© 2015

Carlos Alfredo Fasola Palavecino

ALL RIGHTS RESERVED

TOPICS IN THE SYNTAX OF MAPUDUNGUN SUBORDINATE CLAUSES

by

CARLOS ALFREDO FASOLA PALAVECINO

A dissertation submitted to the

Graduate School-New Brunswick

Rutgers, The State University of New Jersey

in partial fulfillment of the requirements

for the degree of

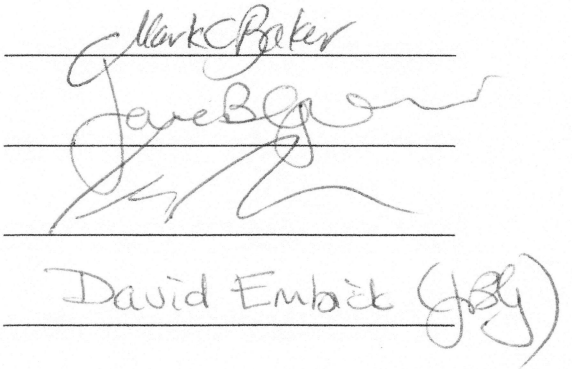
Doctor of Philosophy

Graduate Program in Linguistics

written under the direction of

Mark C. Baker

and approved by



New Brunswick, New Jersey

May 2015

ABSTRACT OF THE DISSERTATION

Topics in the Syntax of Mapudungun Subordinate Clauses

by CARLOS ALFREDO FASOLA PALAVECINO

Dissertation Director:

Mark C. Baker

This dissertation examines select topics in the syntax of non-finite clauses in Mapudungun, an isolate spoken in Chile and Argentina. Much of the data presented was collected from extensive fieldwork in Chile carried out by the author. I first defend Baker's theory that the diverse infinitival markers *-n*, *-el*, *-t*, and *-m* are allomorphs of a single morpheme, Inf. In the process, I formulate a theory of wh-agreement on which this is analogous to subject and object agreement and propose that extraction of a non-subject and of an oblique trigger the allomorphs *-el* and *-m*, respectively. I also characterize clauses with the non-finite morphemes *-lu* and *-wma* as active and passive participles, respectively. Secondly, I argue that Mapudungun infinitival clauses are CPs, despite having the appearance of possessed nominals. Thirdly, I argue for a characterization of the verbal morpheme *-a*, often analyzed as a future tense, as a future modal. Lastly, I describe the distribution of this future modal morpheme *-a* in Mapudungun complement clauses, identifying the classes of predicates which require *-a*, allow but do not require *-a*, and ban *-a* in their clausal complement. I argue that emotive and propositional predicates license identical complements, and develop a semantic theory of complement clause selection which accounts for these complementation facts. In particular, I identify the selectional restrictions of a predicate with its argument structure, containing individual thematic roles, and propose

that predicates themselves transmit the features they select for to their complements via the individual thematic role assigned to them. This selection-for-individual-roles theory endorses a coherence licensing condition: a clause is licensed as complement if it is compatible with the selectional restrictions of a predicate. Thus, to be licensed, a complement clause is only required to be compatible with the specification imparted by the predicate; it is not required to satisfy these selectional restrictions of the predicate.

Dedication

I dedicate this dissertation to my family, whose support made it possible.

Acknowledgements

I thank my mentor, Mark Baker, who encouraged me to work on Mapudungun, gave me the opportunity to collaborate with him on this language, and also provided me with unpublished work of his on Mapudungun which proved very influential. This dissertation has benefited enormously from his careful guidance and edits, as well as our discussions together, for which I am most grateful. I also thank the other members of my dissertation committee: Jane Grimshaw, who as my first official syntax instructor transmitted her zeal for this subject, and who has been a staunch supporter of my work, one reason why I have held a fixed spot for her in all of my qualifying paper committees at Rutgers; Ken Safir, in whose classes I could appreciate the technical details of syntactic theory, and whose interest in clausal complementation provided initial impetus for this dissertation; and David Embick, who I met in my first month at Rutgers when he came to give a colloquium and with whom I have been in contact ever since and have benefitted from engaging and enlightening discussions on Mapudungun and syntax in general, and soccer.

I also thank the other members of my qualifying papers committees, Veneeta Dayal, Liliana Sánchez, and José Camacho. I thank Bruce Tesar in a special way for securing 5^{th} year funding for me, and also Roger Schwarzschild for securing 6^{th} year funding for me. I thank all of my other instructors at Rutgers, including Maria Bittner, Alan Prince, Paul de Lacy, Shigeto Kawahara, Akin Akinlabi, and Chung-Chieh (Ken) Shan.

My time at Rutgers has been made all the more rewarding by bringing me into contact with a great group of fellow students. I thank my classmates Crystal Akers and Willie Willie; my first year at Rutgers was my favorite year there, and it was great to share this experience alongside them. I thank Xiao Li, Seunghun Lee, and Jeremy Perkins for their continued friendship, encouragement, opportunities to collaborate, and many enjoyable outings together. I thank Carlo Linares and Alexandra for their encouragement, kindness, hospitality, and delicious Peruvian dishes. I thank Paula and Patrick Houghton for their friendship and for providing a lot of laughs; it was great to TA alongside Paula and Crystal, especially our bench sessions outside the SAC, comparing notes after our morning classes. I thank Teresa Torres Bustamante and Jimmy Bruno for their friendship and kindness. I also thank my other fellow students, each in their own way for many different things, including Adrian Brasoveanu, Slavica Kochovska, Heeshin Koak, Hyunjoo Kim, Michael O'Keefe, Vera Dvorak, Todor Koev, Will Bennett, Petr Staroverov, Matt Barros, Ryan Denzer-King, and Hope McManus.

Maria Bittner's semantics seminars were some of favorite experiences during my time at Rutgers, especially because of the brilliant students in these classes who I had the privilege and pleasure to collaborate on group projects together with. This same group also participated in the Center for Cognitive Science semantics group run by Ernie Lepore, who I thank for organizing these intellectually stimulating reunions, and I thank as well all of these student participants, including Daniel Altshuler, Sarah Murray, Will Starr, Karen Lewis, Gabe Greenberg, Jessica Rett, Sam Cumming, Michael Johnson, and Josh Armstrong.

I thank Nadya Vinokurova, for her friendship, instruction and edification. I thank my friends David Duran, Joe Fabian, and Jon Barajas for visiting or otherwise encouraging me throughout my time in New Jersey.

I thank the members of the Grad Group of the Catholic Center at Rutgers for ca-

maraderie and community, including Colleen Duffy, Beth Kupin, Miriam Diller, Andy Stroffolino, Chioun Lee, Madel Durens, Raymond and Erin Dansereau, Meghan Sullivan, Tony Pawlak, Jim Jeffers, Senia Katalinic, Marian Messak, Andrew Rodriguez, Erick Chastain and Lucy, and Fr. Jeff Calia. I also thank Fr. Deogracias Rosales for spiritual direction.

I thank Aaron Braver for introducing me to LaTeX, Sarah Murray for providing me specific templates and instructions for writing glossed example sentences, and in a special way my brother Juan Pablo for all his help in producing this final document in LaTeX, with figures, trees, tables, finding the right combination of packages to use together, and many other details besides.

I thank Lori Levin and Rodolfo Vega of the Language Technologies Institute of Carnegie Mellon University for first giving me the opportunity to work on Mapudungun and for financing my first fieldtrip to Chile and introducing me to Pilar Álvarez Santullano and Amilcar Forno, who I thank especially for introducing me to my first contacts in the Mapuche community and Mapudungun speakers. I thank all of my consultants for their assistance.

I thank in a special way Elena Catripán Huentequeo, for her wonderful enthusiasm and willingness to help out with my fieldwork and for introducing me to many speakers of Mapudungun. I thank Ángela Loncoñanco for her support of my fieldwork and the use of the ruka mapuche in Panguipulli. I thank in a special way Héctor Painequeo Paillán, Teodocio and Ester Painequeo and their family for their collaboration and support.

I thank Elisa Loncon for inviting me to present my work in Chile and for providing valuable feedback on my work and instruction, and introducing me to the community of scholars in Chile. I likewise thank Aldo Olate for allowing me to present my work in the distinguished Jornadas de Lengua y Literatura Mapuche and to engage with the other researchers in attendance. I thank Bryan Harmelink for procuring for me

difficult to find publications in Mapudungun. I thank Scott Sadowsky for providing me with a wealth of material on Mapudungun. I thank Hugo Carrasco for providing me access to the library of Mapuche materials at the Universidad de la Frontera. I thank María Catrileo for her repeated assistance and valuable feedback on my work.

I thank my family in Villarrica for generously welcoming me into their home for months at a time during my fieldwork trips to Chile, my Tía Carmen Gloria, my Tío Leo, my cousin Marcelo, who had to wake up early to drive me to morning mass, and the entire Rocha Palavecinos family, as well as my Tía Graciela, and my cousin Viviana and her family. It was a great joy to spend time with them during my work in Chile.

I thank Chris Barker for helpful comments in the initial phase of my dissertation research. I thank Christiane Fellbaum and audiences at the Princeton University Program in Linguistics lunch talk for helpful comments on portions of this dissertation, especially Robert Freidin.

I thank Mandy Simons, Carol Tenny, and Pascual Masullo for first introducing me to linguistics during my time in Pittsburgh.

Completing this Ph.D. is the culmination of a long process which began with my first steps in higher education, and I wish to thank Jorge Peña Vial for admitting me into the philosophy program at the Universidad de los Andes, as well as my first professors in logic, Jaime Araos and José Tomás Alvarado.

I thank in a most special way my family: my parents, my brother Juan Pablo, and my sister Carolina, for their love. There is absolutely no way I could have fulfilled my dream of finishing my dissertation without their continuous support throughout all these years. I am forever grateful.

Finally, and above all, I thank my Lord Jesus Christ the King, from whom comes all that is good. I thank as well his most Holy Mother, the Blessed Virgin Mary, Our Lady of Guadalupe, Queen of Heaven, and Mediatrix of all graces, for her constant

intercession and protection, and for the many miracles she has obtained for me and my family, especially throughout these years. I also thank Santa Gema Galgani, Beato Ceferino Namuncurá, St. Thérèse of Lisieux, and St. Jude for all their intercession and help.

Contents

Abstract ii

Dedication iv

Acknowledgements v

Contents x

List of Tables xix

List of Figures xxi

List of Abbreviations xxii

Chapter 0 Introduction and background 1

1 The Mapudungun language 1

2 Description of fieldwork and nature of the data in thesis 3

3 Grammatical sketch of Mapudungun 9

3.1 Verbal morphology 10

3.2 DPs 17

3.3 PPs 22

3.4 CPs 23

4 Syntactic theory 26

4.1 Syntactic entities: preliminary definitions . . . 26
4.2 Feat-Sat . . . 28
4.2.1 Agree . . . 28
4.2.2 θ-discharge . . . 29
4.2.3 Selection . . . 30
4.3 Merge . . . 30
4.3.1 External and internal Merge . . . 30
4.3.2 Default . . . 31
4.3.3 Tucking-in . . . 31
4.3.4 Head-movement . . . 31
4.3.5 Conditioning of cases . . . 32
4.4 Well-formedness of syntactic entities . . . 32
4.5 Representation of syntactic structures . . . 33
4.6 Sample derivation . . . 35
5 Outline of this dissertation . . . 39

Chapter 1 Non-finite morphemes and Wh-agreement in Mapudungun 41

1 Introduction . . . 42
1.1 Non-finite endings in Mapudungun . . . 42
1.2 Statement of Theory: ontology of non-finite markers and allomorphy grouping . . . 43
2 Note on the use of the term 'non-finite' . . . 44
3 Baker's Theory of Inf allomorphs and Wh-agreement in Mapudungun 46
4 Proposed revision and extension to Baker's theory . . . 51
5 Wh-agreement: description and previous analyses . . . 53
5.1 Phenomena dubbed Wh-agreement . . . 53
5.2 Long-distance extraction and wh-agreement . . . 58
5.3 Theoretical analyses of wh-agreement . . . 61

5.3.1 Chung . . . 62
5.3.2 Watanabe . . . 62
5.3.3 Chomsky . . . 64
6 An Agree theory of Wh-agreement . . . 66
6.1 Heads involved . . . 67
6.2 Features involved . . . 68
6.3 On Agreement in Case accounts . . . 70
6.4 On a unified analysis of C alternations and V morphology . . . 74
6.5 On a unified analysis of subject, object and oblique wh-agreement 75
7 Theory of Wh-agreement in Mapudungun . . . 80
7.1 The features [ns] and [obl] . . . 81
7.2 The heads H_{ns}, H_{obl} . . . 84
7.3 Position and identity of H . . . 84
7.3.1 Position of H . . . 84
7.3.2 Identity of H . . . 86
7.4 Allomorphy rules for Inf . . . 87
8 Critiques of Baker's Theory . . . 90
9 Independent motivation for [obl]: distribution of *-mu* and *-ye* . . . 92
10 Participles . . . 95
10.1 Present participle *-lu* . . . 96
10.2 Past participle *-wma* . . . 102
11 Conclusion . . . 103

Chapter 2 On the category of Mapudungun infinitival clauses 107

1 Isomorphy with Possessed DPs . . . 107
2 Evidence that Mapudungun infinitival clauses contain every extended projection of V . . . 109
2.1 Evidence for vP . . . 109

2.1.1 Object agreement and accusative case 110
2.1.2 Passive and inverse voice 111
2.1.3 Applicatives 112
2.1.4 Statives 113
2.1.5 Adverbs 114
2.1.6 Summary of evidence for vP 115
2.2 Evidence for AspP 120
2.3 Evidence for NegP 121
2.4 Evidence for ModP 122
2.5 Evidence for TP 123
2.6 Evidence for CP 127
2.7 Summary of evidence that Mapudungun infinitival clauses contain every extended projection of V 129
3 Label of Mapudungun infinitival clause is not DP 130
4 The category of the infinitival marker 133
5 Category of Poss 136
5.1 Poss ≠ D_{poss} 136
5.2 Poss ≠ DP 139
5.3 Poss = C 141
6 The structure of Mapudungun infinitival clauses 142
7 Conclusions 147

Chapter 3 Theory of *-a* **151**

1 Introduction 151
2 Evidence from interpretation 152
2.1 Futurity 152
2.2 Modality 154
2.3 Quantificational force 155

3 Evidence from distribution in complement clauses 156
3.1 Subjunctive and infinitive-like distribution 156
3.2 Apparent cases of non-future interpretation 159
3.2.1 Obligation predicates 161
3.2.2 Liking predicates 161
3.2.3 Judgement evaluative predicates 163
3.2.4 Memory predicates 163
3.3 Summary 164
4 Evidence from distribution in matrix and adjunct clauses 164
5 Evidence from counterfactuals 168
6 Evidence from tenselessness diagnostics 174
7 Evidence from position 175
8 Conclusion 178

Chapter 4 Theory of Complementation in Mapudungun Syntax 181

1 Introduction 181
2 Semantic theories of complementation: Literature Review 187
2.1 Rochette (1988) 188
2.2 Dixon (2006) 192
2.3 Zucchi (1993) 197
2.4 Portner (1992) 205
2.4.1 The distribution of indicative, subjunctive, and irrealis infinitivals in English 208
2.4.2 Syntax-semantics correspondence 208
2.4.3 Deriving the distribution facts 212
2.5 Summary of abstract approaches to complement distribution . 215
2.6 Cross-linguistic predictions of semantic theories of complementation 218

3 Assessment of predictions of existing semantic theories of complementation for Mapudungun 220
3.1 Eventive and emotive predicates 220
3.2 Eventive and propositional predicate complements 221
3.3 Emotive and propositional predicate complements 225
3.3.1 Mapudungun as a language without control 227
3.3.2 Obviative readings of subject pronouns 233
3.3.3 RNR/NCC 234
3.3.4 Object agreement and Null Complement Anaphora . 238
3.3.5 Summary 240
4 A Coherence Licensing Condition Account of Clausal Complementation in Mapudungun 241
4.1 The selection-for-individual-roles theory of clausal complementation 241
4.2 Complementation in Mapudungun 243
4.3 Unified lexical semantic characterizations of predicate classes and consequent semantic constraints on their clausal arguments 244
4.3.1 Predicates whose complements require -*a* 244
4.3.2 Predicates whose complements may either contain -*a* or not 249
4.3.3 Predicates whose complements may not contain -*a* . 250
4.4 Implementation of account of Mapudungun complementation facts 251
4.4.1 Causes 251
4.4.2 Attitudes 255
4.4.3 Accompanying eventualities 256
5 Extension to complementation facts in Romance, Balkan, and Germanic 259

5.1 Distribution data . . . 259
5.2 A Modal Concord analysis of complementation in Romance, Balkan, and Germanic . . . 269
5.2.1 Classes of modalities as (mood) modals . . . 269
5.2.2 Syntactic analysis of complements . . . 275
5.2.3 Semantic analysis of predicates . . . 277
5.2.4 Deriving the complementation facts: the Modal Concord theory of clausal complementation . . . 281
5.3 Other predictions and a comparison with an alternative semantics of mood . . . 291
6 Note on Evaluative Predicates . . . 294
7 Conclusions . . . 296

Appendix A Distribution across predicates of the Mapudungun complement clause classes defined with respect to whether the presence of *-a* is required, optional, or disallowed 303

1 Predicates which require *-a* . . . 303
1.1 Ability predicates . . . 303
1.2 Permission predicates . . . 304
1.3 Obligation predicates . . . 305
1.4 Mandative and manipulative predicates . . . 305
1.5 Desiderative predicates . . . 306
1.6 Recommendation predicates . . . 307
1.7 Commissive predicates . . . 307
1.8 Anticipation psychological predicates (verba timendi) . . . 308
1.9 Decision predicates . . . 309
1.10 Preparation predicates . . . 310
1.11 Conative predicates . . . 311

1.12 Realized ability due to assistance . . . 312
1.13 Time-span predicates . . . 313
1.14 Requirement evaluative predicates . . . 314
2 Predicates which allow *-a* and its absence . . . 315
2.1 Verba dicendi . . . 315
2.2 Epistemic predicates . . . 316
2.3 Judging predicates . . . 317
2.4 Dream predicates . . . 318
2.5 Memory predicates . . . 318
2.6 Judgement evaluative predicates . . . 319
2.7 Liking predicates . . . 320
2.8 Reaction psychological predicates . . . 321
3 Predicates which may block *-a* . . . 322
3.1 Aspectual predicates . . . 322
3.2 Truth predicates . . . 324
3.3 Perception predicates . . . 324

Appendix B Comparison of Allomorphy Theory with Alternatives 326

1 On analyses of endings . . . 326
1.1 Contra *-fiel* as unitary . . . 327
1.2 Contra *-eteo* as unitary . . . 328
1.3 Contra *-am* as unitary . . . 329
1.4 Contra *-mum* as unitary . . . 330
1.5 Contra *-yüm* as unitary . . . 331
2 On the distribution of non-finite endings across morphological environments . . . 332
2.1 On the generation of strings with *-t* . . . 334
2.2 On the generation of strings with the ending *-m* . . . 334

2.3 On the generation of strings with the ending *-n* 335
2.4 On the generation of strings with the ending *-am* 336
2.5 On the generation of strings with the ending *-mum* 336
2.6 On the generation of strings with the ending *-eteo* 337
2.7 On the generation of strings with the ending *-fiel* 338
2.8 On the generation of strings with the ending *-el* 339
2.9 On the generation of strings with the ending *-yüm* 340
2.10 Evaluation of allomorphy theory and alternatives on the generation of strings with non-finite endings 341
3 Contra -($y\ddot{u}$)m as an independent morpheme 344
4 On the distribution of non-finite endings across functions 349
4.1 Complements 350
4.2 Adjuncts 352
4.2.1 Purpose clause 352
4.2.2 Causal 355
4.2.3 Temporal 356
4.2.4 Manner 360
4.3 Relatives 361
4.3.1 Subject relatives 361
4.3.2 "Object" relatives 361
4.3.3 Oblique relatives 362
4.3.4 Relative clauses with *-n* 364
4.4 Evaluation of allomorphy theory and alternatives on accounts of the distribution of non-finite endings across functions 366
4.4.1 Summary of account proposed here 367
4.4.2 Comparison with alternative theories 369

Bibliography **372**

Index **385**

List of Tables

Table 1.1 Non-finite morphemes in Mapudungun 43

Table 1.2 Distribution of Inf markers across morphological environments on Baker's ontology of morphemes 46

Table 1.3 Distribution of Inf markers across morphological environments on ontology of triggers proposed here 88

Table 4.1 Zucchi (1993) distribution data 198

Table 4.2 Portner (1992) distribution data: eventive predicates 206

Table 4.3 Portner (1992) distribution data: propositional attitude predicates 208

Table 4.4 Lexical semantic classes of predicates categorized with respect to whether they allow *-a* and its absence in their clausal complement in Mapudungun 245

Table 4.5 Lexical semantic classes of predicates which license a subjunctive complement in Romance (Godard 2012) 261

Table 4.6 Lexical semantic classes of predicates which license a subjunctive complement in Balkan (Giannakidou 1998, 2015, Varlokosta 1993, Roussou 2009, Quer 2009, Agouraki 1991) 262

Table 4.7 Lexical semantic classes of predicates which license a *to*-infinitival complement in Old English (Los 2005) 265

Table 4.8 Lexical semantic classes of predicates which license an *om-te* infinitival complement in Dutch (IJbema 2001) 266
Table 4.9 Lexical semantic classes of predicates which license a *for-to* infinitival complement in English (Pesetsky 1991) 268
Table 4.10 Lexical semantic classes of predicates which license an indicative complement (Godard 2012) 269
Table 4.11 Abstract Distribution Table 298

Table B.1 Distribution of non-finite endings across morphological contexts . . 333
Table B.2 Distribution of non-finite endings across functions 366
Table B.3 C heads and selected Inf allomorphs allowed 367

List of Figures

Fig. 1 Map of Chile with different cities and natural features labeled which are relevant for locating the extent of Mapuche territory in Chile in different historical periods. The black box outline indicates the region in which most fieldwork for this dissertation was carried out and which is shown in detail in Figure 2. (Thanks to Juan P. Fasola for preparing this figure.) 5

Fig. 2 Map of Chile with detail showing area where most fieldwork realized. Towns marked on map indicate places where interviews carried out (often in rural areas outside the town itself) and also approximate well the place of origin of the native speaker interviewed there in each case. Highlighted regions outline the comunas of Panguipulli and Puerto Saavedra, and roughly demarcate the extent of the two main dialects studied in this thesis, that of Panguipulli and Lago Budi, respectively. The border between the 9th and 14th Regions of Chile roughly indicates the separation between the main Mapudungun dialects; Huilliche dialects, including that of Panguipulli, are spoken to the south and other dialects, including the Lafkenche dialect of Isla Huapi, Lago Budi, to the north. (Thanks to Juan P. Fasola for preparing this figure.) 6

List of Abbreviations

-	morpheme boundary
.	meaning part boundary
=	clitic boundary
1	first person (pronoun or agreement)
2	second person (pronoun or agreement)
3	third person (pronoun or agreement)
A	agent
acc	accusative case
accum	accumulation
adj	adjectivizer
affirm	affirmative
agr	agreement
ben	benefactive
C	complementizer
case	case marker

caus	causative
comp	complementizer
cond	conditional mood
cont	continuative
d	dual number
dat	dative case
dec	deceased
dem	demonstrative
det	determiner
dim	diminutive
dir	directional
distr	distributive
ds	dative subject
dub	dubitative particle
empath	empathy marker
exp	experience
f	feminine gender
fac	factitive
force	force
fut	future

ger	gerund
hab	habitual
hith	hither
imm	immediate
imp	imperative mood
imprf	imperfect
indic	indicative mood
inf	infinitival marker
instr	instrument
interrupt	interruptive
inv	inverse voice
irr	irrealis mood
loc	location
m	masculine gender
mal	malefactive
neg	negation
nf	non-finite ending
nom	nominalizer
nonpast	non-past
obj	object agreement or clitic

obl	oblique case
oo	oblique object
P	preposition
p	plural number
part	particle
pass	passive voice
past	past
pcpl	participle
persist	persistance
plprf	pluperfect
poss	possessive agreement
ppl	past participle
pres	present
prf	perfect
prog	progressive
prox	proximate
prpl	present participle
re	repetitive/restorative
realis	realis mood
refl	reflexive

rep	reportative
s	singular number
stat	stative
subjunc	subjunctive mood
sudd	sudden
temp	temporal quantifier
thith	thither
tr	transitivizer
vb	verbalizer

Chapter 0

Introduction and background

1 The Mapudungun language

Mapudungun is an isolate spoken in southern central Chile and western Argentina. It is the language of the Mapuche people, native to these regions of South America. At the time of first contact with the Spanish, Mapudungun was spoken in Chile between the city of Coquimbo and the island of Chiloé. Today, Mapudungun is spoken, in scattered, small pockets, between the river Bío-Bío and the vicinities of the city of Osorno. The most traditional territory of the Mapuche people in Chile extends from the river Bío-Bío to the river Toltén, approximately the modern 8th and 9th Regions of Chile; as this was the area that the Mapuche were able to defend against first the Incas and then the Spanish, though not against the Chilean government after independence from Spain (see Figure 1). A consensus among researchers recognizes five main dialects of Chilean Mapudungun: Picunche, spoken in the northern portion of this traditional territory, Pehuenche, spoken in the eastern, mountainous portion of this territory, Lafkenche, spoken along the Pacific coast of this territory, central Mapudungun, centered around the city of Temuco and extending to the confines of these other areas within the traditional territory, and Huilliche, spoken in the regions

south of this most traditional territory, approximately the modern 14th and 10th Regions of Chile. Huilliche is the most distinct from the others, which are in turn very similar among themselves (Salas 2006, Zúñiga 2006).

The UNESCO endangerment status for Mapudungun is given as "definitely endangered" (Moseley 2010). Although there are many communities in this area of Chile composed entirely or primarily of Mapuche, and despite a frequent desire among these communities to maintain traditional practices, Mapudungun is ordinarily not spoken in these communities. The remaining speakers of Mapudungun are isolated, seldom have contact with other native speakers and therefore do not have the opportunity to practice or propagate their language (see also Gundermann et al. 2008). There are no monolingual speakers of Mapudungun (Forno and Álvarez-Santullano 2000). The 1982 census cited by Ethnologue estimated around 200,000 Mapudungun speakers. Zúñiga (2006: 43-4) cites a 2002 study by the Centro de Estudios Públicos (CEP 2002), which estimates that only 16% of ethnic Mapuche speak their language and another 18% have a passive understanding of it. At the same time, Zúñiga cautions against such studies based on a census-like question "do you speak Mapudungun?", on the basis of the fact that neither the interviewer nor the responder are likely to have the aptitude to assess the matter properly. The more recent study reported in Gundermann et al. (2009) concluded that 24.7% of the Mapuche population living in the, mostly rural, traditional homeland of the Mapuche possesses a high level of competency, corresponding to 61,340 individuals, the majority of whom are over 60. This study used more sophisticated tests to evaluate competency. However, this study also concluded that the vitality of the language is rapidly regressing with its use becoming completely replaced by Spanish.

In my experience I found it quite difficult to locate competent native speakers. It is fair to say that in most communities where the majority of the population is Mapuche use of the Mapudungun language is minimal while Spanish is used for all

daily activities. Even in communities where use of the Mapudungun language is still relatively vital, it is only the generation of grandparents, many still young, which use it frequently. At the same time, however, it is my impression that these same individuals are just as likely, if not more so, to communicate with one another in Spanish. Knowledge of the language by the younger generations is passive at best.

2 Description of fieldwork and nature of the data in thesis

The data in this thesis comes from my own fieldwork in Chile realized during yearly trips between 2009 and 2012 for between one to three months at a time. In addition to fieldwork, I have relied on data from published grammars, especially Smeets (2008), Salas (2006), Zúñiga (2006), and de Augusta (1903). Where no citation for a datum is given, it comes from my fieldwork. All morphological segmentation and glosses are mine, including those for data cited from other authors, in order to adhere to the glossing conventions adopted here, and English translations are mine for authors who write in Spanish.

Figure 2 shows many of the locations where fieldwork was carried out. Two main regions were targeted: the comuna[1] of Panguipulli in the eastern portion of the 14$^{\text{th}}$ Region of Chile and Isla Huapi on Lago Budi, in the comuna of Puerto Saavedra on the Pacific coast in the 9$^{\text{th}}$ Region of Chile. The dialect of Panguipulli is a Huilliche dialect, and the dialect of Isla Huapi is a Lafkenche dialect. I interviewed over 18 native speakers, but my primary consultants were three: a woman from Coihueco in Panguipulli and a married couple from Isla Huapi, on the Pacific coast. All are in

[1] A civic body akin to a municipality, though often with an extension similar to that of a county in the United States.

their 40s or 50s. The bulk of my data comes from these three speakers, where the data from other speakers is used mainly for confirmation. In addition, I have also had the opportunity and benefit to confirm the accuracy of at least some of the data collected with two Mapuche university professors who are both native speakers of Mapudungun, central dialect, and have a background in linguistics.

My mother's family is from the city of Villarrica, and this served as my base of operations during the fieldtrips undertaken. Neither I nor my mother's family is Mapuche but my access to consultants was greatly facilitated by the fact that I had ties to this area and I was often introduced by Mapuche to other Mapuche as 'Villarrica-che' (person from Villarrica); despite the fact that I had never lived there before these fieldtrips. Incidentally, Villarrica is a fairly emblematic place to hail from for such work. Lying on the Toltén river, the southern boundary of the Mapuche stronghold, it was the earliest city founded by the Spanish in the area and its site commands the best view of Villarrica Volcano, which is important to Mapuche mythology. The city was completely destroyed by hostile Mapuche forces, twice. Therefore, a common epithet for the city is "Villarrica, three times born".

There are minor differences between the Huilliche dialect of Panguipulli and the Lafkenche dialect of Isla Huapi but these are mostly on the level of contentful lexical items, e.g. Panguipulli *upe* (forget) vs. Huapi *ngoyma* (forget), and very few and far between. The Mapuche of Panguipulli refer to their language as Mapunchezungun (talk of the Mapuche); even in this name illustrating certain differences with other dialects such as the intrusion of [n] into the Noun-Noun compound mapu-che (person (of the) land), which in other dialects is absent in this compound, though found in some others. Much more significant differences are observed in the domain of agreement across these two dialects, but the differences are not crucial for the investigation of this thesis. In any event, in most cases, data was verified across these two dialects; and sometimes across central Mapudungun as well. For these reasons, then, data will

Figure 1: Map of Chile with different cities and natural features labeled which are relevant for locating the extent of Mapuche territory in Chile in different historical periods. The black box outline indicates the region in which most fieldwork for this dissertation was carried out and which is shown in detail in Figure 2. (Thanks to Juan P. Fasola for preparing this figure.)

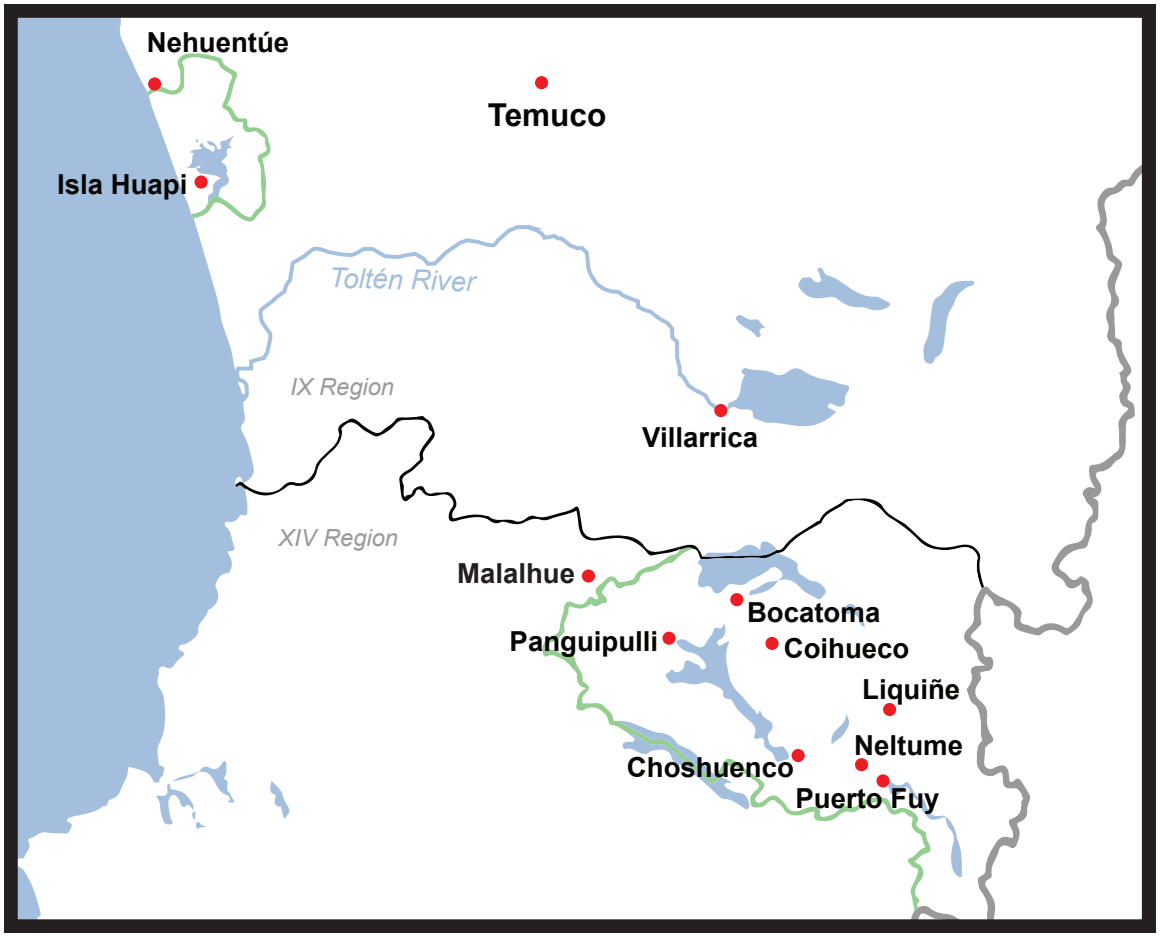


Figure 2: Map of Chile with detail showing area where most fieldwork realized. Towns marked on map indicate places where interviews carried out (often in rural areas outside the town itself) and also approximate well the place of origin of the native speaker interviewed there in each case. Highlighted regions outline the comunas of Panguipulli and Puerto Saavedra, and roughly demarcate the extent of the two main dialects studied in this thesis, that of Panguipulli and Lago Budi, respectively. The border between the 9^{th} and 14^{th} Regions of Chile roughly indicates the separation between the main Mapudungun dialects; Huilliche dialects, including that of Panguipulli, are spoken to the south and other dialects, including the Lafkenche dialect of Isla Huapi, Lago Budi, to the north. (Thanks to Juan P. Fasola for preparing this figure.)

not be annotated in the text as having provenance from any particular dialect.

Sessions with consultants were conducted in private, most often in the homes of the individuals interviewed. A few times a session was conducted at a primary school or at a public establishment such as the Ruka Mapuche in the city of Panguipulli, a community center serving the Mapuche of Panguipulli, if this proved more convenient for the consultant. Individual sessions lasted for approximately one hour. With the consultant's permission, many sessions were recorded, using a Sony Walkman Digital Media Player NWZ-E445 recording at 128 kbps; though sometimes the first session was not, so that some rapport could be established with the consultant before they were asked to authorize recordings.

Sessions consisted of the following: the interviewer, always me, would ask for translations into Mapudungun of Spanish prompts or else present Mapudungun prompts directly, in speech or in writing, and ask if the sentences were acceptable. In certain cases, a scenario was described, and it was asked whether the Mapudungun prompt was true or false in that scenario. To verify that they had carefully considered the form as presented, the interviewee would always be asked to repeat the Mapudungun sentence being reported a judgement on, under the pretext of getting a recording of the sentence or of getting an accurate transcription. Not infrequently, the sentence repeated by the speaker was not the one prompted, spoken by the interviewer or printed on the page, and attempts would be made to reprompt if possible.

In general, assessing the judgement of a native speaker on a sentence is still rather an art. The fieldworker is left to his or her own best devices and personal judgement as to what the native speaker's judgement is on a given sentence. One must take into account all aspects of their response, from hesitancy, to degree of commitment, spontaneous additional comments, etc.; and there are no steadfast rules with such a set-up, as hesitancy may signal uneasiness with a sentence in one case but just difficulty in assessing a sentence in another. One can only decide on the speaker's

ultimate judgement on a sentence by considering all these factors and then making one's best interpretation; consistency of judgement on subsequent later testing also yields important evidence, though overuse of this tactic can lead to annoyance on the part of the interviewee.

Thus, the data reported in this thesis come from the interviews realized with these speakers, primarily with my main three consultants, and are reported as either good or bad, or true or false in a scenario, in accord with my best judgement at this time. The data presented here is accurate to the best of my knowledge and ability to ascertain. If there is any serious doubt concerning a datum presented, this is addressed in the text when it is presented.

The scarcity of native speakers and the general state of disuse that the language is in even with individuals who do have native competency in my assessment, do raise the question of how accurate the judgements offered can actually be, and how enlightening, therefore, of the true Mapudungun grammar. I am encouraged by the fact that the data obtained by my fieldwork conforms with previously published data in cases where a comparison is possible; though, crucially, there is new data presented in this thesis. I am also buoyed by the fact that the two areas where I was able to find my best consultants, viz. Panguipulli and Isla Huapi, are the same two areas whose dialects de Augusta studied in composing his invaluable dictionary for Mapudungun (see de Augusta 1916: iv-vi). However perilous the current state of the language in these areas, these are surely among the regions with the strongest historic ties to use of Mapudungun and, especially considering their relative isolation, among the most likely where Mapudungun is best preserved.

Finally, for this section on the nature of the data presented in this thesis, a note on the Mapudungun orthography employed. Mapudungun never possessed an autochthonous writing system. There is currently much debate over the best orthographic system to use and there are several popular candidates. In general I follow

the conventions of Zúñiga (2006). I also generally remain faithful to the orthography used by authors cited, except for Augusta which I have brought in line with more modern conventions. 'ü' is either a high central vowel or a schwa; 'tr' is a retroflex affricate; 'ng' is a velar nasal; 'll' is a palatal lateral; the diacritic '̪' marks dental place of articulation; the pronunciation of the coronal written as 'd' varies widely among speakers but is usually fricative (I preserve Smeets' use of 'đ' when reporting her examples, and usually transcribe it as 'z' in data from my own fieldwork, though the voicing is not entirely clear). For data transcribed from my own fieldwork, every attempt was made to transcribe sequences of phones faithfully, as best as I can distinguish them, but I am not a native speaker and the recording equipment used is not adequate for phonetic analysis. Moreover, pronunciation may differ slightly between speakers and with data confirmed from multiple sources, only a generic, but still accurate, representation is appropriate, which, however, does not capture the phonetic peculiarities of any particular dialect. Clearly, then, the data presented cannot serve as the basis for phonological research.

3 Grammatical sketch of Mapudungun

Mapudungun is a polysynthetic language both in the traditional sense of Sapir (1921) and in the technical sense of Baker (1996) (Salas 2006, Baker 2006, Loncon 2011). It allows object incorporation; though with the peculiarity that the object appears to the right of the verb root, rather than the left as is more often the case for noun incorporation cross-linguistically (Baker 1996, Baker, Aranovich, and Golluscio 2005).

(1)

ina-mara-le-y	*t̪a*	*chi*	*pu*	*trewa*
follow-hare-stat-indic.3	det	det	p	dog

"The dogs are chasing hares.", "The dogs are hare-chasing." (Salas 2006: 181)

3.1 Verbal morphology

Mapudungun has a rich system of verbal suffixes, corresponding to elements such as reflexive/reciprocal marking, causative, light verbs, passive voice, various aspects, adverbial-like modification, and negation.

(2) *leli-w-i*
watch-refl-indic.3
"He looked at himself.", "They looked at each other." (Salas 2006: 120)

(3) *Kuan* *wadkü-m-i* *ta* *ko*
J. boil-caus-indic.3 det water
"Juan boiled the water." (Zúñiga 2006: 123)

(4) *püntü-künu-fi-ñ*
separate-leave-obj-indic.1.s
"I left it separated." (Smeets 2008: 294)

(5) *kellu-nge-y*
help-pass-indic.3
"He was helped." (Baker 2003a: 33)

(6) *weyel-küle-y*
swim-stat-indic.3
"He is swimming." (Smeets 2008: 281)

(7) *aku-rume-y*
arrive-sudd-indic.3
"He arrived suddenly." (Salas 2006: 143)

(8) *tripa-la-n*
go.out-neg-indic.1.s
"I did not go out." (Salas 2006: 136)

Many of these suffixes can be combined, producing verbal elements of great complexity, with long sequences of suffixes; though their order is generally fixed (Smeets 2008).

(9) *rüngkü-kon-fem-tu-a-y-m-i*
jump-go.in-imm-re-fut-indic-2-s
"You will immediately jump inside again (returning to your original position)." (Salas 2006: 59)

There are no prefixes in Mapudungun. Modal verbs might be considered counterexamples, especially since markers of higher functional material, expressed by auxiliaries in many languages, usually occur to the right of the verb in Mapudungun, as a suffix. However, Baker and Fasola (2009) analyze these as compounds such that the modal verb is the main verb and incorporates its, verbal, complement to the right, in typical Mapudungun fashion, as previously discussed. Smeets (2008) calls these "auxiliaries" and transcribes them as independent words preceding the inflected verb. Clearly, on this analysis they are not prefixes either.

(10) *kim-wingka-dungu-ke-n*
know-speak.spanish-hab-indic.1.s
"I know how to speak Spanish." (Zúñiga 2006: 179)

(11) *küpa-l̨angüm-fu-e-n-ew*
want-kill-FU-inv-indic.1.s-ds
"S/he wanted to kill me." (Zúñiga 2006: 180)

(12) *pepi-umawtu-ke-la-n*
be.able-fall.asleep-hab-neg-indic.1.s
"I couldn't fall asleep." (Zúñiga 2006: 180)

At the right edge of the verb, there is mood marking and person and number agreement. Mapudungun distinguishes indicative and conditional mood. Person and number marking are, in general, distinguished in an agglutinative manner; though this is sometimes obscured by some phonological processes and also by certain morphological irregularities, notably -*n* for 1st person singular indicative. Number is not distinguished for 3rd person; though an optional clitic marking number is available in this case. There are three numbers in most dialects: singular, dual, and plural; but not in Huilliche, which only has singular and plural.

(13) *kon-i-m-i*
enter-indic-2-s
"You went in." (Zúñiga 2006: 105)

(14) *kon-i-m-u*
enter-indic-2-d
"You two went in." (Zúñiga 2006: 105)

(15) *kon-i-m-ün*
enter-indic-2-p
"You (all) went in." (Zúñiga 2006: 105)

(16) *treka-l-i-u*
walk-cond-1-d
"if the two of us walk" (see Salas 2006: 101)

(17) *tripa-l-e*
go.out-cond-3
"if he goes out" (Zúñiga 2006: 106)

Mapudungun also has a system of imperative mood marking, distinguishing 1st, 2nd, and 3rd person. An indeclinable marker generally replaces mood, person and number agreement, though non-singular forms which may be analyzed as imperatives do display person-number inflection. Negative imperatives occur with the conditional mood, and yet may display an imperative mood marker as well.

(18) *entu-chi* *tüfá*
take.out-imp.1.s this
"Let me take this out." (Smeets 2008: 185)

(19) *tripa-nge*
go.out-imp.2.s
"Leave!" (Salas 2006: 100)

(20) *wirar-ki-l-nge*
shout-neg-cond-imp.2.s
"Don't shout!" (Smeets 2008: 185)

(21) *i-pe* *mütem* *engün*
eat-imp.3 only 3.p
"Let them just eat." (Smeets 2008: 185)

Immediately preceding mood marking is another agreement marking. It only occurs with transitive stems and is optional. This is an invariant form *-fi*; thus not distinguishing person or number. For independent reasons, though, discussed further below, in finite clauses it only occurs with a 3rd person. That is, it is only licensed by the presence of a 3rd person argument in addition to the argument which triggers the word-final person-number agreement. However, it does appear to be licensed with a 1st or 2nd person argument in certain non-finite forms; see (2) and (3) in Appendix B.

(22) *leli-fi-ñ*
watch-obj-indic.1.s
"I looked at him." (Zúñiga 2006: 120)

(23) *leli-fi-l-m-i*
watch-obj-cond-2-s
"if you look at him" (Zúñiga 2006: 121)

(24) *kellu-fi-y* *ñi* *pu* *wenüy*
help-obj-indic.3 3.poss p friend
"He helped his friends." (Smeets 2008: 158)

Mapudungun has what can be described (and analyzed) as an inverse system of agreement. In a clause with a 1st or 2nd person Agent and a 3rd person Patient, person-number agreement is with the Agent and *-fi* may optionally occur. However, in a clause with a 1st or 2nd person Patient and a 3rd person Agent, the person-number agreement is with the 1st or 2nd person Patient, and not the Agent. In addition, a marker *-e* necessarily appears, which otherwise cannot occur, in the position immediately before mood; this appears in place of (the agreement marker) *-fi*, which is no longer possible. This marker *-e* has been analyzed as an inverse voice (Arnold 1996, Baker 2003a).

(25) *pe-fi-m-u* *ta* *chi* *witran*
see-obj.indic-2-d det det foreigner
"You two saw the foreigner." (Salas 2006: 115)

(26) *pe-e-y-m-u-meo* *ta* *chi* *witran*
see-inv-indic-2-d-ds det det foreigner
"The foreigner saw you two.", "You two were seen by the foreigner." (Salas 2006: 115)

In interactions between two 3rd persons, if the more topical participant is the Agent, then the agreement is direct, i.e. (3rd) person (+ optional clitic number) agreement is with the Agent and *-fi* is optionally present; whereas if the more topical participant is the Patient, then the inverse agreement occurs, i.e. (3rd) person agreement is with the Patient and the marker *-e* necessarily occurs, while *-fi* is impossible. For instance, in the adjunct clauses of the following sentences, *Kaín* (Cain) is more topical than *Dios* (God), being the subject of the matrix clause.

(27) *Kaín* *langüm-fi* *ñi* *Afel* *peñi,* *fey* *ñi* *füla*
C. kill-obj.indic.3 3.poss A. brother 3 3.poss because.of
kastiga-e-y-ew *Dios*
punish-inv-indic.3-ds God
"Cain killed his brother Abel; therefore, God punished him." (de Augusta 1903: 79)

(28) *#Kaín* *langüm-fi* *ñi* *Afel* *peñi,* *fey* *ñi* *füla*
C. kill-obj.indic.3 3.poss A. brother 3 3.poss because.of
kastiga-fi *Dios*
punish-obj.indic.3 God
"Cain killed his brother Abel; therefore, he punished God." (de Augusta 1903: 79)

We can summarize these facts by appealing to a topic-animacy hierarchy such as the one below and saying that if the Agent outranks the Patient, agreement will be direct, i.e. person-number agreement is with the Agent and *-fi* optionally occurs, whereas if the Patient outranks the Agent, inverse agreement will obtain, i.e.

person-number agreement is with the Patient and -*e* necessarily occurs, in place of -*fi*. Proximate and obviative 3rd persons refer to 3rd persons which are more and less topical relative to one another, respectively.

(29) Topic-animacy hierarchy in Mapudungun

1, 2 > 3proximate > 3obviative

Note that in inverse forms, a marker -(*m*)*ew* occurs after person-number agreement. Strictly speaking, then, it is this marker which occurs at the end of the Mapudungun verbal complex and not person-number agreement. However, there are reasons to believe that its mode of attachment to the verbal complex differs from that of other verbal suffixes. First, Baker (2003a) has analyzed it as an ergative case marker licensing the overt subject in an inverse voice construction. This marker is indeed homophonous with the postposition *mew* used with instruments (and locatives and all other oblique roles), as is often observed for ergative case markers (Dixon 1994: 57). So it would appear to be more properly a nominal element. Secondly, as we will see, non-finite inflection replaces mood and person-number agreement inflection on the Mapudungun predicate, but it does not block this marker -(*m*)*ew*, which continues to occur word-finally. This can be explained if one holds that non-finite inflection replaces mood and all higher verbal inflections, as is common in many languages, but does not affect clitics which may beset the verbal complex.

In ditransitives, agreement may be with a Recipient. Thus, if the Recipient outranks the Agent in the topic-animacy hierarchy, inversion agreement will be induced. If agreement were consistently with the Agent and Theme, there should be no need for inversion in these cases.

(30) *Padre* *elu-e-i-ñ-meu* *santitu*
father give-inv-indic.1-p-ds saint.dim
"The Father gave us little saints." (de Augusta 1903: 80)

There are also different applicative morphemes that can induce agreement with another affected participant which is not the Patient/Theme (and which sometimes appears to be a possessor of the Patient/Theme), and which, depending on the circumstances, viz. whether the new argument is of higher topicality/animacy on the hierarchy than the Agent, may induce inversion.

(31) *weñe-ñma-e-n-ew* *ñi* *kawellu*
steal-mal-inv-indic.1.s-ds 1.s.poss horse
"He stole my horse on me." (Zúñiga 2006: 124)

The agreement inflections that occur in interactions between 1st and 2nd persons are more complex, and moreover differ between Huilliche and what is observed in other dialects (see de Augusta 1903: 84-5, 154-5, Salas 2006: 118-9; see Smeets 2008, Zúñiga 2006, and especially Zúñiga 2000 for more details on agreement forms in Mapudungun).

In summary, we see that person-number tracks the sole argument of an intransitive. With transitive predicates, it does not track a unique thematic role nor does it track a given set of thematic roles in a consistent manner; at times it references an Agent and at times a Patient, depending on the topic-animacy relation between the two. In addition, given the sensitivity of agreement in ditransitives to a Recipient or benefactive-introduced argument, as evidenced by their ability to trigger inversion form of agreement under the appropriate conditions, viz. when outranking the Agent in topic-animacy, we can conclude that even in direct agreement forms with a ditransitve the invariant -*fi* agreement references the Recipient. Thus this agreement does not track a unique role either. The alternation between -*fi* and -*e* observed in cases where the more topical participant bears a higher or lower role than the other participant, respectively, is explained on a theory where person-number agreement is consistently with the subject and a difference in voice determines whether or not a lower thematic role argument may be promoted to subject, and where -*e* and -*fi*

are the expression of voice heads, or at least correlate with the presence of different voice heads. For these reasons, following Baker (2003a, 2006), I will refer to the person-number agreement as "subject agreement", and to the invariant form *-fi* as "object agreement" (see Baker 2003a for further arguments in support of a theory of this sort and against alternative theories; see Fasola 2010 for further discussion of existing theories of agreement in Mapudungun).

3.2 DPs

The structure of DPs, in contrast to what is observed in the verbal domain, is strikingly analytic in Mapudungun. There is no overt marking of case. Independently of the complexities which arise with the consideration of interactions between 1st and 2nd person, we know that one of the arguments in (32) must not be the subject. Yet, we see that its form remains the same when it is a subject, comparing (32) with (33) and (33).

(32) *eymün* *leli-mu-y-i-ñ* *iñchiñ*
2.p watch-2.A-indic-1-p 1.p
"You (all) watched us." (Smeets 2008: 99)

(33) *iñchiñ* *dungu-i-ñ*
1.p speak-indic.1-p
"We (all) spoke." (Harmelink 1996: 93)

(34) *eymün* *dungu-y-m-ün*
2.p speak-indic-2-p
"You (all) spoke." (Harmelink 1996: 93)

Nouns may be modified by Adjectives, which occur to the left of the Noun. They also mark number by means of the presence or absence of the distributive suffix *-ke*, indicating plural and singular, respectively.

(35) *küme wentru*
good man
"good man" (Loncon 2011: 54)

(36) *kurü kawell*
black horse
"black horse" (Zúñiga 2006: 188)

(37) *lüq-ke ruka*
white-distr house
"white houses" (Smeets 2008: 111)

Plural number is realized as an analytic marker; and restricted to animates (Loncon 2011: 46).

(38) *pu domo aku-y*
p woman arrive-indic.3
"The women arrived." (Zúñiga 2006: 109)

(39) *pu trewa*
p dog
"dogs" (Salas 2006: 84)

(40) **pu ruka*
p house
"houses" (OK as: inside the house, with *pu* as Preposition "inside") (Salas 2006: 84)

Numerals are also possible.

(41) *kiñe ruka müle-fu-y fao*
one house be-FU-indic.3 here
"There used to be a/one house here." (Salas 2006: 93)

(42) *epu ruka müle-fu-y fao*
two house be-FU-indic.3 here
"There used to be two houses here." (Salas 2006: 92)

A few quantifiers exist, and numerals inflected for distributivity may also function as quantifiers.

(43) *fill* *ruka*
all house
"all the houses" (de Augusta 1903: 16)

(44) *kiñe-ke* *ruka*
one-distr house
"some houses" (de Augusta 1903: 16)

DPs may occur without determiners, and with definite reference.

(45) *wentru* *pe-fi* *domo* *ruka* *mew*
man see-obj.indic.3 woman house P
"The man saw the woman in the house." (Zúñiga 2006: 103)

DPs may also appear with the different analytic definite articles or determiner-like elements *ti* and/or *chi*, which appear to be distinct (see Zúñiga 2006: 93 for further discussion).

(46) *aku-y* *chi* *longko*
arrive-indic.3 det chief
"The longko arrived." (Zúñiga 2006: 155)

(47) *adkintu-yaw-i* *ti* *mansun*
look.at-go.around-indic.3 det ox
"He is looking after the ox." (Zúñiga 2006: 183)

(48) *chi* *mansun*
det ox
"the ox" (Salas 2006: 85)

Analytic demonstrative determiners are also possible; they require -*chi*, an adjectivalizer, when serving as determiners of Nouns (Smeets 2008: 84).

(49) *adkintu-yaw-i* *tüfa-chi* *mansun*
look.at-go.around-indic.3 dem-adj ox
"He is looking after this ox." (Zúñiga 2006: 183)

(50) *fey-chi* *wentru*
3-adj man
"that man" (see Smeets 2008: 218)

The ordinary anaphoric expression for a 3rd person is a null pronoun. However, *fey* may also be used in this way, although it carries a more demonstrative force. Speakers usually translate isolated sentences with *fey* with a demonstrative, and it can also occur as a determiner when suffixed with *-chi* as other demonstratives, as above. At the same time, however, its form differs from that of other demonstratives, which clearly form a set (see Smeets 2008: 83); and indeed *fey* appears to belong to a different paradigm of deictics including *faw* (here). Clearly, then, *fey* is a somewhat different element from the other demonstratives.

(51) *fey* *aku-y*
3 arrive-indic.3
"He/she/it arrived." (Smeets 2008: 98)

(52) *fey=engün* *aku-y(=ngün)*
3=3.p arrive-indic.3=3.p
"They arrived." (Smeets 2008: 98)

Fey can also precede other elements which may serve as determiners in Mapudungun, forming more complex determiners in a single DP. Note that these determiner elements do not inflect for plural.

(53) *fey-ti* *pu* *ñuwa* *trem-üm-fi-y* *ti* *pichi-ke* *đomo*
3-det p bandit grow-caus-obj-indic.3 det small-dist woman
"and the bandits raised those girls" (Smeets 2008: 89)

(54) *fey-tüfa-chi* *achawáll* *kewa-y=ngu* *tüye-chi* *achawáll* *yengu*
3-dem-adj chicken fight-indic.3=3.d dem-adj chicken 3.d
"This chicken here fought with that chicken over there." (Smeets 2008: 85)

(55) *fey-ṯa-chi* *trewa* *leli-e-n-eo*
3-det-adj dog look.at-inv-indic.1.s-ds
"The dog looked at me." (Salas 2006: 111)[2,3]

(56) *fey-ta-chi* *pu* *Mapuche* *kim-ke-fu-y=ngün* *ñi* *fende-n* *ñi* *mapu*
3-det-adj p M. know-hab-FU-indic.3=3.p 3.poss sell-inf 3.poss land
"These Mapuche knew they sold their land." (Smeets 2008: 87)

Possessed nominals contain an analytic agreement morpheme inflected along a distinctively possessive paradigm and agreeing with the possessor. The analytic agreement morpheme precedes the head Noun.

(57) *ñi* *chaw*
1.s.poss father
"my father" (see Smeets 2008: 156)

A DP possessor may optionally occur and may either precede the analytic agreement morpheme or be extraposed to the end of the Noun phrase.

(58) *iñché* *ñi* *wenüy*
1.s 1.s.poss friend
"my friend" (Smeets 2008: 133)

(59) *ñi* *rakiđuam* *kümé* *kim-ke* *wentru*
3.poss thought good wise-distr man
"thoughts of good wise men" (see Smeets 2008: 134)

The relative ordering among these elements in the DP can be appreciated from the following examples, which suggest: Q < D < Card < D_{poss} < Num < A < N.

[2]Salas glosses *chi* in this example as the article/determiner, but see Smeets (2008: 84, 86-7) for the analysis followed here.

[3]See Chapter 2, §5.1 for further discussion of the determiner-like element *ṯa*.

(60) *tüfa-chi pu fücha-ke longko*
dem-adj p old-distr chief
"these old longkos" (Smeets 2008: 132)

(61) *kiñe küme mansun*
one good ox
"a good ox" (Salas 2006: 86)

(62) *fey-chi epu wentru*
3-adj two man
"those two men" (see de Augusta 1903: 209)

(63) *kiñe-ke ñi pu wenüy*
one-distr 1.s.poss p friend
"some of my friends" (Smeets 2008: 136)

(64) *kom ṯüfa-chi füdü*
all dem-adj partridge
"all this partridge" (see Salas 2006: 127)

(65) *kom ñi pu che*
all 3.poss p person
"all his family" (lit. "all his people") (see Smeets 2008: 139)

3.3 PPs

There is a single general postposition, *mew* or *mu*, which appears with nominals which are not core arguments of a predicate. In addition, there are several specifically spatial prepositions (see Salas 2006: 95), but these occur, at least sometimes, with *mew*/*mu*.

(66) *anel-tu-fi-ñ kiñe kuchillo-mew*
threaten-tr-obj-indic.1.s one knife-P
"I threatened him with a knife." (Smeets 2008: 62)

(67) *amu-a-y wariya-mew*
go-fut-indic.3 city-P
"He will go to town." (Smeets 2008: 62)

(68) *el-i-m-i* *mi* *charu* *wente* *mesa*
leave-indic-2-s 2.s.poss jar on.top.of table
"You left your jar on the table." (Loncon 2011: 83)

(69) *wente* *mesa* *mew* *müle-y* *ti* *lifüro*
on.top.of table P be-indic.3 det book
"The book is on the table." (Loncon 2011: 56)

3.4 CPs

Mapudungun is a radical pro-drop language, insofar as it does not require an overt DP to be present describing the subject or object argument of a verb (or alternatively: Agent, Patient, Recipient participants) to form a complete clause.

(70) *maychü-fi-ñ*
wave-obj-indic.1.s
"I waved at him." (Smeets 2008: 288)

(71) *pichi-ka-y*
small-cont-indic.3
"He is small (for his age)." (Smeets 2008: 256)

(72) *mawün-i*
rain-indic.3
"It rained."

(73) **fey* *mawün-i*
3 rain-indic.3
"It rained."

When a clause does contain overt DPs, word order is not constrained, though SVO order seems to be most common or preferred (Baker 2006: 298; see Smeets 2008: 164-5 for support of Baker's view and discussion on the difficulty verifying all orders with consultants, but see Arnold 1994, Loncon 2011 for dissenting views).

(74) *ti* *wentru* *poye-fi-i* *ti* *ülcha*
det man love-obj-indic.3 det young.woman
"The man loves the young woman." (Loncon 2011: 76)

(75) *ti* *wentru* *ti* *ülcha* *poye-fi-i*
det man det young.woman love-obj-indic.3
"The man loves the young woman." (Loncon 2011: 76)

(76) *poye-fi-i* *ti* *ülcha* *ti* *wentru*
love-obj-indic.3 det young.woman det man
"The man loves the young woman." (Loncon 2011: 76)

(77) *metawe* *iñche* *pe-fi-n*
vessel 1.s see-obj-indic.1.s
"I see the vessel." (Baker 2006)

(78) *pe-fi-n* *iñche* *metawe*
see-obj-indic.1.s 1.s vessel
"I see the vessel." (Baker 2006)

A conditional adjunct precedes the main clause and is in the conditional mood.

(79) *mawün-l-e,* *tripa-la-ya-n*
rain-cond-3 go.out-neg-fut-indic.1.s
"If it rains, I will not go out." (Smeets 2008: 183)

All other subordinate clauses are non-finite. Non-finite clauses resemble possessed nominals (see §3.2 above) and may function as adjuncts, complements, or relatives.

(80) Adjunct clauses

a. *aku-yüm* *witran* *kiñe* *ruka* *mew,* *fey* *müte* *küme*
arrive-temp.inf foreigner one house P 3 very well
llow-nge-ke-fu-y
receive-pass-hab-FU-indic.3
"When a foreigner arrived at a house, he was received with much hospitality." (Zúñiga 2006: 247)

b. *kon-ke-i=ngün* *pali-we* *meo* *t̲a* *ñi* *pali-a-el*
enter-hab-indic.3=3.p chueca-loc P det 3.poss chueca-fut-inf
engün
3.p
"They go onto the chueca field to play chueca." (Salas 2006: 159)

(81) Complement clauses

a. *kim-la-i* *chew* *ñi* *müle-n*
know-neg-indic.3 where 3.poss be-inf
"He doesn't know where it is." (de Augusta 1903: 173)

b. *ramtu-ke-fi* *ñi* *fele-n* *chi* *ñi* *weñe-n*
ask-hab-obj.indic.3 3.poss be.thus-inf det 3.poss steal-inf
"They asked him if it was true that he stole." (lit. "They asked him if his stealing was so.") (Zúñiga 2006: 142)

(82) Relative clauses

a. *chi* *witran* *wiya* *aku-lu* *a̲l̲ün* *nütram*
det foreigner yesterday arrive-prpl many story
elu-e-n-ew
give-inv-indic.1.s-ds
"The foreigner who arrived yesterday told me many things." (Zúñiga 2006: 146)

b. *fey-chi* *chanchu* *eymi* *mi* *ngilla-el* *trongli-le-y*
3-adj pig 2.s 2.s.poss buy-inf lean-stat-indic.3
"That pig you bought is lean." (Smeets 2008: 200)

Non-finite morphemes will be discussed in Chapter 1, and non-finite clauses will be discussed in greater depth in Chapter 2.

This short grammatical sketch will suffice to help the reader parse the examples presented in this thesis.

4 Syntactic theory

The aim of a syntactic theory is to generate a representation of the set of grammatical sentences in a language. Sentences have two verifiable components: a phonetic form and a meaning. A syntactic theory, then, must deliver, ultimately, a set of form-meaning pairs (Speas 1990).

To this end, a syntactic theory needs to be supplemented with phonological and semantic interpretation functions in order to verify whether a representation of a sentence it deems to be grammatical accords with native speaker intuitions. For instance, it is no good if a syntactic theory claims that a syntactic structure α is grammatical, if there is no phonetic form and meaning to map it to, and thus verify according to native speaker intuition whether the form-meaning pairing is actually good.

I adopt a single-output syntactic theory with non-cyclic interpretation and with interpretation functions which are composed of a translation function and another intermediary function. In this section I will outline the syntactic theory presupposed in this dissertation, based upon ideas in Chomsky (2001, 2004, 2008, 2010a,b, 2013).

4.1 Syntactic entities: preliminary definitions

Syntactic entities are bundles of features. Prominent among these features is the c-structure.

The following are preliminary definitions for discussing c-structures.

Let $\in^*$ be the transitive closure of the membership relation, $\in$; that is, $\in^*$ subsumes the relation $\in$ such that it holds that if $\alpha \in \beta$ then $\alpha \in^* \beta$, and $\in^*$ is a transitive relation such that it holds that if $\alpha \in^* \beta$ and $\beta \in^* \gamma$ then $\alpha \in^* \gamma$.

α is a constituent in a c-structure C if $\alpha \in^*$ C

In the following, the variables α, β are understood to range over constituents of

the specified, or otherwise an arbitrary, c-structure C

α immediately dominates β if $\beta \in \alpha$

α dominates β if $\beta \in^* \alpha$

α is a sister of β in a c-structure C if C = $\{\alpha, \beta\}$ or if $\{\alpha, \beta\} \in^*$ C

Note that if α is a sister of β, then β is a sister of α; in such a case, then, α and β are said to be sisters.

α c-commands β in a c-structure C if a sister of α in C either is or dominates β

The set of features of a syntactic entity besides the c-structure is called the label. A syntactic entity is a primitive if its c-structure is just its label. Primitive syntactic entities are also called heads.

LEX is a subset of the set of primitive syntactic entities, heads, for a given language. Elements of LEX are referred to as lexical items (of the language in question).

A Numeration is a sequence of lexical items. Each element in the sequence is assigned a unique index, called its numeration index. The same lexical item may occur more than once in a Numeration, but each occurrence will have a distinct numeration index.

Label is a commutative operation mapping a pair of labels to another label. I will forgo a full specification of this operation. For the present, I only wish to define notions regarding projections, which appeal to Label; though I note that it is presumed to hold that Label({V, ...}, {D, ...}) = {V, ...} and that this fact will ultimately be the basis of ensuring that a constituent {V, D} is deemed a projection of V and not D.

Although c-structures do not bear labels, I assume it is possible to reconstruct a label for an arbitrary c-structure. Let α, β be labels. Let A and B be the primitive syntactic entities with α and β as labels and c-structures, respectively. The reconstructed label of the c-structure $\{\alpha, \beta\}$ is defined to be Label(A, B). Now let γ, δ be c-structures. Let G be the syntactic entity with γ as c-structure and the recon-

structed label of γ as label. Let D be the syntactic entity with δ as c-structure and the reconstructed label of δ as label. The reconstructed label of the c-structure $\{\gamma, \delta\}$ is defined to be Label(G, D).

I now define the notions of projection of a feature and projection of a constituent.

For some feature f, let γ_0, ..., γ_n be the finite sequence of maximal length of constituents in a c-structure C such that for each $0 \leqslant i \leqslant n$, f is in the reconstructed label of γ_i and γ_i immediately dominates γ_{i+1} in C.[4] Then for each $0 \leqslant i < n$, γ_i is said to be a projection of the feature f of γ_n in C and γ_n is said to be the head of the feature f of γ_i; moreover, γ_0 is said to be the maximal projection of the feature f of γ_n in C. If the feature in question is a category feature, then it is simply said of each γ_i that γ_i is a projection of γ_n, that γ_n is the head of γ_i, and that γ_0 is the maximal projection of γ_n in C.

Where X is a category feature, a projection of X is said to be an XP.

C, v*, and P are phase heads. Their projections are phases.

4.2 Feat-Sat

Feat-Sat is a function mapping one c-structure to another. It induces feature modification of constituents. A partial specification of its effects is given below by cases.

4.2.1 Agree

A constituent may bear a special feature specified as a probe for a feature. In that case the constituent is referred to as a Probe. An Agree relation is established between the Probe and a Goal, defined as the closest constituent which bears the feature probed for. Proximity is determined by c-command.

[4] Extra assumptions are needed to guarantee uniqueness. I do not suppose that uniqueness holds for such sequences in general. Let γ_0, ..., γ_n be undefined if uniqueness is not met.

The Goal may either be c-commanded by the Probe or may c-command the Probe (see Baker 2008). Furthermore, the position of the Goal is limited by the Phase Impenetrability Condition (PIC), which states that the Goal may not be c-commanded by the head of a phase dominated by the phase in which the Probe occurs, i.e. the phase which dominates the Probe and does not dominate any other phase which dominates the Probe; such a phase is called a lower phase.

If an Agree relation holds between two constituents in a c-structure C, Feat-Sat(C) returns a c-structure identical to C except that the probe feature on the Probe has been marked as satisfied/checked/deleted and a record of features of the Goal of that probe feature has been transcribed on the Probe. Records are associated with particular probe features and are basically akin to category-valued features of GPSG (Gazdar et al. 1985).[5]

4.2.2 θ-discharge

If $\{\alpha, \beta\}$ is such that the reconstructed label of β bears a θ-feature and α is a DP or CP, then α is said to be θ-marked by β, and the head of α and the head of the θ-feature of β are said to stand in a θ-marking relation.

If a θ-marking relation holds between two constituents α and β in a c-structure C, Feat-Sat(C) returns a c-structure identical to C except that the θ-feature of β is marked as satisfied/checked/deleted, and α bears the θ-feature of β.

Where Label(X, Y) = Z, Y bears a θ-feature and X is a DP or CP, it is assumed that Label is defined such that Z does not project the θ-feature of Y.

[5]See also the precursors to the idea of category-valued features listed in Gazdar et al. (1985: 21).

4.2.3 Selection

A constituent may bear a special feature called a selection feature for a feature. In such a case, the constituent is also said to select for that feature. If $\{\alpha, \beta\}$ is such that the reconstructed label of β bears a feature which α selects for, then the head of the selection feature of α is said to stand in a selection relation with (the head of the feature selected for of) β.

If a selection relation holds between two constituents α and β in a c-structure C, then Feat-Sat(C) returns a c-structure identical to C except that the selection feature of α is marked as satisfied/checked/deleted.

4.3 Merge

Merge is a commutative binary operation mapping two syntactic entities to another. In the following I present a partial specification of the operation by cases. Fist I discuss the distinction between internal and external Merge.

4.3.1 External and internal Merge

Let Merge(X, Y) = Z. I assume that the numeration index of Z is uniquely determined from those of X and Y. The following is one option. Let i be the numeration index of X and j be the numeration index of Y. Then the numeration index of Z is defined to be {i, j}.

Let Merge(X, Y) = Z, the c-structure of X be α, and the c-structure of Y be β. Then Merge(X, Y) is a case of internal Merge if α is identical to a constituent of β, γ, with the exception that every head in α bears a copy index with the same value and distinct from that of the heads in γ. In particular, the numeration index in the reconstructed label of α, viz. the label of X, is the same as the numeration index in the reconstructed label of γ.

Constituents in a c-structure Z with homogenous copy indices and which bear the same reconstructed numeration index are called copies of each other, and a syntactic theory with internal Merge is also called a copy theory of movement.

An application of Merge which is not a case of internal Merge is called an external Merge.

4.3.2 Default

In the default case, where X and Y are syntactic entities, x is the label of X, y is the label of Y, α is the c-structure of X, and β is the c-structure of Y, Merge(X, Y) is that syntactic entity with label Label(x, y) and c-structure Feat-Sat($\{\alpha, \beta\}$).

Every instance of external Merge is subject to the default rule specifying the output. Cases of internal Merge, however, may license different effects of the Merge operation.

4.3.3 Tucking-in

In the case of tucking-in, where X and Y are syntactic entities, y is the label of Y, α is the c-structure of X, and $\{\beta, \gamma\}$ is the c-structure of Y and the reconstructed label of γ bears an edge feature, Merge(X, Y), where X is internally Merged to Y, is that syntactic entity with label y and c-structure Feat-Sat($\{\beta, \{\alpha, \gamma\}\}$).

4.3.4 Head-movement

In the case of head-movement, where X and Y are syntactic entities, y is the label of Y, α is the c-structure of X, and $\{\beta, \gamma\}$ is the c-structure of Y and a projection of β, Merge(X, Y), where X is internally Merged to Y, is that syntactic entity with label y and c-structure Feat-Sat($\{\{\alpha, \beta\}, \gamma\}$).

Beyond Merge, there may be other operations on syntactic entities. A non-commutative operation pairMerge may produce an ordered pair instead of a set:

pairMerge(α, β) = <α, β>

4.3.5 Conditioning of cases

The non-default c-structures that may be created as a result of Merge, e.g. tucking-in and head-movement c-structures, may similarly be derived from separate operations, such as tuck-inMerge and headMerge. Alternatively, they may simply be the result of Merge under specific conditions. For instance, the tucking-in case may be triggered whenever there is internal Merge to a syntactic entity with an edge feature and the head-movement case may result whenever there is internal Merge of a head. In general, the conditions under which Merge(X, Y) follows the default specification or one of the others may be due to features on X or Y or language-wide parameter settings. In this way, there is no need to posit any operations besides Merge.[6]

4.4 Well-formedness of syntactic entities

Every syntactic theory must countenance both derivations of its representations and constraints defining the class of well-formed representations. Every constraint-based

[6] Instead of proposing different specifications of Merge which define the c-structure of the output in different ways, one could leave only the default case as the specification of Merge and let the phonological interpretation take on the burden of producing different linearizations under the conditions specified. For instance, the phonological interpretation function could be defined so that the c-structure {DP^i {C {T$_{[edge]}$ {...}}}}, where DP^i is a copy of another constituent, is spelt-out as p(C) < p(DP^i) < p(T) < ..., where p is the phonological interpretation function and < is linear precedence. However, such a division of labor will only work if linearization exhausts the intended effects of proposing the c-structure {C {DP^i {T {...}}}} over {DP^i {C {T$_{[edge]}$ {...}}}}. If, on the other hand, there are other consequences to proposing the former c-structure over the latter, for instance if it is crucial that C c-commands DP instead of vice-versa, then the two structures are not equivalent and there is motivation to specify that a syntactic entity possesses the former c-structure rather than the latter. See also Baker (1988) for arguments that head-movement should be represented in the syntax in the manner sketched and therefore not in an alternative manner with the burden of appropriate linearization relegated to phonological interpretation. Note that the same reasoning also motivates the distinction between c-structures and Merge structures, i.e. the structure representing the derivation of a syntactic entity by Merge, pursued here. Note, moreover, that the distinction between c-structures and Merge structures is analogous to that between P-markers and T-markers proposed in Chomsky (1975: 306, 320-1, 340-2, 355, 360).

theory, at least implicitly, must recognize an initial set of representations which to filter through the constraint system. Conversely, every derivational theory must recognize at least the implicit constraint which limits the grammatical structures to those which are the result of the production rules.

I adopt a constraint-based theory, where every syntactic rule takes the form of a constraint which a syntactic representation must satisfy. Constraints are not assumed to be violable. Rather, I adopt the simplest algorithm for the tabulation of grammaticality: a syntactic entity is grammatical if it satisfies every constraint.

What appear to be production rules in the theory proposed here are actually to be cast as constraints. In particular, among the constraints of the theory I include:

(83) Constraints of the syntactic theory proposed

a. For a syntactic entity to be valid, it must be the output of repeated applications of Merge, with the elements of some Numeration N as atoms, and such that each element in N participates in an application of Merge.

b. For a syntactic entity to be valid, any satisfiable features in its c-structure (e.g. selection features, θ-features, probes) must be marked as satisfied/checked/deleted.

I will not explore just how a syntactic entity is evaluated as to whether it satisfies a constraint. Ideally, the satisfaction of a constraint by a syntactic entity would be defined in a model-theoretic manner with formalized constraints (see Carpenter 1992).

4.5 Representation of syntactic structures

I represent syntactic primitives, and their c-structures, which are just their label, by means of a list with a partial specification of its features. In addition, the representation of a syntactic primitive may also contain a piece of orthography indicating

the intended phonological and semantic interpretation by means of the conventions associated with standard English orthography. A piece of orthography in all capital letters indicates only the intended semantic interpretation.

For instance, I represent a head with a feature [D] and expected spell-out [ðʌ] as:

(84) D

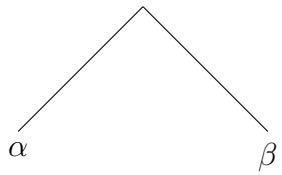
the

The numeration index of this head may be represented as a subscript on the first feature in the list.

This head may have many other features besides, such as selection features, number features, perhaps agreement features, etc. Since the representation of heads is assumed to be partial, which features are shown is left to the discretion of the author.

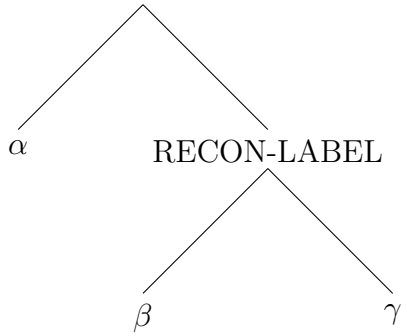
I represent a c-structure $\{\alpha, \beta\}$ as:

(85)



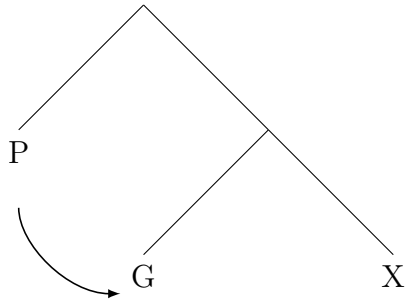
Optionally, a constituent in a c-structure may bear a reconstructed label, as in:

(86)



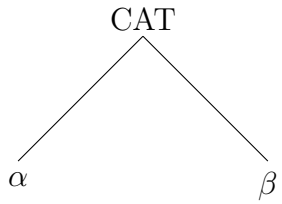
I represent the Agree relation holding between a Probe P and a Goal G as:

(87)



I represent the syntactic entity with label CAT and c-structure {α, β} as:

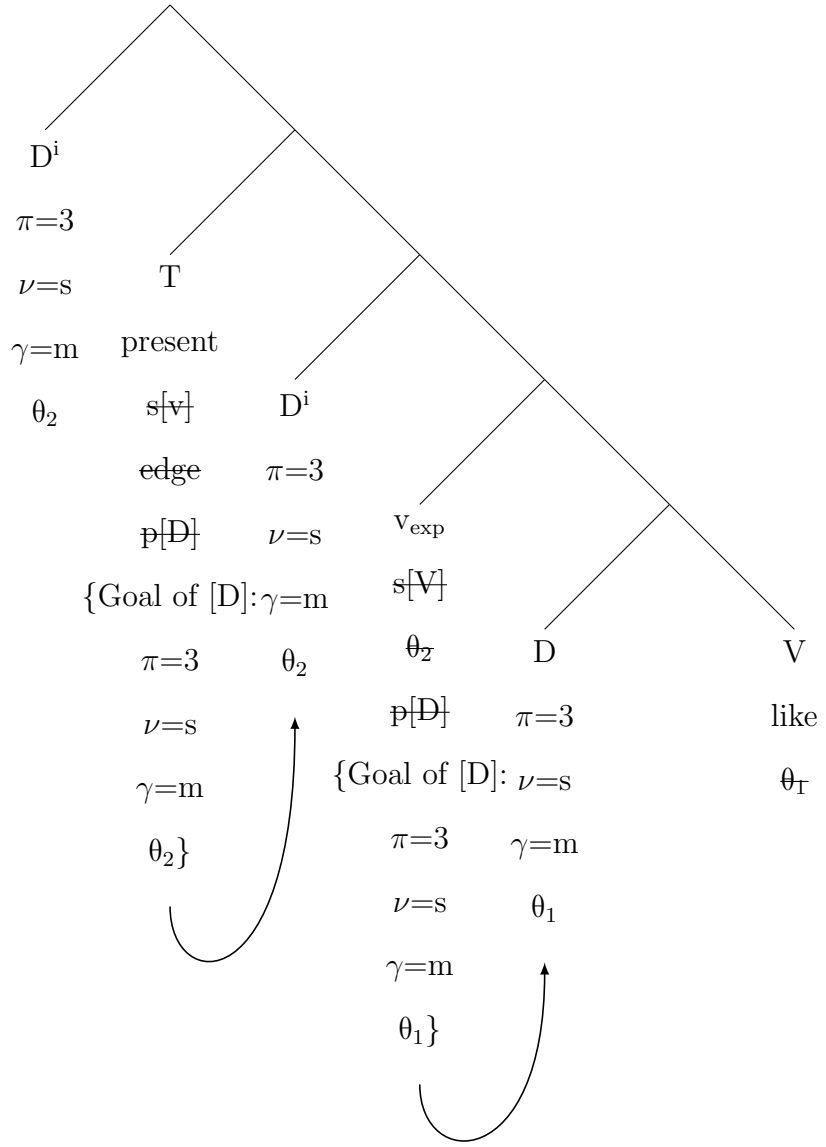
(88)



4.6 Sample derivation

The syntactic entity represented in (89) appears to be valid in accord with the syntactic theory sketched in the previous sections, as it appears to be the output of successive applications of Merge to a Numeration N = <{D, π=3, ν=s, γ=m}, {D, π=3, ν=s, γ=m}, {T, present, s[v], [edge], p[D]}, {v_{exp}, s[V], [θ_2], p[D]}, {V, [θ_1]}>, and all features that must be satisfied, viz. selection, probe, and θ-features, are satisfied/checked/deleted.

(89)



Let p be the translation function component of the phonological interpretation function and satisfy the following partial specification (where hd is a function which returns the first term in a formula of the form x ^ y ^ ... z, and tail is a function which returns the portion of the formula of the form x ^ y ^ ... z except for the first term and instance of ^).

(90) p($\{\alpha, \beta\}$) = p(α) ^ p(β) where α is a head and $\{\alpha, \beta\}$ is a projection of α

p($\{\alpha, \beta\}$) = p(α) ^ p(β) where neither α nor β is a head and $\{\alpha, \beta\}$ is a projection of β

p($\{\alpha, \beta\}$) = hd(p(β))-p(α) ^ tail(p(β)) where α is specified as a suffix[7]

p($\{\alpha, \beta\}$) = β where a copy of α has already been encountered

p({T, present, {Goal of [D]: π=3, ν=s, ...}, ...}) = -s

p({V, like}) = $_{\text{V}}$like

p($\{\text{v}_{\text{exp}}\}$) = ε

p({D, π=3, ν=s, γ=m, ...}) = he

Then on the syntactic entity in (89) as input, the phonological translation function returns (a formula equivalent to):[8]

(91) he ^ $_{\text{V}}$like-s ^ he

Then the component function of the phonological interpretation function which maps logical terms to phonological entities may map the formula in (91) to the following phonological representation; in particular where ^ is interpreted as string concatenation which also inserts a word-boundary marker.

(92) #hi#{$_{\text{VP}}$lʌɪkz#hɪm}#

[7]Such a rule essentially treats suffixes as enclitics and obviates the need for head movement in the syntax; though whether or not a head movement analysis is appropriate is due to considerations beyond linearization / phonological interpretation. Nevertheless, for convenience, I will propose structures for Mapudungun without head movement, assuming that a rule of this sort is operative in phonological interpretation. See, however, Baker (2009) for arguments supporting a head-movement analysis in the syntax for Mapudungun.

[8] I assume that the appropriate case of the pronouns is determined by the second component of the phonological interpretation function. Presumably, the translation function already provides the relevant information in the logical term it outputs or else could easily be modified so that it does. Alternatively, we could assume that there are [case=nominative] and [case=accusative] features in the c-structure, the former licensed by Agree with T and the latter by Agree with v, and that the translation function is specified such that p({D, π=3, ν=s, γ=m, case=nominative, ...}) = he and p({D, π=3, ν=s, γ=m, case=accusative, ...}) = him.

Supplied to a phonological theory, e.g. some version of OT (Prince and Smolensky 2004), this can provide an even more specific phonological entity to consider for verification, eliminating boundary symbols and parsing the string into the full projection of prosodic hierarchies, which structure in turn receives a phonetic interpretation, and devoicing [z].[9]

Let s be the translation function component of the semantic interpretation function and satisfy the following partial specification (where θ_α is the predicate denoting the thematic role assigned by the head of α and var_α is the eventuality variable used to translate the closest V dominated by $\{\alpha, \beta\}$ where β is the sister of α; P is a predicate of eventualities and varies from predicate to predicate; var_δ is the individual variable used to translate the closest N dominated by $\{\delta, \gamma\}$ where γ is the sister of δ or else, if no such N, then one introduced by δ itself).

(93) $s(\{\alpha, \beta\}) = s(\alpha) \wedge s(\beta)$[10]

$s(v) = \top$

$s(V) = P(\text{var}_\alpha)$

$s(\{[\theta], D, ...\}) = \theta_\alpha(\text{var}_\alpha, \text{var}_\delta) \wedge s(\{D, ...\})$ where α is the constituent which θ-marks the lowest copy of DP and {D, ...} is the set {[θ], D, ..} minus {[θ]}

$s(\{D, \pi{=}3, \nu{=}s, \gamma{=}m\}) = (\text{var}_\delta = \top_{\text{male}})$ where δ is this D constituent and is not c-commanded by another D with the same γ feature, otherwise $= (\text{var}_\delta = \bot_{\text{male}})$

$s(\{T, \text{present}, ...\}) = \top_{\text{time}} \subseteq \tau(\text{var}_\alpha)$

[9] If the alternation between [z] and [s], as the expression of present tense agreement with a 3rd person singular subject, among other English morphemes which share this expression, is not due to a phonological process but rather to phonologically-conditioned allomorphy, then the (second component of the) phonological interpretation function will be expected to have already delivered devoiced [s]. Note that morphology is assumed to operate within the phonological interpretation function.

[10] See Pietroski (2005) for a discussion of semantic interpretation functions with such a rule.

Assuming there is also default existential closure of free variables, then the output of the translation function on (89) as input is (logically equivalent to):

(94) $\exists$e, x, y. like(e) $\wedge$ $\top_{\text{time}} \subseteq \tau$(e) $\wedge$ Experiencer(e, x) $\wedge$ Theme(e, y) $\wedge$ x = $\top_{\text{male}}$ $\wedge$ y = $\bot_{\text{male}}$

The component function of the semantic interpretation function which maps logical formulae to semantic entities may map (94) to:

(95) true if and only if there is an event of liking holding at the topic time, the experiencer of which is the topical male in discourse and the theme of which is the backgrounded male in discourse.

Supplied to a pragmatic theory (see Bittner 2007), this can provide an even more specific meaning in a given context.

I assess that insofar as a syntactic theory, augmented with interpretation functions meeting the specifications laid out, predicts that the form-meaning pair of (92) and (95), or the more refined output of phonological and pragmatic theories with these as input, is grammatical in English, as does the theory considered here, that is a good prediction of the theory.

Note that overt agreement in ϕ-features with the subject is mediated through both an Agree relation in the syntax and the appropriate specifications in the phonological interpretation function. Note, for instance, that the lack of overt agreement in ϕ-features with the object is due to the specification of the phonological interpretation function, as the syntax treats subjects and objects uniformly in terms of Agree.

5 Outline of this dissertation

This dissertation investigates topics in the syntax of Mapudungun subordinate clauses.

In Chapter 1, I undertake a study of the diverse non-finite endings in Mapudungun and defend Baker's allomorphy theory for a range of non-finite markers. In the process I develop a theory of wh-agreement for Mapudungun, as different patterns of extraction condition the appearance of certain of these markers. I also analyze the remaining non-finite markers as participial heads.

In Chapter 2, I undertake a study of the syntactic structure of Mapudungun infinitival clauses, with special attention to the question of the projections contained and the label of the entire clause.

In Chapter 3, I study the morpheme *-a* in Mapudungun and argue that it is a future modal and review evidence against alternative analyses.

In Chapter 4, I define classes of predicates on the basis of whether *-a* is required, optional, or disallowed in their complement clauses and develop a semantic theory of selection which accounts for this distribution of *-a*.

Chapter 1

Non-finite morphemes and Wh-agreement in Mapudungun

Several non-finite endings can be distinguished in Mapudungun, including: *-n*, *-el*, *-fiel*, *-eteo*, *-am*, *-mum*, *-yüm*, *-lu*, *-wma*. It is a controversial matter just what the non-finite morphemes within these endings are and whether any are allomorphs of one another. Baker (undated) identifies *-n*, *-el*, *-t*, and *-m* as non-finite markers and proposes that they are morphologically-conditioned allomorphs of a single non-finite morpheme, call it Inf. In this chapter I seek to further develop and defend Baker's theory by defining the morphological environments which trigger each allomorph. Following Baker, I propose that certain appearances of *-el* reflect the presence of object extraction, but formulate a different analysis of wh-agreement. I extend this wh-agreement analysis of Inf allomorph selection by proposing that the appearance of the *-m* allomorph responds to the presence of oblique extraction. Finally I develop a participial analysis of the remaining two non-finite markers in Mapudungun, *-lu* and *-wma*.

1 Introduction

1.1 Non-finite endings in Mapudungun

In Mapudungun, a non-finite inflection replaces both mood and person-number inflection; though the marker -(*m*)*ew* which accompanies inverse marking, -*e*, and occurs outside of person-number inflection remains. In most non-finite clauses, however, there is an analytic marker displaying person and number agreement, drawn from the nominal possessor paradigm.

There are several different non-finite endings in Mapudungun, including: -*n*, -*el*, -*fiel*, -*eteo*, -*am*, -*mum*, -*yüm*, -*lu*, and -*wma*. Previous researchers have analyzed this set of endings in different ways and posited distinct ontologies of non-finite markers, but the following examples present non-finite clauses with these diverse endings, described in this most theoretically neutral manner.

(1) *kim-nie-n* *fey* *ñi* *ayü-nie-**fiel***
know-have-indic.1.s 3 3.poss love-have-nf
"I know that she loves him" (Smeets 2008: 214)

(2) *kim-nie-n* *fey* *ñi* *ayü-nie-**etew***
know-have-indic.1.s 3 3.poss love-have-nf
"I know that he loves her" (Smeets 2008: 213)

(3) *kiñe* *aṉṯü* *ṯa* *ñi* *kude-**am*** *engu*
one day det 3.poss race-nf 3.d
"a day for the two of them to race" (see Salas 2006: 168)

(4) *fey-ti-chi* *rewe* *anüm-tuku-le-ke-y* *itro-tripa* *ruka* *cheo* *ṯa*
3-det-adj rehue plan-put-stat-hab-indic.3 right-go.out house where det
ñi *müle-**mum*** *kiñe* *machi*
3.poss live-nf one machi
"the rehue is planted in front of the house where a machi lives" (Salas 2006: 169)

(5) *ngüñü-le-**yüm** ṯüfa kulliñ che rume yam-ke-la-fi*
hungry-stat-nf det animal person even respect-hab-neg-obj.indic.3
"When this animal was hungry, not even people did it respect" (Salas 2006: 155)

(6) *allkü-tu-fi-**lu** iñchiñ ngüma-y-i-ñ*
hear-tr-obj-nf 1.p cry-indic-1-p
"When we listened to it, we cried" (Smeets 2008: 221)

(7) *feymeo pepika-nge-ke-y epu angken fara katrü-kunu-**uma** kuyfi*
then prepare-pass-hab-indic.3 two dry rod cut-leave-nf before
"then two dry rods which have been left cut long ago are prepared" (Salas 2006: 156)

1.2 Statement of Theory: ontology of non-finite markers and allomorphy grouping

Baker (undated) analyzes these endings such that *-n*, *-el*, *-t*, and *-m* are non-finite markers and further proposes that these are morphologically-conditioned allomorphs of the same morpheme (see also Smeets 2008). Following Baker and Smeets, I propose the ontology and allomorphy grouping of non-finite markers in Mapudungun in Table 1.1.

Table 1.1: Non-finite morphemes in Mapudungun

Morpheme	Allomorphs
Infinitive (Inf)	*-n*, *-el*, *-t*, *-m*
Present participle *-lu*	*-lu*
Past participle *-wma*	*-wma*

In particular, then, I propose that the markers *-n*, *-el*, *-t*, and *-m* are all morphologically-conditioned allomorphs of a single non-finite morpheme in Mapudungun, call it Inf, and that the markers *-lu* and *-wma* are each independent morphemes, different from the first and each other.

In Appendix B I compare this theory with the alternative theories of Salas (2006), Zúñiga (2006), de Augusta (1903), and Smeets (2008).

In this chapter I seek to formulate the precise morphological environments which trigger each allomorph of Inf.

Before proceeding, a brief excursus is called for on why it is justified to refer to these endings and markers, and the clauses which contain them, as "non-finite".

2 Note on the use of the term 'non-finite'

Embedded clauses in Mapudungun are non-finite. I define 'non-finite' as any clause whose predicate does not inflect for agreement in ϕ-features with the subject.

Any attempt to define 'non-finite' universally seems to come up against counterexamples. Surely any clause whose predicate does not inflect for subject agreement, does not allow expression of tense, and does not allow an overt subject will readily be admitted as 'non-finite', as if prototypical. But there are clauses which one wishes to classify as non-finite which may display one or more of the contrasting 'finite' properties; and perhaps all three, retaining only certain other characteristic behavior of clauses which meet these criteria in other languages. For instance, Italian gerundival adverbial clauses may host an overt (nominative) subject, as in (8); Latin infinitives display present, past, and future tense distinctions, as in (9); and European Portuguese allows certain infinitives to inflect for subject agreement, as in (10).

(8) *Avendo Mario accettato di aiuta-r-ci, potremo*
have.ger M. accept.ppl P help-inf-1.p.obj be.able.indic.pres.1.p
resolve-re il problema.
resolve-inf det problem
"Mario having accepted to help us, we will be able to solve the problem."
(Rizzi 1982: 83)

(9) a. *Dic-unt eum iuva-re eam*
say.pres-3.p 3.m.acc help.pres-inf 3.f.acc

"They say that he is helping her."

b. *Dic-unt* *eum* *iuv-isse* *eam*
say.pres-3.p 3.m.acc help.prf-inf 3.f.acc
"They say that he helped her."

c. *Dic-unt* *eum* *iuturum* *esse* *eam*
say.pres-3.p 3.m.acc help.fut.pcpl be.pres.inf 3.f.acc
"They say that he will help her."

(10) *Subi-r-es* *a* *renda* *signific-a* *sai-r-mos* *do* *apartamento*
raise-inf-2.s det rent mean-pres.3 leave-inf-1.p from.det apartment
imediatamente
immediately
"For you to raise the rent means for us to leave the apartment immediately."
(Safir 1996: 86-7)

Landau (2004) has dispensed with the binary feature [±finite] and has instead sought to characterize clauses in terms of several other features: [±R], [±T], and [±Agr], on C and I. Each combination of these is responsible for distinct behavior, such as licensing a subject capable of independent reference, having independent, dependent or anaphoric tense, and having overt, covert, or no agreement. On the resulting typology of clause types, defined in terms of different combinations of these particular features on C and I, one end of the cline might be deemed the 'non-finite' end and the other, the 'finite' end. However, there is no clear break in the middle, as it were. Rather there are clause types which possess some mix of the properties considered, and which we might judge to be more or less finite, or finite in some ways and non-finite in others, but any absolute classification in these binary terms is arbitrary.

Faced with the difficulty of formulating necessary and sufficient conditions for being a non-finite clause, I resolve to restrict use of this term to this sense, viz. a clause whose predicate does not inflect for overt agreement in ϕ-features with the subject. It may not be appropriate to saddle the term 'non-finite' with this sense;

note that problems for this definition include that it does not classify European Portuguese inflected infinitives as non-finite and classifies every clause in Chinese, including matrix clauses, as non-finite. However, I concur with the assessment of Joseph (1983), studying Balkan infinitives or the lack thereof, that a binary finite/non-finite distinction is often very useful to posit among the clauses of a language but is defined parochially on the basis of language-particular characteristics and that no such definition may have universal validity. Restricting the use of this term in this way will at least suffice for Mapudungun. Note that such a feature [±finite] would correspond most closely to that of [±Agr] in Landau (2004: 839).

3 Baker's Theory of Inf allomorphs and Wh-agreement in Mapudungun

Returning to Mapudungun, the distribution of the non-finite markers which Baker (undated) takes to be allomorphs of a single non-finite morpheme, Inf, across morphological contexts is as summarized in Table 1.2.

Anticipating more detailed discussion of Baker's theory, I will refer to the morphemes which on Baker's analysis compose with the true non-finite markers to form of the traditional class of non-finite endings, viz. *-fi*, *-e*, *-mu*, *-a*, *-ye*, and also *-fu*, as triggers. I will refer to all other Mapudungun verbal suffixes as neutral.

Table 1.2: Distribution of Inf markers across morphological environments on Baker's ontology of morphemes

	Root	*-a*	*-fu*	*-mu*	*-fi*	*-e*	*-ye*
-n	✓	*	*	*	*	*	*
-el	✓	✓	✓	*	✓	*	*
-t	*	*	*	*	*	✓	*
-m	*	✓	*	✓	*	*	✓

A ✓ indicates that the non-finite marker may follow a stem containing the morpheme identified, followed by a, possibly null, sequence of neutral morphemes.
A * indicates that the non-finite marker may not follow a stem terminating with the morpheme identified or containing it and followed by a sequence of neutral morphemes.

This ontology of markers and morphemes provides for a near-complementary distribution of the markers across morphological contexts, thus motivating and greatly facilitating a morphologically-conditioned allomorphy account of the distribution of the markers -*n*, -*el*, -*t*, and -*m*. Note that the columns for the morphemes -*fu*, -*mu*, -*fi*, -*e*, and -*ye* only contain one check mark, with the rest of the entries being stars. This expresses the fact that the morphological environment defined by these morphemes only admits a single marker from Baker's ontology.

In light of the restrictions reflected in Table 1.2, Baker proposes the following allomorphy rules for Inf: the marker -*el* is triggered by preceding future -*a*, temporal -*fu*, or object agreement -*fi*; the marker -*t* is triggered by preceding inverse voice -*e*; the marker -*m* is triggered by preceding past -*mu* or temporal -*ye*; and the marker -*n* appears in an elsewhere class of environments. These rules are illustrated below; where "..." is a, possibly empty, sequence consisting solely of neutral morphemes.

(11) Inf → -*el* /-*a*...___ (i.e. when last non-neutral morpheme is -*a*)

a. *iñche* *ayü-n* *ñi* *lef-a-el*
1.sg want-1.sg 1.sg.poss run-fut-inf
"I want to run."

b. **iñche* *ayü-n* *(ñi)* *lef-el*
1.sg want-1.sg 1.sg.poss run-inf
"I want to run."

(12) Inf → -*el* /-*fi*...___

a. *iñche* *kim-ün* *Manuel* *ñi* *kewa-fi-el* *ta* *Juan* *em*
1.s know-indic.1.s M. 3.poss fight-obj-inf det J. empath
"I know that Manuel hit Juan (too bad for Juan)."

b. *iñche* *kim-ün* *Manuel* *ñi* *kewa-n* *Juan* *yengu*
1.s know-indic.1.s M. 3.poss fight-inf J. with
"I know that Manuel fought with Juan."

(13) Inf → *-el* /*-fu*...___ (morpho-phonological rule reduces sequence to *-fel*, de Augusta 1903: 196)

nge-we-ke-no-f-el *meo* *mawida-nto* *kom* *püle*
be-persist-hab-neg-FU-inf P wood-accum all direction
"because there were no longer woods anywhere" (Salas 2006: 158)

(14) Inf → *-t* /*-e*...___

a. *kim-nie-n* *fey* *ñi* *ayü-nie-e-t-ew*
know-have-indic.1.s 3 3.poss love-have-inv-inf-ds
"I know that he loves her." (Smeets 2008: 213)

b. *kim-nie-n* *fey* *ñi* *ayü-nie-fi-el*
know-have-indic.1.s 3 3.poss love-have-obj-inf
"I know that she loves him." (Smeets 2008: 214)

(15) Inf → *-m* /*-mu*...___

iñchiñ *ta-yiñ* *lleq-mu-m*
1.p det-1.p.poss grow.up-plprf-inf
"where we have grown up" (Smeets 2008: 206)

(16) Inf → *-m* /*-ye*...___

chew *müli-y* *ñi* *kücha-tu-pe-ye-m*
where be-indic.3 1.s.poss wash-tr-prox-temp-inf
"Where is the thing I always wash with?" (Smeets 2008: 207)

Baker also formulates a linearity principle for allomorph selection according to which the allomorph of Inf is chosen in accord with the preference of the closest linearly preceding trigger. This principle accounts for the expression of Inf in verbal complexes in which more than one trigger occurs.

For instance, in verbs with both future *-a*, which triggers the allomorph *-el*, and *-e*, which triggers the allomorph *-t*, the form of Inf is *-t*. This follows on Baker's theory since *-e* follows *-a* and is thus the closest linearly preceding morpheme to Inf.

(17) *ñi* *elu-a-e-t-eo* *küme* *kosecha*
3.poss give-fut-inv-inf-ds good harvest
"so that they may be given a good harvest" (Salas 2006: 163)

Of course, an allomorphy theory must specify an exhaustive and disjoint set of environments such that each one only allows a single allomorph marker; a near-complementary distribution does not suffice.

Two columns have more than one check in Table 1.2, indicating that more than one marker may occur in the morphological environment described and constituting apparent counterexamples to a complementary distribution of Inf markers across morphological contexts. Specifically, the markers *-el* and *-m* appear to occur in morphological environments in which another marker may occur; *-n* and *-el*, respectively. The pursuit of a morphologically-conditioned allomorphy theory with this ontology of markers, therefore, will require the positing of some difference in these apparently identical morphological environments.

First, both *-n* and *-el* can occur on bare roots, or on any stem consisting solely of neutral morphemes. It is not the case, however, that *-n* and *-el* are in free variation in a situated context. Rather, *-el* may occur on a bare stem in object relatives and certain adjuncts. In fact, it appears that object relatives require the marker *-el*.

(18) *-n* on bare stem, only neutral morphemes

a. *kim-nie-n* *fey* *ñi* *müle-n*
know-have-indic.1.s 3 3.poss be-inf
"I know where he is.", "I know that he is present." (Smeets 2008: 197)

b. *müpü-le-n* *puw-üy*
fly-stat-inf arrive-indic.3
"He arrived flying." (Smeets 2008: 195)

(19) *-el* on a bare stem, within a relative clause

ta-ti *wentru* *(eymi)* *ta-mi* *pe-el*
det-det man 2.s det-2.s.poss see-inf

"the man that you saw" (Harmelink 1990: 138)

Noting that instances of -*el* after a bare root or sequence of solely neutral suffixes correspond to object relatives, and that such distinctive marking correlating with object extraction also occurs in the Austronesian language of Chamorro, Baker proposes an account of the appearance of -*el* along the lines of the analysis of wh-agreement in Chamorro of Chung (1998). In particular, Baker proposes that there is a null allomorph of the object agreement morpheme -*fi* present in object relatives which is specified as agreeing with a wh-trace in object position, -$\varnothing_{\text{fi[+wh]}}$, and that this morpheme triggers the allomorph -*el*. Baker (1996) already argued that object agreement was obligatory in polysynthetic languages, like Mapudungun, and Baker (2006) argued specifically that object agreement -*fi* has a null allomorph in Mapudungun. Baker now proposes that there are two null allomorphs of -*fi*: one which agrees with a +wh trace (in object position) and triggers the presence of -*el* in the case of object relatives, and another one which agrees with a -wh empty category and does not trigger -*el* but rather is transparent for allomorph selection. It then follows that all (active voice) object relatives in Mapudungun will bear the marker -*el*, for either -*fi* or its null allomorph, -$\varnothing_{\text{fi[+wh]}}$, will be present[1]. With this enriched ontology of triggers, a complementary distribution across morphological environments between -*el* and -*n* may be maintained[2].

The second counterexample to a simple statement of complementary distribution across morphological contexts with Baker's ontology of markers is the fact that both -*m* and -*el* may occur after -*a*. Baker's theory incorrectly predicts that the ending -*am* should be impossible, as the sequence -*a*-*m* is ruled out by the allomorphy spell-out

[1] Unless -*ye* may occur in object relatives, in which case it is predicted that -*m* will be the marker, since -*ye* follows both -*fi* and -$\varnothing_{\text{fi[+wh]}}$. Yet it does not seem to be the case that -*ye* can occur in object relatives.

[2] Putting aside the potential cases of object relatives with -*n* discussed in Appendix B §4.3.4.

rules and there is no other means of generating it; in particular, it is not a primitive, as it is for de Augusta (1903), Salas (2006), Zúñiga (2006). Yet the ending -*am* is possible.

(20) *maipill-nentu-nge* *kütral* *ñi* *eñum-tu-a-m* *che*
fire.poker-take.out-imp.2.s fire 3.poss hot-vb-fut-inf person
"Stoke the fire so that people can warm up." (de Augusta 1916: 129)

Baker takes the grammaticality of the non-finite ending -*am* to be more or less a straightforward problem.

4 Proposed revision and extension to Baker's theory

We have seen that there are two counterexamples to an allomorphy theory with Baker's ontology of markers. Baker has proposed a wh-agreement analysis for the first, bringing it in line with the allomorphy hypothesis, but deems the second to be a straightforward problem for an allomorphy theory.

Nevertheless, extending the analogy which Baker has set up with Chamorro, we might note that Chamorro has distinctive marking specifically for oblique extraction as well as for object extraction (Chung 1982), and observe that in Mapudungun non-finite clauses ending in [m] are, within relatives at least, restricted to clauses with oblique extraction. (See also (15), (16) above.)

(21) *fey-ti-chi* *rewe* *anüm-tuku-le-ke-y* *itro-tripa* *ruka* *cheo* *ta̲*
3-det-adj rehue plan-put-stat-hab-indic.3 right-go.out house where det
ñi *müle-mu-m* *kiñe* *machi*
3.poss live-plprf-inf one machi
"The rehue is planted in front of the house where a machi lives." (Salas 2006: 169)

(22) *kiñe* *a̲n̲t̲ü* *t̲a* *ñi* *kude-a-m* *engu*
one day det 3.poss race-fut-inf 3.d
"a day for the two of them to race" (see Salas 2006: 168)

(23) *cheo* *ñi* *llitu-a-m* *ñi* *lef-ün* *chi* *epu* *kawellu*
where 3.poss start-fut-inf 3.poss race-inf det two horse
"where the two horses will race" (see Salas 2006: 168)

I propose that, just as with the appearance of *-el* in object relatives, the appearance of *-m* in oblique relatives is a result and reflection of wh-agreement in Mapudungun.

However, to refine the descriptive generalization, note that some oblique relatives also take *-el*. Thus, alongside (22) and (23) above, we also find (25) and (26).

(24) *chew* *müli-y* *mi* *chüngar-fi-el*
where be-indic.3 2.s.poss stab-obj-inf
"Where is (the thing) I stabbed you with?" (Smeets 2008: 214)

(25) *kiñe* *a̲n̲t̲ü* *t̲a* *ñi* *traw-a-el* *engün*
one day det 3.poss gather-fut-inf 3.p
"a day for them to gather" (see Salas 2006: 167)

(26) *pali-we* *meo* *cheo* *t̲a* *ñi* *pali-a-el* *engün*
chueca-loc P where det 3.poss chueca-fut-inf 3.p
"to the chueca field where they will play" (see Salas 2006: 159-60)

The most adequate generalization, then, at least among relatives, appears to be that *-m* occurs in oblique relatives and that *-el* occurs in non-subject relatives more generally, i.e. in object and oblique relatives.[3]

[3]I crucially assume that oblique relatives with the endings *-am* and *-ael* may occur alongside one another in the same dialect; not just that there are dialects in which oblique relatives are marked like object relatives and others in which they are marked distinctly. Salas (2006) cites both forms and does nothing to suggest as much. Rather, it seems that Mapudungun dialects allow both options. See also the discussion of adjuncts with *-el* and no other triggers besides the posited extraction of a null oblique operator in Appendix B §4.2.3. If it were not for these cases, under such an analysis, it could be maintained that oblique wh-agreement is optional in Mapudungun and that *-el* triggered by extraction is limited to cases of object extraction, as the sentences in (24) – (26) above all contain other triggers for *-el* besides oblique extraction.

I will propose an analysis of wh-agreement along the same lines of Minimalist analyses of agreement in ϕ-features. First, however, I will review the principle descriptive generalizations of the phenomena called wh-agreement and previous generative analyses of wh-agreement.

5 Wh-agreement: description and previous analyses

5.1 Phenomena dubbed Wh-agreement

Wh-agreement refers to the appearance of distinctive morphology which shows up in all or some of a natural class of constructions which has been analyzed within the generative tradition as involving wh-movement, including matrix and embedded questions, relative clauses, clefts, topicalizations, comparatives, equatives, "tough movement" constructions, infinitival object relatives, and purpose clauses (Chomsky 1977, see McCloskey 1990: 208 for application to Irish wh-agreement, see Chung 1982, 1998: 208 for application to Chamorro wh-agreement).

Zaenen's (1983) generalization states that manifestations of wh-agreement are limited to complementizer alternations and special verbal morphology. This assessment, restricted to wh-agreement in relative clauses, is also consistent with the overview in Andrews (2007).

Beyond the locus of overt manifestation of wh-agreement, another dimension along which one can classify wh-agreement phenomena is how many and what types of extractions it is sensitive to. The most basic is the distinction between a clause in which wh-movement occurs vs. one in which it does not. However, wh-agreement in several languages is more fine-grained. For example, Palauan distinguishes between subject and non-subject extraction (Georgopolous 1985, Watanabe 1996) and Chamorro

distinguishes between subject, object, and oblique extraction (Chung 1982).

In the following I list examples of wh-agreement classified along both of these dimensions.

Firstly, familiar complementizer alternations from English and French may be described as wh-agreement. In English, with object or adjunct extraction out of a complement, the complementizer *that* can either appear or not, whereas with subject extraction, it must not appear (Rizzi 1990: 29). In French, extraction of an object or embedded subject cannot be marked by *qui*, while extraction of a local subject may (and must) (Rizzi 1990: 56, 57-8).

(27) Complementizer alternation exhibiting a subject vs. non-subject extraction distinction

a. Who do you think (*that) left? (see Rizzi 1990: 29)

b. Who do you think (that) Bill saw? (see Rizzi 1990: 29)

c. How do you think (that) Bill solved the problem? (see Rizzi 1990: 29)

(28) Complementizer alternation exhibiting a subject vs. non-subject extraction distinction

a. *L'homme que je crois qui viendra*
det.man C 1.s believe C come.fut
"the man who I think will come" (Rizzi 1990: 56)

b. *L'homme que je crois que /*qui Jean connaît*
det.man C 1.s believe C C J. know
"the man that I believe that Jean knows" (Rizzi 1990: 56)

c. *L'homme que je pense que /*qui Jean croit qui viendra*
det.man C 1.s think C C J. believe C come.fut
"the man that I think that John believes will come" (Rizzi 1990: 56)

Irish clauses display wh-agreement in the form of complementizer alternations responding to a tripartite distinction. Irish clauses with no wh-dependency present

are marked with the complementizer *go*. Irish clauses out of which extraction has occurred are marked with the complementizer *aL*. Irish clauses in which there is a wh-dependency present using the resumptive pronoun strategy are marked with the complementizer *aN*.

(29) Complementizer alternation exhibiting a tripartite distinction between: no extraction, extraction, and wh-dependency with a resumptive pronoun

a. *Deir siad gur chum sé an t-amhrán sin*
say 3.p **go**.past compose 3.s det song
"They say he wrote that song." (see McCloskey 1979: 153, 11)

b. *Cé a deir siad a chum an t-amhrán sin*
who **aL** say 3.p **aL**.past compose det song
"Who do they say wrote that song?" (see McCloskey 1979: 153, 11)

c. *Cén t-oifigeach ar shíl tú go mbeadh sé i láthair?*
which officer **aN**.past think you **go** would.be 3.s present
"Which officer did you think would be present?" (see McCloskey 1990: 238, McCloskey 1979: 11)

The Austronesian language of Chamorro exhibits wh-agreement in the form of complementizer alternations responding to several different properties of the moved operator. When the extracted element is a Noun which does not denote a location, the complementizer is null. When the extracted element is a null operator denoting a location, the complementizer is *änai*. When the extracted element is an overt Noun denoting a location or a PP, the complementizer is *nai* or *ni* in the Saipan dialect and *na* in the Guam dialect.[4]

[4] There are different rules for C heading a postnominal relative; these also occur without a linker (see Chung 1998: 232-3).

(30) Complementizer alternation exhibiting sensitivity to whether moved operator is a location vs. not, overt vs. not, N vs. not

a. *Hafa* ∅ *malago'-mu*
what (C[+N,-loc]) want.nom-agr
"What do you want?" (Chung 1998: 224)

b. *Pues dumimu guihi änai gaigi si tata-ña yan si nana-ña*
so agr.kneel there C[+N,+loc,+O] agr.be det father-agr and det mother-agr
"So they (dual) knelt there where his father and mother were." (Chung 1998: 226)

c. *Manu ni mañ-ásaga*
where C[+N,+loc,-O] agr-stay.prog
"Where are they staying?" (see Chung 1998: 228, 224) [Saipan dialect]

d. *Ginin hayi na un-risibi kata*
from who C[-N] agr-receive letter
"From whom did you receive a letter?" (see Chung 1998: 227, 224) [Guam dialect]

e. *Gi manu ni man-ma'añao i famagu'un pära ufañ-aga*
loc where C[-N] agr-afraid det children fut agr-stay
"Where are the children afraid to stay?" (see Chung 1998: 227-8, 224) [Saipan dialect]

Also in Chamorro, if a subject is extracted from a transitive realis clause, it triggers an infix agreement *-um-* instead of the expected (ergative or A) agreement. If an object is extracted, then optionally the verb is nominalized and bears the infix *-in-*; the subject is a possessor and (derived) direct object, an oblique. If an oblique is extracted (e.g. instrument or comitative), the verb must be nominalized but is not marked with *-in-*, unless it is unaccusative in which case *-in-* is optional (Chung 1982, 1998: 237).

(31) Verbal morphology exhibiting a subject vs. object vs. oblique vs. no extraction distinction

a. *Ha-fa'gasi si Juan i kareta*
agr-wash det J. det car
"Juan washed the car." (Chung 1998: 236)

b. *Hayi f-um-a'gasi i kareta*
who -**um**-wash det car
"Who washed the car?" (Chung 1998: 236)

c. *Hafa f-in-a'gasése-nña si Henry pära hagu*
what -**in**-wash.prog.**nom**-agr det H. for 2.s
"What is Henry washing for you?" (Chung 1998: 236)

d. *Hafa pära fa'gase-mmu ni kareta*
what fut wash.**nom**-agr obl car
"What are you going to wash the car with?" (Chung 1998: 236)

Irish too appears to have distinctive marking for adjunct extraction. Adjunct extraction often triggers the appearance of the complementizer *aN* (McCloskey 2002: 206).[5] Extraction of reason adverbials only allows the complementizer *aN*, not *aL*.

(32) a. *Sin an áit a bhfuil sé ina chónaí*
that det place aN be 3.s living
"That's where he's living." (McCloskey 2002: 206)

b. *Sin an dóigh a bhfuil sé*
that det way aN be it
"That's the way it is." (McCloskey 2002: 206)

[5] McCloskey (2001: 71) says that "if there is an application of wh-movement in a finite clause, then that clause is marked by *aL*", while at the same time noting that some instances of adjunct-extraction are marked by the complementizer *aN* (McCloskey 2001: 71, fn. 3). Descriptively, a matrix question can either be headed by *aL* or *aN*. In the former case, there is a gap, whereas in the latter case, there is a resumptive pronoun, which, however, may be null (see, for example, McCloskey 1979: 53, McCloskey 1990: 207). McCloskey (2002: 202, 206) also says of these adjunct extraction facts that no account currently exists; again suggesting that adjunct extraction displays a different pattern from other, non-adjunct, types of extraction. Ultimately, McCloskey (2002: 206-12) offers a unified account for the appearance of *aN* with adjunct extraction and with resumptive pronouns, so that nothing specific need be said about adjunct extraction per se. Nevertheless, the important point for us is the descriptive one: in Irish, just as in Chamorro, (at least some) adjunct extraction is marked differently than other, non-adjunct, types of extraction. This descriptive generalization is enough to motivate an analogy between Mapudungun and Irish and Chamorro.

c. *Cé a raibh tú ag caint leis?*
who aN be 2.s talk prog P.3.s
"Who were you talking to?" (McCloskey 2002: 213)

(33) a. *Cén fáth ar dhúirt tú sin?*
what reason aN.past say 2.s that
"Why did you say that?" (McCloskey 2002: 209, see McCloskey 1979: 11)

b. **Cén fáth a dúirt tú sin?*
what reason aL.past say 2.s that
"Why did you say that?" (McCloskey 2002: 209, see McCloskey 1979: 11)

5.2 Long-distance extraction and wh-agreement

Languages with wh-agreement often display interesting patterns of marking in sentences with long-distance extraction, including Chamorro, Irish, Palauan, Kikuyu, and some dialects of Hausa (Chung 1998, McCloskey 2002, Watanabe 1996). In particular, it is often the case that the presence of extraction is indicated by the dedicated wh-agreement morphology in all intermediate clauses between the extraction site and the position in which the wh-operator lands; which generative syntacticians have usually taken to be evidence in favor of successive-cyclic analyses of wh-movement.

For instance, recall that Irish wh-agreement marks clauses in which extraction takes place with the complementizer *aL*. In long-distance extraction, this complementizer appears in the clause hosting the landing site of wh-movement, the clause in which the extracted element originates, and all intermediate clauses, as illustrated in (29b) above, and in (34) below.

(34) *an fear a shíl mé a bheadh ann*
det man **aL** thought 1.s **aL**.nonpast would.be.there
"the man that I thought would be there." (cf. McCloskey 1979: 150, 11)

Hausa wh-agreement displays a binary distinction between extraction and no extraction. Clauses in which extraction takes place bear an irrealis complementizer, whereas clauses in which no extraction takes place bear a realis complementizer (Watanabe 1996: 180-1). Some dialects of Hausa display wh-agreement only on the highest clause, but others display extraction wh-agreement on all clauses between the landing and extraction sites as well, as in (35) below (cf. Haïk 1990, Watanabe 1996: 187).

(35) *Mee* *suka* *cee* *yaaraa* *suka* *sayaa*
what 3.p.**irr**.comp say children 3.p.**irr**.comp buy
"What did they say the children bought?" (Watanabe 1996: 187)

The pattern exhibited by Chamorro in cases of long-distance extraction is of special interest in that the marking on intermediate clauses is not uniform. Rather each clause bears the wh-agreement marking appropriate to the grammatical function fulfilled in that clause by the constituent out of which extraction has occurred, viz. indicating subject, object, or oblique extraction. For instance, if an oblique is extracted out of a complement clause, then the lowest clause will bear oblique wh-agreement but the higher clause will bear object wh-agreement, as observed in (36); where nominalization is the expression of oblique wh-agreement and nominalization along with the infix *-in-* is the expression of object wh-agreement (note that the internal argument of "want" is oblique in Chamorro).

(36) Chamorro Obj - Obl chain

Hafa *s-in-angani* *hao* *ni* *chi'lu-mu* *malago'-ña*
what **-in**-agr.pass.say.to.**nom** 2.s obl sibling-agr want.**nom**-agr
"What did your sister tell you that she wants?" (Chung 1998: 247)

Similarly, if an object is extracted out of an oblique clause, the lowest clause will bear object wh-agreement but the higher clause will bear oblique wh-agreement, as

observed in (37); where the lower clause bears no distinctive marking, as is possible for object extraction in Chamorro, and, again, the internal argument of "want" is oblique in Chamorro.

(37) Chamorro Obl - Obj chain

Hafa	*malago'-ña*	*si*	*Magdalena*	*pära*	*ta-chuli'*
what	want.**nom**-agr	case	M.	fut	agr-bring

"What does Magdalena want us to bring?" (Chung 1998: 249)

In Palauan, when the local subject is extracted, the verb retains realis morphology but loses subject agreement, whereas when something other than the local subject is extracted, the verb takes irrealis morphology and retains subject agreement (Watanabe 1996: 173). Like Chamorro, Palauan also allows for mixed chains of wh-agreement with long-distance extraction. The Palauan example below illustrates topicalization out of a subject clause. The matrix clause consequently bears subject wh-agreement, but the subordinate clause itself bears non-subject wh-agreement, since it is the (resumptive pronoun) object which participates in the wh-dependency.

(38) Palauan Subj - NonSubj chain

a	*John*	*a*	*kltukl*	*el*	*loltoir*	*er*	*ngii*	*a*	*Mary*
part	J.	part	**realis**.clear	that	**irr.3**.love	P	him	part	M.

"John, (it's) clear Mary loves him." (cf. Watanabe 1996: 176)

With respect to the patterns of marking accompanying long-distance extraction in Mapudungun, consider that if Mapudungun were to display a pattern of marking in sentences with long-distance extraction analogous to Chamorro, this would be strong confirmation for the wh-agreement analysis of the distribution of the endings *-el* and *-m*. In fact, in addressing this very question, Baker (undated) provides evidence that suggests that Mapudungun does display a Chamorro-like pattern of long-distance

extraction marking, where extraction of an embedded subject out of a complement clause occurs with *-el* on the higher verb.

(39)

fey-chi	*wentru*	*iñche*	*ñi*	*kim-el*	*(*kim-ün)*	*ñi*	*langüm-ün*
3-adj	man	1.s	1.s.poss	know-∅-inf	know-inf	3.poss	kill-inf
ñi	*peñi*	*faw*	*pülle-le-y*				
3.poss	brother	here	live-stat-indic.3				

"The man that I learned killed his brother lives near here." (Baker undated)

Note that no other trigger for *-el* occurs on the higher verb. Thus, there is nothing to explain the presence of *-el* besides the presence of extraction out of a non-subject, viz. out of the complement clause.

Further confirmatory data, and in particular more impressive chains of alternating marking such as are observed in Chamorro, have not been collected for Mapudungun at this time. However, their potential absence may be attributable to independent factors in Mapudungun. The absence of Obl - ... chains, i.e. where oblique wh-agreement dominates another wh-agreement, may be due to the fact that Mapudungun does not allow extraction out of an adjunct clause. The absence of ... - Obl chains, i.e. where oblique wh-agreement is dominated by another wh-agreement, may be due to the fact that clauses displaying oblique wh-agreement may not serve as complements, which is the only clause that can be extracted from in Mapudungun.[6]

5.3 Theoretical analyses of wh-agreement

Distinctive marking correlating with different types of wh-dependencies must have some source. In generative syntactic theories, the proximate source may be taken to be a head in the clause with specific features reflecting the presence of the distinct types of wh-dependencies. A theory of wh-agreement along these lines must identify the head(s) involved, the feature(s) involved, and explain how it comes to be that the

[6] See §7.2 and Appendix B §4.1 for further discussion of this point.

heads bear those features in the presence of a specific wh-dependency in the clause. In this section I will review the theories of wh-agreement of Chung (1998), Watanabe (1996), and Chomsky (2004).

5.3.1 Chung

Chung (1998) proposes that wh-agreement reflected as verbal morphology in Chamorro is due to T agreeing with a trace in case. However, while T is the head involved in wh-agreement, the morphological reflex does not show up on this head itself but rather on a different head, V for Chung, to which it propagates its features (Chung 1998: 252).

Chung (1998) analyzes the complementizer alternations and impact on verbal morphology that occurs in Chamorro clauses with wh-movement as two distinct processes; only the latter is deemed 'wh-agreement' proper for Chung, while the former falls under the more general category of 'the morphology of extraction'. Chung (1998: 258-60) argues explicitly for a non-unified treatment of the two, as the patterning of wh-agreement contrasts dramatically with that of the complementizer alternations. Chung claims that the latter holds between a Spec and its head, while the former does not.

5.3.2 Watanabe

Deeming that "the relevance of C^0 to Nominative Case checking is something which the Case theory of Chomsky (1993) does not take into account" (Watanabe 1996: 42), Watanabe (1996) proposes instead a theory of "layered case checking" (Watanabe 1996: 17). T may check the case feature of a DP, but still needs to have its own case feature checked by an appropriate C "follow-up checker" (Watanabe 1996: 11, 19); if C is absent or defective, as is assumed to be the case in ECM complements, the derivation cannot proceed in this manner and consequently the only viable option is

for the case feature of T to be absorbed and for the DP to check its case in a higher clause (Watanabe 1996: 12, 14-5, 29, 37).

Watanabe implements this layered case checking theory by means of a complex head consisting of C, Agr_S, and T, formed by successive head-to-head movement (see Watanabe 1996: 11-2); or just C and T, adopting the Minimalist revision which dispenses with Agr heads (see Watanabe 1996: 19).

Having independently motivated a feature checking system involving the heads C, Agr_S, and T on the basis of case checking, Watanabe (1996: 231) further proposes that "the Tns-Agr-C feature checking system forms a unit which participates in wh-agreement", as "wh-agreement arises from the interaction of this system with the A-bar processes that involve CP" (Watanabe 1996: 212). In particular, Watanabe (1996: 177) states that "our theory of Case checking requires the structure involving C^0, Agr-s, and Tns to work as a unit", and adds that "since C^0 interacts with wh-movement, it follows that the entire system of C^0, Agr-s, and Tns should be affected by wh-agreement."

In short, Watanabe (1996: 230) holds that "wh-agreement is simply a specification of features in the Tns-Agr-Comp system." Moreover, Watanabe (1996: 178) speaks of "the purely morphological nature of wh-agreement", and describes his theory as endorsing a "morphological view of wh-agreement" (Watanabe 1996: 178, 187). That is, Watanabe (1996: 193) maintains that there is "morphological arbitrariness in realization of wh-agreement", and states that "there is no logical sense in which a particular language must employ a particular form of wh-agreement" (Watanabe 1996: 178). Rather, the "various forms of wh-agreement should be treated as due to morphological arbitrariness superimposed on the underlying syntactic feature checking mechanism involving Tns, Agr-s, and C^0" (Watanabe 1996: 231).

Watanabe's theory of wh-agreement immediately derives Zaenen's generalization that only complementizers and verbal morphology are affected by wh-agreement, since

wh-agreement is just the arbitrary reflection of features on C, the complementizer, and Agr and T, heads in the verbal complex (cf. Watanabe 1996: 177).

Watanabe (1996: 173-4) distinguishes three different configurations at LF: Spec of CP is not occupied; Spec of CP is occupied by XP_i whose trace occupies Spec Agr_SP; Spec of CP is occupied by $XP_i \neq DP_j$ in Spec Agr_SP. Watanabe (1996: 174) then urges "suppose that Spec-head agreement at CP has an effect on the feature content of C^0. Since the checking system involving Tns, Agr-s, and C^0 enters into three different configurations, we have three different kinds of feature content." In this way, Watanabe captures the three-way contrast exhibited by wh-agreement in Palauan, distinguishing between: no extraction, extraction of the local subject, and extraction of some element other than the local subject.

5.3.3 Chomsky

Chomsky (2004, 2008) holds that C and T function as a unit in several respects; specifically with respect to inducing nominative-agreement and raising the subject to Spec of T (see Chomsky 2008: 143). Working under the crucial assumption that raising (a.k.a. raising-to-subject) and ECM (a.k.a. raising-to-object) clauses lack C and have a T which lacks φ-features and basic tense[7], Chomsky concludes that "T manifests the basic tense features if and only if it is selected by C (default agreement aside)" (Chomsky 2008: 143). In particular, Chomsky holds that T inherits its Agree and Tense features from C, the phase head, and that in the lexicon T lacks these features (see Chomsky 2008: 143-4). Thus, "T enters into feature-checking only in the C-T configuration" (Chomsky 2004: 115). Chomsky (2004: 127, fn. 54, and context on p. 116) notes that "inflectional marking of C in some languages yields

[7] See Martin (1996), who claims that raising and ECM clauses are [-Tense], for further discussion on this matter, and also the discussion in Landau (2000: 59-60) which implies that raising and ECM clauses may lack C, unlike most clauses, including different sorts of control infinitivals. Chomsky also assumes that control infinitivals have C (Chomsky 2004: 127, fn. 52).

further support" to C-T functioning as a unit in inducing agreement, as "sometimes the φ-features of C are morphologically expressed, as in the famous West Flemish examples" (Chomsky 2008: 159, fn. 26).[8]

That Chomsky conceives of C-T functioning as a unit, for agreement, is evident from phrasings such as "C-T agrees with the goal DP" (Chomsky 2008: 144). Chomsky does not hold that C-T form a complex head, e.g. via movement of T to C, and he appears to characterize Pesetsky and Torrego's (2001) discussion of this movement as a distinct implementation of the C-T relation (Chomsky 2004: 127, fn. 54). Rather, for Chomsky, C-T is a unit insofar as C and T are in a local configuration after C has Merged to the projection formed by T Merging with its complement, C transmits features to T and the two heads jointly drive syntactic processes and continue to share features thereafter. Note that Chomsky holds that this Merge applies prior to raising of the subject (Chomsky 2010a,b, 2008: 147), hence at this point nothing intervenes between the two heads. T inherits C's tense and agr features, and the computation proceeds from there; involving, for instance, raising of the subject or, the case of interest to us, wh-movement. Chomsky (2008: 149, ex. 10) presents the derivation sketch in (40) for the sentence 'Who saw John?', illustrating how the C-T unit in (40a) drives the subsequent operations of subject raising and wh-movement in (40b).

(40) Steps in the derivation of: *Who saw John?*

a. C[T[who [v* [see John]]]]

b. Who [C [who [T [who v* [see John]]]]]

The validity of attributing to Chomsky the view that C-T functions as a unit in wh-movement is reinforced precisely by Chomsky's appreciation of the wh-agreement

[8]For representative data, see, for example, Haegeman (1992).

facts in Chamorro. Chomsky (2004: 116) states, "Successive cyclic A'-movement often leaves a reflex, sometimes in C (where we would expect it), but commonly in the agreement system headed by T (where we would not). That makes sense if C-T are really functioning as a unit in inducing agreement." An accompanying footnote to this cited passage clarifies that Chomsky is referring specifically to wh-agreement as discussed in Chung (1998), as well as phenomena discussed in Collins (1993), which it may be noted that Watanabe (1996) also cites and deems to be wh-agreement (see Chomsky 2004: 127, fn. 54).[9]

Consequently the heads participating in wh-agreement for Chomsky are the complex unit C-T. C selects for T and transmits features to it in the course of the derivation. The precise features involved in wh-agreement are not identified, but it is suggested that C-T comes to bear these features as a result of (successive-cyclic) wh-movement.

6 An Agree theory of Wh-agreement

I propose to analyze wh-agreement along the same lines as the analysis of agreement in ϕ-features with the subject and object in Minimalist syntactic theories. See the implementation of the latter phenomenon in Chapter 0 §4.2.1 and §4.6.

[9] Though, in discussing the derivation of the sentence 'who did John see?', Chomsky still speaks in the following manner: "the Agree feature of C-T seeks the subject *John* and raises it to Spec-T, and the edge feature of C seeks the object *who* in the outer Spec of v* and raises it to Spec-C" (Chomsky 2008: 152); that is, as if C-T did not act as a unit in wh-movement but only in A-movement of the subject. The rationale for this mode of speaking may be that while C transmits its Agree and Tense features to T, it does not transmit its edge feature. Nevertheless, if there is a way to specify that the landing site of A-movement is Spec of TP, while maintaining that it is C-T as a unit which seeks out an element to raise, then there must also be a way to specify that the landing site of wh-movement is Spec of CP, while maintaining that C-T also probes as a unit for an element to raise here.

6.1 Heads involved

Following Watanabe (1996: 175) in seeking a unified account of wh-agreement within a language if possible, on the grounds of simplicity, I concur with Watanabe that C must be involved in wh-agreement. For distinctive marking to correlate with different extraction patterns, there must be one or more heads sensitive to the presence and nature of those extractions in a clause. C is the only head in the clause which is necessarily aware of all wh-movement that occurs in the clause and of properties of the moved operator and extraction site and all other properties of the wh-dependency that may be reflected in wh-agreement. So if there is only one mechanism underlying all wh-agreement in a language, it must be that the head C is involved in all wh-agreement.

I further propose that all functional heads in the C phase form a unit, not just C and T, and that C transmits its features to these heads. As Chomsky (2008) takes C and T to be the functional heads in the phase of C, and explicitly notes that C is just a shorthand for a series of functional heads in the left periphery (Chomsky 2008: 143), this generalization may well just be a faithful exegesis of Chomsky's theory. See also van Urk and Richards (2015: 152) for a similar hypothesis.

Insofar as heads other than C are involved in wh-agreement, then, I propose that this is because C transmits its featural specification relevant to wh-agreement to them. Wh-agreement morphology may consequently be reflected on C or on any of these other heads in its phase and in communion with it.

The previous theoretical analyses of wh-agreement reviewed in §5.3 all maintain that two heads are involved. A higher head which is primarily responsible for the syntax of agreement and a lower head to which features are transmitted and is responsible for the expression in verbal morphology. For Chomsky and Watanabe, these heads are identified as C and T; though for Chung, as T and V. The proposal here conforms to this general schema.

6.2 Features involved

I propose to analyze wh-movement as due to C probing for a [+wh] Goal. Once it finds one, it Agrees with it and keeps a record of the features of this Goal.

It is reasonable to suppose that one of the features that a Probe keeps a record of is the referential index of the Goal it finds through Agree. If, then, the functional heads in the C phase, which together participate in subject agreement in phi-features, also function as a unit in wh-agreement, as Chomsky (2004) and Watanabe (1996) maintain, it is a straightforward matter to define the distinction between subject extraction and non-subject extraction. The unit of C phase heads must simply verify whether the element it has extracted is identical to the element it has agreed with in phi-features or not by comparing their referential indices. I thus propose the following featural definition of subject extraction.

(41) Subject extraction has occurred if a C phase head hosts the configuration of features:

{Goal of [+wh]:

Referential index = i

...}

{Goal of [D]:

Referential index = i

...}

Non-subject extraction is similarly defined.

(42) Extraction of a non-subject has occurred if a C phase head hosts the configuration of features:

{Goal of [+wh]:

Referential index = i

...}

{Goal of [D]:

Referential index = j

...}

Where i ≠ j

Since a Probe's search for a Goal is bounded, e.g. by the Phase Impenetrability Condition, if (the non-edge portions of) previous phases are still present in the structure, and have not been completely removed even if subject to cyclic interpretation, it must be possible for the probing operation to evaluate whether its current, or next, position is in bounds or not. Let us suppose, then, that the probing operation is capable of determining the phrase (or perhaps phase (edge)) it is currently examining, e.g. as v* or P. If it is then possible to keep a record of the location in which its Goal was found under such a description, this will suffice to provide adequate extraction site information. In particular, I propose the following featural definition for oblique extraction.

(43) Oblique extraction has occurred if a C phase head hosts the configuration of features:

{Goal of [+wh]:

Location = P phase

...}

Note that object extraction can be defined as non-subject non-oblique extraction, simply combining the conditions in (42) with the negation of those in (43); in particular, as in (44).

(44) Extraction of an object has occurred if a C phase head hosts the configuration of features:

{Goal of [D]:

Referential index = i

...}

{Goal of [+wh]:

Referential index = j

Location = X

...}

Where i ≠ j, X ≠ P

6.3 On Agreement in Case accounts

I have accounted for the sensitivity to oblique extraction via a record keeping of the phase from which an element is extracted and the determination of whether this phase is P or not. In essence, then, I propose that a record is kept of the extraction site of the Goal of a [+wh] Probe. However, one may wish for an analysis which appeals to more familiar features. A natural candidate is case, as the case features of an extracted DP reflect its extraction site.

Chung (1998) identifies case as the feature which the clausal head participating in wh-agreement is sensitive to, allowing for the distinction between subject, object, and oblique extraction. For Chung, T is the head involved in wh-agreement in Chamorro. Insofar as T is supposed to be involved in the checking of nominative case for the subject, an implementation along these lines will have to hold that T can agree with multiple DPs in case. Consequently, it will be necessary for the head(s) participating

in wh-agreement to keep the different cases agreed with distinct, in order to make sure that wh-agreement is expressed only with the appropriate case.[10]

Actually, this problem arises in general for any theory which attempts to capture wh-agreement with objects and/or obliques and on which the head involved in this wh-agreement forms a unit with T, such as the theory proposed here, if wh-agreement is based on case. For if T forms part of the unit then the entire unit is still dealing with multiple cases, and must therefore keep them distinct.[11]

A further problem for the supposition that wh-agreement solely reflects case features arises from the patterns of marking accompanying long-distance extraction reviewed in §5.2. If case is a constant feature of a DP, or a chain formed by wh-movement, then each head which agrees with (part of) this chain should presumably be valued in the same way. Yet long-distance dependencies in Chamorro show that heads across different clauses which agree with a single wh-movement chain may be valued in different ways, e.g. a lower head showing oblique wh-agreement but a higher head showing object wh-agreement, as in (36) above.

Chung resolves this problem by assuming that intermediate traces in Spec CP have their case feature overwritten by the case of the CP (Chung 1998: 251). In this way, when the head of the higher clause agrees with this trace, it will reflect the case of the clause that it is extracted out of, and not necessarily the original case of the lowest element of the chain. The system now works fine, but requires this additional and apparently ad hoc case overwrite mechanism.

Rackowski and Richards (2005) propose that there is Agree in case first with

[10]Note that it is possible to make such a distinction within the system adopted here where Probes do not have features that are valued by Agree, but rather merely keep a record of the features and values of the Goals that they Agree with. Thus, the case features of two different Goals will be kept distinct.

[11]Note again that the theory proposed here could handle this problem, if the approach to wh-agreement based on case features were adopted instead of the approach in §6.2; see footnote 10 above.

the CP and then with the DP extracted, as a precondition for extraction out of a clause. In their analysis of the long distance wh-agreement pattern in Tagalog, only the first agreement, with CP, is reflected in morphology. This is an elegant solution to Chamorro-like long-distance wh-agreement patterns, and one which eschews the need to appeal to a mechanism of case overwriting.

Either of these implementations of the idea that the feature to which wh-agreement is sensitive to is case could replace the account in §6.2. For instance, the featural definition of oblique extraction could be reformulated as:

(45) Oblique extraction has occurred if a C phase head hosts the configuration of features:

{Goal of [+wh]:

Case = oblique

...}

(where this refers either to the ultimate Goal of the [+wh] probing, and we suppose its case is susceptible to case overwrite, or else refers to the first, intermediate, Goal of the [+wh] probing, and we assume that extraction is preceded by Agreeing with a CP containing the ultimate [+wh] Goal.)

This obviates the need to posit the feature Location, taking on values corresponding to the phase an element occupies a position in, as in (43). The featural definitions of subject and non-subject extraction could similarly be reformulated, appealing to nominative case; and a definition of object extraction could be formulated, appealing to accusative case.

Nevertheless, note first that the account which appeals to Location features also successfully handles the patterns of marking accompanying long-distance extraction, since a record is kept of the phase (edge) in which a Goal is found, which is independent of the inherent case of the Goal. The theory proposed here allows for the

case of the Goal to be reflected in wh-agreement but is not committed to this being the sole or main feature which wh-agreement reflects, unlike approaches which analyze wh-agreement as agreement in case, such as Chung (1998) and Rackowski and Richards (2005). Moreover, there may be independent reasons to eschew reliance on case in an analysis of wh-agreement.

Firstly, van Urk and Richards (2015) develop a theory of wh-agreement which is specifically noncommittal on the issue of whether the long-distance extraction patterns of marking in Tagalog and Chamorro are due to agreement in case (cf. van Urk and Richards 2015: 146). Secondly, there may be no such thing as case features (in the syntax). A strong hypothesis is that inherent features on heads may be restricted to interpretable features, with uninterpretable features merely being the reflection of the interpretable features of other elements which the head has undergone Agree with. Pesetsky and Torrego (2001: 361) propose that nominative case on a DP is the expression of an (uninterpretable) Tense feature that it has come to bear as a result of undergoing Agree with T. Alternatively, case features may exist as such but only relegated to morphology, not in the syntax. Baker (In progress), following Marantz (1991), formulates rules for dependent case assignment. It follows that whatever feature a DP comes to bear as a result of undergoing Agree with v, this does not necessarily result in the DP being spelt-out with accusative case. Rather, the expression of accusative case depends on other factors besides. Hence, it is possible that there is no feature [case=accusative] in the syntax, solely responsible for the expression of accusative case in the morphology.[12]

[12]Insofar as case is still needed to license DPs in a structure, a single abstract feature [case], without differentiation into distinct values and thus totally divorced from morphological case, may suffice. Moreover, approaches which attempt to reformulate the Case Filter in terms of the licensing of other, independently motivated, features, such as ϕ-features in Béjar and Rezac (2009), may even dispense with such an abstract feature [case] entirely.

6.4 On a unified analysis of C alternations and V morphology

Chung (1998: 258-60) argues explicitly for a non-unified treatment of wh-agreement realized as complementizer alternations and as special verbal morphology, as the patterning of the latter contrasts dramatically with that of the former. Presumably, Chung may also be referring to the fact that the features that the complementizer and verb are sensitive to are not the same and do not correlate, as might be expected if C and T were functioning as a unit in wh-agreement. While the verb is sensitive to the distinction between subject vs. object vs. oblique extraction, the complementizer is sensitive to distinctions such as ±location, ±overt operator, ±D.

Note, however, that the features to which complementizer alternations and verbal morphology are sensitive to sometimes do correlate, as in Irish, where the special form of 3rd person singular agreement on the verb is possible if and only if the complementizer is *aL* (McCloskey 1979).

(46) *an t-iascaire a dhíolann /dhíolas a bhád*
det fisherman aL sells sells.agr 3.s.poss boat
"the fisherman who sells his boat" (McCloskey 1979: 9)

(47) *sul a dtiocfaidh /*dtiocfas sé 'na bhaile*
before aN come.fut come.fut.agr 3.s home
"before he comes home" (McCloskey 1979: 10)[13]

Note also that it is possible to recast the Chamorro facts as if the complementizer and verb were in fact sensitive to the same distinctions, namely: subject vs. object vs. oblique & overt N denoting location vs. oblique & null operator denoting location vs. oblique & PP. All that is necessary is to invoke these more fine-grained distinctions, and also appeal to arbitrariness in morphological exponence *à la* Watanabe (1996:

[13]The conjunction *sul* (before) requires an *aN* clause (McCloskey 1979: 10).

180-200). On such a unified analysis of Chamorro wh-agreement, verbal morphology would collapse all the distinctions between obliques, having a single expression for oblique extraction, while complementizer morphology would collapse the distinction between subjects and objects, having a single expression for argument extraction.

Moreover, the need to correlate features of C and T in the case of Irish may provide a stronger argument for a C-T unit than does the, apparent, lack of need to correlate features of C and T in Chamorro, an argument against a C-T unit.

6.5 On a unified analysis of subject, object and oblique wh-agreement

Watanabe (1996: 212) maintains that Chamorro's general distinction between subject extraction and non-subject extraction is wh-agreement "exactly as in the case of Palauan", and adds that "complementizer shape is also affected by wh-agreement in Chamorro" and that "this again points to the unity of the Tns-Agr-C^0 system". Nevertheless, Watanabe (1996) does not analyze the distinctive marking accompanying object and oblique extraction in Chamorro as wh-agreement proper.

Rather, Watanabe assimilates this pattern of marking to French participle agreement and French stylistic inversion, both of which display a transitivity restriction lifted in case of cliticization or wh-movement of the object. For instance, there is no participial agreement in a transitive clause unless there is also cliticization or wh-movement of the object, as illustrated in (48).

(48) French participle agreement: transitivity restriction lifted by cliticization or wh-movement of object

a. *la* *porte* *a* *été* *ouvert-e*
det door have be.ppl open.ppl-fem.s
"The door has been opened."

b. *Jean a ouvert-(*e) la porte*
J. have open.ppl-fem.s det door
"John has opened the door." (Watanabe 1996: 82)

c. *Jean les a ouvert-(es)*
J. obj have open.ppl-fem.p
"Jean has opened them." (Watanabe 1996: 79)

d. *la lettre qu'il a dit que Pierre a écrit-(e)*
det letter that.he have say.ppl that P. have write.ppl-fem.s
"the letter that he said that Pierre has written." (Watanabe 1996: 208)

French stylistic inversion refers to the ability of the subject to appear postverbally in wh-extraction contexts, and is subject to a transitivity restriction which is lifted in case it is the object itself which undergoes wh-movement or else cliticization, as illustrated in (49).

(49) French stylistic inversion: transitivity restriction lifted by cliticization or wh-movement of object

a. *Je me demande quand partira ton ami*
1.s 1.s.obj ask when leave.fut 2.poss friend
"I wonder when your friend will leave." (Watanabe 1996: 205)

b. **Je me demande quand mangera sa pomme Marie*
1.s 1.s.obj ask when eat.fut 3.s.poss apple M.
"I wonder when Marie will eat her apple." (Watanabe 1996: 205-6)

c. **Je me demande quand mangera Marie sa pomme*
1.s 1.s.obj ask when eat.fut M. 3.s.poss apple
"I wonder when Marie will eat her apple." (Watanabe 1996: 206)

d. *Tes cours, à quelle occasion les ont manqué un*
2.poss course at which occasion obj have be.absent.from.ppl det
grand nombre d'étudiants
great number of.students
"At which occasion were many students absent from your classes?"
(Watanabe 1996: 206)

e. *Que crois-tu que manquent un grand nombre d'étudiants*
what belive-2.s that be.absent.from det great number of.students
"What do you think that many students are absent from?" (Watanabe 1996: 206)

Watanabe accounts for the transitivity restriction of these constructions by supposing that the subject cannot move over an object in Spec Agr_OP. Cliticization or wh-movement of the object saves the construction, however, because in these cases the object adjoins to Agr_OP instead of moving into its Spec, such movement being licensed by posterior wh-movement or cliticization movement (Watanabe 1996: 207). This adjunction of the object to Agr_OP permits the subject to raise over it, since this adjoined position, but not the Spec position, is equidistant to its landing site (see Watanabe 1996 for further details of the analysis).

Watanabe (1996) transfers this analysis of French participial agreement and French stylistic inversion to Chamorro object and oblique wh-agreement in the following way. First recall that, as reviewed in §5.1, both Chamorro object and oblique wh-agreement involve nominalization of the verb; Chamorro oblique wh-agreement consists in this nominalization alone, while object wh-agreement further includes the presence of an infix *-in-*.

Watanabe holds that extraction in Chamorro is subject to a transitivity restriction, just like French participial agreement and French stylistic inversion. The construction is saved in case the object itself undergoes wh-movement, as in (31c) repeated here, just as with French participial agreement and stylistic inversion.

(50) *Hafa f-in-a'gasése-nña si Henry pära hagu*
what -in-wash.prog.nom-agr det H. for 2.s
"What is Henry washing for you?" (Chung 1998: 236)

The construction is also saved, however, in the case of oblique extraction in virtue of the availability in the lexicon of an oblique case marker capable of transmitting a Theme role, which languages with antipassive, like Chamorro, possess but languages

without antipassive, like French, do not. Watanabe thus takes it to be significant that in oblique extraction in Chamorro, the object appears in oblique case, as in (31d) repeated here.

(51) *Hafa pära fa'gase-mmu ni kareta*
what fut wash.nom-agr obl car
"What are you going to wash the car with?" (Chung 1998: 236)

Since the object may be licensed in situ in this way and does not need to raise to Agr_OP for case, no problem arises with subject movement over an occupied Spec Agr_OP in this instance either (as with adjunction of the object to Agr_OP), and thus the construction is saved.

Watanabe (1996: 212) takes the nominalization accompanying Chamorro object and oblique extraction to be the expression of wh-agreement with extraction of a non-subject in general, much as in Palauan. Watanabe (1996: 216) analyzes the infix *-in-* which accompanies object extraction in Chamorro as a reflex of accusative case marking, akin to French participial agreement, and not as true wh-agreement. It is triggered by adjunction to Agr_OP and thus correlates with wh-movement of the object insofar as only subsequent wh-movement licenses adjunction to Agr_OP instead of movement into its Spec, but is not wh-agreement proper. On this analysis, then, Chamorro wh-agreement would not distinctively mark object and oblique extraction, but only distinguish non-subject extraction from subject extraction, like Palauan.

Nevertheless, problems remain with this account of Chamorro object and oblique wh-agreement. First, as Watanabe (1996: 239) acknowledges, the common analysis proposed for French participial agreement and stylistic inversion, which is carried over to Chamorro object and oblique wh-agreement, does not explain why there is no participial agreement in French stylistic inversion. Secondly, since the participial V does not raise to Asp, its follow-up checker, in the underlying structure common to both French stylistic inversion with object extraction and Chamorro object wh-

agreement, it is not clear how the accusative case feature of this V is deleted, as it must be on Watanabe's layered case theory for the derivation to converge. Thirdly, the distinction between movement to Spec Agr_OP and adjunction to Agr_OP with an unfilled Spec crucial to this account is one which is not definable in Minimalism.

Now, the reason that Watanabe goes to seemingly great lengths to avoid an analysis of the distinctive marking accompanying object and oblique extraction in Chamorro as true wh-agreement appears to be that Watanabe assumes that if such distinctive marking were true wh-agreement, then Agr_O would necessarily participate in wh-agreement, and that this would serve as a counterexample to his theory that only the C-Agr_S-T unit participates in wh-agreement and that wh-agreement is limited to the reflection of features on C, Agr_S, and T (cf. Watanabe 1996: 178, 180, 212-3). However, an analysis of (Chamorro) object and oblique wh-agreement as true wh-agreement is not in fact detrimental to Watanabe's theory of wh-agreement, nor to the modification proposed here.

First, note that the consequence that Agr_O (or whatever head is responsible for accusative case assignment and/or object agreement, e.g. v) participates in wh-agreement if distinctive marking accompanying object or oblique extraction is analyzed as true wh-agreement is not necessary. I have shown in §6.2 and §6.3 above how object and oblique extraction can be defined in terms of information accessible to C and T alone.

Secondly, given Watanabe's (1996: 188) appeal to "the arbitrary morphological nature of wh-agreement", and his claim that an account of the phenomenon of wh-agreement comes "almost for free" from his Case theory (Watanabe 1996: 173), through the interaction of A-bar processes and the unit of heads involved in case checking (cf. Watanabe 1996: 212), there is actually every reason to expect v and V, the unit involved in the case checking of the object, to reflect wh-agreement, much as do C and T, the unit involved in the case checking of the subject, if successive cyclic

wh-movement proceeds through the v phase (as well as the C phase), as is currently commonly assumed (cf. e.g. van Urk and Richards 2015).

I conclude that there is no principled reason to avoid a straightforward analysis of distinctive marking accompanying object and oblique extraction as wh-agreement proper within a theory along the lines of Watanabe (1996).

Finally, note that even if a wh-agreement analysis of the distinctive marking accompanying oblique extraction in Mapudungun relatives is disputed, the data cannot be explained away in the same manner as Watanabe (1996) does for Chamorro oblique wh-agreement; even setting aside the problems with Watanabe's account reviewed above. Recall that it is crucial for Watanabe that the object in Chamorro oblique extraction is marked as oblique. Nevertheless, the marking correlating with oblique extraction in relative clauses in Mapudungun, which I propose to analyze as wh-agreement, is compatible with an object which is not marked as an oblique. Obliques in Mapudungun are headed by the postposition *mew*, which is absent in the examples below.

(52) *tüfá* *ta-mi* *firma* *ta-mi* *fende-mu-m* *ta* *mapu*
dem det-2.s.poss signature det-2.s.poss sell-plprf-inf det land
"This is your signature with which you have sold the land." (Smeets 2008: 206)

(53) *fey* *amu-y* *ngilla-ka-yal* *chem* *rumé* *ye-nu-n* *ñi*
3 go-indic.3 buy-fac-fut.inf what ever carry-neg-inf 3.poss
küpal-tu-a-m *ñi* *ngilla-ka-n*
bring-re-fut-inf 3.poss buy-fac-inf
"She went shopping without taking anything whatsoever in which to bring back her purchases." (Smeets 2008: 209)

7 Theory of Wh-agreement in Mapudungun

In contrast to Baker (undated), who proposed an account of wh-agreement in Mapudungun along the lines of Chung (1998), I pursue an account along the lines of

Chomsky (2004) and Watanabe (1996). Instead of null local agreement heads, I propose that there are null TAM heads, H_{ns} and H_{obl}, participating in wh-agreement in Mapudungun.

7.1 The features [ns] and [obl]

Béjar and Rezac (2003) put forward the idea that a feature may need to be licensed. They formulate the Person Licensing Condition (PLC) which states that an interpretable $1^{st}/2^{nd}$ person feature must be licensed by entering into an Agree relation (Béjar and Rezac 2003: 53). Béjar and Rezac (2009: 46, 47) propose to formulate the Case Filter such that the presence of certain ϕ-features must be licensed and state that they intend for the PLC to fall under the Case Filter. Moreover, Béjar and Rezac (2009: 47) state that on the implementation of the Case Filter in Chomsky (2000, 2001) the PLC determines when Agree licenses the deletion of [*u*Case]. Thus, for Béjar and Rezac (2009), not only may a feature be licensed by entering into an Agree relation but a feature may also be deleted, or satisfied/checked, by virtue of an Agree relation obtaining, and licensed in this way.

In a similar manner, I posit the existence of primitive features, [ns] and [obl], which are only licensed in a particular configuration, germane to non-subject and oblique extraction, respectively. Licensing conditions consist in certain features having certain values, on the same head.

I propose that the feature [ns] is licensed only in the configuration defining non-subject extraction.

(54) The feature [ns] is licensed only in the configuration:

{Goal of [+wh]:

Referential index = i

...}

{Goal of [D]:

Referential index = j

...}

Where i ≠ j

I propose that the feature [obl] is licensed only in the configuration defining oblique extraction.

(55) The feature [obl] is licensed only in the configuration:

{Goal of [+wh]:

Location = P phase

...}

Thus C licenses its [ns] feature if the extracted element is not the subject, independently of the characterization of its extraction site, i.e. whether object or oblique, and C licenses its [obl] feature only if the location of the extracted element prior to movement was the P phase, thus being restricted to oblique extraction.

Note that Watanabe (1996: 193) states that "in some languages, realization of wh-agreement on C^0 takes the form of verb raising to C^0. In other words, the V-feature of C^0 is strong in these languages." Thus, Watanabe (1996) allows for wh-agreement on C to take the form of a strong [V] feature on C. Nevertheless, it is not clear how to reconcile this assertion with Watanabe's theory of wh-agreement in general, as reviewed in §5.3.2; in particular, with the view of wh-agreement as different featural configurations on C-Agr_S-T which correspond to different extraction patterns. It may be the case, then, that Watanabe is either tacitly assuming or otherwise committed to a feature licensing condition along the lines proposed here. That is, if wh-agreement in some languages takes the form of a strong [V] feature on C, this may be due to a licensing condition being operative in these languages to the effect that a strong [V]

feature on C is only licensed in the presence of a featural configuration on C which correlates with extraction.

Note also that in appealing to the category P instead of oblique case, the licensing condition in (55) may be superior to an alternative which appealed to a featural definition of oblique extraction based on case, such as (45), as appeal to P may provide a motivation for [m] as a recurrent formative in oblique wh-agreement, e.g. in the form of Inf and in the form of the alternant of null past, insofar as this may constitute a reflection of the sole, and pervasive, Postposition *mew* in Mapudungun, which marks all obliques.

Another viable alternative for Mapudungun with the same benefit, if it does not contain wh-agreement chains containing -*m*, is the following licensing condition, where solely inherent properties of the moved operator need be examined, and not properties such as its extraction site.

(56) The feature [obl] is only licensed in the configuration:

{Goal of +wh:

Category = P

...}

However, the adoption of (56), which only examines an inherent property of the moved operator, will not extend to the mixed wh-agreement chains of the Chamorro, Palauan, or Tagalog variety. Therefore, a licensing condition which appealed to either of the two featural definitions of oblique extraction based on case features in (45) are preferable in this respect.

I will continue to maintain the original proposal for the licensing condition for [obl] in (55). This approach avoids the potential drawbacks of approaches based on case discussed in §6.3, motivates the appearance of the formative [m] associated with the sole Postposition in Mapudungun, and may potentially be accommodated within

an account of the long-distance extraction wh-agreement patterns of the Chamorro variety.

7.2 The heads H_{ns}, H_{obl}

I posit the existence in Mapudungun of TAM heads H_{ns} and H_{obl}, in the C phase but occurring on the verbal complex. I propose to model wh-agreement in Mapudungun by means of these heads, which trigger different allomorphs of Inf.

H_{ns} bears the feature [ns] and H_{obl} bears the feature [obl]. Each of these heads are in communion with C and C transmits its [ns] or [obl] feature to it. I similarly refer to C with an [ns] feature as C_{ns} and to C with an [obl] feature as C_{obl}. The most economical assumption is that H_{ns} and H_{obl} are the same head, H, differing only in bearing an [ns] or [obl] feature, respectively. It seems possible to maintain this assumption.

I propose that H_{ns} triggers the -*el* allomorph of Inf and that H_{obl} triggers the -*m* allomorph of Inf.

I propose that relative C heads, i.e. C with the feature [+rel], must bear one of the features [ns] or [obl]. In addition, C with the feature [obl] must bear the feature [+rel]. I take these to be accidents of the Mapudungun lexicon. Nevertheless, it should be noted that, if both [ns] and [obl] were restricted to [+rel] clauses, wh-agreement in Mapudungun would still be akin to that in Turkish, where wh-agreement is restricted to relative clauses (Ouhalla 1993: 479).

7.3 Position and identity of H

7.3.1 Position of H

For Baker (undated), the allomorph of the infinitival morpheme was determined by the preference of the closest linearly preceding non-neutral morpheme to the infiniti-

val morpheme. In order to maintain Baker's natural and elegant positional preference ordering principle, it is necessary that the triggering morpheme, H, occupy an appropriate position in the verbal complex.

To account for the ending -*am*, H_{obl}'s preference for -*m* must trump -*a*'s preference for -*el*. At the same time, to account for the impossibility of the endings *-*fim* and *-*em*(*eo*), H_{obl}'s preference for -*m* must be trumped by -*fi*'s preference for -*el* and -*e*'s preference for -*t*; assuming that H_{obl} may occur in clauses with -*fi* or -*e*. Likewise, assuming that H_{ns} may occur with -*e*, it must yield to its preference for -*t*, since only the ending -*e*-*t*-*ew* is found in relatives with inverse voice -*e*, never *-*e*-*el*.

I thus conclude that H_{obl} occupies a position in the verbal complex between future -*a* and the voice heads, object agreement -*fi* and inverse voice -*e*, and that H_{ns} similarly occupies a position prior to the voice heads -*fi* and -*e*; consistent with the assumption that H_{ns} and H_{obl} correspond to a single head, H, with different feature specifications and occupy the same position. Three possibilities remain: for H to occupy the position between future -*a* and temporal -*fu*, between -*fu* and temporal -*mu*, or between -*mu* and the voice heads -*fi* and -*e*.

As for the ordering of the preferences of the H heads and -*fu* and -*mu*, it will be argued below that -*mu* must occur with H_{obl} and, consequently, may not occur with H_{ns}. Since the preferences of -*mu* and H_{obl} do not conflict, there is no way to determine which should override the other. The possible existence of the ending -*afum*, cited in (de Augusta 1916: xii), suggests that H_{obl} trumps -*fu*'s preference for -*el* and thus that $H_{(obl)}$ should follow -*fu*. However, apart from the form -*afum*, there are no clear instances of -*fu* and H_{obl} without the additional presence of the morphemes -*mu* and -*ye*, which follow -*fu* and would override its preference independently of the position of H_{obl}. The preferences of H_{ns} and -*fu* do not conflict, and thus there is no way to determine which should override the other.

Thus, impossibility of conflict between elements conditioning the same allomorph

and questionable data conspire to underdetermine the exact position that H, or H_{ns} and H_{obl} separately, should occupy. For concreteness, I assume that H occupies a position between that of future -*a* and temporal -*fu*.

That the position adjacent to the Modal head -*a* is a plausible position for a TAM head which participates in wh-agreement to occupy is supported by the modalization facts regarding wh-agreement discussed by Watanabe (1996). In particular, wh-agreement in Palauan, among other languages, affects modality such that irrealis morphology is triggered (see Watanabe 1996: 180). Now, interrogative clauses are often irrealis across languages, and possibly for a principled semantic reason, but Watanabe (1996: 172) argues that the appearance of wh-agreement-triggered irrealis in Palauan is not semantic but a purely morphological reflex. Either way, these facts can be accommodated if the head participating in wh-agreement is adjacent to the Modal head, either dominating it and selecting a particular value of it, or identical in position to it and replacing it while still appropriating one of its morphological expressions as its own, or else below it and linearly preceding it in spell-out but still able to affect its form. This is consistent, then, with the proposal made here for Mapudungun. See Chapter 3 for arguments that the future morpheme -*a* is a modal.

7.3.2 Identity of H

Note that, wishing to maintain Baker's principle of the linear ordering of preferences, we cannot take H to be T (= Inf) itself, since -*fi* and -*e* occur before Inf but must follow H.

Nevertheless, taking H to be distinct from T may still be consistent with Chomsky's theory of C-T acting as a unit (and participating in wh-agreement). Chomsky (2008: 143) clarifies that in the context of the discussion of phases, "C is shorthand for the region that Rizzi (1997) calls the "left periphery," possibly involving feature spread from fewer functional heads (maybe only one)". It is also plausible, then, to

take T to be shorthand for the region commonly called "exploded Infl" (see Pollock 1989), and not necessarily the unique head T.

We cannot take H to be C either because the position between future -*a* and the voice heads -*fi* and -*e* which it must occupy on this approach is not a natural position for a C head to occupy by Baker's (1988) Mirror Principle. Note, furthermore, that it is for this reason that it cannot be C alone which participates in wh-agreement in Mapudungun. Rather, C must have a proxy in the verbal complex.

Because of the position it occupies in the verbal complex, then, I further conclude that H is a null independent TAM head, distinct from T and C.

Note that Chung (1998) actually states that it is I^0 which participates in wh-agreement. Adopting the position that this is shorthand for "exploded Infl", it may actually be that it is a different TAM head which participates in wh-agreement besides T itself, and if so, then Chung's analysis of wh-agreement reflected in verbal morphology might be wholly consistent with the proposal here.

Note that, in light of exploded Infl (Pollock 1989), Chung (1998) has no reason to claim that the expression of wh-agreement as verbal inflection is due to features on V, specifically, as opposed to some other (functional) head below T. Indeed, the placing of these features on V may simply be due to an assumption that there are no such heads.

7.4 Allomorphy rules for Inf

With H_{ns} and H_{obl} enriching the ontology of trigger morphemes, it is now possible to define a complementary distribution for the non-finite markers of Mapudungun deemed to be allomorphs of a single morpheme, Inf, following Baker's ontology.

As is evident from examination of Table 1.3, every morphological environment now admits one and only one of the markers -*n*, -*el*, -*t*, or -*m*. On this theory, then, the markers -*n*, -*el*, -*t*, and -*m* have a complementary distribution across an

Table 1.3: Distribution of Inf markers across morphological environments on ontology of triggers proposed here

	Root	*-a*	H_{ns}	H_{obl}	*-fu*	*-mu*	*-fi*	*-e*	*-ye*
-n	✓	*	*	*	*	*	*	*	*
-el	*	✓	✓	*	✓	*	✓	*	*
-t	*	*	*	*	*	*	*	✓	*
-m	*	*	*	✓	*	✓	*	*	✓

A ✓ indicates that the non-finite marker may follow a stem containing the morpheme identified, followed by a, possibly null, sequence of neutral morphemes.
A * indicates that the non-finite marker may not follow a stem terminating with the morpheme identified or containing it and followed by a sequence of neutral morphemes.

exhaustive and disjoint set of morphological environments, preparing the way for a morphologically-conditioned allomorphy account of their distribution. I propose the following rules of allomorph selection for Inf.

(57) Allomorphy rules for Inf

Where "..." is a, possibly empty, sequence consisting solely of neutral morphemes, i.e. not containing any of *-a*, H_{ns}, H_{obl}, *-fu*, *-mu*, *-fi*, *-e*, or *-ye*:

Inf → *-el* /*-a*...___ (i.e. when last non-neutral morpheme is *-a*)

Inf → *-el* /H_{ns}...___

Inf → *-m* /H_{obl}...___

Inf → *-el* /*-fu*...___

Inf → *-m* /*-mu*...___

Inf → *-el* /*-fi*...___

Inf → *-t* /*-e*...___

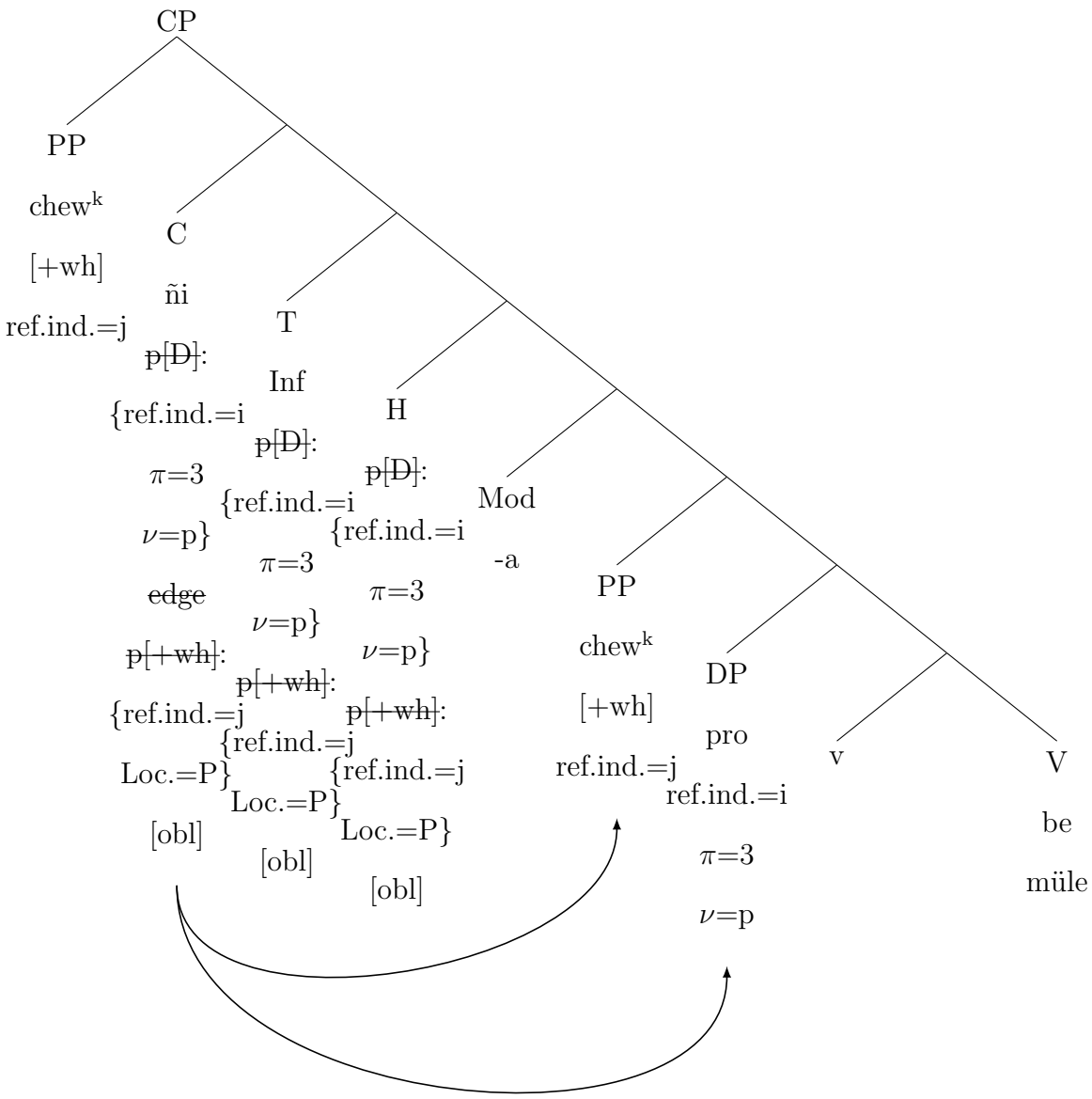
Inf → *-m* /*-ye*...___

Inf → *-n* /elsewhere

Note that this allomorphy theory can account for the existence of the non-finite ending *-am*. In particular, I propose the following derivation for the free relative in (58).

(58) *chew* *ñi* *müle-a-m*
where 3.poss be-fut-inf
"(a place) where they can stay" (Smeets 2008: 207)

(59)



chew ñi müleam ((a place) where they can stay)

After C probes for [D] and [+wh] and comes to bear a record of the Goal found for each, the featural content of C in this case is indicative of oblique extraction; see §6.2 above. After C copies these probe feature records onto the other heads in its phase, which form a unit with C, in particular T and H, the [obl] feature on H becomes licensed; see §7.1 above. Consequently, since H_{obl} is the closest head to Inf, it specifies its allomorph as *-m*, by the allomorphy rule just proposed.

8 Critiques of Baker's Theory

Baker's approach of instantiating wh-agreement in Mapudungun with null local agreement heads rather than null TAM heads, in communion with C, faces theoretical and empirical shortcomings.

The hypothesis which identifies the head that participates in wh-agreement with a local agreement head that takes a special form when agreeing with a wh-trace is not a viable alternative for wh-agreement in Mapudungun, in particular as regards wh-agreement with oblique extraction.

Firstly, in the case of oblique extraction in Mapudungun correlating with the marker *-m*, it is less likely that there is a special, null, agreement marker present which triggers the spell-out of the non-finite marker as *-m*, because there is no evidence for agreement with obliques to begin with.

Secondly, if the presence in relatives of *-el* not accompanied by any of the other hypothesized triggers for *-el*, viz. *-a*, *-fu*, or *-fi*, is to be analyzed as wh-agreement, then it is clear that this marker *-el* may also occur with oblique extraction. But again, as there is no agreement with obliques to begin with, it is unlikely that there is a local agreement head which triggers the spell-out of the non-finite marker as *-el* in this case.

(60) *kiñe* *an̲n̲tü* *t̲a* *ñi* *traw-a-el* *engün*
one day det 3.poss gather-fut-inf 3.p
"a day for them to gather" (see Salas 2006: 167)

In addition, a problem for Baker's account of -*el* being triggered in object relatives by the null allomorph of -*fi* which agrees with a +wh trace may be presented by examples where a Theme is relativized out of a ditransitive, if these are possible without overt -*fi* agreement and still with the -*el* ending. For, if object agreement in a ditransitive is necessarily with the Recipient and thus null object agreement is with a -*wh* trace in clauses in which the Theme and not the Recipient has been extracted, one should expect default -*n* in such relatives as opposed to -*el* if no other triggers for -*el* occur. For instance, the question is whether in the relative clause below the -*fi* agreement, referencing the Recipient of the applicativized predicate, can drop.

(61) *ta-ti* *kofke* *ta-mi* *kupal-el-fi-el*
det-det bread det-2.s.poss bring-ben-obj-inf
"the bread that you brought" (see Harmelink 1990: 140)

Finally, the revision and extension to Baker's theory also predicts that the ending -*el* should be OK in oblique relatives with a (bare) intransitive predicate, triggered by H_{ns}, whereas Baker would predict that such relatives are impossible, since there is nothing to trigger -*el*, in particular: no -$\varnothing_{fi[+wh]}$. In fact, such clauses are attested, at least when functioning as (correlative) adjuncts, such as the example above and the following.

(62) *aku-tu-el* *fey* *el-i* *ñi* *dungu* *Painemilla* *ñi*
arrive-re-inf then give-indic.3 3.poss matter P. 3.poss
amu-al *Argentina*
go-fut.inf A.
"Upon returning, Painemilla manifested his decision to go to Argentina."
(Zúñiga 2006: 145)

Baker (undated) had mentioned the existence of cases where -*el* shows up where his theory predicts -*n* and hypothesizes that this may point to a breakdown in a complex system or uncertainty as to whether the default is -*el* or -*n*, or that the triggering conditions could be more subtle than those considered.

Nevertheless, the ability to account for these subordinate clauses with the non-finite marker -*el* is an advantage for a theory which posits the head H_{ns} and attributes the triggering of the ending -*el* to it.

I conclude that the head(s) participating in wh-agreement in Mapudungun cannot be local agreement heads.

9 Independent motivation for [obl]: distribution of *-mu* and *-ye*

Another advantage to positing the feature [obl] is that it yields an account of the distribution of the suffixes -*mu* and -*ye*. The hypothesis that -*mu* and -*ye* are restricted to clauses in which the functional heads in the C phase bear an [obl] feature accounts for a number of distributional facts.

First, note that -*mu* does not necessarily occur with -*m*. Yet even when occurring with other endings, it appears to be restricted to clauses with oblique extraction.

(63) *ti ruka chew ñi pe-mu-fi-el la pampa fewlá*
det house where 3.poss see-plprf-obj-inf the plains now
nge-we-tu-la-y
be-persist-re-neg-indic.3
"That house (from) where one saw the plains is not there any more." (Smeets 2008: 214)

(64) *welu pülle-pu-el chew ñi pe-mu-fi-el engu*
but near-dir-inf where 1.s.poss see-plprf-obj-inf 3.d
pe-we-tu-la-fi-n
see-persist-re-neg-obj-indic.1.s

> "but when I came near the place where I had seen them, I did not see them any more" (Smeets 2008: 230)

If we say that -*mu* can only occur in clauses headed by C_{obl}, i.e. C bearing an [obl] feature, this yields a simple statement of the co-occurrence restrictions, for it predicts that -*mu* will be restricted to clauses with oblique extraction and that it will normally occur with -*m* except when followed by triggers of non-*m* allomorphs which override H_{obl}'s preference (which are not in turn followed by another trigger of -*m*, viz. -*ye*); such as the triggers for -*el* in (63) and (64).

For its part, -*ye* does seem to be restricted to -*m* clauses (if only because no other morpheme can intervene between -*ye* and the position of non-finite morphemes and in this way potentially trigger a different allomorph of Inf).

I propose to derive these facts from an allomorphy account of the appearance of -*mu* and -*ye*.

First note that in Mapudungun matrix clauses, a verbal form consisting of just a root and mood and agreement inflection is interpreted as past, or present depending on the aktionsart of the predicate. Thus, no overt marking for past or present occurs.

(65) *Amu-n* *Temuco* *mew*
go-indic.1.s T. P
"I went to Temuco."

(66) *Iñché* *müle-n* *Temuco*
1.s be-indic.1.s T.
"I live in Temuco.", "I lived in Temuco." (Smeets 2008: 166)

Clauses with -*mu* are similarly interpreted as past or present (see Salas 2006: 169). I propose, then, that Mapudungun possesses a null past/present marker and that -*mu* is an allomorph of this same morpheme.

It may also be noted that -*mu* is similar in phonological form to the past-like temporal marker -*fu*; with -*mu* containing the formative [m] which appears to be

recurrent in the oblique relative clauses which are here analyzed as exhibiting wh-agreement.

In a similar way, I propose that -*ye* is the allomorph of a quantificational temporal morpheme whose default expression is null.

Taking the heads of which -*mu* and -*ye* are the expression to be functional heads in the C phase, it follows from the theory proposed here that they also bear the [obl] feature in clauses headed by C_{obl}. I consequently propose the following allomorphy rules for -*mu* and -*ye*.

(67) Spell-Out rules

p({NonFut$_{obl}$}) = -*mu* (i.e. when this morpheme bears the feature [obl])

p({NonFut}) = -∅ (i.e. elsewhere)

p({Temporal_quantifier$_{obl}$}) = -*ye*

p({Temporal_quantifier}) = -∅

In this way, we derive the restrictions that -*mu* and -*ye* may only occur in clauses with C_{obl} and H_{obl}.

Note that this account also predicts that the markers -*mu* and -*ye* may co-occur, *ceteris paribus*, as they are both restricted to clauses headed by C_{obl}. This prediction is indeed confirmed.

(68) *chew* *müli-y* *mi* *chüngar-mu-fi-ye-m?*
where be-indic.3 2.s.poss stab-plprf-obj-temp-inf
"Where is the (the thing) with which you stabbed him?" (Smeets 2008: 210)

This account can also derive the impossibility for the markers -*mu* and -*ye* to occur with the non-finite morpheme -*lu*, since it follows from the assumptions that C_{obl} selects for Inf and that -*lu* is not an allomorph of Inf. These co-occurrence restrictions must apparently simply be stipulated on Baker's theory, though the latter follows from Smeets' stipulation that -*ye* requires the ending -*m* (Smeets 2008: 225).

Finally, another fact which must be accounted for by any theory of Mapudungun non-finite endings is that the marker -*m* may not occur on a bare root (Smeets 2008: 206), or indeed without either -*a*, -*mu*, or -*ye*. This is somewhat surprising, since Mapudungun clauses do not require the overt expression of tense in general and one might expect oblique extraction, via H_{obl}, to license -*m* alone without the need of one of these other temporal morphemes to be present. Yet if -*mu* is an allomorph of a null past/present marker and if we further suppose that tense marking is obligatory (although often as ∅), then these facts follow.

Any theory of Mapudungun is charged with accounting for the distribution of the markers -*mu*, -*ye*, and -*m*. They must find a way to derive the fact that -*mu*, -*ye*, and -*m* may only occur in oblique relatives and certain adjuncts (see Appendix B), that -*mu* may only occur with the endings -*m*, -*fiel*, -*fiyüm*, or -*eyümeo*, and that -*ye* may only occur with the ending -*m*. I have proposed that the markers -*mu*, -*ye*, and -*m* necessarily co-occur with H_{obl}. Their limited distribution, restricted to oblique relatives and certain adjuncts, follows from the theoretical proposal that clauses headed by C_{obl} have oblique extraction, and the plausible distribution of such clauses. Alternative theories which do not posit the feature [obl] may find it difficult to define this precise class of syntactic environments in which -*mu*, -*ye*, and -*m* may occur.

10 Participles

Every theory of non-finite endings in Mapudungun considered in Appendix B agrees on the theses that -*lu* and -*wma* are independent non-finite morphemes, distinct from each other and from those occurring in other non-finite endings such as -*n*, -*el*, -*eteo*, -*am*, -*mum*, or -*yüm*.

Nevertheless, there remain certain facts regarding -*lu* and -*wma* which any theory

of non-finite morphemes in Mapudungun must account for.

10.1 Present participle *-lu*

-lu clauses are characterized by two major properties. First, in contrast to clauses with other non-finite markers in Mapudungun, *-lu* clauses do not allow expression of the analytic possessive agreement morpheme, Poss. Second, *-lu* clauses display a distinctive distribution. *-lu* clauses can fulfill all adjunct functions, though when interpreted as a causal adjunct it does not occur with the Postposition *mew*, as do causal adjuncts with other non-finite markers, but rather with the particle *am* or *kam*. *-lu* clauses may be used as relatives, but only as subject relatives.

(69) *ṯüfa-chi* *kulliñ* *puṉ* *tripa-ke-y* *weñe-a-lu*
det-adj animal night go.out-hab-indic.3 steal-fut-prpl
"This animal goes out at night to steal." (Salas 2006: 149)

(70) *ṯüfa-chi* *kulliñ* *weñefe-achawall-nge-y* *i-ke-lu* *am* *ilo*
det-adj animal thief-chicken-be-indic.3 eat-hab-prpl part meat
"This animal is a chicken-thief because it always eats meat." (Salas 2006: 152)

(71) *dewma* *ella* *trafia-lu* *kom* *che* *amu-tu-ke-y* *kisu-ke*
already just nightfall-prpl all person go-re-hab-indic.3 self-distr
ñi *ruka* *meo*
3.poss house P
"When night had just fallen, the people returned each one to his house." (Salas 2006: 152)

(72) *müñal* *püra-kawellu-a-lu* *pe-pu-fi-ñ* *Padre*
about.to go.up-horse-fut-prpl see-dir-obj-indic.1.s father
"I saw the Father when he was about to mount the horse." (de Augusta 1916: 138, de Augusta 1903: 191)

Relativization of the sole argument of intransitives, which are presumably subjects, take *-lu*. Malvestitti (2010: 189) states that predicates in *-lu* relatives are typically intransitive. Nevertheless, relativization of the Agent in a clause with a

transitive predicate in active voice, which is presumably a subject, appears to be possible and takes *-lu*.

(73) *kom* *che* *müle-lu* *ina* *pali-we*
all person be-prpl edge chueca-loc
"everyone who is at the edge of the chueca field" (see Salas 2006: 152)

(74) *fey-chi* *wentru* *langüm-lu* *ñi* *peñi* *faw* *pülle-le-y*
3-adj man kill-prpl 3.poss brother here close-stat-indic.3
"The man who killed his brother lives nearby." (Smeets 2008: 218)

It is not clear whether *-lu* clauses are possible as complements. The verb *troki* (opine) consistently takes (what appear to be) *-lu* complements, but these occur to its left, unlike all other complements in Mapudungun. Certain verbs such as *ayü* (want) may appear with *-a-lu* clauses, intuitively interpreted as their Theme, though it is not clear whether these are complements or purpose clause adjuncts.

(75) *amu-a-lu* *troki-w-ke-y*
go-fut-prpl opine-refl-hab-indic.3
"He judges it good to go." (de Augusta 1903: 199)

I have proposed that Mapudungun possesses special C heads, C_{ns} and C_{obl}, dedicated exclusively to non-subject and oblique (relative) extraction, respectively. It is natural, then, to expect there to be a head C_{subj}, dedicated exclusively to subject relative extraction. One attractive theory, then, is that this head selects for *-lu* as non-finite complement.

On this theory, (at least some) *-lu* clauses are true subject relative clauses, i.e. involve relative extraction of the subject. The impossibility of Poss might then follow from a principle to the effect that anti-agreement holds in Mapudungun. Anti-agreement is the phenomenon whereby there is no agreement with subjects in clauses in which subject extraction occurs. It is attested in Berber and other languages (Ouhalla 1993). It is not clear whether anti-agreement holds in Mapudungun clauses

in general, but anti-agreement in Turkish is restricted to relative clauses (Ouhalla 1993: 483), so if necessary the same could be said for Mapudungun.

This theory, on which (some) -*lu* clauses involve subject extraction, can account for the distribution of these -*lu* clauses in the following way. It follows immediately that relative uses with these -*lu* clauses are restricted to subject relatives, since C_{subj} requires subject relative extraction. -*lu* clauses which function as adjuncts can be analyzed as correlatives, with these -*lu* relative clauses adjoined, as I argue to be possible in Mapudungun in Appendix B. Relative clauses are, universally, impossible as complements to V or P. Recourse to a principle to this effect would account for the impossibility of -*lu* clauses to appear as complement to the P *mew*, e.g. when functioning as a causal adjunct, and would also predict that the few putative instances of -*lu* complements to V are to be analyzed in some other manner.

So the major properties of -*lu* clauses can be explained quite well when analyzed as true subject relatives. However, not all -*lu* clauses can be analyzed in this way.

If all -*lu* clauses were true subject relatives, all would contain a subject gap. But there are -*lu* clauses without a subject gap. Moreover, if all -*lu* adjuncts were (subject) correlatives, we should expect their subject to be coreferential with an argument in the matrix clause, which would be what licenses the correlative. Yet there are -*lu* adjuncts whose subject is not coreferential with any matrix argument. (Obviously, both possibilities are restricted to -*lu* clauses not functioning as subject relatives, since these must contain a subject gap.) Each of the examples below illustrates both possibilities.

(76) *dewma* *ella* *trafia-lu* *kom* *che* *amu-tu-ke-y* *kisu-ke*
already just nightfall-prpl all person go-re-hab-indic.3 self-distr
ñi *ruka* *meo*
3.poss house P
"When night had just fallen, the people returned each one to his house."
(Salas 2006: 152)

(77) *ñall đungu-a-lu iñché ka che đungu-y*
just speak-fut-prpl 1.s other person speak-indic.3
"Just when I was about to speak, someone else spoke." (Smeets 2008: 220)

Such examples cannot be analyzed as involving subject extraction. Consequently, for the theory which analyzes some -*lu* clauses as true subject relatives to be successful, it must recognize the existence of a different type of -*lu* clause, which can host an independent subject.

Present participles can host either controlled or independent subjects, as illustrated by the following English examples.

(78) (Mary) having solved the problem, John went home early.

If (some) -*lu* clauses are participial clauses (see Smeets 2008: 217), then this would account for their ability to host both independent subjects and subjects co-construed with a matrix argument. Such an analysis of -*lu* clauses still has the burden of accounting for the impossibility of Poss and for the restricted distribution exhibited by all -*lu* clauses.

A participial analysis of -*lu* clauses might account for the impossibility of Poss in one of the following ways. Cross-linguistically, participles do not allow agreement in person. Whatever universal principle guarantees this might be recruited to account for the impossibility of -*lu* participles to co-occur with Poss, since Poss encodes person agreement.

Alternatively, we might simply argue as follows: Poss selects Inf, -*lu* is not an allomorph of Inf, therefore Poss is incompatible with -*lu*. We can motivate the first assumption by noting that non-finite clauses with markers other than -*lu* often appear with Poss and these clauses resemble possessed nominals in Mapudungun. I will argue that these clauses are not in fact nominals, see Chapter 2, but we might assume that they share certain features with nominal projections nonetheless. The theory of categories in Baker (2003b, 2005, 2011) identifies bearing a referential index as a

nominal property. We might decompose the categories of N (or n) and Inf in such a way that they share the feature of bearing a referential index and differ in other features. The analytic possessive agreement which occurs in non-finite clauses, Poss, is homophonous with the analytic possessive agreement which occurs in possessed nominals, D_{poss}. We might suppose further that Poss and D_{poss} are similar enough such that the selection for N (or n) by D in the nominal domain is reflected in the selection for Inf by Poss in the (subordinate) clausal domain. A single unifying principle may comprehend both, such as that these heads seek a complement with a referential index, appropriate in other respects as well, which it may pass on to it (see Baker 2011). A participial head, like -*lu* on this theory, would be an adjectival head, not bearing a referential index (Baker 2003b), and so cannot be selected by Poss.

This participial analysis of (some) -*lu* clauses can also account for their distribution. If -*lu* is not a Nominal-like head, as Inf is, but rather an Adjectival-like head, then it follows that it will be excluded from syntactic environments which require a nominal(-like) constituent and will have the distribution of a modifier: adjunct or relative. In effect, we observe that the primary functions of -*lu* clauses are as modifiers: the various adjunct functions and (subject) adnominal relative clause function.

It is reasonable to assume that adjuncts must be non-nominal. Both -*lu* and Inf clauses may occur as adjuncts, and yet there are reasons to believe that the structures are not entirely parallel. -*lu* does not appear to be possible after the P *mew*, whereas Inf markers are. If we assume that the Inf clauses functioning as adjunct do so in virtue of being headed by a P, overt or null, while -*lu* clauses functioning as adjunct do not allow P, overt or null, we can maintain that the more nominal Inf clauses require a P to license them, whereas -*lu* clauses are licensed as adjuncts directly, in virtue of their participial nature (Mark Baker, p.c.). The adjunct function differentiation principle proposed in Appendix B then predicts that it will be licit in all adjunct functions.

The fact that -*lu* clauses functioning as relatives are restricted to being interpreted as subject relatives also follows from the participial analysis, since participles may modify some head N, functioning as relative clauses, but the grammatical function in the participial clause with which the head N is co-construed is the subject, as the following English example with a present participle illustrates:

(79) The man fixing the toilet told me to stop pouring Drano down it.

If some -*lu* clauses are participles, we might expect a limited range of V to allow them as complements. This is potentially consistent with the data observed in Mapudungun. Further investigation is needed to determine whether the possible candidates are true complements or not, but it is certainly evident that -*lu* clauses do not have as wide a distribution as complement clauses as do Inf clauses, which follows if Inf clauses are more nominal while -*lu* clauses are participles with a limited distribution as complement clauses.

Thus we see that the participial analysis of -*lu* clauses succeeds in accounting for the major properties of these clauses: the impossibility of Poss, and its particular distribution. On the participial analysis, it is plausible that all -*lu* clauses are participles, whereas on the true subject relative analysis, it must be recognized that there is a different type of -*lu* clause (possibly a participle). By Ockham's razor, we can conclude that the participial analysis is therefore superior insofar it does not multiply entities needlessly. Moreover, as all -*lu* clauses display the peculiarities, among non-finite clauses, of lacking Poss and having a distribution more or less restricted to modifier functions, a unified analysis of -*lu* clauses seems preferable as well.

Finally, further evidence that -*lu* clauses are never true (subject) relatives is that, while (non-subject) relative clauses with Inf may have an overt wh-relative pronoun, -*lu* clauses appear to be incompatible with one.

10.2 Past participle *-wma*

The non-finite ending *-wma* is fairly rare (Smeets 2008: 224). Nevertheless, every theory of non-finite endings in Mapudungun must recognize the fact that *-wma* clauses are restricted to relative function and are incompatible with all functional suffixes, including in particular the triggers *-mu*, *-a*, *-fu*, *-fi*, *-e*, and *-ye*. It is again not entirely clear whether *-wma* clauses are restricted to functioning as subject or object relatives. There are transitive examples which are glossed as object relatives, and yet intransitive examples which are glossed as subject relatives.

(80) *feymeo* *pepika-nge-ke-y* *epu* *angken* *fara* *katrü-kunu-uma* *kuyfi*
then prepare-pass-hab-indic.3 two dry rod cut-leave-ppl before
"Then two dry rods which have been left cut long ago are prepared." (Salas 2006: 156)

Note that *-wma* is necessarily past.

If indeed no suffixes are possible before *-wma*, but only the root, or a limited set, e.g. of lexical, i.e. non-functional, morphemes (e.g. *-künu*), then it is possible that *-wma* attaches early and is a kind of voice morpheme: suppressing the Agent, intransitivizing the predicate and targeting the highest thematic argument available at that point, normally the Theme. Clauses with *-wma* which are interpreted as object relatives may correspond to clauses to which *-wma* has attached instead of or prior to a little v which licenses an Agent. When *-wma* attaches to an intransitive predicate, however, it targets the sole argument, and hence is interpreted as a subject relative. In this way, relatives with *-wma* would not involve object extraction at all, since there would be no objects in *-wma* clauses, and may not even involve subject extraction either but rather a strategy like *-lu* employs. Note that *-wma* is similar to *-lu* in rejecting Poss; though *-lu* clauses have a wider distribution than *-wma*, which are restricted to relatives. This analysis may predict that *-wma* can only ever target

the Theme (or perhaps a Recipient with a ditransitive predicate); so it is only OK with unaccusative intransitives.

(81) *kom ti pu che müle-wma tüfa-chi eluwün-mew*
all det p person be-ppl dem-adj funeral-P
"all the people who had been at their funeral" (see Smeets 2008: 224)

Note that *-wma* is again necessarily past.

de Augusta (1903: 182) also gives (82) as a variant of (83), with deletion of subsequent *-nge-(fu)-lu* according to this analysis.

(82) *aku-wma-nge-(fu)-lu*
arrive-ppl-pass-FU-prpl (de Augusta 1903: 182)

(83) *aku-wma*
arrive-ppl (de Augusta 1903: 182)

Nevertheless, the important datum is (82), which shows that *-wma* can co-occur with the non-finite marker *-lu*, and attaches at a much earlier position (see also de Augusta 1903: 44-5).

On this view, then, *-wma* would have a different attachment site than all the other markers and, indeed, there is little evidence that *-wma* belongs to the same class of non-finite markers proper. Rather, it may belong to a different category forming reduced relatives, or participles to use the terminology of de Augusta (1903: 182); to which another morpheme whose exponent is *-n* may also belong. These clauses would be non-finite by the definition adopted, but these markers would not be members of the category of non-finite markers as treated in this section.

11 Conclusion

In this chapter, I have characterized the Mapudungun non-finite endings *-lu* and *-wma* as present and past participles (or active and passive participles), respectively. I have

also defended Baker's analysis of the traditional Mapudungun non-finite endings *-n*, *-el*, *-fiel*, *-eteo*, *-mum*, *-am*, and *-yüm*, on which these are composed of the non-finite markers *-n*, *-el*, *-t*, and *-m*, which are all allomorphs of a single non-finite morpheme, Inf, plus triggers for particular allomorphs of Inf by formulating morphological conditioning rules for each allomorph. In order to define a disjoint set of morphological environments, it was necessary to posit the existence of a null morpheme in the verbal complex, H, and two features, [ns] and [obl], which it could bear. It was proposed that H with the feature [ns] triggers the *-el* allomorph of Inf, while H with the feature [obl], the *-m* allomorph. The features [ns] and [obl] are licensed on H as a result of wh-agreement with non-subject and oblique extraction, respectively. The way wh-agreement works in Mapudungun, then, is by licensing the [ns] or [obl] feature on H, which in turn triggers a particular allomorph of Inf, which is the ultimate overt expression of wh-agreement in Mapudungun.

Along the way, I have formulated an Agree theory of wh-agreement on which wh-agreement is in all respects like person-number agreement (with subjects and objects). The presence of extraction, and the further differentiation between subject, object, and oblique extraction (among other possible patterns of extraction which can be recognized), is definable in terms of features on the heads in the C phase (principally, C and T), which phonological interpretation rules are free to reflect overtly. Drawbacks to approaches to on which wh-agreement reflects Agree in case have been identified, although the Agree theory of wh-agreement itself allows for case features to be reflected. Nevertheless, it should be noted that the supposition that Agree in case yields case features on the heads participating in wh-agreement gives rise to the problem of a single head bearing multiple case features which need to be kept distinct; in particular, which ones arise from Agree with a subject or object and which from Agree with an extracted element. The particular theory of subject and object agreement proposed in Chapter 0 §4.2.1 solves this potential problem through

the use of records.

The proposed symmetry between wh-agreement and subject and object agreement raises the following questions. First, why do subject and object agreement often reflect the ϕ-features of the Goal, but wh-agreement seldom or never does? Secondly, why are subject and object agreement often overt but wh-agreement rarely so?

In response to the first question, note that Minimalist syntactic theories analyze lexical items as hosting a complex feature structure, the majority of whose differences are not reflected in morphology. One might assume that natural language operates under a universal principle not to make morphological distinctions; something along the lines of the quasi-tautology "marking is marked, not marking is unmarked". At the same time, there are clearly functional pressures to make distinctions in overt forms; for instance, a grammar which spelt-out every lexical item in the same way would not be useable. Consequently, observed natural languages are expected to display overt distinctions when there is a greater pressure to do so.

Note further, then, that subject and object agreement often target Goals in a specific location, so that the Goals of this Agree would not need to be distinguished one from another in terms of location or case, but would need to be distinguished in ϕ-features. Similarly, wh-movement often targets 3rd person pronouns or operators, so that the Goals of this Agree would not need to be distinguished one from another in terms of person, but would need to be distinguished in terms of location or case. Nevertheless, the Goals of wh-agreement could still be distinguished in terms of number. Moreover, the extracted element in certain wh-movements such as topicalization is not restricted to 3rd person, and so might wh-agreement might be expected to reflect ϕ-features at least in these constructions. If these features are not reflected in wh-agreement, this may be due to the lack of need to distinguish ϕ-features among extracted elements generally, which then exerts a more pervasive influence over wh-agreement marking.

In response to the second question, in the same way one may say that if wh-agreement is not overt as often as subject or object agreement, this may be because there is less need for extraction patterns to be morphologically marked. Alternatively, note that wh-agreement in Mapudungun does not spell out the featural configurations defining of non-subject or oblique extraction directly, but rather only the allomorph-triggering effects of the posited features [ns] and [obl]. It may be conjectured, then, that wh-agreement does not in fact spell out the featural configurations which define the diverse extraction patterns directly but only certain features such as [ns] and [obl], which are idiosyncratic features, which many languages may lack.

Chapter 2

On the category of Mapudungun infinitival clauses

1 Isomorphy with Possessed DPs

Mapudungun infinitival clauses resemble possessed nominals in certain respects. The predicate in an infinitival clause is inflected with a nominalization marker. Both the embedded predicate of an infinitival clause and the head Noun of a possessed nominal are preceded by an analytic agreement morpheme displaying a distinctively nominal paradigm of agreement. The DP which controls this agreement may be overt and is interpreted as the subject of an embedded clause and as the possessor of a possessed nominal.

(1) Possessed nominals

a. *iñche* *ñi* *trewa*
1.s 1.s.poss dog
"my dog"

b. *eymi* *mi* *trewa*
2.s 2.s.poss dog
"your dog"

c. *fey* *ñi* *trewa*
3 3.poss dog
"his/her dog"

(2) Infinitival clauses

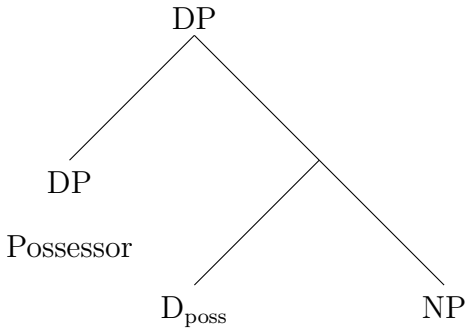
a. *iñche* *ñi* *amu-n*
1.s 1.s.poss go-inf
"that I went"

b. *eymi* *mi* *amu-n*
2.s 2.s.poss go-inf
"that you went"

c. *fey* *ñi* *amu-n*
3 3.poss go-inf
"that he went"

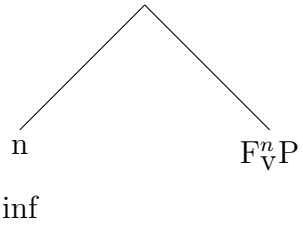
An intuitive analysis, therefore, is that Mapudungun infinitival clauses are DPs, with the extended projection of deverbal Noun at its base, and a possessor which is understood as subject. The examples in (1) and (2), therefore, would share the following structure on this analysis.

(3)



The only difference between the possessed nominals in (1) and the infinitival clauses in (2) would be that NP dominates a lexical N in the former but a nominalization of an extended projection of V in the latter, such as a structure of the following sort.

(4)



Nevertheless, despite the intuitive appeal of this analysis, in this section I will argue that Mapudungun infinitival clauses are not DPs but rather CPs, with full clausal structure.

Nominalization can occur at any clausal level, e.g. VP, vP, TP, CP, blocking further extended projection of V and instead licensing appropriate extended projections of N after that point. In section §2, I will show that clausal properties are not restricted ever inside Mapudungun infinitival clauses. In section §3, I will argue that the constituent as a whole does not bear a DP label. In section §4 I will argue that the infinitival marker on embedded predicates in Mapudungun is a T head. In section §5, I will argue that the analytic possessive agreement which occurs in Mapudungun infinitival clauses, and which we may call Poss, is a C head. In section §6 I will propose an analysis of Mapudungun infinitival clauses as ForcePs, with full clausal structure and no nominalization. In section §7 I conclude.

2 Evidence that Mapudungun infinitival clauses contain every extended projection of V

2.1 Evidence for vP

First I review properties of certain nominalizations in English and Spanish which have been analyzed as lacking v. Contrasting the behavior of these nominalizations

with that of Mapudungun embedded clauses, I argue that Mapudungun embedded clauses do contain a projection of v.

2.1.1 Object agreement and accusative case

For English deverbal Nouns and *-ing of* nominals and Spanish deverbal Nouns, the direct object of the base verb cannot appear without a special case marking, common to other N, but unlike the marking of direct objects of matrix verbs.

(5) a. the destruction of the city

b. *the destruction the city

(6) a. his mellifluous singing of the Marseilles

b. *his mellifluous singing the Marseilles

(7) a. *la venta de animal-es*
det sale P animal-p
"the sale of animals"

b. **la venta animal-es*
det sale animal-p
"the sale of animals"

English deverbal Nouns and *-ing of* nominals have been analyzed as nominalizations of V (Zucchi 1993). Spanish deverbal Nouns may admit of the same analysis. The head Noun is derived from a V, but nothing in the phrase beyond this Noun displays clausal properties. In particular, in a nominalization of V, there is no projection of v. It is generally supposed that there is a correlation between the presence of v and the availability of accusative case. As a consequence the direct object of the base Verb is only licensed if another case is available for it, such as the so-called genitive case associated with n. On this analysis of these nominalizations, then, the facts above follow.

In contrast, the direct objects of predicates in Mapudungun embedded clauses license the object agreement marker -*fi*, just as in matrix clauses.

(8) *iñche* *rupa-y* *zewma* *ni* *chillkatu-fi-el* *chi* *lifru*
1.s pass-indic.3 already 1.s.poss read-obj-inf det book
"I already finished reading the book."

Object agreement has been analyzed as the result of an Agree relation between v[1] and the direct object (Chomsky 2001), and Baker (2003a) proposes that the presence of Mapudungun -*fi* is indicative of a v head which assigns accusative case. Thus, the availability of -*fi* in embedded clauses in Mapudungun indicates that a v projection is present.

2.1.2 Passive and inverse voice

English -*ing of* nominals and Spanish infinitive nominals do not allow the expression of passive voice.

(9) *the Marseilles' mellifluous being sung

(10) **Su* *ser* *eligido* *es* *sorprendente.*
3.poss be.inf choose.ppl be.indic.pres.3.s surprising
"His being chosen is unexpected."

In contrast, Mapudungun infinitival clauses do allow passive voice -*nge*.

(11) *fey* *el-küno-y* *yin* *leli-nge-a-el*
3 give-leave-indic.3 1.p.poss look.at-pass-fut-inf
"He let him look at us." (lit. "He let that we be looked at.")

[1] In particular v*: active voice, transitive v, complete in ϕ-features (i.e. with a probe for [D] triggering Agree).

Passive voice is taken to be a type of v (Chomsky 2001). If English *-ing of* nominals and Spanish infinitive nominals lack v while Mapudungun embedded clauses host a projection of v, the facts above follow.

A similar argument extends to Mapudungun inverse voice *-e*, which Baker (2003a) analyzes as a voice, hence v, head. As inverse voice is licensed in Mapudungun infinitival clauses, this is further evidence that Mapudungun infinitival clauses host a projection of v.

(12) *fey* *ayü-le-y* *ñi* *pe-ya-e-t-ew*
3 want-stat-indic.3 1.s.poss see-fut-inv-inf-ds
"He wants that one to see me."

2.1.3 Applicatives

Spanish deverbal Nouns and infinitive nominals do not allow clitics referencing an affectee, although such morphology is otherwise available in finite clauses.

(13) *Es* *vergonzoso* *como* *se* *(me)* *comportó*
be.indic.pres.3.s shameful how refl 1.s.dat behave-indic.past.3.s
Pedro
P.
"It is shameful the way Pedro behaved (on me)."

(14) *El* *(*me)* *comportamiento* *(*me)* *de* *Pedro* *es*
det 1.s.dat behavior 1.s.dat P P. be.indic.pres.3.s
vergonzoso
shameful
"Pedro's behavior (on me) is shameful."

(15) *El* *comporta-r-se-(*me)* *de* *Pedro* *es* *vergonzoso*
det behave-inf-refl-1.s.dat P P. be.indic.pres.3.s shameful
"The way Pedro behaved (on me) is shameful."

In contrast, applicatives may appear in Mapudungun infinitival clauses. In the example below, the affected argument appears to be the possessor of the object.

(16) *müle-y* *mün* *allkü-tu-ñma-ya-fi-el* *ñi* *đungu*
be-indic.3 2.p.poss hear-tr-mal-fut-obj-inf 3.poss word
"You have to listen to His word." (Smeets 2008: 277)

Applicative heads have been analyzed as introducing arguments and, in this way, constitute v heads (Pylkkänen 2008, McFadden 2004). Therefore, their presence in Mapudungun infinitival clauses also constitutes evidence of a vP projection. If, on the other hand, applicative v heads may not project in Spanish deverbal Nouns and infinitive nominals, this explains why an affectee argument is not licensed in these nominalizations.

2.1.4 Statives

English *-ing of* nominals do not allow base verbs which are stative (Zucchi 1993). Similar remarks apply to Spanish deverbal Nouns and infinitive nominals.

(17) *The having of cats is not allowed.

(18) **La tenencia de gato-s no está permitido.*
det having P cat-p neg be.indic.pres.3.s permit.ppl
"Having cats is not allowed."

(19) **Su tene-r (de) gato-s es molestoso.*
3.s.poss have-inf P cat-p be.indic.pres.3.s bothersome
"His having cats is bothersome."

On the other hand, Mapudungun infinitival clauses allow stative roots.

(20) *Ka küme-y ñi nie-a-el kullin, nga fill chem kullin*
also good-indic.3 3.poss have-fut-inf animal part all.kinds what animal
"It is also good to have animals, any type of animal."

Suppose that stative verbs are selected by a special v head and that the nominalizing heads for English and Spanish deverbal Nouns, English *-ing of* nominals,

and Spanish infinitive nominals do not select for statives verbs. Then the facts above follow if no v projection is present in these English and Spanish nominalizations but a v projection is available in Mapudungun infinitival clauses.

2.1.5 Adverbs

In addition, English deverbal Nouns and *-ing of* nominals and Spanish deverbal Nouns and infinitive nominals do not allow modification by Adverbs but only Adjectives.

(21) a. the complete destruction of the city

b. *the completely destruction of the city

(22) a. his mellifluous singing of the Marseilles

b. *his mellifluously singing of the Marseilles

(23) a. *la venta indiscriminada de animal-es*
det sale indiscriminate P animal-p
"the indiscriminate sale of animals"

b. **la venta indiscriminadamente de animal-es*
det sale indiscriminately P animal-p
"the selling of animals indiscriminately"

(24) a. *su descuidado actua-r*
3.poss careless act-inf
"his careless manner of acting"

b. **su descuidadamente actua-r*
3.poss carelessly act-inf

In contrast, Mapudungun infinitival clauses do allow modification by Adverbs. To observe this, first note that *epé* may modify a predicate in a matrix clause but may not serve as a modifier of a Noun. I conclude that *epé* is an Adverb and not an Adjective. Note then that *epé* may modify the predicate of a Mapudungun infinitival clause.

(25) *Epé* *aku-y*
almost arrive-indic.3
"He has almost arrived."

(26) **Chi* *epé* *wentru* *aku-y*
det almost man arrive-indic.3
"the almost man arrived"

(27) *Iñche* *rakizuam-ün* *ñi* *epé* *aku-a-el* *chi* *wentru*
1.s think-indic.1.s 3.poss almost arrive-fut-inf det man
"I thought that the man was about to arrive."

Supposing that adverbial modification is only possible above the vP level, it follows that the English and Spanish nominalizations above do not allow such modification while Mapudungun infinitival clauses do allow it, as long as it is further assumed that the former lack a projection of v while the latter license a projection of v.

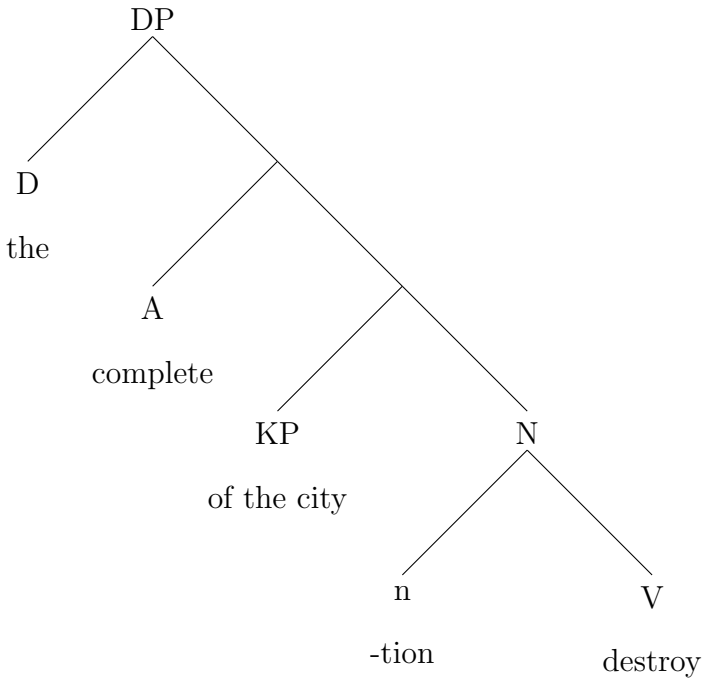
Furthermore, we might suppose that nominalization of V is low enough to license Adjectival modification in the same manner as for standard Nouns.

2.1.6 Summary of evidence for vP

English deverbal Nouns and *-ing of* nominals and Spanish deverbal Nouns and infinitive nominals have been shown to not license direct objects unless these appear in a case associated with complements of Nouns, to not license passive voice, to not license affectee arguments, to not license stative verbs, and to not license Adverbial modification. In each case, this behavior has been tied to the absence of a projection of v. In this way, the analysis of Zucchi (1993) for English deverbal Nouns and *-ing of* nominals, whereby these constitute a nominalization of V, blocking all further extended projections of V, is supported and shown to extend to the Spanish nominalizations considered.

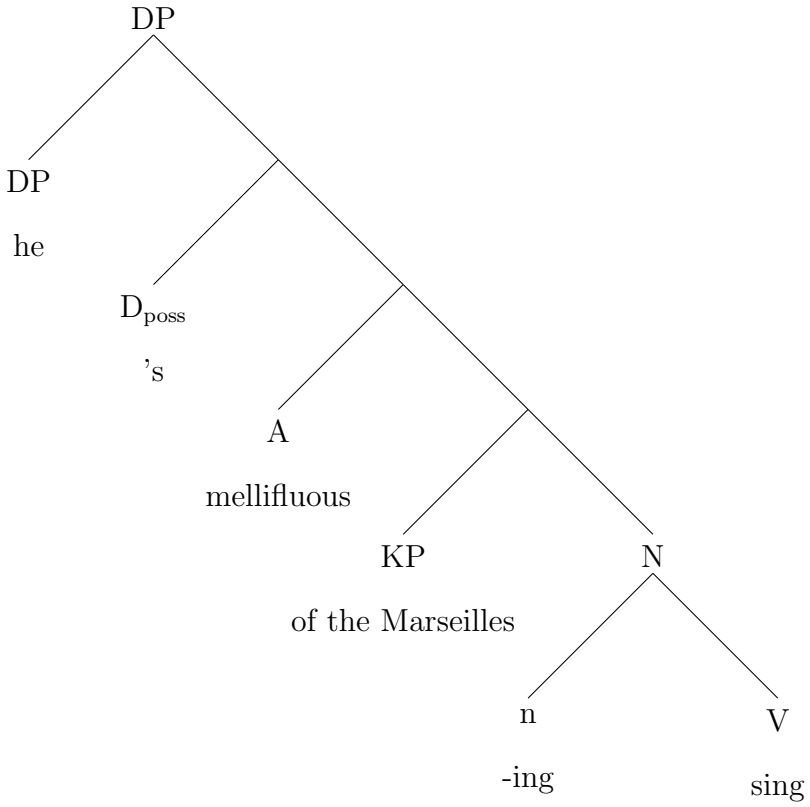
Analyses of the English deverbal Noun in (21a), the English *-ing of* nominal in (22a), the Spanish deverbal Noun in (23a), and the Spanish infinitive nominal in (24a) are presented in (28), (29), (30), and (31), respectively.

(28)



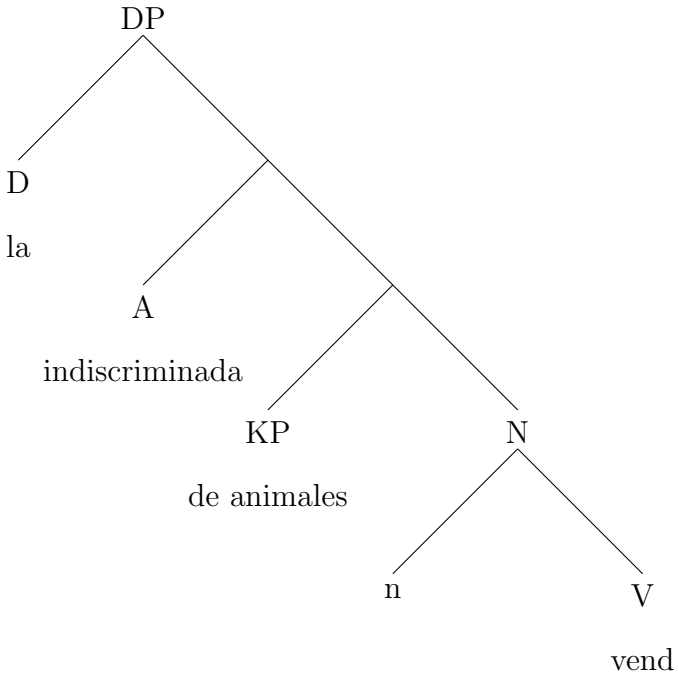
the complete destruction of the city

(29)



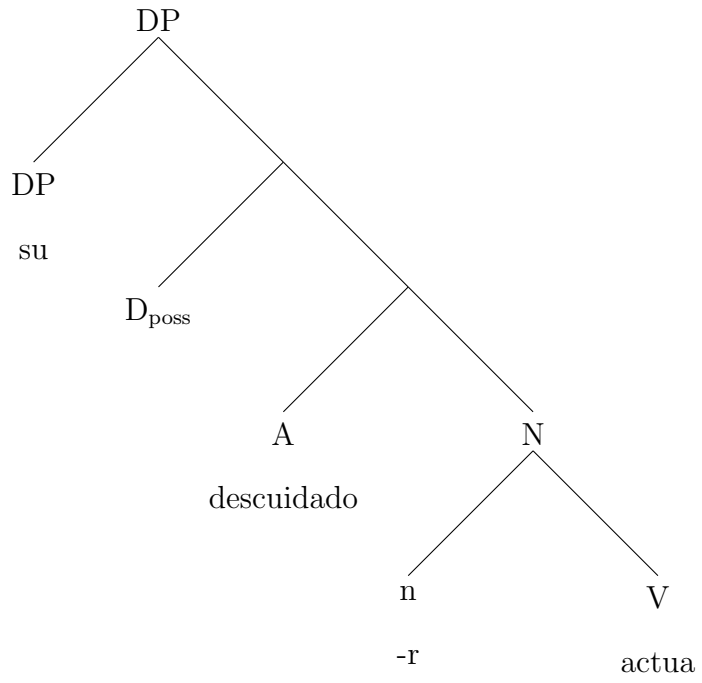
his mellifluous singing of the Marseilles

(30)



la indiscriminada venta de animales (the indiscriminate sale of animals)

(31)



su descuidado actuar (his careless manner of acting)

Conversely, I conclude that there is ample evidence for the projection of v in Mapudungun infinitival clauses, as Mapudungun infinitival clauses do not display these hallmarks of being nominalizations of V. Their predicates allow direct objects in the same manner as in standard matrix clauses, allow the expression of passive and inverse voice and of applicative morphology, may be stative, and allow modification by Adverbs. So Mapudungun infinitival clauses do not admit of an analysis similar to English deverbal Nouns or *-ing of* nominals or Spanish deverbal Nouns or infinitive nominals.

As a further comparison, English Poss-ing gerunds display the same behavior reviewed so far for Mapudungun infinitival clauses. Specifically, their base predicate allows a direct object in the same case as in matrix clauses, and not in a special nominal case, they allow passives, they allow stative predicates, and they allow modification by Adverbs.

(32) his singing the Marseilles

(33) His being (unanimously) chosen was unexpected.

(34) Your having cats was not well-received.

(35) Their unanimously choosing that candidate was unexpected.

Similar remarks apply to Spanish substantive infinitives.

(36) *El lee-r mucho-s libro-s es recomendable.*
det read-inf much-p book-p be.indic.pres.3.s recommendable
"Reading a lot of books is recommendable"

(37) *El ser reproba-do es lamentable.*
det be.inf fail-ppl be.indic.pres.3.s regrettable
"Being failed is regrettable."

(38) *El tene-r gato-s tiene su-s ventaja-s.*
det have-inf cat-p have.indic.pres.3.s 3.poss-p advantage-p
"Having cats has its advantages."

(39) *El gana-r limpiamente es la mejor victoria.*
det win-inf cleanly be.indic.pres.3.s det best victory
"Winning fairly is the best victory."

It is conceivable, then, that while Mapudungun infinitival clauses may not be nominalizations of the sort of English and Spanish deverbal nominals, English *-ing of* nominals, or Spanish infinitive nominals, they may still be nominalizations of the sort of English Poss-ing gerunds or Spanish substantive infinitives.

In fact, there are further similarities between English Poss-ing gerunds, Spanish substantive infinitives, and Mapudugnun infinitival clauses, as I will review in the next two sections.

2.2 Evidence for AspP

English Poss-ing gerunds, Spanish substantive infinitives, and Mapudungun infinitival clauses license the presence of aspectual auxiliaries.

(40) His having sung the Marseilles is much appreciated.

(41) *El habe-r respondi-do correctamente a esa pregunta le*
det have-inf answer-ppl correctly P that question 3.s.dat
vali-ó el premio.
be.worth-indic.past.3.s det prize
"Having answered that question correctly earned him the prize."

(42) Aspectual morphemes in Mapudungun embedded clauses

a. *iñché kiñe tripantu-nge-y zewma petu chillkatu-meke-n*
1.s one year-be-indic.3 already still study-prog-inf
mapunzungun
M.
"I have been studying Mapudungun for a year already." (lit. "It is one year already that I have been studying Mapudungun.")

b. *iñche rakizuam-ün ni fey lef-küle-rpu-n*
1.s think-indic.1.s 3.poss 3 run-stat-interrupt.dir-inf
"I think that he is running."

c. *iñche rakizuam-ün ñi leli-nie-fi-el*
1.s think-indic.1.s 1.s.poss look.at-have-obj-inf
"I think I am looking at someone fixedly."

I take this to indicate that each allow a projection of the head Asp.

Note also that English *-ing of* nominals and Spanish infinitive nominals, which have been analyzed as being nominalized at a position before (the projection of) Asp, viz. at the position of v, do not allow such auxiliaries.

(43) *His having beaten of his opponent helped him.

(44) **Su habe-r gana-do le ayud-ó.*
3.poss have-inf win-ppl 3.s.dat help-indic.past.3.s
"His having won helped him."

2.3 Evidence for NegP

English Poss-ing gerunds allow standard clausal negation, although in a different position from that observed in matrix clauses; in particular, negation must precede an auxiliary rather than follow it.

(45) a. His not having chosen yet concerns me.

b. *His having not chosen yet concerns me.

(46) a. *He not has chosen yet.

b. He has not chosen yet.

Spanish substantive infinitives similarly license standard clausal negation, and, moreover, in the same position.

(47) *El no habe-r llega-do a tiempo le cost-ó.*
det neg have-inf arrive-ppl P time 3.s.dat cost-indic.past.3.s
"Not having made it on time cost him."

(48) *Él no ha llega-do aún.*
3.s neg have.indic.pres.3.s arrive-ppl yet
"He still has not arrived."

Mapudungun infinitival clauses also license a negation element, *-no* or its variant *-nu*. However, it is not the same element as standard clausal negation, *-la*. Moreover, *-nu* is a form of nominal negation. All three negations can be observed in (49); standard clausal negation *-la* on the matrix verb, nominal negation *-nu* on the NPI subject of the infinitival clause, and *-no* on the infinitival verb.

(49) *inche pe-la-n ni iney nu rume kom-pa-no-n*
1.s see-neg-indic.1.s 3.poss who neg ever enter-hith-neg-inf
"I didn't see anyone come in."

Nevertheless, the *-no/-nu* form of negation also appears on conditional clauses, which are finite.

(50) *petú kuđu-nu-l-m-i*
still lay.down-neg-cond-2-s
"if you are not going to bed yet" (Smeets 2008: 244)

I conclude that *-no/-nu* is a subordinate form of negation in general, and not necessarily a nominal form of negation. Moreover, *-no/-nu* occupies the same position as standard clausal negation *-la* in the verbal complex (Smeets 2008: 243), and so may be taken to be an allomorph.

I take the availability of negation to signal the presence of a NegP projection in Mapudungun infinitival clauses, English Poss-ing gerunds, and Spanish substantive infinitives.

2.4 Evidence for ModP

Up until this point, then, Mapudungun infinitival clauses have shown similar behavior to English Poss-ing gerunds and Spanish substantive infinitives, suggesting that they may all be nominalizations of a similar sort. However, in examining extended projections of V higher than NegP, asymmetries emerge.

English Poss-ing gerunds do not allow modals.

(51) a. *His will(ing) choos(ing) that option is expected.

b. *His should(ing) go(ing) was imposed on him by his mother.

On the other hand, Mapudungun infinitival clauses do allow modals; at least in the form of the contrast in temporal interpretation illustrated below and mediated through the presence or absence of the future modal *-a*.[2]

[2]See Chapter 3 for an analysis of the Mapudungun morpheme *-a* as a future modal.

(52) a. *fey* *küre-y* *iñché* *ñi* *amu-n*
3 believe-indic.3 1.s 1.s.poss go-inf
"He thinks that I went."

b. *fey* *küre-y* *iñché* *ñi* *amu-a-el*
3 believe-indic.3 1.s 1.s.poss go-fut-inf
"He thinks that I will go."

I conclude that Mapudungun infinitival clauses license a projection of a modal phrase, ModP, while English Poss-ing gerunds are nominalized at a position in the extended projection of V at or below ModP.

Spanish substantive infinitives also appear to license a modal. Hence, they would likewise contain a projection of ModP. However, ModP appears to be lower than NegP in Spanish anyway; or else Spanish modal verbs may be instances of V instead of Mod, as has often been argued (Mark Baker, p.c.).

(53) a. *El* *pode-r* *viaja-r* *me* *interesa.*
det be.able-inf travel-inf 1.s.dat interest.indic.pres.3.s
"The ability to travel interests me."

b. *El* *no* *tene-r* *que* *volve-r* *es* *muy* *conveniente.*
det neg have-inf C return-inf be.indic.pres.3.s very convenient
"The lack of need to go back is very convenient."

2.5 Evidence for TP

Neither English Poss-ing gerunds nor Spanish substantive infinitives allow weather predicates.

(54) *Its raining cats and dogs frightened me.

(55) **El* *esta-r* *llovie-ndo* *me* *preocupa.*
det be-inf rain-prpl 1.s.dat worry-indic.pres.3.s
"It worries me that it's raining."

There is yet another type of infinitive in Spanish which does license a weather predicate, but it appears to require the Preposition, or prepositional complementizer, *a*. Hence, it is distinct from the substantive infinitive discussed here.

(56) *Al esta-r llovie-ndo, volv-imos a entra-r a la casa*
P.det be-inf rain-prpl return-indic.past.1.p P enter-inf P det house
"As it was raining, we went back inside the house."

In contrast, Mapudungun infinitival clauses do allow weather predicates.

(57) *iñché rakizuam-ün ni mawun-meke-n*
1.s think-indic.1.s 3.poss rain-prog-inf
"I think that it is raining."

In this respect, Mapudungun infinitival clauses pattern more like English matrix clauses.

(58) It is raining.

I propose that the difference between English Poss-ing gerunds and Spanish substantive infinitives, on the one hand, and English matrix clauses, Spanish adjunct infinitives headed by *a*, and Mapudungun infinitival clauses, on the other, resides in the availability of a non-thematic subject position.

Weather predicates require expletive subjects. From English, it appears to be tolerable for a weather predicate to lack a clause-mate expletive subject, but if it does, then a controlling expletive subject present in another clause is required.

(59) a. It is snowing.

b. *Snowflakes are snowing (down).

(60) a. It rained all summer after snowing all winter.

b. *We worked all summer after snowing all winter.

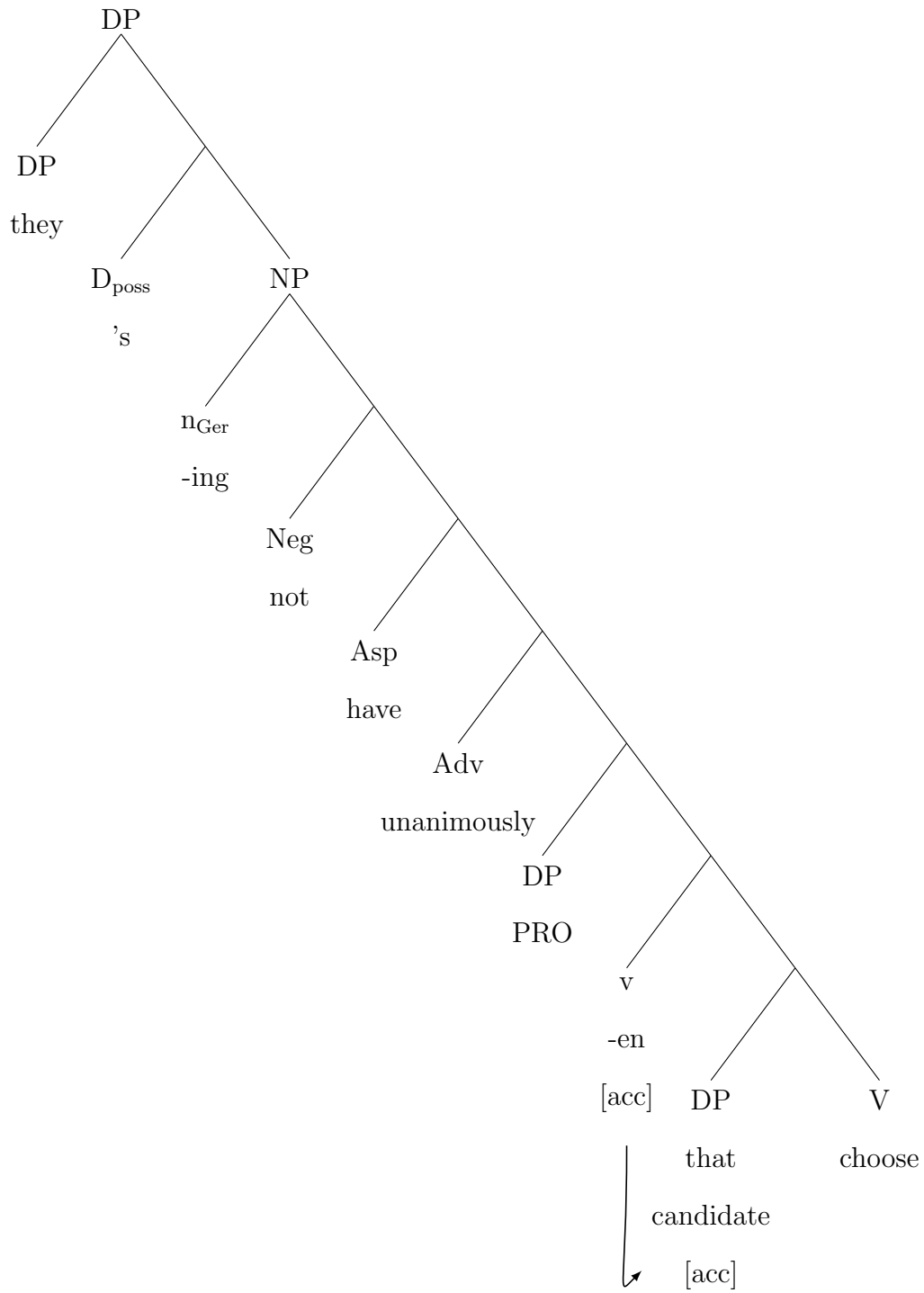
I further assume that expletive subjects cannot occupy a thematic subject position but rather must occupy a non-thematic subject position. English matrix clauses possess a non-thematic subject position, Spec TP (Chomsky 1995), accounting for the availability of weather predicates in English matrix clauses.

The Mapudungun clause with a weather predicate in (57) has no overt subject. Nevertheless, it is plausible that Mapudungun, being a pro-drop language, possesses null expletives. It is not plausible that the matrix clause in (57) licenses a null expletive. Therefore, if a weather predicate requires either a clause-mate expletive subject or an expletive subject controlling into its clause, as I assume, it is the embedded clause in (57) which must contain an expletive subject. Since expletive subjects may not occupy a thematic subject position, *ex hypothesi*, I conclude that Mapudungun infinitival clauses possess a non-thematic subject position, Spec TP, and, hence, license a projection of T.

In contrast, I take the subject position in English Poss-ing gerunds to be Spec of $D_{poss}P$, a thematic position - being assigned a vague possessor role. The nominalized clause complement to D_{poss} would contain a PRO which this overt possessor controls, thus coming to be interpreted as clausal subject (Baker 2011). I propose a similar analysis for Spanish substantive infinitives. If a weather predicate requires a clause-mate expletive subject or else an expletive controlling into its clause but an expletive may not occupy a thematic position and yet Poss-ing gerunds only provide for a thematic subject position, it follows that neither English Poss-ing gerunds nor Spanish substantive infinitives may host a weather predicate.

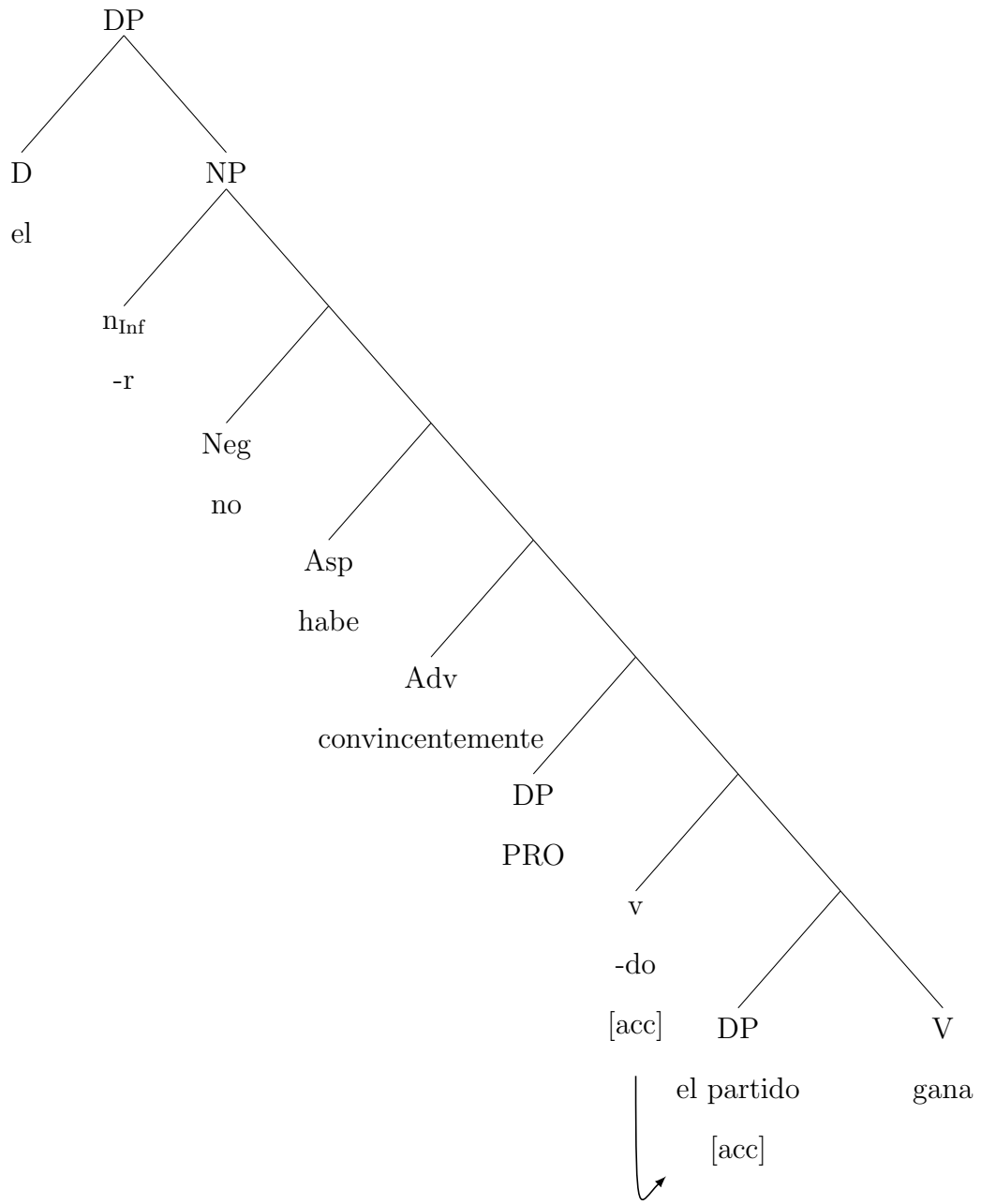
Analyses of an English Poss-ing gerund and a Spanish substantive infinitive are presented in (61) and (62), respectively.

(61)



their not having unanimously chosen that candidate

(62)



el no haber ganado convincentemente el partido

(not having won the game convincingly)

2.6 Evidence for CP

Mapudungun matrix questions display obligatory fronting of wh-words.

(63) a. *chem pe-fi-m-i eymi*
what see-obj.indic-2-s 2.s
"What did you see?"

b. **pe-fi-m-i eymi chem*
see-obj.indic-2-s 2.s what
"What did you see?"

Mapudungun embedded questions display a similar effect.

(64) a. *Ramtu-w-ün iney ñi aku-a-el*
ask-refl-indic.1.s who 3.poss arrive-fut-inf
"I wonder who will arrive."

b. *???Ramtu-w-ün ñi aku-a-el iney*
ask-refl-indic.1.s 3.poss arrive-fut-inf who
"I wonder who will arrive."

Wh-movement canonically targets Spec CP (McCloskey 2006). The possibility of wh-movement in a clause indicates that it contains a Spec CP position and, thus, a projection of C (cf. Koster and May 1982).

Wh-movement, as opposed to a resumption strategy, is sensitive to islands. Island effects are observable in Mapudungun at least in the form of adjunct islands.

(65) a. *Iñche aku-n Huapi meu Hector amu-tu-lu*
1.s arrive-indic.1.s H. P H. go-re-prpl
"I arrived in Huapi when Hector left"

b. **Ini eymi aku-ymi Huapi meu amu-tu-lu?*
who 2.s arrive-indic.2.s H. P go-re-prpl
lit. "Who did you arrive in Huapi when he/she left?"

I therefore assume that the embedded question in (64a) involves true wh-movement. I conclude that Mapudungun infinitival clauses contain a Spec CP position, the landing site for wh-movement, and thus that Mapudungun infinitival clauses host a projection a C.

Note that English Poss-ing gerunds and Spanish substantive infinitives, which have been analyzed as lacking a CP projection, and indeed all extended projections of V above NegP and ModP, respectively, on independent grounds, disallow wh-movement, as expected on the analyses proposed.

(66) *Who's winning a prize surprised you?

(67) *(*a quién) El (*a quién) gana-r-le (*a quién) te*
P who det P who win-inf-3.s.dat P who 2.s.obj
conviene?
serve.indic.pres.3.s
"Who does it help you to beat?"

2.7 Summary of evidence that Mapudungun infinitival clauses contain every extended projection of V

Apart from the evidence reviewed in section §2.1.6 that Mapudungun infinitival clauses contain a projection of v, it has been shown that Mapudungun infinitival clauses license aspectual elements, negation, modals, expletive subjects, and wh-movement. I have concluded that these facts serve as evidence that Mapudungun infinitival clauses license AspP, NegP, ModP, TP, and CP projections.

In contrast, the various nominalizations considered in this section, viz. English and Spanish deverbal Nouns, English *-ing of* nominals, Spanish infinitive nominals, English Poss-ing gerunds, and Spanish substantive infinitives have each been shown to differ from Mapudungun infinitival clauses in not displaying evidence of every extended projection of V and analyses have been proposed whereby English Poss-ing gerunds and Spanish substantive infinitives constitute nominalizations of NegP and all the other nominalizations discussed constitute nominalizations of V.

If Mapudungun infinitival clauses are nominalizations, then, they are nominalizations of CP.

3 Label of Mapudungun infinitival clause is not DP

In section §2 I argued that Mapudungun infinitival clauses contain every extended projection of V, up to CP, and concluded that if Mapudungun infinitival clauses are nominalizations, they must be nominalizations of CP. In this section, however, I argue that Mapudungun infinitival clauses are not nominalizations at all, even of CP. I do this by showing that the label of these clauses may not be identified with that of DPs.

First, it is possible to extract out of complement clauses in Mapudungun but not out of uncontroversial nominals.

(68) a. **iney pe-ymi ñi metawe*
who see-indic.2.s 3.poss vessel
"Whose metawe did you see?" (lit. "Of whom did you see the metawe?") (Baker 2006)

b. **tuchi pizza k'a-i-ymi troke*
which pizza want-eat-indic.2.s piece
"Which pizza do you want a piece of?" (Baker 2006)

(69) *cheo ayü-y (ñi) traw-a-el chi longko*
where want-indic.3 3.poss gather-fut-inf det longko
"Where does the longko want to gather?"

(70) *chem ayü-ymi kupal-a-el*
what want-indic.2.s bring-fut-inf
"What do you want to bring?"

This asymmetry is observed in English and many other languages.

(71) *Which country did they supervise shipments to?

(72) Which country did they oversee that shipments were made to?

If successive-cyclic wh-movement is driven by intermediate [wh] features which need not be interpretable (van Urk and Richards 2015), I assume that such a feature is impossible on D, the head of DPs, in Mapudungun and other languages which do not allow extraction out of DP. A feature of this sort is available for other lexical elements, such as C, which thus allow successive-cyclic wh-movement to pass through their edge.

Alternatively, in languages which do not allow extraction out of DP, probing for a wh-phrase may involve probing for a [D] feature. If so, then it may be impossible for the probe to access a wh-phrase bearing the feature [D] inside the projection of another head bearing the feature [D], even if it occupies an, erstwhile, escape hatch position such as at the edge of this phase, as this would give rise to a relativized minimality intervention effect (Rizzi 2001).

If the head of the projection of a Mapudungun nominal either may not bear a [wh] feature facilitating successive-cyclic wh-movement or bears a [D] feature while the head of a Mapudungun infinitival clause either may bear such a [wh] feature or does not bear a [D] feature, it follows that extraction will be possible from the latter but not the former.

Secondly, in at least some dialects of Mapudungun, complement clauses are not compatible with object agreement *-fi*, in contrast to uncontroversial nominals.

(73) *kim-fi-n* *tiyé*
know-obj-indic.1.s dem
"I know that."

(74) **kim-fi-y* *iñche* *tripa-n*
know-obj-indic.3 1.s go.out-inf
"He knows that I left."

I take it that object agreement requires the valuation of ϕ-features. If Mapudungun infinitival clauses do not bear ϕ-features while nominals do, it follows that agreement is possible with the latter but not the former.

Thirdly, when infinitival clauses are adjoined to a clause, the Postposition *mew* is not required, in contrast to what is observed with uncontroversial nominals.

(75) *Iñché* *elu-fi-n* *kiñe* *lifru* *kulli-tu-n-*(mu)*
1.s give-obj-indic.1.s one book pay-vb-inf-P
"I gave him a book as payment."

(76) *Iñché* *elu-fi-n* *kiñe* *lifru* *kulli-ñma-ya-fi-el*
1.s give-obj-indic.1.s one book pay-mal-fut-obj-inf
"I gave him a book to pay him."

I assume that DPs are not case-licensed in adjoined positions on their own. Rather, they require a head which can assign them case and license them in such a position. On the other hand, I assume that infinitival clauses do not bear case and are not subject to such a requirement.

On the basis of the asymmetries between Mapudungun infinitival clauses and uncontroversial nominals examined in this section, I conclude that the label of Mapudungun infinitival clauses differs from that of nominals in at least three respects: Mapudungun infinitival clauses either may bear an intermediate [wh] feature licensing successive-cyclic wh-movement through its edge or lack a [D] feature while nominals either may not bear such a [wh] feature or bear a [D] feature; nominals bear ϕ-features but Mapudungun infinitival clauses do not; and nominals bear a case-feature, which consequently stands in need of being valued, but Mapudungun infinitival clauses do not.

Baker (2003b) decomposes lexical categories into component features, including that of bearing a referential index. Mark Baker (p.c.) suggests that D may decompose into the features of bearing a referential index and ϕ-features, among others, while C may decompose into features including that of bearing a referential index but not ϕ-features. The shared feature of bearing a referential index may account for D and C's common ability to occur as complement to V or be θ-marked. If we further

assume that D either bears a [D] feature or disallows a [wh] feature driving successive-cyclic movement and may bear a [case] feature, while C either does not bear a [D] feature or allows a [wh] feature driving successive-cyclic movement and may not bear a [case] feature, then the featural specification attributed to Mapudungun nominals and infinitival clauses are consistent with an analysis of the former as a projection of D and of the latter as a projection of C.

Hence I identify the label of Mapudungun nominals as DP but that of Mapudungun infinitival clauses as CP, and, in particular, not DP.

4 The category of the infinitival marker

Every nominalization considered in section §2, viz. English and Spanish deverbal Nouns, English *-ing of* nominals, Spanish infinitival nominals, English Poss-ing gerunds, and Spanish substantive infinitives, allowed for either a definite Determiner or a possessive Determiner. Some allowed for one but not the other. In particular, English Poss-ing gerunds do not allow for a definite Determiner and Spanish substantive infinitives do not allow for a possessive Determiner.[3] Nevertheless, every nominalization considered allows for at least one or the other.

(77) *the singing the Marseilles so beautifully

(78) **su* *habla-r* *constantemente*
3.poss talk-inf constantly
"his constant talking"

[3] I attribute this to the selectional restrictions of the Determiners in question, which may not select for the projections of the corresponding nominalizers. A similar explanation is available for the inability of these phrases to host Adjectives above their point of nominalization, despite the fact that they constitute nominal categories at that point. Namely, there are still differences between these projections and projections of a lexical N which the head which hosts an Adjectival, in its Spec, is sensitive to and it may select for one but not the other.

In section §3, it was shown that, in at least some dialects of Mapudungun, a matrix predicate may not display object agreement *-fi* with a complement clause, despite the fact that object agreement is possible with a possessed nominal. If a parse were available on which an infinitival clause was selected by a D_{poss}, and thus projecting a DP, such agreement should be observed. Since it is not, at least in these dialects, I conclude that such a parse is never available and hence that D_{poss} may not select for the projection of an infinitival marker in Mapudungun.

Neither may an infinitival clause be selected by a demonstrative or definite Determiner in Mapudungun.[4]

(79) a. *Iñche* *ayü-n* *tüfa-chi* *(ñi)* *amu-a-el*
1.s want-indic.1.s dem-adj 1.s.poss go-fut-inf
*"I want to go.", *"I want that going of mine."

b. *Iñche* *ayü-n* *fey-chi* *(ñi)* *amu-a-el*
1.s want-indic.1.s 3-adj 1.s.poss go-fut-inf
*"I want to go.", *"I want that going of mine."

Since a Mapudungun infinitival clause may not be selected by either a possessive Determiner or a definite Determiner, in contrast to the nominalizations considered from English and Spanish, I conclude that it is not a nominal.

Furthermore, as the infinitival marker in Mapudungun infinitival clauses replaces solely mood and subject agreement inflection on the predicate, I conclude that it is a T-level head (cf. Chomsky 1981: 19, on English infinitival *to*), and thus that it heads a TP projection; though I will refer to this head as Inf and to its projection as InfP.

(80) a. *leli-fi-y-m-i*
look.at-obj-indic-2-s

[4] It is possible that these sentences are grammatical under other interpretations such as "This time I want to go", "I want to go on that date", or "I want this one to go", where the Determiner element is parsed as an Adv or a DP subject, but the important point here is that the readings indicated are impossible, where the element is parsed as a Determiner with the infinitival clause as complement.

"You looked at him." (see Zúñiga 2006: 120, Smeets 2008: 237, 252)

b. *leli-fi-l-m-i*
look.at-obj-cond-2-s
"if you look at him" (Zúñiga 2006: 121)

(81) *mi* *leli-fi-el*
2.s.poss look.at-obj-inf
"that you looked at him" (Zúñiga 2006: 146)

Before concluding this section, it should be noted that there are nominalizations in Mapudungun which do allow for Determiners and that one of these involves the marker -*n*, which is also a marker of infinitival clauses of the sort examined here.

(82) *ti* *kewa-n*
det fight-inf
"the fight"

I analyze these as nominalizations of V, headed by an infinitive nominalizer, akin to English and Spanish deverbal Nouns and, perhaps even more so, Spanish infinitive nominals or English -*ing of* nominals. It follows that phrases with a bare verb stem followed by -*n* and possibly preceded by an analytic possessive agreement marker are ambiguous between a nominalization and an infinitival parse, which were argued directly above to not constitute nominalizations. This situation is not surprising, however, as both English and Spanish possess homophonous markers which create distinct nominalizations, as has been shown throughout section §2 above, and which in fact also create clauses which are not nominalizations at all, viz. English -*ing* and Spanish -*r*. Moreover, the marker -*n* is employed for diverse functions in Mapudungun, appearing in compounds and suppletive forms of agreement.

5 Category of Poss

In this section I examine the issue of the category of the analytic possessive agreement marker occurring in infinitival clauses, and which we might call Poss. In section §5.1 I argue that it cannot be identified with the analytic possessive agreement marker which occurs in possessed nominals, D_{poss}; in section §5.2 I argue that it is not a DP; and in section §5.3 I argue that it is a C-domain head in the extended projection of the base verb serving as the predicate of the infinitival clause.

5.1 Poss ≠ D_{poss}

There are various asymmetries between Poss, the analytic possessive agreement morpheme which occurs in Mapudungun infinitival clauses, and D_{poss}, the analytic possessive agreement morpheme which occurs in Mapudungun possessed nominals.

First, D_{poss} cannot be omitted, but, at least in some dialects, Poss may.

(83) *Petú kintu-n eymi *(mi) trewa*
still look.for-indic.1.s 2.s 2.s.poss dog
"I'm looking for your dog."

(84) a. *Küme-nge-y eymi (mi) kupa-kupa-meke-n*
good-be-indic.3 2.s 2.s.poss come-come-prog-inf
"It's good that you're coming."

b. *iñche ayü-n (ñi) amu-al*
1.s want-indic.1.s 1.s.poss go-fut.inf
"I want to go."

Second, D_{poss} requires modifiers to follow it, but Poss allows modifiers to precede it.

(85) a. *mi fütra trewa*
2.s.poss big dog
"your big dog"

b. **fütra mi trewa*
big 2.s.poss dog
"your big dog"

(86) *iñché küre-n zewma ñi picham-ün ñi kuzao*
1.s believe-indic.1.s already 1.s.poss finish-inf 1.s.poss work
"I think I've already finished my work."

Third, D_{poss} does not allow the DP (possessor) with which it agrees to intervene between it and its complement, but Poss does allow for this.

(87) a. *eymi mi trewa*
2.s 2.s.poss dog
"your dog"

b. **mi eymi trewa*
2.s.poss 2.s dog
"your dog"

(88) *iñche ayü-n ñi fey amu-a-el*
1.s want-indic.1.s 3.poss 3 go-fut-inf
"I want him to go."

On the basis of these asymmetries, I conclude that Poss in Mapudungun infinitival clauses is not the same element as D_{poss} in possessed nominals. The behavior of the analytic possessive agreement head in possessed nominals can be explained on its analysis as a D head; for, the possessor, generated above it, while it may be able to extrapose to the end of the phrase, may not intervene between it and its complement, nor can a modifier in its complement, an extended projection of N, scramble above it. The behavior displayed by Poss, on the other hand, is consistent with an analysis of it as an element high in the extended projection of V, and not as a D head taking an extended projection of N as complement.

Before concluding this subsection, it should be noted that the analytic possessive agreement which shows up in Mapudungun infinitival clauses, Poss, may be immediately preceded by the element *ta*. While not prevalent in the speech of my primary

consultants, Harmelink (1990), for instance, offers a paradigm for Mapudungun relative clauses in which possessive agreement is consistently immediately preceded by *ta*.

(89) *ta-ti* *wentru* *eymi* *ta-mi* *pe-el*
det-det man 2.s det-2.s.poss see-inf
"the man that you saw" (Harmelink 1990: 138)

The optional presence of *ta* immediately preceding Poss in Mapudungun infinitival clauses may be taken to indicate a Determiner status for Poss as this same *ta*-Poss combination is also found in possessed nominals and the element *ta* may occur in sequences of Determiners in Mapudungun DPs.

(90) a. *eymi* *ta̲* *mi* *kawellu*
2.s det 2.s.poss horse
"your horse" (Salas 2006: 90)

b. *ti* *ad̠* *ta-ñi* *wangku*
det color det-1.s.poss chair
"the color of my chair" (Smeets 2008: 136)

(91) *ta-ti* *pichi-domo*
det-det small-woman
"the girl" (see Harmelink 1990: 135)

Nevertheless, the categorial status of *ta* itself is not clear. It may occur alone in a matrix clause, not clearly associated with any DP but resembling more so a clausal particle. Indeed, *ta* seems to be most common in clauses with no verbal predicate.

(92) *iñche* *ta* *ayü-n* *ni* *nie-yá* *yoz* *mari* *ufisha*
1.s det want-indic.1.s 1.s.poss have-fut.inf more ten sheep
"I want to have more than ten sheep."

(93) a. *korü,* *ta* *ti*
soup det det
"It is soup." (Smeets 2008: 91)

b. *iñché* *ta*
1.s det
"I am", "I did", "mine" (Smeets 2008: 90)

Furthermore, in an infinitival clause *ta* allows the clausal subject to intervene between it and the infinitival predicate; behavior which may be distinct from that of its occurrence in possessed nominals, just like Poss.

(94) *iñché* *kim-ün* *ta* *eymi* *pe-fi-el*
1.s know-indic.1.s det 2.s see-obj-inf
"I know what you saw."

I conclude that the availability of *ta* in Mapudungun infinitival clauses does not indicate that these are nominal or that Poss is a D head. Rather, the facts are still consistent with an analysis of Poss as occupying a position in the extended projection of V.

5.2 Poss ≠ DP

Given that Poss displays ϕ-features, it is conceivable that these are inherent rather than valued through agreement. That is, a conceivable analysis is that Poss is a DP, perhaps itself the possessor DP of a possessed nominal; its peculiar form perhaps arising from genitive case assignment instead of those cases seen on pronouns in matrix clauses.

Mapudungun is a polysynthetic language in the sense of Baker (1996) (Loncon 2011). Baker (1996) argues that there can only be two DPs associated with a single θ-role in a clause: a pro which occupies an argument position and an overt DP which is adjoined to the clause and forms a chain with it. A consequence of the requirement that the overt DP form a chain with the pro is that the overt DP must c-command the pro.

Overt full DP subjects are possible in Mapudungun infinitival clauses alongside a Poss which agrees in ϕ-features with it.

(95) *iñche* *ayü-n* *fey* *ñi* *lef-a-el*
1.s want-indic.1.s 3 3.poss run-fut-inf
"I want him to run."

If, then, an instance of Poss which agrees with this DP is also a DP, as on the hypothesis we are considering, it must be the element corresponding to the pro in Baker's chains associated with a single θ-role for polysynthetic languages. Perhaps there is something special about genitive case assignment which allows the pronoun to be overt whereas it is null in other contexts, like finite matrix clauses.

However, if an overt full DP forms a chain with Poss *qua* pro, then it must c-command Poss. Nevertheless, it is possible for the overt full DP which a Poss displays agreement with to intervene between it and the verb.

(96) *iñche* *ayü-n* *ñi* *fey* *amu-a-el*
1.s want-indic.1.s 3.poss 3 go-fut-inf
"I want him to go."

(97) *pu* *longko* *ayü-y* *ñi* *kom* *pu* *che* *traw-al*
pl head want-indic.3 3.poss all p person gather-fut.inf
"The longkos want all the people to get together."

I propose that this word order cannot be derived from a syntactic structure in which the overt DP c-commands Poss.

It follows that Poss cannot form a chain with the overt DP. By Baker's conditions on chains associated with a single θ-role, restricting them to two elements, it follows that Poss cannot bear a θ-role in clauses such as that in (96). If DPs must be θ-marked, the grammaticality of (96) shows that Poss cannot be a DP, at least in such sentences. I conclude that Poss is not a DP ever in Mapudungun infinitival clauses.

5.3 Poss = C

Having shown in section §5.1 that Poss cannot be analyzed as the agreement head D_{poss} which occurs in possessed nominals, I concluded that it is an element in the extended projection of V. Having shown in section §5.2 that Poss cannot be analyzed as an independent DP, I conclude that it must be an agreeing head in the extended projection of V. In this section I argue that Poss is, specifically, a left peripheral, C-level, head.

Support for this analysis comes from word order in Mapudungun infinitival clauses. Incorporation may not skip intervening heads (Baker 1988). Since the infinitival marker appears on the verb but Poss does not, it follows that Poss must occupy a higher position than Inf. If Inf is a T-level head, as argued in section §4, it follows that Poss must occupy a position above T; that is, a left-periphery or C position.

Further support for this analysis comes from the fact that Poss may appear on either side of a fronted wh-word.

(98) a. *Ramtu-w-ün* *iney* *ñi* *aku-a-el*
ask-refl-indic.1.s who 3.poss arrive-fut-inf
"I wonder who will arrive."

b. *Ramtu-w-ün* *ñi* *iney* *aku-a-el*
ask-refl-indic.1.s 3.poss who arrive-fut-inf
"I wonder who will arrive."

(99) a. *Iñche* *kim-ün* *chumngechi* *ni* *amu-a-el*
1.s know-indic.1.s how 1.s.poss go-fut-inf
"I know how to go."

b. *Iñche* *kim-ün* *ni* *chumngechi* *amu-a-el*
1.s know-indic.1.s 1.s.poss how go-fut-inf
"I know how to go."

If wh-movement targets a particular position in the left periphery, the word order in (98b) and (99b) suggests that Poss may occupy a higher position than the landing

site of wh-movement. It follows that Poss is able to occupy a position in the left periphery. Again assuming that the landing site of wh-movement is unique, the word order in (98a) and (99a) suggests that Poss may also occupy a position below this landing site of wh-movement. This position may or may not be in the left-periphery. Nevertheless, following the cartography of the left periphery of Rizzi (1997), I propose to identify the two positions which Poss may occupy as Force and Fin.

On Rizzi's analysis, fronted wh-words, as well as focused and topicalized phrases, may intervene between these two positions, accounting for the word orders observed; in particular, the ability of Poss to either precede or follow fronted wh-words and subjects.

Note also that identifying Poss as the expression of C-level heads is consistent with the observation that it agrees in ϕ-features with a DP given the proposal of Chomsky (2008) that C and T probe jointly for ϕ-features and that these, while ordinarily expressed on T, may be expressed on C as well.

6 The structure of Mapudungun infinitival clauses

In this section I will propose an analysis of Mapudungun infinitival clauses in which no nominalization is present but rather in which these constitute pure extended projections of V to the full extent.

I have argued that the infinitival marker is a T-level head in section §4 and that Poss is a C-level head in section §5. In fact, it was argued in section §5.3 that Poss could occupy one of two C-domain positions in the extended projection of V.

Further support for the idea that Poss may occupy two different positions in the left periphery comes from the ability, in certain dialects of Mapudungun at least, for two Poss to occur in an infinitival clause.

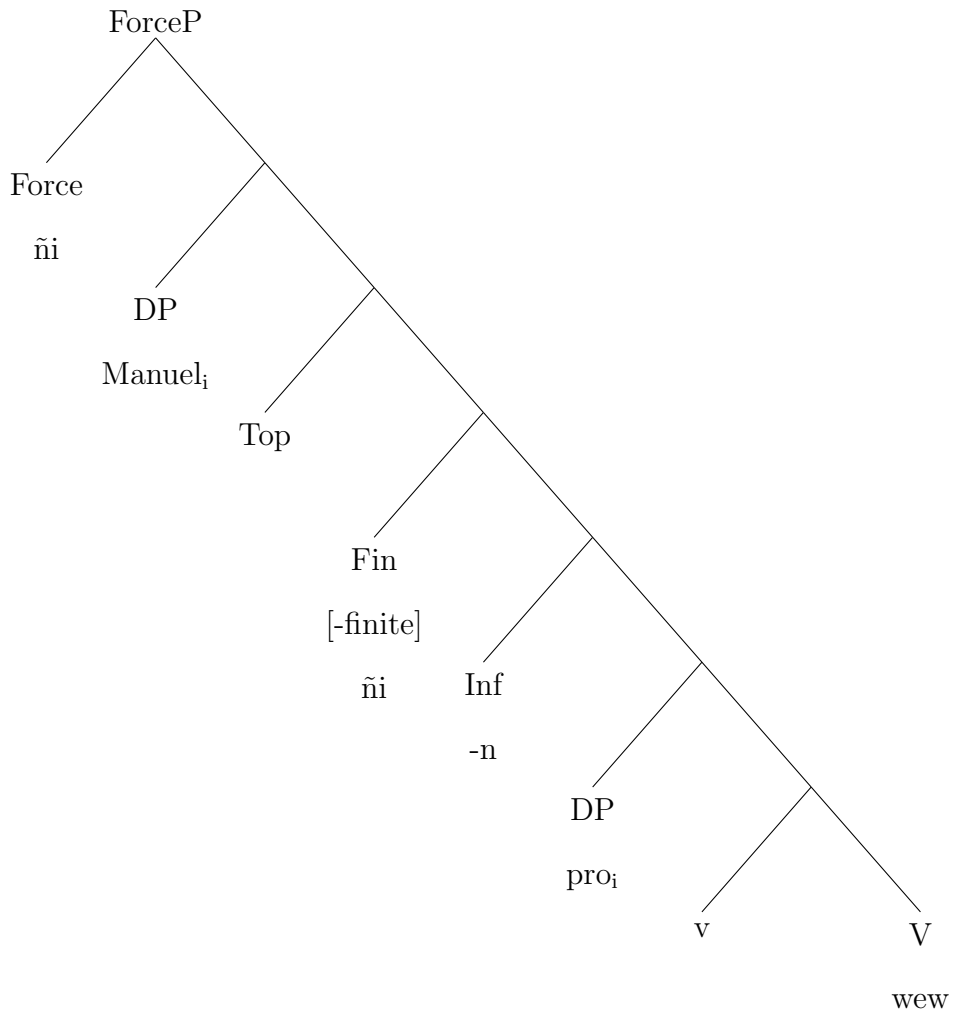
(100) *iñché* *kim-ün* *ñi* *Manuel* *ñi* *wew-ün*
1.s know-indic.1.s 3.poss M. 3.poss win-inf
"I know that Manuel won."

Such sentences would be accounted for on this analysis by saying that both the Force and the Fin instance of Poss are overt. That is, I propose the structure in (101) for (100).[5]

In addition, I propose the structure in (102) for the infinitival clause in (42c), illustrating the presence of functional structure above V but below T, and the structure in (103) for the infinitival clause in (64a), illustrating the analysis of wh-movement in Mapudungun infinitival clauses.

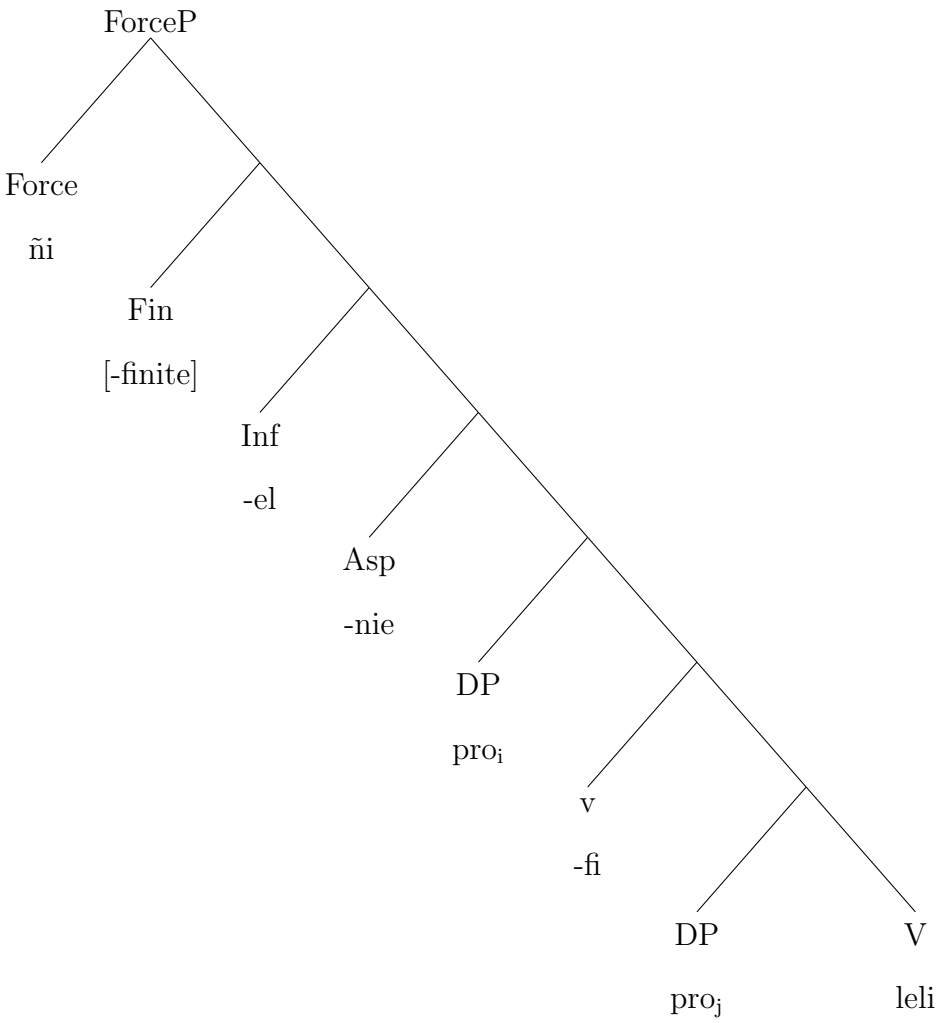
[5] Certain null intermediate heads may be necessary in order to satisfy the selection requirements of each head in the structure, and possibly also to ensure correct semantic interpretation. These are omitted here for clarity.

(101)



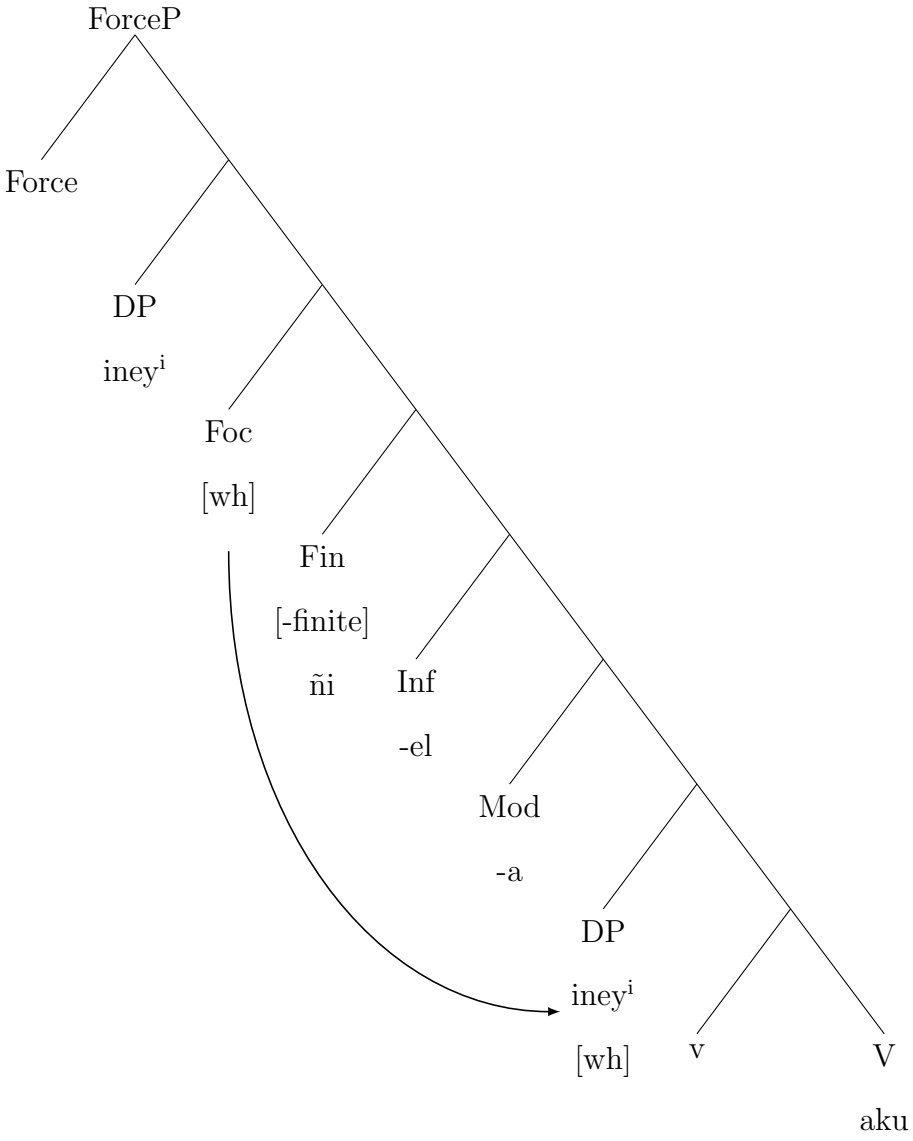
ñi Manuel ñi wewün (that Manuel won)

(102)



ñi leliniefiel (that I am looking at someone fixedly)

(103)



iney ñi akuael (who will arrive)

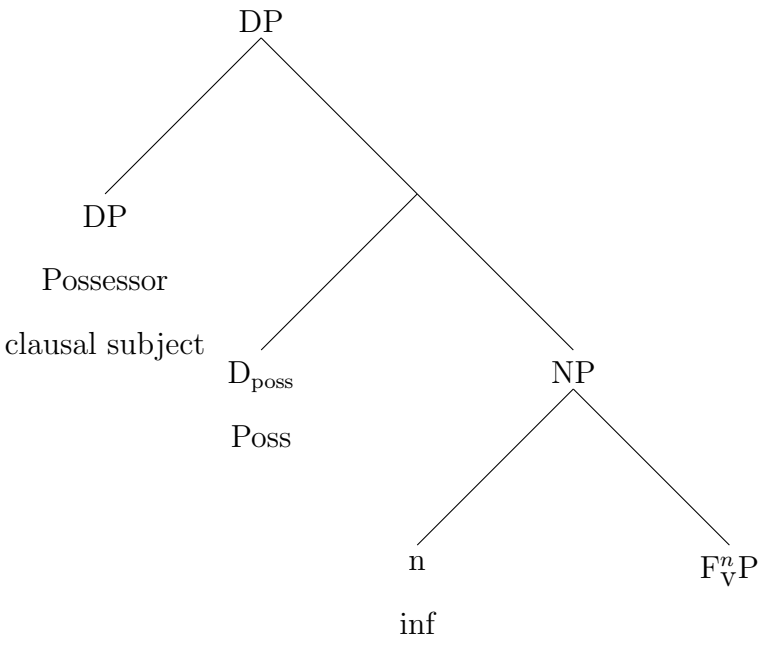
Note finally that the hypothesis that there may be two different instances of Poss does not invalidate the conclusion in section §5.1 that Poss cannot be identified as the analytic possessive agreement head which occurs in possessed nominals, D_{poss}. Rather, the arguments presented there still show that neither Poss may be analyzed as D_{poss}. Firstly, it is clear that both Poss heads may be covert as there are sentences without Poss, such as (84). As D_{poss} may not be covert, this first argument against identifying (either) Poss with D_{poss} stands. Secondly, it was shown that D_{poss} may

not follow modifiers or precede the DP it agrees with, while (at least one) Poss may. In fact, the data presented, when considered conjointly, show that neither Poss may be taken to pattern with D_{poss}. It was shown that Poss may follow a modifier. If this is the higher Poss, it immediately follows that neither Poss patterns like D_{poss}. If one of the two Poss is D_{poss}, then, it must be the lower Poss. It was also shown that Poss may precede the DP it agrees with. If this is assumed to be the lower Poss, it again immediately follows that neither Poss patterns like D_{poss}. If one of the two Poss is D_{poss}, then, it must be the higher one. It is now clear, however, that there is no consistent way to maintain that one of the two Poss is D_{poss}. Hence, the data presented still show that neither Poss may be analyzed as D_{poss}.

7 Conclusions

According to the intuitive analysis of Mapudungun infinitival clauses as possessed nominals outlined in section §1 and presented again in (104), the infinitival marker on the end of the predicate would be a nominalizer taking some extended projection of V as complement, the analytic possessive agreement morpheme, Poss, would be the same possessive agreement head that shows up in possessed nominals, D_{poss}, the clausal subject would be a possessor, and Mapudungun infinitival clauses as a whole would be DPs.

(104)



In this chapter, it has been shown that this analysis of Mapudungun infinitival clauses as possessed nominals is untenable.

It was argued in section §4 that the infinitive marker in Mapudungun infinitival clauses is not a nominalizer.

It was argued in section §5.1, and confirmed in section §6 in light of the proposals in section §5.3, that Poss, the analytic possessive agreement morpheme which appears in Mapudungun infinitival clauses, is not the same possessive agreement head which appears in possessed nominals, D_{poss}.

It was shown in section §2.5 that subjects of Mapudungun infinitival clauses are not possessors, since clausal subjects of Mapudungun infinitival clauses are not necessarily θ-marked.

It was argued in section §3 that the label of Mapudungun infinitival clauses is distinct from that of DPs.

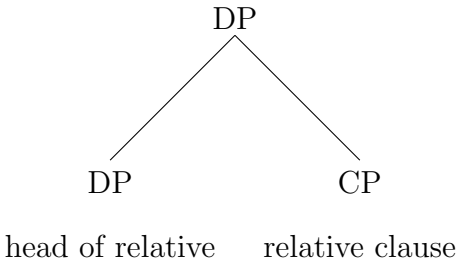
I conclude that the intuitive analysis of Mapudungun infinitival clauses as possessed nominals as presented in (104) is roundly refuted.

I have also shown that Mapudungun infinitival clauses do not display the behavior of various nominalizations from English and Spanish and have argued that, in contrast to these, Mapudungun infinitival clauses contain every extended projection of V, up to CP.

Moreover, it follows from the results of section §3, viz. that the label of Mapudungun infinitival clauses is distinct from DP, that Mapudungun infinitival clauses are not any type of nominalization at all; not even, for instance, one with a null nominalization structure dominating a CP.

These results also show that Mapudungun clausal complementation does not implement the relative clause complementation strategy (see Dixon 2006: 35-6). That is, complement clauses in Mapudungun cannot be analyzed as relative clauses modifying a DP complement. If this were the case, the constituent as a whole would display evidence of bearing a DP label, as illustrated in (105), contrary to the results of §3. The interpretation of tense also differs in relative clauses and complement clauses (see, for example, Stowell 2007), and the two analyses could be distinguished on the basis of such considerations as well.

(105)



It further follows, in fact, that, apart from the nominalization with *-n* discussed in §4, which might well be analyzed as a nominalization of V, Mapudungun possesses no nominalizations of any other level, e.g. NegP, ModP, TP or CP, or with any other infinitival marker. For, if it did, strings corresponding to the relevant Mapudungun infinitival clauses would be ambiguous and one would expect to see object agreement -

fi, or other DP-like behavior, licensed with such strings. Insofar as this is not observed, I conclude that Mapudungun does not possess any higher types of nominalizations or any nominalizations with infinitive markers other than *-n*.

In this chapter I have argued that the infinitive marker in Mapudungun infinitival clauses is a T head and that Poss, the analytic possessive agreement morpheme which occurs in Mapudungun infinitival clauses, is a C head. I have consequently proposed that Mapudungun infinitival clauses are full CPs; in particular, following Rizzi (1997), ForcePs, with no nominalization either above or below this projection.

Chapter 3

Theory of *-a*

1 Introduction

de Augusta (1903: 26), Salas (2006: 131), and Zúñiga (2006: 129) all characterize the morpheme *-a* as a future tense. Smeets (2008: 235), in turn, characterizes *-a* as an irrealis marker. Although she offers a robust discussion of the diverse environments in which *-a* occurs, she does not offer any further or explicit argumentation for this analysis of *-a*.

Other prima facie viable analyses of *-a* include a marker of non-finiteness, e.g. an expression of a head Fin specified for a negative binary value (Rizzi 1997)[1], a marker of subjunctive mood, or a modal.

In this chapter I will review evidence pertaining to these various analyses and ultimately argue that the Mapudungun morpheme *-a* should be analyzed as a future modal.

I begin with a review of the primary evidence for the traditional analysis of *-a* as

[1] *Pace* arguments in Chapter 1 §2 that (non-)finiteness should not be identified with any binary feature but rather with a multiplicity of interacting features and a resulting scale (Landau 2004) or partial order of finiteness.

a future tense.

2 Evidence from interpretation

2.1 Futurity

Matrix clauses interpreted as future necessarily bear the marker -*a*, and matrix clauses marked with -*a* cannot be interpreted as present or past.

(1) *amu-a-n*
go-fut-indic.1.s
"I will go."

(2) *amu-n*
go-indic.1.s
*"I will go." (OK as: "I went.")

These facts are consistent with an analysis of -*a* as a future marker, but are inconsistent with an analysis of -*a* as an irrealis or subjunctive or non-finite marker insofar as these are inherently time-independent.

(3) a. John seems to be sick.

b. John seems to have been sick.

(4) a. She hopes to qualify.

b. She hopes to have qualified.

(5) a. *No creo que venga.*
neg believe.pres.indic.1.s that come.pres.subjunc.3.s
"I don't think he will come."

b. *No creo que sea él*
neg believe.pres.indic.1.s that be.pres.subjunc.3.s 3
"I don't believe it's him."

c. *No* *creo* *que* *haya* *sido* *él*
neg believe.pres.indic.1.s that have.pres.subjunc.3.s be.ppl 3
"I don't believe it was him."

It should also be noted that the futurity expressed by *-a* is a relative, and not an absolute, future, as is evident from the consideration of the interpretation of embedded uses.

(6) Context: Manuel won.

Iñche *ayü-fu-n* *ñi* *wew-a-el*
1.s want-FU-indic.1.s 1.s.poss win-fut-inf
"I wanted to win."

The winning eventuality which is the object of the desire expressed in (6) occurs prior to the speech time, as it is clear from context that the competition is over by that time. Nevertheless, it is still marked with *-a*. The fact that this complement may, and indeed must, be marked with *-a* demonstrates that *-a* does not express an absolute future, i.e. a future relative to the speech time, but rather a relative future; in this case, the winning is future relative to the desire, which is past.

The same facts are observed with the following sentence.

(7) Context: He did not come.

Fey *feypi* *wiya* *kupa-ya-fu-lo*
3 say.thus.indic.3 yesterday come-fut-FU-prpl
"He said he would come yesterday."

If the person in question is taken not to have fulfilled his promise, as in this context, the promised coming must be located in the past. Yet the complement clause which describes this eventuality is marked with *-a*. This again shows that *-a* is not an absolute future, but rather a relative future; in this case, the coming is future

relative to the subject's saying, promising, but not relative to the time at which (7) is uttered.

2.2 Modality

The facts in (1) and (2) are also consistent with an analysis of *-a* as a modal, insofar as many, if not all, modals express futurity. Indeed, see Werner (2003) for arguments that all modals are always future, despite appearances. Thus, if *-a* is a modal, the futurity of *-a* may derive from its modality.

In fact, the presence of *-a* in a matrix clause licenses readings broader than a purely future one. In particular, it may express various types of, at least deontic, modality.

(8) *Iñché witrankontu-pu-a-e-yu*
1.s visit-dir-fut-inv-indic.1.d
"I have to go visit you."

(9) *Iñche amu-la-a-n*
1.s go-neg-fut-indic.1.s
"I don't have to go."

(10) *Tripa-ke-la-ya-y*
go.out-hab-neg-fut-indic.3
"Don't go out!"

(11) *imi ngilla-ya-flu lichi*
2.s buy-fut-FU.prpl milk
"You were supposed to buy milk."

Modals may be evaluated against different conversational backgrounds (Kratzer 1991). If a plain future reading results from a circumstantial conversational background, i.e. the modal is interpreted relative to certain relevant circumstances, or a stereotypical conversational background, i.e. the modal is interpreted relative to

the normal course of events, and a debitive reading from a deontic conversational background, i.e. the modal is evaluated relative to what is required by law, then the different readings available for *-a*, as illustrated in the sentences above, attest to a sensitivity to different conversational backgrounds and suggest a modal nature for *-a*.

2.3 Quantificational force

Modals are associated with a quantificational force and normally encode a specific quantificational force; such as the universal force associated with English *must* and the existential force associated with English *may*. Modals thus often come in dual pairs, with universal and existential force variants. Nevertheless, modals in St'át'imcets and Nez Perce have been described as displaying variable quantificational force (Rullmann et al. 2008, Deal 2011).

Mapudungun *-a* clauses are compatible with different quantificational force interpretations as well. We have seen that they can express universal quantification force in the certainty afforded by future readings in (1). At the same time, *-a*, often in the presence of *-fu*, is capable of expressing a weaker quantificational force, as in the following examples.

(12) *fiy wülá fiy tüfá küpá amu-tu-l-m-i amu-tu-a-ymi*
dem then dem dem wish go-re-cond-2-s go-re-fut-indic.2.s
"and then, if you want to go back then, you may go." (Smeets 2008: 239)

(13) *mari-we aku-fu-l-m-i, pe-pa-ya-fwi-y-m-i*
ten-loc arrive-FU-cond-2-s see-hith-fut-FU.obj-indic-2-s
"If you had arrived ten days ago, you would/might have seen him." (Smeets 2008: 232)

(14) *eymi müle-l-m-i, küđaw-a-fu-yu*
2.s be-cond-2-s work-fut-FU-indic.1.d
"If you are here, we might work." (Smeets 2008: 184)

(15) *pepí* *amu-n* *nge-la-y* *kawellu-mu,* *welu* *namun-tu*
be.able go-inf be-neg-indic.3 horse-P but foot-adv
puw-a-fu-y *che*
arrive-fut-FU-indic.3 person
"It is impossible to go by horse, but people might get there on foot." (Smeets 2008: 240)

(16) *nü-ki-fi-l-nge.* *trafo-l-a-fu-ymi*
take-neg-obj-cond-imp.2.s break-caus-fut-FU-indic.2.s
"Don't take it! You might break it." (Smeets 2008: 239)

(17) *müna-tuw-i-m-i.* *di-la-a-f(u)-e-yu*
much-begin-indic-2-s catch.up.to-neg-fut-FU-inv-indic.1.d
"You are very fast. I could not catch you." (Salas 2006: 133)

The availability of an existential force reading, in particular, suggests a quantificational nature for -*a*, and thus a modal one.

3 Evidence from distribution in complement clauses

3.1 Subjunctive and infinitive-like distribution

Consideration of the distribution of -*a* in complement clauses reveals that many complement clauses with -*a* correspond to infinitival and/or subjunctive complements in English and Romance. This can be seen from the English translations provided for the following Mapudungun sentences and also from the subsequent set of Spanish sentences, which also include translations for these Mapudungun sentences (see also Chapter 4 §4.2 and Appendix A).

(18) *iñche* *ayü-n* *ñi* *fey* *amu-a-el*
1.s want-indic.1.s 3.poss 3 go-fut-inf
"I want for him to go."

(19) *iñche* *ayü-ke-n* *(ñi)* *müñetu-me-a-el* *lafken*
1.s want-hab-indic.1.s 1.s.poss bathe-thith-fut-inf lake
"I like to swim in the lake."

(20) *Llüka-(le)-n* *(ñi)* *amu-al*
be.afraid-stat-indic.1.s 1.s.poss go-fut.inf
"I am afraid to go."

(21) *küme-la-y* *ñi* *i-ya-fi-el* *chi* *pülko*
good-neg-indic.3 3.poss eat-fut-obj-inf det wine
"It is not good to drink wine."

(22) *küme-la-y* *ñi* *pütoko-meke-fi-el* *chi* *pülko*
good-neg-indic.3 3.poss drink-prog-obj-inf det wine
"It is not good for him to be drinking."

(23) a. *Quiero* *ir.*
want.indic.pres.1.s go.inf
"I want to go."

b. *Quiero* *que* *él* *vaya.*
want.indic.pres.1.s that 3.s go.subjunc.pres.3.s
"I want for him to go."

(24) a. *Me* *gusta* *nadar* *en* *el* *lago.*
1.s.obj please.indic.pres.3.s swim.inf P det lake
"I like to swim in the lake."

b. *No* *me* *gusta* *que* *andes* *así.*
neg 1.s.obj please.indic.pres.3.s that go.around.subjunc.pres.2.s thus
"I don't like for you to go around like that."

(25) a. *Tengo* *miedo* *de* *ir.*
have.indic.pres.1.s fear P go.inf
"I am afraid to go."

b. *Tengo* *miedo* *de* *que* *venga.*
have.indic.pres.1.s fear P that come.subjunc.pres.3.s
"I am afraid that he will come."

(26) a. *No es bueno tomar vino.*
neg be.indic.pres.3.s good drink.inf wine
"It is not good to drink wine."

b. *No es bueno que esté tomando.*
neg be.indic.pres.3.s good that be.subjunc.pres.3.s drink.prpl
"It is not good for him to be drinking."

These facts suggest an analysis of *-a* as a subjunctive mood marker or as a marker of non-finiteness, perhaps along the lines of the Fin head of Rizzi (1997), specified for a negative feature value.

Note, however, that aspectual predicates commonly license non-finite complements cross-linguistically (see Landau 2004: 835); even in (historical stages of) Balkan languages with few or no other environments which license infinitives, such as Geg, a dialect of Albanian, and historical Macedonian (Joseph 1983). Nevertheless, although the distribution of *-a* in subordinate clauses resembles that of infinitival clauses, aspectual predicates appear to ban *-a* from their complement clauses in Mapudungun (see also Appendix A §3.1).

(27) *af-i ñi i-fi-el iyagel*
stop-indic.3 1.s.poss eat-obj-inf food
"I already finished eating food."

This is unexpected if *-a* were a non-finite marker.

Portner (1992: 148 fn. 3, 164 fn. 10) claims that the British English modal *should* is a semantic alternative to subjunctive mood and, in these uses, may really be a mood marker. In much the same way, then, a modal analysis of Mapudungun *-a* is also consistent with its observed subjunctive-like distribution in complement clauses, insofar as it may be analyzed as playing the same role as subjunctive mood in Romance.

Its distribution is perhaps also consistent with an analysis as a future tense, though it would need to be explained why certain predicates, or at least certain senses of pred-

icates, require a future tense; for corresponding predicates in English and Romance do not require the prototypical future tense marker in these languages.[2]

(28) *I want that he will go.

(29) *I like I will swim.*

*"I like to swim."

(30) **Quiero* *que* *él* *irá*
want.indic.pres.1.s that 3.s go.indic.fut.3.s

(31) **Me* *gusta* *nadaré*
1.s.obj please.indic.pres.3.s swim.indic.fut.1.s

3.2 Apparent cases of non-future interpretation

A particular difficulty of the thesis that *-a* expresses futurity comes from the need to explain the, at least prima facie, lack of a future reading of clauses with *-a* which serve as complements to obligation, memory, liking and evaluative predicates.

(32) *Müle-y* *kom* *chi* *machi* *ñi* *nie-a-el* *ñi* *rewe*
be-indic.3 all det machi 3.poss have-fut-inf 3.poss rehue
"All machis should have their rehue."

(33) *Ngoyma-n* *ngilla-ya-el* *lichi*
forget-indic.1.s buy-fut-inf milk
"I forgot to buy milk."

(34) *poye-fü-n* *ta* *(ñi)* *amu-al* *lafken-meu*
love-FU-indic.1.s det 1.s.poss go-fut.inf lake-P
"I would like to go to the lake."

[2] As I ultimately adopt a future modal analysis of *-a*, and as English *will* might also admit an analysis as a future modal instead of a future tense, I also owe an explanation of these facts. I propose that English *will* is the spell-out of a future modal under the scope of a realis mood modal. See Chapter 4 §5.2.2 for further relevant discussion.

(35) *ayü-ke-n* *ñi* *lef-a-el*
want-hab-indic.1.s 1.s.poss run-fut-inf
"I like to run."

(36) *küme-nge-y* *ni* *iñche* *ni* *pe-a-fi-el*
good-be-indic.3 1.s.poss 1.s 1.s.poss see-fut-obj-inf
"It's good for me to see him."

(37) *Küme-y* *ni* *ñimitu-nge-al* *ngülliw*
good-indic.3 3.poss pick.up-pass-fut.inf pinecone
"It's good to pick up pinecones."

In each case, the complement bears -*a* but the eventuality it denotes appears to be simultaneous to the matrix eventuality. In particular, the eventuality of having a rehue may be construed as simultaneous with the obligation to have one; the state of forgetfulness regarding buying milk is co-extensive with the period within which the eventuality of milk buying was supposed to take place; the enjoyment of swimming in the lake is simultaneous or co-extensive with the act of swimming in the lake; and the niceness of seeing someone is simultaneous or co-extensive with the seeing of that person.

So it would appear that semantically these predicates at least allow simultaneous, and thus do not require future-oriented, complements. Indeed, the obligatory presence in similar syntactic contexts of the Mohawk morpheme *v*-, like -*a* also traditionally glossed as a future, led Baker and Travis (1997) to reject a future analysis for this morpheme and instead opt for an analysis as an indefinite marker of events.

Nevertheless, it may be observed that the object eventuality that each of these predicates is oriented towards necessarily extends into the future. This is clear when these sentences are evaluated at the present instant. In the following, I will review each of these predicate classes in turn and attempt to defend a future reading of its complement.

3.2.1 Obligation predicates

The object eventuality that obligation predicates are oriented towards necessarily extends into the future. For instance, an obligation for a machi to have a rehue holding at the present instant does not allow the eventuality that it is oriented towards to end at the present instant (pragmatically at least, it would be odd to utter a sentence which was no longer true the moment after it was uttered), but rather requires the state to persist, beyond the present instant, for an indeterminate or contextually specified length of time. Thus, despite the fact that the obligation holds at the present instant, its object eventuality necessarily extends into the future. In much the same way, the object eventuality of a liking must extend into the future. If it is impossible for the object eventuality to be realized in the future, the sentence evaluated at the present is infelicitous.

Context: the U of M par-3 course has now been converted into a driving range

(38) #I like playing on the U of M par-3 course.

Such infelicity is indicative of a presupposition failure. In this case, I propose that the presupposition not supported by the context is that the embedded eventuality extends into the future.

3.2.2 Liking predicates

The sense expressed by these Mapudungun predicates appears to be habitual. For instance, they seem to correspond to English sentences with liking predicates with *to*-infinitival complements. These predicates are similarly habitual, as evidenced by the fact that they may appear in the present tense, which allows habitual or generic readings, but are marked when appearing in the simple past and rather must take the habitual past form.

(39) I like to go to the State Fair.

(40) a. *I liked to go the State Fair.

b. I used to like to go to the State Fair.

In this respect, I believe that the liking predicate *ayü-ke* (like) is revealing. Note that this is an overtly habitual form of the desiderative predicate *ayü* (want, love). What licenses the *-a* complement of this liking predicate is presumably the desiderative predicate *ayü* embedded under the habitual. I propose that other Mapudungun liking predicates allow a similar semantic decomposition; that is, with a habitual dominating a desiderative. This would account for their habitual interpretation, as with the English sentences above. What licenses the *-a* complement is actually a desiderative attitude embedded under a habitual, and it is this attitude which is future-oriented. Thus these liking predicates inherit their syntax of complementation from desiderative predicates.

There is perhaps a difference between liking or enjoying something and habitually desiring it, but the two senses are certainly truth-conditionally similar. For instance, if one stands in the habitual attitude of liking or enjoying some activity, one will presumably also want to carry it out at some future time; conversely, if someone is not habitually in a state of desiring to carry out some activity (not necessarily often, but at least at some future time), one can hardly be said to like or enjoy the activity. Mapudungun might only possess liking predicates with this semantic decomposition, but this appears to be functionally viable.

It is possible that this semantic decomposition of liking predicates is neither necessary nor universal. Participial complements to English liking predicates appear to license a simultaneous construal and not be future. For instance, liking predicates with participial complements, in contrast to *to*-infinitival complements, do tolerate simple past marking and may refer to a single eventuality.

(41) a. I liked going to the State Fair.

b. Did you like going to the State Fair?

3.2.3 Judgement evaluative predicates

Following Pesetsky (1991) on *to*-infinitival complements, I hold that the semantics of sentences with *küme* (good) and -*a* complements are similar to conditional sentences.

(42) a. It is good for me to see him.

b. If I were to see him, it would be good <that I see him>.

Pesetsky argues for an affinity between the semantics of the complementizers *for* and *if*. If -*a* is a modal and the modality in question is part of what -*a* may express, the ability for -*a* clauses to occur as complement to *küme* (good) with an apparently simultaneous reading follows from the same principle which licenses English (42).

3.2.4 Memory predicates

I analyze sentences with memory predicates which translate into English with negative implicative complements as corresponding quite simply to finite complements with an obligation modal. This modality is clearly inside the expressive realm of -*a*. Thus, all the semantic facts attributable to sentences of the first type can be derived from sentences of the second, with a modal, and thus without requiring a simultaneous complement but rather allowing a future-oriented one.

(43) a. I forgot to buy milk.

b. I forgot that I had to buy milk.

I conclude that the complement to an obligation, memory, evaluative, or liking predicate is at least partially future-oriented with respect to it, and that the licensing of -*a* complements with these predicates is thus compatible with an analysis of -*a* as a future marker (tense or modal).

3.3 Summary

I have shown that certain subordinate -*a* clauses correspond to English *for-to* infinitivals. These have been analyzed as hosting irrealis tense (Bresnan 1972, Stowell 1982, Pesetsky and Torrego 2001) or as (non-finite) subjunctive clauses (Los 2005). A correlation with Mapudungun -*a* clauses thus provides evidence that (at least) in these clauses, -*a* may correspond to an irrealis or subjunctive marker.

Note that there is no evidence that there are two separate -*a* morphemes in Mapudungun; for instance, one which is perhaps irrealis or subjunctive and another which is a future marker. The marker -*a* occupies a consistent position in the Mapudungun verbal complex and is consistently subject to the same morphophonological processes, independent of its sense. For instance, there are phonological processes which appear to be morphologically conditioned, such as the coalescence of [a] and [e] to form [a]. This phenomenon occurs with the non-finite marker -*el* and the inverse voice marker -*e*, but appears to be restricted to the morpheme -*a*; other roots and suffixes ending in [a] do not appear to be subject to it. One observes that both subjunctive -*a*, i.e. -*a* occurring in putative subjunctive contexts, and future -*a* are susceptible to this process, suggesting that one is facing a unitary morpheme.

Rather, I contend that the ability of embedded -*a* clauses in Mapudungun to correspond to English *for-to* infinitivals is consistent with analysis of -*a* as modal as long as the modality of -*a* may encompass that of English *for-to* clauses.

4 Evidence from distribution in matrix and adjunct clauses

Arbitrary control infinitivals are marginally acceptable as stand-alone clauses in English. Their interpretation is limited to the expression of a subjective attitude towards the relevant proposition (Portner 1992: 165).

(44) Ah, to be young and in love! (Roberts 2004).

Nevertheless, for languages with a finite vs. non-finite distinction, non-finite clauses are typically unable to function as stand-alone matrix clauses.

This stands in stark contrast to the perfect acceptability of *-a* in matrix clauses in Mapudungun, and suggests that it is not a non-finite marker.

(45) *amu-a-n*
go-fut-indic.1.s
"I will go."

Entirely analogous remarks apply to subjunctive clauses. That is, they are only marginally acceptable as stand-alone matrix clauses, and only with an optative, or similarly restrictive, meaning.

(46) Long live the King! (Portner 1992: 149)

(47) *Que entr-e-n*
that enter-pres.subjunc-3.p
"May they come in!"

Spanish also allows negative subjunctive matrix clauses, without a complementizer, as suppletive forms to complete the negative imperative paradigm. Whether this is a true use of subjunctive or just a case of morphological syncretism, it is clear that the distribution of subjunctive mood in matrix clauses is highly restricted.

(48) *No vaya-s*
neg go.pres.subjunc-2.s
"Don't go!"

Once again, these facts stand in stark contrast to the perfect acceptability of matrix clauses with *-a* in Mapudungun and their standard future meaning, as in (45), and suggest that *-a* is not a subjunctive marker.

Matthewson (2006: 684), citing Chung and Timberlake (1985: 241), states that contexts typically treated by languages as irrealis include: conditionals, counterfactuals, imperatives, futures, questions, negatives, obligations, desideratives, potentials, and warnings. She further cites the assertion of Mithun (1999: 179) that conditionals and counterfactuals are classified as irrealis in all systems. Following the argumentation of Matthewson (2006), we note that if Mapudungun -*a* were an irrealis marker, we would expect it to necessarily occur in at least some of these contexts, especially conditionals and counterfactuals. Nevertheless, it only necessarily occurs in future statements, as observed in §2.1 above.[3]

(49) a. *mawün-l-e, tripa-la-ya-n* *Conditional*
rain-cond-3 go.out-neg-fut-indic.1.s
"If it rains, I will not go out." (Smeets 2008: 183)

b. *müle-fal-fu-ymi faw, iñché đew wiño-fu-l-i wülá*
be-force-FU-indic.2.s here 1.s already return-FU-cond-1.s then
"You should stay here until I get back." (lit. "You should be here if I am back then.") (Smeets 2008: 360)

(50) *dungu-fu-l-i, allkü-tu-nge-a-fu-n* *Counterfactual*
speak-FU-cond-1.s hear-tr-pass-fut-FU-indic.1.s
"If I had spoken, I would have been heard." (Salas 2006: 135)

(51) *leli-fi-nge* *Imperative*
look.at-obj-imp.2.s
"Look at him/her/it/them!" (Smeets 2008: 153)

(52) *chew amu-le-y?* *Question*
where go-stat-indic.3
"Where is he going?" (Smeets 2008: 106)

(53) *tripa-la-n* *Negation*
go.out-neg-indic.1.s

[3] Although -*a* appears in the consequent of a counterfactual, no -*a* is necessary in the antecedent, which is presumably the irrealis clause in any conditional.

"I did not go out."

(54) *müle-y* *ñi* *amu-a-el* *Obligation*
be-indic.3 1.s.poss go-fut-inf
"I must go."

(55) *küpá-pu-le-n* *liwen* *Desiderative*
want-arrive-stat-indic.1.s morning
"I want to arrive in the morning." (Smeets 2008: 175)

(56) *pepí-küđaw-ün* *Potential*
be.able-work-indic.1.s
"I can/could work." (Smeets 2008: 175)

Moreover, again following the argumentation of Matthewson (2006), we note that when -*a* does occur in these typically irrealis contexts, it contributes a future interpretation.

(57) *feypi-a-l-m-i,* *kümé* *witra-künu-w-a-y-m-i* *Conditional*
say.thus-fut-cond-2-s good get.up-leave-refl-fut-indic-2-s
"If you are going to speak, you must stand up right." (Smeets 2008: 184)

(58) *wiño-a-fu-l-i,* *i-pa-tu-a-fu-n* *Counterfactual*
go.back-fut-FU-cond-1.s eat-hith-re-fut-FU-indic.1.s
"If I had to go back, I would come to eat." (Smeets 2008: 241)

(59) *chem chi pütoko-a-fu-ymi?* *Question*
what dub drink-fut-FU-indic.2.s
"What would you (care to) drink?"

(60) *tripa-la-ya-n* *Negation*
go.out-neg-fut-indic.1.s
"I will not go out."

If -*a* were merely optionally licensed in these environments as an irrealis marker, the correlation between its presence and a future interpretation would not be explained. Rather, the facts reviewed suggest that -*a* is not an irrealis marker.

5 Evidence from counterfactuals

Iatridou (2000) undertakes a cross-linguistic survey of the morphological ingredients of counterfactual conditionals, a.k.a. subjunctive conditionals. Counterfactuals may be characterized as conditionals which convey that the antecedent, and possibly the consequent, is contrary to fact, as a conversational implicature (Iatridou 2000: 231-2).

The morphological elements that necessarily accompany a counterfactual construction vary from language to language. Among the schemas which counterfactual constructions may conform to discussed by Iatridou are the following. For all schemas, past counterfactuals are distinguished by the presence of a perfect, such as the English auxiliary *have*. For the first four schemas, present and future counterfactuals are distinguished merely by the aktionsart of the predicate: a stative gives rise to a present interpretation and an eventive to a future. The final schema distinguishes present and future counterfactuals by means of explicit future marking in the latter.

(61) Iatridou's cross-linguistic templates for counterfactuals: required elements in antecedent and consequent

[subjunc: subjunctive; pst: past; impf: imperfective; Fut: future; Modal: modal; Prf: perfect]

a. ... pst impf (Prf) ..., ... pst impf Modal (Prf) ... *Greek*

b. ... pst (Prf) ..., ... pst Modal (Prf) ... *English*

c. ... subjunc pst (Prf) ..., ... pst impf Modal (Prf) ... *Spanish*

d. ... subjunc pst (Prf) ..., ... subjunc pst Modal (Prf) ... (Iatridou 2000: 263)

e. i. ... pst Fut ..., ... pst Fut ... Future *Hindi*

ii. ... pst (Prf) ..., ... pst Fut (Prf) Present/Past

Modern Greek requires past and imperfective marking in the antecedent and consequent. It also requires a modal element in the consequent. Perfective marking is optional but correlates with a past interpretation of the clause it occurs in. Spanish requires subjunctive mood in the antecedent and a special conditional mood in the consequent, which Iatridou actually analyzes a combination of future, past, and imperfect inflection.[4]

Despite the common name of 'subjunctive conditionals' for counterfactuals, and contra the analysis of English counterfactual antecedents as containing a subjunctive mood realized morphologically as a past inflection, Iatridou does not regard subjunctive mood as a necessary morphological ingredient of counterfactuals (see Iatridou 2000: 263, 268). Iatridou notes the existence of languages with subjunctive mood which do not require it in the antecedent of a counterfactual. Nevertheless, the examples she cites, French and Indo-Aryan languages, are noted by her to only possess a present subjunctive (see Iatridou 2000: 264); hence, if past subjunctives are required in counterfactual antecedents, as in Spanish, it is expected that the present subjunctives of these languages would not be licensed.

Iatridou (2000) argues that the sole necessary ingredient in this construction is (fake)[5] past marking in the antecedent and/or consequent (see Iatridou 2000: 268).[6]

Although many languages have a future or modal element in the consequent, Iatridou claims that this is not a necessary ingredient of counterfactuals (Iatridou

[4] Since in Romance future, past and imperfective are all inflections, a hybrid results from the attempt to combine them. One can discern in the Spanish conditional mood the infinitival root on which the future is usually formed, followed by imperfect endings, which usually attach to another form of the root; there is no clear evidence for the presence of past, although imperfect morphology may admit an analysis as a combination of past and imperfective.

[5] Iatridou dubs this a 'fake past', since the typical contribution of past tense is not clearly discernible. Nevertheless, Iatridou formulates a semantics of the past morpheme which permits a unified analysis for its use in counterfactuals and standard matrix clauses; thus, the past in counterfactuals is actually ultimately analyzed to be a real past.

[6] Actually, Iatridou cites languages in which the past occurs only in the antecedent but does not mention languages in which the past marker occurs only in the consequent.

2000: 233, fn. 4).

Examples of Mapudungun future, present, and past counterfactuals from Smeets (2008) are given below.

(62) Future

iñché *küđaw-me-nu-l-i* *Arxentina,* *pepí-wew-la-ya-fu-n*
1.s work-thith-neg-cond-1.s A. be.able-earn-neg-fut-FU-indic.1.s
plata
money
"If I did not go to work in Argentina, I would not be able to earn money." (Smeets 2008: 240)

(63) Present

eymi *müle-l-m-i,* *küđaw-a-fu-yu*
2.s be-cond-2-s work-fut-FU-indic.1.d
"If you are here, we might work." (Smeets 2008: 184)[7]

(64) Past

a. *iñché* *küđaw-me-nu-fu-l-i* *Arxentina,*
1.s work-thith-neg-FU-cond-1.s A.
pepí-wew-la-ya-fu-n *plata*
be.able-earn-neg-fut-FU-indic.1.s money
"If I had not gone to work in Argentina, I would not have been able to earn money." (Smeets 2008: 240)

b. *eymi* *müle-fu-l-m-i,* *küđaw-a-fu-yu*
2.s be-FU-cond-2-s work-fut-FU-indic.1.d
"If you had been here, we could have worked." (Smeets 2008: 184)

[7] This conditional is clearly not epistemic, since the speaker would be assumed to know if the antecedent were true. Yet Smeets' translation of the antecedent as "if you are here" instead of "if you were here" raises doubt as to whether this is truly a present counterfactual. Perhaps it is even being interpreted as a future less-vivid/counterfactual.

For Smeets (2008), past counterfactuals are distinguished by having *-fu* in the antecedent; note the minimal pair contrast between (62) and (64a) and between (63) and (64b).

Salas (2006), however, presents a different picture and gives the following examples of future, present, and past counterfactuals. In contrast to Smeets, Salas' data suggests that *-fu* is required in all antecedents of counterfactuals.

(65) Future

tuchi rume pe-fwi-l-e kiñe domo fele-le,
who ever see-FU.obj-cond-3 one woman be.thus-stat.adj
nge-rke-la-a-fu-y ta ñi üñfitu-a-fi-el
be-rep-neg-fut-FU-indic.3 det 3.poss harm-fut-obj-inf
"If anyone sees a woman in that state, they should not harm her." (Salas 2006: 135)

(66) Present

pichi-mapu-nge-fu-l-e, küpal-el-uw-ke-a-fu-iñ itrofill
small-land-be-FU-cond-3 bring-ben-refl-hab-fut-FU-indic.1.p many
müle-lu kampo meu (welu pütre-mapu-le-iñ)
be-prpl country P but much-land-stat-indic.1.p
"If my land were nearby, I would bring you many things from the country (but we are far from it)." (Salas 2006: 135)

(67) Past

dungu-fu-l-i, allkü-tu-nge-a-fu-n
speak-FU-cond-1.s hear-tr-pass-fut-FU-indic.1.s
"If I had spoken, I would have been heard." (Salas 2006: 135)

My own data supports Salas' characterization insofar as it does not appear to be the case that *-fu* forces a past interpretation, but rather that future and present counterfactuals permit *-fu* in the antecedent.

(68) *Amu-fu-l-i,* *wiño-a-fu-n*
go-FU-cond-1.s return-fut-FU-indic.1.s
"If I went, I would come back."

(69) *Müle-fu-l-e* *longko,* *müle-a-fu-y* *machi* *feymo* *ka*
be-FU-cond-3 longko be-fut-FU-indic.3 machi then also
müle-a-fu-y *machitun*
be-fut-FU-indic.3 machitun
"If there were a longko, there would be a machi and consequently there would also be a machitun."

Nevertheless, in Salas' schema, it is not clear how to distinguish past from present or future counterfactuals. Moreover, conditionals of the form that Smeets offers, which I have also collected, if not counterfactuals, are certainly similar to counterfactuals and difficult to distinguish from them semantically.

(70) *Amu-l-i,* *wiño-a-fu-n*
go-cond-1.s return-fut-FU-indic.1.s
"If I (were to) go, I would come back."

I conclude that further study is required to confirm a template for Mapudungun counterfactuals. At present, either Smeets' or Salas' schema is viable.

(71) Smeets' schema for Mapudungun counterfactuals

...(-fu)..., ...-a-fu...

(72) Salas' schema for Mapudungun counterfactuals

...-fu..., ...-a-fu...

Even with the uncertainties present regarding the schema of Mapudungun counterfactuals, we are now in a position to draw certain conclusions from consideration of the candidate schemas in light of the templates offered by Iatridou in (61). First, we may immediately conclude that the distribution of *-a* is not consistent with its

analysis as a subjunctive mood along any template; because Spanish requires subjunctive in the antecedent, but not the consequent while the other class of languages with subjunctives requires it in both. Mapudungun -*a*, however, is required only in the consequent and not in the antecedent, thus not conforming to either of these patterns.

Neither do the candidate schemas support an analysis of -*a* as a non-finite marker.

The distribution of -*a* in counterfactuals is, however, consistent with its analysis as a future or modal, which is required in the consequent of every paradigm reviewed; though, again, Iatridou claims that there are some languages without modals or future in the consequent, and explicitly discounts this as a universal for counterfactuals (Iatridou 2000: 233, fn. 4). Nevertheless, from the paradigms reviewed by her, it is evidently quite common.[8]

For the sake of completeness, I will note that Smeets' schema is consistent with an analysis of -*fu* as the optional perfect which correlates with a past interpretation of the counterfactual and Salas' schema is consistent with an analysis of -*fu* as (fake) past or (fake) imperfective, or possibly subjunctive, which are required in both clauses in specific templates. The analysis most straight-forwardly consistent with Iatridou's generalization regarding the morphological make-up of counterfactuals cross-linguistically is that of -*fu* as a past marker. The morpheme -*fu* does indeed behave as a past marker when modifying statives and habituals. However, it does not appear to be necessary in these cases, nor does it act as a past marker when modifying an eventive predicate. There is some evidence, in fact, that Mapudungun is a tenseless language; it may conform to Iatridou's archetype either vacuously or through a null past tense form.

[8] Another analysis consistent with the cross-linguistic templates is that the complex -*a*-*fu* as a whole is the special modal in counterfactuals. This appears to be the assessment of many scholars, who regard -*afu* as a unit; see Smeets (2008: 234) for discussion, though Smeets herself does not adopt this position.

6 Evidence from tenselessness diagnostics

Mapudungun clauses may consist minimally of a predicate root and an agreement inflection. There is no obligatory overt marking of temporal distinctions. Out of context, such clauses are ambiguous between a present and past interpretation, though there are certain preferences according to the lexical aspectual type of the predicate. In the indicative mood, stative predicates are preferentially interpreted as present, whereas eventive predicates are preferentially interpreted as past in out-of-the-blue contexts (Zúñiga 2006: 129).

(73) *Iñché* *müle-n* *Temuco*
1.s be-indic.1.s T.
"I live in Temuco.", "I lived in Temuco." (Smeets 2008: 166)

(74) *kon-i*
enter-indic.3
"He came in.", "He comes in." (Zúñiga 2006: 160)

As noted in §2.1, such clauses cannot be interpreted as future. Rather, indicative clauses interpreted as future necessarily bear the morpheme *-a*.

(75) *amu-a-n*
go-fut-indic.1.s
"I will go."

(76) *amu-n*
go-indic.1.s
*"I will go." (OK as: "I went.")

Some analysts have held that some languages lack tenses entirely (Bittner 2005, Bohnemeyer 2009, Lin 2006). It is sometimes held that tensed languages show a distinction between past and non-past tense, conflating present and future, with the past tense marked, and that tenseless languages show a distinction between future and non-future, conflating present and past, with the future marked but analyzed

as a mood or mood-like element. Nevertheless, there have been analyses of tensed languages which only distinguish a future from a non-future tense, e.g. Hua (Haiman 1980).

In addition, the lexical aspect-based preferences for temporal interpretation exhibited by Mapudungun have been widely noted to occur across languages and in particular in those which have been analyzed as tenseless (Bittner 2008, Bohnemeyer 2009, Lin 2006, Matthewson 2006).

In both of these respects, then, Mapudungun is seen to pattern with tenseless languages. Whether or not Mapudungun is truly tenseless deserves further study. Nevertheless, it should be noted that if Mapudungun is tenseless, it would necessarily lack a future tense and, perforce, the Mapudungun morpheme *-a* could not be analyzed as a future tense.

It should further be noted that many analysts have held that there are no future tenses in natural language, and that what appear to be future tenses are actually modals (see Matthewson 2006: 708, Iatridou 2000: 237 fn. 11, 246). Indeed, alongside a future tense analysis of English *will*, there are also viable analyses of *will* as a modal (inflected for present tense, with *would* being the realization of this modal inflected for past tense). Clearly, then, if there is no future tense in natural language, the Mapudungun morpheme *-a* can again not be analyzed as a future tense, whether Mapudungun is tenseless or not.

7 Evidence from position

According to the Mirror Principle of Baker (1988), the position of a morpheme in a verbal complex correlates with the position in the clausal hierarchy of the functional projection which it expresses. Consequently, we can glean information as to the nature of the functional head which *-a* is an expression of by examining its position

in the Mapudungun verbal complex.

The universal hierarchy of functional heads of Cinque (1999) places Tense above grammatical Mood, which includes indicative mood. It may be observed, however, that -*a* occurs below indicative and conditional mood in Mapudungun.

(77) *amu-a-i-m-i*
go-fut-indic-2-s
"You will go."

(78) *amu-a-l-m-i*
go-fut-cond-2-s
"if you go"

This positioning is incompatible with an analysis of -*a* as a future tense if Mapudungun respects this hierarchy of functional heads.

Cinque (1999: 78) conflates together indicative and realis mood, on the one hand, and subjunctive and irrealis mood, on the other. Moreover, Cinque (1999: 55, 130) sustains that grammatical Mood comprises realis and irrealis (indicative and subjunctive) and occupies a unique position in the functional hierarchy of heads. If -*a* were an irrealis or subjunctive mood, it should occur in the same position as indicative and be incompatible with it, according to Cinque. Again, the fact that -*a* occupies a different position than indicative and conditional mood and may co-occur with either of these, as observed in (77) and (78), suggests that it is neither an irrealis nor a subjunctive mood marker itself.

Non-finite markers have been analyzed as a T^0 head with a -finite feature (Koster and May 1982: 118; see also Chomsky 1981: 19) or as a, C-domain, Fin^0 head with a -finite feature specification (Rizzi 1997). Since both C and T occupy a position higher than that of grammatical Mood according to Cinque (1999), and -*a* occurs below the position of grammatical Mood, as observed in (77) and (78), either option for the placement of a non-finite marker is incompatible with an analysis of -*a* as one.

Furthermore, while some European Portuguese infinitives display person-number agreement inflection, from the same paradigm as matrix, or finite, agreement, non-finite markers are ordinarily incompatible with person-number agreement.

(79) *Subi-r-es* *a* *renda* *signific-a* *sai-r-mos* *do* *apartamento*
raise-inf-2.s det rent mean-pres.3 leave-inf-1.p from.det apartment
imediatamente
immediately
"For you to raise the rent means for us to leave the apartment immediately."
(Safir 1996: 86-7)

In contrast, the perfect acceptability of *-a* in verbs inflected for person-number agreement in Mapudungun, as illustrated in (77) and (78), suggests that it is not a non-finite marker.

Subordinate clauses with *-a* do not inflect for agreement as matrix clauses do. Rather, a marker replaces mood, person, and number inflection. In fact, this is evidence that this element is the non-finite marker, and not *-a*.

(80) *iñché* *müle-y* *ñi* *amu-a-el*
1.s be-indic.3 1.s.poss go-fut-inf
"I must go."

Cinque (1999: 79, 89, 130) places alethic and root, including deontic, Modal heads below the position of grammatical mood. The position of *-a* in the Mapudungun verbal complex is thus consistent with an analysis of *-a* as such a modal head; for *-a* exhibits both alethic and root, in particular obligation, readings, as reviewed in §2.[9]

[9] Alethic modality deals with necessity and possibility in itself, and not relative to speaker's knowledge as with epistemic modals; rather, necessity and possibility are evaluated relative to the way the world is (see Cinque 1999: 78).

8 Conclusion

It was shown in §2 that the Mapudungun morpheme *-a* has a, relative, future interpretation. This is consistent with an analysis of *-a* as either a future tense or a, future, modal.

It was further shown in §2, however, that *-a* displays a range of other modal readings, which are more readily accounted for on the analysis of *-a* as a modal than as a future tense. Moreover, evidence from tenseless diagnostics and position, reviewed in §6 and §7, respectively, suggest that *-a* is not a tense and does not occupy T.

Furthermore, while the distribution of *-a* in complement clauses reviewed in §3.1 suggests that *-a* is a subjunctive or non-finite marker, the temporal restrictiveness of *-a*, the inability of aspectual predicates to take *-a* complements in Mapudungun, as well as evidence from the distribution of *-a* in matrix clauses, from counterfactuals, and from the position of *-a*, reviewed in §2.1, §3.1, §4, §5, and §7, respectively, suggest that *-a* is not a non-finite marker. Similarly, the temporal restrictiveness of *-a* as well as evidence from the distribution of *-a* in matrix clauses, from counterfactuals, and from the position of *-a*, reviewed in §2.1, §4, §5, and §7, respectively, suggest that *-a* is not a subjunctive marker.

Finally, the temporal restrictiveness of *-a* as well as evidence from the distribution of *-a* in matrix and adjunct clauses and evidence from position, reviewed in §2.1, §4, and §7, respectively, suggest that *-a* is not an irrealis marker, contra the proposal of Smeets (2008).

In each case, the modal analysis of *-a* remained consistent with the further evidence reviewed; most significantly, with the distribution of *-a* in complement clauses reviewed in §3.1, as argued in §3.2. I conclude that the morpheme *-a* in Mapudungun is a, future, modal; with its futurity likely deriving from its modality (see Werner 2003).

In this chapter, then, I have shown asymmetries between Mapudungun -*a* and elements commonly described as irrealis, subjunctive, and non-finite. Nevertheless, one might maintain that the differences appealed to are accidental and that the morpheme -*a* might still be an irrealis, subjunctive, or non-finite marker but differing from other such markers in different languages in the respects reviewed. For instance, while subjunctives, unlike future markers, are generally time independent, Lubukusu subjunctives are restricted to future (Mark Baker, p.c.); hence the fact that Mapudungun -*a* consistently contributes a future meaning does not entail that it is not a subjunctive. I believe that the difficulty in conclusively demonstrating that given marker does or does not belong to one of these categories is that these traditional categories are ill-defined. Furthermore, I do not endorse the view that there is a small set of universal gram types (Bybee and Dahl 1989), with discrete elements irrealis, subjunctive, non-finite, modal, from which each language makes a selection for its lexicon. Rather, there is a plethora of particular lexical items with overlapping semantic and other features, but also many idiosyncrasies besides (see Hyman 2009). Even if it cannot be said that the arguments presented here demonstrate that the Mapudungun morpheme -*a* is not an irrealis, subjunctive, or non-finite marker, I have nevertheless argued for two components of its content: it is both future and modal in the sense of Kratzer (1991); that is to say, it is a quantifier (over worlds) and interpreted relative to sets of propositions (serving as a restrictor and) constituting a conversational background. These results are well-supported no matter what term one wishes to use to describe -*a*; for instance, if Smeets (2008) is correct in assessing Mapudungun -*a* to be an irrealis marker, it must at least be understood in this way, i.e. as both a modal quantifier and a future element.

It should also be noted that this modal analysis of -*a* in the Kratzerian sense is also essentially a weaker claim than an irrealis or subjunctive mood analysis insofar as the modality of -*a* does not necessarily exclude subjunctive or irrealis modality,

insofar as a content can be defined for these, as long as that content can be accommodated within the type of modality that -*a* expresses; in particular, if the particular conversational background against which a modal quantification claim is evaluated can be characterized in the same manner as it is with irrealis or subjunctive mood.

Chapter 4

Theory of Complementation in Mapudungun Syntax

1 Introduction

Not every predicate allows every clause as complement.

(1) *that*-indicative

a. He believes that she will be there.

b. *He wants that she will be there.

c. *He wishes that she will be there.

d. *He demands that she will be there.

e. *He likes that she will be there. (OK is: He likes it that she will be there.)

(2) $\varnothing_{\text{prop}}$-*to* infinitival (a.k.a. propositional infinitival)

a. Who do you believe to have been there?

b. *Who do you want to have been there?

c. *Who do you wish to have been there?

d. *Who do you demand to have been there?

e. *Who do you like to have been there?

(3) *for-to* infinitival (a.k.a. irrealis infinitival)

a. *He believes to go.

b. He wants to go.

c. He wishes to go.

d. He demands to go.

e. He likes to go.

(4) *that*-counterfactual subjunctive

a. *He believes that he were there.

b. *He wants that he were there.

c. He wishes that he were there.

d. *He demands that he were there.

e. *He likes that he were there.

(5) *that*-mandative subjunctive

a. *He believes that she be there.

b. *He wants that she be there.

c. *He wishes that she be there.

d. He demands that she be there.

e. *He likes that she be there.

(6) ∅--*ing* (a.k.a. active participle)

a. *He believes swimming in the lake.

b. *He wants swimming in the lake.

c. *He wishes swimming in the lake.

d. *He demands swimming in the lake.

e. He likes swimming in the lake.

One would like to explain why predicates take the clausal complements they do; formulating the principles which describe this relation between predicate and clause types and, if possible, reduce these to a set of primary axioms: a theory of clausal complementation. To define this relation, one needs to find a way to define the clause types and also the predicate classes. A clause type is simply a set of clauses sharing a specified property. Insofar as some predicate shows a restriction on which clauses it allows as complement, the defining property of this set becomes relevant to a theory of complementation. A priori, the best characterization may be phonological, morphological, syntactic or semantic. Nevertheless, many researchers have sought to characterize the clause types relevant for a theory of clausal complementation syntactically, via features of C and T (Rosenbaum 1967, Landau 2004).

In English, several distinct clause types relevant for a theory of complementation can be characterized in terms of pairs of abstract C-T elements, as illustrated in (1) – (6).

Once one posits such abstract complement clause types, complementation facts may be captured by a theory of subcategorization or c-selection, producing a list of statements such as the following.

(7) Subcategorization rules for English

a. *believe* licenses a *that*-indicative or $\varnothing_{\text{prop}}$-*to* infinitive

b. *want* licenses a *for-to* infinitive

c. *wish* licenses a *for-to* infinitive or a *that*-counterfactual subjunctive

One observes, however, that complementation facts are comparable across languages, for predicates with a similar meaning and a suitable correlation between clause types across given languages. For instance, the following principles appear to hold for Spanish.

(8) Subcategorization rules for Spanish

a. *creer* licenses a *que*-indicative or propositional infinitive

b. *querer* licenses an irrealis infinitive or a *que*-present subjunctive

c. *quisiera* licenses an irrealis infinitive or a *que*-past subjunctive

This suggests that there is a universal relation between predicates and complement clause types underlyingly. In order to formulate it, one would need a universal typology of clause types. Clearly, language-particular morphological criteria such as "*for-to* clauses" will not succeed in defining a universal clause type, since it does not pick out a class of clauses cross-linguistically. For this purpose, other clause features will have to be appealed to which abstract away from morphological exponence, such as semantic properties or universal categories of moods.

Whereas English appears to have many distinct complement clause types, Mapudungun complement clauses, in contrast, do not display such differences in morphology or syntax, in general. All subordinate clauses in Mapudungun are non-finite. I have distinguished three different non-finite morphemes: infinitival Inf, with allomorphs *-n*, *-el*, *-t*, *-m*; active participle *-lu*; and passive participle *-wma*. Putting aside the few instances of -lu clauses which may be analyzed as complement clauses (cf. Chapter 1 §10.1), all complement clauses in Mapudungun bear one of the non-finite markers which have been analyzed as allomorphs of a single morpheme, Inf. Furthermore, all allow the analytic possessive agreement morpheme Poss to be overt

or not; all allow extraction, even apparently out of factive islands, as in (9); all apparently allow embedded wh-movement, as in (10)[1]; all allow voice heads (e.g. passive and object agreement) and other morphemes indicating higher functional structure; all even appear to allow a null subject coreferent with a matrix argument as well as an overt subject disjoint in reference from any matrix argument. Indeed, these properties shared by all infinitival clauses were used to argue for a particular analysis of Mapudungun subordinate clauses in general in Chapter 2.

(9) *iniy* *kim-y* *pe-fi-el* *Manuel*
who know-indic.3 see-obj-inf M.
"Who does he know that Manuel saw?", "Who does he know that saw Manuel?"

(10) *Allkü-n* *ni* *iney* *kon-pa-n*
hear-indic.1.s 3.poss who enter-hith-inf
"I heard someone come in."

In fact, the only significant asymmetry between the complement clauses to different predicates in Mapudungun that we have reviewed deals with the presence of the morpheme -*a*: some allow -*a* to appear or not, some require the presence of -*a*, and some appear to ban -*a*.

(11) a. *fey* *küre-y* *iñché* *ñi* *amu-n*
3 believe-indic.3 1.s 1.s.poss go-inf
"He believes that I left."

b. *fey* *küre-y* *iñché* *ñi* *amu-a-el*
3 believe-indic.3 1.s 1.s.poss go-fut-inf
"He believes that I will leave."

(12) a. *inché* *ayü-n* *(ñi)* *amu-(y)a-el*
1.s want-indic.1.s 1.s.poss go-fut-inf
"I want to go."

[1]Though these data may merely indicate the (com)pliancy of the consultants

b. **iñche* *ayü-n* *amu-n*
1.s want-indic.1.s go-inf
"I want to go."

(13) *allkü-fi-n* *ñi* *aku-n*
hear-obj-indic.1.s 3.poss arrive-inf
"I heard him arrive."

Therefore, there is a certain tension here, insofar as a universal theory of complement licensing may require many clause types to be distinguished, in order to set up the necessary correlations between complement clause types across languages, and yet Mapudungun seems to have a reduced stock of complement clause types to draw on - possibly only having one.

In particular, theories have been formulated which require complements to different predicate classes to be semantically distinct. From the principle of compositionality it follows that they must also be syntactically distinct. These theories thus have implications for the syntactic analysis of Mapudungun -*a* clauses to different classes of predicates, if they are expected to extend to Mapudungun.

I embark upon a review of complementation facts in Mapudungun with a focus on the properties of allowing the morpheme -*a* to be present and of allowing it to be absent, as these seem to produce overt asymmetries between predicates and relatively clear judgements are available.

This chapter is structured as follows. In §2, I review the semantic selection theories of Rochette (1988), Dixon (2006), Zucchi (1993), and Portner (1992), laying out their main claims and supporting them by appeal to facts in English and/or Romance and examining their cross-linguistic predictions. In §3 I evaluate the predictions of these semantic selection theories for Mapudungun. I investigate whether these theories can accommodate the Mapudungun facts presented or whether Mapudungun poses a problem for these theories, and to what extent demands revision. In §4, I review the facts observed in Mapudungun regarding which classes of predicates require -*a*

in their clausal complement, which allow but do not require it, and which appear to ban it; the full set of which facts are presented in Appendix A. Also in §4, I formulate a theory of clausal complementation with a coherence licensing condition, along the lines of Portner (1992), and show that it derives the clausal complementation facts observed in Mapudungun. In §5, I review a select portion of clausal complementation facts in Romance, Balkan, and Germanic and extend the theory of §4 to account for these facts. Selection for mood in these languages will be modeled as modal concord, and the distribution of subjunctive and irrealis in these languages will be related to the distribution of *-a* in Mapudungun. In §7 I conclude.

2 Semantic theories of complementation: Literature Review

Just as a clause type is a set of clauses defined on the basis of a shared property, which may be phonological, morphological, syntactic, or semantic, although the clause types relevant for a theory of clausal complementation have traditionally been defined in syntactic terms, via features of C and T, so a predicate class is a set of predicates sharing some specified property. A priori, the classes of predicates relevant for a theory of complementation may be defined on the basis of phonological, morphological, syntactic or semantic properties. However, it has been traditionally observed that predicates displaying different behavior in terms of which complement clauses they license fall into equivalence classes that can be defined on the basis of lexical semantic criteria. It is also observed that certain complementation patterns are only possible for predicates in a particular sense, and unavailable for other senses. Semantic theories of complementation thus appear to be more natural or faithful to the true underlying principles. Thus, it is reasonably clear that what licenses a given complement is not a lexical item, which are bundles of features, as in approaches to

clausal complementation based on c-selection or subcategorization frames, but rather just a semantic feature; this explains why only certain senses of a predicate may license a given complement and why whole classes of predicates conforming to a lexical semantic feature specification pattern together in licensing a complement clause type. That is, it is clear that what is active on the predicate side is semantic features, and not just whole lexical items or non-semantic features. If the predicate classes are defined by semantic criteria, it is also natural to suppose that what they evaluate for coherence or compatibility in a complement is also its semantics.

Semantic theories attempt to describe the predicate-complement relation by means of semantic properties, characterizing both the predicate classes and complement clause types via semantic properties. Hence, they crucially attribute semantic properties to complement clauses. As semantic theories of complement licensing appeal to semantic categories, they are intended to have a more universal applicability than approaches to define the predicate-complement relation based on c-selection or subcategorization frames.

Semantic theories may also provide an account for semantic facts regarding multiple complements to a predicate; namely, whether diverse complements to a, putatively, single predicate are synonymous or not - or are such that one entails another or not.

In this section, I review the semantic selection theories of Rochette (1988), Dixon (2006), Zucchi (1993), and Portner (1992) in §2.1, §2.2, §2.3, and §2.4, respectively. In §2.5 I characterize the approaches of each of these theories to distribution facts in abstract terms and in §2.6 I identify the cross-linguistic implications for clausal complementation from each of these theories.

2.1 Rochette (1988)

Rochette (1988) aims to capture the distribution facts in Romance, which are roughly

as follows: effective predicates (e.g. modal, aspectual, movement verbs) license restructuring and other infinitivals; emotive predicates (e.g. volition, command, permission, psychological verbs) license finite subjunctive clauses or controlled infinitives; propositional predicates (e.g. stating, belief, knowledge verbs) license indicative clauses, secondary subjunctives, or infinitivals which display evidence of allowing an overt subject underlyingly.

(14) Effective predicates with a restructuring infinitival complement[2]

a. *Mario* *comienza* *a* *tipia-r-lo* *mañana*
M. begin.indic.pres.3.s P type-inf-obj tomorrow
"Mario will start typing it tomorrow." (cf. Rochette 1988: 90)

b. *Lo* *debe-s* *trae-r*
obj should.indic.pres-2.s bring-inf
"You should bring it." (cf. Rochette 1988: 191)

c. *Qué* *me* *viene-s* *a* *deja-r?*
what 1.s.obj come.indic.pres-2.s P leave-inf
"What are you bringing me?" (lit. "What are you coming to leave me?")
(cf. Rochette 1988: 191)

(15) Emotive predicates with controlled infinitival or subjunctive complement

a. *Lucía* *quiere* *toma-r* *el* *tren.*
L. want.indic.pres.3.s take-inf det train
"Lucia wants to take the train." (cf. Rochette 1988: 252)

b. *Lucía* *quiere* *que* *sus* *hijos* *tome-n*
L. want.indic.pres.3.s that 3.poss.p child.p take.subjunc.pres-3.p
el *tren*
det train
"Lucia wants her children to take the train." (cf. Rochette 1988: 252)

[2]Clitic climbing and a lower Adverbial which must be construed as modifying the matrix verb are taken to indicate restructuring.

c. *El* *general* *ordena* *a* *todos* *los* *soldados* *estar*
det general order.indic.pres.3.s P all.p det.p soldier.p be.inf
presente
present
"The general orders all the soldiers to be present." (cf. Rochette 1988: 259)

(16) Propositional predicates with indicative, secondary subjunctive[3], or infinitival with subject trace complements

a. *Juan* *supo* *que* *había* *resuelto* *el*
J. know.indic.past.3.s that have.indic.imprf.3.s resolve.ppl det
problema
problem
"Juan knew that he had solved the problem." (cf. Rochette 1988: 342)

b. *Dudo* *que* *yo* *termine* *este* *artículo*
doubt.indic.pres.1.s that 1.s finish.subjunc.pres.1.s dem article
"I doubt that I finish this article." (cf. Rochette 1988: 265)

c. *El* *mozo* *que* *yo* *creo* *habe-r* *llegado*
det boy that 1.s believe.indic.pres.1.s have-inf arrive.ppl
"the boy that I believe to have arrived" (cf. Rochette 1988: 332)

Despite the apparent heterogeneity of complements to each predicate class when morpho-syntactically described, and the possibility for infinitivals to occur across predicate classes, Rochette argues for a common syntactic analysis for the complements to each lexical semantic predicate class. Rochette analyzes restructuring infinitivals and other complements to effective verbs as VPs, finite subjunctive clauses and controlled infinitivals as TPs lacking a CP layer, and indicative clauses, secondary subjunctives, and infinitivals which allow a subject trace as CPs. Thus, on this structural analysis of the complement types morpho-syntactically described, the

[3]Rochette analyzes secondary subjunctive complements as CPs, noting that they do not display subjunctive disjoint reference effects as do other subjunctive complements, which Rochette attributes to their containing a CP projection.

correlation between predicate classes and complement types can be restated as follows: effective predicates license VP complements, emotive predicates license TP complements, propositional predicates license CP complements.

However, for Rochette, syntactic category is not the primary factor in selection. In addition to VPs, effective predicates admit DP complements and in addition to CPs, propositional predicates admit AP, DP, and PP small clauses. As a consequence, Rochette maintains that the primary factor in complement licensing is not syntactic category but semantics.

(17) *Juan* *comienza* *la* *lectura* *del* *libro*
J. begin.indic.pres.3.s det reading P.det book
"Juan begins the reading of the book." (cf. Rochette 1988: 212)

(18) *Juan* *considera* *a* *Pierre* *verdaderamente* *loco*
J. consider.indic.pres.3.s P P. truly crazy
"Juan believes Pierre to be really crazy." (cf. Rochette 1988: 349)

(19) *Los* *estudiantes* *considera-n* *a* *Marco* *un* *muy* *buen* *profesor*
det.p student.p consider.indic.pres-3.p P M. det very good professor
"The students consider Marco a very good teacher." (cf. Rochette 1988: 349)

Rochette develops a semantic selection theory of complement licensing. She identifies the denotation of each level of clause structure, VP, TP, CP, with a different semantic type: VPs denote actions, TPs denote events, CPs denote propositions. Rochette then proposes the following semantic selection principles.

(20) Axioms of Selection Theory for Rochette (1988)

a. Effective predicates select actions

b. Emotive predicates select events

c. Propositional predicates select propositions

With the proposed structural analyses of clause types morpho-syntactically defined and syntax-semantics correspondence principles in place, the original distribution facts reviewed above follow. In addition, this theory captures the facts that effective predicates license nominals, assuming these denote actions, and propositional predicates license small clauses with AP, DP, or PP predicates, assuming that these denote propositions.

2.2 Dixon (2006)

Dixon (2006: 23, 26) speaks of three "recurrent" and "standard" clause types. He characterizes each in terms of morpho-syntactic criteria and associates each with a distinctive semantics. From more to less NP-like, these are as follows.

The Activity clause type is semantically characterized as referring to an ongoing activity, relating to its extension in time. Morpho-syntactically, it may share structural similarities to NP without being one; for instance, its subject may be possessor-like and its main verb may have a special form which may preclude tense-aspect-modality-negation marking. In addition, an Activity clause may allow a time reference different from that of the matrix clause, its verb may not allow the same range of bound pronominals as a matrix clause, and its subject need not be identical to a matrix argument but if co-construed with one, may be omissible.

The Potential clause type is semantically characterized as referring to the potentiality of the embedded subject becoming involved in an activity. The embedded subject is almost always identical to a matrix argument and may require deletion when this is so. Morpho-syntactically, this clause type possesses less structural similarity to an NP than an Activity complement type, while still generally lacking tense-aspect and similar choices available to a main clause. It may lack bound pronominals available in a main clause. It has implicit reference to a simultaneous or future time relative to that of the matrix clause. Its verb generally has special form akin to a

dative NP.

The Fact clause type is semantically characterized as referring to the fact that something took place. Morpho-syntactically, it typically has full possibilities for negation, tense-aspect, and bound pronominal marking as a main clause. It generally has independent tense from a main clause. It is typically headed by a complementizer and may be required to extrapose. If its subject is co-construed with a matrix argument, it is unlikely to be omitted.

Note that every morpho-syntactic property is very tentative, so it seems that Dixon is merely describing common clusterings of morpho-syntactic properties with each of the three standard types of complement clause. As a consequence, it may be difficult to identify an instance of any given complement clause type in a given language. Nevertheless, Dixon (2006) appears to identify *-ing* gerunds, *to*-infinitivals, and *that*-indicative clauses as English instantiations of activity, potential, and fact complement types, respectively.

In line with the functionalist-descriptivist approach explicitly adopted, Dixon (2006) does not advance a theory of complement licensing per se. Nevertheless, Dixon (2006) does describe cross-linguistic generalizations regarding clausal complementation in, inescapably, theoretical terms, and for comparative purposes, we might cast these stated tendencies as a predictive system.

Like Rochette (1988), Dixon (2006) distinguishes three semantic types of complement clauses: activity, potential, and fact. Nevertheless, Dixon (2006) distinguishes many more predicate classes than Rochette (1988). As a consequence, and in contrast to Rochette (1988), Dixon (2006) does not present a correlation between predicate classes and complement clause types. That is, whereas Rochette presents the binary relation between predicate classes and complement clause types as a bijection, on Dixon's analysis, the binary relation is not even a function. Rather, predicate classes may be related to multiple complement clause types.

The semantic complement clause types that each predicate class licenses according to Dixon (2006) are as follows. We also verify the predictions of each tenet for English and thereby review the distribution data in English that Dixon's semantic theory of complement licensing accounts for.

Sensory (see, hear, notice, smell, show): activity or fact

(21) I noticed Mary('s) weeding the garden. (Dixon 2006: 27)

(22) I noticed that Mary had weeded the garden. (Dixon 2006: 27)

Discover (discover, find, recognize): fact

(23) I discovered that Mary had resigned. (Dixon 2006: 27)

Thinking (think, consider, imagine, dream): fact

(24) John thinks that Mary is clever. (Dixon 2006: 27)

Contemplation (think of/about/over, dream of/about): activity

(25) John is thinking about Mary's weeding the garden. (Dixon 2006: 27)

Supposition (assume, suppose): fact

(26) I just assumed he killed her.

Memory (remember, forget): fact or activity

(27) I remembered that I had visited Paris. (Dixon 2006: 28)

(28) I remembered visiting Paris. (Dixon 2006: 28)

Epistemic (know, understand, believe, suspect): fact

(29) I happen to know, for a fact, that he was called 'Maestro' in social situations.

Familiarity (know about): activity

(30) I know about breaking into cars.

Liking (like, love, prefer, regret): activity or fact

(31) I like John's getting drunk. (Dixon 2006: 28)

(32) I like (it) that John gets drunk. (Dixon 2006: 28)

Psychological (fear): activity or fact

(33) I fear John's getting drunk. (Dixon 2006: 28)

(34) I fear that John may get drunk. (Dixon 2006: 28)

Enjoy: activity

(35) I enjoy skiing these slopes.

Saying (say, inform, tell): fact

(36) I told Mary that it was late. (Dixon 2006: 29)

Report: fact or activity

(37) The newspaper reported that the candidate had resigned.

(38) The witnesses reported Perpetua's being martyred.

Describe (describe, refer to): activity

(39) I told Mary about Brazil's having scored four goals. (Dixon 2006: 29)

Promise (promise, threaten): potential

(40) I promised to go.

Manipulative (order, command, persuade, tell): potential

(41) I persuaded John to go. (Dixon 2006: 29)

Modal (can, should): potential

(42) I can go.

Aspectual (begin, start, continue, stop, cease, finish): activity or potential

(43) He began washing the clothes. (Dixon 2006: 30)

(44) He began to wash the clothes. (Dixon 2006: 30)

Attempt (try, attempt): potential

(45) He tried to eat the pie. (cf. Dixon 2006: 31)

Desiderative (want, wish, intend, plan): potential

(46) I want to sing. (Dixon 2006: 32)

Hope: potential or fact

(47) I hope to go.

(48) I hope that John did lock the door last night. (Dixon 2006: 31)

Simulative (pretend): potential or fact

(49) I pretended to be a preacher. (cf. Dixon 2006: 31)

(50) I pretended that I was a preacher. (Dixon 2006: 31)

Obligation (make, cause, force): potential

(51) They forced John to go. (Dixon 2006: 31)

(52) John was made to go by them. (Dixon 2006: 31)

Permission (let): potential

(53) They let us go.

Help: potential

(54) I helped him finish.

The above are the licensing principles which Dixon suggests have universal applicability. There is additional English complementation data which Dixon's universal theory does not capture and for which he adds additional stipulations which, however, he explicitly characterizes as English specific; for instance, memory verbs allowing a potential complement and some liking predicates allowing potential complements, but not all.

(55) I remembered to lock the door. (Dixon 2006: 28)

(56) a. I'd like to go. (Dixon 2006: 28)

b. *I regret to go. (Dixon 2006: 28)

2.3 Zucchi (1993)

Zucchi (1993) tackles the distribution of deverbal Nouns, *-ing of* nominals, Poss-ing gerunds, *fact that* DPs and *that* clauses among different predicate classes, specifically eventive, *remember*-type, sensory, *surprise*-type, *be informed* (*of*)-type, and propositional predicates. The distribution facts are schematized in Table 4.1 and illustrated below.

Table 4.1: Zucchi (1993) distribution data

	Deverbal N	*-ing of*	Poss-ing	*fact that* DP	*That*-clause
Eventive	✓	✓	*	*	*
Propositional	*	*	*	*	✓
Sensory, Remember	✓			✓	✓
Surprise	✓	✓	✓	✓	✓
Be informed (of)	✓	✓	✓	✓	✓

A ✓ indicates that the predicate class licenses the complement type.
A * indicates that the predicate class does not license the complement type.
A blank space indicates that the construction is not considered.

Eventive predicates include: *be slow*, *be gradual*, *be quick*, *be thorough*, *be sudden*, *be unexpected*, *take a long time*, *last an hour*, *last a few days*, *be postponed*, *occur* (*at 1*), *begin at 3pm*; *carry out*, *be Ted's job*, *is supposed to be helpful*, *is a bad idea*, *is difficult*, *proved difficult* (*for Mary*).

(57) Eventive predicates allow deverbal Nouns and *-ing of* nominals (Zucchi 1993: 71-2)

a. His performance of the song was sudden.

b. His performing of the song was sudden.

c. *The soprano's performing the song was sudden.

d. *The fact that the soprano performed the song was sudden.

e. *That the soprano performed the song was sudden.

Propositional predicates include propositional attitude and truth-value predicates such as: *believe*, *know*, *be true*, *be false* (Zucchi 1993: 208).

(58) Propositional predicates allow *that* clauses (cf. Zucchi 1993: 205-7)

a. *John believes the arrival of the soprano.

b. *John believes the soprano's performing of the song.

c. *John believes the soprano's performing the song.

d. *John believes the fact that the earth is round.

e. John believes that the earth is round.

Sensory predicates include: *see*, *hear*, *notice*.

(59) Sensory predicates allow deverbal Nouns, *fact that* DPs and *that* clauses as complement (cf. Zucchi 1993: 18)

a. John noticed Mary's arrival.

b. John noticed the fact that Mary arrived.

c. John noticed that Mary arrived.

The verb *remember* displays similar complementation behavior.

(60) *Remember* allows deverbal Noun, *fact that* DP, and *that* clause complements (Zucchi 1993: 17, 189-90)

a. Mary remembers John's arrival.

b. Mary remembers the fact that John arrived.

c. Mary remembers that John arrived.

The predicate *be surprising* licenses each type of complement considered (Zucchi 1993: 75).

(61) a. The soprano's performance of the song is surprising.

b. The soprano's performing of the song is surprising.

c. The soprano's performing the song is surprising.

d. The fact that the soprano performs the song is surprising.

e. It is surprising that the soprano performs the song.

Other predicates displaying this behavior include: *be aware* (*of*), *be informed* (*of*), *fear*, *anticipate* (cf. Zucchi 1993: 174, 201, 205).

(62) a. John is aware of the soprano's performance of the song.

b. John is aware of the soprano's performing of the song.

c. John is aware of the soprano's performing the song.

d. John is aware of the fact that the soprano performed the song.

e. John is aware that the soprano performed the song.

Zucchi accounts for the distribution data in (57) – (62) and summarized in Table 4.1 with a semantic theory of complement licensing. He associates a distinct semantic type to each class of complements with a unique distribution among the predicates considered.

Zucchi (1993: 77-8, 212) distinguishes situations, states of affairs, and propositions as semantic entities. In particular, where S is the set of situations, and P is the set of propositions, P = $\wp$(S); that is, P is the power set of S, the set of all subsets of S. As events are modeled as (minimal) situations, it is clear that the set of events and the set of propositions are disjoint. That is, nothing is both an event and a proposition; hence nothing's denotation can be both an event and a proposition. There is a function f mapping propositions to states of affairs (Zucchi 1993: 212). States of affairs and propositions are called propositional entities. There is also a shifting operation $[\![$ s.o.a. $]\!]$, which maps events to states of affairs (Zucchi 1993: 214). This operation is the meaning of the covert operator S.O.A. in the syntax, which converts constituents denoting events into constituents denoting states of affairs.

Zucchi proposes the following syntax-semantics correspondence. Deverbal Nouns and *-ing of* nominals denote events and are assigned the same denotation when they are based on the same clause; that is, when the predicate and its arguments are the same. Poss-ing and *fact that* DPs denote states of affairs, and have the same

denotation when based on the same clause (though *fact that* DPs carry the further implication that the state of affairs they denote are actual, and in this way can be said to denote facts). *That* clauses denote propositions.

For Zucchi, states of affairs, propositions, and situations are not distinguished by type; that is, they do not belong to distinct denotation domains. Consequently, a predicate which allowed any one of these could also allow an entity of a different sort and still respect its type specification. In order to enforce selectional restrictions to a particular sort, then, Zucchi recurs to presuppositions, in the form of definedness conditions. A predicate will denote a (partial) function, and this function may only be defined if its argument meets some specification, such as being a situation, state of affairs, or proposition.

Eventive predicates are only defined if their entity argument is a situation (Zucchi 1993: 72).

(63) $[\![\text{V}_{\text{eventive}}]\!]$(e) is only defined if e is a situation

Since only deverbal Nouns and *-ing of* nominals may denote events, it follows that eventive predicates allow deverbal Nouns and *-ing of* nominals but none of the other complement types considered, accounting for the facts in (57).

Propositional predicates require their argument to be a proposition (Zucchi 1993: 208).

(64) $[\![\text{V}_{\text{propositional}}]\!]$(p) is defined only if p is a proposition

In the absence of further translations or type-shifting operations which might save anomalous arguments (e.g. no f^{-1} mapping states of affairs to propositions), this accounts for the distribution facts in (58); namely that propositional predicates only allow *that* clauses, among the complement types considered.

Note that the data in (58) cannot be accounted for by saying that Poss-ing, *fact that* DPs, and *that* clauses all denote the same thing, e.g. a proposition, but that

propositional predicates simply c-selected for CP, and did not allow DP, for their proposition argument. The data below shows that this cannot be the case (Zucchi 1993: 205, 209).

(65) a. John believes many things.

b. John believes this proposition.

c. John believes the claim that the earth revolves around the sun.

Rather, propositional predicates allow DP complements denoting propositions. Hence, the ban on Poss-ing and *fact that* DPs cannot be due to their being DP. Rather, it must be some other feature. As Zucchi considers that there is no natural syntactic candidate for such a feature, he proposes the semantic distinction between propositions and states of affairs among propositional entities.

To account for predicates which allow both deverbal Nouns and *that* clauses, such as *remember*, Zucchi supposes that there are in fact two different predicates, one selecting events and the other a propositional entity. The sense of *remember* is either represented as $\text{remember}_{\text{e}}$ or as $\text{remember}_{\text{p}}$, with the following definedness conditions imposed on them:

(66) $[\![\text{remember}_{\text{p}}]\!]$(a)(b) is only defined if a is a propositional entity.

(67) $[\![\text{remember}_{\text{e}}]\!]$(a)(b) is only defined if a is a situation.

The E-variant of the predicate requires an event argument, and hence is compatible with a deverbal Noun complement. The P-variant requires a propositional entity argument and so is compatible with a *that* clause complement and a *fact that* DP. An entirely analogous analysis is offered for sensory predicates. This accounts for the data in (59) and (60).

The same basic approach is taken for the predicate *be surprising*, i.e. positing E- and P-variants to account for the range of complement types it licenses, but the

details differ. Zucchi proposes the following definedness conditions on the P- and E-variants of *surprise*; where P is a property salient in context (Zucchi 1993: 180-1).

(68) $[\![\text{surprise}_{\text{p}}]\!](a)(b)$ is only defined if b is a propositional entity

(69) $[\![\text{surprise}_{\text{e}}]\!](P)(a)(b)$ is only defined if b is an individual or situation

Again, the E-variant of the predicate requires an event argument, and hence is compatible with a deverbal Noun or *-ing of* nominal complement, and the P-variant requires a propositional entity argument, and so is compatible with a Poss-ing gerund, *fact that* DP, or *that* clause complement. This accounts for the data in (61).

The sense of *be informed* (*of*) is either represented as $\text{be.informed.of}_{\text{e}}$ or as $\text{be.informed.of}_{\text{p}}$, with the following definedness condition imposed on $\text{be.informed.of}_{\text{p}}$.

(70) $[\![\text{be.informed.of}_{\text{p}}]\!](a)(b)$ is only defined if a is a propositional entity

Furthermore, as complements to *be informed* (*of*) and similar predicates (e.g. *be aware* (*of*)), an erstwhile event-denoting complement may be parsed as containing a null S.O.A. operator which has the effect of shifting its denotation into a state of affairs. As a consequence, the P-variant of these predicates will actually license deverbal Nouns and *-ing of* nominals on its own. This accounts for the data in (62).

There are different equivalent solutions to the distribution data along the same lines of Zucchi's approach. For instance, *be surprising* and the *be informed* (*of*) class could have received the exact same analysis as *remember* and sensory predicates. However, Zucchi's theory also intends to account for accompanying semantic data, not just the distribution data.

It is important to note that the distinction between events and propositional entities is independently motivated on the basis of properly semantic evidence, not just distributional evidence. In particular, entailment patterns between sentences

with (apparently) the same predicate and different complements motivate a distinction between the semantics of deverbal Nouns and -*ing of* nominals (events), on the one hand, and and Poss-*ing* gerunds, *fact that* DPs, and *that* clauses (propositional entities), on the other. I now very briefly review these arguments.

With sensory predicates, the meaning of a sentence with a Poss-ing gerund complement is not equivalent to one with a deverbal Noun or -*ing of* nominal complement. For example, if (71c) is true, John must have had a direct perception of Mary's arrival, but this is not the case for the (71a) or (71b) sentences (Zucchi 1993: 18). It is also assumed to be possible for one to witness Mary's arrival but, not being aware of certain aspects of the perceived event, such as the identity of the arriver, thus failing to gain from this perception the knowledge necessary to support (71a) or (71b). Thus, neither does (71c) entail (71a) or (71b).

(71) Notice (cf. Zucchi 1993: 18)

a. John noticed the fact that Mary arrived. $\equiv$

b. John noticed that Mary arrived. $\not\Leftarrow, \not\Rightarrow$

c. John noticed Mary's arrival.

These facts are captured under Zucchi's theory in the following way. The assumption that deverbal Nouns and -*ing of* nominals denote different semantic entities than Poss-ing gerunds, *fact that* DPs, and *that* clauses based on the same clause, in tandem with the assumption that these complements combine with different predicates restricted to one particular semantic sort, allows for an account of the meaning difference between (71a,b) and (71c). For, deverbal Nouns and -*ing of* nominals will serve as arguments only to one variant of the predicate and Poss-ing gerunds, *fact that* DPs, and *that* clauses will serve as arguments only to the other variant.[4] Fur-

[4]It is important in this respect to note that the ⟦ s.o.a ⟧ shifting operation is stipulated to be

thermore, Zucchi does not provide meaning postulates constraining the denotation of the constants notice_p and notice_e, relating the two. Clearly, absent these, neither of the following two *notice* clause meanings will entail the other; where (72) is the meaning assigned to a sentence in which *notice* takes as complement a *that* clause or *fact that* DP, p is the propositional entity denotation of the complement, and b is the denotation of the subject, and where (73) is the meaning assigned to a sentence in which *notice* takes a deverbal Noun complement, e is the event denotation of this complement, and b is the denotation of the subject.

(72) $[\![\text{notice}_p]\!](p)(b)$

(73) $[\![\text{notice}_e]\!](e)(b)$

The fact that neither (72) nor (73) entails the other accounts for the difference in meaning observed between (71a) and (71b), on the one hand, and (71c) on the other.

Thus, the semantic analysis of sentences with sensory predicates benefits from a distinction between the denotation of deverbal Noun or *-ing of* nominal complements, on the one hand, and Poss-ing gerund, *fact that* DP, or *that* clause complements, on the other, based on the same clause (i.e., benefits from a distinction between events and propositional entities), just as the analysis of the distribution of these diverse complement types across predicate classes does. The distribution data is summarized in Table 4.2 and illustrated in (74) – (76).

2.4 Portner (1992)

Portner (1992) is concerned with two distinct subclasses of predicates and complement clause types. He first considers the distribution of *-ing of* nominals and *-ing* gerunds

unavailable with eventive arguments to sensory predicates or *remember*. That is to say, deverbal Noun and *-ing of* nominal complements to sensory predicates or *remember* must denote events and cannot denote a propositional entity (although in other contexts these constituents may).

across different kinds of eventive predicates and certain others.

Table 4.2: Portner (1992) distribution data: eventive predicates

	-Ing of nominal	*-Ing* Gerund
Take place in the library, occur on the 10th, be slow, ...	✓	*
Make me sick, take 4 minutes, ...	✓	✓
Bother	✓	✓

A ✓ indicates that the predicate class licenses the complement type.
A * indicates that the predicate class does not license the complement type.

(74) a. The quick eating of that apple took place on July 16. (Portner 1992: 34)

b. The quick eating of that apple took place in the library. (Portner 1992: 34)

c. The quick eating of that apple was joyful. (Portner 1992: 34)

d. *Eating that apple quickly took place on July 16. (Portner 1992: 34)

e. *Eating that apple quickly took place in the library. (Portner 1992: 34)

f. *Eating that apple quickly was joyful. (Portner 1992: 34)

(75) a. The quick eating of that apple made me sick. (Portner 1992: 33)

b. The quick eating of that apple took four minutes. (Portner 1992: 33)

c. Eating that apple quickly made me sick. (Portner 1992: 33)

d. Eating that apple quickly took four minutes. (Portner 1992: 33)

(76) a. John's quick eating of the apple bothered me.

b. John's eating the apple bothered me. (Portner 1992: 88)

Portner argues for a uniform structural analysis for Poss-ing, Acc-ing, and controlled *-ing* gerunds, which would differ only in the case assigned to the subject. The distribution of *-ing of* nominals and *-ing* gerunds conforms to a familiar pattern, viz. one in which two complement types have a different but overlapping distribution

across predicates. In this case, every predicate which licenses an -*ing* gerund licenses an -*ing of* nominal, but not vice versa. We observed a similar configuration in our review of Zucchi (1993), where every predicate which licensed a Poss-ing gerund or -*ing of* nominal also licensed a *that* clause complement, but not vice versa. Portner accounts for this distribution pattern in the same way as Zucchi.

Portner proposes the following syntax-semantics correspondence and selection rules. -*Ing of* nominals denote maximally specified concrete situations, which capture everything going on in a particular spatio-temporal region (Portner 1992: 35). Gerunds, on the other hand, denote less fully specified situations, which are only part of the former situations (Portner 1992: 90). The class of predicates including *take place in the library*, *occur on the 10th*, *be slow*, and *be joyous* can only be true of concrete situations (Portner 1992: 90). On the other hand, predicates such as *bother* and the class of predicates including *make me sick* and *take 4 minutes* select for situations in general (cf. Portner 1992: 90).

Thus we see that two different semantic sorts are assigned to complement types with a distinct distribution, viz. concrete situations and less fully specified situations. Nevertheless, both conform to the supersort of situations. Predicates which license both types of complements are held to select for the supersort, while predicates which only license one are held to select for its specific sort. This analysis accounts for the data summarized in Table 4.2 and illustrated in (74) – (76).

The treatment of this distribution pattern is entirely analogous to that provided by Zucchi (1993), who proposed that Poss-ing gerunds and *fact that* DPs denote states of affairs and that *that* clauses denote propositions, both of which are instances of the supersort of propositional entities, and that the class of predicates licensing both complement types, viz. the class including (the P-variant of) *remember* and sensory predicates, select for the supersort of propositional entities, while the class of predicates which only licensed one complement type select for the specific sort of that

complement type, viz. the class of predicates including *believe* select for propositions.

2.4.1 The distribution of indicative, subjunctive, and irrealis infinitivals in English

Of greater interest is Portner's treatment of the distribution of different full clause types across various propositional attitude predicates, summarized in Table 4.3.

Table 4.3: Portner (1992) distribution data: propositional attitude predicates

	For-to Infinitive	Counterfactual Subjunctive	Mandative Subjunctive	*That*-indicative-T
Wish	✓	✓	*	*
Want	✓	*	*	*
Desire	✓	*	?	*
Hope	✓	%	*	*
Believe	*	*	*	✓
Claim	*	*	*	✓

A ✓ indicates that the predicate class licenses the complement type.
A * indicates that the predicate class does not license the complement type.
A ? indicates that the predicate class licenses the complement type but is slightly marked.
A % indicates that the predicate class licenses the complement type for some but not all speakers.

In the ontology adopted by Portner (1992), there is a mereological ordering relation on situations, as one situation may encompass another. Possible worlds are modeled as maximal situations; a situation encompassing an entire world history, as it were.

Propositions are modeled as sets of situations; not necessarily worlds. Embedded clauses denote functions from a reference situation to a proposition; the reference situation provides the time (and place) relative to which the lower proposition is interpreted, in a manner analogous to reference times in theories of tense (Portner 1992: 45).

2.4.2 Syntax-semantics correspondence

The desiderative predicates *hope*, *want*, *desire*, and *wish* all have a semantics which fits the following schema (cf. Portner 1992: 236); where c' Vs in s = c's hopes/wants/

desires/wishes/... in s.

(77) $[\![\text{ V }]\!] = f_{\langle\langle s\langle st\rangle\rangle\langle e\langle st\rangle\rangle\rangle}$: for all $p \in D_{\langle s\langle st\rangle\rangle}$, $c \in I$, $s \in S$,

$f(p)(c)(s) = 1$ iff

$\forall s'$. s' satisfies c's Vs in s $\rightarrow$ $p(s)(s') = 1$

The propositional predicates *believe* and *claim*, which require beliefs and claims to be satisfied in worlds, not just any situations, owing to Portner's principle that beliefs should be true together, i.e. situations compatible with someone's beliefs should contain all their beliefs (Portner 1992: 184-5), have a semantics which conforms to the following schema. Note that it is the same schema as (77) above, simply substituting a world w for the situation s'.

(78) $[\![\text{ claim }]\!] = f_{\langle\langle s\langle st\rangle\rangle\langle e\langle st\rangle\rangle\rangle}$: for all $p \in D_{\langle s\langle st\rangle\rangle}$, $c \in I$, $s \in S$,

$f(p)(c)(s) = 1$ iff

$\forall w$. w satisfies c's claims in s $\rightarrow$ $p(s)(w) = 1$

Clause types are assigned the following denotations. Firstly, *for-to* infinitivals denote what have come to be called 'outcomes' (Ginzburg and Sag 2001), a set of situations which begin at the present and extend into the future until a specified event, e.g. the hoped-for or desired event, is realized.

(79) $[\![\text{ for NP to VP }]\!]$ = that function $f \in D_{\langle s\langle st\rangle\rangle}$ such that for all $s \in S$, $f(s) = \{$ s' | s' has as its initial segment a duplicate-counterpart of s and for some s" $<$ s', s" $\in [\![\text{ NP VP }]\!]\}$ (Portner 1992: 158, 191, 228)

Secondly, *that* clauses with a counterfactual subjunctive (cf. (4) above), mandative subjunctive (cf. (5) above), or indicative mood (cf. (1) above) denote the same proposition that these moods take as argument. That is, these moods denote identity

functions. Thus, *that* clauses do not differ semantically, although, as will be discussed shortly, they carry different presuppositions.

(80) $[\![$ cf-subjunc p $]\!] = [\![$ p $]\!]$ (Portner 1992: 159, 232)

(81) $[\![$ mand-subjunc p $]\!] = [\![$ p $]\!]$ (Portner 1992: 159, 231)

(82) $[\![$ that p $]\!]^{MuCrgs}$ = that function f $\in D_{<s<st>>}$ such that for all s', s" $\in$ S,
f(s')(s") = 1 iff $[\![$ p $]\!]^{MuCs'gs}$(s") = 1. (Portner 1992: 193, 227)

A proposition is persistent if, for some subset of it, it contains every supersituation of every situation in this set. All tensed, or aspect-marked, clauses denote persistent propositions and, thus, contain entire worlds; including *that*-indicative-T and *that*-counterfactual subjunctive clauses; for instance, past marked indicative clauses denote persistent propositions over the set of situations preceding the reference situation r in the proposition denoted by its tenseless complement (cf. Portner 1992: 227):

(83) $[\![$ past(p) $]\!]^{MuCrgs}$ = that function f $\in D_{<st>}$ such that for all s' $\in$ S,
f(s') = 1 iff for some s" $<$ s', s" precedes r and $[\![$ p $]\!]^{MuCrgs}$(s") = 1.

In addition to their semantics, verbs and clauses may carry lexical restrictions or presuppositions. For instance, the following clause types carry the following presuppositions; where s' is a situation in the denotation of the complement fed the reference situation r, and where a situation s' is a counterfactual alternative of s iff it is not a subpart of any situation in the context of s – where the context of s is the common ground, if s is the utterance situation, or the doxastic alternatives of the agent, if s is a propositional attitude situation (Portner 1992: 188).

For-to infinitivals carry a possibility presupposition to the effect that the content of a *for-to* clause is presupposed to be possible (Portner 1992: 158, 228).

(84) possibility presupposition:

some s' is not a counterfactual-alternative to r

Counterfactual subjunctives carry a counterfactual presupposition to the effect that the content of a counterfactual subjunctive clause is presupposed to be false or unexpected (Portner 1992: 232, 245).

(85) counterfactual presupposition:

every s' is a counterfactual-alternative to r

Mandative subjunctives carry an obliging situation presupposition to the effect that their reference situation must be an obliging situation (Portner 1992: 230, 231)

(86) obliging situation presupposition:

r is an obliging situation

In addition, predicates are subject to lexical restrictions, in the form of meaning postulates, of their own. For instance, *want* is subject to the following three lexical restrictions (Portner 1992: 239); where r is the reference situation, which in the case of *want* is the wanting situation itself (and in the case of *wish*, *hope*, and *desire* are the wishing, hoping, and desiring situations, respectively).

(87) counterfactual lexical restriction:

no s' in the denotation of its complement fed r is actual at r, based on the agent's beliefs at r

(88) possibility lexical restriction:

some s' in the denotation of its complement fed r is or will be actual based on the agent's beliefs in r

(89) non-obliging situation lexical restriction

r is not an obliging situation

The other predicates discussed are each subject to some combination of two of these three lexical restrictions; a different combination for each one. *Wish* is subject to the counterfactual lexical restriction and the non-obliging situation lexical restriction (Portner 1992: 238). *Hope* is subject to the possibility lexical restriction and the non-obliging situation lexical restriction (Portner 1992: 237). *Desire* is also subject to the counterfactual lexical restriction and the possibility lexical restriction (Portner 1992: 239-240).

2.4.3 Deriving the distribution facts

Portner allows for free combination of predicates and complement clauses, up to logical inconsistency. If a given combination yields a necessarily false statement, this is taken to be sufficient to induce ungrammaticality (see Portner 1992: 189). For instance, if the conjunction of the semantics and lexical restrictions of a predicate with the semantics and presuppositions of a complement clause results in a contradiction, ungrammaticality is induced. I now review a few of the facts which Portner's theory captures in order to illustrate how his approach works to account for distribution facts.

The obliging situation presupposition of mandative subjunctives and the non-obliging situation lexical restriction of *want*, *wish*, and *hope* are contradictory. This accounts for the fact that these predicates will not license a mandative subjunctive complement. (This argument extends to *deny*, *believe*, *claim*.)

(90) *They wish that he be here. (Portner 1992: 151)

(91) *They hope that he be here. (Portner 1992: 151)

(92) *They want that he be here. (Portner 1992: 152)

The verb *desire*, on the other hand, is not subject to the non-obliging situation lexical restriction, and since the obliging situation presupposition of mandative subjunctive is consistent with the counterfactual and possibility lexical restrictions of *desire*, it follows that *desire* may combine with a mandative subjunctive complement.

(93) a. Do you desire that I be made well?

b. ?They desire that he be here. (Portner 1992: 152)

The counterfactual presupposition of counterfactual subjunctives is inconsistent with the possibility lexical restriction of *want*, *hope*, *desire*. That is, the presupposition of counterfactual subjunctives to the effect that it is presupposed false (or unexpected) with respect to the agent's beliefs, conflicts with the lexical restriction of these predicates to the effect that what is wanted, hoped for, and desired must be possible, according to the beliefs of the agent. This accounts for the fact that *want*, *hope*, *desire* do not license a counterfactual subjunctive complement. (This argument likely extends to *believe*, and possibly to *claim*.)

(94) *They hope that he were here. (Portner 1992: 151)

(95) *They want that he were here. (Portner 1992: 152)

(96) *They desire that he were here. (Portner 1992: 152)

In contrast, the counterfactual presupposition of counterfactual subjunctives entails the counterfactual lexical restriction of *wish*. That is, the presupposition of a counterfactual subjunctive that every situation contained in its denotation is believed to be false (or unexpected) entails that the agent believes that there is no actual situation s' which satisfies the content of the clause, which is the lexical restriction of *wish*. In addition, the counterfactual presupposition of counterfactual subjunctives is

consistent with the non-obliging situation lexical restriction of *wish*. This accounts for the fact that *wish* licenses a counterfactual complement.

(97) I wish (that) he were here. (Portner 1992: 149, 160)

Finally, the combination of a complement clause and a predicate may produce a necessary falsehood semantically, even if the presuppositions of the complement clause and the lexical restrictions of the predicate cohere. Recall that the production of a necessarily false statement is taken to be sufficient to induce ungrammaticality (see Portner 1992: 189).

For instance, *believe* and *claim* cannot combine with a *for-to* infinitival. The reason is that the denotation of *for-to* infinitivals contain no worlds, and so cannot satisfy the requirement in the lexical semantics of *believe* and *claim* that the denotation of its complement, fed the believing/claiming reference situation, contain all worlds which satisfy the agent's beliefs/claims in that situation; see (78) above. Hence, all belief and claim ascriptions would be necessarily false.

(98) *I believe for him to be coming. (Portner 1992: 183)

(99) *I claim for him to be coming. (Portner 1992: 183)

In contrast, the denotation of *that*-indicative clauses are persistent and hence contain worlds. Moreover, no specific lexical restrictions have been associated with *believe* or *claim* and no presuppositions have been associated with *that*-indicative clauses. Hence there is no possibility of a contradiction arising from the conjunction of these. This accounts for the fact that *believe* and *claim* do license a *that*-indicative complement.

(100) I believe that he is crazy. (Portner 1992: 146)

(101) I claim that he is crazy.

2.5 Summary of abstract approaches to complement distribution

Given a set of clause types and predicate classes and a distribution (table) of clause types across predicate classes, Rochette (1988) assigns the same semantic sort to each clause type with an equivalent distribution and a different semantic sort to clause types with a different distribution.[5] Rochette limits attention to cases in which clause types with a different distribution actually have a disjoint distribution; that is, to cases in which no predicate licenses two complement clause types which do not have an equivalent distribution across predicates. It is a straightforward matter to formulate a theory of selection rules which derives the data for such distribution tables. A predicate class licensing a class of complements with an equivalent distribution is specified to select for the semantic sort associated with that class of clause types.

Zucchi (1993) tackles the problem posed by the possibility of clause types with a non-equivalent distribution nonetheless having an overlapping distribution, instead of a completely disjoint one. For cases in which a predicate licenses multiple clause types with a distinct distribution, Zucchi first distinguishes cases where a common predicate is only apparent from cases in which the same predicate is truly involved.[6] Clearly, if faced with a case in which a predicate licenses two different complement clause types with a different distribution, one can posit two different versions of the predicate, one which licenses one complement clause type and another which licenses

[5]For instance, propositional infinitive, indicative, and secondary subjunctive complements may have the same distribution across predicates and Rochette (1988) assigns them all the sort of: proposition. In contrast, a restructuring infinitive complement has a distribution distinct from that of these clause types, and is held to denote a distinct semantic sort: action.

[6]According to the analysis of Zucchi (1993), an example of the former case is *remember* with a deverbal Noun or *-ing of* nominal complement vs. *remember* with a Poss-ing gerund, *fact that* DP, or *that* clause complement. These are analyzed as involving two different, but homophonous, predicates *remember*; an E-variant and a P-variant. An example of the latter case is precisely *remember* with a Poss-ing gerund or *fact that* DP complement vs. *remember* with a *that* clause complement. These are analyzed as all involving the same predicate *remember*; viz. the P-variant.

the other, and in this way maintain a Rochette-type theory in which complement clause types with a different distribution always have a disjoint distribution. While this move may indeed be appropriate in many cases, e.g. semantically motivated quite apart from considerations of distribution as Zucchi (1993) argues[7], there are still likely cases in which the very same predicate licenses two (or more) complement clause types with a different distribution, which are obviously not, then, disjoint.

To handle such distribution tables, Zucchi (1993) formulates a semantic selection theory which can be seen as a generalization of that of Rochette (1988). Just like Rochette (1988), Zucchi assigns the same semantic sort to each clause type with an equivalent distribution and different semantic sorts to clause types with a different distribution. Clause types with an overlapping distribution are then assigned a supersort, encompassing the sorts of each.[8] For each predicate class licensing the same range of complement clause types, selection rules are then formulated to the effect that they require their complement to satisfy the (super)sort corresponding to the disjunction of the sorts of all the clause types licensed.[9] It follows that when a predicate class only licenses a single clause type as complement, it will select for the particular sort associated with that clause type.[10] A Rochette-type distribution table, in which clause types with a different distribution have a disjoint distribution, then falls out as a special case: predicate classes select for the particular sort associated with the equivalence class of clause types licensed; no supersorts need be invoked, much as Rochette doesn't invoke any. Nevertheless, Zucchi's approach is more general and more robust, able to derive not only Rochette-type distribution tables but in fact any distribution table.

[7]See the discussion of the sentences with *notice* and different complements in (71), §2.3

[8]For instance, the sorts of states of affairs and propositions are encompassed by the supersort of propositional entities; see §2.3 for discussion.

[9]See for instance the selection rules for the P-variants of the predicates *remember* and *surprise* in (66) and (68), respectively, and the selection rule for *be informed of* in (70) in §2.3.

[10]See for instance the selection rule for propositional predicates (64) in §2.3.

That is, the approach just outlined will produce a theory, of selection rules, capable of deriving any distribution table given as input. Of course, there remains the challenge of characterizing the abstract semantic sorts required by adopting such an approach to selection or complement clause distribution in an intuitive and, ideally, independently motivated way. Typically, theories which adopt such an approach will posit as basic semantic sorts: actions, events, outcomes, states of affairs, facts, propositions, etc. However, since each clause type with a unique distribution will have to be assigned its own particular sort, it may prove difficult to extend this list further and further if so prompted by consideration of a wider range of cross-linguistic complementation facts. Moreover, it is often not obvious on the basis of what criteria one clause type is said to denote one sort rather than another, or just how two sorts are distinct; that is, there is often not evidence independent of distribution that two clause types with a distinct distribution denote semantic entities of distinct, and disjoint, sorts.

Dixon (2006) also countenances cases in which a predicate (class) licenses multiple complement clause types with a distinct distribution. However, Dixon does not examine as rigorously as Zucchi the matter of whether such cases truly involve a common predicate or whether there is in fact evidence which motivates an analysis of the predicates involved as homophonous but ultimately distinct. In addition, Dixon does not attempt to formulate any generalizations and is instead content to specify the relation or distribution table by means of a brute-force listing of predicate class-complement clause type pairs. Nevertheless, it is easy enough to reformulate such a brute-force theory into one with supersorts, where every unique range of complement clause types licensed by some predicate (class) is assigned a supersort corresponding to the disjunction of the sorts of the clause types in the range, and there is only one

selection rule per predicate (class), specifying that it selects its associated supersort.[11] The result will be identical to a Zucchi-type theory of selection rules.

The theories of Rochette (1988), Zucchi (1993), and Dixon (2006) all formulate semantic selection rules to the effect that a complement must satisfy some semantic property, viz. denote an entity of a specific sort, in order to be licensed as a complement to the predicate. In contrast, Portner (1992) formulates a licensing condition based on compatibility or logical consistency. It is not required that a complement satisfy some semantic property or sort, but rather only that the semantics resulting from the combination of a predicate and complement be logically consistent, i.e. not necessarily false. Up to logical inconsistency, free combination of predicates and complement clauses is allowed.

I now turn to a discussion of the cross-linguistic predictions of semantic theories with a licensing condition requiring satisfaction of a specific semantic sort.

2.6 Cross-linguistic predictions of semantic theories of complementation

As the (super)sorts invoked in selection rules may be disjoint, a licensing condition requiring satisfaction of a semantic sort will require distinct complement clause types to be available in a language if the selection rule has universal validity; as semantic selection rules are supposed to. Using Rochette's tripartite division of the space of predicates (see §2.1 above), though mixing terminology from both Zucchi (1993) and Rochette (1988) for these predicate classes, we can state the following generalizations regarding the predictions of the theories of Rochette (1988), Dixon (2006), and Zucchi (1993) concerning clause types serving as complements to these classes of predicates.

[11] In the case of the theory of Dixon (2006) as presented in §2.2, supersorts corresponding to the following disjunctions will have to be posited if one seeks a reformulation into a more economical theory along the lines discussed: activity or potential, activity or fact, potential or fact.

For Rochette (1988), the complements to eventive predicates must denote actions, whereas the complements to emotive predicates must denote events, which are semantically distinct sorts of entities, and presumably disjoint. For Dixon (2006), the complements to eventive predicates may only denote events, whereas the complements to emotive predicates may only denote potentialities. Thus, the conclusion that the complements to eventive and emotive predicates must be semantically distinct follows from both of these semantic theories. By the principle of compositionality, the complements to eventive and emotive predicates must also be syntactically distinct, on these theories. That is, since it is supposed that there is a mapping from syntax to semantics, to each syntactic constituent there corresponds a single semantic entity.[12] Hence if the complements of two predicate classes denote semantic entities of disjoint sorts, these complements must also be syntactically distinguished in some way, even if the difference is not structural but just relates to a feature on some constituent; that is, it follows that predicates of these classes cannot host identical complements.

For Rochette (1988), eventive predicates require action arguments, whereas propositional predicates require proposition arguments. For Dixon (2006), eventive predicates such as aspectuals take event arguments, whereas propositional predicates such as *believe* take fact arguments. For Zucchi (1993), eventive predicates require event arguments, whereas propositional predicates require proposition complements, which are disjoint semantic sorts (see §2.3 above). Hence, from each of these theories, it follows that the complements of eventive predicates must be semantically distinct from the complements of propositional predicates; that is, they must denote semantic entities of a distinct, and presumably disjoint, sort or type. By the principle of compositionality, they must also be syntactically distinct; since a given syntactic structure can only map to a single semantic entity.

[12] This single semantic entity may, of course, be plural in some sense, such as a set of alternatives.

Rochette (1988) maintains that the complements to emotive verbs must denote events and that the complements to propositional verbs must denote propositions. Dixon (2006) maintains that the complements to the emotive verb *want* may only denote potentialities, while the complements to the propositional verb *believe* may only denote facts. Hence from both theories, it follows that the complements to emotive and propositional predicates must be semantically distinct. By the principle of compositionality, they must also be syntactically distinct.

As semantic theories of complementation are universalist in scope, these theories predict that the complements to these predicate classes must be syntactically distinct, one from another, cross-linguistically. In the following section, I will assess these predictions for Mapudungun.

3 Assessment of predictions of existing semantic theories of complementation for Mapudungun

In this section we review the implications of previous semantic theories of complementation on the syntactic structure of complements to diverse predicates in Mapudungun.

3.1 Eventive and emotive predicates

This prediction that complements to eventive and emotive complements in Mapudungun are syntactically distinct is confirmed for Mapudungun insofar as eventive complements ban *-a* whereas emotive complements require *-a*. Hence, the two classes of complements are distinct and, indeed, disjoint.

(102) *Juan* *wiri-tu-le-y* *kiñe* *papeltu-n*
J. write-vb-stat-indic.3 one read-inf
"Juan continues to write a book."

(103) *rupa-y* *ñi* *mawün-ün*
pass-indic.3 3.poss rain-inf
"It stopped raining."

(104) *iñché* *ayü-n* *ni* *mawun-a-el*
1.s want-indic.1.s 3.poss rain-fut-inf
"I want it to rain."

3.2 Eventive and propositional predicate complements

There is abundant evidence that the prediction that Mapudungun complements to eventive and propositional predicates are syntactically distinct is a good prediction for Mapudungun. For, while propositional predicates take full clausal complements, eventive predicates in Mapudungun are consistently realized as suffixes or restructuring verbs and thus take reduced complements.

Aspectual notions are usually expressed by suffixes in Mapudungun, such as those corresponding to "continue" and "keep".

(105) *iñché* *petu* *chillkatu-meke-n* *mapunzungun*
1.s still study-prog-indic.1.s M.
"I am studying Mapudungun."

(106) *Juan* *wiri-tu-le-y* *kiñe* *papeltu-n*
J. write-vb-stat-indic.3 one read-inf
"Juan continues to write a book."

The aspectual notion of "again" may be expressed by the suffix *-tu* or by the restructuring verb *wiño* (go back).

(107) *Juan* *wiño-kuzao-tu-y* *ñi* *wiri-tu-n*
J. return-work-vb-indic.3 3.poss write-vb-inf
"Juan went back to work on his writing."

(108) a. *wew-nge-y-m-i*
win-pass-indic-2-s
"You were beaten." (Salas 2006: 140)

b. *wew-nge-tu-y-m-i*
win-pass-re-indic-2-s
"You were beaten again." (Salas 2006: 140)

The notion of "sudden", which is an eventive predicate according to Zucchi (1993: 21-2, 71-2), is expressed by the suffix *-rume*.

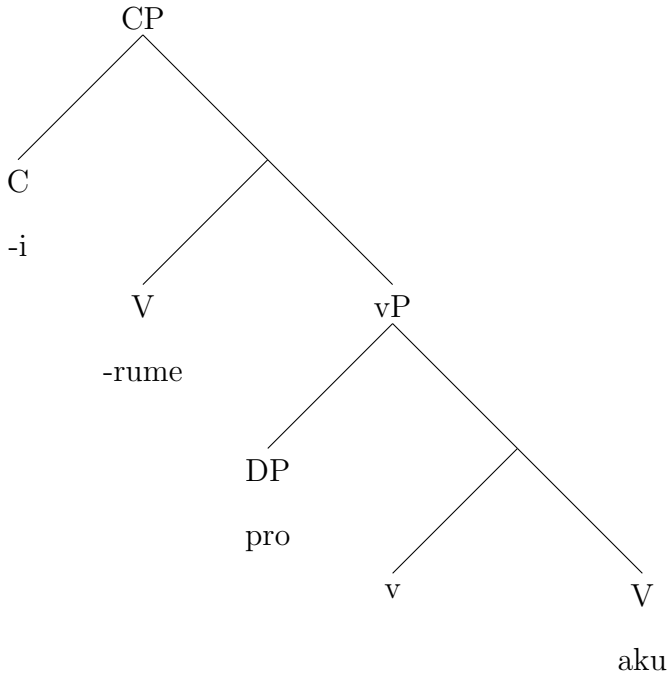
(109) a. *aku-y*
arrive-indic.3
"He arrived." (Salas 2006: 143)

b. *aku-rume-y*
arrive-sudd-indic.3
"He suddenly arrived." (Salas 2006: 143)

Indeed, the facts in Mapudungun appear to be fully consistent with the theory of Rochette (1988) that the complements of eventive predicates must be vPs syntactically, i.e. lacking higher functional clausal structure, as illustrated in (110).[13]

[13]Mark Baker (p.c.) points out that if affixal eventive predicates are lexical, as they presumably are, the fact that their complements must be vPs with no higher functional structure follows from Li's Generalization to the effect that incorporation cannot proceed from a lexical head into a functional head and back into a lexical head (Li 1990). Insofar as there exists an alternative explanation for the apparent facts regarding complements to eventive predicates in Mapudungun, these facts, while consistent with the predictions of the semantic selection theory of Rochette (1988), do not unequivocally support this theory.

(110)



aku-rume-y (he suddenly arrived)

Nevertheless, there is in addition some evidence, albeit scant and perhaps untrustworthy, since apparently only attested in my fieldwork, that at least some aspectual eventive predicates allow clausal complements which are not reduced but rather isomorphic to the complements to propositional predicates. In particular, a few aspectual verbs, including *rupa* (pass), *pücham* (finish), and *af* (stop), were attested with complements with non-finite endings other than bare -*n* or which otherwise suggest a full clausal structure rather than a nominal parse. Note that the matrix verb does not agree with the embedded subject but rather displays default agreement, indicating that, insofar as these constructions are indeed good, these verbs take clauses as their sole argument, instead of entering into a control or raising structure.

(111) *inche* *rupa-y* *zewma* *ni* *chillkatu-fi-el* *chi* *lifru*
1.s pass-indic.3 already 1.s.poss read-obj-inf det book
"I finished reading the book."

(112) *rupa-y* *ñi* *mawün-ün*
pass-indic.3 3.poss rain-inf

"It stopped raining."

(113) *af-i* *ñi* *i-fi-el* *iyagel*
stop-indic.3 1.s.poss eat-obj-inf food
"I already finished eating food."

The theory of Zucchi (1993) is still able to account for such complementation behavior, for, although complements to eventive and propositional predicates are required to be semantically (and hence syntactically) distinct, Zucchi (1993) posits the existence of a null S.O.A. operator which, when it projects, turns an erstwhile event-denoting complement into a propositional entity denoting complement.

The motivation for this null operator had been to explain the synonymy between nominal and *that*-clause complements to the *be informed* class of predicates (recall that for the sensory and *remember* class of predicates, nominal and that clause complements were not synonymous); and in particular to be able to account for narrow scope readings of deverbal Noun and -ing *of* nominal complements such as the reading for the sentence below on which there is no particular mafia boss whose arrival the police are informed of (see Zucchi 1993: 191-203 for more details).

(114) a. The police are informed of the arrival of a mafia boss from Sicily.

b. The police are informed that a mafia boss from Sicily arrived.

With this theoretical machinery in hand, a Zucchi-type analysis of Mapudungun might posit a null S.O.A.-like operator, PROP, in each complement of a propositional predicate, thus making it denote the necessary propositional entity that it requires, whereas the complements to the eventive predicates above, while isomorphic, would lack this null PROP operator and just denote events, as required for these predicates.

Nevertheless, if this null operator PROP were available in English, an analysis along the lines of Zucchi (1993) would lose the explanation of why propositional predicates do not license deverbal Noun and *-ing of* nominal complements in English;

see (58), §2.3. Thus, such a move to maintain the universal semantic selection theory of Zucchi (1993) in light of the Mapudungun data in (111) – (113) comes at a cost.

3.3 Emotive and propositional predicate complements

Heretofore, the complementation facts in Mapudungun have been consistent with the predictions of the, universalist, semantic theories reviewed. Even the apparently problematic data of eventive predicates with CP complements may be accommodated within the theory of Zucchi (1993), though at a cost; and if this data is actually bad, then Mapudungun is simply fully consistent with the theory of Rochette (1988). In this section, however, I review a prediction of these semantic theories which is far less evidently verified in Mapudungun.

As Rochette (1988) and Dixon (2006) formulate semantic theories of complementation, they are expected to have universalist scope and extend to Mapudungun. We have seen in §2.6 that these theories predict that the complements of emotive and propositional predicates must be syntactically distinct. Nevertheless, in Mapudungun the complements to emotive and propositional predicates are isomorphic.

(115) *inché* *ayü-n* *(ñi)* *amu-(y)a-el*
1.s want-indic.1.s 1.s.poss go-fut-inf
"I want to go."

(116) *iñché* *kim-fu-n* *(ñi)* *wew-a-el*
1.s know-FU-indic.1.s 1.s.poss win-fut-inf
"I knew that I was going to win."

(117) *fey* *küre-y* *iñché* *ñi* *amu-a-el*
3 believe-indic.3 1.s 1.s.poss go-fut-inf
"He believes that I will leave."

Thus, to comply with the universalist theories of Rochette and Dixon, Mapudungun would have to distinguish future complements to desiderative and epistemic

predicates underlyingly; even though the two are isomorphic. The situation could be entirely akin to that in Modern Hebrew, where future complements to propositional predicates and complements to manipulative and commissive predicates are isomorphic, but have in fact been analyzed by Landau (2004) to be distinct, with the former being analyzed as future indicatives and the latter as subjunctives.

(118) *sar* *ha-ocar* *he'emin* *še-?(hu)* *yorid* *et* *ha-misim*
minister det-treasury believed that fut.lower.3.m.s acc det-taxes
"The minister of treasury believed that he would lower the taxes." (Landau 2004: 818)

(119) *sar* *ha-ocar* *hivtiax* *še* *yorid* *et* *ha-misim*
minister det-treasury promised that fut.lower.3.m.s acc det-taxes
"The minister of treasury promised that he would lower the taxes." (Landau 2004: 818)

On Landau's analysis, the Hebrew subjunctive would co-opt morphology from the future indicative, but this would merely be an instance of the cross-linguistically common many-to-one mapping between syntax and morphology (Landau 2004: 819). Although not morphologically distinguished, the two complement types are distinguished in Hebrew by various syntactic phenomena. Principal among these is the licensing of a controlled subject. Subjunctive complements allow a controlled (null) subject but future indicatives do not; as evidenced by the fact that a null subject must be interpreted *de se*, and disallows a strict reading under ellipsis. In addition, an overt subject in a subjunctive complement displays obviation effects, but not in an indicative complement. However, the asymmetries between the complements to emotive and propositional predicates presented by Landau for Hebrew have not been replicated in Mapudungun, as will be reviewed in the following two subsections.

3.3.1 Mapudungun as a language without control

In this section I present three arguments that Mapudungun lacks controlled complements. Consequently, it follows that the isomorphic complements to emotive and propositional predicates do not display an asymmetry with respect to whether they may be controlled, as some isomorphic complements in Hebrew do.

Firstly, PRO only supports a sloppy reading under ellipsis (Landau 2004: 823). That is, in a sentence such as (120) PRO in the reconstructed VP of the second conjunct can only refer to its controller in this conjunct, the so-called "sloppy reading", and cannot refer to the controller of PRO in the first conjunct, the so-called "strict reading" (cf. Landau 2000: 35).

(120) The boys like to bathe in the river but their father doesn't like to.

At the same time, we note that the null subject of a future-marked emotive complement in Mapudungun does not require a sloppy reading when elided, but rather allows a strict reading.

(121) *pu* *pichi-ke-che* *ayü-ke-y* *müñetu-me-a-el* *leofu-mo,* *welu*
p little-distr-person want-hab-indic.3 bathe-thith-fut-inf river-P but
tañi *chao* *ayü-ke-la-y*
3.poss father want-hab-neg-indic.3
"The boys like to bathe in the river but their father doesn't like for them to do so."

This contrast with what is observed with controlled infinitival complements in English, where a sloppy reading is required under ellipsis as in (120), suggests that, unlike the English complements, the null subject in Mapudungun emotive complements need not be PRO.

Nevertheless, it is not clear that (121) involves ellipsis. An alternative analysis is that there is Null Complement Anaphora (NCA) in the second conjunct. If so, the

structure would be more parallel with the following English sentence, which Landau (2000: 35) deems to license a strict reading.

(122) Sam enjoyed being a nuisance, but his family hated it. (Landau 2000: 35)

Secondly, then, consider the following. A pronoun inside a clausal complement exhibits a *de se* reading if it refers to the matrix attitude holder and this attitude holder is fully aware of the fact that the referent of the pronoun is themselves (cf. Chierchia 1989: 3). PRO must be interpreted *de se* (Landau 2004: 823). In contrast, the null subject of future-marked complements to emotive predicates does not appear to require a *de se* reading. This can be observed with the felicity of the sentence below in the context indicated, for which the following background is necessary. The chief of a Mapuche community is called a 'longko' and he holds this position for life. Status as a longko is hereditary. Before he dies an existing longko must designate one of his sons as his successor by publicly announcing it during a 'trawün', a gathering. It is generally the eldest son, but not necessarily. Rather it is the one who the longko believes will make the best longko.

Context: suppose that a longko has two sons, Manuel and Juan. The longko is about to announce which will succeed him as longko. Juan wants to be chosen as longko. Manuel wants whoever his father wants to be longko to become the longko. Unbeknownst to Manuel, the longko has chosen Manuel to succeed him as longko.

(123) *Manuel* *ayi* *longko-nge-a-el*
M. want.indic.3 chief-be-fut-inf
"Manuel wants to be longko."

In the context indicated, it is OK to utter this sentence, in contrast to the English gloss which is unacceptable in virtue of the fact that, although the person who Manuel wants to be longko is himself, since this is who his father wants, he is not aware of this identity. Since the PRO subject of the complement in the English gloss requires

this awareness, it is false in this context. Since the Mapudungun sentence is not false, this shows that a null subject in the complement to *ayü* (want) does not require a *de se* reading, hence it need not be PRO.

In addition, on another occasion, the same speaker confirmed this judgement in a slightly different form. On the eve of Barack Obama's reelection to the presidency of the United States, in an amnesia scenario, typical of diagnostics of required *de se* readings, the following sentence was found to be felicitous.[14]

Context: Obama has suffered an accident, he is in a hospital bed watching himself campaign on TV without recognizing himself, but he wants the candidate on TV to win.

(124) *Obama* *ayi* *ñi* *wew-a-el*
O. want.indic.3 3.poss win-fut-inf
"Obama wants to win."

Note that in this scenario, the English sentence in the gloss (with a controlled complement) is bad. Nevertheless, the speaker also spontaneously produced an entire discourse which confirms that the scenario was clearly understood. Even embedded in such a discourse (note the second to last sentence), this sentence with a null subject is judged felicitous.

(125) *Obama* *nie-y* *kiñe* *accidente.* *Hospital-mu-nge-le-y.* *Welu*
O. have-indic.3 one accident hospital-P-be-stat-indic.3 but
fewüla *zewma* *amu-n* *trümü-le-y* *leli-meke-fi-chi*
now already go-inf lack.strength-stat-indic.3 watch-prog-obj-adj
noticia *television-mu.* *Welu* *kishu* *kim-üw-la-y.* *Welu*
news TV-P but alone know-refl-neg-indic.3 but
ayi *ñi* *wew-a-el.* *Fey* *twi-ti* *petu* *leli-meke-fi-[lu?].*
want.indic.3 3.poss win-fut-inf 3 dem-det still watch-prog-obj-prpl
"Obama had an accident. He doesn't recognize himself. But he does want the

[14]Note that *ñi* in (124) is an analytic possessive agreement marker and not a pronoun, as argued in Chapter 2, §5.2.

person that he is seeing to win, and that person is himself." (lit. "Obama had an accident. He is in the hospital. But now he is going without strength watching news on TV. But he doesn't recognize himself. But he wants to win. He is the one he is watching.")

Again, this judgement shows that a null subject in the complement to a desiderative verb need not be PRO, since it does not require a *de se* reading.[15]

Finally, note that it could still be the case that PRO subjects are available in Mapudungun and that the verb *ayü* (want) allows complements with PRO subjects but that its presence is masked by the availability of complements with another null pronominal subject which does not require a *de se* reading, unlike PRO. However, languages with controlled complements normally require the complement to a desiderative verb to have a PRO subject when this subject is (intended to be) co-construed with the matrix experiencer. That is, a complement with a non-PRO subject, overt or null, referring back to the matrix subject is either disallowed or only acceptable in contexts in which there is contrastive focus on this subject (pronoun).

(126) *Obama$_i$ wants him$_i$ to win.

(127) *Obama* *quiere* *que* *gane.*
O. want.indic.pres.3.s that win.subjunc.pres.3.s
"Obama wants him to win.",
*"Obama wants himself to win."

(128) *Obama* *quiere* *que* *él* *gane.*
O. want.indic.pres.3.s that 3.s win.subjunc.pres.3.s
"Obama wants him to win.",
*"Obama wants himself to win."

[15] Nevertheless, it must be noted that the judgement that an infinitival complement to a desiderative requires a *de se* reading is fairly delicate. This consultant is bilingual, a native speaker of both Spanish and Mapudungun, and it was not tested whether they got this judgement for corresponding Spanish examples. As a consequence, it is possible that there is no true asymmetry between Mapudungun and English or Romance here, but merely an informant who does not get the judgement in either Mapudungun or Romance.

(129) *Obama* *quiere* *que* *ÉL* *gane.*
O. want.indic.pres.3.s that 3.s win.subjunc.pres.3.s
"Obama wants himself to win."

Thus, if Mapudungun had PRO in its lexicon, and hence controlled complements available to it, it would not be patterning with such languages. A more satisfactory explanation for the fact that the null subject of a desiderative complement in Mapudungun does not require a *de se* reading and does not require a sloppy reading under ellipsis, then, is that Mapudungun does not have PRO.

The same argument can be made with another class of predicates which normally require a controlled complement in languages which have PRO. While there is likely a semantic requirement that the object of a manipulative verb be involved in the clausal argument, there should be no semantic requirement that it be the subject, yet control seems to behave this way for syntactic reasons. Mapudungun, however, does not. Thus, it is not necessary for the matrix object to corefer with the embedded subject with manipulative verbs.

(130) *Iñché* *werkü-fi-n* *tiyechi* *chillkatu-we* *chillkatu-nge-a-el*
1.s order-obj-indic.1.s that study-instr study-pass-fut-inf
"I ordered them to read the book." (lit. I ordered them that the book be studied)

The same can be seen in the example below, assuming that the 1st person benefactive argument is actually the subject of the embedded clause instead of the 3rd person Agent which it outranks on the topic-animacy hierarchy, as appears to be the case from corresponding matrix clauses, where it controls the person-number agreement[16]; though in this particular sentence, the Poss agreement form which is taken as a diagnostic for subject status is actually ambiguous between a 3rd person and a 1st person gloss.

[16]See the discussion surrounding (30) and (31) in Chapter 1, §3.1

(131) *inché* *werkü-fi-n* *ni* *zewma-lel-a-e-t-ew* *kiñe* *malal*
1.s order-obj-indic.1.s 1.s.poss make-ben-fut-inv-inf-ds one fence
"I ordered them to build me a fence." (lit. I ordered them that I be built a fence (by them))

In languages with control, these complements are always controlled, i.e. PRO is always the subject and there is no other option.

(132) a. I ordered the boys to read the book.

b. *I ordered the boys (for) them to read the book.

c. *I ordered the boys that they should read the book.

(133) a. I ordered them to read the book.

b. *I ordered them the book to be read.

c. *I ordered them that the book should be read.

(134) a. I ordered them to build me a fence.

b. *I ordered them me to be built a fence (by them).

c. *I ordered them that I (should) be built a fence (by them).

Note that (133) and (134), which are ungrammatical in English, are structurally parallel to (130) and (131) above, which are grammatical in Mapudungun. The fact that Mapudungun does not require a PRO subject in these complements suggests even more strongly that PRO is absent in the language; since, if it had PRO, it should be required here.

In summary, we have seen that a null subject in the Mapudungun complement to emotive predicates does not display the hallmarks of control, such as requiring a *de se* interpretation and requiring a sloppy reading under ellipsis. We have also seen that PRO may be absent in Mapudungun in complements where it is otherwise required for languages with PRO. A possible explanation for these facts is that PRO is entirely

absent from the lexicon of Mapudungun, or that Mapudungun does not possess the appropriate functional heads to license PRO. In any case, the asymmetries between the future-marked complements to propositional predicates and the isomorphic complements to emotive predicates in Hebrew, viz. that the latter but not the former license a PRO subject, have not been replicated in Mapudungun.

3.3.2 Obviative readings of subject pronouns

Neither is there an asymmetry to be observed between propositional and emotive complements in Mapudungun with respect to the obviative reading of an overt pronoun subject. For both classes of predicates, the salient reading of an overt pronoun is obviative.

(135) *fey* *ayü-y* *fey* *ñi* *lef-a-el*
3 want-indic.3 3 3.poss run-fut-inf
"He$_i$ wants him$_j$ to run."

(136) *Manuel* *küre-y* *fey* *ñi* *wew-ün*
M. believe-indic.3 3 3.poss win-inf
"Manuel believes that that one won."

Nevertheless, a co-construal reading does appear to be possible, even if highly marked or marginal. Again, however, both classes of predicates display similar behavior in this respect.

(137) *ka* *fey* *ayü-y* *fey* *ñi* *lef-a-el*
also 3 want-indic.3 3 3.poss run-fut-inf
"He also wants himself to run."

(138) *Manuel* *ka* *kim-fu-i* *fey* *ni* *wew-a-fu-el*
M. also know-FU-indic.3 3 3.poss win-fut-FU-inf
"Manuel$_i$ also knew that he$_i$ was going to win."

Nonetheless, there is an asymmetry between propositional and emotive complements in Mapudungun as regards the obviative interpretation of null subjects. While

ayü (want) appears to disallow an obviative interpretation with a null subject, *kim* (know) readily allows for one. Both allow a same subject construal.

(139) *fey* *ayü-y* *amu-a-el*
3 want-indic.3 go-fut-inf
"He wants to go.",
*"He wants him/someone to go."

(140) *iñche* *kim-ün* *ñi* *amu-n*
1.s know-indic.1.s 3.poss go-inf
"I know that he went.", "I know where I'm going."

(141) *fey* *kim-ürk-y* *ñi* *amu-n*
3 know-rep-indic.3 3.poss go-inf
"He_i learned that $he_{i/j}$ went."

Thus, a null subject in the complement of an emotive must be coconstrued with a matrix argument, i.e. must be controlled, which is a hallmark of PRO, but does not display the other hallmarks of PRO of *de se* reading and lack of strict reading under ellipsis. Nevertheless, there does seem to be a subtle asymmetry between propositional and emotive complements here; even if it is not the same one which is observed in Modern Hebrew, viz. allowing a PRO subject.

3.3.3 RNR/NCC

Given that the future-marked complements to emotive predicates in Mapudungun do not display the differentiating characteristics from the isomorphic future-marked complements to propositional predicates that the corresponding isomorphic pair of complements in Modern Hebrew do, but do appear to display an asymmetry with respect to the interpretation of a null subject pronoun, reviewed directly above, the question persists of whether they are truly different or in fact identical after all. Is there any other evidence that the complements are distinct?

Sentences in which two predicates are conjoined, only one complement clause is overt, and yet both predicates are interpreted as taking the complement clause as argument are acceptable in Mapudungun, much as the accompanying translations are in English. The following instances use the same predicate in each conjunct.

(142) *Juan* *rakizuam-i* *welu* *Maria* *rakizuam-la-y* *ñi* *amu-a-el*
J. think-indic.3 but M. think-neg-indic.3 3.poss go-fut-inf
Pedro
P.
"Juan thinks, but María doesn't think that Pedro will leave."

(143) *Juan* *ayü-y* *welu* *Maria* *ayü-la-y* *ñi* *amu-a-el* *Pedro*
J. want-indic.3 but M. want-neg-indic.3 3.poss go-fut-inf P.
"Juan wants, but María doesn't want Pedro to leave."

The construction remains fine if different predicates are used.

(144) *Juan* *kim-i* *welu* *Maria* *rakizuam-la-y* *ñi* *amu-a-el*
J. know-indic.3 but M. think-neg-indic.3 3.poss go-fut-inf
Pedro
P.
"Juan knows, but María doesn't think that Pedro will leave."

Yet when the two predicates which occur in this construction are *rakizuam* (think) and *ayü* (want), this construction becomes impossible, despite the fact that the complements for each look the same, as seen in (142) and (143).

(145) **Juan* *rakizuam-(f)i* *welu* *Maria* *ayü-la-y* *ñi* *amu-a-el*
J. think-(obj.)indic.3 but M. want-neg-indic.3 3.poss go-fut-inf
Pedro
P.
"Juan thinks that Pedro will leave but María doesn't want Pedro to leave."

(146) **Juan* *ayü-y* *welu* *Maria* *rakizuam-la-y* *ñi* *amu-a-el*
J. want-indic.3 but M. think-neg-indic.3 3.poss go-fut-inf
Pedro
P.
"Juan wants Pedro to leave but María doesn't think that Pedro will leave."

Since using different predicates as V1 and V2 does not affect the acceptability of this construction, as seen in (144) with two propositional predicates, the failure of the sentences above must stem from the conjunction of a propositional and an emotive complement. We further conclude that the complements of these predicates must differ in some way. Just in which way the complements differ, however, is not clear.

The English translations accompanying the Mapudungun sentences in (142) - (144) have been analyzed as right node raising (RNR) constructions. Analyses of RNR typically require that the shared complement be identical (Sabbagh 2007: 351). Hence, it may be that the future-marked complements to propositional and emotive predicates, despite appearances, do differ syntactically; for instance, with the complement of propositional predicates headed by a null $\varnothing_{\text{realis}}$ complementizer while the complement of emotive complements are headed by a null $\varnothing_{\text{irrealis}}$ complementizer.

Alternatively, however, the Mapudungun sentences above may be analyzed as involving null complement cataphora (NCC), instead of RNR. On this analysis, the complements to propositional and emotive predicates may not differ syntactically but only semantically. In particular, it is possible that complement clauses to propositional and emotive predicates create different sorts of discourse referents and that it is impossible for a predicate from one class to pick up as argument a discourse referent created by the complement clause of the other. For instance, where p is the discourse referent introduced by the propositional complement, this fact may induce a constraint in the semantic representation to the effect that p is the prejacent (i.e. propositional argument) of a realis modality. Suppose now that this constraint conflicts with one which states that p is the prejacent of an irrealis modality. This will then prevent the null complement cataphor of an irrealis modality like *ayü* (want) from picking up the discourse referent p. See §4.4 and §5.2.4 below for more details on this approach.

In fact, we can replicate the results above with an overt anaphor. That is, there is

an asymmetry between an overt anaphor argument of *rüfdungunge* (be true (word)) picking up complement of *rakizuam* (think) vs. picking up complement of *ayü* (want); though in either case it can pick up entire matrix+embedded sentence.

(147) *Juan* *rakizuam-i* *ñi* *amu-a-el* *Pedro,* *rüf-dungu-nge-y* *tufa*
J. think-indic.3 3.poss go-fut-inf P. true-word-be-indic.3 dem
"Juan thinks that Pedro will leave and it is true that Pedro will leave.",
"Juan thinks that Pedro will leave and it is true that Juan thinks this."

(148) *Juan* *ayü-y* *ñi* *amu-a-el* *Pedro,* *rüf-dungu-nge-y* *tufa*
J. want-indic.3 3.poss go-fut-inf P. true-word-be-indic.3 dem
??? "Juan wants Pedro to leave and it is true that Pedro will leave.",
"Juan wants Pedro to leave and it is true that Juan wants this."

The failure of the relevant anaphora in (148) indicates that it is anaphora to the complement of a different predicate class which is bad; in this case, anaphora to the (discourse referent created by the) complement to an emotive predicate by the complement of a propositional predicate. Since a constraint blocking anaphora to complements across emotive and propositional predicate classes is independently needed to account for (148), the same principle can be extended to account for the failure of (145) and (146), once sentences such as these are analyzed as involving, not RNR, but rather NCC.

Note that on such an analysis, the two complements do not differ syntactically but do differ semantically, in context. It is conceivable that the complements to the two predicate classes are identical, with a unified semantics, respecting the principle of compositionality, but that different discourse referents are created, in line with the distinct requirements of the predicate that the clause is complement to. That is, what is at issue with anaphora may not be the semantics of the complement itself but rather the specific (type of) antecedent that is created in context; the semantics of the complement may be broader but the other possible specifications of it may not made be available in the context for the anaphor (or cataphor) to pick up as

antecedent. The appropriate discourse referent is not created, and this is what is required for this anaphora/cataphora to succeed. Nevertheless, the clause involved may serve as a good complement to either predicate. The difference would not reside in the syntax of the complements to these distinct predicate classes but merely in how discourse referents are created from them.

3.3.4 Object agreement and Null Complement Anaphora

Finally, I have shown that *-fi* object agreement is impossible with an overt complement for both emotive and propositional predicates. Nevertheless, for at least one pair of speakers, interviewed together, *-fi* object agreement may license a null pronoun that refers to a propositional complement antecedent, but not one which refers to an emotive complement antecedent.

(149) a. - *kim-imi* *wew-ün* *Katólica?*
- know-indic.2.s win-inf C.
"Do you know that Católica won?"

b. - *May,* *kim-fi-n.*
- yes know-obj-indic.1.s
"Yes, I know."

(150) a. - *Ayimi* *wew-a-el?*
- want.indic.2.s win-fut-inf
"Do you want to win?"

b. - *May,* *ayi-n.*
- yes want-indic.1.s
"Yes, I want to."

(151) a. - *Ayimi* *wew-a-el?*
- want.indic.2.s win-fut-inf
"Do you want to win?"

b. - *#May,* *ayi-fi-n.*
- yes want-obj-indic.1.s
"Yes, I want him.", *"Yes, I want to."

Nevertheless, two other speakers (from a different dialect zone), and working independently, offer distinct judgements on the same form in a different context. In constructions with two identical predicates and a single overt complement clause which the two predicates are interpreted as sharing as argument, the predicate in the conjunct involving ellipsis or null complement anaphora licenses overt object agreement *-fi*. This suggests that, for these speakers at least, object agreement *-fi* may reference the clausal argument of *ayü* (want), much as it can with propositional predicates.

(152) *inché* *ayü-n* *amu-a-el* *ka* *fey* *ayü-fi*
1.s want-indic.1.s go-fut-inf and 3 want-indic.3
"I want to go and he also wants to go."

Consequently, the judgements reported by the first pair of speakers may simply be due to the greater saliency of the reading where object *-fi* references a human antecedent rather than a clausal one in a sentence with no overt complement. It may be harder to get the second reading with an emotive predicate than with a propositional predicate, but both readings may be available to both; not evincing an asymmetry.

Even if this asymmetry is real, it is conceivable that it too is attributable to discourse factors and not to a difference in the syntactic structure of the isomorphic future-marked complements to propositional and emotive predicates. Here again, properties of the discourse referent created by the complement to an emotive predicate may differ from those of the discourse referent created by the complement to a propositional predicate such that object agreement *-fi*, or the null pronoun which it licenses, may refer to one but not the other. That is, here again, the difference may reside in a module different than syntax.

3.3.5 Summary

In this section, §3.3, three potential asymmetries between propositional and emotive complements have been identified: whether a null subject must be coconstrued with a matrix argument; whether the overt complement of an emotive or propositional predicate may serve as antecedent; and whether overt object agreement -*fi* may reference a clausal argument when the complement is null.

It is possible that these asymmetries point to a distinct syntactic structure underlying the isomorphic future-marked complements to propositional and emotive predicates. Nevertheless, in each of the latter two cases, viable analyses exist on which they are differentiated later than syntax, in the semantic representation of discourse. Hence, there is still no conclusive evidence that these complements must be distinct syntactically. This is contrary to the predictions of the, universalist, semantic complementation theories of Rochette (1988) and Dixon (2006).

On the other hand, the theory of Portner (1992) does not require emotive and propositional complements to be distinct. Now, the complements to propositional and emotive predicates, such as *believe* and *want*, are (morphologically and) syntactically distinct in English, and Portner assigns a different semantic type to each to account for their different distributions.

(153) a. I want to go.

b. *I want that I will go.

(154) a. *I believe to go.

b. I believe that I will go.

Nevertheless, Portner does not hold that the complements to *want* and *believe* necessarily differ semantically. On Portner's analysis, the complements to propositional and emotive predicates happen to be semantically distinct in English, but,

unlike for the theories of Rochette (1988) and Dixon (2006), it does not follow from his semantic theory of complementation that they must be. In fact, Portner (1992: 199-200) explicitly predicts that a language with a true future will allow a true future complement to both verbs. English *will*, however, is a relative future.

An analysis of Mapudungun consistent with Portner's theory, then, is that Mapudungun -*a* is a true future and the complements to propositional and emotive predicates are not merely isomorphic but actually identical syntactically.

In light of the isomorphy between the complements to emotive and propositional predicates and due to the paucity and equivocal nature of the evidence that underlyingly distinct, I develop a Portner-style analysis of clausal complementation in Mapudungun on which the complements to emotive and propositional predicates in Mapudungun are underlyingly identical.

4 A Coherence Licensing Condition Account of Clausal Complementation in Mapudungun

4.1 The selection-for-individual-roles theory of clausal complementation

Following the approach of Portner (1992), I adopt a coherence licensing condition to the effect that a predicate licenses a clause as complement as long as the lexical requirements of the predicate cohere with the inherent presuppositions of the clause. Basically, free combination of predicates and complements is allowed, up to logical inconsistency between the semantics of the predicate and the semantics of the complement.

Furthermore, while predicates may require that their clausal complements satisfy certain properties, as specified in a selection rule, I propose that the predicates them-

selves impart all needed semantic specification, via the thematic role assigned to their complement.

Dowty (1989) distinguishes between individual thematic roles, like the hitter role, killer role, and builder role, and thematic role types, such as Agent, which are classes of individual roles sharing certain entailments (cf. also Dowty 1991: 550). The Theme role has proven difficult to characterize, the designated Theme argument of different predicates not sharing many properties in common. I hold that 'Theme' is just a cover term for the class of individual roles assigned by predicates to their internal argument. Other traditional roles may be similar abstractions, or else they may be the individual roles assigned by particular heads such as: v^*, v_{exp}, v_{appl} (for Agent, Experiencer, Beneficiary/Recipient, respectively).

I hold that the thematic role assigned by a predicate to a complement clause is a highly specified individual thematic role, characterizing the semantic content of this argument relative to the matrix eventuality in a precise manner. I hold that semantic selection rules are just restatements of portions of the argument structure of predicates in terms of individual thematic roles. For instance, to say that *remember* selects for remembrances amounts to saying that *remember* assigns the individual thematic role of remembrance to its clausal complement.

As all specification that a predicate requires its complement to satisfy is imparted to the complement by the predicate itself, the complement is not required to construct or deliver it, but only to be compatible with it. The burden on the complement clause to produce a certain semantics which the predicate selects for is thus reduced. In principle, all complement clauses in a language may be of identical syntactic type and have a common, underspecified, semantics, as appears to be the case in Mapudungun – with eventive, emotive, and propositional predicates each licensing an identical clause as complement, as argued in §3.

The proposal above can be summarized in terms of feature transmission in the

following way.

A predicate selects for features A, B, C, ... (These features may or may not be semantic).

This predicate will transmit to its complement the features A, B, C, ... that it selects for. (In the case of semantic features, this is accomplished via thematic role assignment.)

The complementation will be licensed if the inherent feature specification of the complement is compatible with the features transmitted, and thus added, to it. (In the case where these are semantic features, compatibility reduces to logical consistency.)

Note that it is not required that a complement already possess the features A, B, C, ... selected for by its governing predicate, but merely that it cohere with them. (In the case of semantic features, it is not required that the complement already satisfy the properties selected for, as in satisfaction licensing condition theories[17], but merely that it be consistent with them, as in the coherence licensing condition theory of Portner 1992.)

Within the framework of this theory of complementation, I will proceed to account for the complementation patterns observed in Mapudungun under the assumption that the -*a* marked complements to propositional predicates like *kim* (know) are not merely isomorphic to the -*a* marked complements to desiderative predicates like *ayü* (want) but actually syntactically identical.

4.2 Complementation in Mapudungun

Appendix A examines data pertinent to the question of which predicates allow which complement clause types in Mapudungun, focusing on the distinction between pred-

[17] See the discussion in §2.5.

icates which require -*a* in their complement clauses, either allow -*a* to be present or absent, and ban -*a*.

Table 4.4 summarizes the classes of predicates whose complements require -*a*, allow -*a* and its absence (or null counterpart), and appear to ban -*a*, respectively.

I refer to the subordinate clauses associated with each of these predicates as complements although it may sometimes be the case that the clause is actually an adjunct. The reason I do so is that the clause seems to belong to the argument structure of the predicate and also that, in languages such as English and Romance, the clause with the same semantic role for corresponding predicates is often a complement clause.

4.3 Unified lexical semantic characterizations of predicate classes and consequent semantic constraints on their clausal arguments

In this section, for each class of predicates defined in Table 4.4 with respect to its licensing of -*a*, I offer a unified lexical semantic characterization, posit a natural language principle regarding this semantics, and derive from this principle the temporal properties of the predicates adhering to this semantics.

4.3.1 Predicates whose complements require -*a*

Aristotelian metaphysics holds that each entity has multiple different sorts of causes. I propose that the class of predicates which require -*a* in their complement correspond to those which describe states or activities which serve as causes for the eventuality described in their complement clause, in one or another Aristotelian sense of cause: material: that out of which something is made; formal: form, that in virtue of which something is what it is; efficient: source of impetus for change; final: *τέλος* (end), that for the purpose of which something is done (cf. Falcon 2014).

Table 4.4: Lexical semantic classes of predicates categorized with respect to whether they allow *-a* and its absence in their clausal complement in Mapudungun

Licensing of *-a* in complement	Predicate class	Exemplars
Require *-a*	desiderative	*ayü* (want, love), *zuam* (want, desire), *pi* (want)
	mandative	*kimeltu* (order), *werkü* (send), *manda˜manta* (send)
	obligation	*müle* (be)
	manipulative	*matuka* (hurry, make)
	recommend	*ngelamtu* (advise)
	commissive	*ameltu* (threaten), *elma* (have bad intention, threaten)
	permission	*elküno* (let), *elu* (give), *elu newen* (give permission), *elu permiso* (give permission), *rul permiso* (give permission), *kimeltu* (teach)
	decision	*zulli* (choose)
	preparation	*pepikaw* (ready oneself)
	anticipation	*üngüm* (wait)
	conative	*newentu* (make effort), *yafülw* (make effort)
	realized ability /due to memory	*upe* (forget), *ngoyma* (forget)
	/assistance	*kellu* (help)
	time-span	*kiñe-antü* (one day), *epu-antü* (two day), *kiñe-tripantu* (one year)
	evaluative-requirement	*fali* (cost, worth), *kuzao* (work, tough), *chofu* ((too) lazy)
	verba timendi	*llüka* (fear), *pellke* (worry, be afraid)
Allow *-a* to be present or not	liking	*ayü-ke* (like), *kümentu* (find good, like), *poye* (like, love), *üze* (hate), *wim* (become accustomed to, become used to)
	emotion-inducing	*küñiwtuku* (worry)
	emotional response	*yewentu* (be ashamed), *mañumü* (be grateful), *ayüw* (be happy), *mashiaw* (be sick/tired of)
	evaluative-deontic	*küme* (good), *weza* (bad)
	verba dicendi	*pi* (say), *feypi* (tell), *ramtu* (ask), *pezi* (ask)
	manner-of-speech	*wirar* (shout)
	epistemic	*kim* (know)
	memory	*upe* (forget), *ngoyma* (forget), *akorza* (remember)
	doxastic	*küre* (believe), *rakizuam* (think)
	judgement-appearance	(*n*)*günew* (believe), *troki* (opine)
	dream	*pewma* (dream)
Appear to ban *-a*	truth	*ruf-nge* (be true)
	aspectual	*tuw* (start), *af* (stop), *afün˜apüm* (stop, bring to end), *pücham* (finish), *zewma* (make, finish), *rupa* (pass)
	perception	*pe* (see), *allkü* (hear)

Ability constitutes a precondition for any event to take place; for if an event is impossible, it cannot be realized. Hence the ability or possibility of an event is a cause of that event, in this sense, and may also constitute a formal cause in an Aristotelian sense.

Obligations serve as the motivation, driving force, or impetus for the realization of an event. In this way, they are final causes in the Aristotelian sense. Satisfying a demand serves as the impetus for the action, which itself becomes an intermediate Goal. The obligation nevertheless exists in time prior to the realization of the intermediate Goal, and serves as its final cause.

If an ability exists, it is because someone or some conditions permit it. If an obligation exists, it is because someone or some conditions require it. Permissions and orders, then, constitute the transmission of abilities and obligations.

A petition is a request for permission and therefore shares an object with permissions. A response to a request may be a permission and hence shares an object with permissions.

Promises are another type of response to a request. Promises also self-impose an obligation, and consequently lead to an expectation. Threats are particular types of promises.

Desires are formal causes of both transmitted abilities and obligations; because they give shape to and define the eventuality sought. Desires are also efficient causes of the acts of petitioning and ordering.

Recommendations differ from orders only in lacking the position of authority necessary to impose an obligation, but nevertheless signal a course of action which is deemed desirable (for someone or some end), which may or may not be binding on the subject. Nevertheless, apart from these accidents, in the Aristotelian sense, they are akin to desires and orders.

Examining the realization of an event by some agent, certain moments can be

distinguished. First there must exist an ability. Secondly, there must also exist a desire on the part of the agent. These are both more primary causes of the action, formal and, in the case of desires, also efficient. As for the more proximate causes, first there must be a decision, which is akin to a desire but with specific resolve; it is also, thence, a formal and efficient cause. Then there follows any necessary preparation, a removal of all impediments to action; this constitutes a material cause because the elements necessary to expedite the realization of an eventuality are put in order. The result of preparation is a state of anticipation. Finally, there is an actual attempt of the eventuality, which culminates in the realization of the ability. These are also efficient causes. In effect, desires, decisions, attempts and ability-realizations all serve as a more and more proximate cause of an event, and may be deemed initiations.

Anticipation psychological states are not unlike desires. Fears, for instances, can constitute the contrary attitude of a desire. Both attitudes share the same type of object. Similarly, states of anticipation of external parties are not unlike those of an agent performing an action insofar as they share the same object. That is, states such as waiting or expecting are neutral in terms of desire but denote attitudes towards similar objects and can be located on a scale between fear and wanting.

Each event requires a span of time to develop and occur in. Consequently time spans constitute a material cause of an eventuality. They might also be considered preconditions. Time span predicates are certainly goal-oriented, as evident in paraphrases with explicit final adjuncts, as might be the actual constructions in Mapudungun; e.g. in order to cross to Argentina, you need two days.

In a similar manner, requirements for an event to take place are clearly preconditions. If effort is needed to realize an event, that effort is a material cause of the event. Other requirements may be material or efficient causes.

In summary, desires, abilities, obligations, permissions, orders, recommendations, petitions, responses to requests, promises, decisions, preparations, anticipations, at-

tempts, ability-realizations, and time spans all serve as causes, in one sense or another, for the events for which they fill these roles. They constitute states or activities which are oriented towards an eventuality for which they serve as cause. Nonetheless, note that these causes, by themselves, may be neither sufficient nor necessary.

Consequently, the classes of desiderative, ability, obligation, permission, directive (i.e. mandative, manipulative, recommendation), petition, response-to-request, commissive, decision, preparation, anticipation, conative, realized ability, time span, and requirement evaluative predicates can be characterized lexical-semantically as causes.

It should be noted that a similar class of predicates, viz. those selecting for subjunctive mood in Romance, have also been characterized as expressing the notion of CAUSE in Quer (1997), working not within Aristotelian metaphysics but rather the taxonomy of conceptual structures of Jackendoff (1990, 1993).[18]

I posit a principle operative in natural language to the effect that causes must temporally precede their effects. It follows that the events for which these activities and states serve as cause temporally follows these eventualities themselves. These events themselves are thus necessarily in the relative future of the cause eventuality.

Insofar as cause eventualities are characterized as such by the events towards which they are oriented and serve as cause, it can also be said of these eventualities that they are future-oriented or forward-looking. Consequently, I hold that the thematic role imparted by forward-looking predicates requires their complements to be interpreted as relative future.

[18]See Table 4.5 in §5.1 for a list of predicate classes selecting for subjunctive in Romance, and see Table 4.4 above for comparison with the classes of predicates requiring *-a* in their complement in Mapudungun.

4.3.2 Predicates whose complements may either contain *-a* or not

Predicates whose complements may either contain *-a* or not correspond to those which express attitudes and also communication of attitudes.

Epistemic states consist in the orientation of a mind to an eventuality as imagined by it, a way the world could be. Thus, epistemic states constitute the prototypical propositional attitudes.

By means of speech, a speaker can communicate his knowledge, belief, ignorance (when asking a question), but also emotions and desires. Thus, speech shares the same range of objects as these attitudes.

Dream states are akin to sensory states except that the eventuality experienced is not real. As a consequence, the eventualities which serve as their object are independent of the agent and can consist in any way the world could be, corresponding to the objects of epistemic states.

Memory is a repository of epistemic attitudes. Remembering and forgetting constitute changes of state from one epistemic attitude to its contrary; for instance, of not knowing, or not being aware, to knowing, or vice-versa. These acts thus share the same object as epistemic attitudes.

Evaluations constitute judgements, just like doxastic epistemic attitudes, whether the perspective or judge is indicated or not.

The diverse liking attitudes are also judgements or evaluations regarding personal taste.

Psychological states consisting in emotional responses are akin to judgements of personal taste as well; for instance, classifying eventualities as ones which one is happy about (cf. likes) or regrets or is sorry for (cf. doesn't like).

I posit a principle operative in natural language to the effect that attitudes are completely independent of the eventualities which serve as their objects. Consequently, the eventualities towards which an attitude is oriented are temporally inde-

pendent of it and may stand in any relative temporal relation to it: past, simultaneous, or future.

Attitude predicates include verbs of saying and epistemic, memory, judging/appearance, dream, judgement evaluative, taste/liking, and emotional reaction psychological predicates. The thematic role imparted by these predicates imposes no temporal requirement on its eventuality argument.

4.3.3 Predicates whose complements may not contain -*a*

The commencement, continuation, and termination of an event are components of that event itself and hence non-distinct from it; at least as regards the relevant portions.

The sensation of an event is intimately correlated with that event; one can only sense an event as it happens. A sensation occurs alongside the perceived event, and thus forms part of a single, contiguous supersituation with its object; at least for the portion of the event which is sensed.

By virtue of their overlap and necessary co-occurrence with the eventualities towards which they are oriented, then, aspectual and sensory events also share a temporal duration with these eventualities; that is, they are simultaneous with them.

Predicates which ban -*a* thus include aspectual and sensory predicates and thus correspond to eventualities which are simultaneous with the events towards which they are oriented. As a consequence, the complements to these predicates may not be temporally independent but rather are temporally dependent: they can neither be back- nor forward-shifted but rather must be simultaneous.

The truth predicate *ruf-nge* (be true) does not appear to tolerate -*a* in its complement. It may be the case that it enforces reference to a realis eventuality. Nevertheless, we would expect a truth predicate to pattern with epistemic and other judgement evaluative predicates in their complementation, and license a realis interpretation of -

a in their complement. I therefore take the observation that the predicate *ruf-nge* (be true) does not tolerate *-a* in its complement to be either an anomaly of Mapudungun, or simply an incorrect assessment of the facts in Mapudungun.

4.4 Implementation of account of Mapudungun complementation facts

4.4.1 Causes

I have argued for the following semantic selection principle: cause predicates require their complements to be interpreted as relative future. In particular, futurity is part of the information included in the thematic role assigned by a cause predicate to its clausal complement.

Let Θ be the individual thematic role assigned by a given cause predicate to its complement. Then, in the logical semantic representation of a matrix sentence with this causative predicate, an proposition will be characterized as the Theme of a matrix eventuality e by a conjunct.

(155) Θ(e, p) (e.g. p is the Theme of e)

For all individual thematic roles of cause predicates, Θ, I assume that the following holds; where ... p ... represents the characterizations of the propositional argument from the thematic role beyond the futurity of the embedded eventuality, including that it is the object of a bouletic modality.

(156) Θ(e, p) $\rightarrow$ ... p ... $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec$ τ(e')

This does not mean that the complements to cause predicates are necessarily marked as future, but only that they may not be marked in a manner incompatible with future, such as with non-future marking.

So, in a manner akin to modal concord, the statements of futurity of the thematic role imparted by the causal predicate and an inherent specification of the embedded clause do not take scope one over another. Rather, they cohere, when the complement already includes information of futurity.

For instance, the semantic representation of the embedded clause in (157) may be (158), on the added assumption that -*a* is a future marker (see Chapter 3), which in turn yields the semantic representation in (159) for the entire sentence.

(157) *Ayin* *amu-a-el*
want.indic.1.s go-fut-inf
"I want to go."

(158) λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

(159) want(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

Given the assumption in (156), (159) implies (160).

(160) want(e) $\wedge$ ... p ... $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

In turn, (160) simplifies to the following, where it is clear that the statements of futurity are redundant and thus simply, and innocuously, cohere.

(161) want(e) $\wedge$ ... p ... $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

It is not the case that all cause predicates in Mapudungun require -*a* in their complement. The ability, permission and desiderative predicates *kim* (know how) *kalli* (let), *küpa* (wish) do not require, or even allow, -*a* in their complement, but rather take restructuring complements. Rather, the class of cause predicates in Mapudungun only requires -*a* in their complement, when they take a full clause as complement.

On the theory proposed here, when a predicate occurs with a reduced complement, futurity is imparted as a truly new specification. Lacking a projection of T, reduced

complements lack all tense specification. Thus, the semantic representation of the reduced complement in (162) may be (163), and that of the whole sentence (164).

(162) *Küpá-amu-n*
want-go-indic.1.s
"I want to go."

(163) λe'. go(e')

(164) want(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. go(e')

By hypothesis, (164) implies (165), which in turn implies, directly, as it were, (166), which is equivalent to (161).

(165) want(e) $\wedge$ ... p ... $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ p $\subseteq$ λe'. go(e')

(166) want(e) $\wedge$ ... p ... $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

Thus, a thematic role contributing futurity merely coheres with the existing futurity statement of embedded *-a* clauses, but adds futurity to reduced complements.[19]

Predicates impart all the needed semantics; complements just cohere. This posited principle is illustrated most dramatically with restructuring complements which obviate the requirement of hosting a future modal.

I assume that c-selection is also at work. While there are semantic preconditions to restructuring, it is generally unpredictable which particular predicates (among those satisfying the preconditions) will admit restructuring complements in a given language (Landau 2000: 81-2). Hence, I propose that the ones that do are merely marked as c-selecting reduced complements in an idiosyncratic manner.

[19] In addition, the thematic roles of desiderative predicates add irreality to their complements in Mapudungun, since this is not an inherent characterization of *-a* clauses in Mapudungun; though it would merely cohere with the inherent specification of *for-to* and subjunctive clauses in English and Romance, respectively. See §5.2.4.

Finally, transmission of a causal thematic role may conflict with the inherent specification of a complement, and result in ungrammaticality. I propose that when the future marker -*a* is absent in a full clause (but not in a restructuring clause) the clause is interpreted as non-future, in virtue of a null non-future morpheme -$\varnothing$ with which -*a* covaries. In this way do I derive the observation that cause predicates in Mapudungun require -*a* when they take a full clausal complement. Thus, the semantic representation of the embedded clause in (167) may be (168), which yields (169) as the semantic representation of the entire sentence, which by hypothesis implies (170).

(167) **Ayin* *amu-n*
want-indic.1.s go-inf
"I want that I went."

(168) λe'. τ(e') $<$ τ(e) $\wedge$ go(e')

(169) want(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. τ(e') $<$ τ(e) $\wedge$ go(e')

(170) want(e) $\wedge$ ... p ... $\wedge$ p $\subseteq$ λe'. τ(e) $<$ τ(e') $\wedge$ p $\subseteq$ λe'. τ(e') $<$ τ(e) $\wedge$ go(e')

The semantic representation in (170), however, induces a contradiction (assuming that the temporal ordering relation, $<$, is antisymmetric). Consequently, the coherence licensing condition rules out this clause as a complement for *ayü* (want).

In summary, when a cause predicate takes a full clausal complement, this complement must bear -*a*. It is clear that the necessary futurity of its complement, required by the semantic selection principle formulated for cause predicates, may be contributed by this embedded -*a*. Nevertheless, the complements of restructuring predicates do not require, or even allow, -*a* and yet are still interpreted as future.

I propose that in both cases, the necessary futurity of the eventuality expressed in the complement clause is contributed by the matrix predicate; in particular, by the thematic role that it assigns to its complement. This same future thematic role

is assigned to its complement whether it is restructuring, and lacks -*a*, or not, and has -*a*.

When a predicate from this class takes a full clausal complement, this complement bears -*a*, but it is not -*a* itself which contributes the needed futurity. Rather, futurity is already imparted from the thematic role assigned to the complement clause. Nevertheless, the futurity imparted from the presence of the embedded -*a* coheres with the futurity predicated of the object eventuality by the thematic role, and the presence of -*a* is in fact semantically required because its absence, in the form of a null -$\varnothing$ non-future marker, would imply the contradictory claim that the eventuality is not relative future, contradicting the content of the thematic role.

4.4.2 Attitudes

I have proposed the semantic selection principle that the thematic role imparted by attitude predicates imposes no temporal requirement on its eventuality argument. This can be formalized in the following way; where Θ now ranges over the individual thematic roles assigned by an attitude predicate.

(171) a. $\Theta(e, p) \rightarrow\!\!\!\!\!\rightarrow p \subseteq \lambda e'.\ \tau(e) < \tau(e')$

b. $\Theta(e, p) \rightarrow\!\!\!\!\!\rightarrow p \subseteq \lambda e'.\ \tau(e') < \tau(e)$

c. $\Theta(e, p) \rightarrow\!\!\!\!\!\rightarrow p \subseteq \lambda e'.\ \tau(e) \subseteq \tau(e')$

Consequently, these predicates will be compatible with complements with -*a*, which will be interpreted as future, or with a future modality more generally, in virtue of this embedded -*a*, and with complements without -*a*, which will be interpreted as non-future in virtue of this lack, via a null -$\varnothing$ non-future marker.

(172) a. *fey* *küre-y* *iñché* *ñi* *amu-n*
3 believe-indic.3 1.s 1.s.poss go-inf
"He thinks that I went."

b. *fey* *küre-y* *iñché* *ñi* *amu-a-el*
3 believe-indic.3 1.s 1.s.poss go-fut-inf
"He thinks that I will go."

As before, let (173) be the semantic representation of the complement of (172a); cf. (168) above. Then the semantic representation of the entire sentence is as in (174).

(173) λe'. τ(e') $\prec$ τ(e) $\wedge$ go(e') $\wedge$ Agent(e', spkr)

(174) think(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. τ(e') $\prec$ τ(e) $\wedge$ go(e') $\wedge$ Agent(e', spkr)

By hypothesis, viz. (171), this statement is logically consistent. Hence, by the coherence licensing condition adopted, this clause without *-a* is licensed as a complement to *küre* (believe).

Similarly, let (175) be the semantic representation of the complement of (172b); cf. (158) above. Then the semantic representation of the entire sentence is as in (176).

(175) λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e') $\wedge$ Agent(e', spkr)

(176) think(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ go(e') $\wedge$ Agent(e', spkr)

By hypothesis (171) again, this statement is logically consistent. Hence, by the coherence licensing condition adopted, this clause with *-a* is also licensed as a complement to *küre* (believe).

4.4.3 Accompanying eventualities

I have proposed a semantic selection principle to the effect that aspectual and perception predicates require their complements to be interpreted as simultaneous. This may be formalized as follows; where Θ now ranges over the individual thematic roles assigned by an accompanying eventuality predicate.

(177) $\Theta(e, p) \rightarrow p \subseteq \lambda e'.\ \tau(e) \subseteq \tau(e')$

As noted in §3.2, eventive predicates are generally affixal and take reduced complements.

(178) *aku-rume-y*
arrive-sudd-indic.3
"He suddenly arrived." (Salas 2006: 143)

The simultaneous temporal interpretation of these complements, for these predicates, is derived in the following way. Let (179) be the semantic representation of the complement. Then (180) is the semantic representation of the whole sentence. By the hypothesis in (177), this implies (181).

(179) $\lambda e'.$ arrive(e')

(180) sudden(e) $\wedge$ $\Theta(e, p)$ $\wedge$ $p \subseteq \lambda e'.$ arrive(e')

(181) sudden(e) $\wedge$ $p \subseteq \lambda e'.\ \tau(e) \subseteq \tau(e')$ $\wedge$ $p \subseteq \lambda e'.$ arrive(e')

In turn, (181) simplifies to (182), accounting for the simultaneous reading. Moreover, as (181) is thus seen to be logically consistent, it follows by the coherence licensing condition that this predicate licenses this reduced complement.

(182) sudden(e) $\wedge$ $p \subseteq \lambda e'.\ \tau(e) \subseteq \tau(e')$ $\wedge$ arrive(e')

Note that there is no inherent temporal specification in this complement. Nevertheless, the matrix predicate transmits its temporal interpretation to this complement via the individual thematic role assigned, and in this way satisfies its own selection restrictions.

Perception predicates allow a clausal complement without *-a*; see also Appendix A §3.3.

(183) *allkü-fi-n* *ñi* *aku-n*
hear-obj-indic.1.s 3.poss arrive-inf
"I heard him arrive."

Let (184) be the semantic representation of this complement clause. Then (185) is the semantic representation of the entire sentence.

(184) λe'. (τ(e) $\prec$ τ(e') $\vee$ τ(e) $\subseteq$ τ(e')) $\wedge$ arrive(e')

(185) hear(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. (τ(e) $\prec$ τ(e') $\vee$ τ(e) $\subseteq$ τ(e')) $\wedge$ arrive(e')

By hypothesis, (185) implies (186), which simplifies to (187).

(186) hear(e) $\wedge$ p $\subseteq$ λe'. τ(e) $\subseteq$ τ(e') $\wedge$ p $\subseteq$ λe'. (τ(e) $\prec$ τ(e') $\vee$ τ(e) $\subseteq$ τ(e')) $\wedge$ arrive(e')

(187) hear(e) $\wedge$ p $\subseteq$ λe'. τ(e) $\subseteq$ τ(e') $\wedge$ arrive(e')

As we can thus see that (185) is consistent, and expresses a simultaneous reading, it follows by the coherence licensing condition that perception predicates license a complement without *-a*.

Perception predicates with complement clauses with *-a* have not been attested. This is explained on the assumptions already set out if, again, (188) is the semantic representation of a complement clause bearing *-a*; see (158) and (175) above.

(188) λe'. τ(e) $\prec$ τ(e') $\wedge$ V(e')

For it follows that the semantic representation of a sentence in which a perception verb like *allkü* (hear) takes a complement with *-a* will be as in (189).

(189) hear(e) $\wedge$ Θ(e, p) $\wedge$ p $\subseteq$ λe'. τ(e) $\prec$ τ(e') $\wedge$ V(e')

By hypothesis, (189) implies (190), which simplifies to (191).

(190) hear(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec \tau$(e') $\wedge$ V(e')

(191) hear(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ τ(e) $\prec \tau$(e') $\wedge$ V(e')

Yet as (191) is a contradiction, it follows by the coherence licensing condition that a perception predicate will not license as complement a clause with -*a*; as indeed appears to be the case.

5 Extension to complementation facts in Romance, Balkan, and Germanic

5.1 Distribution data

Predicates which require -*a* in Mapudungun correspond to predicates which tend to select for subjunctive mood in natural language, as illustrated in (192) and (193) with data from Romance and Balkan, respectively.

(192) Romance predicates selecting subjunctive mood

a. *Paul veut que nous soyons là*
P. want.indic.pres.3.s that 1.p be.subjunc.pres.1.p there
"Paul wants us to be there." (French; Godard 2012: 130)

b. **Paul veut que nous sommes là*
P. want.indic.pres.3.s that 1.p be.indic.pres.1.p there
Intended: "Paul wants us to be there." (French; Godard 2012: 130)

c. *Les pide que lleguen a tiempo*
3.p.obj ask.indic.pres.3.s that arrive.subjunc.pres.3.p P time
"She asks them to arrive on time." (Spanish; Laca 2010: 203)

d. **Les pide que llegan a tiempo*
3.p.obj ask.indic.pres.3.s that arrive.indic.pres.3.p P time
Intended: "She asks them to arrive on time." (Spanish)

e. *Fas* *que* *marxi* *abans* *d'hora*
make.2.s that leave.subjunc.pres.3.s before of.time
"You make him leave earlier." (Catalan; Quer 1997: 175)

f. **Fas* *que* *marxa* *abans* *d'hora*
make.2.s that leave.indic.pres.3.s before of.time
Intended: "You make him leave earlier." (Catalan; Quer 1997: 175)

(193) Balkan predicates selecting subjunctive mood

a. *Ion* *vrea* *să* *pleacă*
I. want.pres.3.s subjunc leave.3.s
"John wants to leave." (Romanian; Kempchinsky 2009: 1799)

b. *O* *Kostas* *kanonise* *na* *fiji*
det K. arrange.past.3.s subjunc leave.3.s
"Kostas arranged (for himself or someone else) to leave." (Greek; Roussou 2009: 1832)

c. *Ivan* *se* *opita* *da* *razbere* *vŭprosa*
I. refl try.past subjunc understand.3.s question.det
"Ivan tried to understand the question." (Bulgarian; Krapova and Petkov 1999: 265)

Table 4.5 summarizes the predicate classes which license subjunctive in Romance, with exemplars taken from French, and Table 4.6 summarizes the predicate classes which license subjunctive in Balkan, with exemplars taken from Greek.

As can be seen, there is a fundamental correspondence between the classes of predicates which license subjunctive across Romance and Balkan languages. There is also a substantial overlap with respect to the classes of predicates which require *-a* in their clausal complements in Mapudungun.

The most striking difference between Mapudungun, on the one hand, and Romance and Balkan, on the other, is that some epistemic/communication predicates license a subjunctive complement in Romance and Balkan, without any obvious difference in meaning with alternating indicative complements, whereas epistemic/communication predicates in Mapudungun do not require *-a* in their complement and,

Table 4.5: Lexical semantic classes of predicates which license a subjunctive complement in Romance (Godard 2012)

Predicate class	Exemplars
desiderative	*vouloir* (want), *désirer* (want, desire), *souhaiter* (wish), *avoir envie* (would like)
mandative	*exiger* (demand), *ordonner* (order), *dire* (say)
obligation	*il faut* (must), *nécessaire* (be obligatory)
manipulative	*faire* (make it so that), *empêcher* (prevent)
recommend	*suggérer* (suggest)
petition	*demander* (ask), *demander à ce que* (ask)
accede-to-request	*consenter à ce que* (consent), *se résoudre à ce que* (resign oneself to)
commissive	*proposer* (propose), *s'engager à ce que* (commit oneself to)
permission	*permettre* (allow)
ability	*possible* (be possible), *impossible* (be impossible)
preparation	*envisager* (contemplate, consider)
anticipation	*être prêt à ce que* (be ready), *attendre que* (wait), *s'attendre à ce que* (expect), *espérer* (hope)
conative	*essayer que* (try), *s'employer à ce que* (apply oneself), *viser à ce que* (aim), *chercher à ce que* (look to), *s'opposer à ce que* (oppose)
realized ability	*obtenir* (obtain, manage), *éviter* (avoid), *s'arranger pour que* (manage), *réussir à ce que* (succeed), *veiller à ce que* (ensure)
/due to threshhold	*condescendre à ce que* (condescend)
liking	*aimer (à ce) que* (like), *détester* (hate), *préférer* (prefer), *avoir intérêt à ce que* (it had better be), *être habitué à ce que* (be used to), *s'habituer à ce que* (get used to)
verba timendi	*craindre* (be afraid), *redouter* (dread)
emotional response	*ému* (be moved), *étonné* (be surprised), *se réjouir* (be happy), *regretter* (regret)
evaluative-deontic	*normal* (normal), *bizarre* (be bizarre)
verba dicendi	*nier* (deny), *admettre* (admit, accept, grant)
epistemic	*comprendre* (understand), *concevoir* (understand)
doxastic	*douter* (doubt), *douteux* (be doutful), *contester* (question), *(ne) crois* ((not) think), *il semble* (it seems)
evaluative-epistemic	*il se peut* (it may be the case), *il arrive que* (it may be the case), *exclu* (be excluded), *faux* (be false), *probable* (be probable), *vraisemble* (be likely)
aspectual	*en arriver à ce que* (come to)

Table 4.6: Lexical semantic classes of predicates which license a subjunctive complement in Balkan (Giannakidou 1998, 2015, Varlokosta 1993, Roussou 2009, Quer 2009, Agouraki 1991)

Predicate class	Exemplars
desiderative	*thelo* (want), *epithimo* (desire), *prothimopiume* (be willing), *efchome* (wish)
mandative	*dhiatazo* (order), *leo* (say)
obligation	*prepi* (must), *ime ipochreomenos* (be obliged)
manipulative	*empodhizo* (prevent)
recommend	*simvulevo* (advise), *protino* (suggest), *protrepo* (encourage)
petition	*zito* (ask)
accede-to-request	*arnume* (refuse)
commissive	*iposxome* (promise)
permission	*epitrepo* (allow), *apagorevo* (forbid), *matheno* (learn)
ability	*bori* (may), *ksero* (know how), *ine pithanon* (be possible)
decision	*apofasizo* (decide)
preparation	*skopevo* (plan), *schediazo* (arrange), *kanonise* (arrange)
anticipation	*prothimos* (be eager), *elpizo* (hope), *perimeno* (expect)
conative	*dokimazo* (try), *prospatho* (try)
realized ability	*kataferno* (manage), *tolmo* (dare), *apofevgho* (avoid), *ekana to lathos* (make the mistake), *distazo* (hesitate)
/due to memory	*thimame* (remember), *ksexno* (forget)
liking%	*aresi* (like), *protimo* (prefer)
verba timendi	*fovame* (be afraid)
emotional response%	*xerome* (be pleased), *lipame* (be sorry)
doxastic	*pistevo* (believe), *nomizo* (think)
evaluative-epistemic	*isos* (perhaps), *pithanon* (possibly)
aspectual	*irtha* (come), *archizo* (start), *stamato* (stop), *sinexizo* (continue)
perception	*vlepo* (see), *akuo* (hear)

A % indicates that the predicate class only licenses a subjunctive complement under a habitual, non-punctual aspect.

when it is present, necessarily contributes a future meaning and thus is not synonymous with a complement without *-a*.

This licensing of subjunctive complements by epistemic/communication predicates in Romance and Balkan is most often triggered by the presence of a negative or interrogative operator. Nevertheless, some Romance and Balkan languages allow subjunctive complements to doxastic predicates even in the absence of negative or interrogative operators, as in (194) and (195).

(194) *Credo* *che* *lei* *sia* *stanca*
believe.indic.pres.1.s that 3.f.s be.subjunc.pres.3.s tired
"I think she is tired." (Italian; Quer 2009: 1783)

(195) *Pistévo* *na* *min* *fíji* *norís*
think.1.s subjunc neg leave.3.s early
"I think she won't leave soon." (Greek; Quer 2009: 1785)

In this light, it is interesting to consider the claim of Los (2005: 300) that the distribution of subjunctive in Gothic, an extinct east Germanic language, was initially restricted to optative subjunctive contexts, i.e. marking "a prospective, non-actuated event", but later spread to discourse subjunctive contexts, e.g. reported speech. It is clear that there are (at least) two different distributions for subjunctive cross-linguistically: a more conservative one, tied to future-oriented predicates, and a more extensive one which includes contexts otherwise reserved for indicative.

A possible example of the former type of subjunctive is the *to*-infinitive of Old English, which Los (2005: 300) suggests had a distribution similar to that of early Gothic subjunctive. Old English overtly distinguished indicative and subjunctive verbal inflection. Old English *to*-infinitive complements were necessarily controlled, restricted to environments which licensed subjunctive complements, and alternated with these (Los 2005).

(196) a. *Ga* *geond* *wegas* *and* *hegas,* *and* *nyd* *hi* *inn* *to* *farenne*
go along roads and hedges and urge them in to come
"Go along the roads and hedges and urge them to come in." (Old English; Los 2005: 68)

b. *Ga* *geond* *ðas* *wegas* *and* *hegas* *and* *nyd* *hig* *ðæt* *hig*
go along the roads and hedges and urge them that they
gan *in*
go.subjunc in
"Go along the roads and hedges and urge them to come in." (Old English; cf. Los 2005: 68)

(197) a. *þeah* *he* *[...]* *hine* *þeowde* *to* *ofsleanne* *mid* *þam* *folce*
though he ... him threatened to kill amidst the people
"though he [...] threatened to kill him in the presence of the people." (Old English; Los 2005: 141)

b. *And* *he* *[...]* *þywde* *mid* *muþe* *þ* *he* *Martinum* *abite*
and he ... threatened with mouth that he M. tear.to.pieces.subjunc
"And he [...] threatened with his mouth to tear Martin to pieces." (Old English; Los 2005: 142)

The distribution of the Old English *to*-infinitive appears to have been identical to that of (Modern) Dutch *om-te* infinitivals, which are also necessarily controlled. Tables 4.7 and 4.8 summarize the distribution of OE *to*-infinitives and Dutch *om-te* infinitivals, respectively. As can be seen, they are not attested with predicates which normally select for indicative mood, negated or otherwise.

(Modern) English irrealis, or subjunctive, *to*-infinitivals were first identified as a distinct type of Modern English *to*-infinitival in Bresnan (1972) (cf. e.g. Bresnan 1972: 78-9). They may also be called, more parochially, *for-to* infinitivals, as one of their distinguishing features is that they are headed by the complementizer *for*, as illustrated in (198).

(198) a. I want very much *(for) Bill to win. (Chomsky and Lasnik 1977: 458)

b. It bothers me *(for) Bill to win. (Chomsky and Lasnik 1977: 457)

c. *(For) John to take the job would be preferred. (Chomsky and Lasnik 1977: 458)

d. It is illegal *(for) John to leave. (Chomsky and Lasnik 1977: 471)

e. John is eager *(for) Bill to win. (Chomsky and Lasnik 1977: 477)

f. his plan *(for) Bill to win. (Chomsky and Lasnik 1977: 457)

Table 4.7: Lexical semantic classes of predicates which license a *to*-infinitival complement in Old English (Los 2005)

Predicate class	Exemplars
desiderative	*giernan* (desire), *wilnian* (desire)
mandative	*bebeodan* (order), *beodan* (order), *dihtan* (direct), *reccan* (direct), *wissian* (direct, guide), *deman* (condemn), *settan* (appoint, set)
manipulative	*don* (make, see to it), *biegan* (compel), *neadian* (compel), *niedan* (urge, force), *underðeodan* (subject, force), *afysan* (impel), *aweccan* (incite), *drefan* (excite), *fysan* (incite), *gremian* (provoke), *hwierfan* (turn, incite, persuade), *onælan* (incite), *onstyrian* (stir, bestir), *onwendan* (turn, incite, persuade)
recommend	*bodian* (preach), *læran* (preach), *bædan* (urge), *tyhtan* (induce, urge), *cierran* (persuade), *spanan* (persuade), *weman* (persuade), *læran* (advise, teach), *manian* (admonish), *mynegian* (remind), *trymman* (encourage)
petition	*biddan* (ask, urge)
accede-to-request	*ðwærian* (agree), *weddian* (agree), *forsacan* (refuse) *wiðcweðan* (refuse), *wiðsacan* (refuse)
commissive	*behatan* (promise, threaten), *beotian* (promise, threaten, boast), *gehatan* (promise, threaten), *swerian* (swear), *ðeowan* (threaten), *ðreatian* (threaten), *weddian* (vow)
permission	*aliefan* (allow), *liefan* (allow), *lofian* (allow), *sellan* (give, grant), *ðafian* (allow), *forbeodan* (forbid) *tæcan* (teach), *earnian* (deserve, strive), *leornian* (learn)
ability	*witan* (know how, manage)
decision	*ceosan* (choose)
preparation	*hogian* (intend), *myntan* (intend), *teohhian* (intend), *ðencan* (intend), *aðencan* (intend), *mynnan* (intend), *smeagan* (intend), *ðeahtian* (intend), *secan* (seek), *sirwan* (plot)
anticipation	*wenan* (hope, expect), *anbidian* (expect), *hyhtan* (hope)
conative	*fundian* (hasten, try, strive, do one's best), *tilian* (exert oneself, strive, try, do one's best) *hyhtan* (trust, hope), *fon* (attempt), *cunnian* (try), *underfon* (attempt), *higian* (strive), *ðristlæcan* (undertake), *ðyrstlæcan* (undertake), *tacan* (undertake)
realized ability	*medemian* (humble oneself), *gieman* (care), *murnan* (care), *reccan* (care), *forhogian/forhycgan* (neglect), *forgieman* (neglect), *forgiemeleasian* (neglect), *understandan* (manage), *abisgian* (engage in), *fleon* (shun), *onscunian* (shun), *warnian* (shun), *forlætan* (abstain from), *ieldan* (delay), *slawian* (be slow), *wandian* (hesitate)
liking	*forseon* (despise), *oferhogian* (despise), *unlustian* (loathe) *wunian* (be wont, be in the habit of)
verba timendi	*adrædan* (fear), *aforhtian* (fear), *anðracian* (fear), *forhtian* (fear), *ondrædan* (fear)
emotional response	*besorgian* (regret), *forsceamian* (be ashamed)
evaluative-deontic	*god* (be good)
aspectual	*onginnan* (begin), *(a)ginnan* (begin), *beginnan* (begin), *swican* (stop)

Table 4.8: Lexical semantic classes of predicates which license an *om-te* infinitival complement in Dutch (IJbema 2001)

Predicate class	Exemplars
desiderative	*begeren* (desire), *wensen* (wish)
mandative	*bevelen* (order), *gebieden* (order), *gelasten* (order)
	eisen (demand), *verlangen* (demand)
	opdragen (appoint), *verplichten* (oblige)
obligation	*onnodig* (be unnecessary)
manipulative	*dwingen* (force)
recommend	*aanraden* (advise), *adviseren* (advise)
	aansporen (urge), *brengen* (persuade), *uitnodigen* (invite)
petition	*verzoeken* (request), *vragen* (ask)
accede-to-request	*weigeren* (refuse)
commissive	*beloven* (promise), *dreigen* (threaten),
	voorstellen (propose)
permission	*toestaan* (permit), *verbieden* (forbid),
	leren (learn, teach), *verleren* (unlearn)
decision	*besluiten* (decide)
preparation	*beogen* (intend), *denken* (plan)
anticipation	*hopen* (hope), *verwachten* (expect)
conative	*pogen* (try), *proberen* (try), *trachten* (try)
realized ability	*wagen* (dare), *vermijden* (avoid),
	lukken (succeed), *verzuimen* (fail),
	opgeven (give up), *ophouden* (stop), *verafschuwen* (abort)
/due to memory	*vergeten* (forget), *zich herinneren* (remember)
/assistance	*helpen* (help)
liking	*haten* (hate), *gewoon (zijn)* (be used to)
emotion-inducing	*irriteren* (irritate)
emotional response	*betreuren* (regret)

In Standard English, the complementizer *for* may disappear in certain environments, such as before a controlled subject or, for certain verbs, when directly following the matrix verb, as illustrated in (199). Pesetsky (1991: 149, 152) has proposed that the infinitival complementizer *for* has a syntactically-conditioned null allomorph $\varnothing_{\text{for}}$.

(199) a. Bill wants (*for) to leave.

b. Bill wants (?for) Sue to leave. (Pesetsky 1991: 49)

c. Bill wants very much *(for) Sue to leave. (Pesetsky 1991: 49)

d. For Sue to leave is what we want. (Pesetsky 1991: 149)

Stowell (1982: 566) says of *for-to* infinitives that they "are uniformly interpreted as having an unrealized (quasi-future) tense" (cf. also Stowell 1981: 417). (Landau 2004: 863) also holds that *for-to* infinitivals are tensed, bearing "irrealis tense".

Landau (2000: 37) classifies interrogative *to*-infinitivals as irrealis *to*-infinitivals. The following examples illustrate that *to*-infinitival clauses hosting terminal wh-movement display a modal reading, insofar as they are roughly synonymous with finite clauses with a modal, with which they alternate.

(200) a. Mrs. Schaden found many things for us to do (Hackl and Nissenbaum 2012: 60)

b. Mrs. Schaden found many things that we could/should do (Hackl and Nissenbaum 2012: 60)

(201) a. Tim knows how to solve the problem. (Bhatt 2006: 2)

b. Tim knows how one/he could/should solve the problem. (Bhatt 2006: 2)

The distribution of *for-to* infinitives as identified in Pesetsky (1991) is summarized in Table 4.9.

As can be seen, the range of predicates which license irrealis, or subjunctive or *for-to*, infinitival complements in English corresponds closely to the range of predicates licensing *to*-infinitival complements in Old English, *om-te*-infinitival complements in Dutch, and subjunctive complements in Romance and Balkan. Nevertheless, noticeably absent on comparison are two lexical semantic classes of predicates: realized ability and manipulative predicates. The predicates of these two classes share the logical property of being implicative.

Pesetsky (1991) proposes that these predicates do not take $\varnothing_{\text{for}}$-*to* complements in English but rather $\varnothing_{\text{implic}}$-*to* complements. A similar assessment is made by Landau (2000, 2004), who argues that implicative predicates take a type of non-finite

Table 4.9: Lexical semantic classes of predicates which license a *for-to* infinitival complement in English (Pesetsky 1991)

Predicate class	Exemplars
desiderative	*want*, *desire*, *wish*
mandative	*demand*, *command*, *order*, *commission*, *designate*, *direct*
obligation	*need*
recommend	*urge*, *exhort*, *encourage*, *inspire*, *advise*, *counsel*, *persuade*, *convince*, *coax*, *challenge*, *dare*
petition	*petition*, *request*, *ask*, *beg*, *beseech*, *implore*
accede-to-request	*agree*, *assent*, *consent*, *refuse*
commissive	*offer*, *promise*, *swear*, *vow*
ability	*be able*, *be free*, *be eligible*
decision	*choose*, *decide*, *resolve*
preparation	*arrange*, *plan*, *prepare*, *intend*, *mean*, *contrive*
anticipation	*be ready*, *be anxious*, *be eager*, *hope*, *expect*
disposition	*be willing*, *be inclined*, *be hesitant*, *be reluctant*
conative	*attempt*, *try*, *endeavor*, *strive*, *struggle*, *seek*, *undertake*
liking%	*prefer*, *like*, *love*, *loathe*, *hate*, *can't stand*
emotional response%	*be sad*, *be sorry*
evaluative-deontic%	*be nice*, *be common*, *be rare*, *be unusual*

A % indicates that the predicate class only licenses a *for-to* infinitival complement under a habitual, non-punctual aspect.

complement distinct from the irreals infinitivals that predicates such as desideratives take as complement.

Finally, the range of predicates which license indicative complements in Romance is summarized in Table 4.10, using exemplars from French. These classes of predicates appear to license indicative complements in all languages discussed in this section.

Table 4.10: Lexical semantic classes of predicates which license an indicative complement (Godard 2012)

	Predicate class	Exemplars
verba dicendi	declarative	*dire* (say), *annoncer* (announce), *faire l'annonce* (make the announcement), *informer* (inform), *affirmer* (claim), *prétendre* (claim),
	mode-of-communication	*écrire* (write)
	saying-evaluative	*se plaindre* (complain)
	consent	*admettre* (admit, accept, grant)
	commissive	*promettre* (promise)
epistemic	demonstrate	*montrer* (show),
	inference	*il s'ensuit* (it follows), *il se trouve* (it happens/turns out)
	evidential	*entendre* (hear), *percevoir* (perceive), *sentir* (feel, smell), *subodorer* (scent), *voir* (see)
	knowledge	*savoir* (know), *ignorer* (ignore), *comprendre* (understand), *concevoir* (understand)
	memory	*se souvenir* (remember), *oublier* (forget)
doxastic	appearance	*il semble* (it seems)
	convince	*persuader* (persuade)
	judgement	*juger* (judge), *être d'accord* (agree), *décider* (decide)
	belief	*croire* (believe), *penser* (think), *avoir l'intuition / l'idée / l'impression* (have the intuition / idea / impression)
	anticipation	*prédire* (predict), *prévoir* (foresee), *anticiper* (anticipate), *espérer* (hope)
dream		*rêver* (dream), *imaginer* (imagine)
evaluative-epistemic	likelihood	*clair* (be clear), *évident* (be evident), *probable* (be probable), *vraisemble* (be likely),
	truth	*exact* (be exact, true), *vrai* (be true)

5.2 A Modal Concord analysis of complementation in Romance, Balkan, and Germanic

5.2.1 Classes of modalities as (mood) modals

Many languages have a syntactic category of Modals, usually realized as auxiliaries, independent particles, or verbal affixes. However, the class of categories which admit a modal semantics is wider and includes main Verbs (Hintikka 1962), as well as Adverbs and Adjectives (Kratzer 1981: 41). In this section I propose a modal semantics for

Moods as well. I begin by reviewing the notion of modality and classifications of modalities.

According to Kratzer (1981: 42), there are two main ingredients in the interpretation of modals: "A *conversational background* which contributes the premises from which conclusions are drawn. And a *modal relation* which determines the 'force' of the conclusion."

For Kratzer (1981: 72), a conversational background may function either as a modal base or as an ordering source. A modal base restricts the worlds under consideration, whereas an ordering source orders them. Many modalities require appeal to an ordering on the set of admissible worlds and evaluate only what holds at the closest worlds, such as graded modalities (cf. Kratzer 1981: 50).

Conversational backgrounds, on which the interpretation of a modal depends, are usually provided by the utterance situation, although they may be made explicit by phrases such as *in view of what is known* or *in view of what is commanded* (Kratzer 1981: 42, 45).

Kratzer (1981: 65) provides the example that in (202), the phrase *the relevant circumstances* contributes a modal base and the phrase *what I want* contributes the ordering source. These provide the conversational backgrounds, circumstantial and bouletic, respectively, against which the modal *be necessary* evaluates its prejacent (Kratzer 1981: 42-5).

(202) Considering the relevant circumstances and what I want, it is necessary in w that I go to the pub regularly. (Kratzer 1981: 65)

The semantics of modals can be specified in terms of the following parameters: a modal relation, i.e. quantificational force, and restrictions on admissible conversational backgrounds: conditions on the modal base, and conditions on the ordering source (Kratzer 1981: 45, 51).

That is, modals are semantically characterized in terms of quantificational force and conversational backgrounds admitted. Kratzer (1981: 44) states: "An epistemic conversational background leads to an epistemic interpretation of modal expressions. Other kinds of conversational backgrounds could lead to different interpretations." For instance, a modal is epistemic if it concerns what may or must be the case given everything we know already, while a modal is circumstantial if it concerns what can or must happen given circumstances of a certain kind (Kratzer 1981: 52). Kratzer (2012: 55) notes that "sentence adverbs like *wahrscheinlich* or *möglicherweise* and auxiliaries like *wird* or *dürfte* always express epistemic modality", while other modal elements never do, and the auxiliaries *müssen* and *können* can express root or epistemic modality. In addition, Kratzer (1981: 59) notes: "Some modal expressions of German tolerate a wide range of ordering sources. Others have to obey more restrictions." For instance, the difference between *kann* and *darf* can be described in terms of differing restrictions on "admissible ordering sources" (Kratzer 1981: 61). In particular, "*darf* does not tolerate a 'normal standards' - ordering source. On the other hand, *kann* may have difficulties with buletic ordering sources" (Kratzer 1981: 61). In addition, "*Es ist wahrscheinlich daβ* and *dürfte* seem to require an 'objective' stereotypical background as their ordering source. *Wahrscheinlich* and *wird* prefer 'subjective' stereotypical backgrounds" (Kratzer 1981: 58).

In Kratzer's system, then, a modal is characterized by the conversational backgrounds it admits, and different modals may be more or less restrictive than others. If a given modal admits the conversational backgrounds of two other modals, this just means that it is more permissive, or vague, but it is still equally a modal. In this way, classes of modalities are also modalities themselves.

In this light, there are two different classes of modalities I now wish to consider. The first has to do with the basic split between deontic, bouletic, and root modality, on the one hand, and epistemic modality, on the other.

Kratzer (2012: 61) speaks of "the fundamental difference between root and epistemic modality" in natural language (cf. also Kratzer 2012: 23, 49). Kratzer (2012: 55) proposes that root modals have realistic modal bases which interact with normative ordering sources to produce deontic, bouletic, teleological, or propensity interpretations; thus collapsing all these types of modalities into a single fundamental class of root modality, distinct from that of epistemic modality.

The difference between the two classes rests on a dichotomy in "the facts relied on" (Kratzer 2012: 50) (cf. also Kratzer 2012: 24). Kratzer (2012: 51, 54) states that root modals typically refer to the external or internal circumstances of people, things or places that determine their possible futures, while epistemic modals, to evidence of things implying or suggesting the presence of other facts in the past, present, and future. Root modals are typically future-oriented (Kratzer 2012: 51), whereas epistemic modals are typically time-independent.

The second classification of modalities that I wish to consider has to do with quantificational force. Giannakidou (1998, 2015) proposes a distinction between veridical and nonveridical modalities. Veridical modalities are modalities with universal quantificational force. They require their propositional argument to logically follow from their associated premise set, or conversational background. In terms of possible worlds semantics, the proposition must be true in all possible worlds accessible from the world of evaluation, relative to the associated accessibility relation of the modal.

For instance, for a reported speech sentence to be true, it must be the case that the content of the complement clause follows from everything that the subject has said. Also, for a knowledge-attribution sentence to be true, the content of the complement clause must follow from everything that the subject knows.

Nonveridical modalities, on the other hand, are associated with a less-than-universal quantificational force, or else are such that their propositional argument is only evaluated relative to the closest accessible worlds. The proposition may be false in ac-

cessible worlds which are not among the closest such worlds. This does not falsify the modal assertion. Such a preferential, ordering semantics has been proposed for many modalities, including comparative and graded modalities such as *it is more likely that … than that …*, *it is probable that*, *there is a good possibility that*, *there is a slight possibility that* (Kratzer 1981, 1991). Modalities with such a preference ordering have also been proposed as the semantics for predicates which select subjunctive complements in Spanish (Villalta 2008).

I hold that all veridical modalities are realis modalities; and, contrapositively, that all irrealis modalities are nonveridical modalities. I also hold that all irrealis modalities are future-oriented.

Since classes of modalities are also modalities themselves, I posit the existence of modals corresponding to each of the broad classes reviewed. Specifically, I propose that there is: a realis modal, encompassing the class of epistemic modalities, including communication ones; an irrealis modal, encompassing the class of root modalities, including deontic, bouletic, and propensity modalities; and veridical and nonveridical modals, encompassing the classes of veridical and nonveridical modalities, respectively. Each of these modals is associated with liberal restrictions on admissible conversational backgrounds, admitting those admitted by any of the modalities in its corresponding class. Their semantics is consequently quite vague. Nevertheless, each member of each pair is distinct from the other.

Evidence for an analysis of moods as semantically modals comes in part from the close affinity between moods and modals. Portner (1992: 148, fn. 3) asserts that "some 'modals' are really mood markers", citing certain British English modal clauses with *should* as plausible candidates for "an alternative form for what is semantically a subjunctive."

In effect, what appear to be indicative clauses with modals may alternate with *for-to*, or irrealis or subjunctive, infinitives, which were shown above to correspond

in large part to subjunctive clauses in other languages; either in a formal register of the standard dialect or else in nonstandard dialects.

(203) a. Lord, I am not worthy to receive you.

b. Lord, I am not worthy that you should enter under my roof.

(204) You want I should do it [teach you to dance] in front of all the customers? (Clerks II)

(205) Hey Boss, you want we should ... [take him out]? (Police Academy 5: Assignment Miami Beach)

Moreover, in Old English, subjunctive clauses not only alternated with *to*-infinitives but also with modalized clauses (Los 2005).

(206) *þa* *coman* *þa* *Cristenan* *and* *ðone* *cempan* *tihton* *þæt* *he*
then came the Christians and the warrior.acc urged that he
faran *sceolde* *feor* *fram* *ðære* *byrig*
go should far from that town
"Then the Christians came and urged the warrior to go far away from that town." (Los 2005: 53)

Los (2005: 303) also states that in Middle English, "probably as a result of the general syncretism of forms (...) and the levelling of verbal endings", "the finite subjunctive form (...) was increasingly becoming expressed by a free form, a modal verb, rather than a bound form, the subjunctive ending."

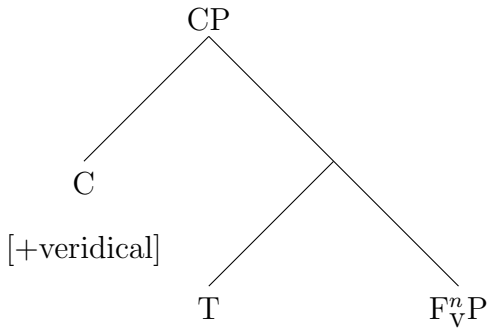
I take these facts to point to the modal nature of the semantics of mood. In sentences where a Modal plays the role of a Mood, I contend that this Modal element continues to contribute its same modal semantics, but now taking scope over the propositional argument of the matrix modality, instead of taking scope within it and forming part of its inherent modality, and also thereby placing a constraint on the matrix eventuality, of which it is a reflection.

5.2.2 Syntactic analysis of complements

Having posited the existence of these mood modals, I proceed to propose analyses for indicative complements, Romance and Balkan subjunctive complements, and English *for-to* infinitival, Old English *to*-infinitival, and Dutch *om-te* infinitival complements. In the following, I place moods in C and other modals in T for convenience, abstracting away from their precise positions in the C- and Infl-domains.[20]

I analyze indicative clauses as hosting a veridical mood modal. The presence of such a mood modal imposes no constraints on what modals or tenses may appear in T.

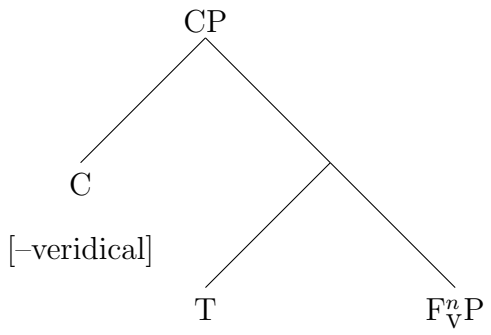
(207) Indicative clause



I analyze Romance and Balkan subjunctive clauses as hosting a nonveridical mood modal. Again, this mood modal imposes no constraints on what modals or tenses may appear in T.

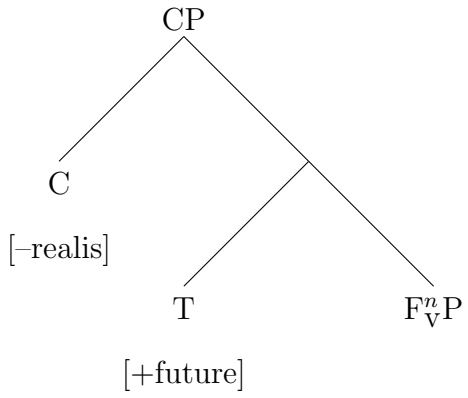
(208) Subjunctive clause (Romance and Balkan)

[20]The placement of Mood in C, above the inherent modality of the embedded clause, which may occur in T, contradicts the ordering of epistemic modals and (ir)realis, grammatical mood in the hierarchy of functional heads of Cinque (1999: 106, 130), in which the former occur above T and the latter, below. Nevertheless, what is crucial in the modal concord theory to be proposed in §5.2.4 below are the semantic scope relations between these modals. If necessary, the position of Mood may be below that of the inherent modality of the clause, but I nevertheless maintain that the Mood takes as argument the proposition including this modality.



I analyze English *for-to* infinitival clauses, as well as Old English *to*-infinitive clauses and Dutch *om-te* infinitival clauses, as hosting an irrealis mood modal and a future modal in T. [21]

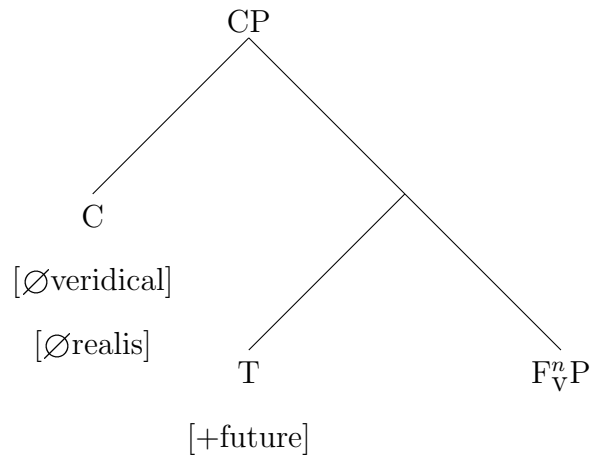
(209) Irrealis clause



Recall that I have analyzed Mapudungun *-a* complements as possessing a future modal, in virtue of *-a*. I now refine the analysis by explicitly specifying that Mapudungun subordinate clauses contain a fully underspecified mood modal, encompassing, for instance, all realis and irrealis modalities.

(210) Mapudungun subordinate *-a* clause

[21] Since the irrealis mood modal suffices to impart a future interpretation to the eventuality of the clause, the positing of a separate future modal in T is not needed, semantically. Nevertheless, I follow Stowell (1981: 40), among others, in supposing that English *for-to* clauses possess a tense operator.



5.2.3 Semantic analysis of predicates

In this section, I partially characterize, for select classes of predicates, the information regarding a propositional argument imparted by the thematic role that a predicate assigns to its clausal argument.

Since root/deontic/bouletic/propensity modalities are irrealis modalities, part of what it is to be the propositional argument of a root/deontic/bouletic/propensity modality is to be the propositional argument of an irrealis modality. This information is contained in the thematic role assigned to the clausal argument of a root/deontic/bouletic/propensity predicate, since thematic roles are the means by which a predicate characterizes its arguments. Consequently, root/deontic/bouletic/propensity predicates, such as "want", specify their propositional argument p as the argument of an irrealis modality. This fact may be represented as follows; where $\Theta_{r/d/b/p}$ ranges over the individual thematic roles assigned by root/deontic/bouletic/propensity predicates to their clausal complements, and ... p ... stands for information coveyed by the thematic role beyond the type of modality the propositional argument is subjected to.

(211) $\Theta_{r/d/b/p}(\text{e, p}) \rightarrow \text{IRRp} \wedge \text{... p ...}$

In addition, I hold that all irrealis modalities are nonveridical, and thereby specify their propositional argument p as the argument of a nonveridical modality, a fact which can be represented as follows.

(212) $\Theta_{r/d/b/p}(\text{e, p}) \rightarrow \text{NVp} \wedge \text{... p ...}$

I also hold that all irrealis modalities, being cause predicates, are future-oriented as a result of their lexical semantic content; see §4.3.1 for supporting argumentation. It follows that the propositional argument p of root/deontic/bouletic/propensity predicates are also specified to be inherently (relative) future; a fact which can be represented as follows.

(213) $\Theta_{r/d/b/p}(\text{e, p}) \rightarrow \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \prec \tau(\text{e'}) \wedge \text{... p ...}$

Although each of these semantic selection generalizations can be considered separately, all of this information is contained within the information imparted by the thematic role that predicates denoting irrealis modalities assign to their clausal argument. Consequently, it is equally licit to represent the semantic selection generalizations of these predicates more succinctly as follows.

(214) $\Theta_{r/d/b/p}(\text{e, p}) \rightarrow \text{NVp} \wedge \text{IRRp} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \prec \tau(\text{e'}) \wedge \text{... p ...}$

Now, when the thematic role assigned by a root/deontic/bouletic/propensity modality to its clausal complement characterizes this complement as the propositional argument of an irrealis or nonveridical modality, this is because root/deontic/bouletic/propensity modalities are irrealis and nonveridical modalities. Consequently, (211), (212), and (214) above can be reformulated as constraints on the matrix eventuality itself instead of the propositional argument p, as in (215), (216), and (217). Henceforth I will use such semantic representations since they will prove more useful later on. Of course, the propositional argument still needs to be identified as the

object of the eventuality; I assume that this is accomplished within the information summarized as ... p ....

(215) $\Theta_{r/d/b/p}$(e, p) → IRR(e) ∧ ... p ...

(216) $\Theta_{r/d/b/p}$(e, p) → NV(e) ∧ ... p ...

(217) $\Theta_{r/d/b/p}$(e, p) → NV(e) ∧ IRR(e) ∧ p ⊆ λe'. τ(e) ≺ τ(e') ∧ ... p ...

Realized ability and manipulative predicates are irrealis, and hence conform to schema (217). Nevertheless, following Landau (2004: 835, 839, 840, 847), I assume that in English and some other languages these predicates are additionally specified to carry a syntactic feature [–T] and select for complements with a [–T] feature. Mixing semantic and syntactic features, then, and invoking the image of the selection-for-individual-roles theory as the transmission of features, semantic or syntactic, as outlined in §4.1, we can formulate the following selection rule schema for these predicates; where the arrow (→) is read as "transmits".[22]

(218) English-$V_{\text{implicative}}$ → [–veridical][–realis][+future][–T]

Since epistemic/communication modalities are realis modalities, epistemic/communication predicates, such as "believe", specify their propositional argument p as the argument of a realis modality. Some of these modalities are veridical and some are not. For those that are, the following semantic selection generalization holds; where $\Theta_{ver-epist/comm}$ ranges over the individual thematic roles assigned to veridical epistemic/communication predicates to their clausal complements and ... p ... stands for the additional information conveyed by the thematic role.

[22]Note that it is not self-contradictory for a predicate to semantically select for [+future] and syntactically select for [–T]. In §4.4.1, restructuring complements in Mapudungun were analyzed such that they lack T and yet are conferred a future interpretation by their selecting predicate.

(219) $\Theta_{ver-epist/comm}$(e, p) $\rightarrow$ V(e) $\wedge$ R(e) $\wedge$ ... p ...

I assume that (lexically) negative predicates are evaluated relative to the same conversational background as their positive counterparts, but with a quantificational force opposite to that of their positive counterparts. Specifically, whereas the positive predicates require their propositional argument to hold throughout this space, the negative predicates require it to not hold throughout the space, but rather for its negation to hold throughout the space. They can thus be said to have a 0% quantificational force. As a result, negative predicates are nonveridical, indeed antiveridical, if the positive version of the predicate is veridical. This fact can be represented as follows; where $\Theta_{neg-epist/comm}$ ranges over the individual thematic roles assigned by negative epistemic/communication predicates to their clausal complements and ... p ... stands for the additional information conveyed by the thematic role.

(220) $\Theta_{neg-epist/comm}$(e, p) $\rightarrow$ NV(e) $\wedge$ R(e) $\wedge$ ... p ...

In a similar manner, I assume that doxastic predicates which allow subjunctive complements, as in Italian and Greek, are evaluated not with respect to a doxastic modal base but rather an epistemic one. Semantically, then, these predicates would not be doxastic predicates but rather weak epistemic predicates; that is, epistemic predicates with a reduced quantificational force. Consequently, they denote nonveridical modalities. (See Marques 2009 for a similar analysis.) Nevertheless, they remain realis. This can be represented as follows; where $\Theta_{weak-epist}$ ranges over the individual thematic roles assigned by weak epistemic predicates to their clausal complements and ... p ... stands for the additional information conveyed by the thematic role.

(221) $\Theta_{weak-epist}$(e, p) $\rightarrow$ NV(e) $\wedge$ R(e) $\wedge$ ... p ...

In those languages in which doxastic predicates do not license a subjunctive complement, I assume that they denote veridical doxastic modalities, a subclass of veridical epistemic modalities, and hence conform to (219).

5.2.4 Deriving the complementation facts: the Modal Concord theory of clausal complementation

I propose that the Mood modality takes the same proposition as argument as the matrix V modality and that these two modalities enter into a relation of modal concord and must cohere (cf. Huitink 2012, Cui 2010, Anand and Brasoveanu 2010). In particular, I propose that the Mood modality places constraints on the matrix V modality, characterizing this modality which takes its own propositional argument as argument. This is akin to the manner in which Portner (1992) has the presuppositions of clauses place constraints on the reference situation, e.g. specifying that it not be an obliging situation, which is precisely the matrix eventuality or modality; see §2.4.2 above.

In addition, I propose the following semantics for the mood modals posited in §5.2.2.

(222) Semantics of mood modals

a. $[\![\text{ +veridical }]\!] = \text{V}$

b. $[\![\text{ –veridical }]\!] = \text{NV}$

c. $[\![\text{ +realis }]\!] = \text{R}$

d. $[\![\text{ –realis }]\!] = \text{IRR}$

It is important within a semantic selection theory with a coherence licensing principle to define which pieces of information may not cohere, i.e. contradict. As veridical and nonveridical modalities are disjoint sets of modalities, and likewise realis and

irrealis, and as irrealis modalities are a subset of nonveridical modalities, I propose that the following statements are contradictions.

(223) Contradictory modal characterizations

a. $V(e) \wedge NV(e)$

b. $V(e) \wedge IRR(e)$

c. $R(e) \wedge IRR(e)$

Within this theory of modal concord in clausal complementation, the theoretical assumptions laid out in §5.2.2 and §5.2.3 can account for the complementation data in §5.1 in the following way.

First, as reviewed in §5.1 and illustrated here with Spanish, veridical epistemic/communication predicates license indicative complements, but not subjunctive or irrealis complements.[23]

(224) a. **Cree* *ir*
believe.indic.pres.3.s go.inf
Intended: "He believes he will go."

b. **Cree* *que* *vaya*
believe.indic.pres.3.s that go.subjunc.pres.3.s
Intended: "He believes he is going."

c. *Cree* *que* *va*
believe.indic.pres.3.s that go.indic.pres.3.s
"He believes he is going."

[23]Note for the examples that follow that Spanish possesses a distinction between irrealis and propositional infinitivals, just like English. In effect, the properties of the two constructions are much the same across the two languages, and the many others which make a similar distinction (see Varlokosta 1993 on propositional subjunctives in Greek). In particular, propositional infinitivals require a stative predicate. Hence an eventive predicate, not in the perfect, which is stativizing, serves as a diagnostic for an irrealis infinitive.

These facts are captured as follows. Let (225) be the semantic representation of the irrealis complement in (224a). Then the semantic representation of the entire sentence is as in (226), which implies (227) given (219).

(225) IRR(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

(226) believe(e) $\wedge$ $\Theta_{ver-epist/comm}$(e, p) $\wedge$ IRR(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

(227) believe(e) $\wedge$ V(e) $\wedge$ R(e) $\wedge$ ... p ... $\wedge$ IRR(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec$ τ(e') $\wedge$ go(e')

Yet (227) is contradictory; assuming as we are that R(e) contradicts IRR(e). (V(e) also contradicts IRR(e).) Hence, by the coherence licensing condition, it follows that veridical epistemic/communication predicates do not license irrealis clauses as complement, which is the correct result, accounting for (224a).

Again, let (228) be the semantic representation of the subjunctive complement in (224b). Then (229) is the semantic representation of the entire sentence, which implies (230), given (219).

(228) NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq$ τ(e') $\wedge$ go(e')

(229) believe(e) $\wedge$ $\Theta_{ver-epist/comm}$(e, p) $\wedge$ NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq$ τ(e') $\wedge$ go(e')

(230) believe(e) $\wedge$ V(e) $\wedge$ R(e) $\wedge$ ... p ... $\wedge$ NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq$ τ(e') $\wedge$ go(e')

Yet (230) is a contradiction, since V(e) contradicts NV(e). Hence, by the coherence licensing condition, it follows that a veridical epistemic/communication predicate does not license a subjunctive clause as complement, capturing (224b).

Consider then (231) as the semantic representation for the indicative complement in (224c). The semantic representation of the entire sentence is (232), which implies (233) and in turn simplifies to (234).

(231) $\text{V(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \subseteq \tau(\text{e'}) \wedge \text{go(e')}$

(232) $\text{believe(e)} \wedge \Theta_{ver-epist/comm}(\text{e, p}) \wedge \text{V(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \subseteq \tau(\text{e'}) \wedge \text{go(e')}$

(233) $\text{believe(e)} \wedge \text{V(e)} \wedge \text{R(e)} \wedge \text{... p ...} \wedge \text{V(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \subseteq \tau(\text{e'}) \wedge \text{go(e')}$

(234) $\text{believe(e)} \wedge \text{V(e)} \wedge \text{R(e)} \wedge \text{... p ...} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \subseteq \tau(\text{e'}) \wedge \text{go(e')}$

As the statement in (234) is not contradictory, it correctly follows by the coherence licensing condition that veridical epistemic/communication predicates license indicative complements, as observed in (224c).

Secondly, as reviewed in §5.1 and illustrated here with Spanish, nonveridical epistemic/communication predicates license neither indicative nor irrealis complements, but do license subjunctive complements.

(235) a. **Niega* *ir*
deny.indic.pres.3.s go.inf
Intended: "He denies he will go."

b. *Niega* *que* *vaya*
deny.indic.pres.3.s that go.subjunc.pres.3.s
"He denies going."

c. **Niega* *que* *va*
deny.indic.pres.3.s that go.indic.pres.3.s
Intended: "He denies going."

These facts are captured as follows. Let (236) be the semantic representation of the irrealis complement in (235a). Then (237) is the semantic representation of the entire sentence, which implies (238), given (220).

(236) $\text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \prec \tau(\text{e'}) \wedge \text{go(e')}$

(237) $\text{deny(e)} \wedge \Theta_{neg-epist/comm}(\text{e, p}) \wedge \text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \prec \tau(\text{e'}) \wedge \text{go(e')}$

(238) $\text{deny(e)} \wedge \text{NV(e)} \wedge \text{R(e)} \wedge \text{... p ...} \wedge \text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau(\text{e}) \prec \tau(\text{e'}) \wedge \text{go(e')}$

Yet (238) is contradictory, as R(e) contradicts with IRR(e). It follows by the coherence licensing condition that nonveridical epistemic/communication predicates do not license irrealis clauses as complements, which is the desired result, as observed in (235a).

Now let (239) be the semantic representation of the subjunctive complement in (235b). Then the semantic representation of the entire sentence is as in (240). Given (220), (240) implies (241), which in turn simplifies to (242).

(239) NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(240) deny(e) $\wedge$ $\Theta_{neg-epist/comm}$(e, p) $\wedge$ NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(241) deny(e) $\wedge$ NV(e) $\wedge$ R(e) $\wedge$ ... p ... $\wedge$ NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(242) deny(e) $\wedge$ NV(e) $\wedge$ R(e) $\wedge$ ... p ... $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

As (242) is not contradictory, it follows by the coherence licensing condition that nonveridical epistemic/communication predicates license subjunctive complements, accounting for (235b).

Consider then (243) as the semantic representation for the indicative complement in (235c). The semantic representation of the entire sentence is then as in (244), which implies (245), given (220).

(243) V(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(244) deny(e) $\wedge$ $\Theta_{neg-epist/comm}$(e, p) $\wedge$ V(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(245) deny(e) $\wedge$ NV(e) $\wedge$ R(e) $\wedge$ ... p ... $\wedge$ V(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

Yet (245) is a contradiction, as NV(e) contradicts with V(e). Hence, by the coherence licensing condition, it follows that nonveridical epistemic/communication

predicates do not license indicative complements, as appears to be the case with (235c).

Thirdly, as reviewed in §5.1 and illustrated here with Spanish, root/deontic/bouletic/propensity predicates license both subjunctive and irrealis complements, but not indicative.

(246) a. *Quiero* *ir*
want.indic.pres.1.s go.inf
"I want to go."

b. *Quiero* *que* *él* *vaya*
want.indic.pres.1.s that 3.m.s go.subjunc.pres.3.s
"I want him to go."

c. **Quiero* *que* *él* *irá*
want.indic.pres.1.s that 3.m.s go.indic.fut.3.s
Intended: "I want him to go."

These facts are captured as follows. Let (247) be the semantic representation of the irrealis complement in (246a). Then (248) is the semantic representation of the entire sentence. Given (217), (248) implies (249), which in turn simplifies to (250).

(247) $\text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau\text{(e)} < \tau\text{(e')} \wedge \text{go(e')}$

(248) $\text{want(e)} \wedge \Theta_{r/d/b/p}\text{(e, p)} \wedge \text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau\text{(e)} < \tau\text{(e')} \wedge \text{go(e')}$

(249) $\text{want(e)} \wedge \text{NV(e)} \wedge \text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau\text{(e)} < \tau\text{(e')} \wedge \text{...\ p\ ...} \wedge \text{IRR(e)} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau\text{(e)} < \tau\text{(e')} \wedge \text{go(e')}$

(250) $\text{want(e)} \wedge \text{NV(e)} \wedge \text{IRR(e)} \wedge \text{...\ p\ ...} \wedge \text{p} \subseteq \lambda\text{e'}.\ \tau\text{(e)} < \tau\text{(e')} \wedge \text{go(e')}$

As (250) is logically consistent, it follows by the coherence licensing condition that root/deontic/bouletic/propensity predicates license irrealis clauses as complements, accounting for (246a).

Again, let (251) be the semantic representation of the subjunctive complement in (246b). Then (252) is the semantic representation of the entire sentence. Given (217), (252) implies (253), which in turn simplifies to (254).

(251) NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(252) want(e) $\wedge$ $\Theta_{r/d/b/p}$(e, p) $\wedge$ NV(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(253) want(e) $\wedge$ NV(e) $\wedge$ IRR(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec \tau$(e') $\wedge$ ... p ... $\wedge$ NV(e) $\wedge$ p $\subseteq$ λe'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

(254) want(e) $\wedge$ NV(e) $\wedge$ IRR(e) $\wedge$ ... p ... $\wedge$ p $\subseteq \lambda$e'. τ(e) $\subseteq \tau$(e') $\wedge$ go(e')

As (254) is logically consistent, it follows by the coherence licensing condition that root/deontic/bouletic/propensity predicates license subjunctive complements, accounting for (246b).

Consider then (255) as the semantic representation of the indicative complement in (246c). The semantic representation of the entire sentence is then (256), which, given (217), implies (257), which in turn simplifies to (258).

(255) V(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec \tau$(e') $\wedge$ go(e')

(256) want(e) $\wedge$ $\Theta_{r/d/b/p}$(e, p) $\wedge$ V(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec \tau$(e') $\wedge$ go(e')

(257) want(e) $\wedge$ NV(e) $\wedge$ IRR(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec \tau$(e') $\wedge$ ... p ... $\wedge$ V(e) $\wedge$ p $\subseteq$ λe'. τ(e) $\prec \tau$(e') $\wedge$ go(e')

(258) want(e) $\wedge$ NV(e) $\wedge$ IRR(e) $\wedge$ $\wedge$ ... p ... $\wedge$ V(e) $\wedge$ p $\subseteq \lambda$e'. τ(e) $\prec \tau$(e') $\wedge$ go(e')

Nonetheless, (258) is logically inconsistent, as NV(e) contradicts with V(e). (IRR(e) also contradicts with V(e).) Consequently, by the coherence licensing principle, it

correctly follows that root/deontic/bouletic/propensity predicates do not license an indicative clause as complement, accounting for (246c).

Realized ability and manipulative predicates in English, and other languages which require specialized implicative complements for these predicates, do not license irrealis complements, since the [–T] syntactic feature that they select for conflicts with the [+future] specification of T in irrealis clauses, which I further assume are consequently marked as [+T]. Neither do they license indicative or subjunctive complements, as I assume the T of these clauses is also specified as [+T]. Hence, these predicates will require a different sort of complement than those considered here; even if isomorphic to irrealis or subjunctive complements in the language (see Landau 2004 on EC-infinitivals in English and C-subjunctives in Balkan).

Recall that Mapudungun clausal complements have been argued to be unspecified for mood. It follows that Mapudungun complements with the future modality *-a* are compatible with predicates of all the classes considered, with the exception of English-type implicative predicates, since each of the specifications they impart are compatible with the [+future] specification of these complements.

Consequently, a single, identical, Mapudungun *-a* clause may serve as complement to both epistemic and desiderative predicates; see §4.4.1 and §4.4.2 for accounts of these facts.

(259) *Ayü-n* *fey* *ñi* *amu-a-el*
want-indic.1.s 3 3.poss go-fut-inf
"I want him to go."

(260) *Kim-ün* *fey* *ñi* *amu-a-el*
know-indic.1.s 3 3.poss go-fut-inf
"I know he will go."

Finally, consider the English verb *hope*. It licenses either a *for-to* infinitive or a *that*-clause complement. It is not future-oriented, though because of the inherent

futurity of irrealis complements, it may only combine with a *that*-clause to express an attitude towards a past eventuality.

(261) a. I hope to go.

b. ?I hope for him to go.

(262) a. ??I hope to have convinced you.

b. *I hope for him to have gone.

(263) I hope that he went.

Note, however, that it is likely that the *that* clause complement in (263) is not a *that*-indicative clause. We already know of various clause types in English with a *that* complementizer which host an irrealis or subjunctive modality, such as mandative and counterfactual subjunctives. Moreover, there are asymmetries between *that* complements to *hope* and *that* complements to epistemic predicates regarding temporal interpretation. Whereas a present tense eventive predicate triggers a generic temporal interpretation when in a *that* clause complement to an epistemic verb, much as it does in a matrix context, the same form triggers an aktionsart future interpretation when in a *that* clause complement to *hope*, much as it does when in a subjunctive context, such as under conditional *if*.

(264) a. I know that she goes there.

b. She goes there.

(265) a. I hope that she goes there.

b. If she goes there

In this way, we can explain that *hope*, unlike other similar predicates, licenses a *that*-clause (though not a *that*-indicative clause), and, moreover, one which is compatible with a non-future eventuality, by supposing that it semantically selects for a

type of subjunctive, nonveridical, modality which is compatible with irrealis and with other non-future-oriented nonveridical modalities, but not with the veridical modality of indicative complements.

Godard (2012: 132) cites the existence of predicates which are future-oriented but select for indicative complements, such as *prédire* (predict), *prévoir* (foresee), *anticiper* (anticipate), *promettre* (promise), and *décider* (decide). Some of these allow the same *that* complement as *hope* in English, suggesting that perhaps they do not license indicative complements after all, but rather a homophonous type.

(266) a. *I know he wins tonight.

b. *He wins tonight.

c. If he wins tonight

d. I hope he wins tonight.

e. I predict he wins tonight.

f. I bet he wins tonight.

g. ?I promise he wins tonight.

If correct that the apparent indicative complements to these predicates are not really so, there may be no counterexamples to the converse of the generalization that all irrealis modalities are future-oriented. That is, the claim that all future-oriented modalities are irrealis modalities, hence only compatible with complements with irrealis mood (if marked for mood at all), may be supported. But the matter is not clear.

5.3 Other predictions and a comparison with an alternative semantics of mood

The claim that moods are modals, along with the analysis of clause types hosting moods proposed in §5.2.2, predicts that, in root contexts, indicative and subjunctive clauses should display, vague, modal readings consistent with the range of modality readings attributed to them.

This prediction appears to be borne out. Portner (1992: 165) observes that "the use of an unembedded infinitive can express a variety of subjective attitudes towards the proposition", and that with (267) the speaker expresses a wish.

(267) Oh to some day meet her! (Portner 1992: 165)

A similar optative or jussive reading is available for subjunctive clauses used as stand-alone matrix clauses.

(268) *na* *kolimbisi* *o* *Yanis*
subjunc swim.3.s det Y.
"Let John swim." (Greek; Varlokosta 1993: 148)

Such sentences are essentially vague as to whether they express a wish, a command, or some other related modality.

We have also seen that subjunctive complements have a wider distribution in Italian than in other Romance languages, being licensed for instance under doxastic predicates even in the absence of negation or interrogative operators. The analysis therefore predicts that unembedded subjunctives should show an even wider range of meanings than in other languages and, in particular, allow doxastic readings. This prediction appears to be borne out as well, as the supposition and dubitative readings of the sentences in (269) suggest.

(269) a. *L'avesse* *anche* *detto* *lui*
obj.have.subjunc.3.s also say.ppl 3.m.s

"Suppose he had said it too." (Italian; Portner 1997: 192)

b. *Che* *sia* *nel* *bagno?*
that be.subjunc P.det bath
"She is in the bath?" (Italian; Portner 1997: 193)

Even indicative clauses used as stand-alone matrix sentence exhibit a degree of modal vagueness, insofar as it is not clear whether the proposition expressed is something that the speaker knows, believes, or has heard. In effect, many languages recur to grammaticalized evidential markers, which serve to specify this modality under which an indicative matrix clause is presented. Moreover, some researchers have felt the need to posit a covert assertion operator in the syntax taking scope over a stand-alone matrix indicative clause, such as I DECLARE TO YOU THAT (Ross 1970).

Yet, on the analysis proposed here, there is no semantic motivation to appeal to such covert structure, since the requisite, modally vague, information is already present in the indicative mood.

This analysis also predicts that Mapudungun non-finite *-a* clauses, when used as stand-alone matrix clauses, should not be restricted to indicative readings, but should also allow optative readings. This prediction also appears to be borne out.

-lu participles may be used as stand-alone matrix clauses. When so used, they allow both optative and plain assertive future readings, as illustrated in (270) and (271), respectively.

(270) a. *fey* *vende-a-lu* *ruka* *lleg-mu-m*
3 sell-fut-prpl house be.born-plprf-inf
"He wants to sell the house where he was born."

b. *wüya* *eymi* *amo-to-ya*
yesterday 2.s go-re-fut.inf
"I wanted you to leave yesterday." (?) (Prompted for: "I wanted him to leave yesterday")

(271) a. *fey füta-nge-a-lu*
3 husband-vb-fut-prpl
"She'll get married." (I expect her to get married sometime) (Smeets 2008: 223)

b. *iñché kücha-w-a-lu*
1.s wash-refl-fut-prpl
"I will wash myself." (Smeets 2008: 242)

The Agent, or Experiencer, of the optative modality is the subject of the infinitival clause in (270a) but the speaker in (270b). I conclude that the Agent, or Experiencer, of the optative modality is indeed unspecified, as expected, but may be construed as the subject in contexts where construal with the speaker is not warranted.

These confirmed predictions reveal that moods are semantically active and contribute a modal meaning, although this contribution is often obscured when they occur in a selected environment.

The theory proposed here is very similar to that of Portner (1997). However, on this theory, moods do not express modality themselves but rather only serve as tests on the modality, in particular the modal force and context, relative to which a proposition is interpreted (Portner 1997: 207). For embedded moods, these modal parameters are provided by the embedding predicate, but for matrix moods, these parameters are filled in from context (Portner 1997: 207). Thus, Portner (1997: 208) posits modal contexts such as ASSERT and DR, which provide assertive and dream modalities under which matrix indicative clauses may be interpreted; the latter is needed for the interpretation of the second sentence in the discourse in (272). The matrix indicative mood serves as a test to allow such modalities as these but block others, such as those licensed by a (matrix) subjunctive mood.

(272) I had a dream last night. My friend came to visit me. (Portner 1997: 208)

Again, since on the theory proposed here, it is the, vague, mood modals themselves which provide these modalities, I maintain that, despite their similarities, the theory

proposed here is simpler, more economical, than that of Portner (1997) on which moods merely serve as tests of a modality provided by the matrix predicate or by context. On the theory proposed here, moods work as tests as well, but this is a consequence of modal concord and their own modal semantics.

6 Note on Evaluative Predicates

Pesetsky (1991) notes that evaluative predicates, including liking, emotional response, and evaluative-deontic predicates, license a *for-to* infinitival complement in English only when the matrix predicate is under the scope of a generic or habitual operator or a modal operator such as *would*.

(273) a. John would hate (for) his students to smoke in class. (Pesetsky 1991: 48, 51)

b. John always hates (for) his students to smoke in class. (Pesetsky 1991: 48, 51)

c. *John hated (for) his students to smoke in class yesterday. (Pesetsky 1991: 48, 51)

(274) a. Sue would prefer (for) us to meet in the conference room. (Pesetsky 1991: 49, 51)

b. Sue always prefers (for) us to meet in the conference room. (Pesetsky 1991: 49, 51)

c. *Sue preferred (for) us to meet in the conference room. [unless generic] (Pesetsky 1991: 49, 51)

Bresnan (1972) also notes the following contrasts regarding the complements licensed under an evaluative verb when interpreted punctually and habitually.

(275) a. It's rather odd that a man is chairing a women's meeting. (Bresnan 1972: 71)

b. ?It's rather odd for a man to be chairing a women's meeting. (Bresnan 1972: 71)

(276) a. *It's always rather odd that a man is chairing a women's meeting. (cf. Bresnan 1972: 71)

b. It's always rather odd for a man to be chairing a women's meeting. (Bresnan 1972: 71)

These observations generally hold for evaluative predicates cross-linguistically. Thus, evaluative predicates in Balkan similarly license subjunctive under a generic aspect but only an indicative complement under a punctual aspect or construal.

(277) a. *Tis aresi pu pijenete moni sas*
det likes indic go by your
"She likes it that you go by yourselves." (Greek; Quer 2009: 1784)

b. *Tis aresi na pijenete moni sas*
det likes subjunc go by your
"She likes it that you go by yourselves." (Greek; Quer 2009: 1784)

(278) a. *Tis arese pu pighate moni sas*
det liked indic go by your
"She liked it that you went by yourselves." (Greek; Quer 2009: 1784)

b. **Tis arese na pighate moni sas*
det liked subjunc go by your
Intended: "She liked it that you went by yourselves." (Greek; Quer 2009: 1784)

Mapudungun evaluative predicates were classified among those not requiring *-a*. Nevertheless, it may be the case that they display behavior similar to that of evaluative predicates in other languages. If so, then we might expect *-a* complements

to be required with a habitual construal and complements without *-a* to be licensed under a punctual construal. This appears to be the case (see Appendix A §2.7), although I leave a more thorough investigation to future research.

However, I note that, just as the complex predicate consisting of the negation of a veridical predicate may license a nonveridical complement, it is plausible that the complex predicate consisting of a habitual or modalized evaluative may license an irrealis complement, even though the evaluative predicate under another aspect may only license a realis complement.

7 Conclusions

In this chapter I have investigated the distribution of complement clauses across lexical semantic predicate classes, focusing on Mapudungun.

In this chapter I have identified the lexical semantic classes of predicates which require *-a* in their complement in Mapudungun, those which allow but do not require *-a*, and those which appear to ban *-a*; the supporting data for this appears in Appendix A.

I have argued that Mapudungun emotive and propositional predicates may share identical complements. This is contrary to predictions of semantic theories reviewed with a satisfaction licensing condition. In order to capture the distribution data in Mapudungun, I have proposed a new semantic selection theory, extending ideas from Portner (1992). In particular, I have adopted a coherence licensing condition, by means of which, for a specified semantic entity which a predicate requires in its selection rule, it is not necessary for a clause to satisfy this semantic description to be licensed as a complement, but only that it be compatible with it. This is because the predicate itself will impart all the necessary semantic information that it requires to its complement, via the individual thematic role it assigns to it.

The two approaches can be contrasted as follows. Given an abstract distribution table with m lexical semantic predicate classes and n clause types, a Zucchi-type theory (extending Rochette 1988) can be constructed in accord with the algorithm in (279).

(279) Algorithm for constructing a Zucchi (1993)-type Selection Theory (extending Rochette 1988)

a. Assign the same semantic sort to clause types with an equivalent distribution across predicates.

b. Assign a different semantic sort to clause types with a different distribution across predicates.

c. For each predicate (class), formulate a rule to the effect that it selects for the (super)sort corresponding to the disjunction of the sorts of all the clause types it licenses.

d. Adopt a satisfaction licensing condition; i.e. a predicate licenses a clause as complement if the clause satisfies the semantic sort the predicate selects for.

A selection-for-individual-roles theory (extending Portner 1992) can be constructed in accord with the algorithm in (280).

(280) Algorithm for constructing an Individual Role Selection Theory (extending Portner 1992)

a. Assign to each clause type the semantic supersort corresponding to the disjunction of the sorts selected for by all predicates it distributes across.

b. For each predicate, formulate a rule to the effect that it selects for the semantic sort consisting in the individual thematic role it assigns to its

clausal complement; this is its own specific sort, distinct from those of other predicates, and corresponds to its own modality.

c. Adopt a coherence licensing condition; i.e. a predicate licenses a clause as complement if the semantics of the clause is consistent with the semantic property that the predicate selects for.

Implementation of these algorithms to produce specific theories will be illustrated with the abstract distribution table in Table 4.11.

Table 4.11: Abstract Distribution Table

Lex. Sem. Predicate Classes	Clause Types	
	C_1	C_2
P'_1	✓	*
P'_2	✓	✓
P'_3	*	✓

A ✓ indicates that the predicate class licenses the complement type.

A $*$ indicates that the predicate class does not license the complement type.

Applying the algorithm in (279) to construct a Zucchi-type theory, one obtains the following.

(281) Zucchi-type theory for the distribution table in Table 4.11

a. $[\![C_1]\!] = C'_1$

b. $[\![C_2]\!] = C'_2$

c. P'_1 selects for C'_1

d. P'_2 selects for $C'_1 \vee C'_2$ (this supersort may be renamed as $C'_3 \equiv C'_1 \vee C'_2$)

e. P'_3 selects for C'_2

f. Satisfaction licensing condition: a complement must satisfy the semantic sort a predicate selects for to be licensed.

Applying the algorithm in (280) to construct a selection-for-individual-roles theory, one obtains the following.

(282) Selection-for-individual-roles theory for the distribution table in Table 4.11

a. $[\![\ C_1\ ]\!] = P'_1 \vee P'_2$ (this supersort may be renamed as $P'_{1/2} \equiv P'_1 \vee P'_2$)

b. $[\![\ C_2\ ]\!] = P'_2 \vee P'_3$ (this supersort may be renamed as $P'_{2/3} \equiv P'_2 \vee P'_3$)

c. P'_1 selects for P'_1

d. P'_2 selects for P'_2

e. P'_3 selects for P'_3

f. Coherence licensing condition: a complement must be consistent with the semantic sort a predicate selects for to be licensed.

Each of the theories constructed is empirically adequate; that is, each captures the data in Table 4.11. Of course, when applying these algorithms to construct semantic selection theories, there are the remaining challenges of characterizing these abstract semantic sorts in an intuitive manner and motivating the syntax-semantic correspondence between clause types and posited semantic sorts.

Nevertheless, I contend that the selection-for-individual-roles theory is much better equipped to handle this challenge than the Zucchi-Rochette approach.

Firstly, note that the predicate-specific modalities appealed to are well-defined, well-motivated semantically, and independently motivated from their inclusion in argument structures as the individual thematic roles assigned to their propositional arguments. Each predicate taking a propositional argument will characterize it in

its own unique way, as an argument of its unique modality. For example, *remember* assigns the individual thematic role of a remembrance to its propositional argument. This is the same as saying that the proposition is evaluated relative to a modality specific to the concept of remembering. In this case, regarding the worlds quantified over in this modality, "if what we are speaking of are (say) *a*'s memories, then these possible worlds are all the possible worlds compatible with everything he remembers" (Hintikka 1969: 91). Moreover, note that the selection rules in the selection-for-individual-roles approach are natural and motivated since they are merely restatements of the portion of the argument structure of these predicates concerning the individual thematic role assigned to their clausal complement.

Secondly, the supersorts posited on this approach just consist in disjunctions of predicate-specific modalities and so will likewise inherit a well-defined content. Moreover, they will often correspond to natural classes of modalities, independently motivated outside of clausal complementation, such as the class of root/deontic/bouletic/propensity modalities discussed in Kratzer (2012).

Thirdly, the syntax-semantics correspondence for clause types is natural and motivated because it semantically characterizes each clause type in terms of its mood modal.

In contrast, on the Zucchi-Rochette approach, for the semantic sorts of clause types, one is forced to recur to concepts such as: action, event, fact, state of affairs, proposition, etc. – the content of which is often not entirely clear. In addition, for broader cross-linguistic coverage, a Zucchi-Rochette theory will need to posit more and more of these semantic sorts, and supersorts, and it is not clear that there is a well-defined stock to pull new concepts of this kind from.

I have formulated a specific selection-for-individual-roles theory for Mapudungun. As I have analyzed Mapudungun such that it possesses a single clause type licensed as complement by all predicate classes, it follows on the semantic selection theory pro-

posed that it has a completely underspecified semantics, consisting of the disjunction of all modalities.

I have formulated unified lexical semantic descriptions for each of the predicate classes identified on the basis of whether -*a* is required, -*a* is allowed but not required, or -*a* is apparently banned as cause, attitude, and accompanying eventuality predicates, respectively. I have also posited natural language principles regarding these semantic sorts and derived from these the temporal properties of these classes of predicates. In particular, I have derived the future-orientation of cause predicates, which also correspond to the set of predicates selecting irrealis complements in Germanic, and which also correspond to the natural class of root/deontic/bouletic/propensity modalities.

This accounts for the fact that cause predicates (a.k.a. root/deontic/bouletic/propensity predicates) in Mapudungun require -*a* in their complement, and yet identical subordinate -*a* clauses can serve as complement to both cause and attitude predicates. For, future-oriented predicates taking CP complements will require these to contain an inherent future if these CP complements are specified for tense, [+T], as they require their propositional argument to be interpreted as relative future and so, by the coherence licensing condition, do not tolerate any conflicting information.

In this way, I have also discovered the important role of selection for futurity, which is evident in Mapudungun, and apparently independent of selection for mood modality. In effect, it is not necessary to appeal to a different mood modal in Mapudungun subordinate clauses with -*a* and clauses without. For those predicates requiring -*a* in their complement, futurity will be imparted from the predicate itself, via its individual thematic role.

I have also considered the distribution of irrealis, subjunctive, and indicative clause types in Romance, Balkan, and Germanic. I have extended the specific selection-for-individual-roles theory for these complement clause types as well. The

chief innovation with respect to the theory for Mapudungun alone is the positing of modal concord between moods and matrix predicates.

I have noted that the class of predicates which require *-a* in their complement in Mapudungun corresponds closely to those which select for subjunctive complements in Romance and Balkan, and for irrealis complements in Germanic. Yet, the distributions of these clause types are not equivalent.

Mapudungun *-a* clauses thus constitute a new clause type to consider within this group. It is distinct from the others in having an overt modal, which is the same modal the language uses to form ordinary future statements in stand-alone matrix clauses. The other clause types cannot be used in this way. Therefore, the rough correspondence between these clause types opens up interesting new lines of inquiry. Perhaps Mapudungun *-a* clauses can shed new light on these more familiar clause types to which they correspond in part.

Appendix A

Distribution across predicates of the Mapudungun complement clause classes defined with respect to whether the presence of *-a* is required, optional, or disallowed

1 Predicates which require *-a*

1.1 Ability predicates

The principle ability predicates in Mapudungun *pepí* (be able) and *kim* (know how) take restructuring complements.

(1) *Pepí-kintu-la-fi-n* *ta-ñi* *kullin*
be.able-look.for-neg-obj-indic.1.s det-1.s.poss animal
"I couldn't find my animal."

(2) *iñché* *kim-chillkatu-n*
1.s know-read-indic.1.s
"I know how to read."

However, *kimeltu* (teach) may be considered a causative of an ability predicate and it appears to require an *-a* complement.

(3) *fey* *kimeltu-e-n-eo* *ni* *mapuzungu-yá*
3 teach-inv-indic.1.s-ds 1.s.poss M.-fut.inf
"He taught us [*sic*] to speak Mapudungun."

1.2 Permission predicates

The let causative *kalli* in Mapudungun takes a restructuring complement. However, other permission predicates in Mapudungun such as *elküno* (let) and *elu* (give, let) require future *-a* in their complement.

(4) *fey* *el-küno-y* *yin* *leli-nge-a-el*
3 give-leave-indic.3 1.p.poss look.at-pass-fut-inf
"He let us be looked at."

(5) *iñche* *elu-fi-n* *tra-ñi* *awkantu-a-el* *tan-chi*
1.s give-obj-indic.1.s det-3.poss play-fut-inf det-adj
pichi-ke-che *wekun*
small-distr-person outside
"I let the kids play outside."

Some permission predicates are complex predicates with a V and N, such as *elu newen* (give permission), *elu permiso* (give permission), and *rul permiso* (give permission). These permission predicates appear to have a clausal complement to the Noun rather than the Verb directly. Nevertheless, the apparently obligatory presence of *-a* is also observed here.

(6) *fey* *elu-fi* *newen* *ñi* *tripa-yá*
3 give-obj.indic.3 force 3.poss go.out-fut.inf
"He gave them permission to go out."

(7) *elu-nge-n* *permiso* *(ñi)* *tripa-ya-el*
give-pass-indic.1.s permission 1.s.poss go.out-fut-inf
"They gave me permission to go out."

(8) *fey* *rul-üy* *permiso* *ñi* *tripa-ya-el*
3 pass.on-indic.3 permission 1.s.poss go.out-fut-inf
"He gave permission for me to leave."

1.3 Obligation predicates

The obligation predicate *müle* requires an *-a* complement.

(9) *Müle-y* *kom* *chi* *machi* *ñi* *nie-a-el* *ñi* *rewe*
be-indic.3 all det machi 3.poss have-fut-inf 3.poss rehue
"All machis should have their rehue."

(10) a. *Fey* *müle-y* *ñi* *leli-wül-a-e-t-ew*
3 be-indic.3 1.s.poss look.at-give-fut-inv-inf-ds
"He has to look at me."

b. **Müle-y* *fey* *leli-wül-e-t-eo* *iñche*
be-indic.3 3 look.at-give-inv-inf-ds 1.s
Intended: "He has to look at me."

1.4 Mandative and manipulative predicates

Mandative and manipulative predicates in Mapudungun, such as *kimeltu* (order), *manda ~ manta* (send), *werkü* (send), and *matuka* (hurry, make), require the morpheme *-a* in their complement.

(11) *fey* *kim-el-tu-y* *ni* *zewmal* *malal*
3 know-ben-re-indic.3 3.poss make.fut.inf fence
"He ordered them to build a fence."

(12) *fey* *kim-el-tu-fi* *ñi* *amu-al*
3 know-ben-re-obj.indic.3 3.poss go-fut.inf
"He ordered them to go."

(13) *inché* *manta-fi-n* *ni* *zewma-ya* *ti* *malal*
1.s send-obj-indic.1.s 3.poss make-fut.inf det fence
"I ordered them to build a fence."

(14) *Iñché* *werkü-fi-n* *malal-tu-a-el*
1.s send-obj-indic.1.s fence-vb-fut-inf
"I ordered him to make a fence."

(15) *Werkü-fi-n* *zewma-me-yal* *malal*
send-obj-indic.1.s make-thith-fut.inf fence
"I ordered him to make a fence."

(16) *iñche* *matuka-nge-n* *ta-ñi* *wiño-l-tu-a-el* *libru*
1.s hurry-pass-indic.1.s det-1.s.poss go.back-caus-re-fut-inf book
"They hurried me to return the book."

1.5 Desiderative predicates

A common way to express desiderativity in Mapudungun is with the modal verb *küpá*, which takes a restructuring complement.

(17) *Iñche* *küpá-ülkantu-fu-n*
1.s want-sing-FU-indic.1.s
"I wanted to sing."

(18) *Fey* *küpá-langüm-fe-n-ew*
3 wish-kill-FU.inv-indic.1.s-ds
"That one tried/wanted to kill me."

Nevertheless, desideratives in Mapudungun which take a full clause as complement, such as *ayü* (want, love) and *zuam* (want, desire) require the presence of the future marker -*a* in their complement.

(19) a. *inché* *ayü-n* *(ñi)* *amu-(y)a-el*
1.s want-indic.1.s 1.s.poss go-fut-inf
"I want to go."

b. **iñche ayü-n amu-n*
1.s want-indic.1.s go-inf
"I want to go."

(20) a. *iñché zuam-ün ta ñi amu-al*
1.s want-indic.1.s det 1.s.poss go-fut.inf
"I desire to go."

b. **iñché zuam-ün ta ñi amu-n*
1.s want-indic.1.s det poss go-inf
"I desire to go." (Speaker's comment: #"I desire that he went.")

The desiderative predicate *pi* (want), which occurs in more northern varieties, has been attested with a *-lu* complement. Nevertheless, it also seems to require *-a*.

(21) *pi-la-y chillkatu-a-lu*
want-neg-indic.3 study-fut-prpl
"He didn't want to study."

1.6 Recommendation predicates

The recommendation predicate *ngelamtu* (advise) appears to require an *-a* complement.

(22) *fey ngelamtu-e-n-eo ñi amu-no-a-el*
3 advise-inv-indic.1.s-ds 1.s.poss go-neg-fut-inf
"He advised me not to go."

(23) *inché ngelamtu-fi-n ni amu-al ni fotum chillkatu-we*
1.s advise-obj-indic.1.s 3.poss go-fut.inf 1.s.poss son read-loc
ruka-meo
house-P
"I advised my son to go to school."

1.7 Commissive predicates

The threaten predicates *ameltu* (threaten) and *elma* (have bad intention, threaten) appear to require *-a* in their complement.

(24) *ameltu-rki-y* *ni* *yoz* *zeyegtu-no-a-el*
threaten-rep-indic.3 3.poss more chop.wood-neg-fut-inf
"He threatened not to chop wood any longer."

(25) *Fey* *elma-fe-n-eo* *ñi* *langüm-a-e-t-eo*
3 have.bad.intention-FU.inv-indic.1.s-ds 1.s.poss kill-fut-inv-inf-ds
"He threatened to kill me."

1.8 Anticipation psychological predicates (verba timendi)

At the same time, Mapudungun predicates corresponding to psychological states such as fear, perhaps anomalous among psychological states in containing an aspect of expectation, or at least ignorance (like hope), such as *llüka* (fear), *pellke* (worry, be afraid), and *üngüm* (wait), appear to require *-a*.

(26) *Llüka-(le)-n* *(ñi)* *amu-al*
be.afraid-stat-indic.1.s 1.s.poss go-fut.inf
"I am afraid to go."

(27) *Llüka-le-n* *fey* *ñi* *amu-tu-al*
be.afraid-stat-indic.1.s 3 3.poss go-re-fut.inf
"I am afraid that he will go.", "I am afraid that he has gone."

(28) *Iñche* *pellke-le-n* *Juana* *(ta-ñi)* *amu-tu-a-el*
1.s worry-stat-indic.1.s J. det-3.poss go-re-fut-inf
"I am afraid that Juana will leave."

(29) *Iñche* *üngüm-(fi)-n* *Kwan* *ñi* *aku-a-el*
1.s wait-obj-indic.1.s J. 3.poss arrive-fut-inf
"I waited for Juan to arrive."

More properly, then, it may be said that anticipation psychological predicates require *-a* whereas reaction psychological predicates ban *-a*.

Nevertheless, the case of the psychological state of worry may be instructive here. Where the clause describes the object of the psychological attitude, the complement

bears -*a*; as was seen with *pellke* (worry) above in (28). This sense of worry is more or less synonymous with fear. When the clause describes the fact which causes worry, the clause does not bear -*a*, as seen in the *kuñituku* (worry) example below.

(30) *Kuñiw-tuku-ne-fi-n* *ñi* *tripa-n* *rupan-antü*
care-put-have-obj-indic.1.s 3.poss go.out-inf pass.inf-sun
"It worries me that he left so late." (lit. "I am worried because he left so late.")

In this case, although the fact that he left so late may be the cause of the worry, the actual object of the worry may be a future prospect, such as what might happen to him as a result of having left so late.

Similar remarks may apply to (31) with *llüka* (fear). That is, a clause without -*a* may describe the cause of the fear, i.e. the event that induced the emotion, while the actual object may be an unspecified future prospect.

(31) *Llüka-n* *fey* *ñi* *amu-tu-n* *mu*
be.afraid-indic.1.s 3 3.poss go-re-inf P
"I am afraid that he has gone."

As the object of an anticipation psychological state is always some future prospect, perhaps unspoken, we can tentatively conclude that anticipation psychological predicates actually allow both complements with and without -*a* but corresponding to different thematic roles. Causes will be described with clauses which ban -*a* while the object of the psychological state may be described with clauses which contain -*a*.

1.9 Decision predicates

Choose predicates in Mapudungun appear to license a final adjunct. Evidence for such an analysis comes from speaker translations of the Mapudungun sentences into Spanish resulting in readings on which a given object, or person, was picked or selected, for some finality. These adjuncts may even be final correlatives, along the

lines of English "I chose a book to read". No extraction tests were carried out to see if the clauses were complements or adjuncts.

(32) *Fey* *zulli-eymo* *mi* *langüm-a-fi-el*
3 choose-inv.indic.2.s.ds 2.s.poss kill-fut-obj-inf
"He chose you to kill me."

There are certain cases, however, which involve no selected object but rather just an action which the subject decided to carry out. While it may be the case that even these sentences are susceptible to a final adjunct analysis, with an intransitive matrix predicate expressing that a choice was made and a final adjunct specifying to what end, it is important to note that, even in this case, the complement still requires *-a*.

(33) a. *Iñche* *zulli-n* *ñi* *aku-a-el*
1.s choose-indic.1.s 1.s.poss arrive-fut-inf
"I chose to come."

b. **Iñche* *zulli-n* *ñi* *aku-n*
1.s choose-indic.1.s 1.s.poss arrive-inf

(34) *inché* *zulli-n* *ñi* *amu-a-el* *choshuenco* *mapu*
1.s choose-indic.1.s 1.s.poss go-fut-inf Ch. land
"I chose to go until Choshuenco."

1.10 Preparation predicates

The preparation predicate *pepikaw* (ready oneself) requires an *-a* complement. However, translations offered suggest a final adjunct analysis for these *-a* clauses.

(35) a. *Iñche* *pepikaw-ün* *ñi* *küpa-ya-el* *faw*
1.s prepare-indic.1.s 1.s.poss come-fut-inf here
"I got ready to come."

b. **Iñche* *pepikaw-ün* *ñi* *küpa-n* *faw*
1.s prepare-indic.1.s 1.s.poss come-inf here
Intended: "I got ready to come."

(36) *pepikaw-ün* *ñi* *pe-me-a-fi-el* *ñi* *wenüy*
prepare-indic.1.s 1.s.poss see-hith-fut-obj-inf 1.s.poss friend
"I prepared to go visit my friend."

(37) *pepikaw-ün* *ñi* *llow-a-fi-el* *mawun*
prepare-indic.1.s 1.s.poss receive-fut-obj-inf rain
"I prepared myself to receive the rain."

(38) *inché* *pepikaw-ün* *ñi* *amu-al* *Juanito* *chillkatu-we* *ruka-mu*
1.s prepare-indic.1.s 3.poss go-fut.inf J. read-loc house-P
"I readied myself for Juanito to go to school."

1.11 Conative predicates

Similar remarks as to Decision predicates apply to Conative or Attempt predicates; that is, Attempt predicates require *-a* but may take final adjuncts instead of complement clauses. Note that the second translation offered for the sentence below suggests a final adjunct analysis.

(39) a. *Iñche* *newentu-n* *ñi* *aku-a-el* */küpa-ya-el*
1.s make.effort-indic.1.s 1.s.poss arrive-fut-inf come-fut-inf
"I made an effort to come/arrive.", "I exerted myself in order to arrive."

b. **Iñche* *newentu-n* *ñi* *aku-n*
1.s make.effort-indic.1.s 1.s.poss arrive-inf

(40) a. *Fey* *newentu-fu-y* *langüm-a-e-t-ew*
3 make.effort-FU-indic.3 kill-fut-inv-inf-ds
"He tried to kill me (but was unsuccessful)."

b. **Fey* *newentu-fu-y* *langüm-e-t-ew*
3 make.effort-FU-indic.3 kill-inv-inf-ds

(41) *inche* *yafülw-a-n* *ñi* *pe-me-al* *ñi* *wenüy*
1.s make.effort-fut-indic.1.s 1.s.poss see-thith-fut.inf 1.s.poss friend
"I will make an attempt to go see my friend."

1.12 Realized ability due to assistance

Help predicates in Mapudungun, such as *kellu* (help), license two different complementation schemes. On the one hand, help predicates license adjunct or oblique argument clauses which appear to ban -*a*.

(42) *Kellu-n* *kintu-n* *mu* *waca*
help-indic.1.s look.for-inf P cow
"I helped look for the cow."

(43) *Kellu-fi-n* *kintu-n* *mu* *waca*
help-obj-indic.1.s look.for-inf P cow
"I helped him find the cow."

(44) *inché* *kellu-n* *ni* *zeyegtu-n-mu*
1.s help-indic.1.s 1.s.poss chop.wood-inf-P
"I helped chop wood." (cf. "I helped out in the wood chopping.")

On the other hand, help predicates in Mapudungun also license clauses which appear to be final adjuncts and require -*a* (compare (42) above with (46) below).

(45) *inché* *kellu-n* *kintu-a-fi-el* *fotüm*
1.s help-indic.1.s look.for-fut-obj-inf son
"I helped to find the child."

(46) *???Kellu-n* *kintu-n* *waca*
help-indic.1.s look.for-inf cow

(47) *Iñche* *kellu-n* *malal-tu-a(e)l*
1.s help-indic.1.s fence-vb-fut.inf
"I helped repair the fence."

Thus, an oblique clause will block -*a*, whereas a final adjunct will require -*a*; but there appears to be no difference in interpretation between the two variant complementation schemes. That is, each clause appears to bear the same thematic role in their respective constructions.

1.13 Time-span predicates

Time-span predicates denote the span of time that some event took. Time span predicates in English include: *take an hour / a year*, *last an hour / a year*. Mapudungun has predicates in which DPs denoting times serve are followed by the copular clitic *-nge* or some light-verb-like suffix. These predicates often take nominal complements.

(48) *kiñe antü-tuku-y ni kewa-n Manuel ka Juan*
one day-put.at-indic.3 3.poss fight-inf M. and J.
"The fight between Manuel and Juan lasted one day."

(49) *Kiñe-antü-l-i yiñ trapi-l-ün*
one-day-caus-indic.3 1.p.poss red.pepper-caus-inf
"It took us a day to plant ají.", "Our ají planting took a day."

(50) *Kiñe-antü-künü-y iñ trapi-l-ün*
one-day-leave-indic.3 1.p.poss red.pepper-caus-inf
"It took us a day to plant ají.", "Our ají planting took a day."

(51) *epu antü tuku-y ni amu-n ka mapu*
two day put.at-indic.3 1.s.poss go-inf other land
"It took two days for me to go to other lands.", "My going to other lands took two days."

When taking full complement clauses, these predicates license complements with *-a*.

(52) *itro-kom antü tuku-y ñi katru-me-a-fi-el chi mamüll*
completely-all day put-indic.3 3.poss cut-thith-fut-obj-inf det tree
"It took a whole day to cut the tree."

(53) *kiñe tripantu tuku-y=ngün ñi zewma-ya-fi-el chi kuykuy*
one year put-indic.3=p 3.poss make-fut-obj-inf det bridge
"They took a year to build the bridge."

There exist similar predicates, but for which consultants offered divergent readings from those above and more cleft-like in character, as in the following example. The

complement to this predicate below does not bear *-a*, but it also differs from the previous temporal predicates reviewed in that it denotes a specific day rather than measuring a length of time in days or years, etc. Therefore, I conclude that it is not a time-span predicate, but rather more of an eventive predicate, with an Adverbial-like meaning; in this case, "yesterday".

(54) *wiya-nge-y* *ñi* *kintu-tu-n* *ñi* *waca*
yesterday-be-indic.3 3.poss look.for-re-inf 3.poss cow
"It was yesterday that he looked for the cow."

1.14 Requirement evaluative predicates

Requirement evaluative predicates, as opposed to judgement evaluative predicates, appear to require *-a*, such as *fali* (cost, worth), *kuzao* (work, tough), and *chofu* (lazy). As with other evaluative predicates, the complement may either be interpreted as future, generic, and thus partially future, or as factive and past.

(55) *fali-la-y* *ni* *tripa-yá*
worth-neg-indic.3 3.poss go.out-fut.inf
"It's not worth it to go out."

(56) *fali-nma-n* *ni* *kütral-tu-ya-el*
cost-mal-indic.1.s 1.s.poss fire-vb-fut-inf
"It was difficult to start the fire."

(57) *masiaw* *kuzaw-nge-y* *mapunzungwo-al*
too.much work-be-indic.3 M.-fut.inf
"It is very difficult to speak Mapudungun." (lit. "It is a lot of work to speak Mapudungun.")

(58) *Chofu-y* *ñi* *chillkatu-a-el*
lazy-indic.3 3.poss read-fut-inf
"He was too lazy to read."

(59) *Küzao-tu-y* *ñi* *pe-tu-al* *waca*
work-vb-indic.3 3.poss see-re-fut.inf cow

"It was difficult to find the cow." (lit. "It cost work to find the cow.")

However, speakers also offered and accepted the following form, without *-a*, as a variant for the previous sentence and truth-conditionally equivalent in context.

(60) *Küzao-tu-y* *ñi* *pe-tu-n* *waca*
work-vb-indic.3 3.poss see-re-inf cow
"It was difficult to find the cow." (lit. "It was work to find the cow.")

2 Predicates which allow *-a* and its absence

2.1 Verba dicendi

Verbs of saying in Mapudungun, such as *feypi* (tell), *pi* (say), *ramtu* (ask), *pezi* (ask), and *wirar* (shout), are the only ones that license finite complements, in the form of direct quote complements, and all appear to pattern together in this regard.

(61) *fey* *fipi-e-n-eo* *amu-la-[e?]ymi*
3 say-inv-indic.1.s-ds go-neg-indic.2.s
"He advised me not to go." (lit. "He told me: Don't go.")

(62) *fey* *amu-a-n* *pi*
3 go-fut-indic.1.sg say.indic.3
"He said: I will go."

(63) *fey* *ramtu-y* *kim-i-m-ün* *eymün*
3 ask-indic.3 know-indic-2-p 2.p
"He asked if we had understood." (lit. "He asked: Have you understood?")

(64) *fey* *wirar-i* *basta* *fentepu*
3 shout-indic.3 be.enough that.much
"He shouted: that's enough!"

Nevertheless, when verbs of saying take indirect, hence in Mapudungun non-finite, complements, they allow complements either with *-a* or its absence (null counterpart); correlating with a future vs. non-future meaning.

(65) a. *fey fipi-e-n-eo chew ñi müle-n*
3 say-inv-indic.1.s-ds where 3.poss be-inf
"He told me where it was."

b. *Iñche feypi-fi-n (ñi) chillkatu-nge-a-el ti chillkatu-we*
1.s say.thus-obj-indic.1.s 3.poss study-pass-fut-inf det study-instr
"I told them to read the book." (lit. "I told them that the book should be read.")

(66) *iñche ramtu-w-ün eymi mi chem ngilla-ka-n*
1.s ask-refl-indic.1.s 2.s 2.s.poss what buy-cont-inf
"I wonder what you have bought."

(67) *ramtu-i ni küpa:-fu-el*
ask-indic.3 3.poss come.fut-FU-inf
"He asked if he could come."

(68) *eymi pi-kunu-la-imi chumül ñi amu-a-el*
2.s say-leave-neg-indic.2.s when poss go-fut-inf
"You didn't say when you would be coming."

(69) *iñche pezi-nge-tu-n ta-ñi wiño-l-tu-a-el libru*
1.s ask-pass-re-indic.1.s det-1.s.poss go.back-caus-re-fut-inf book
"I was asked to return the book."

2.2 Epistemic predicates

Epistemic predicates like *kim* (know), *küre* (believe), *rakizuam* (think) similarly allow for complements with or without *-a*, correlating with a difference in future vs. non-future temporal interpretation.

(70) a. *iñché kim-ün ñi wew-ün*
1.s know-indic.1.s 1.s.poss win-inf
"I know that I won."

b. *iñché kim-fu-n (ñi) wew-a-el*
1.s know-FU-indic.1.s 1.s.poss win-fut-el
"I knew that I was going to win."

(71) a. *fey* *küre-y* *iñché* *ñi* *amu-n*
3 believe-indic.3 1.s 1.s.poss go-inf
"He believes that I left."

b. *fey* *küre-y* *iñché* *ñi* *amu-a-el*
3 believe-indic.3 1.s 1.s.poss go-fut-inf
"He believes that I will leave."

(72) a. *iñché* *rakizuam-ün* *Manuel* *ni* *wew-ün*
1.s think-indic.1.s M. 3.poss win-inf
"I thought that Manuel won."

b. *iñché* *rakizuam-fu-n* *(fey)* *ni* *Manuel* *ni* *wew-a-fu-el*
1.s think-FU-indic.1.s 3 3.poss M. 3.poss win-fut-FU-inf
"I had thought that Manuel would win."

2.3 Judging predicates

Judging predicates in Mapudungun such as *(n)günew* (be cautious, judge, think, believe) and *troki* (opine, judge, seem to one) may appear with *-lu* clause complements, which generally appear to the left of the matrix predicate, in contrast to most complement clauses in Mapudungun. Nonetheless, these verbs pattern with other epistemic predicates in either allowing *-a* or its absence (null counterpart) in its complement, correlating with a difference in temporal interpretation.

(73) *Fey* *langüm-e-t-ew* */langüm-e-lu-mu* *günew-i/ngenuw-i*
3 kill-inv-inf-ds kill-inv-prpl-ds caution.refl-indic.3
"He believes he killed me."

(74) *Iñché* *amu-tu-a-lu* *ngünewküle-n*
1.s go-re-fut-prpl caution.refl.stat-indic.1.s
"I think I will go."

(75) *Kon-pa-lu* *troki-fi-n* *trewa,* *pe-la-fi-n*
go.in-hith-prpl opine-obj-indic.1.s dog see-neg-obj-indic.1.s
"I sensed the dog come in, but I didn't see it."

(76) *iñché kelü troki-la-fi-n*
1.s red opine-neg-obj-indic.1.s
"It didn't look red to me." (lit. "I didn't think it red.")

2.4 Dream predicates

The dream predicate *pewma* (dream) in Mapudungun allows -*a* complements; and presumably also complements without -*a*, correlating with a difference in temporal interpretation.

(77) *inché pewma-n famun-yaku-(y)a-el*
1.s dream-indic.1.s here-arrive-fut-inf
"I dreamt that I would be here."

2.5 Memory predicates

Memory predicates in Mapudungun such as *upe* (forget), *ngoyma* (forget), and *akorza* (remember) allow complements with either -*a* or its absence (null counterpart). The difference again appears to reside in temporal interpretation; though the matter is not straightforward as complements with -*a* may license negative implicative readings.

(78) *upe-nentu-küno-n ni pe-ntuku-me-fi-el*
forget-take.out-leave-indic.1.s 1.s.poss see-put.at-thith-obj-inf
"I forgot that I already went to visit him."

(79) *upe-nentu-küno-n eymi mi müle-a-el Villarrica mu wülé*
forget-take.out-leave-indic.1.s 2.s 2.s.poss be-fut-inf V. P
tomorrow
"I forgot that you were going to be in Villarrica tomorrow." (Speaker confirms factive implication)

(80) *upe-nentu-küno-n ni pe-ntuku-me-a-fi-el*
forget-take.out-leave-indic.1.s 1.s.poss see-put.at-thith-fut-obj-inf
"I forgot to go visit him."

(81) *Fey* *ngoyma-y* *iñche* *mi* *langüm-fi-el*
3 forget-indic.3 1.s 2.s.poss kill-obj-inf
"He forgot that I killed you."

(82) *Ngoyma-n* *amu-al* *Temuco* *wíle*
forget-indic.1.s go-fut.inf T. tomorrow
"I forgot that I had to go to Temuco tomorrow.", "I forgot to go to Temuco tomorrow." (Speaker's comment: you will not go now, because you did not prepare)

(83) *feyta* *akorza-i* *chew* *ñi* *müle-n*
3 remember-indic.3 where 3.poss be-inf
"He remembered where he was."

2.6 Judgement evaluative predicates

Evaluative predicates in Mapudungun license complements either with or without *-a*. Paradigmatic here is the predicate *küme* (good).

The resulting difference is not obviously one of temporal interpretation. Whereas complements without *-a* are interpreted as non-future, complements with *-a* may be interpreted as future, generic, and thus at least partially future, or also as factive and past.

(84) *küme-la-y* *ñi* *pütoko-meke-fi-el* *chi* *pülko*
good-neg-indic.3 3.poss drink-prog-obj-inf det wine
"It is not good for him to be drinking.", "It is not good that he is drinking."

(85) *küme-la-y* *ñi* *i-ya-fi-el* *chi* *pülko*
good-neg-indic.3 3.poss eat-fut-obj-inf det wine
"It is not good to drink wine."

(86) *muná* *wesá* *ñi* *kewa-fi-el* *Juan* *ta* *Manuel*
very bad 3.poss fight-obj-inf J. det M.
"It is very bad that Manuel hit Juan."

2.7 Liking predicates

Liking predicates in Mapudungun, e.g. *kümentu* (like, find good; Huilliche dialect), *poye* (like, love; Central dialect), *üze* (hate), allow complements either with or without *-a*.

As with evaluative predicates, there appear to be two senses possible with liking predicates. With one sense, where the predicate is interpreted as a punctual attitude, the alternation between *-a* and its absence in the complement correlates with a future vs. non-future temporal interpretation. In another sense, where the predicate is interpreted as a habitual attitude, *-a* appears to be required.

(87) *kümentu-la-fi-n* *fey* *ni* *amu-n* *Maria*
like-neg-obj-indic.1.s 3 3.poss go-inf M.
"I don't like it that Maria has left."

(88) *poye-fü-n* *ta* *(ñi)* *amu-al* *lafken-meu*
love-FU-indic.1.s the 1.s.poss go-fut.inf lake-P
"I would like to go to the lake."

(89) *ayü-ke-n* *ñi* *lef-a-el*
want-hab-indic.1.s 1.s.poss run-fut-inf
"I like to run."

(90) *Feyengün* *ayü-ke-y=ngün* *ñi* *müñetu-me-a-el* *leofu-mo*
3.p want-hab-indic.3=p 3.poss bathe-thith-fut-inf river-P
"They like to go swim in the river."

(91) *Üze-n* *treka-ya-el* *chillkatu-we* *ruka* *mew*
hate-indic.1.s walk-fut-inf study-instr house P
"I hate walking to school."

The predicate *wim* (become accustomed to, become used to) may be deemed a liking predicate with the sense of an attitude of being at peace with some habitual eventuality. It appears to require an *-a* complement.

(92) *Wim-ün* *treka-yal* *chilkatu-we* *ruka* *meo*
get.used.to-indic.1.s walk-fut.inf study-instr house P
"I got used to walking to school."

2.8 Reaction psychological predicates

The Mapudungun psychological predicates *yewentu* (be ashamed), *mañumü* (be grateful), *ayüw* (be happy), *mashiaw* (be sick/tired of) all take *-n mu*, or other sorts of, reason adjuncts. The sense expressed is that the psychological state of the experiencer is the result of, or a reaction to, the event described in the adjunct. It may be implied that the object of the psychological state is also that event, but this may not be stated. The complements of these predicates generally appear without *-a*.

(93) *Yewe-ntuku-ne-fi-n* *ni* *kon-pa-n*
be.ashamed-put-have-obj-indic.1.s 1.s.poss go.out-hith-inf
"I am ashamed to admit it."

(94) *inché* *yewentu-fi-n* *ni* *kon-un-pa-tu-el*
1.s be.ashamed-obj-indic.1.s 1.s.poss enter-?-hith-vb-inf
"I am ashamed to admit it."

(95) *inché* *mañumü-küle-n* *ni* *llow-nge-n*
1.s be.grateful-stat-indic.1.s 1.s.poss receive-pass-inf
"I am grateful that you have received me."

(96) *Ayüw-küle-n* *ñi* *kellu-ntuku-le-n* *mo*
be.happy-stat-indic.1.s 1.s.poss help-put-stat-inf P
"I am happy to be able to help."

(97) *Mashiaw-rkü-tu-n* *ñi* *zella[/e]w-tu-n* *mamüll*
too.much-rep-vb-indic.1.s 1.s.poss chop.wood-vb-inf wood
"I am tired of chopping wood."

(98) *Mashiaw-rkü-tu-n* *ñi* *zella[/e]w-tu-n* *mew*
too.much-rep-vb-indic.1.s 1.s.poss chop.wood-vb-inf P
"I am tired from chopping wood."

Reaction psychological states may be past-oriented (cf. e.g. regret, being sorry), and thus their cause or object, perhaps often the same, may be described in clauses without *-a*; for instance as reason adjuncts. Nevertheless, we expect complements with *-a* to be possible, if marginal, insofar as a future prospect may also elicit an emotional response in the present.

3 Predicates which may block *-a*

3.1 Aspectual predicates

Aspectual notions are usually expressed by suffixes in Mapudungun, such as those corresponding to "continue" and "keep".

(99) *iñché petu chillkatu-meke-n mapunzungun*
1.s still study-prog-indic.1.s M.
"I am studying Mapudungun."

(100) *Juan wiri-tu-le-y kiñe papeltu-n*
J. write-vb-stat-indic.3 one read-inf
"Juan continues to write a book."

The use of bare lexical items also encodes aspectual information in Mapudungun, with different information expressed depending on the aktionsart of the predicate.

(101) *wiyá tràpi-l-í*
yesterday red.pepper-caus-indic.3
"Yesterday he planted / began to plant ají."

The aspectual notion of "again" may be expressed by the suffix *-tu* or by the restructuring verb *wiño* (go back).

(102) *Juan wiño-kuzao-tu-y ñi wiri-tu-n*
J. return-work-vb-indic.3 3.poss write-vb-inf
"Juan went back to work on his writing."

The notion of "sudden", which is an eventive predicate according to Zucchi (1993: 21-2, 71-2), is expressed by the suffix *-rume*.

In fact, it is not clear that there are any aspectual predicates proper, i.e. which take full clauses as complement instead of just restructuring ones.

I have recorded several such instances, with verbs such as *tuw* (start), *zewma* (make, finish), *afün ~ apüm* (stop, bring to an end), and *pücham* (finish), but it is possible these are forced; for the predicates in question tend to take N arguments. Moreover, some of the examples collected are ambiguous between a parse on which the complements are clauses or nominalizations (e.g. headed by n_{Inf} instead of Inf, cf. chapter 2). Nevertheless, there are examples which clearly contain complement clauses, as indicated by the presence of higher functional clausal structure.

(103) *???wiyá* *tuw-iyiñ* *trapi-l-ün*
yesterday start-indic.1.p red.pepper-caus-inf
"Yesterday we started to plant ají."

(104) *Zewma-yiñ* *trapi-l-ün*
make-indic.1.p red.pepper-caus-inf
"We finished sowing ají."

(105) *Juan* *afü-nentu-(rpu)-i* *ñi* *wiri-tu-n*
J. stop-take.out-interrupt.dir-indic.3 3.poss write-vb-inf
"Juan finished (his) writing."

(106) *Juan* *pücham-i* *ni* *chillka-tu-n*
J. finish-indic.3 3.poss study-vb-inf
"Juan finished studying / his studies."

Only a few verbs were attested with complements with endings other than bare *-n* or which otherwise suggest a full clausal structure rather than a nominal parse, including *rupa* (pass), *pücham* (finish), and *af* (stop). Note that the matrix verb does not agree with the embedded subject but rather displays default agreement, indicating that, insofar as these constructions are indeed good, these verbs take clauses as their

single argument, instead of entering into a control or raising structure. None of these predicates were attested with complements with *-a*.

(107) *inche* *rupa-y* *zewma* *ni* *chillkatu-fi-el* *chi* *lifru*
1.s pass-indic.3 already 1.s.poss read-obj-inf det book
"I finished reading the book."

(108) *rupa-y* *ñi* *mawün-ün*
pass-indic.3 3.poss rain-inf
"It stopped raining."

(109) *af-i* *ñi* *i-fi-el* *iyagel*
stop-indic.3 1.s.poss eat-obj-inf food
"I already finished eating food."

3.2 Truth predicates

The predicate *rüf-nge* (be true) in Mapudungun does not appear to license -a in its complement clause.

(110) a. *Rüf-nge-y* *ñi* *kintu-yawül-ün* *waca*
true-be-indic.3 3.poss look.for-go.around[.give?]-inf cow
"Is it true that he is going around looking for the cow?"

b. **Rüf-nge-y* *kintu-yawül-a-el* *waca*
true-be-indic.3 look.for-go.around[.give?]-fut-inf cow
Intended: is it true that he will be going around looking for the cow?

(111) *rüf[e]-nge-y* *ta-ni* *kim-no-n* *mapuzungun*
truth[?]-be-indic.3 det-1.s.poss know-neg-inf M.
"It's true that I don't know (how to speak) Mapudungun."

3.3 Perception predicates

Sensory predicates in Mapudungun may not allow *-a* complements. It may be the case that these verbs do not take a complement clause, but rather an adjunct clause modifying the matrix object.

(112) *inche* *pe-ge-ymi* *kuzaw-ni-fi-el* *mi* *malal*
1.s see-inv-indic.2.s work-have-obj-inf 2.s.poss fence
"I saw you working on your fence." (must have witnessed event)

(113) *iñche* *pe-fi-n* *(ta-ñi)* *tripa-n* *wiyá*
1.s see-obj-indic.1.s det-3.poss go.out-inf yesterday
"I saw him leave yesterday."

(114) *allkü-fi-n* *ñi* *aku-n*
hear-obj-indic.1.s 3.poss arrive-inf
"I heard him arrive."

(115) *iñche* *allkü-(fi)-n* *wadkü-n* *tetera* *ko*
1.s hear-obj-indic.1.s boil-inf kettle water
"I heard the water in the kettle boiling."

Further evidence that these predicates allow an adjunct modifying an object instead of a complement clause comes from the possibility of licensing -*lu* clauses with essentially the same meaning.

(116) *Fey* *allkü-y* *aku-tu-lu* *iñche*
3 hear-indic.3 arrive-re-prpl 1.s
"They heard me coming in."

(117) *allkü-nge-n* *aku-tu-lu* *iñche*
hear-pass-indic.1.s arrive-re-prpl 1.s
"They heard me coming in." (lit. "I was heard coming in.")

In either complementation scheme, sensory predicates have not been observed with -*a* complements.

Appendix B

Comparison of Allomorphy Theory with Alternatives

In this Appendix I will compare the theory proposed in Chapter 1, on which *-n*, *-el*, *-t*, and *-m* are all allomorphs of a single non-finite morpheme, Inf, with alternative theories. In particular I will examine the question of which theories fare best on the analyses of traditionally recognized non-finite endings, on the distribution of non-finite markers and endings across morphological environments, and on the distribution of the traditionally recognized non-finite endings across syntactic functions. I will also argue against the proposal in de Augusta (1903) that *-m* and *-yüm* are two allomorphs of a single morpheme.

1 On analyses of endings

Following Baker (undated) (see also Smeets 2008), I have proposed the following ontology of non-finite markers for Mapudungun (see also Table 1.1).

(1) Ontology of non-finite markers in Mapudungun

-n, *-el*, *-t*, *-m*, *-lu*, *-wma*

I thus analyze the ending -*fiel* as -*fi-el*, containing the object agreement morpheme -*fi*; the ending -*eteo* as -*e-t-eo*, containing the inverse voice morpheme -*e* and dative subject marking -*eo*; the ending -*am* as -*a-m*, containing the future morpheme -*a*; the ending -*mum* as -*mu-m*, containing a past morpheme -*mu*; and the ending -*yüm* as -*ye-m*, containing a temporal quantification morpheme -*ye*.

These analyses are contentious as several previous theories have not analyzed these endings in this way, most deeming them unitary elements not susceptible to analysis. In the following, I will defend these analyses by motivating the presence of the component morphemes indicated, and in this way, argue against unitary analyses of the endings in question.

1.1 Contra *-fiel* as unitary

Smeets' (2008: 213) justification for distinguishing -*fiel* from -*el* and not analyzing the sequence as -*fi-el* is that object agreement -*fi* cannot occur with a 1st or 2nd person object in finite clauses whereas the ending -*fiel* is possible with 1st or 2nd person objects in non-finite clauses.

(2) *iñché* *mi* *pe-fi-el* *eymi*
1.s 2.s.poss see-obj-inf 2.s
"my seeing you" (Smeets 2008: 211)

(3) *eymi* *mi* *pe-fi-el* *iñché*
2.s 2.s.poss see-obj-inf 1.s
"your seeing me" (Smeets 2008: 211)

However, the agreement inflections for interactions between 1st and 2nd person appear to be somewhat idiosyncratic to begin with and it is therefore not implausible to suppose that their expression might vary between finite and non-finite clauses.

Also in favor of a unitary analysis of -*fiel* is that -*fi* is not free to drop in general, unlike matrix -*fi*. Thus the ending -*fiel* on transitive predicates seems to act as a unit.

Nevertheless, this may be attributed, on the allomorphy theory proposed here, to the absence of a preceding morphological context which triggers -*el* instead of another allomorph of Inf.

1.2 Contra -*eteo* as unitary

Let us say that clauses in which the Patient outranks the Agent on the topic-animacy hierarchy display 'inverse interactions'. The ending -*eteo* licenses inverse interactions. Matrix clauses with an inverse interaction and a singular 1st, 2nd or 3rd person Patient surface as -*e-n-eo*, -*e-ym-eo* and -*e-y-eo*, respectively. Smeets' (2008) analysis, on which -*e-t-eo* is made up of a non-finite marker -*t* occurring in the morphological context -*e*...-*eo*, appears to be more successful insofar as it allows one to maintain the simple generalization that an inverse voice interaction is licensed if and only if the inverse voice morpheme -*e* and dative subject marker -(*m*)*eo* are present, and to have it apply across both finite and non-finite clauses. Theories which treat the ending -*eteo* as a single unanalyzed unit, such as those of Salas (2006), Zúñiga (2006), and de Augusta (1903), on the other hand, must divorce the licensing of an inverse interaction from the presence of the inverse voice morpheme -*e* (and dative subject marking -(*m*)*eo*) and extend the licensing also to the marker -*eteo*, and thus produce a disjunctive statement, since on these theories the ending -*eteo* does not contain the inverse voice morpheme -*e* despite its availability in subordinate clauses in principle.

It should also be noted that there is independent evidence that the inverse voice morpheme -*e* may occur embedded. The ending -*eyümeo* is best analyzed as -*e-yüm-eo* (up to different analyses of the sequence -*yüm*), with an independent inverse voice morpheme -*e*, as it licenses an inverse interaction. Thus, theories which posit unitary -*eteo* must nevertheless also posit inverse voice -*e* and acknowledge its ability to occur in subordinate clauses in order to account for -*eyümeo*.

(4) *kintu-ñma-nie-n* *ta-ñi* *mapu*
look.for-mal-have-indic.1.s det-1.s.poss land
trana-künu-mu-e-yü-meu *ta-ñi* *Longkomilla* *chau* *em*
drop-leave-plprf-inv-temp-inf.ds det-1.s.poss L. father dec
"I have under my care my land where my late father Longokomilla has left me" (de Augusta 1903: 223)

Finally, it may also be noted that, while it suffices to say that inverse interactions are licensed by *-e* and *-eteo* to derive the facts that the non-finite endings *-n*, *-el*, *-am*, and *-mum* may not occur with inverse interactions, this account may be deemed unsatisfactory for theories on which the endings *-n*, *-el*, *-am*, or *-mum* do not contain non-finite markers which alternate with an allomorph triggered by, or constitutive of, a licensor of inverse interactions but rather are independent morphemes. For, it is unexpected for clauses with a given non-finite morpheme to be barred from licensing a certain type of interaction, such as a 3rd person Agent and a 1st person Patient. On the allomorphy theory proposed here, on the other hand, there is no such strange consequence. Rather, the non-finite morphemes Inf and *-lu* are both compatible with inverse interactions; as both may combine with inverse voice *-e*, the sole licensor of inverse interactions.

1.3 Contra *-am* as unitary

Clauses with the ending *-am* may be used as final adjuncts. Smeets' (2008) analysis of the ending as *-a-m* allows for the generalization to be maintained that all final adjuncts require the future marker *-a*, as is observed with final adjuncts with the non-finite markers *-lu*, *-el* and *-eteo*.

(5) *feymeo* *ñi* *küymi-a-m* *chi* *machi* *kom* *chi* *pu* *wentru*
then 3.poss fall.into.trance-fut-inf det machi all det p man
ürar-ke-i=ngün *ka* *palo-lel-ke-i=ngün* *ñi* *wiño*
shout-hab-indic.3=3.p and stick-ben-hab-indic.3=3.p 3.poss chueca.stick
"Then, for the machi to fall into a trance, all the men shout and beat their chueca sticks for him." (Salas 2006: 167)

(6) *traw-uw-üy=ngün* *ñi* *rünga-l-a-fi-el*
gather-refl-indic.3=3.p 3.poss dig-caus-fut-obj-inf
"They gathered together to bury him." (Smeets 2008: 215)

(7) *fey* *müná* *kutran-ka-w-üy* *mi* *trem-üm-a-t-ew*
3 very be.sick-fac-refl-indic.3 2.s.poss grow-caus-fut.inv-inf-ds
"She made a lot of sacrifices in order to raise you." (Smeets 2008: 215)

(8) *ṯüfa-chi* *kulliñ* *puṉ* *tripa-ke-y* *weñe-a-lu*
det-adj animal night go.out-hab-indic.3 steal-fut-prpl
"This animal goes out at night to steal." (Salas 2006: 149)

On the other hand, theories on which -*am* is an unanalyzed unit (e.g. Salas 2006, Zúñiga 2006, de Augusta 1903) must either note its use as a final adjunct as an exception to the general rule, perhaps saying that -*am* could have inherited this function historically but still be a synchronic unit, or reformulate the general rule such that final adjuncts require only a [+future] element and posit the disjunctive statement that -*a* and -*am* are both [+future] elements. Smeets' analysis of the ending -*am* is compatible with such a reformulation of the principle of final adjunct licensing, but may dispense with the disjunctive statement identifying the bearers of the [+future] feature.

1.4 Contra -*mum* as unitary

Since -*mum* clauses display a consistently present or past meaning (Salas 2006: 169), as opposed to -*am*, which are future, and since [mu] may appear separated from the ending -*m* and may even appear without the ending -*m*, and always correlating with a present or past meaning, the analysis of -*mum* as -*mu*-*m*, the exponents of two separate morphemes, the first an independent temporal morpheme -*mu* the second and a non-finite marker -*m*, seems preferable to the analysis of Salas (2006) and Zúñiga (2006) of -*mum* as a primitive unit and non-finite morpheme; and especially on the

basis of the fact that non-finite markers do not in general have an isolable meaning, but rather are interchangeable in diverse syntactic contexts without discernible semantic effects.

(9) *ti ruka chew ñi pe-mu-fi-el la pampa fewlá*
det house where 3.poss see-plprf-obj-inf the plains now
nge-we-tu-la-y
be-persist-re-neg-indic.3
"That house (from) where one saw the plains is not there any more." (Smeets 2008: 214)

(10) *monge-mu-lle-m kam*
live-plprf-affirm-inf part
"That's life!" (de Augusta 1903: 223)

1.5 Contra *-yüm* as unitary

Smeets (2008: 225) proposes that *-ye* expresses a temporal quantification meaning akin to "when(ever)". Since *-yüm* clauses are primarily used precisely as temporal adjuncts situating the matrix clause at the time of the eventuality expressed by the *-yüm* clause, attributing such a meaning to *-ye* may be viewed critically as quite convenient; especially since the hypothesized morpheme *-ye* is restricted to occurring with the non-finite marker *-m* (Smeets 2008: 225), and thus independent evidence for its content outside of *-m* clauses is impossible to obtain.

Nevertheless, the plausibility of the analysis of *-yüm* as *-ye-m* is significantly strengthened once one considers the fact that non-finite clause types in Mapudungun generally have a multitude of uses: as adjuncts of various types (e.g. final, causal, temporal, manner), relative clauses of particular types, and as complements (see Salas 2006, Smeets 2008, Loncon 2011). The fact, then, that *-yüm* clauses are for the most part restricted to the use of temporal adjuncts is indeed quite unexpected. If, however, it is the presence of *-ye* which imparts a temporal quantificational meaning, then this restriction receives a tidy yet satisfactory explanation.

Moreover, non-finite markers do not in general have an isolable meaning, but rather are compatible and interchangeable in diverse syntactic contexts without semantic effects. Therefore, the fact that -*yüm* does have content, and a restricted distribution, suggests that it does contain an element which is contributing this, temporal, meaning.

2 On the distribution of non-finite endings across morphological environments

In the following, I will defend the allomorphy groupings (and thereby also the ontology of markers) of the theory developed here by considering the generation of the set of grammatical strings with non-finite endings in Mapudungun. In each case, the facts regarding co-occurrence restrictions between endings and preceding morphological contexts are explained within the theory proposed here solely on the basis of its proposed allomorphy rules for Inf, its analysis of the endings, and the rigid ordering of morphemes in Mapudungun verbs. I will show that alternative theories must resort to explanations with stipulations which have no counterpart in the theory proposed here and with principles which are less appealing.

Table B.1 summarizes the facts regarding the distribution of non-finite endings across preceding morphological contexts.

It is necessary to impose a presupposition on the morphological analysis of the stem since it is conceivable that there might be a stem in Mapudungun ending in [a], for example, and which may be followed by the non-finite ending -*n*, -*am*, or -*mum*. The * in the table does not refer to these strings but only to those where the stem, indicated in the column and prior to the appending of the non-finite ending, is analyzed as ending in the morpheme of future -*a*. Note also that none of the theories considered here differ on the morphological analysis assigned to these stems but only

Table B.1: Distribution of non-finite endings across morphological contexts

	Stem	Stem-*a*	Stem-*fu*	Stem-*mu*	Stem-*fi*	Stem-*e*	Stem-*ye*
ˆ*t*	*	*	*	*	*		*
ˆ*m*	*		?		*	*	
ˆ*n*		*	*	*	*	*	*
ˆ*am*		*	*	*	*	*	*
ˆ*mum*		*		*	*	*	*
ˆ*eteo*					*	*	*
ˆ*fiel*					*	*	*
ˆ*el*				*		*	*
ˆ*yüm*							*

'Stem' refers to a stem beginning with a Mapudungun root followed by a possibly empty sequence of neutral morphemes. Each column refers to such a stem followed by and terminating in the morphemes of future -*a*, temporal -*fu*, temporal -*mu*, object agreement -*fi*, inverse voice -*e*, or temporal -*ye*, respectively. Each cell is interpreted as the string formed by appending the ending in the row onto the stem in the column, though with a presupposition on the morphological analysis assigned to the stem.
A * indicates that the string is ungrammatical.
A blank indicates that it is grammatical.
A ? indicates that the grammaticality of the form is uncertain but presumed bad.
In each case this string is supposed to constitute a word, except for the strings in the first row, formed by appending the putative marker -*t*, which must be followed by the differential subject marker -*eo* to form a word.

on the analysis of the endings; so all must face, and account for, the facts as listed in the table.

First, let us review evidence for positing -*a*, -*fu*, -*mu*, -*fi*, and -*e* as independent morphemes which may occur embedded by showing how they may occur in diverse contexts and contribute consistent meanings isolable to them alone. First it might be noted that -*a*, -*fu*, -*fi*, and -*e* are all uncontroversial independent morphemes which may occur in finite verb forms in matrix clauses.

-*a* may precede different non-finite endings such as -*el*, -*eteo*, and -*yüm*. It consistently contributes a future meaning.

-*fu* may precede different non-finite endings such as -*el*, -*eteo*, -*mum* and -*yüm*. It consistently contributes a past meaning.

-*mu* is not restricted to occurring in the non-finite ending -*mum* but may appear non-contiguous to -*m* or even without -*m* at all, followed by the ending -*fiel*. It

consistently contributes a present or past meaning. See §1.4.

-fi is not restricted to occurring in the non-finite ending *-fiel* but may appear in *-filu*, *-fiyüm*. It consistently marks the presence of an object. See §2.7.

-e may occur without *-t* such as in *-eyümeo*. It consistently marks the presence of an inverse interaction. See §1.2.

In this way, the inability for a given ending to attach to a stem ending in the morphemes of future *-a*, temporal *-fu*, temporal *-mu*, object agreement *-fi*, or inverse voice *-e*, in each column, cannot be attributed to the inability of that morpheme to occur embedded.

2.1 On the generation of strings with *-t*

The non-finite marker *-t* cannot occur after the morphemes *-a*, *-fu*, *-fi*, *-mu*, *-ye* or indeed after any stem not terminating in the morpheme *-e*. This is explained on an allomorphy theory by providing an allomorph for *-t* in each of these environments.

On theories which posit a primitive marker *-eteo*, such as Salas (2006), Zúñiga (2006), and de Augusta (1903), the fact that, within non-finite endings, [t] may only occur in the context [e...eo] is explained by appeal to idiosyncrasies of the lexicon.

2.2 On the generation of strings with the ending *-m*

The non-finite marker *-m* cannot occur after *-fu*, *-fi*, *-e*, a bare root, or more generally after any stem not ending in *-a*, *-mu*, or *-ye* followed by a, possibly null, sequence of neutral morphemes. An allomorphy theory can account for these co-occurrence restrictions by specifying that other allomorphs of *-m* appear in these environments.

Theories whose ontology of markers does not recognize *-m*, but rather *-am*, *-mum*, and *-yüm*, such as Salas (2006) and Zúñiga (2006), explain the fact that, within non-finite endings, the formative [m] may only occur in environments where it is

immediately preceded by [a], [mu] or [ye] by reducing the matter to idiosyncrasies of the lexicon.[1]

2.3 On the generation of strings with the ending *-n*

-n may not be preceded by any of *-a*, *-fu*, *-mu*, *-fi*, *-e*, or *-ye*.[2] This is explained on the allomorphy theory proposed here because the presence of any of these would trigger a non-*n* marker and there is nothing that could change the preference back to *-n*, since it is only the default marker.

Alternative theories on which *-n* is an independent morpheme, such as Salas (2006), Zúñiga (2006), and de Augusta (1903), and thus does not alternate with allomorph forms after *-a*, *-fu*, *-mu*, *-fi*, *-e*, or *-ye*, may still provide a principled explanation for the inability of *-n* to follow these morphemes by stipulating an appropriate attachment site restrictions, such as that *-n* attaches at or below the position of *-a*. Otherwise, these co-occurrence restrictions must simply be stipulated individually; though the impossibility of **-ye-m* is explained on the assumption that *-ye* is not an independent morpheme in Mapudungun but only part of the primitive ending *-yüm*.

---

[1] de Augusta (1916: xii) cites the ending *-afum*. If this form is grammatical it is a problem for both the theory proposed here and the alternatives considered, since each predicts that [m] may not immediately follow [fu]. If Augusta's datum is correct and to be captured, it may be so within the theory proposed here by supposing that the head H_{obl} occupies the position immediately after *-fu* instead of immediately preceding *-fu*. Alternative theories may capture Augusta's datum by positing another primitive ending *-afum* or else *-m*, and analyzing the ending as *-a-fu-m*.

[2] de Augusta (1903: 169) cites examples of the non-finite marker *-n* occurring with *-a* and *-fu*, while noting that the preference is to use the form *-el* in these environments (de Augusta 1903: 172). de Augusta (1903) also claims that *-n* may occur after *-fi*.

kim-nge-ke-y ta-mi ayü-ke-fi-ñ Rosario
know-pass-hab-indic.3 det-2.s.poss love-hab-obj-inf R.
"It is known that you love Rosario." (de Augusta 1903: 180)

Perhaps these uses are vestiges of an earlier system where *-n* and *-el* forms were in fact distinct or they may involve use of a different *-n* ending which is not an allomorph of the other non-finite endings. In any case, I have not observed such forms and they do not appear to be part of the synchronic grammar of current day Mapudungun; though Malvestitti (2010: 195) does cite an example from Argentinian Mapudungun where *-n* follows future *-a* in an oblique relative clause.

2.4 On the generation of strings with the ending *-am*

The ending -*am* is analyzed here as -*a*-*m*. It may not be preceded by -*a* because -*a* cannot occur twice nor can it occupy a position before its designated slot. It may not be preceded by -*fu*, -*mu*, -*fi*, -*e*, or -*ye*, because each of these occupies a position after -*a*.

Alternative theories on which -*am* is a unitary element and independent morpheme, such as Salas (2006), Zúñiga (2006), and de Augusta (1903), may account for its inability to follow -*a*, -*fu*, -*mu*, -*fi*, -*e*, or -*ye* in a principled manner by stipulating that -*am* attaches at a position at or below -*a*.

2.5 On the generation of strings with the ending *-mum*

The ending -*mum* is analyzed here as -*mu*-*m*. It is plausible that it may not be preceded by -*a* on grounds of semantic incompatibility between future -*a* and past -*mu*.[3] It may not be preceded by -*mu* because -*mu* may not occur twice nor can it occupy a position prior to its designated slot. It may not be preceded by -*fi*, -*e*, or -*ye* because each of these occupies a position after -*mu* and, except for -*ye*, trigger a non-*m* allomorph of Inf.

Alternative theories on which -*mum* is a unitary element and independent morpheme, such as Salas (2006) and Zúñiga (2006), may account for its inability to follow -*a*, -*mu*, -*fi*, -*e*, or -*ye* in a principled manner by stipulating that -*mum* attaches at a position at or below that of -*mu* and accounting for its inability to follow -*a* on semantic incompatibility grounds.

[3] Though English *will* and *would* have been analyzed as a future modal WOLL occurring with both present and past tense inflections, respectively (see e.g. Abusch 1997: 22).

2.6 On the generation of strings with the ending *-eteo*

The ending -*eteo* is analyzed here as -*e*-*t*-*eo*. It cannot be preceded by -*fi* because -*e* occupies the same slot as -*fi* and the two are in complementary distribution. It cannot be preceded by -*e* because -*e* cannot occur twice, nor can it occupy a position before its designated slot. It cannot be preceded by -*ye* because -*ye* occupies a position after -*e*, and if it did occur with -*e* would trigger a different marker than -*t*, resulting in the ending -*eyümeo*.[4]

Alternative theories on which -*eteo* is a unitary and independent morpheme, such as Salas (2006) and de Augusta (1903), and thus does not alternate with other forms, may provide a principled explanation for its inability to follow -*fi*, -*e*, or -*ye* by stipulating that -*eteo* attaches at or below the shared position of -*fi* and -*e*.

Alternative theories on which -*el* and -*eteo* are the sole two allomorphs of a single non-finite morpheme, the former occurring in active voice and the latter in inverse voice contexts, such as that of Zúñiga (2006), may explain the impossibility for -*eteo* to follow -*fi* on the grounds that it would trigger the -*el* allomorph; on the further, shared, assumption that -*fi* is only possible with active voice. However, the inability for -*eteo* to follow -*e* or -*ye* remain to be explained. The latter can be explained by denying the existence of -*ye* as an independent morpheme. The former can be handled either by an attachment site stipulation, such that -*eteo* attaches at a position at or below that of -*e*, or else just directly stipulated.

Adopting an attachment site stipulation approach, however, would force Zúñiga's analysis to introduce further complexities. Since the morphemes -*fi* and -*e* are assumed to occupy the same position, and -*el* may follow -*fi* but -*eteo* may not follow -*e* (or -*fi*), different attachment sites must be proposed for the two markers despite the

[4] Note that the theory proposed here also predicts that it may be preceded by -*mu*, though data on this point has not been obtained.

fact that they are assumed to be allomorphs of the same morpheme. To avoid making such a statement, one alternative is to hold that -*fi* and -*e* do not occupy the same position but rather that -*fi* precedes -*e* and that both attach at the position of -*e* (the impossibility for -*eteo* to follow -*fi* still follows on the assumption that -*fi* triggers -*el*); another alternative is to adopt -*fiel* as the allomorph of -*eteo* and assume that both attach at the position shared by -*fi* and -*e*, though the analysis now becomes subject to the criticisms against positing -*fiel* as a unitary marker (see §1.1).

2.7 On the generation of strings with the ending *-fiel*

It is observed that the ending -*fiel* cannot follow object agreement -*fi*, inverse voice -*e*, or temporal -*ye*. The ending -*fiel* is analyzed here as -*fi*-*el*. It cannot be preceded by -*fi* because -*fi* may not occur twice nor in a position before its designated slot. It cannot be preceded by -*e* because -*fi* occupies the same slot as -*e* and the two are in complementary distribution. It cannot be preceded by -*ye* because -*ye* occupies a position after -*fi* and would trigger a different allomorph of Inf if it did intrude between -*fi* and Inf, so that the ending -*fiyüm* would result.

Smeets (2008) presumably accounts for the impossibility of -*fiel* to follow -*e* on the grounds that preceding inverse voice -*e* triggers the allomorph -*t*, and Smeets (2008: 225) handles the inability for -*fiel* to follow -*ye* by stipulating that -*ye* requires the marker -*m*.

Smeets (2008) suggests that the non-finite markers -*n*, -*el*, -*t*, -*m*, and -*fiel* are all allomorphs, with -*fiel* and -*t* occurring on transitive stems and -*n*, -*el*, and -*m* on intransitive stems. However, apart from this broad characterization in terms of transitivity, there is no clear specification of what the triggering conditions for each allomorph are. Moreover, Smeets is even forced to relax the claim that -*m* only attaches to intransitive stems in light of data with the ending -*fiyüm*. Furthermore, there are plenty of instances of transitive predicates with the ending -*n*. Smeets

appears to define transitivity narrowly and in such a way that these do not constitute counterexamples. Nevertheless, as the non-finite endings -*fiel* and -*n* may attach to the very same root, it appears that no definition of 'transitivity' will suffice to adequately distinguish the environments that the two classes of markers purportedly attach to.

In any case, it is not clear how *-*fi-fiel* is blocked on Smeets' theory. Conceivably, the marker -*fiel* might be taken to have an attachment site at or below that of -*fi*. However, as the marker -*m* can occur after -*fi* in the ending -*fi-ye-m*, on this approach Smeets would have to give up the principle of a uniform attachment site for these non-finite makers. Alternatively, then, the impossibility for -*fiel* to follow -*fi* may be accounted for by assuming that object agreement -*fi* cannot occur embedded, but rather that the formative [fi] referencing transitivity only occurs embedded within the, transitive, non-finite marker -*fiel*. Nevertheless, there is evidence that one needs to recognize that object agreement -*fi* can occur embedded apart from the ending -*fiel*, from clauses ending in -*filu* and -*fiyüm*. Thus, ruling out *-*fi-fiel* appears to remain an outstanding problem for Smeets' theory.

(11) *pe-fi-ye-m* *pu* *kamañ* *utu-ke-fwi-y* *ñi*
see-obj-temp-inf p shepherd go.to-hab-FU.obj-indic.3 3.poss
nütram-ka-pa-ya-fi-el
converse-cont-hith-fut-obj-inf
"Every time he saw the shepherds he went over to talk to them." (Smeets 2008: 210)

(12) *pe-fi-lu* *ñi* *chaw* *amu-tu-y*
see-obj-prpl 3.poss father go-re-indic.3
"When he saw his father, he went back." (Smeets 2008: 221)

2.8 On the generation of strings with the ending *-el*

-*el* cannot be immediately preceded by -*mu*, -*e* or -*ye* on the theory proposed here because each of these would trigger a non-*el* allomorph of Inf.

Alternative theories on which -*el* is an independent morpheme and does not alternate with other allomorph forms after -*mu*, -*e*, or -*ye*, such as Salas (2006) and de Augusta (1903), may provide a principled explanation for its inability to occur after -*ye* by saying that -*el* attaches at a position at or below -*ye*; or simply by not recognizing -*ye* as a morpheme and analyzing the ending -*yüm* as a primitive unit. Since -*el* may follow -*fi* which occupies the same position as -*e*, it cannot account for the inability of -*el* to follow -*e* in this way. Similarly, it cannot account for the inability of -*el* to immediately follow -*mu* in this way, since -*mu* precedes -*fi*, which -*el* must occur after. Moreover, since -*mu* and -*el* may co-occur, it does not do to simply bar -*el* from the contexts in which -*mu* is licensed, however defined. Apparently, then, the impossibility of the sequence -*mu*-*el* must simply be stipulated for such theories.

Alternative theories on which -*el* are -*eteo* are the sole two allomorphs of a single non-finite morpheme, such as Zúñiga (2006), may account for the impossibility of -*el* to follow -*e* on the basis of the fact that inverse voice will trigger the -*eteo* allomorph. The impossibility of -*el* to follow -*ye* may again be accounted for simply by rejecting the existence of the morpheme -*ye* and adopting a unitary analysis of the ending -*yüm* or by assuming that -*el* attaches at a position at or below that of -*ye*. However, the inability for -*el* to immediately follow -*mu* remains a problem and must apparently be stipulated.

2.9 On the generation of strings with the ending *-yüm*

The ending -*yüm* is analyzed here as -*ye*-*m*. It may not be preceded by -*ye* because -*ye* may not occur twice nor can it occupy a position prior to its designated slot.

Alternative theories on which -*yüm* is a unitary element and an independent morpheme, such as Salas (2006) and Zúñiga (2006), may account for its inability to occur with -*ye* by denying that -*ye* is an independent element.

2.10 Evaluation of allomorphy theory and alternatives on the generation of strings with non-finite endings

Independently of its ontology of markers, every theory of non-finite endings in Mapudungun must recognize that the formatives [n], [el], [t], and [m] display a drastically restricted distribution in non-finite endings in Mapudungun. See Table B.1.

On the theory proposed here, this is because the markers -*n*, -*el*, -*t*, -*m* are all allomorphs of a single non-finite morpheme, Inf, and different preceding morphological contexts trigger different allomorphs. The traditional tack of accounting for the relevant co-occurrence restrictions is to incorporate the triggers into their respective non-finite markers, forming a single primitive. In this way, the fact that, within non-finite endings, [t] may only occur in the context [e...eo] or that [m] can only occur preceded by [a], [mu], or [ye] is reduced to idiosyncrasies of the lexicon. Co-occurrence restrictions stemming from idiosyncrasies of the lexicon are just as motivated as those stemming from allomorphy rules, if not more so. Thus, this reduction of the co-occurrence restrictions would appear to be as or more attractive than that of the allomorphy theory proposed here.

Moreover, it should be noted that these traditional theories might seem to have a better account of the impossibility of strings of the form Stem-*m*, where Stem is defined as in Table B.1, viz. a root followed by a possibly null sequence of neutral morphemes, followed by [m]. This follows from the non-existence of -*m* as a non-finite marker in its own right but only appearing as a formative in the markers -*am*, -*mum*, and -*yüm*, in which material would thus necessarily intervene between a stem and [m]. The theory proposed here, on the other hand, derives this fact from a principle to the effect that tense must be marked on Mapudungun verbs and the thesis that a null past form alternates with -*mu* in a context containing the posited morpheme H_{obl}. Nevertheless, as there is independent evidence for both of these assumptions, the result essentially follows from the theory without any further stipulations (as

well).

Furthermore, the traditional approach appears to yield the advantage of providing for a free distribution of the resulting ontology of non-finite morphemes, including -*eteo*, -*am*, -*mum*, and -*yüm*; for instance, while -*m* may only be preceded by -*a*, -*mu* or -*ye*, -*am*, -*mum*, and -*yüm* are free to attach to roots and many other stems. However, once one develops the predictions of this traditional approach further, it becomes clear that the distribution of the resulting ontology of non-finite markers is not free. Rather, a host of other co-occurrence restrictions are needed in order to explain the distribution of these markers across preceding morphological contexts.

On the allomorphy theory proposed here, all these co-occurrence restrictions follow from the allomorphy rules for Inf, analysis of the endings, and the rigid order of morphemes in the Mapudungun verb. It is not clear how alternative theories can derive these co-occurrence restrictions in a non-stipulative manner. One possibility that has been considered is appeal to different attachment sites for the different markers. Arguably, the two approaches yield equally principled explanations; at least for the co-occurrence restrictions that may be so captured by attachment site stipulations.

Nevertheless, there remain certain co-occurrence restrictions which an attachment site stipulation approach will not capture, such as the inability for the ending -*el* to immediately follow -*mu*. On the other hand, on the theory proposed here, this fact follows from the allomorphy rules for Inf.

In addition, since the attachment sites that must be assumed, on this approach, for the markers -*am* or -*mum*, on the one hand, and -*el* or -*eteo* or -*yüm*, on the other, differ, any theory which posits one or more of these markers from each of these groups must hold that non-finite markers have different attachment sites in Mapudungun; including those of Salas (2006), Zúñiga (2006), and de Augusta (1903) - again, should they adopt an attachment site stipulation approach to capture the co-occurrence

restrictions. On the other hand, on the theory proposed here, all Inf allomorphs can be taken to have the same attachment site, viz. following -*ye*, preceding the differential subject marker -(*m*)*eo*, and replacing solely mood and person and number agreement; which is, moreover, apparently the position that the non-finite morpheme -*lu* occupies and a natural position for non-finite markers to occupy.

Thus, the theory proposed here has the advantage of allowing one to maintain the principle that all non-finite markers in Mapudungun (except perhaps -*wma*) have a uniform attachment site, replacing solely mood and person and number agreement; which is preferable *ceteris paribus* to theories which require different attachment sites for different markers.

In summary, theories on which the restricted distribution of the formatives [t] and [m] is explained by idiosyncrasies of the lexicon in only making available the, unitary, non-finite morphemes -*eteo*, -*am*, -*mum*, and -*yüm*, are forced to account for a host of other co-occurrence restrictions which follow on the Inf allomorphy theory proposed here merely on the allomorphy rules, analysis of endings, and strict ordering of morphemes in Mapudungun (see Smeets 2008).

These co-occurrence restrictions must be derived in an alternative way for theories which hold these markers to be distinct morphemes, and one possibility considered here, attachment site stipulations, is not as successful as the allomorphy theory proposed here. It fails to capture certain facts which the allomorphy theory does, and thus still stands in need of further supplemental theory, and also yields the consequence that one must abandon the natural sole attachment site for non-finite markers that the theory proposed here is compatible with and recognize distinct attachment positions for different markers.

Having thus extolled the virtues and advantages of an allomorphy theory, it might further be noted that since the distribution of the endings -*n*, -*eteo*, -*am*, -*mum*, and -*yüm* across morphological contexts is grossly overlapping, it will be difficult for theo-

ries with these markers as primitives to develop an allomorphy account of their distribution. In this way, we further support the particular ontology of non-finite markers, as well as the recognition of the morpheme -*ye*, of the theory proposed here, following Baker (undated) and Smeets (2008). The near-complementary distribution of the markers across morphological contexts, thus greatly facilitating a, morphologically-conditioned, allomorphy account of the distribution of the markers -*n*, -*el*, -*t*, and -*m*; and consequently an account of the distribution across morphological contexts of endings containing them.

3 Contra -(*yü*)*m* as an independent morpheme

The theory of de Augusta (1903) has already been criticized on the grounds that: it posits -*n*, -*am*, -*el*, and -*eteo* as independent morphemes, with the concomitant drawbacks of holding these theses jointly (see §2); does not analyze the ending -*am* as -*a*-*m*, containing future -*a*, but rather deems it an independent marker as well (see §1.3); does not analyze the ending -*eteo* as -*e*-*t*-*eo*, containing inverse voice -*e*, and does not provide for a satisfactory explanation as to why the independent non-finite morphemes of -*n*, -*el*, and -*am* are incompatible with inverse interactions, viz. none beyond the stipulation that only -*e* and the independent non-finite morpheme -*eteo* license inverse interactions (see §1.2).

Nevertheless, one tenet of Augusta's theory is worthy of further consideration in that it is fairly resistant to the types of criticisms leveled against alternative theories thus far in the preceding section. This is the claim that -*m* and -*yüm* are the sole two allomorphs of a single non-finite morpheme. This view has proven influential, as it is also espoused in Loncon (2011).

Of course, the consequent view that -*yüm* is a unitary marker is still subject to the criticisms leveled against this thesis in §1.5. Nevertheless, the positing of the

morpheme -*ye* is likely among the most controversial aspects of the theory of Smeets (2008), followed here, and so it is worth investigating to what extent, and how well, an alternative theory which rejects -*ye* can be developed.

In the following, I will nonetheless argue against the view that -*m* and -*yüm* are the sole two allomorphs of a single morpheme, -(*yü*)*m*, and in favor of the theory proposed here that -*m* is an allomorph of Inf, alongside -*n*, -*el*, and -*t*, and that -*yüm* is to be analyzed as -*ye*-*m*.

Initial motivation for the view that -(*yü*)*m* is a morpheme may come from the observation that -*m* and -*yüm* display a complementary distribution across a wide range of contexts; for example, after a root, -*fi* or -*e*, -*m* is out but -*yüm* is OK, as observed in Table B.1 in §2.

The first matter for any theory which proposes that two forms are allomorphs of a single morpheme is to specify the conditions under which one or the other are triggered. On this matter, de Augusta (1903) appears to never formulate a general principle but rather just lists environments in which one or the other form is triggered.

Loncon (2011) posits a single morpheme -(*y*)*üm* with underlying /üm/ and two phonologically-conditioned allomorphs subject to the rule that the form -*üm* appears after a consonant and -*yüm* after a vowel, with epenthetic [y] (Loncon 2011: 168 fn. 1, 188 fn. 12). However, this cannot be the rule which governs the exponence of this putative morpheme, as there are cases of -*yüm* appearing after a consonant.

(13) *kim-yüm* *Pedro* *ti* *wuñoldungun,* *wew-i* *ti* *wünel*
know-temp.inf P. det answer win-indic.3 det first
mañumtun
prize
"Knowing the answer, Pedro, he won first place." (Loncon 2011: 202)

Furthermore, the evidence that a form -*üm* occurs after a consonant is equivocal; the sole example cited by Loncon involves the sequence -*üm mu*, and this may well

be the non-finite marker -*n* followed by the postposition *mu* and undergoing place assimilation.

(14) *lef-üm* *mu* *María* *welng-i* *ñi* *l̦uku*
run-inf P M. twist-indic.3 3.poss knee
"Running, Maria twisted her knee." (Loncon 2011: 189)

While Loncon's particular formulation of phonologically-conditioned allomorphy may be problematic, Augusta also appears to advance a phonologically-conditioned allomorphy approach. de Augusta (1903: 217) posits a morpheme with the underlying form /üm/, which is subject to repair operations of epenthesis of an initial glide, [y], or deletion of [ü], thus surfacing as either [yüm] or [m] (see de Augusta 1903: 217, 222). In this way, for instance, Augusta analyzes the ending -*mum* as consisting of a past marker /mu/ and the non-finite marker /üm/, with the sequence /mu+üm/ being realized as [mum], with deletion of /ü/.

Such repair operations are familiar from Mapudungun, affecting, for instance, the non-finite marker -*el*, which may epenthesize a [y] when combining with stems ending in /e/ and may delete initial /e/ when combining with future -*a* (see de Augusta 1903: 196).

(15) *pingeyel*
pi-nge-el
say-pass-inf (de Augusta 1903: 197)

(16) *pingeal*
pi-nge-a-el
say-pass-fut-inf (de Augusta 1903: 197)

de Augusta (1903) does not state the precise conditions under which one or the other repair occurs, and so stands relatively immune from critiques of the type to which Loncon's analysis is susceptible; at the cost of an incomplete account. Nevertheless, there is other evidence which suggests that an account of phonologically-conditioned alternation for allomorphs -*yüm* and -*m* is untenable.

de Augusta (1903) keeps the morpheme -(*yü*)*m* distinct from -*am*. It seems that he is forced to do so in order to account for the observation that combining future -*a* with -(*yü*)*m* surfaces as -*ayüm* and not -*am*; i.e. the epenthesis repair is applied, and not deletion.

(17) *tripa-ia-yüm* *l̪afken̪* *ngaingáyü-ke-i* *kaikaifilu*
go.out-fut-temp.inf sea neigh-hab-indic.3 mythical.serpent.horse
"When the sea is to go out, the kaikáifílu neighs." (de Augusta 1903: 218)

And yet, Augusta himself presents data which suggests that -(*yü*)*m* should surface as mere [m] after /a/.[5]

(18) *mufü* *küyen̪i* *ta-mi* *konfesa-mo-pa-m*
how.many month det-2.s.poss confess-plprf-hith-inf
"How many months since you came to confess?" (de Augusta 1903: 223)

If it were a matter of either the epenthesis or the deletion strategy being available, then we should expect free variation between the endings -*am* and -*ayüm* for a given word, but this does not appear to be the case.

A similar problem for a phonologically-conditioned allomorphy account arises when we consider the appearance of -(*yü*)*m* after /e/. After inverse -*e*, the epenthesis strategy should be invoked, as the sequence -*e*-(*yü*)*m*-(*m*)*eo* rendered as -*eyümeo*.

(19) *kintu-ñma-nie-n* *ta-ñi* *mapu*
look.for-mal-have-indic.1.s det-1.s.poss land
trana-künu-mu-e-yü-meu *ta-ñi* *Longkomilla* *chau* *em*
drop-leave-plprf-inv-temp-inf.ds det-1.s.poss L. father dec
"I have under my care my land where my late father Longokomilla has left me." (de Augusta 1903: 223)

[5] de Augusta (1903: 181) also gives an example with an embedded predicate ending in -*mo-pa-n*. However, Augusta has already given several examples of morphemes which appear to trigger non-*n* markers occurring with -*n*, including -*a*, -*fu*, and -*fi* (see footnote 2). This may be due to a synchronic change in the grammar.

However, after other suffixes ending in /e/, we observe the form -*m*, suggesting that the deletion repair should be invoked. Again, since free variation between the endings -*eÿumeo* and -*emeo* is presumably not observed, it cannot be the case that either repair strategy is freely available. Rather, epenthesis must be used after -*e* but deletion after -*lle*.[6]

(20) *monge-mu-lle-m* *kam*
live-plprf-affirm-inf part
"That's life!" (de Augusta 1903: 223)

Due to these inconsistencies across similar phonological environments, it seems that the thesis that -*yüm* and -*m* are phonologically-conditioned allomorphs of a single morpheme cannot be maintained.

A morphologically-conditioned allomorphy account is also untenable if there are morphological environments in which either the ending -*m* or -*yüm* is possible. For Augusta, -*m* and -*yüm* also have a complementary distribution after the morpheme of future -*a*. For, not analyzing the ending -*am* as -*a*-*m* but rather as a primitive, he can maintain that after future -*a*, -*m* is impossible and only -*yüm* is OK. Nevertheless, clearly, if the ending -*am* is best analyzed as -*a*-*m* with the same non-finite marker -*m* which is a putative allomorph of -*yüm*, e.g. the same marker -*m* which occurs in the ending -*mum* on Augusta's analysis as -*mu*-*m*, a morphologically-conditioned allomorphy theory is untenable as well, since both -*m* and -*yüm* are observed after the same morpheme, future -*a*.

Other environments are predicted to be provided by the theory proposed here by -*mu* followed by a, possibly empty, sequence of neutral morphemes. For in such an environment, whether -*ye* is included or not at the end of the sequence, the marker

[6] Note that the data in this section are unproblematic for our allomorphy theory, since -*pa* and -*lle* are deemed neutral morphemes and thus transparent for allomorph selection.

-m will be triggered, and the result will be an alternation between the endings *-yüm* and *-m*, respectively.

de Augusta (1916: xii) cites the form *-afum* and implies that it is to be analyzed as *-afu-m* (up to different analyses of the sequence [afu]), with the non-finite marker *-m*. If, then, *-afuyüm* is also OK, this would be evidence that both *-m* and *-yüm* can appear after *-afu* (however analyzed).

These particular data might be amenable to a free variation allomorphy account, yet a free variation allomorphy account faces many counterexamples, as we have already noted.

Since neither a phonologically-conditioned, morphologically-conditioned, or free variation allomorphy theory is viable, I conclude that the hypothesis that the forms *-yüm* and *-m* are allomorphs cannot be maintained. Rather, *-yüm* and *-m* must be deemed distinct morphological structures.

4 On the distribution of non-finite endings across functions

The non-finite endings *-n*, *-el*, *-eteo*, *-am*, *-mum*, and *-yüm* have a fairly varied distribution across functions, or syntactic environments. This is consistent with traditional claims that these are distinct morphemes and so has served as indirect evidence for this position. A corollary claim that *-n*, *-el*, *-t*, and *-m* are allomorphs of a single morpheme is that if one of these markers is licensed in a given function, i.e. syntactic environment, so should the others be, *ceteris paribus*; viz. as long as at least one of their triggers is licensed. I therefore owe an account of the distribution of the markers *-n*, *-el*, *-t*, and *-m* across functions, and hence of the endings *-n*, *-el*, *-eteo*, *-am*, *-mum*, and *-yüm*, which is consistent with my claim that these markers are all allomorphs of a single morpheme, Inf.

First, we need a classification of functions that non-finite clauses in Mapudungun may fulfill. I will follow Salas (2006), which provides the most in-depth discussion of the matter; Salas distinguishes: complements, final adjuncts, causal adjuncts, temporal adjuncts, manner adjuncts, subject relatives, object relatives, and oblique relatives.

4.1 Complements

Complement clauses may appear with the endings *-n*, *-el*, *-fiel*, or *-eteo*.

(21) *ramtu-e-y-u* *chew* *ñi* *müle-n*
ask-inv-indic.1-d where 3.poss live-inf
"I asked you where he lives." (Smeets 2008: 189)

(22) *kim-uw-ke-i=ngu* *ta̲* *ñi* *rüf* *pali-a-el* *engu* *müten*
know-refl-hab-indic.3=3.d det 3.poss true chueca-fut-inf 3.d after.all
"They let each other know that they were effectively going to play chueca." (Salas 2006: 157)

(23) *kim-nie-n* *fey* *ñi* *ayü-nie-fi-el*
know-have-indic.1.s 3 3.poss love-have-obj-inf
"I know that she loves him." (Smeets 2008: 214)

(24) *trawün* *nie-ke-y* *pu* *che* *ngillatu-a-fi-el* *chao* *ngünechen*
meeting have-hab-indic.3 p person pray-fut-obj-inf father God
ñi *elu-a-e-t-eo* *küme* *kosecha*
3.poss give-fut-inv-inf-ds good harvest
"The people have a prayer gathering to ask God the Father to give them a good harvest." (Salas 2006: 163)

I analyze these as clauses headed by $C_{[\text{-rel}]}$ complement to V.

Note that the feature [±relative] is independently motivated in Mapudungun, and cross-linguistically even in English. It is possible to extract the subject in a complement clause with Inf.

(25) *Iñey* *feypi-e-n* *ñi* *küpa-ya-f-el?*
who tell-inv-indic.1.s 3.poss come-fut-FU-inf
"Who did you tell me would come?" (Loncon 2011: 39)

(26) *kim-la-n* *iniy* *ñi* *feypi-n*
know-neg-indic.1.s who 3.poss say.thus-inf
"I don't know who said that." (Smeets 2008: 106)

Therefore, there must be some C head which is compatible with subject extraction and allows Inf, if *-el* in (25) and *-n* in (26) are instances of Inf. If this C could head a relative, there would be subject extraction relatives with Inf, contrary to fact. Since subject relatives are impossible with *-el*, *-n*, or any Inf allomorph, this C head must not be able to appear in relatives, hence must be specified [-relative].

There is also cross-linguistic motivation for a feature, such as [±relative], to distinguish relative complementizers from other compelmentizers, from English. Rizzi (1990: 67-8) discusses the need for a feature of this kind for languages with special complementizers for relative clauses, proposing [±pred]. Rizzi (1990: 66) also notes that in the context of relative clauses, the *that*-trace effect facts in English switch. Namely, as opposed to complement clauses, the complementizer *that* is now required and the null version is impossible. There must be some distinction, then, between the complementizer *that* which occurs in relatives and *that* which occurs in complements in English, and [±pred], or [±relative], would be such a feature.

(27) Switch of *that*-trace effect with extraction of subject in relative and complement clause

a. the thing *(that) happened

b. What do you believe (*that) happened?

Moreover, the mere fact that subject extraction is impossible with Inf is enough to argue that the +relative C head(s) must be sensitive to subject extraction and block

it; hence motivating a feature [±subject extraction], or at least some conglomerate way to define this. Our current proposal, viz. with the feature [ns] and its special licensing condition, is one such way.

de Augusta (1903) offers a few examples of *-m* clauses which appear to be complements.

(28) *ayü-la-y* *ñi* *medi-a-m* *dungu*
want-neg-indic.3 3.poss measure-fut-inf matter
"[the judge] does not want to examine the matter." (de Augusta 1903: 215)

However, it is not clear whether the clauses in question are not in fact final adjuncts or whether, if true complements, this is a construction which is not synchronically grammatical. If all *-m* clauses are (oblique) relative clauses, and relative clauses may not be complement to V, it follows that all *-m* clauses will be impossible as complements, as indeed appears to be the case.

Smeets (2008) presents examples of clauses with bare *-el* and no overt triggers deemed to be complements, but it is not clear if they are true complement clauses rather than adjuncts or headless relative complements.

(29) *fali-y* *ta-mün* *kellu-el*
be.worth-indic.3 det-2.p.poss help-inf
"It was worthwhile that you helped." (Smeets 2008: 201)

If Inf clauses analyzed as being headed by C_{ns}, e.g. bearing the ending *-el* with no other triggers than non-subject extraction, may not be complements, this also follows from the hypothesis that C_{ns} necessarily bears the feature [+rel].

4.2 Adjuncts

4.2.1 Purpose clause

Clauses with the non-finite endings *-el*, *-fiel*, *-eteo*, and *-am* may function as a purpose clause.

(30) *iney no rume doam-pi-ye-we-ke-la-y ka famngechi ṯa*
who neg ever need-want-oo-persist-hab-neg-indic.3 and thus det
ñi wemü-mara-a-fel
3.poss chase-hare-fut-FU.inf
"No one cares to do what is necessary anymore so that there might be hunting of hares." (Salas 2006: 158)

(31) *traw-uw-üy=ngün ñi rünga-l-a-fi-el*
gather-refl-indic.3=3.p 3.poss dig-caus-fut-obj-inf
"They gathered together to bury him." (Smeets 2008: 215)

(32) *fey müná kutran-ka-w-üy mi trem-üm-a-t-ew*
3 very be.sick-fac-refl-indic.3 2.s.poss grow-caus-fut.inv-inf-ds
"She made a lot of sacrifices in order to raise you." (Smeets 2008: 215)

(33) *feymeo ñi küymi-a-m chi machi kom chi pu wentru*
then 3.poss fall.into.trance-fut-inf det machi all det p man
ürar-ke-i=ngün ka palo-lel-ke-i=ngün ñi wiño
shout-hab-indic.3=3.p and stick-ben-hab-indic.3=3.p 3.poss chueca.stick
"Then, for the machi to fall into a trance, all the men shout and beat their chueca sticks for him." (Salas 2006: 167)

If we adopt the principle that purpose clauses must have *-a*, or must have a [+future] element, then it follows on the allomorphy theory that the ending *-n* will be impossible in purpose clauses, since it is impossible for this default marker to occur after *-a*.

I propose that *-am* purpose clauses are correlatives headed by C_{obl} and involve movement of a null oblique, instrument, operator. A correlative is a relative clause adjoined to a clause and licensed by and co-construed with a DP in it. This syntactic analysis may explain Harmelink's (1987) observation regarding *-am* purpose clauses. Harmelink argues that an *-am* purpose clause is used whenever there is an instrument, in particular, which causes an effect.

For instance, analyzing the following *-am* purpose clause as an instrument correlative, the DP in the matrix which licenses this correlative, in this case "the earthquake", is then further co-construed as the instrument in the adjunct, in this case

as "that by which we will have scarcity". In such a manner, then, we might derive Harmelink's observation that -*am* purpose clauses always involve the identification of an instrument which causes the effect described in the adjunct. This would result from the fact that the DP in the matrix which licenses the correlative is characterized as an instrument in and by the correlative.

(34) *ye-r-pa-ke-y* *ketran* *nüyün* *ta-iñ*
carry-interrupt-hith-hab-indic.3 crop earthquake det-1.p.poss
filla-nge-a-m
be.in.want.of-be-fut-inf
"The earthquake took the harvest so that we would have scarcity."
(Harmelink 1987: 74)

It follows from this analysis of -*am* purpose clauses that the marker -*m* is licensed in purpose clauses, and yet the endings -*mum* and -*yüm* appear to be impossible. Since -*a* and -*mu* may not co-occur, which we have independently accounted for above, and a [+future] element is necessary in purpose clauses, it follows that the -*mum* ending is impossible in purpose clauses. If we further assume that final adjuncts must refer to particular events, and therefore do not allow temporal quantification, it will also follow that the ending -*a*...-*yüm* is impossible in purpose clauses.

It is also expected that certain purpose clauses with the ending -*a*...*el* may admit a similar correlative adjunct analysis, headed by C_{ns}.

Final adjuncts with the ending -*afiel* and -*aetew* may also admit an analysis as headed by C_{obl}.

However, I also propose that $C_{[-rel][-wh]}$ clauses without movement may adjoin to a matrix clause and function as purpose clauses. -*ael* purpose clauses may only be analyzed this way. -*afiel* and -*aetew* purpose clauses are ambiguous between parses as such clauses without movement or as correlative adjuncts.

4.2.2 Causal

Causal adjuncts are attested with the non-finite endings *-n*, *-el*, and *-eteo*; in each case headed by the Postposition *mew*.

(35) *dulli-fi=ngün* *Pedro* *ñi* *küme-longko-nge-n* *mu*
choose-obj.indic.3=3.p P. 3.poss good-head-be-inf P
"They chose Pedro because he is intelligent." (Loncon 2011: 193)

(36) *pichi* *kuyfi* *newe* *müle-we-ke-la-y* *mara*
small before almost be-persist-hab-neg-indic.3 hare
nge-we-ke-no-fel *meo* *mawida-nto* *kom* *püle*
be-persist-hab-neg-FU.inf P wood-accum all direction
"A short while ago there were almost no hares left because there were no longer thickets anywhere." (Salas 2006: 158)

(37) *poye-ke-la-n* *ñi* *chaw* *ñi* *rumé* *kewa-ke-e-t-ew* *mew*
like-hab-neg-indic.1.s 1.s.poss father 3.poss very hit-hab-inv-inf-ds P
"I don't like my father because he beats me a lot." (Smeets 2008: 214)

I propose to analyze these causal adjuncts as $C_{[-rel][-wh]}$ clauses complement to the Postposition *mew*.

Assuming that all *-m* clauses are relative clauses and that relative clauses cannot be complements to P, it follows that none of the endings *-am*, *-mum*, or *-yüm* will be possible as causal clauses; at least as complements to P. Nevertheless, *-m* clauses may function as causal adjuncts, though without the postposition *mew*.

(38) *Kansha-le-we-n* *küdau-mo-m* *kom* *antü*
tired-stat-persist-indic.1.s work-plprf-inf all day
"I have become tired by having worked all day." (de Augusta 1903: 45)

I analyze *-m* clauses functioning as causal adjuncts as being headed by C_{obl} and containing movement of an, oblique, operator with a reason semantics, along the lines of Spanish causal adjuncts.

(39) *Estoy* *cansado* *porque* *trabajé* *todo* *el* *día*
be.indic.pres.1.s be.tired.ppl because work.indic.past.1.s all det day
"I am tired because I worked all day."

If the Mapudungun *-m* causal adjunct is a correlative, then there is a null oblique element in the matrix clause which licenses it and which it modifies.

If a causal adjunct cannot quantify over its matrix clause, this may account for the impossibility of *-yüm* causal adjuncts.

It remains to be seen whether an *-am* adjunct may receive such a causal construal.

If similar adjuncts or correlatives headed by C_{ns}, e.g. with the ending *-el* and no other triggers, and not complement to P, may not receive a causal construal, this may be due to a restriction such that the null reason operator is restricted to occurring in C_{obl} clauses.

The null reason operator is sufficient to impart the causal semantics in the case of *-m* clauses functioning as causal adjuncts whereas clauses with other markers require the Postposition *mew* to transmit this semantics to the adjunct clause.

4.2.3 Temporal

Temporal adjuncts may appear with the endings *-n*, *-el*, *-fiel*, *-eteo*, and *-yüm*.

(40) *petú* *yu* *küđaw-nu-n* *ngilla-me-a-n* *kofke*
still 1.d.poss work-neg-inf buy-thith-fut-indic.1.s bread
"Before we start working, I'll go and buy bread." (Smeets 2008: 196)

(41) *eymi* *mütrüm-fi-el* *iñché* *küpa-n* *mi* *pe-pa-ya-fi-el*
2.s call-obj-inf 1.s come-indic.1.s 2.s.poss see-hith-fut-obj-inf
"When you called me, I came to see you." (Smeets 2008: 217)

(42) *mara* *ina-ke-e-y-eo* *trewa* *fente* *tu-e-t-eo* *ula* *well*
hare follow-hab-inv-indic.3-ds dog until take-inv-inf-ds then or
ñamum-e-t-eo *ula*
lose-inv-inf-ds then
"The hare is pursued by the dog until it traps or loses it." (Salas 2006: 164)

(43) *añiđ-üy* *ñi* *trawa* *wima-e-t-ew* *kuri*
burn-indic.3 1.s.poss boy flog-inv-inf-ds stinging.nettle
"My body burned when I was stung by a stinging nettle." (Smeets 2008: 217)

(44) *ngüñü-le-yüm* *ṭüfa* *kulliñ* *che* *rume*
hungry-stat-temp.inf det animal person even
yam-ke-la-fi
respect-hab-neg-obj.indic.3
"When this animal was hungry, not even people did it respect." (Salas 2006: 155)

The allomorphy theory requires us to analyze *-yüm* temporal adjuncts as involving oblique movement, since *-m* is only licensed in a clause headed by C_{obl}. This is not implausible, as analyses of temporal adjuncts on which there is fronting of an oblique operator have been defended (Geis 1970, Larson 1990, Haegeman 2010).

Moreover, some temporal adjuncts in Mapudungun contain an overt fronted operator.

(45) *chumngen* *ñi* *trem-küle-n* *đoy* *fill* *dungu,* *đoy* *fill*
while 1.s.poss grow-state.inf more all.kinds matter more all.kinds
küđaw *kim-nie-rpu-n*
work know-have-interrupt.dir-indic.1.s
"While I grew up, I gradually became acquainted with all kinds of ideas and practical matters." (Smeets 2008: 352-3)

C_{ns} is another head which displays wh-agreement with oblique movement. If we assume that Mapudungun temporal adjuncts involving fronting of a null temporal operator may also be headed by C_{ns}, this will explain why it is possible for temporal adjuncts to bear the ending *-el* without any (other) triggers. Note that such examples provide further motivation for the morpheme H_{ns}, as no other potential triggers for the marker *-el* occur.

(46) *welu* *pülle-pu-el* *chew* *ñi* *pe-mu-fi-el* *engu*
but near-dir-inf where 1.s.poss see-plprf-obj-inf 3.d
pe-we-tu-la-fi-n
see-persist-re-neg-obj-indic.1.s

"but when I came near the place where I had seen them, I did not see them any more" (Smeets 2008: 230)

(47) *aku-tu-el* *fey* *el-i* *ñi* *dungu* *Painemilla* *ñi*
arrive-re-inf then give-indic.3 3.poss matter P. 3.poss
amu-al *Argentina*
go-fut.inf A.
"Upon returning, Painemilla announced his intention to go to Argentina."
(Zúñiga 2006: 145)

Thus, I propose that temporal clauses may consist in clauses adjoined to the matrix, headed by C_{ns} or C_{obl}, and containing fronting of a null, oblique, temporal operator.

Note, however, that if C_{obl} necessarily bears the feature [+rel], then -*yüm* temporal adjuncts must be correlatives and there must be a matrix element which licenses the correlative and with which it is co-construed. Clearly, this element must be a null temporal operator itself. However, if -*yüm* temporal clauses are relative clauses modifying a single matrix element, it is not clear how they can have scope over the entire matrix sentence. Perhaps their syntactic position as clausal adjunct permits this. Analogous comments apply to temporal adjuncts analyzed as headed by C_{ns}, if C_{ns} is assumed to necessarily bear the feature [+rel].[7]

Despite the fact that, in this way, -*m* clauses are allowed to fulfill a temporal adjunct function, it does not appear to be the case that clauses with the marker -*mu*, or hence with the ending -*mum*, are allowed. Neither does the marker -*fu* appear to be allowed in temporal adjuncts.

[7] Note that, since we have assumed that a correlative adjunct may modify a null matrix element, it may be expected that Inf clauses headed by C_{obl} or C_{ns} could appear to occur in complement position, but actually adjoined to null N which license them. As clauses with -*m* or bare -*el* without overt triggers do not appear to be observed as complements, we conclude that the null N which may license (cor)relatives are limited to null temporal and reason operators, and do not include N which may occur in complement position.

In fact, though, Mapudungun temporal clauses may well all be necessarily cotemporaneous; or else interpreted such that the matrix occurs alongside the completion of the event in the subordinate clause, hence after. In particular, there do not seem to be overt operators such as English "before". To express the semantics of "before", Mapudungun recurs to a temporal adjunct which literally expresses "while still not".

(48) *petú ñi nie-nu-n kayu tripantu kolexio-tu-y*
still 3.poss have-neg-inf six year school-vb-indic.3
"He started going to school before he was six years old." (lit. "while still not six years old, he started going to school") (Smeets 2008: 244)

(49) *petú ñi ramtu-nu-fi-el feypi-e-n-ew*
still 1.s.poss ask-neg-obj-inf say.thus-inv-indic.1.s-ds
"Before I had asked him, he told me." (cf. lit. "while I still had not asked him, he told me") (Smeets 2008: 214)

Thus, it is plausible to assert a principle of cotemporaneity for Mapudungun temporal adjuncts whereby these must all describe events or states cotemporaneous with the matrix. The impossibility of time-shifting operators such as *-fu* and *-mu* in temporal adjuncts then follows.

Nevertheless, de Augusta (1903) offers an example of an *-ayüm* clause interpreted as a temporal adjunct, suggesting that the future morpheme *-a* is in fact compatible with a temporal adjunct construal.

(50) *tripa-ia-yüm* *l̲afken̲* *ngaingáyü-ke-i* *kaikaifilu*
go.out-fut-temp.inf sea neigh-hab-indic.3 mythical.serpent.horse
"When the sea is to go out, the kaikáifílu neighs." (de Augusta 1903: 218)

To maintain this account of the apparent absence of *-fu* and *-mu* in temporal adjuncts, the presence of the morpheme *-a* would need to somehow escape this putative ban on temporal shifting operators. It is unclear at present just why this should be.

I also propose that $C_{[-rel][-wh]}$ clauses without movement may adjoin to a matrix clause and function as temporal adjuncts. Temporal adjuncts with the marker *-n* only admit this analysis.

4.2.4 Manner

Manner adjuncts have been implied to be restricted to the non-finite ending *-n* (Salas 2006, Zúñiga 2006). However, Smeets (2008) gives examples with *-el* and *-eteo*, and it is therefore likely that the ending *-fiel* is possible too.

(51) *chi weya pichi wentru witra-le-we-rke-y müten ñi*
det poor small man stand.up-stat-persist-rep-indic.3 only 3.poss
dungu-no-n ka ñi treka-we-no-n pichi rume
speak-neg-inf and 3.poss walk-persist-neg-inf small even
"The poor boy remained standing, they say, not talking and not walking even a little." (Salas 2006: 166)

(52) *fey ñi ngüma-nu-el kutran-ka-w-üy*
3 3.poss cry-neg-inf illness-fac-refl-indic.3
"He suffered without having cried." (Smeets 2008: 202)

(53) *fey rupa-y mi chem-pi-nu-e-t-ew rumé*
3 pass-indic.3 2.s.poss what-say-neg-inv-inf-ds ever
"He passed without saying anything to you." (Smeets 2008: 214)

I analyze these manner adjuncts as $C_{[-rel][-wh]}$ clauses adjoined to a matrix clause or as clauses headed by C_{ns} with movement of a null "how", or possibly "when", operator.

It appears to be the case that clauses with *-a* or *-fu* cannot function as manner adjuncts. If we assume that manner adjuncts must describe a situation cotemporaneous with the matrix, the impossibility of temporal-shifting morphemes like *-a*, *-fu*, or *-mu* follows.

The apparent lack of *-m* clauses which may function as manner adjuncts may follow from the thesis that C_{obl} is necessarily [+rel] and a restriction to the effect

that a null "how" operator, needed to license a correlative adjunct, is unavailable in matrix clauses.

4.3 Relatives

4.3.1 Subject relatives

Clauses functioning as subject relatives may not appear with any of the Inf endings, but only -*lu*. These are treated in §10.1.

This follows on the assumption that there is no relative C which allows subject extraction, selects for Inf, and may be adjoined to N. That is, I assume that C bearing a [+rel] feature must bear either the [ns] or [obl] feature.

4.3.2 "Object" relatives

There are several distinct cases of object relatives, broadly construed, to consider.

Relativization of a Theme in an active voice clause, which is presumably an object, may take -*el*.

(54) *ta-ti* *wentru* *(eymi)* *ta-mi* *pe-el*
det-det man 2.s det-2.s.poss see-inf
"the man that you saw" (Harmelink 1990: 138)

Relativization of the Theme in a clause with a ditransitive predicate in active voice, which is presumably a secondary object, takes -*fiel*.

(55) *ta-ti* *kofke* *ta-mi* *küpal-el-fi-el* *af-i*
det-det bread det-2.s.poss bring-ben-obj-inf end-indic.3
"The bread that you brought me is all gone." (Harmelink 1990: 140)

Relativization of the Theme in a clause with a ditransitive predicate in inverse voice, which is again presumably a secondary object, takes -*eteo*.

(56) *Xoanna* *nü-tu-y* *ti* *libru* *ñi* *nü-ñma-wye-e-t-ew* *Lisa*
J. take-re-indic.3 det book 3.poss take-mal-plprf-inv-inf-ds L.
"Joanna took back the book that Lisa had taken away from her (Joanna)." (Smeets 2008: 215)

The Theme in a clause with inverse voice and monotransitive predicate is presumably the subject, since it controls person and number agreement. The Agent in such a clause is an object according to Arnold (1996) but merely a non-demoted Agent, and hence non-subject, according to Baker (2003a). Relativization of this Agent takes *-eteo*.

(57) *kiñe-ke* *petaf* *elu-fi-y* *ta-ñi* *pu* *wenüy* *ta-ñi* *petú*
one-distr piece give-obj-indic.3 det-3.poss p friend det-3.poss still
ñi *kellu-e-t-ew*
3.poss help-inv-inf-ds
"He gave one piece to each of his friends who were helping him." (Smeets 2008: 216)

I analyze each of these clauses functioning as object relatives, broadly construed, as Inf clauses headed by C_{ns}. The presence of H_{ns} will trigger *-el* unless followed by a morpheme which triggers a different ending, such as *-e*, which triggers *-t*. The marker *-m* is impossible in these relatives, because it is only compatible with oblique extraction, and none of these elements would qualify as obliques.

4.3.3 Oblique relatives

Relativization of an instrument, time or location in active voice, which are presumably obliques, may occur with the endings *-el*, *-fiel*, *-am*, *-mum*, or *-yüm*.

(58) *fey-ti-chi* *rewe* *anüm-tuku-le-ke-y* *itro-tripa* *ruka* *cheo* *t̪a*
3-det-adj rehue plan-put-stat-hab-indic.3 right-go.out house where det
ñi *müle-mu-m* *kiñe* *machi*
3.poss live-plprf-inf one machi
"The rehue is planted in front of the house where a machi lives." (Salas 2006: 169)

(59) *kiñe* *an̲n̲tü* *n̲a* *ñi* *kude-a-m* *engu*
one day det 3.poss race-fut-inf 3.d
"a day for the two of them to race" (see Salas 2006: 168)

(60) *kiñe* *an̲n̲tü* *n̲a* *ñi* *traw-a-el* *engün*
one day det 3.poss gather-fut-inf 3.p
"a day for them to gather" (see Salas 2006: 167)

(61) *cheo* *ñi* *llitu-a-m* *ñi* *lef-ün* *chi* *epu* *kawellu*
where 3.poss start-fut-inf 3.poss race-inf det two horse
"where the two horses will race" (see Salas 2006: 168)

(62) *pali-we* *meo* *cheo* *n̲a* *ñi* *pali-a-el* *engün*
chueca-loc P where det 3.poss chueca-fut-inf 3.p
"to the chueca field where they will play" (see Salas 2006: 159-60)

(63) *chew* *müli-y* *mi* *chüngar-fi-el*
where be-indic.3 2.s.poss stab-obj-inf
"Where is (the thing) I stabbed you with?" (Smeets 2008: 214)

(64) *kintu-ñma-nie-n* *ta-ñi* *mapu*
look.for-mal-have-indic.1.s det-1.s.poss land
trana-künu-mu-e-yü-meu *ta-ñi* *Longkomilla* *chau* *em*
drop-leave-plprf-inv-temp-inf.ds det-1.s.poss L. father dec
"I have under my care my land where my late father Longokomilla has left me." (de Augusta 1903: 223)

(65) *chew* *müli-y* *mi* *chüngar-mu-fi-ye-m?*
where be-indic.3 2.s.poss stab-plprf-obj-temp-inf
"Where is the (the thing) with which you stabbed him?" (Smeets 2008: 210)

I have proposed that oblique relatives may either be headed by C_{obl} or C_{ns}. Oblique relatives with the ending *-m* are analyzed as headed by C_{obl}. Oblique relatives with the ending *-el* and which do not contain triggers for *-el* following the putative position of H are analyzed as headed by C_{ns}, with *-el* triggered by H_{ns}. Oblique relatives with the ending *-el* but which occur with *-fi* and would trump H's preference are potentially ambiguous between analyses where they are headed by C_{obl}

or C_{ns}. If -*mu* occurs, then the clause must be analyzed as headed by C_{obl} on the allomorphy theory formulated above. If -*a* occurs, the clause is ambiguous on the theory here, admitting either analysis. If neither -*a* nor -*mu* occurs, the clause must be analyzed as headed by C_{ns} on the theory here.

It is also predicted that the ending -*eteo* should occur in oblique relatives headed either by C_{ns} or C_{obl}. Data on this point is not available at present.

4.3.4 Relative clauses with -*n*

It follows from the theory developed so far that -*n* should be impossible in all relative functions. It should be impossible in subject relatives because Inf is not licensed. It should be impossible in object and oblique relatives because the presence of H_{ns} or H_{obl} will never allow the default marker to emerge. Nevertheless, the ending -*n* is in fact observed with each type of these relatives.

Relativization of the sole argument of intransitives appears to be attested with -*n* (see also Malvestitti 2010: 193-5).

(66) *kom* *dungu* *ṯa-ñi* *chem* *pi-pi-nge-n*
all word det-3.poss what say-say-pass-inf
"everything that is said" (see Salas 2006: 164)

Relativization of the Theme in an active voice clause may appear with -*n*.

(67) *chem* *pi-n* *machi*
what say-inf machi
"what the machi says" (see Salas 2006: 164)

Smeets (2008: 196-7) gives several examples of locative relatives with the ending -*n*; all appear to be with intransitive predicates.

(68) *chew* *yiñ* *pun-ma-n* *umaw-tu-ke-fu-y-i-ñ*
where 1.p.poss night-exp-inf sleep-vb-hab-FU-indic-1-p
"Wherever we were overtaken by the night, we used to sleep." (Smeets 2008: 196-7)

The formative -*n* is common throughout Mapudungun morphology, intruding in certain compounds, appearing as the suppletive form of 1st person singular agreement in the indicative mood, and forming nominalizations. It is possible that its role as default infinitival marker is also attributable to its multifaceted use.

It is also conceivable, then, that relatives with -*n* may not be Inf clauses at all, but rather yet a different construction, such as another past participle besides -*wma*.

Noting the existence of cases where -*el* shows up but where his theory predicts -*n*, Baker (undated) hypothesizes that this may point to a breakdown in a complex system or uncertainty as to whether the default is -*el* or -*n*. Adopting a similar tack, we might suppose that object and oblique relatives with the ending -*n* really are Inf clauses, headed by C_{ns} or C_{obl}, but that there is a breakdown in the complex allomorphy system and the default ending -*n* arises in contexts where it is not expected to. Nevertheless, this analysis cannot extend to subject relatives with -*n*, as Inf clauses must be barred from this function.

It is also possible that the presence of -*n* at least in oblique relatives is due to a free variation between -*n* and -*m* which may be available in some dialects. Smeets (2008: 197) suggests that one of her consultants uses the ending -*n* in locative expressions in a broader manner than the others. Malvestitti (2010: 195) presents an example of a locative relative with -*n* from Argentinian Mapudungun, but the example also has the peculiarity that -*n* follows future -*a*.

(69) *küme* *porta-y* *mi* *ruka* *ta* *mi* *pu-a-n*
good behave-indic.3 2.s house det 2.s.poss arrive.there-fut-inf
"He behaves well, in your house where he will arrive." (Malvestitti 2010: 195)

As this is nowhere else observed, *pace* de Augusta's (1903) data discussed in footnote 2, it is plausible that this is either an instance of a different morpheme with the spell-out -*n*, and hence not subject to the morphologically-conditioned allomorphy rules of Inf, or else representative of a dialect in which the marker -*n* may freely

alternate with *-m* and/or in which the allomorphy rules have broken down at least partially.

4.4 Evaluation of allomorphy theory and alternatives on accounts of the distribution of non-finite endings across functions

The distribution of non-finite endings across functions can be summarized as in Table B.2.

Table B.2: Distribution of non-finite endings across functions

	complement	purpose	causal	temporal	manner	subj rel	"obj" rel	obl rel
-n	✓		✓	✓	✓	✓	✓	✓
-el	✓	✓	✓	✓	✓		✓	✓
-fiel	✓	✓	✓	✓	✓		✓	✓
-eteo	✓	✓	✓	✓	✓		✓	✓
-am		✓						✓
-mum			✓					✓
-yüm				✓				✓

A ✓ indicates that clauses with non-finite ending indicated may fulfill the syntactic function indicated.
A blank indicates that clear examples of clauses with the non-finite ending indicated fulfilling the syntactic function indicated have not been attested.

On the face of it, the distribution of endings across functions certainly appears to be somewhat haphazard. No two of the traditional endings has the same distribution, except for *-el*, *-fiel*, and *-eteo*. This picture, although certainly consistent with theories on which some or all of the traditional endings are independent morphemes, or with Zúñiga's (2006) theory on which only *-el* and *-eteo* are allomorphs, does not offer a principled explanation for their distribution but rather reduces the distribution of each morpheme across functions to idiosyncrasy.

On the other hand, the theory elaborated here has managed to defend the corollary of the allomorphy theory that in a syntactic environment in which one Inf marker is licensed, so are all the rest, *ceteris paribus*.

4.4.1 Summary of account proposed here

This has been accomplished by providing analyses of the Inf clauses in each function as headed by $C_{[-rel]}$, C_{ns} or C_{obl}, either adjoined to a clause or complement to V or P. Each of these heads is already associated with only a limited range of allomorphs of Inf which may appear in their clauses.

The allomorphy theory predicts that each of these C heads may potentially appear only with the range of markers indicated in Table B.3; and only if at least one of the allomorph's licensing morphological environments may occur.

Table B.3: C heads and selected Inf allomorphs allowed

C head selecting Inf	Compatible Inf allomorphs
$C_{[-rel]}$	*-n*, *-el*, *-t*
C_{ns}	*-el*, *-t*
C_{obl}	*-el*, *-t*, *-m*

A given function will potentially display the full range of Inf markers only if it may be fulfilled by Inf clauses headed by both $C_{[-rel]}$ and C_{obl}. In all other cases, only a more restricted range of markers is expected with that function. Moreover, since no function is expected to bar transitive predicates, which license the voice morphemes *-fi* and *-e*, which in turn serve as triggers for *-el* and *-t* respectively, the markers *-el* and *-t* are expected to have the widest distribution across functions; the marker *-m*, on the other hand, is expected to have a more restricted distribution.

With further assumptions regarding which functions may be fulfilled by a clause headed by one of these C in a given syntactic position, and how, and appropriate additional stipulations regarding each function, we will develop a theory which accounts for the distribution of markers across functions in a manner consistent with the allomorphy theory of Inf and its corollary regarding this distribution.

In conjunction with additional more or less independently motivated assumptions, these analyses associate a range of endings compatible with each function which accounts for the data summarized in Table B.2.

Instead of reducing the distribution of endings across functions to idiosyncrasy, a principled explanation at least of the facts involving adjunct functions are available to alternative theories by adopting the stipulations proposed here.

I propose syntactic analyses of non-finite clauses with these markers and fulfilling these functions in which Inf is selected by one of the following C heads: $C_{[-rel]}$, C_{ns}, C_{obl}. The latter two may necessarily bear the feature [+rel]. Clauses headed by any of these C heads may adjoin to a matrix clause, but only clauses headed by C_{ns} and C_{obl} may adjoin to N and only clauses headed by $C_{[-rel]}$ may occur as complement to V or P.

Only complements to V may fulfill the complement function, only adjuncts to N may fulfill the relative functions, and only adjuncts to a matrix clause, headed by P or not, may fulfill the adjunct functions.

$C_{[-rel]}$ as adjunct to a clause can fulfill the functions of: purpose (if with -*a*), temporal, manner, causal adjunct (if headed by P), in each case without movement. The causal construal requires P to impart semantics. Final adjuncts may be headed by a null P "for". Temporal and manner may not really be distinguished, unless they happen to attach at different clausal adjunct positions, say one reserved for "how" and another for "when".

C_{ns} adjunct to a clause can fulfill the functions of temporal, purpose and manner adjunct (with fronting of a null temporal operator). A causal adjunct construal appears to be impossible, perhaps due to a restriction such that the null oblique reason operator is specified to occurring in C_{obl} clauses only.

C_{ns} correlative adjunct to a clause can perform its relative function(s) generally, at this position.

C_{obl} correlative adjunct to a clause can fulfill the functions of: purpose (with -*a*), temporal (with -*ye*), and causal adjunct; in each case with movement, of a null instrument operator, of a null temporal operator, and of a null reason operator,

respectively. In each case also, there is a matrix DP element which licenses the correlative. In the case of temporal correlatives, this must be a null temporal operator in the matrix.

If C_{obl} were not necessarily [+rel] and allowed as a "bare" clausal adjunct, it could presumably still fulfill the temporal adjunct function, and without having to be weighed down with the need to be tied to a matrix null temporal operator. It is not clear how it could fulfill its purpose clause function on the account given whereby in virtue of its status as an instrument relative. It could still presumably fulfill its causal adjunct function, and without the need of being tied to a null reason operator in the matrix.

$C_{[-rel]}$ complement to V can fulfill complement or argument function.

If C_{ns} is not necessarily [+rel] it may be licensed as complement to V and fulfill complement or argument function.

If C_{obl} were not necessarily [+rel] and could be complement to V, it could presumably then fulfill complement or argument function.

C_{ns} adjunct to N can fulfill relative function.

C_{obl} adjunct to N can fulfill relative function.

4.4.2 Comparison with alternative theories

The impossibility of clauses with the ending -*n* to function as a purpose clause may follow on attachment site stipulation theories from the supposition that -*n* attaches at or below -*a*, independently needed to account for the fact that -*n* cannot occur with -*a*, and the principle, adopted here, that purpose clauses require -*a* or a [+future] element.

Attachment site stipulation theories can account for the impossibility of -*mum* clauses to function as purpose clauses either on the supposition that -*mum* attaches at a position at or below -*a* or on the semantic incompatibility between -*a* and -

mum along the lines assumed here; either is independently needed to account for the impossibility of *-*amum* (though this follows from a more general ban on *-*amu* on the allomorphy theory).

The same ban on quantification in purpose clauses assumed here would account for the impossibility of -*yüm* endings in purpose clauses.

Adopting a cotemporaneity restriction for temporal adjuncts, as we do, will derive the impossibility of -*mum* endings, and the presence of -*fu*, in temporal adjuncts; though the apparent impossibility of -*am* endings, while -*a* is still licensed, remains a problem, as it does for the theory proposed here.

Similarly, alternative theories can adopt our cotemporaneity restriction for manner adjuncts to account for the lack of manner adjuncts with the endings -*am* and -*mum*; and also for the lack of -*a* or -*fu* with other endings. If it is further assumed, as we may do here, that a manner clause cannot have quantificational scope over the matrix, it follows that the ending -*yüm* is impossible.

If it is assumed that a causal adjunct cannot have scope over its matrix, it will follow that causal adjuncts with the ending -*yüm* are impossible.

Other than these restrictions, alternative theories are free to assume that all non-finite clauses with these traditional endings may fulfill any function and capture the facts in the table. To explain how a given adjunct receives a given construal, these theories may co-opt the principles proposed here such as that the purposive construal of purpose clauses may be deemed to result from the presence of -*a*, or the [+future] element; or perhaps from an appropriate null P.

Nonetheless, while these stipulations suffice to maintain the consistency of the allomorphy theory with its corollary regarding the distribution of markers across functions, the viability of alternative theories, on which the endings do not contain allomorphs, shows that, this theory of the distribution of endings across functions is still compatible with view that the markers are distinct morphemes and not allo-

morphs.

On the other hand, alternative theories which do not hold, as does our allomorphy theory, that the endings -*am*, -*mum*, and -*yüm* are only available in relative clauses will not be able to account for the impossibility of these endings to occur as complement to V or P.

Moreover, alternative theories which do not hold, as does our allomorphy theory, that the endings -*am*, -*mum*, and -*yüm* are restricted to (relative) clauses with oblique movement will not be able to account for the impossibility of clauses with these endings to function as "object" relatives, in the broad sense described in §4.3.2.

Neither can alternative theories easily explain why clauses with any of these endings, except perhaps -*n*, are impossible as subject relatives.

Bibliography

Dorit Abusch. Sequence of tense and temporal de re. *Linguistics and Philosophy*, 20 (1):1–50, 1997.

Georgia Agouraki. A Modern Greek complementizer and its significance for universal grammar. In *UCL Working Papers in Linguistics*, volume 3, pages 1–24. University College London, London, 1991.

Pranav Anand and Adrian Brasoveanu. Modal concord as modal modification. In Martin Prinzhorn, Viola Schmitt, and Sarah Zobel, editors, *Proceedings of Sinn und Bedeutung 14*, pages 19–36, 2010.

Avery D. Andrews. Relative clauses. In Timothy Shopen, editor, *Language Typology and Syntactic Description*, volume 2: Complex Constructions, pages 206–236. Cambridge University Press, New York, 2007.

Jennifer Arnold. Inverse voice marking in mapudungun. In Susan Gahl, Andy Dolby, and Chris Johnson, editors, *The Twentieth Annual Meeting of the Berkeley Linguistics Society*, pages 28–41, Berkeley, 1994. Berkeley Linguistics Society.

Jennifer Arnold. The inverse system in Mapudungun and other languages. *RLA: Revista de lingüística teórica y aplicada*, 34:9–47, 1996.

Mark Baker and Lisa Travis. Mood as verbal definiteness in a "tenseless" language. *Natural Language Semantics*, 5(3):213–269, 1997. ISSN 0925-854X. doi: 10.1023/a:1008262802401. URL http://dx.doi.org/10.1023/a:1008262802401.

Mark C. Baker. *Incorporation: A Theory of Grammatical Function Changing*. University of Chicago Press, Chicago, 1988. ISBN 978-0226035413.

Mark C. Baker. *The Polysynthesis Parameter*. Oxford studies in comparative syntax. Oxford University Press, Oxford, 1996. ISBN 0-19-509307-0.

Mark C. Baker. On the loci of agreement: Inversion constructions in Mapudungun. In Makoto Kadowaki and Shigeto Kawahara, editors, *Proceedings of NELS 33*, pages 25–49. GLSA, University of Massachusetts at Amherst, 2003a. ISBN 1419622013.

Mark C. Baker. *Lexical Categories: Verbs, Nouns, and Adjectives*, volume 102 of *Cambridge studies in linguistics*. Cambridge University Press, Cambridge, 2003b. ISBN 0-521-80638-0.

Mark C. Baker. On gerunds and the theory of categories. Manuscript, Rutgers University, 2005. URL http://www.rci.rutgers.edu/~mabaker/gerunds&cattheory.pdf.

Mark C. Baker. On zero-agreement and polysynthesis. In P. Ackema, P. Brandt, M. Schoorlemmer, and F. Weerman, editors, *Arguments and Agreement*, pages 289–320. Oxford University Press, Oxford, 2006.

Mark C. Baker. *The Syntax of Agreement and Concord*, volume 115 of *Cambridge Studies in Linguistics*. Cambridge University Press, Cambridge, 2008. ISBN 978-0-521-85547-1.

Mark C. Baker. Is head movement still needed for noun incorporation? *Lingua*, 119 (2):148–165, 2009. doi: 10.1016/j.lingua.2007.10.010. URL http://dx.doi.org/10.1016/j.lingua.2007.10.010.

Mark C. Baker. Degrees of nominalization: Clause-like constituents in Sakha. *Lingua*, 121(7):1164–1193, 2011. doi: 10.1016/j.lingua.2011.01.012.

Mark C. Baker. *Case: Its Principles and Its Parameters*. Cambridge University Press, Cambridge, In progress.

Mark C. Baker. Unpublished notes on the allomorphy of the Mapudungun non-finite suffixes *-n*, *-el*, *-t*, *-m*, undated.

Mark C. Baker and Carlos A. Fasola. Araucanian: Mapudungun. In R. Lieber and P. Stekauer, editors, *The Oxford Handbook of Compounding*, pages 594–608. Oxford University Press, Oxford, 2009.

Mark C. Baker, Roberto Aranovich, and Lucía A. Golluscio. Two types of syntactic noun incorporation: Noun incorporation in Mapudungun and its typological implications. *Language*, 81(1):138–176, 2005.

Susana Béjar and Milan Rezac. Person licensing and the derivation of PCC effects. In Ana Teresa Pérez-Leroux and Yves Roberge, editors, *Romance linguistics: Theory and acquisition: Selected papers from the 32nd Linguistic Symposium on Romance Languages (LSRL), Toronto, April 2002*, volume 244 of *Amsterdam studies in the theory and history of linguistic science, Series IV, Current issues in linguistic theory*, pages 49–62, Amsterdam, 2003. John Benjamins Publishing Company. ISBN 1-58811-430-0.

Susana Béjar and Milan Rezac. Cyclic agree. *Linguistic Inquiry*, 40(1):35–73, 2009. doi: 10.1162/ling.2009.40.1.35. URL http://dx.doi.org/10.1162/ling.2009.40.1.35.

Rajesh Bhatt. *Covert Modality in Non-finite Contexts*, volume 8 of *Interface Explorations*. Mouton de Gruyter, Berlin, 2006. ISBN 978-3-11-017952-1.

Maria Bittner. Future discourse in a tenseless language. *Journal of Semantics*, 22(4): 339–388, 2005. doi: 10.1093/jos/ffh029. URL http://dx.doi.org/10.1093/jos/ffh029.

Maria Bittner. Online update: Temporal, modal, and *de se* anaphora in polysynthetic discourse. In Chris Barker and Pauline Jacobson, editors, *Direct Compositionality*, volume 14 of *Oxford Studies in Theoretical Linguistics*, pages 363–404. Oxford University Press, Oxford, 2007. ISBN 978-0-19-920437-3.

Maria Bittner. Aspectual universals of temporal anaphora. In Susan Deborah Rothstein, editor, *Theoretical and Crosslinguistic Approaches to the Semantics of Aspect*, volume 110 of *Linguistik Aktuell/Linguistics Today*, pages 349–385. John Benjamins Publishing Company, Amsterdam, 2008. ISBN 978-90-272-3374-5.

Jürgen Bohnemeyer. Temporal anaphora in a tenseless language. In Wolfgang Klein and Ping Li, editors, *The Expression of Time*, volume 3 of *The Expression of Cognitive Categories*, pages 83–128. Mouton de Gruyter, Berlin, 2009. ISBN 978-3-11-019581-1.

Joan Wanda Bresnan. *Theory of complementation in English syntax*. PhD thesis, Massachusetts Institute of Technology, September 1972.

Joan L. Bybee and Östen Dahl. The creation of tense and aspect systems in the languages of the world. *Studies in Language*, 13(1):51–103, 1989. ISSN 1569-9978. doi: 10.1075/sl.13.1.03byb. URL http://dx.doi.org/10.1075/sl.13.1.03byb.

Bob Carpenter. *The Logic of Typed Feature Structures: with applications to unification grammars, logic programs and constraint resolution*, volume 32 of *Cambridge Tracts in Theoretical Computer Science*. Cambridge University Press, Cambridge, 1992. ISBN 978-0521419321.

CEP. Una radiografía de los mapuches. Technical Report Documento de Trabajo 345, Centro de Estudios Públicos, 2002. Estudio nacional de opinión pública Nº 15, tercera serie, tema especial.

Gennaro Chierchia. Anaphora and attitudes *De Se*. In R. Bartsch, J. van Benthem, and P. van Emde Boas, editors, *Semantics and Contextual Expression*, volume 11 of *Groningen-Amsterdam Studies in Semantics*, pages 1–31. Foris Publications, Dordrecht, 1989. ISBN 978-9067654432.

Noam Chomsky. *The Logical Structure of Linguistic Theory*. Plenum Press, New York and London, 1975. ISBN 0-306-30760-X.

Noam Chomsky. On wh-movement. In Peter W. Culicover, Thomas Wasow, and Adrian Akmajian, editors, *Formal Syntax*, pages 71–132. Academic Press, New York, 1977. ISBN 9780121992408.

Noam Chomsky. *Lectures on Government and Binding*. Foris, Dordrecht, 1981. ISBN 9783110130409.

Noam Chomsky. *The Minimalist Program*, volume 28 of *Current Studies in Linguistics*. The MIT Press, Cambridge, 1995. ISBN 0-262-03229-5.

Noam Chomsky. Minimalist inquiries: the framework. In Roger Andrew Martin, David Michaels, and Juan Uriagereka, editors, *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, pages 89–156. MIT Press, Cambridge, MA, 2000. ISBN 9780262133616.

Noam Chomsky. Derivation by phase. In Michael Kenstowicz, editor, *Ken Hale: A Life in Language*, number 36 in Current Studies in Linguistics, pages 1–52. The MIT Press, Cambridge, 2001. ISBN 0-262-11257-4.

Noam Chomsky. Beyond explanatory adequacy. In Adriana Belletti, editor, *Structures and Beyond*, volume 3 of *The Cartography of Syntactic Structures*, pages 104–131. Oxford University Press, Oxford, 2004. ISBN 0-19-517197-7.

Noam Chomsky. On phases. In Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta, editors, *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, number 45 in Current Studies in Linguistics, pages 133–166. The MIT Press, Cambridge, 2008. ISBN 978-0-262-06278-7.

Noam Chomsky. Restricting stipulations: consequences and challenges, March 2010a. Edward Said Memorial Lecture, Princeton University.

Noam Chomsky. Poverty of stimulus: unfinished business, August 2010b. Keynote speech, GLOW-in-Asia VIII, Beijing Language and Culture University.

Noam Chomsky. Problems of projection. *Lingua*, 130:33–49, 2013. doi: 10.1016/j.lingua.2012.12.003. URL http://dx.doi.org/10.1016/j.lingua.2012.12.003.

Noam Chomsky and Howard Lasnik. Filters and control. *Linguistic Inquiry*, 8(3): 425–504, 1977.

Sandra Chung. Unbounded dependencies in Chamorro grammar. *Linguistic Inquiry*, 13(1):39–77, 1982.

Sandra Chung. *The Design of Agreement: Evidence from Chamorro*. The University of Chicago Press, Chicago, 1998. ISBN 0-226-10609-8.

Sandra Chung and Alan Timberlake. Tense, aspect and mood. In Timothy Shopen, editor, *Language Typology and Syntactic Description*, volume 3: Grammatical Categories and the Lexicon, pages 202–258. Cambridge University Press, Cambridge, 1985. ISBN 0-521-31899-8.

Guglielmo Cinque. *Adverbs and Functional Heads: A Cross-Linguistic Perspective*. Oxford Studies in Comparative Syntax. Oxford University Press, Oxford, 1999. ISBN 0-19-511526-0.

Christopher Thad Collins. *Topics in Ewe Syntax*. PhD thesis, Massachusetts Institute of Technology, September 1993.

Yanyan Cui. Modal concord with attitude verbs. Manuscript, Georgetown University, March 2010.

Fray Félix José de Augusta. *Gramática Araucana*. Imprenta Central, J. Lampert, Valdivia, Chile, 1903.

Fray Félix José de Augusta. *Diccionario Araucano-Español y Español-Araucano*. Imprenta Universitaria, Santiago, Chile, 1916.

Amy Rose Deal. Modals without scales. *Language*, 87(3):559–585, 2011. ISSN 1535-0665. doi: 10.1353/lan.2011.0060. URL http://dx.doi.org/10.1353/lan.2011.0060.

Robert M. W. Dixon. *Ergativity*. Cambridge studies in linguistics. Cambridge University Press, Cambridge, 1994. ISBN 0-521-44446-2.

Robert M. W. Dixon. Complement clauses and complementation strategies in typological perspective. In R. M. W. Dixon and Alexandra Y. Aikhenvald, editors, *Complementation: A Cross-Linguistic Typology*, volume 3 of *Explorations in Linguistic Typology*, pages 1–48. Oxford University Press, Oxford, 2006. ISBN 0-19-929787-8.

David Dowty. Thematic proto-roles and argument selection. *Language*, 67(3):547–619, 1991. doi: 10.1353/lan.1991.0021. URL http://dx.doi.org/10.1353/lan.1991.0021.

David R. Dowty. On the semantic content of the notion of 'thematic role'. In Gennaro Chierchia, Barbara H. Partee, and Raymond Turner, editors, *Properties, Types and Meaning, Volume II: Semantic Issues*, volume 39 of *Studies in Linguistics and Philosophy*, pages 69–129. Kluwer Academic Publishers, Dordrecht, 1989. ISBN 978-1-55608-070-8. doi: 10.1007/978-94-009-2723-0_3. URL http://dx.doi.org/10.1007/978-94-009-2723-0_3.

Andrea Falcon. Aristotle on causality. In Edward N. Zalta, editor, *The Stanford Encyclopedia of Philosophy*. Spring 2014 edition, 2014. URL http://plato.stanford.edu/archives/spr2014/entries/aristotle-causality/.

Carlos A. Fasola. Teorías morfológicas (y sintácticas) de la concordancia en Mapudungun. Handout of talk presented at Nütramkawaiñ Mapudungun Mew, Universidad de Santiago de Chile, December 2010. Based on joint work with David Embick.

Amilcar Forno and Pilar Álvarez-Santullano. Conservación y cambios en las transiciones del chesungun, dialecto mapuche hablado en San Juan de la Costa. *RLA: Revista de lingüística teórica y aplicada*, 38:7–18, 2000. ISSN 0033-698X.

Gerald Gazdar, Ewan Klein, Geoffrey Pullum, and Ivan Sag. *Generalized Phrase Structure Grammar*. Harvard University Press, Cambridge, MA, 1985. ISBN 0-674-34455-3.

Michael Lorenz Geis. *Adverbial Subordinate Clauses in English*. PhD thesis, Massachusetts Institute of Technology, February 1970.

Carol Georgopolous. Variables in Palauan syntax. *Natural Language and Linguistic Theory*, 3(1):59–94, 1985. doi: 10.1007/bf00205414. URL http://dx.doi.org/10.1007/bf00205414.

Anastasia Giannakidou. *Polarity Sensitivity as (Non)Veridical Dependency*, volume 23 of *Linguistik Aktuell/Linguistics Today*. John Benjamins Publishing Company, Amsterdam, 1998. ISBN 1-55619-907-4.

Anastasia Giannakidou. The subjunctive as *evaluation* and nonveridicality. Manuscript, University of Chicago, January 2015.

Jonathan Ginzburg and Ivan A. Sag. *Interrogative Investigations: The Form, Meaning, and Use of English Interrogatives*, volume 123 of *CSLI Lecture Notes: Center for the Study of Language and Information*. CSLI Publications, Stanford, 2001. ISBN 9781575862781.

Danièle Godard. Indicative and subjunctive mood in complement clauses: from formal semantics to grammar writing. In Christopher Piñón, editor, *Empirical Issues in Syntax and Semantics*, volume 9, pages 129–148. 2012. URL http://www.cssp.cnrs.fr/eiss9/.

Hans Gundermann, Jaqueline Canihuán, Ernesto Castillo, and Alejandro Clavería. Perfil sociolingüístico de comunidades mapuche de la VIII, IX y X Región: Informe de resultados 2008. Technical report, Universidad Tecnológica Metropolitana, 2008.

Hans Gundermann, Jaqueline Canihuan, Alejandro Clavería, and Cesar Faúndez. Permanencia y desplazamiento, hipótesis acerca de la vitalidad del Mapuzugun. *RLA: Revista de lingüística teórica y aplicada*, 47(1):37–60, 2009.

Martin Hackl and Jon Nissenbaum. A modal ambiguity in *for*-infinitival relative clauses. *Natural Language Semantics*, 20(1):59–81, 2012. doi: 10.1007/s11050-011-9075-9. URL http://dx.doi.org/10.1007/s11050-011-9075-9.

Liliane Haegeman. *Theory and Description in Generative Syntax: A case study in West Flemish*. Cambridge Studies in Linguistics: Supplementary Volume. Cambridge University Press, Cambridge, 1992. ISBN 9780521108607.

Liliane Haegeman. The internal syntax of adverbial clauses. *Lingua*, 120(3):628–648, 2010. doi: 10.1016/j.lingua.2008.07.007. URL http://dx.doi.org/10.1016/j.lingua.2008.07.007.

Isabelle Haïk. Anaphoric, pronominal and referential infl. *Natural Language and Linguistic Theory*, 8(3):347–374, 1990. doi: 10.1007/bf00135618. URL http://dx.doi.org/10.1007/bf00135618.

John Haiman. *Hua: A Papuan Language of the Eastern Highlands of New Guinea*, volume 5 of *Studies in Language Companion Series*. John Benjamins Publishing Company, Amsterdam, 1980. ISBN 978-9027230041.

Bryan L. Harmelink. Hacia un analisis funcional de -AM y -AEL. In Hugo Carrasco M., Bryan Harmelink M., and Timothy Sandvig R., editors, *Actas de Lengua y Literatura Mapuche*, number 2, pages 67–77, Temuco, Chile, 1987. Departamento de Lenguas y Literatura y la Facultad de Educación y Humanidades de la Universidad de la Frontera.

Bryan L. Harmelink. Las clausulas relativas del idioma Mapuche. In Hugo Carrasco M., Verónica Contreras, Bryan Harmelink, and Eduardo Miranda, editors, *Actas de Lengua y Literatura Mapuche*, number 4, pages 133–147, Temuco, Chile, 1990. Departamento de Lenguas y Literatura y la Facultad de Educación y Humanidades de la Universidad de la Frontera.

Bryan L. Harmelink. *Manual de Aprendizaje del Idioma Mapuche: Aspectos Morfológicos y Sintácticos*. Ediciones Universidad de La Frontera, Temuco, Chile, 1996. ISBN 956-236-077-6.

Jaakko Hintikka. *Knowledge and Belief: An Introduction to the Logic of the Two Notions*. Cornell University Press, Ithaca, NY, 1962.

Jaakko Hintikka. *Models for Modalities: Selected Essays*, volume 23 of *Synthese Library*. D. Reidel Publishing Company, Dordrecht, 1969.

Janneke Huitink. Modal concord: A case study of Dutch. *Journal of Semantics*, 29 (3):403–437, 2012. doi: 10.1093/jos/ffr012. URL http://dx.doi.org/10.1093/jos/ffr012.

Larry M. Hyman. How (not) to do phonological typology: The case of pitch-accent. *Language Sciences*, 31(2-3):213–238, 2009. ISSN 0388-0001. doi: 10.1016/j.langsci.2008.12.007. URL http://dx.doi.org/10.1016/j.langsci.2008.12.007.

Sabine Iatridou. The grammatical ingredients of counterfactuality. *Linguistic Inquiry*, 31(2):231–270, 2000. ISSN 1530-9150. doi: 10.1162/002438900554352. URL http://dx.doi.org/10.1162/002438900554352.

Aniek IJbema. *Grammaticalization and Infinitival Complements in Dutch*. Number 54. LOT Publications, Utrecht, 2001. ISBN 90-76864-15-2.

Ray Jackendoff. *Semantic Structures*, volume 18 of *Current Studies in Linguistics*. The MIT Press, Cambridge, MA, 1990. ISBN 0-262-10043-6.

Ray Jackendoff. The combinatorial structure of thought: The family of causative concepts. In Eric Reuland and Werner Abraham, editors, *Knowledge and Language*, volume II: Lexical and Conceptual Structure, pages 31–49. Kluwer Academic Publishers, Dordrecht, 1993. ISBN 0-7923-1790-4.

Brian D. Joseph. *The Synchrony and Diachrony of the Balkan Infinitive: A Study in Areal, General, and Historical Linguistics*, volume 1 of *Cambridge Studies in Linguistics: Supplementary volume*. Cambridge University Press, Cambridge, 1983. ISBN 0521273188.

Paula Kempchinsky. What can the subjunctive disjoint reference effect tell us about the subjunctive? *Lingua*, 119(12):1788–1810, 2009. doi: 10.1016/j.lingua.2008.11.009. URL http://dx.doi.org/10.1016/j.lingua.2008.11.009.

Jan Koster and Robert May. On the constituency of infinitives. *Language*, 58(1): 116–143, 1982. ISSN 0097-8507. doi: 10.2307/413533. URL http://dx.doi.org/10.2307/413533.

Iliyana Krapova and Vassil Petkov. Subjunctive complements, null subjects, and case checking in Bulgarian. In Katarzyna Dziwirek, Herbert Coats, and Cynthia M. Vakareliyska, editors, *Annual Workshop on Formal Approaches to Slavic Linguistics: The Seattle Meeting, 1998*, pages 265–287, Ann Arbor, 1999. Michigan Slavic Publications.

Angelika Kratzer. The notional category of modality. In Hans-Jürgen Eikmeyer and Hannes Rieser, editors, *Words, Worlds, and Contexts: New Approaches in Word Semantics*, volume 6 of *Research in Text Theory*, pages 163–201. Walter de Gruyter, Berlin, 1981. ISBN 978-3-11-084252-4.

Angelika Kratzer. Modality. In Arnim von Stechow and Dieter Wunderlich, editors, *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, volume 6 of *Handbücher zur Sprach- und Kommunikationswissenschaft*, pages 639–650. Mouton de Gruyter, Berlin, 1991. ISBN 3110126966.

Angelika Kratzer. *Modals and Conditionals*, volume 36 of *Oxford Studies in Theoretical Linguistics*. Oxford University Press, Oxford, 2012. ISBN 978-0-19-923469-1.

Brenda Laca. Mood in spanish. In Björn Rothstein and Rolf Thieroff, editors, *Mood in the Languages of Europe*, volume 120 of *Studies in Language Companion Series*, pages 198–220. John Benjamins Publishing Company, Amsterdam, 2010. ISBN 978-90-272-0587-2.

Idan Landau. *Elements of Control: Structure and Meaning in Infinitival Constructions*, volume 51 of *Studies in Natural Language and Linguistic Theory*. Kluwer Academic Publishers, Dordrecht, 2000. ISBN 0-7923-6620-4.

Idan Landau. The scale of finiteness and the calculus of control. *Natural Language & Linguistic Theory*, 22(4):811–877, 2004. doi: 10.1007/s11049-004-4265-5. URL http://dx.doi.org/10.1007/s11049-004-4265-5.

Richard K. Larson. Extraction and multiple selection in PP. *The Linguistic Review*, 7(2):169–182, 1990. doi: 10.1515/tlir.1990.7.2.169. URL http://dx.doi.org/10.1515/tlir.1990.7.2.169.

Yafei Li. *Conditions on X^0-Movement*. PhD thesis, Massachusetts Institute of Technology, June 1990.

Jo-Wang Lin. Time in a language without tense: The case of Chinese. *Journal of Semantics*, 23(1):1–53, 2006. doi: 10.1093/jos/ffh033. URL http://dx.doi.org/10.1093/jos/ffh033.

Elisa Loncon. *Morfología y Aspectos del Mapudungun*. Biblioteca de Signos. Universidad Autónoma Metropolitana, México, D.F., 2011. ISBN 978-607-477-553-2.

Bettelou Los. *The Rise of the To-Infinitive*. Oxford University Press, Oxford, 2005. ISBN 978-0-19-920873-9.

Marisa Malvestitti. Las cláusulas relativas en el mapuzungun de *Puelmapu*. Aproximaciones al análisis de las formas *-lu*, *-el* y *-n*. In Zarina Estrada Fernández and Ramón Arzápalo Marín, editors, *Estudios de lenguas amerindias 2: contribuciones al estudio de las lenguas originarias de América*, volume Serie: 4. Estudios Lingüísticos of *Colección Lingüística*, pages 181–198. Editorial Unison, Hermosillo, Sonora, 2010. ISBN 978-607-7782-63-6.

Alec Marantz. Case and licensing. In German Westphal, Benjamin Ao, and Hee-Rahk Chae, editors, *Proceedings of the Eighth Eastern States Conference on Linguistics*, pages 234–253, Columbus, OH, 1991. Ohio State University, Department of Linguistics. Reprinted in *Arguments and Case: Explaining Burzio's Generalization*, ed. Eric Reuland, pp. 11-30, John Benjamins. Amsterdam. 2000.

Rui Marques. On the selection of mood in complement clauses. In Lotte Hogeweg, Helen de Hoop, and Andrej Malchukov, editors, *Cross-linguistic Semantics of Tense, Aspect, and Modality*, volume 148 of *Linguistik Aktuell/Linguistics Today*, pages 179–204. John Benjamins Publishing Company, Amsterdam, 2009. ISBN 978-90-272-5531-0.

Roger Andrew Martin. *A Minimalist Theory of PRO and Control*. PhD thesis, University of Connecticut, Storrs, January 1996.

Lisa Matthewson. Temporal semantics in a superficially tenseless language. *Linguistics & Philosophy*, 29(6):673–713, 2006. doi: 10.1007/s10988-006-9010-6. URL http://dx.doi.org/10.1007/s10988-006-9010-6.

James McCloskey. *Transformational syntax and model theoretic semantics*, volume 9 of *Synthese language library*. D. Reidel Publishing Company, Dordrecht, 1979. ISBN 90-277-1025-2.

James McCloskey. Resumptive pronouns, Ā-binding, and levels of representation in Irish. In Randall Hendrick, editor, *The Syntax of the Modern Celtic Languages*, volume 23 of *Syntax and Semantics*, pages 199–248. Academic Press, San Diego, 1990. ISBN 0-12-613523-1.

James McCloskey. The morphosyntax of WH-extraction in Irish. *Journal of Linguistics*, 37(01):67–100, 2001. doi: 10.1017/s0022226701008775. URL http://dx.doi.org/10.1017/s0022226701008775.

James McCloskey. Resumption, successive cyclicity, and the locality of operations. In Samuel David Epstein and T. Daniel Seely, editors, *Derivation and Explanation in the Minimalist Program*, number 6 in Generative Syntax, pages 184–226. Blackwell Publishing, Oxford, 2002. ISBN 0-631-22732-6.

James McCloskey. Resumption. In Martin Everaert and Henk C. van Riemsdijk, editors, *The Blackwell Companion to Syntax*, volume IV, pages 94–117. Blackwell Publishing, Oxford, 2006. ISBN 978-1-4051-1485-1.

Thomas McFadden. *The Position of Morphological Case in the Derivation: A Study on the Syntax-Morphology Interface*. PhD thesis, University of Pennsylvania, 2004.

Marianne Mithun. *The languages of native North America*. Cambridge language surveys. Cambridge University Press, Cambridge, 1999. ISBN 0-521-23228-7.

Christopher Moseley, editor. *Atlas of the World's Languages in Danger, 3rd edn.* UNESCO Publishing. Online version, Paris, 2010. http://www.unesco.org/culture/en/endangeredlanguages/atlas.

Jamal Ouhalla. Subject-extraction, negation, and the anti-agreement effect. *Natural Language and Linguistic Theory*, 11(3):477–518, 1993. doi: 10.1007/bf00993167. URL http://dx.doi.org/10.1007/bf00993167.

David Pesetsky. Zero syntax, vol. 2: Infinitives. Manuscript, MIT. Material intended for Zero Syntax but not included in the final publication, 1991. URL http://web.mit.edu/linguistics/people/faculty/pesetsky/infins.pdf.

David Pesetsky and Esther Torrego. T-to-C movement: Causes and consequences. In Michael Kenstowicz, editor, *Ken Hale: A Life in Language*, number 36 in Current Studies in Linguistics, pages 355–426. The MIT Press, Cambridge, Massachusetts, 2001. ISBN 0-262-11257-4.

Paul M. Pietroski. *Events and Semantic Architecture*. Oxford University Press, Oxford, 2005. ISBN 978-0-19-924430-0.

Jean-Yves Pollock. Verb movement, universal grammar, and the structure of IP. *Linguistic Inquiry*, 20(3):365–424, 1989.

Paul Portner. The semantics of mood, complementation, and conversational force. *Natural Language Semantics*, 5(2):167–212, 1997. doi: 10.1023/a:1008280630142. URL http://dx.doi.org/10.1023/a:1008280630142.

Paul Howard Portner. *Situation Theory and the Semantics of Propositional Expressions*. PhD thesis, University of Massachusetts, Amherst, September 1992. Reproduced and distributed by the Graduate Linguistic Student Association (G.L.S.A).

Alan Prince and Paul Smolensky. *Optimality Theory: Constraint Interaction in Generative Grammar*. Blackwell Publishing Ltd, Oxford, 2004. ISBN 978-1405119337. Originally distributed as: Rutgers Technical Reports TR-2, Rutgers University Center for Cognitive Science, 1993.

Liina Pylkkänen. *Introducing Arguments*, volume 49 of *Linguistic Inquiry Monographs*. MIT Press, Cambridge, 2008. ISBN 978-0-262-16254-8.

Josep Quer. In the cause of subjunctive. In Jane A. Coerts and Helen de Hoop, editors, *Linguistics in the Netherlands 1997*, volume 14 of *Algemene Vereniging voor Taalwetenschap*, pages 171–182. John Benjamins Publishing Company, 1997. ISBN 9781556192210. doi: 10.1075/avt.14.17que.

Josep Quer. Twists of mood: The distribution and interpretation of indicative and subjunctive. *Lingua*, 119(12):1779–1787, 2009. doi: 10.1016/j.lingua.2008.12.003. URL http://dx.doi.org/10.1016/j.lingua.2008.12.003.

Andrea Rackowski and Norvin Richards. Phase edge and extraction: A Tagalog case study. *Linguistic Inquiry*, 36(4):565–599, 2005. doi: 10.1162/002438905774464368. URL http://dx.doi.org/10.1162/002438905774464368.

Luigi Rizzi. *Issues in Italian Syntax*, volume 11 of *Studies in generative grammar*. Foris Publications, Dordrecht, 1982. ISBN 90-70176-33-5.

Luigi Rizzi. *Relativized Minimality*, volume 16 of *Linguistic Inquiry Monographs*. MIT Press, Cambridge, MA, 1990. ISBN 9780262680615.

Luigi Rizzi. The fine structure of the left periphery. In Liliane Haegeman, editor, *Elements of Grammar: Handbook in Generative Syntax*, volume 1 of *Kluwer International Handbooks of Linguistics*, pages 281–337. Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4297-6.

Luigi Rizzi. Relativized minimality effects. In Mark Baltin and Chris Collins, editors, *The Handbook of Contemporary Syntactic Theory*, Blackwell handbooks in linguistics, pages 89–110. Blackwell Publishers Ltd, Oxford, 2001. ISBN 9780470756416. doi: 10.1002/9780470756416.ch4. URL http://dx.doi.org/10.1002/9780470756416.ch4.

Ian Roberts. The C-system in Brythonic Celtic languages, V2, and the EPP. In Luigi Rizzi, editor, *The Structure of CP and IP*, volume 2 of *The Cartography of Syntactic Structures*, pages 297–328. Oxford University Press, Oxford, 2004. ISBN 0-19-515948-9.

Anne Rochette. *Semantic and Syntactic Aspects of Romance Sentential Complementation*. PhD thesis, Massachusetts Institute of Technology, May 1988.

Peter S. Rosenbaum. *The Grammar of English Predicate Complement Constructions*, volume 47 of *MIT Research Monographs*. The MIT Press, Cambridge, Massachusetts, 1967. ISBN 0-262-18-023-5.

John Robert Ross. On declarative sentences. In Roderick A. Jacobs and Peter S. Rosenbaum, editors, *Readings in English transformational grammar*, pages 222–272. Ginn and Co, Waltham, MA, 1970. ISBN 978-0878401871.

Anna Roussou. In the mood for control. *Lingua*, 119(12):1811–1836, 2009. doi: 10.1016/j.lingua.2008.11.010. URL http://dx.doi.org/10.1016/j.lingua.2008.11.010.

Hotze Rullmann, Lisa Matthewson, and Henry Davis. Modals as distributive indefinites. *Natural Language Semantics*, 16(4):317–357, 2008. doi: 10.1007/s11050-008-9036-0. URL http://dx.doi.org/10.1007/s11050-008-9036-0.

Joseph Sabbagh. Ordering and linearizing rightward movement. *Natural Language & Linguistic Theory*, 25(2):349–401, 2007. doi: 10.1007/s11049-006-9011-8. URL http://dx.doi.org/10.1007/s11049-006-9011-8.

Ken Safir. PRO and pro: Comments on Quicoli. In Robert Freidin, editor, *Current Issues in Comparative Grammar*, volume 35 of *Studies in Natural Language and Linguistic Theory*, pages 81–90. Springer, 1996. ISBN 0792337786.

Adalberto Salas. *El Mapuche o Araucano*. Centro de Estudios Públicos, Santiago, Chile, 2006. ISBN 956-7015-41-4. Originally published as: Salas, Adablerto. 1992. El Mapuche o Araucano. MAPFRE. Madrid. Page cites refer to 2006 edition.

Edward Sapir. *Language: An introduction to the study of speech*. Harcourt, Brace and company, New York, 1921. ISBN 1-58734-086-0.

Ineke Smeets. *A Grammar of Mapuche*. Number 41 in Mouton Grammar Library. Mouton de Gruyter, Berlin, 2008. ISBN 978-3-11-019558-3. Initial version appeared as: Smeets, Ineke. 1989. A Mapuche Grammar. Doctoral Dissertation, Leiden University. Page cites refer to 2008 edition.

Margaret J. Speas. *Phrase Structure in Natural Language*, volume 21 of *Studies in Natural Language & Linguistic Theory*. Kluwer Academic Publishers, Dordrecht, 1990. ISBN 0-7923-0755-0.

Tim Stowell. The tense of infinitives. *Linguistic Inquiry*, 13(3):561–570, 1982.

Tim Stowell. The syntactic expression of tense. *Lingua*, 117(2):437–463, 2007. doi: 10.1016/j.lingua.2005.08.003. URL http://dx.doi.org/10.1016/j.lingua.2005.08.003.

Timothy Angus Stowell. *Origins of Phrase Structure*. PhD thesis, Massachusetts Institute of Technology, September 1981.

Coppe van Urk and Norvin Richards. Two components of long-distance extraction: Successive cyclicity in Dinka. *Linguistic Inquiry*, 46(1):113–155, 2015. doi: 10.1162/ling_a_00177. URL http://dx.doi.org/10.1162/ling_a_00177.

Spyridoula Varlokosta. Control in Modern Greek. In Carol A. Mason, Susan M. Powers, and Cristina Schmitt, editors, *University of Maryland Working Papers in Linguistics*, volume 1, pages 144–163. Department of Linguistics, University of Maryland, 1993.

Elisabeth Villalta. Mood and gradability: an investigation of the subjunctive mood in Spanish. *Linguistics and Philosophy*, 31(4):467–522, 2008. doi: 10.1007/s10988-008-9046-x. URL http://dx.doi.org/10.1007/s10988-008-9046-x.

Akira Watanabe. *Case Absorption and Wh-Agreement*, volume 37 of *Studies in Natural Language and Linguistic Theory*. Kluwer Academic Publishers, Dordrecht, 1996. ISBN 0-7923-4203-8.

Thomas A. Werner. *Deducing the Future and Distinguishing the Past: Temporal Interpretation in Modal Sentences in English*. PhD thesis, Rutgers, The State University of New Jersey, May 2003.

Annie Zaenen. On syntactic binding. *Linguistic Inquiry*, 14(3):469–504, 1983.

Alessandro Zucchi. *The Language of Propositions and Events: Issues in the Syntax and the Semantics of Nominalization*, volume 51 of *Studies in Linguistics and Philosophy*. Kluwer Academic Publishers, Dordrecht, 1993. ISBN 0-7923-2437-4.

Fernando Zúñiga. *Mapudungun*. Number 376 in Languages of the World/Materials. LINCOM EUROPA, Munich, 2000. ISBN 3-89586-976-7.

Fernando Zúñiga. *Mapudungun: El Habla Mapuche*. Centro de Estudios Públicos, Santiago, Chile, 2006. ISBN 956-7015-40-6.

Index

Abusch (1997), 336, 372
Agouraki (1991), xix, 262, 372
Anand and Brasoveanu (2010), 281, 372
Andrews (2007), 53, 372
Arnold (1994), 23, 372
Arnold (1996), 13, 362, 372
Baker and Fasola (2009), 11, 373
Baker and Travis (1997), 160, 372
Baker et al. (2005), 9, 373
Baker (1988), 32, 87, 141, 175, 372
Baker (1996), 9, 50, 139, 372
Baker (2003a), 10, 13, 15, 17, 111, 112, 362, 372
Baker (2003b), 99, 100, 132, 372
Baker (2005), 99, 372
Baker (2006), 9, 17, 23, 24, 50, 130, 373
Baker (2008), 29, 373
Baker (2009), 37, 373
Baker (2011), 99, 100, 125, 373
Baker (In progress), 73, 373
Baker (undated), 41, 43, 46, 60, 61, 80, 84, 91, 326, 344, 365, 373
Bhatt (2006), 267, 373
Bittner (2005), 174, 373
Bittner (2007), 39, 374
Bittner (2008), 175, 374
Bohnemeyer (2009), 174, 175, 374
Bresnan (1972), 164, 264, 294, 295, 374
Bybee and Dahl (1989), 179, 374
Béjar and Rezac (2003), 81, 373
Béjar and Rezac (2009), 73, 81, 373
CEP (2002), 2, 374
Carpenter (1992), 33, 374
Chierchia (1989), 228, 374
Chomsky and Lasnik (1977), 264, 375
Chomsky (1975), 32, 374
Chomsky (1977), 53, 374
Chomsky (1981), 134, 176, 374
Chomsky (1995), 125, 374
Chomsky (2000), 81, 375
Chomsky (2001), 26, 81, 111, 112, 375
Chomsky (2004), 26, 62, 64–66, 68, 81, 375
Chomsky (2008), 26, 64–67, 86, 142, 375
Chomsky (2010a), 26, 65, 375
Chomsky (2010b), 26, 65, 375
Chomsky (2013), 26, 375
Chung and Timberlake (1985), 166, 375
Chung (1982), 51, 53, 54, 56, 375
Chung (1998), 50, 53, 55–60, 62, 66, 70, 71, 73, 74, 77, 78, 80, 87, 375
Cinque (1999), 176, 177, 275, 375
Collins (1993), 66, 375
Cui (2010), 281, 375
Deal (2011), 155, 376
Dixon (1994), 15, 376
Dixon (2006), 149, 186, 188, 192–197, 217–220, 225, 240, 241, 376
Dowty (1989), 242, 376
Dowty (1991), 242, 376
Falcon (2014), 244, 376
Fasola (2010), 17, 376
Forno and Álvarez-Santullano (2000), 2, 376
Gazdar et al. (1985), 29, 376
Geis (1970), 357, 376
Georgopolous (1985), 53, 377
Giannakidou (1998), xix, 262, 272, 377
Giannakidou (2015), xix, 262, 272, 377

Ginzburg and Sag (2001), 209, 377
Godard (2012), xix, xx, 259, 261, 269, 290, 377
Gundermann et al. (2008), 2, 377
Gundermann et al. (2009), 2, 377
Hackl and Nissenbaum (2012), 267, 377
Haegeman (1992), 65, 377
Haegeman (2010), 357, 377
Haiman (1980), 175, 377
Harmelink (1987), 353, 354, 378
Harmelink (1990), 50, 91, 138, 361, 378
Harmelink (1996), 17, 378
Haïk (1990), 59, 377
Hintikka (1962), 269, 378
Hintikka (1969), 300, 378
Huitink (2012), 281, 378
Hyman (2009), 179, 378
Iatridou (2000), 168, 169, 173, 175, 378
Jackendoff (1990), 248, 378
Jackendoff (1993), 248, 378
Joseph (1983), 46, 158, 378
Kempchinsky (2009), 260, 379
Koster and May (1982), 128, 176, 379
Krapova and Petkov (1999), 260, 379
Kratzer (1981), 269–271, 273, 379
Kratzer (1991), 154, 179, 273, 379
Kratzer (2012), 271, 272, 300, 379
Laca (2010), 259, 379
Landau (2000), 64, 227, 228, 253, 267, 379
Landau (2004), 45, 46, 151, 158, 183, 226–228, 267, 279, 288, 379
Larson (1990), 357, 379
Lin (2006), 174, 175, 380
Li (1990), 222, 379
Loncon (2011), 9, 18, 23, 24, 139, 331, 344–346, 351, 355, 380
Los (2005), xix, 164, 263–265, 274, 380
Malvestitti (2010), 96, 335, 364, 365, 380
Marantz (1991), 73, 380
Marques (2009), 280, 380
Martin (1996), 64, 380
Matthewson (2006), 165–167, 175, 380
McCloskey (1979), 55, 57, 58, 74, 380
McCloskey (1990), 53, 55, 57, 380
McCloskey (2001), 57, 380
McCloskey (2002), 57, 58, 381
McCloskey (2006), 128, 381
McFadden (2004), 113, 381
Mithun (1999), 166, 381
Moseley (2010), 2, 381
Ouhalla (1993), 84, 97, 98, 381
Pesetsky and Torrego (2001), 65, 73, 164, 381
Pesetsky (1991), xx, 163, 266–268, 294, 381
Pietroski (2005), 38, 381
Pollock (1989), 87, 381
Portner (1992), 158, 164, 165, 186–188, 205–214, 218, 240, 241, 243, 273, 281, 291, 296, 297, 381
Portner (1997), 292–294, 381
Prince and Smolensky (2004), 38, 381
Pylkkänen (2008), 113, 382
Quer (1997), 248, 260, 382
Quer (2009), xix, 262, 263, 295, 382
Rackowski and Richards (2005), 71, 73, 382
Rizzi (1982), 44, 382
Rizzi (1990), 54, 351, 382
Rizzi (1997), 142, 150, 151, 158, 176, 382
Rizzi (2001), 131, 382
Roberts (2004), 165, 382
Rochette (1988), 186, 188–191, 193, 215, 216, 218, 219, 222, 225, 240, 241, 297, 382
Rosenbaum (1967), 183, 382
Ross (1970), 292, 382
Roussou (2009), xix, 260, 262, 383
Rullmann et al. (2008), 155, 383
Sabbagh (2007), 236, 383
Safir (1996), 45, 177, 383
Salas (2006), 2, 3, 9–12, 14, 16, 18, 19, 21, 22, 25, 42–44, 48, 49, 51, 52, 91, 93, 96–98, 102, 138, 151, 156, 166, 171, 221, 222, 257, 328–331, 334–337, 340, 342, 350, 353, 355–357, 360, 362–364, 383

Sapir (1921), 9, 383
Smeets (2008), 3, 10–13, 16–25, 42–44, 48, 49, 52, 80, 89, 92–95, 97, 99, 102, 103, 113, 122, 135, 138, 139, 151, 155, 156, 166, 167, 170, 171, 173, 174, 178, 179, 293, 326–331, 338, 339, 343–345, 350–353, 355–360, 362–365, 383
Speas (1990), 26, 383
Stowell (1981), 267, 276, 383
Stowell (1982), 164, 266, 383
Stowell (2007), 149, 383
Varlokosta (1993), xix, 262, 282, 291, 383
Villalta (2008), 273, 384
Watanabe (1996), 53, 58–60, 62–64, 66–68, 74–82, 86, 384
Werner (2003), 154, 178, 384
Zaenen (1983), 53, 384
Zucchi (1993), 110, 113, 115, 186, 188, 197–204, 207, 215, 216, 218, 219, 222, 224, 225, 297, 323, 384
Zúñiga (2000), 16, 384
Zúñiga (2006), 2, 3, 9–13, 16, 18–20, 24, 25, 44, 51, 91, 135, 151, 174, 328, 330, 334–337, 340, 342, 358, 360, 366, 384
de Augusta (1903), 3, 14–16, 19, 22, 25, 44, 48, 51, 96, 97, 103, 151, 326, 328–331, 334–337, 340, 342, 344–348, 352, 355, 359, 363, 365, 376
de Augusta (1916), 8, 51, 85, 96, 335, 349, 376
van Urk and Richards (2015), 67, 73, 80, 131, 383
IJbema (2001), xix, 266, 378