grammar of Miya*. University of California Press, Berkeley.
- Schuh, Russell (2003). Chadic overview. In Takács, Gábor, Appleyard, David, and Bender, M. Lionel, editors, *Selected comparative-historical Afrasian linguistic studies in memory of Igor M. Diakonoff*, pages 55–60. Lincom Europa, Munich.
- Schutz, Albert J (1980). *The Fijian language*. University of Hawaii Press, Honolulu.
- Sebba, Mark (1987). *The syntax of serial verbs: An investigation into serialisation in Sranan and other languages*. John Benjamins, Amsterdam; Philadelphia.
- Seiss, Melanie (2009). On the difference between auxiliaries, serial verbs and light verbs. In *Proceedings of the LFG09 Conference*, pages 501–519. CSLI Publications.

- Sells, Peter (2004). Syntactic information and its morphological expression. *Projecting Morphology*, pages 187–226.
- Seuren, Pieter A.M. (1981). Tense and aspect in Sranan. *Linguistics*, 19(11-12):1043–1076.
- Seuren, Pieter A.M. (1990). Serial verb constructions. In Joseph, Brian D. and Zwicky, Arnold M., editors, *When verbs collide: Papers from the Ohio State Mini-Conference on Serial Verbs*, pages 14–32. Ohio State University.
- Shay, Erin (1999). *A grammar of East Dangla: The simple sentence*. PhD dissertation, University of Colorado.
- Shibatani, Masayoshi (2009). On the form of complex predicates: Toward demystifying serial verbs. In Helmbrecht, Johannes, editor, *Form and function in language research*, pages 309–336. Mouton de Gruyter, Berlin.
- Shluinsky, Andrey (2017). An intragenetic typology of Kwa serial verb constructions. *Linguistic Typology*, 21(2):333–385.
- Shryock, Aaron (1997). The classification of the Masa group of languages. *Studies in African Linguistics*, 26(1).
- Simons, Gary and Fenning, Charles D., editors (2017). *Ethnologue: Languages of the world*. SIL International, Dallas, TX, 20 edition. Available online at <http://www.ethnologue.com>.
- Simons, Pamela (1982). Nè... be marking in Lele: A cleft construction. *Studies in African Linguistics*, 13:217–229.
- Simons Cope, Pamela and Burquest, Donald A. (1986). Some comments on nominalization in Lele. *Journal of West African Languages*, 16(2).
- Slobin, Dan (1996). Two ways to travel: Verbs of motion in English and Spanish. *Grammatical constructions: Their form and meaning*, pages 195–219.
- Slobin, Dan (2004). The many ways to search for a frog: Linguistic typology and the expression of motion events. In Strömquist, Sven and Verhoeven, Ludo, editors, *Relating events in narrative: Typological and contextual perspectives*, volume 2, pages 219–257. Psychology Press.
- Smith, Tony (2002). *The Muyang verb phrase*. SIL, Yaoundé, Cameroon.
- Smith, Tony (2003). *Definiteness, topicalisation and theme: Muyang narrative discourse markers*. SIL, Yaoundé, Cameroon.
- Sohn, DaeYoung (2008). Conditions on verbal serialization: Evidence from Korean. MA thesis, Seoul National University.
- Solnit, David B. (2006). Verb serialization in Eastern Kayah Li. In Aikhenvald, Alexandra Y. and Dixon, Robert M. W., editors, *Serial verb constructions: A cross-linguistic typology*, pages 144–159. Oxford University Press, Oxford; New York.
- Spencer, Andrew (2005). Case in Hindi. In *Proceedings of the LFG05 Conference*. CSLI Publications.
- Spencer, Andrew and Luís, Ana R. (2012). *Clitics: An introduction*. Cambridge textbooks in linguistics. Cambridge University Press, Cambridge ; New York.

- van Staden, Miriam and Reesink, G. (2008). Serial verb constructions in a linguistic area. In Senft, Gunter, editor, *Serial verb constructions in Austronesian and Papuan languages*, pages 17–54. Australian National University, Canberra.
- Stahlke, Herbert (1970). Serial verbs. *Studies in African Linguistics*, 1:60–99.
- Stahlke, Herbert (1974). Serial verbs as adverbs: A reply to Paul Schachter. *Studies in African Linguistics*, Supplement 5:271–277.
- Stewart, John (1963). Some restrictions on objects in Twi. *Journal of African Languages*, 2(2):145–149.
- Stewart, Osamuyimen Thompson (2001). *The serial verb construction parameter*. Outstanding dissertations in linguistics. Garland Pub, New York.
- Sudmuk, Cholthicha (2005). *The syntax and semantics of serial verb constructions in Thai*. PhD dissertation, The University of Texas at Austin.
- Sun, Jackson TS (2012). Complementation in Caodeng rGyalrong. *Language and Linguistics*, 13(3):471–498.
- Tai, James H.-Y. (1985). Temporal sequence and Chinese word order. In Haiman, John, editor, *Iconicity in Syntax: Proceedings of a Symposium on Iconicity in Syntax, Stanford, June 24-6, 1983*, pages 49–72. John Benjamins.
- Talmy, Leonard (1985). Lexicalization patterns: Semantic structure in lexical forms. *Language typology and syntactic description*, 3:57–149.
- Talmy, Leonard (1991). Path to realization: A typology of event conflation. In *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society: General session and parasession on the grammar of event structure*, pages 480–519.
- Talmy, Leonard (2000). *Toward a cognitive semantics*. MIT press.
- Talmy, Leonard (2008). Main verb properties and equipollent framing. In Guo, Jiansheng, Lieven, Elena, Budwig, Nancy, Ervin-Tripp, Susan, Nakamura, Keiko, and Ozcaliskan, Seyda, editors, *Crosslinguistic approaches to the psychology of language*, pages 389–402. Psychology Press, New York.
- Talmy, Leonard (2012). Main verb properties. *International Journal of Cognitive Linguistics*, 3(1):1–24.
- Thepkanjana, Kingkarn (1986). *Serial verb constructions in Thai*. PhD dissertation, University of Michigan.
- Toivonen, Ida (2001). *The phrase structure of non-projecting words*. PhD dissertation, Stanford University.
- Toivonen, Ida (2003). *Non-projecting words: A case study of Swedish particles*. Kluwer Academic.
- Tosco, Mauro (1995). A pidgin verbal system: The case of Juba Arabic. *Anthropological Linguistics*, pages 423–459.
- Tourneux, Henri (1990). La place du Masa dans la famille tchadique. In Mukarovzky, H, editor, *Proceedings of the Fifth International Hamito-Semitic Congress, Volume I: Hamito-Semitic, Berber, Chadic*, pages 249–260. Afro-Pub, Vienna.
- Van den Berg, René and Bachet, Peter (2006). *Vitu grammar sketch*. SIL.

- Veenstra, Tonjes (1996). *Serial verbs in Saramaccan: Predication and creole genesis*. PhD dissertation, Universiteit van Amsterdam.
- Velázquez-Castillo, Maura (2004). Serial verb constructions in Paraguayan Guarani. *International Journal of American Linguistics*, 70(2):187–214.
- Versteegh, Kees (1984). *Pidginization and creolization: The case of Arabic*. John Benjamins.
- Versteegh, Kees (2009). Serial verbs. *Encyclopedia of Arabic language and linguistics*, 4:195–199.
- Vittrant, Alice (2015). Expressing motion: The contribution of Southeast Asian languages with reference to East Asian languages. In Enfield, Nick J. and Comrie, Bernard, editors, *Languages of Southeast Asia: The state of the art*, pages 586–632. De Gruyter Mouton, Berlin.
- Voorhoeve, Jan (1975). Serial verbs in Creole. *unpublished paper presented at the Hawaii Pidgin and Creole conference*.
- Welmers, William (1973). *African language structures*. University of California Press, Berkeley.
- Westermann, Dietrich (1907). *Grammatik der Ewe-Sprache*. Dietrich Reimer, Berlin.
- Westermann, Dietrich (1930). *A study of the Ewe language*. Oxford University Press, London.
- Westermann, Dietrich and Bryan, M.A. (1952). *Languages of West Africa*. Handbook of African languages, part II. Oxford University Press for the International African Institute, London.
- Wilson, Stephen (1999). *Coverbs and complex predicates in Wagiman*. CSLI Publications.
- Wolff, Ekkehard (1977). Patterns in Chadic (and Afroasiatic?) verb base formations. In Newman, Paul and Ma Newman, Roxana, editors, *Papers in Chadic linguistics*, pages 37–56. Afrika-Studiecentrum, Leiden.
- Wolff, Ekkehard (1979). Grammatical categories of verb stems and the marking of mood, aktionsart and aspect in Chadic. *Afroasiatic Linguistics*, 6(5):161–208.
- Wolff, Ekkehard (1987). Consonant-tone interference in Chadic and its implications for a theory of tonogenesis in Afroasiatic. In Barreteau, Daniel, editor, *Colloques et séminaires: Langues et cultures dans le bassin du lac Tchad: Journées d'études les 4 et 5 septembre 1984*, pages 193–216. ORSTOM, Paris.
- Wolff, H. Ekkehard (2014). Chadic languages. In *Encyclopædia Britannica*, pages 296–368. Encyclopædia Britannica, Inc.
- Yeon, Janhoon and Brown, Lucien (2011). *Korean: A comprehensive grammar*. Routledge, Abingdon, UK.
- Zaenen, Annie (1983). On syntactic binding. *Linguistic Inquiry*, 14(3):469–504.
- Zimmermann, Johann (1858). *A grammatical sketch of the Akra- or Gã-language, with some specimens of it from the mouth of the natives and a vocabulary of the same, with an appendix on the Adanme dialect*, volume 1. J.F. Steinkopf for the Basel Mission Society, Stuttgart.
- Zlatev, Jordan and Yangklang, Peerapat (2004). A third way to travel: The place of Thai in motion event typology. In Strömquist, Sven and Verhoeven, Ludo, editors, *Relating events in narrative: Typological and contextual perspectives*, volume 2, pages 169–190. Psychology Press.
- Zwicky, Arnold (1990). What are we talking about when we talk about serial verbs? In Joseph, Brian D and Zwicky, Arnold M, editors, *When verbs collide: Papers from the Ohio State Mini-Conference on Serial Verbs*, pages 1–13. Ohio State University.