

Existential quantification in Tiwa: disjunction and indefinites

by

Virginia Ellen Dawson

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Linguistics

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Amy Rose Deal, Chair

Professor Line Mikkelsen

Professor Peter Jenks

Professor Seth Yalcin

Summer 2020

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Abstract

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This dissertation examines the semantics and pragmatics of disjunction and indefinites in Tiwa, an understudied Tibeto-Burman language of northeast India. The core focus of the dissertation concerns cross-linguistic variation and its implications for semantic theory. Broadly, I address the extent to which languages encode similar meanings through the same semantic means; what mechanisms are best suited to model those meanings; and how the theory can best model what cross-linguistic variation we do find. Concretely, I provide novel cross-linguistic evidence from phrasal comparatives that disjunction is alternative-denoting, and argue that languages can employ different semantic mechanisms in deriving exceptional wide scope.

Tiwa's large system of indefinites and disjunction particles, which are in part morphologically related, provide an ideal subject for exploring the logical connection between disjunction and indefinites (which amount to existential quantification over explicit and non-explicit domains respectively). While cross-linguistic studies of indefinites have seen an increase in recent years, disjunction has not received the same level of attention. In this dissertation, I provide a detailed description of the semantic and pragmatic behavior of Tiwa's various disjunction particles and their related indefinites, which, among other things, explicitly encode scope. Additionally, the dissertation contains a broader sketch of Tiwa grammar as a whole, which provides documentation and formal description of many aspects of the language. This empirical contribution is the result of original fieldwork in Assam, India, over the course of four years.

To my Tiwa teachers:

Bibiana Maslai, Juliana Maslai, and Mary Maslai

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List of Abbreviations

1	first person	FOC	focus
2	second person	GEN	genitive
3	third person	HUM	human
ACC	accusative	INF	infinitive
ADD	scalar additive	IPFV	imperfective
ALL	allative	INTS	intensifier
ALTQ	alternative question	LOC	locative
AUX	auxiliary verb	NEG	negation
CAUS	causative	NEUT	neutral aspect
CF	contrastive focus	NMLZ	nominalizer
CFACT	counterfactual	PFV	perfective
CL	classifier	PL	plural
COMP	complementizer	PST	past
COND	conditional	PQ	polar question
COP	copula	REFL	reflexive
DAT	dative	SG	singular
DIST	distributive	TOP	topic

Acknowledgments

This dissertation is entirely about Tiwa and without the welcome, support, and friendship of the Tiwa community at Umswai it would not have been possible. Bibiana Maslai and Juliana Maslai were my first Tiwa teachers, back in 2012, and spent countless hours working with me throughout that year and on subsequent trips. Their incredible knowledge of Tiwa language and culture has been absolutely essential to any work I have been able to do and their friendship has been so valuable to me. Mary Maslai has been my other Tiwa teacher, since 2016, and it is fair to say that a dissertation on scope in Tiwa would not have been possible without her. Mary's incredible insight and enjoyment in exploring subtle shades of meaning makes me the luckiest field semanticist out there, and I am equally appreciative of her friendship over the last four years.

In addition to my Tiwa teachers, I would like to acknowledge the broader Tiwa community at Umswai who have been essential in facilitating this research. In particular, I would like to thank Horsing Kholar and Glorina Maslai for sharing oral texts, Clerina Kholar for her help with translation, Pilsing Malang for his participation in at least one lesson, and Linus Maslai for introducing me to Mary. Horsing Kholar in particular has supported this work consistently throughout the last eight years, and his dedication to developing Tiwa language resources is inspiring. Beyond the work itself, I would like to thank Lily, Premica, Joyful, Joycy and Dohen Lumphui, Santina, Meltina, Bobita, Mary's parents, and countless others for their friendship, hospitality and support over the years.

A special thank you has to be reserved for U.V. Joseph, who first brought me to Umswai, introduced me to the Tiwa community and helped me get set up in 2012. (He also picked me up from the airport and brought me to Umswai in 2015, for which I am eternally grateful.) His scholarship on Tiwa and his incredible dictionary have provided a solid foundation for my work, and I have benefited immensely from our conversations about Tiwa over the years.

In addition to those mentioned above, I would like to acknowledge a number of other people in India who have helped me over the course of my field trips. Most especially, Fr. Quirinus and Fr. Thomas Anikuzhikattil who were the parish priests at Umswai during my trips, and who graciously provided room, board, electricity, and transportation during my stays, as well as friendship and support for my language description projects. I'd like to thank Nicholas and Lucas, the drivers at the parish, for ferrying me to and from Umswai (and especially Nicholas for driving me back from Guwahati that one time so I wasn't stranded). I especially appreciate the generous hospitality of Sister Irene and the other Sisters at Umswai, who provided a great source of friendship during my trips, as did Fr. Kerobin, Fr. Jonas, and the various Brothers who lived at the parish during my stays.

Mark Donohue also facilitated my fieldwork on Tiwa: he introduced me to field linguistics (both the research and the logistics), funded my initial trip, supervised my undergraduate honors thesis, provided me with employment over several years, and encouraged me to pursue a PhD in linguistics. I am so grateful for his mentorship and friendship, and would not be the linguist I am if not for him. Others who played a big role in my linguistic development at ANU include Cynthia Allen, Avery Andrews, Wayan Arka, Phil Rose and Jane Simpson.

A special shout-out goes Alexandre François, who taught a great course on Austronesian linguistics as a visiting scholar, and predicted that I would actually enjoy semantics if I were introduced to the formal variety.

That introduction to formal semantics came from Amy Rose Deal, and quite clearly changed the research trajectory I was on. In her classes I realized that most of my questions were actually semantic, rather than syntactic, and she taught me the tools I needed to explore and (at least partially) answer them. I cannot imagine how she could have been a better advisor, and am eternally grateful for the hours she spent meeting with me, discussing data and half-baked ideas, reading countless versions of my work, and providing such incredible feedback and encouragement over so many years. I count myself extremely lucky to have learned from her, both as a semanticist (and syntactician) and a scholar more broadly.

The rest of my committee has also been incredible. Line Mikkelsen was my advisor for three years, before the full-blown transition to semantics, and her mentorship throughout those early graduate school years was invaluable. Meetings with Line pushed this work forward in huge ways and her insightful comments and questions (and incredible attention to detail) uncovered clear gaps in my thinking and inspired new directions of inquiry for which I am extremely grateful. Peter Jenks' enthusiasm about all aspects of syntax and semantics are infectious, and his experience with languages of Asia has proved extremely valuable in developing many of the ideas in this dissertation (especially the topics covered in the grammar sketch). While Peter describes himself as not-a-semanticist, his expertise in DP semantics in particular deeply informed the analysis and discussion developed here. Seth Yalcin provided a wonderful outside perspective to this very-linguistics dissertation, and I am especially grateful for how he pushed me to consider the tension between positing variation and assuming universals in developing my analysis. Seth is also excellent at identifying a wide range of predictions these analyses make, which sets me up very nicely for future field trips.

In addition to my committee, I would like to especially thank Andrew Garrett, who has been consistently involved in my graduate career in one capacity or another. In particular, Andrew has been a role model and mentor in language documentation and description, and I hope to emulate his community-oriented approach more fully throughout my career. I would also like to thank Sharon Inkelas for her mentorship on my first Tiwa morphology project, and Larry Hyman for his fantastic questions at every in-house talk I've ever given.

Nothing at Berkeley would happen if not for Belén Flores and Paula Floro, least of all a dissertation. Belén ensured I remained enrolled, funded and not in violation of any obscure immigration requirements throughout my graduate career, and was always available to chat and talk through all sorts of problems as they cropped up (often just sorting them out directly with a call). Field trips would have been impossible with Paula, who is the embodiment of calm and expertise, and she was always willing to help a panicked Ginny make last minute flight changes. (I also perfectly timed my graduation so I would not have to live in a post-Paula Berkeley – her retirement is well-deserved.)

I owe a lot to my fellow graduate students at Berkeley, who provided friendship, community and support in so many ways. Thanks especially to my cohort – Geoff Bacon, Emily

Clem, Andrew Cheng, Erik Maier, Alice Shen, and Amalia Skilton – and to Kenny Baclawski, Nico Baier, Madeline Bossi, Meg Cychosz, Emily Drummond, Karee Garvin, Schuyler Leparle, Myriam Lapierre, Florian Lionnet, Julia Nee, Kelsey Neely, Zachary O’Hagan, Emily Ramirez, Nicholas Rolle, Hannah Sande, Katie Sardinha, Tessa Scott, Martha Schwarz, and Elise Stickles. Many of these colleagues provided valuable insight on the topics in this dissertation through informal discussion and/or formal collaboration, and this work bears those marks very clearly. Another colleague who has made an enormous contribution is Samantha Wathugala, who I got to collaborate with on a project on indefinites and disjunction in Sinhala, which is cited in Chapter 4, during her time at Berkeley.

Beyond Berkeley, various parts of this work have benefited immensely from feedback, questions and comments from audiences at Rutgers, New York University, the 48th and 50th meetings of the Northeast Linguistic Society, the 38th meeting of the West Coast Conference on Linguistics, the 22nd meeting of Sinn und Bedeutung, the 7th and 9th meetings of Formal Approaches to South Asian Linguistics, the 4th and 6th meetings of TripleA, and the 93rd meeting of the Linguistic Society of America. The work has also been much improved through discussion with and comments from Luis Alonso-Ovalle, Rahul Balusu, Chris Barker, Rajesh Bhatt, Seth Cable, Lucas Champollion, Mitcho Erlewine, Melissa Fusco, Luisa Martí, Sarah Murray, Deniz Rudin, Roger Schwarzschild, Kristen Syrett, Anna Szabolcsi, Yimei Xiang, and anonymous reviewers at *Journal of Semantics*. A special thanks is reserved for Simon Charlow, who has read so much of this work in various forms, and whose insightful comments over the years have played a big role in how this work has developed. None of these people should be held responsible for the particular claims and positions I take, and while some very recent comments and suggestions did not fully make it into this dissertation, they will definitely impact future work that arises from it.

This work would not have been possible without the love and support of the non-linguists in my life. Thanks to my friends and community around the bay for keeping me grounded – particularly Adam Bradley, Akabar Campbell, Jake Drake, Farrah Golmaryami, Paulina Hartono, Sharon Henthorn-Iwane, Lauren Kallie, Ope Peters, Margaret Rosano, Dan Sanchez, Ari van Schilfgaarde, Gary VanderPol, Rochelle Youk, and all the members of Church Without Walls Berkeley and my sci-fi book club. Thanks also to my dearest and oldest friends who visited and/or sent love and support from Australia – Hannah de Feyter, Katelyn Favero, Anna Mayberry, Lara Sweeney, Becki Whitton, and Jess Woodruff.

And the biggest thanks goes to my family, who don’t necessarily understand what I do, but who support me enthusiastically. To my family in Australia – Maddie, Rachel, Michael, Kara, and especially Mum and Dad – thank you for your support, for visiting me (so many times), and for being a constant source both encouragement and reality checks. Mum and Dad, you gave me the space and confidence I needed to pursue this strange thing called linguistics and the skills to succeed, and for that I will always be grateful. To my family in the US – Nancy, Mike, Chris and Nicole – thank you for welcoming me, encouraging me, and making vacations more relaxing and fun than I could’ve imagined. And most especially to my husband John, whose constant love and support has brought an inexplicable sense of joy to this whole process. I can’t wait to start the next chapter with you.

The four field trips that form the basis of this research were financially supported through four Oswalt Endangered Language grants, administered by the Survey of California and Other Indian Languages at UC Berkeley.

Finally, I recognize and acknowledge that UC Berkeley sits on the ancestral and unceded land of the Muwekma Ohlone tribe. This dissertation was written on that land, which was and continues to be of great importance to the Ohlone people.

Chapter 1

Introduction

“The logical parallelism between disjunction and existential quantification is well-known; disjunction is tantamount to existential quantification over an explicitly given finite domain.”
 Rooth and Partee (1982:7)

1.1 Indefinites and disjunction

The connection between indefinites and disjunction is well established. As Rooth and Partee note in the quote above, there is a clear logical connection between the two: while indefinites typically express existential quantification over some implicit, contextually-determined domain, disjunction can be viewed as existential quantification over an explicitly given domain that consists of two or more elements. This logical connection finds empirical support in natural language. First, indefinites and disjunction in English behave similarly in their ability to take free upward scope and in their interaction with binding (Rooth and Partee 1982, Schlenker 2006, Charlow 2014). Second, many languages, like Japanese and Sinhala, provide morphological evidence for a link: the same morphemes are used in both indefinites and disjunction (Slade 2011, Uegaki 2018, a.o.). As we will see in this dissertation, Tiwa, a Tibeto-Burman language of northeast India, is another language that shows this overt morphological link.

Indefinites as a class have enjoyed an immense amount of research over the last forty plus years. They have been of particular interest to semanticists from among quantificational expressions due to their exceptional scope behavior (i.a. Farkas 1981, Fodor and Sag 1982, Abusch 1994, Reinhart 1997), their ability to introduce referents into the discourse (i.a. Kamp 1981, Heim 1982) and their ability to serve as topics (i.a. Endriss 2009). This body of research has also uncovered significant variation, both cross-linguistically and among indefinites in a single language.¹ Indefinites, for instance, show variation in their scope-taking abilities: while many indefinites are scopally flexible, others take obligatory wide scope (e.g. St’át’imcets indefinites; Matthewson 1999). Indefinites can also impose

¹See Haspelmath 1997 for a broad typological overview.

different requirements on their domain of quantification: where some indefinites impose no semantic constraint (e.g. English *a*; Heim 1991), others are domain-widening (e.g. German *irgendein*; Kratzer and Shimoyama 2002) while still others simply require a non-singleton domain (e.g. Spanish *algún*; Alonso-Ovalle and Menéndez-Benito 2010). Likewise, indefinites can vary in their licensing conditions: while some are only licensed in the scope of negation (or in other downward-entailing environments), others resist being interpreted in the scope of local negation (e.g. *any* vs. *some*; Szabolcsi 2004 and references therein), and still other indefinites are dependent on a quantificational expression higher in the structure (e.g. Hungarian *egy-egy*; Farkas 1997). Finally, indefinites also vary widely in their pragmatic effects. Some indefinites, for instance, are associated with knowledge or epistemic specificity (e.g. French *un certain* and Russian *koe* indefinites) while many others give rise to speaker ignorance effects (e.g. French *un quelconque* and Russian *to* indefinites; Jayez and Tovena 2006, Haspelmath 1997). Accounting for both the special properties that indefinites as a class show, while at the same time capturing the ways in which they vary, has been a central concern of semantic theory (see in particular Matthewson 1999, Farkas 2002a, and Brasoveanu and Farkas 2011 for discussion).

Like indefinites, disjunction has also been of central interest to semanticists, with its obvious link to propositional logic. While disjunction has traditionally been identified with the Boolean join (Gazdar 1980, Partee and Rooth 1983, Keenan and Faltz 1985), a growing body of work has pushed against that notion (e.g. Zimmermann 2001, Simons 2005a, Geurts 2005, Alonso-Ovalle 2006, Aloni 2007), and the proper treatment of natural language disjunction is still an open question. Despite its central interest to semanticists, however, semantic variation in disjunction has not received the same degree of attention as indefinites and has not played as central a role in the development of emerging theories.² Given the logical and often morphological connection between indefinites and disjunction, the question naturally arises of whether the same degree (and kinds of) of variation exists in disjunction, and if such variation is identified, how that impacts our theories. The identification of variation and explicit comparisons with the behavior of indefinites further has the potential to clarify the nature of the link between the two domains, expanding our understanding of existential quantification more broadly.

While disjunction is yet to receive the same level of cross-linguistic attention as indefinites, a number of studies have emerged in recent years that suggest variation is indeed attested. For instance, while disjunction in English readily scopes under negation, Szabolcsi (2002) shows that disjunction in Hungarian behaves like a positive-polarity item, a finding that extends to disjunctors in many other languages, including Japanese *ka* (Minai et al. 2004, a.o.), French *ou* and *soit soit* (Spector 2014, Nicolae 2017), and Sinhala *hari* (Weerasooriya 2017). Separately, many languages, including Finnish, Basque and Mandarin, are also known to lexically distinguish non-interrogative disjunctors from those used in alter-

²This lack of attention is possibly owing to the fact that while many well-studied languages have several indefinites, most – with a few exceptions – do not have multiple forms of disjunction.

native questions (Haspelmath 2007, a.o.),³ while other languages, like English and Yucatec Maya (AnderBois 2012) do not. Another set of languages, including ASL and Warlpiri, make fewer lexical distinctions than English, with a single coordinator that functions as both a disjunctive and conjunctive (Davidson 2013, Bowler 2014). Finally, other languages transparently build up disjunctive meaning with independent modality markers: disjunctives in Cheyenne, for instance, are decomposable into a conjunctive particle and an epistemic possibility particle (Murray 2017). This growing body of research reveals significant variation within disjunction in ways that have important implications for theories of disjunction and existential quantification more broadly. Murray’s finding, for instance, shows that modal theories of disjunction (Zimmermann 2001, Geurts 2005) are correct for at least some languages.

In this dissertation I add to the expanding cross-linguistic picture by examining two particles in Tiwa, a Tibeto-Burman language of northeast India, which are used to form disjunction. These particles – *ba* and *khí* – are illustrated in (1a) and (1b) respectively.

- (1) ‘Sonali or Mukton will come tomorrow.’ [2017.1.11]
 a. [Sonali **ba** Mukton] khónana phi-w.
 Sonali BA Mukton tomorrow come-NEUT
 b. [Sonali **khí** Mukton] khónana phi-w.
 Sonali KHI Mukton tomorrow come-NEUT

While *ba* is used only as a disjunctive, *khí* is also used to form indefinites through suffixation to an indeterminate pronoun, as shown in (2) and (3).

- (2) [Shar-**khí** loró] lí-ga.
 who-KHI priest go-PFV
 ‘Some priest went.’ [2018.3.85]
 (3) Saldi [inda-**khí**-gô] pre-ga.
 Saldi what-KHI-ACC buy-PFV
 ‘Saldi bought something.’ [2016.2.77]

The Tiwa data examined in this dissertation are striking and important for several reasons. The most obvious of these is that *ba* and *khí* lexicalize a scope distinction: while the disjunctive sentences in (1) are truth-conditionally equivalent, they receive opposite scope readings when another scope-taking element is introduced higher in the structure. In particular, *ba* must take narrow scope with respect to higher operators, while *khí* must take wide scope (Dawson 2019). This is illustrated in (4) and (5), which show the scopal interaction of *ba* and *khí* with respect to the attitude verb *as hóng* ‘hope’. (4) presents a narrow scope context of disjunction under the attitude verb – either disjunct would satisfy Lastoi’s hopes – and only *ba* disjunction is judged felicitous. In contrast, (5) presents an unambiguously wide scope disjunctive context – just one of the disjuncts is compatible with Lastoi’s hopes – and only

³Tiwa is another language that makes this distinction, as shown in Chapter 2, §2.4.8.

khí disjunction is judged felicitous. The English translation, in contrast, is compatible with either scenario: it is scopally ambiguous.

- (4) Lastoi is very interested in politics. It's her dream to meet the prime minister or the president of India. If she could meet either one, she would be very happy. hope > or
- a. ✓ Lastoi [PM **ba** president] -go lak mán-a as hóng-do.
Lastoi PM BA president -ACC meet-INF hope-IPFV
- b. # Lastoi [PM **khí** president] -go lak mán-a as hóng-do.
Lastoi PM KHI president -ACC meet-INF hope-IPFV
'Lastoi hopes to meet the PM or the president.' [2018.1.56]
- (5) Lastoi hates Modi (the Indian prime minister), and never wants to meet him. We can't remember whether it's Modi or the president though, and we know she wants to meet whichever politician she doesn't hate. or > hope
- a. # Lastoi [PM **ba** president] -go lak mán-a as hóng-do.
Lastoi PM BA president -ACC meet-INF hope-IPFV
- b. ✓ Lastoi [PM **khí** president] -go lak mán-a as hóng-do.
Lastoi PM KHI president -ACC meet-INF hope-IPFV
'Lastoi hopes to meet the PM or the president.' [2018.1.56]

On its own, this lexical distinction is consequential for theories of disjunction scope. Should, for instance, these data be taken as evidence of a lexical ambiguity in English *or* and other scopally flexible disjunctors? (Likely not, as I will suggest below.) And if not, how can whatever scope mechanism that derives wide scope readings of disjunction be prevented from applying to *ba*? A key goal of this work is to provide detailed documentation of the lexicalized scope distinction in disjunction in Tiwa so that it can be brought to bear on these questions.

While lexicalized disjunction scope is in itself extremely interesting, *ba* and *khí* disjunction (and indefinites) individually reveal additional important clues about the nature of natural language disjunction and existential quantification in the way they interact with other aspects of Tiwa grammar. First, *ba*'s rigid narrow scope uncovers a novel test for approaches to disjunction that treat disjunctors as the Boolean join of propositional logic (e.g. Gazdar 1980, Partee and Rooth 1983). On these approaches, typically individual-denoting expressions like proper names must be treated as generalized quantifier type $\langle et, t \rangle$ in order to be disjoined. I demonstrate that this necessary assumption incorrectly predicts that *ba* disjunctions of names should behave like generalized quantifiers in scoping out of the standard of an unreduced phrasal comparative. Crucially, not only does the traditional approach predict a missing wide scope reading, it cannot derive the attested narrow scope reading. Building on recent proposals for English disjunction (Simons 2005a, Alonso-Ovalle 2006, Aloni 2007), I present an alternative semantic analysis which can derive the relevant reading. The Tiwa data thus provide a novel argument in favor of the alternative-semantic approach to

disjunction in natural language. While this test can (and hopefully will) be applied in other languages that have unreduced phrasal comparatives, *ba*'s obligatory narrow scope removes the complicating factor of an independent disjunction scope mechanism. This unique feature of *ba* disjunction in Tiwa makes it possible to easily identify the implications of the data from comparatives, highlighting the importance of cross-linguistic semantic investigation.

The particle *khí* also highlights the importance of cross-linguistic work in semantics, as it reveals significant variation in how the exceptional wide scope of indefinites and disjunction is derived. While indefinites and disjunction as a class are able to scope out of islands, recent work has shown that there are limits to the readings that indefinites and disjunctors like English *a* and *or* can receive. In particular, Chierchia (2001), Schwarz (2001), and Charlow (2014) show that *a* and *or* are limited in their ability to scope over an operator that binds into them. This limitation proves problematic for a choice functional approach to exceptional wide scope (Reinhart 1997, Winter 1997, 2002), and as a consequence a number of alternative theories have been proposed (e.g. those of Endriss 2009, Brasoveanu and Farkas 2011, and Charlow 2014, 2019). I show that *khí* indefinites and disjunction do not show the same limitation in their scope, but instead receive exactly the readings that a choice functional approach predicts. I propose that the difference between *a/or* and *khí* in this respect is most straightforwardly explained by assuming that there are multiple routes to exceptional wide scope available in natural language: *khí* indefinites and disjunctions are uniformly choice functional, while *a* and *or* receive their wide scope readings through other means. (Note that the differences between *khí* disjunction and wide scope readings of *or* suggest that *or* is not in fact lexically ambiguous between *ba*-like disjunction and *khí*-like disjunction.) While the readings that *khí* indefinites receive in the relevant contexts resemble those available to the English indefinite *a certain*, the two differ starkly in the pragmatic effects: where *a certain* suggests speaker knowledge with respect to the witness, *khí* indefinites very strongly convey speaker ignorance. I argue that this pragmatic difference can be captured on a choice functional approach to both by appealing to the presence or absence of existential closure of the choice function variable (cf. Kratzer 1998, 2003). In addition to expanding our understanding of wide scope indefinites, *khí* also presents the first case of a clearly choice functional disjunction strategy that has to my knowledge been discussed in the context of theories of exceptional scope, providing further evidence of the deeper connection between natural language indefinites and disjunction.

A final theme throughout this work concerns the question of whether natural language disjunction and indefinites always draw on the same semantic resources. That is, are disjunction and indefinites subtypes of a broader category of existential quantification? Or is there a truly distinct strategy of disjunction (e.g. the Boolean join)? These questions will be addressed in the conclusion.

1.2 Structure of the dissertation

The dissertation is structured as follows. In the remainder of this chapter, I give background information on Tiwa and the data which are used in this dissertation. In Chapter 2, I provide a sketch of Tiwa grammar which serves to both set the scene for the subsequent chapters and document various aspects of Tiwa grammar that have not been documented in detail elsewhere. This chapter ends with an overview of coordination and indefinites in Tiwa that situates *ba* and *khí* in the broader system. In Chapter 3, I describe *ba* disjunction in depth, showing that it behaves like English *or* in every respect apart from its inability to take wide scope. I present the argument outlined above that *ba* disjunction cannot be identified with the Boolean join, but must be treated as alternative-denoting, and discuss how wide scope mechanisms can be prevented from applying to it. In Chapter 4, I turn to *khí* indefinites and disjunction, showing that they take obligatory wide scope within their finite clause, and present a choice functional analysis that captures both *khí*'s scopal behavior and its distribution. I demonstrate that this choice functional analysis does not over-generate wide scope readings, as discussed above, and present an account of *khí*'s ignorance effects as a type of manner implicature. I end Chapter 4 with a discussion of the cross-linguistic outlook, and suggest that choice functions as a scope mechanism are likely limited to obligatory wide scope indefinites and disjunction. Chapter 5 summarizes the findings of the dissertation, discusses the interaction of *ba* and *khí*, and concludes with an eye to future research.

1.3 Background on Tiwa and the data

Tiwa (ISO 639-3: lax) is a Tibeto-Burman language of northeast India. Within Tibeto-Burman, it is uncontroversially classified as a member of the Boro-Garo subgroup (also spelled Bodo-Garo), a branch of the larger Sal subgroup which is among the oldest linguistic groups in the northeast (Post and Burling 2017).⁴ The 2011 Indian census lists 33,900 Tiwa speakers, up from the 27,100 speakers reported in the 2001 census (Simons and Fennig 2017, Eberhard et al. 2020). The majority of these speakers live in the western half of Karbi Anglong district in the state of Assam, with smaller populations in Morigaon district, Assam, and Ri-Bhoi district, Meghalaya.

The larger Tiwa ethnic group (whose population was reported as 171,000 in the 2001 census; Eberhard et al. 2020) is often divided into 'Plains' vs. 'Hills' Tiwas, with the vast majority of Tiwa speakers in the latter group. Plains Tiwas primarily live in Morigaon district on the Assam plains and for the most part speak Assamese, with the exception of a group of Tiwa speakers near Sonapur, whose variety is quite divergent from that spoken

⁴Other languages in the Boro-Garo subgroup include Boro, Dimasa, Kok Borok, Garo, Rabha, Koch, Ruga, Atong, and Deori, the first three of which are Tiwa's closest relatives. Comparative work that deals with the subgroup can be found in Grierson (1903/2005), Shafer (1955), Burling (1959, 1983, 2012, 2013), Joseph and Burling (2001, 2006), Wood (2008), and DeLancey (2012). Note that in some older sources Tiwa is referred to by the exonym 'Lalung'.

in the hills (Joseph 2014). Among the variety of Tiwa spoken in the hills of Karbi Anglong and Meghalaya, Joseph (2014) recognizes at least five varieties – Marjông, Amsái, Magró, Amkhâ, and Rongkhói – which show some lexical differences, but are otherwise mutually intelligible.

Tiwa is relatively vital in the hills communities where it is spoken. At least in the Umswai valley in Karbi Anglong, there is some elementary schooling in the language, and children often grow up monolingual in Tiwa before acquiring English and/or Assamese in school and Assamese and/or Karbi (another Tibeto-Burman language) in the marketplace. My impression from the time I have spent in Umswai is that there is a very strong sense of ethnolinguistic pride in the community, which manifests in various organized language committees and local Tiwa publications. Ethnologue classifies Tiwa’s language status as 6a Vigorous (Eberhard et al. 2020), which is consistent with my impressions. Nevertheless, the Tiwa speaking community is significantly smaller than surrounding language groups (e.g. neighboring Karbi is reported to have 529,000 speakers; Eberhard et al. 2020), and many younger speakers are leaving Umswai and the surrounding areas for schooling and jobs in Assamese- or Karbi-dominant towns and cities like Jagoiroad, Guwahati, and Diphu.

To my knowledge, the earliest grammatical description of Tiwa is Fr. Michael Balawan’s 1975 short grammar sketch and 1982 Tiwa-English-Khasi dictionary (Balawan 1975, 1982).⁵ While Balawan did not have formal linguistic training, he developed a Roman orthography and produced various language materials (including a Tiwa language Catholic hymnal which is still in use). In 2004, V. Len Kholar, a native Tiwa-speaker, published a more extensive Tiwa-English-Assamese dictionary, which uses both a Roman and Assamese-based script and provides dictionary definitions in Tiwa (Kholar 2004). An additional Tiwa-English dictionary was published by U.V. Joseph in 2014, with native Tiwa-speakers Horsing Kholar, Juliana Maslai, Alfred Maslai, Bibiana Maslai, and Simon Mithi (Joseph 2014). This dictionary provides numerous example sentences and documentation of lexical dialectal differences, lists the scientific names of plant and animal terms, and identifies loanwords and their origin. It also the first dictionary to consistently mark tone. Laheram Muchahary’s 2014 dissertation from Assam University provides a broad grammatical description of the language, including topics in phonology, morphology and syntax (Muchahary 2014).⁶

In addition to these broad grammatical and lexical descriptions, Tiwa has featured in a number of more focused articles in linguistics. These include Joseph and Burling’s work on comparative Boro-Garo phonology (Joseph and Burling 2001, 2006), Joseph and Konnerth’s work on Tiwa loan word phonology (Joseph and Konnerth 2015), an acoustic study of tones in Tiwa monosyllables (Sarmah et al. 2013), and Jacquesson’s work on person-marking in Tibeto-Burman (Jacquesson 2001). (Note that the dialect of Tiwa that Jacquesson describes, spoken in Morigaon district, is quite different from the varieties dealt with here and in

⁵Balawan was a French missionary priest who set up the Catholic mission at Umswai and founded a Tiwa-medium school. Apparently he changed the spelling of his name from Baloin when he arrived in India to more transparently reflect its pronunciation.

⁶There is also apparently a 1990 dissertation out of Gauhati University by Benu Gogoi, titled “A critical study of the Tiwa community and their language”, but I have not been able to locate a copy of this work.

Joseph's work.) This assortment of studies on Tiwa also includes work that has arisen from my own research on a variety of topics in Tiwa morphology, syntax and semantics, including Dawson (2013, 2017, 2018a,b, 2019, to appear a,b), Dawson and Deal (2019), Clem and Dawson (2019), and Clem et al. (2020). (The specific details of these works are cited in Chapter 2.)

Finally, in addition to formal linguistic work, there is a rapidly growing corpus of written Tiwa, consisting of numerous local publications in Tiwa in a variety of genres. While I cannot begin to do justice to this body of work, which is available at local stores throughout Tiwa speaking regions, I will highlight a collection of traditional stories compiled by Joseph (2006), a translation of the New Testament (Joseph 2010),⁷ a guide to local bird species (Kholar 2014), and a pedagogical Hindi grammar (Sakra n.d.). Tiwa is also frequently used on various social media platforms, including Facebook and WhatsApp.

I collected the data used in this dissertation across four field trips to Umswai, Karbi Anglong in the summers of 2015-2018. (While I had previously spent four months in and around Umswai in 2012, the data collected during that trip does not appear in this dissertation. I did, however, learn a great deal about Tiwa during that trip, which has of course informed my work on the language.) The data primarily come from elicitation work with two main consultants: Mary Maslai and Bibiana Maslai. I additionally worked with Juliana Maslai in 2015, and she and Bibiana were my original teachers and consultants in 2012. All three consultants are speakers of the Amsái variety of Tiwa, and come from Pundurimakhâ village. In addition to elicitation work with these three speakers, I recorded a mixture of traditional oral texts and personal narratives with Juliana Maslai, Bibiana Maslai, Glorina Maslai, and Horsing Kholar. Clerina Kholar helped with text translation in 2015, and Pilsing Malang was present for one elicitation session with Mary Maslai in 2017. Glorina Maslai is also originally from Pundurimakhâ, but has since moved to a non-Tiwa speaking region, and Horsing Kholar and Clerina Kholar are from Shiktamakhâ and speak the Marjông variety of Tiwa. All data resulting from these field trips have been archived at the California Language Archive at UC Berkeley.⁸

This dissertation fundamentally deals with questions of meaning, both semantic and pragmatic. To explore specific questions regarding meaning, I followed the now standard methodology for semantic fieldwork outlined in Matthewson 2004, in which sentences that are known to be grammatical are presented to speakers in an explicitly given enriched context. These contexts were usually in English, but could also involve larger Tiwa discourses. Speakers were asked to provide a felicity judgment on whether the sentence would be acceptable in the given context or not. In other cases, speakers were presented with a target sentence and a follow-up clause or sentence (in Tiwa), to check for consistency. In addition to these controlled contexts, speaker translations and commentary were taken as clues as to the meaning of a given phrase or sentence, and I made note of naturalistic data overheard in

⁷A full translation of the bible – both old and new testaments – has been recently completed, though I have not yet acquired a copy.

⁸<http://dx.doi.org/doi:10.7297/X25Q4T8C>

conversation (which often then fed into elicitation session prompts). Where possible, data were replicated with different speakers and with the same speakers during different field trips (or minimally during different elicitation sessions). Sometimes that replication consisted of testing an identical sentence, in other cases it consisted of replicating an equivalent judgment for a similar sentence. All elicitation sessions were audio-recorded.

Throughout this work, each piece of data is presented with a reference to its source. Almost always this reference is to a particular notebook, with year, notebook number, and page number enclosed in square brackets. For instance, the data in (1) above were collected in 2017 and appear on page 11 of notebook 1 from that trip. Exceptions include references to the few pieces of data elicited via WhatsApp, observed on Facebook, or coming from written texts, each of which is accordingly indicated as such. In a given example, an asterisk * indicates ungrammaticality, while the pound sign # indicates semantic infelicity. For many examples, the context in which a sentence was tested in is given beneath the translation. A checkmark ✓ indicates that the sentence was accepted in the given context, while a cross ✗ indicates that it was rejected.

Chapter 2

Tiwa grammar sketch

In this chapter, I provide an overview of Tiwa grammar. This overview is intended to (i) set the scene for the rest of the dissertation by providing background information and my assumptions about Tiwa grammar, and (ii) provide documentation of aspects of Tiwa grammar that have not elsewhere been thoroughly documented. While this overview sets the scene for the rest of the dissertation, the subsequent chapters are also intended to stand alone; relevant background information is provided in each, as well as specific references to relevant sections of this grammar sketch.

The chapter is structured as follows. In §2.1, I give a brief overview of Tiwa phonology and the orthography adopted in this dissertation. In §2.2, I describe Tiwa's morphology, beginning with verbal inflection (including tense, aspect, negation, and agreement; §2.2.1), and moving onto case (§2.2.2), pronouns (§2.2.3), number marking (§2.2.4), and Tiwa's system of information structure affixes (§2.2.5). In §2.3 I turn to the syntax and semantics of nouns and their modifiers, giving an overview of the structure of the DP (§2.3.1), numeral modification (§2.3.2), adjectives and relative clauses (§2.3.3), and definiteness (§2.3.4). In §2.4, I turn to the clause, outlining my assumptions about the structure of the clause (§2.4.1), auxiliary verbs (§2.4.2), complement clauses (§2.4.3), scrambling and extraposition (§2.4.4), and discontinuous DPs (§2.4.5). In this section I also delve into more complex sentence types, including conditionals (§2.4.6) and comparatives (§2.4.7), and non-declarative sentences: questions (§2.4.8) and imperatives (§2.4.9). I finish the chapter with a description of coordination (§2.5) and quantification (§2.6), setting the scene for the in-depth studies of disjunction and indefinites in the subsequent chapters.

2.1 Phonology

2.1.1 Phonemes and phonotactics

Tiwa has seventeen phonemic consonants and five phonemic vowels, presented in Tables 2.1 and 2.2 respectively. In addition to its segmental phonemes, Tiwa has two contrastive

	labial	alveolar	post-alveolar	velar	glottal
aspirated stops	p ^h	t ^h		k ^h	
voiceless stops	p	t		k	
affricates			tʃ		
fricatives		s	ʃ		h
nasals	m	n		ŋ	
liquids		r, l			
glides	w		j		

Table 2.1: Phonemic consonant inventory

	front	central	back
high	i		u
mid	ɛ		ɔ
low		a	

Table 2.2: Phonemic vowel inventory

tones: high (ˊ) and falling (ˋ). These tones are associated with a particular syllable in the word, and spread left-to-right. For details on Tiwa’s tone system, see Joseph and Burling 2001 and Joseph 2014. Nasalization could be considered contrastive, but is limited to few lexical items, and minimal pairs are confined to ideophones like the ones in (1) (Joseph 2014; Joseph and Konnerth 2015).¹

- (1) a. /praw praw/ ‘splashing water’
 b. /prāw prāw/ ‘humming of bees’ (Joseph 2014:viii)

Tiwa syllables minimally consist of a single vowel, as in (2a), and maximally consist of an onset cluster of two consonants, a vowel and a coda (CCVC), as in (1) above. In an onset cluster, the first consonant is a stop (aspirated or unvoiced) and the second consonant is a liquid or glide. (1) shows a stop+liquid onset, and (2b) shows a stop+glide onset. Codas can be unvoiced stops, nasals, liquids, glides or /s/. Examples of each coda type are given in (1)-(2).

- (2) a. /a.kâs/ ‘sky’
 b. /kɔr.k^hjá/ ‘child’
 c. /sô.mət/ ‘kin relationship’
 d. /kɔ.tʃâm/ ‘old’

¹The lexical items that do have nasalization are not necessarily low frequency. For instance, the 1SG genitive pronoun *ái* is nasalized. This nasalization clearly stems from a historical segmental nasal (the nominative form of the pronoun is *ang*). Because nasalization has such a low functional load, I will not mark it throughout the dissertation.

Words may consist of a single syllable, or multiple syllables. Cross-syllable, word-internal consonant clusters are restricted: there are no C.n or C.w sequences.² Likewise, there are no word-internal VV sequences. Where C.n, C.w or VV sequences would arise via affixation, phonological processes apply to prevent them, as described below.

2.1.2 Major phonological processes

Voiceless stops and affricates are voiced when they occur between two phonemically voiced segments within a word, namely, nasals, liquids, glides and vowels. (I take the domain of voicing to correspond to a prosodic word (Dawson 2017).) Some examples are given in (3).

- (3) Voicing
- a. /k^hántal/ ‘jackfruit’ → [k^hándál]
 - b. /mɔtʃâ/ ‘sock’ → [mɔdʒâ]
 - c. /kagrâ/ ‘waterfall’ → [kāgrâ]
 - d. /táp/ ‘knife’ + /-rê/ COM → [tábrê]

Phonotactic constraints also give rise to phonological processes in Tiwa. Where a C.n or C.w sequence would arise through affixation, the nasal or /w/ is deleted.³

- (4) Deletion of nasals and /w/
- a. /hât/ ‘market’ + /-na/ DAT → [hádà], *[hádnà]
 - b. /núŋ/ ‘drink’ + /-na/ INF → [núŋà], *[núŋnà]
 - c. /hál/ ‘send’ + /-wa/ NMLZ → [hálá], *[hálwá]

Where a word-internal VV sequence would arise through affixation of locative or neutral /-ɔ/ (an aspectual morpheme), the /-ɔ/ is reduced to a glide [w]. Examples are given in (5).

- (5) Reduction of /-ɔ/ following a vowel
- a. /há/ ‘soil’ + /-ɔ/ LOC → [háw]
 - b. /chû/ ‘be tall’ + /-ɔ/ NEUT → [chûw]

Where such a reduction would result in a syllable final CC cluster – specifically, when neutral /-ɔ/ is followed by past tense /-m/ or 1SG /-ŋ/ – the vowel is deleted, as in (6).

- (6) Deletion of /-ɔ/ between a vowel and a coda consonant
- a. /tʃá/ ‘eat’ + /-ɔ/ NEUT + /-ŋ/ 1SG → [tʃájŋ]

²Joseph’s (2014) dictionary contains a few apparent counterexamples to this generalization for C.n sequences, such as the entry *héwne* ‘of this family’. Such examples, however, are all clearly bimorphemic (as the dictionary notes) and all contain the syllable *ne*. I assume that they are better treated as two distinct words (with a potentially idiomatic interpretation).

³I assume this is a regular phonological process rather than allomorphy since there are no consonant sequences of that nature elsewhere in the language, and since the process applies equally to the dative and infinitive suffixes.

b. /lí/ ‘go’ + /-ɔ/ NEUT + /-m/ PST → [líɱ]

Note that neutral /-ɔ/ resurfaces as a glide if the cluster is not syllable-final, as in (7).

(7) /lí/ ‘go’ + /-ɔ/ NEUT + /-m/ PST + /-âŋ/ 1SG → [líɱmâŋ]

Finally, /k^h/ is optionally lenited to [x] intervocalically, as shown in (8).

(8) /pak^hál/ ‘when’ → [pāxál], [pāk^hál]

2.1.3 Orthography

In this dissertation, I use the orthography developed by U.V. Joseph, which is explicated in detail in his dictionary (Joseph 2014). This is the Roman alphabet orthography most commonly in use in the Tiwa community at Umswai. A prior trilingual dictionary by Kholar (2004) lists Roman alphabet entries and Assamese script entries, but does not consistently mark tone.

The orthography is basically phonemic, except that voicing is partially represented. The graphemes are listed in Tables 2.3 and 2.4.

	labial	alveolar	post-alveolar	velar	glottal
aspirated stops	ph	th		kh	
voiceless stops	p, b	t, d		k, g	
affricates			ch, j		
fricatives		s	sh		h
nasals	m	n		ng	
liquids		r, l			
glides	w		y		

Table 2.3: Consonant graphemes

	front	central	back
high	i		u
mid	e		o
low		a	

Table 2.4: Vowel graphemes

For voiceless stops and affricates, <p, t, ch, k> are used word initially and root finally, regardless of whether there is voicing (e.g. due to suffixation). For example, although the /p/ in /táp/ ‘knife’ is voiced when the comitative suffix /-rê/ is added, it is consistently written <p>, as in *táprê*. The voiced counterparts <b, d, j, g> are used when the phoneme is always voiced (e.g. intervocalically within a root), and at the beginning of suffixes, such as the accusative suffix /-kô/, which is consistently written <gô> regardless of voicing. For example,

the accusative form of /táp/ ‘knife’ is always written *tápgô* even though it is pronounced [tápkô]. The effect of this system is that voicing is partially represented orthographically, while roots and affixes are consistently represented. The only other deviation from the one-to-one mapping between segmental phoneme and grapheme is that /Vj/ sequences are written <Vi>. (Note that /Vw/ sequences are written <Vw>.)

A hyphen is used to separate <n> and <g> in phonemic /ng/ sequences (<n-g>), to disambiguate them from /ŋ/. For example, /tʃón/ ‘finish’ + perfective /-ka/ is written <chón-ga>. Note that there is no place assimilation in such sequences. /ŋg/ sequences are written <ngg>.

Tone is marked in the orthography with some systematic exceptions. High tone is indicated with an acute accent ´, and falling with a circumflex ^. Each morpheme has no more than one tone mark, which is placed on the syllable that is associated with the tone (see Joseph and Burling 2001). For monosyllabic roots, falling tone is unmarked. For example, the verb root /núŋ/ ‘drink’ is always written <nung>.

Some affixes in Tiwa are associated with lexical tones, while others are not. Non-tonal affixes are always unmarked. Tonal affixes are marked for tone if the tone on the preceding morpheme is the opposite. For example, the suffix /-k^há/ ‘anymore’ bears an inherent high tone. When it follows a stem that is already high, the orthographic accent is omitted. For example, /lí-ja-k^há/ ‘not go anymore’ is written <líyakha> (and pronounced [líjákh^há]). In contrast, when /-k^há/ follows a stem with falling tone, such as /núŋ-ja/ ‘not drink’, it is written with the accent mark, as in <nungyakhá> (pronounced [núŋ-jà-k^há]; recall the tone on /núŋ/ is never marked).

While nasalization is also marked in Joseph’s orthography with a tilde ~ on the nasalized vowel, I omit it throughout this dissertation since it bears such a low functional load.

2.2 Morphology

Tiwa is strongly agglutinating and suffixing. Verbs are inflected for tense, aspect and negation (and optional 1SG agreement), while nominals bear (optional) number and case marking. Additionally, information structure is primarily marked through dedicated suffixes. Each of these areas of morphology (including their semantics) will be discussed in this section.

2.2.1 Verb inflection

Finite verbs in Tiwa are inflected for tense and aspect, negation, and optional 1SG subject agreement. Negation and aspect fill the same morphological slot directly to the right of the verb; they cannot co-occur. Tiwa’s sole overt tense marker *-m* ‘past’ appears to the right of aspect/negation, and can combine with any of those suffixes. 1SG subject agreement optionally appears to the right of tense.

- (9) V-{-Neg/Asp}-Tense-(Agreement)

Table 2.5 provides a summary of verbal affixes and possible combinations in Tiwa, along with rough glosses and the interlinear gloss I use throughout this dissertation. The interlinear gloss applies to the particular combination of aspect/negation and tense. As Table 2.5 shows, the aspect/negation slot is always overtly filled on finite verbs.

gloss	interlinear gloss	V	Neg/Aspect	Tense	Agreement
imperfective	IPFV	V	-do		(-ng)
past	PST	V	-do	-m	(-âng)
perfective	PFV	V	-ga		(-ng)
‘would’	MODAL	V	-ga	-m	(-âng)
neutral	NEUT	V	-o		(-ng)
‘would’/past	MODAL/NEUT-PST	V	-o	-m	(-âng)
negative	NEG	V	-ya		(-ng)
past negative	NEG-PST	V	-ya	-m	(-âng)

Table 2.5: Finite verb inflection

When the imperfective suffix *-do* appears on verb roots ending in /a/, /o/ or /u/ (i.e. non-front vowels), a palatal glide [j] is inserted, as illustrated in (10). When the root ends in a front vowel or a consonant, there is no change, as illustrated in (11).⁴

- (10) a. *thá* ‘stay’ + *-do* = *tháido* [t^hájídó] ‘is staying’
 b. *hánjo* ‘bathe’ + *-do* = *hánjoido* [hándzójídó] ‘is bathing’
 c. *tu* ‘climb’ + *-do* = *tuido* [tújdò] ‘is climbing’
- (11) a. *lí* ‘go’ + *-do* = *lído* [lídó] ‘is going’
 b. *omlê* ‘play’ + *-do* = *omlêdo* [ɔ̄mlédò] ‘is playing’
 c. *nung* ‘drink’ + *-do* = *nungdo* [núɲdò] ‘is drinking’

Non-finite (and non-nominalized) main verbs are marked with infinitival *-na*, as in (12) (a complement clause) and (13) (a purposive clause). Infinitival verbs cannot bear negation, as shown in (14).

- (12) Ang sa khúp nung-**a** hal-do.
 1SG tea INTS drink-INF want-IPFV
 ‘I want to drink a lot of tea.’ [2015.1.12]
- (13) Mukton hor-o ti-sham [tigâr-**a**] chigál-ga.
 Mukton night-LOC two-CL.time urinate-INF get.up-PFV
 ‘Mukton got up twice in the night to pee.’ [2018.1.112]

⁴Interestingly, this exact process also occurs in auxiliary verb constructions (see §2.4.2 below).

(14) Intended: ‘to not go’ [2015.1.19]

- a. *lí-**ya**-na
go-NEG-INF
- b. *lí-na-**ya**
go-INF-NEG

Nominalized verbs are marked with the suffix *-wa*, as in (15). Unlike infinitives, nominalized verbs can be negated (see example (211) in §2.4.1 below). There are no other nominalizing affixes in the language.

(15) Ang Sonali-ne miyâw-e omlê-**wa**-go ni thá-ga.
1SG Sonali-GEN cat-GEN play-NMLZ-ACC look AUX-PFV
‘I watched Sonali’s cat playing.’ [2018.1.13]

2.2.1.1 Tense, aspect and negation

The semantics of Tiwa’s tense and aspect inflection is not always transparent. While *-m* ‘past’ clearly contributes past tense in combination with *-do* ‘imperfective’, *-ya* ‘negative’, and sometimes *-o* ‘neutral’, it combines with *-ga* ‘perfective’, and in some cases *-o* ‘neutral’, to form a modal which is used in similar contexts to English ‘would’.⁵ Likewise, the aspect suffix *-do* on its own conveys imperfectivity, but in combination with the past tense suffix does not. For instance, *-do* on its own cannot be used on a semelfactive predicate (as expected for an imperfective), but the combination of *-do* and *-m* can, as shown in (16). For this reason, I treat *-do-m* sequences as a single unit glossed PST throughout.

- (16) a. Tonbor (*sham-shá) hájing kói-**do**.
Tonbor (*CL.time-one) sneeze-IPFV
‘Tonbor is sneezing (*once).’ [2018.2.137]
Comment: “Sneezing is too fast.”
- b. Tonbor sham-shá hájing kói-**dom**.
Tonbor CL.time-one sneeze-PST
‘Tonbor sneezed once.’ (Not: ‘Tonbor was sneezing once.’) [2018.2.137]

While certain combinations are not semantically transparent, they cannot be treated as a single lexical unit morphologically. Evidence against a single-morpheme view comes from cases in which a focus marker or discourse particle can appear between aspect and tense marking, as illustrated in (17). (This process relies on the presence of 1SG agreement, and is discussed in detail by Clem et al. (2020).)

- (17) a. Phi-**do**-lo-**m**-ang.
come-IPFV-FOC-PST-1SG
‘I came.’ [2015.1.145]

⁵This particular non-transparency is not especially surprising from a cross-linguistic perspective, representing just another case of a “fake past tense” which contributes a modal meaning (Iatridou 2000).

- b. Phi-**ga**-lo-**m**-ang.
 come-PFV-FOC-PST-1SG
 ‘I would come.’ [2015.1.142]
- c. Phi-**w**-lo-**m**-ang.
 come-NEUT-FOC-PST-1SG
 ‘I would come.’ [2015.1.142]

Plain imperfective *-do* cannot be used with future tense reference (which is covered by neutral *-o*, see below), as shown in (18). Instead, it indicates that the event or state holds at the time of speech, as in (19) and (20).⁶

- (18) Pibúr pe nó-gô lúi-**do**, # thêbo lú-na chorê-wa-n’ cha.
 3PL 3SG house-ACC build-IPFV but build-INF begin-NMLZ-GEN exist.NEG
 ‘They are building the house, # but they haven’t started.’ [2018.2.135]
 (Intended: ‘They will be building the house, but they haven’t started.’)
- (19) Ethâ Sonali misâi-**do**.
 now Sonali dance-IPFV
 ‘Sonali is dancing now.’ [2018.2.135]
- (20) Ang chui-**do**.
 1SG tall-IPFV
 ‘I am tall.’ [2018.3.74]

Past tense *-dom* conveys that the event or state held in the past, as in (21). It also implicates that the state, or a state that resulted from the event, no longer holds. For example, as the speaker comments in (22) shows, *-dom* on a stative verb implies that the state no longer holds. This inference can be canceled, however, as the follow up shows.

- (21) Mokhále, Saldi Amerika-jíng lí-**dom**.
 last.year Saldi America-ALL go-PST
 ‘Last year Saldi went to America.’ [2018.2.137]
- (22) Fr Balawan khúp chui-**dom**.
 Fr Balawan INTS tall-PST
 ‘Fr Balawan was very tall.’ [2016.1.83]
 Comment: “Can’t say if he’s still alive. Well, you can, but now he’s short.”

⁶Note that *-do* can also receive a habitual reading, as in (1), though this reading is less common. Habitual readings are almost always conveyed with *-o* as discussed below. Speakers report a difference between the two habitual interpretations, but teasing apart these differences will require further investigation.

- (1) John khúp phi thái-**do**.
 John INTS come AUX-IPFV
 ‘John comes too much.’ [2016.2.90]

- a. ✓ *Arô ethâ pe chui thâi-do.*
 and now 3SG tall AUX-IPFV
 ‘And he’s still tall now.’ [2016.1.83]

(23) shows a similar implicature for a non-stative verb: Mukton’s leaving resulted in his not being present, but the use of *-dom* implies that that state may no longer hold. As the speaker comment indicates, this inference probably arises through competition of perfective *-ga*, discussed below.

- (23) *Mukton nu-tha pajê-w lí-dom.*
 Mukton nine-CL hour-LOC go-PST
 ‘Mukton left at nine o’clock.’ [2018.2.135]

Comment: “He went, maybe he came back. *-ga* sounds like he’s not coming back.”

Like imperfective *-do*, the perfective suffix *-ga* cannot be understood with future tense, as illustrated in (24). Instead, it conveys that an event happened in the past, as shown in (25).

- (24) # *Khónana shâri-tha pajê-w, ching lí-ga.*
 tomorrow four-CL hour-LOC 1PL go-PFV

Intended: ‘By four o’clock tomorrow we will have gone.’ [2018.3.65]

- (25) *Mokhále, Saldi Amerika-jíng lí-ga. Thin par thâ-ga, arô wal phi-ga.*
 last.year Saldi America-ALL go-PFV three week stay-PFV, and return AUX-PFV
 ‘Last year, Saldi went to America. She stayed three weeks, and then came back.’
 [2018.2.136]

Where past tense *-dom* implies the state no longer holds, perfective *-ga* makes no such implication. Instead, it simply conveys that the initial stage of the event has taken place. For example, on stative predicates like *phung* ‘be fat’ in (26), *-ga* conveys that the state became true of the subject at some point in the past. In (27), perfective marking conveys that Lastoi holds the opinion that Rachel is staying in Guwahati (i.e. she has come to think this); it does not imply that she no longer does.

- (26) *Tonbor phung-ga.*
 Tonbor fat-PFV
 ‘Tonbor got fat.’ [2018.2.134]
- (27) *Lastoi atkhâl lá-ga, Rachel Guwahati-w thâi-do honmandé.*
 Lastoi think-PFV Rachel Guwahati-LOC stay-IPFV COMP
 ‘Lastoi thinks that Rachel is staying in Guwahati.’ [2018.1.97]

As mentioned above, the combination of perfective *-ga* and past *-m* results in a modal meaning roughly equivalent to English *would*. (28) shows a counterfactual use of *-gam*, in which John is not bringing rice because there’s not enough money, but he otherwise would. Just like English *would*, *-gam* does not require past tense interpretation. This is illustrated most clearly in (29), which is felicitous with a future-oriented adverb like *khónana* ‘tomorrow’.

- (28) John mai lap-**gam**, thêbo phûisa páng-ya.
 John rice bring-MODAL but money enough-NEG
 ‘John would bring rice, but there’s not enough money.’ [2016.1.49]
- (29) Context: John is in prison with no food, and therefore isn’t eating. However, if we bring him food tomorrow, he would.
 Khónana John mai chá-**gam**.
 tomorrow John rice eat-MODAL
 ‘John would eat tomorrow.’ [2016.1.48]

Neutral aspect *-o* covers a variety of functions. On non-stative predicates, it usually conveys future tense, as in (30). It can also, however, convey a habitual reading, as in (31), and is used to convey a fact that holds in general, as in (32).

- (30) Ethâ John mai chá-**w**.
 now John rice eat-NEUT
 ‘John will eat now.’ (i.e. John is about to eat)
 Not: ‘John is eating now.’ [2016.1.48]
- (31) Saldi phor phor kodâr-a lí-**w**.
 Saldi time time walk-INF go-NEUT
 ‘Saldi goes for walks from time to time.’ [2016.2.31]
- (32) Ang India-w phi-wa-ne ak-o, visa-go mán-a mán-**o**.
 1SG India-LOC come-NMLZ-GEN before-LOC visa-ACC get-INF must-NEUT
 ‘Before I come to India, I have to get a visa.’ (Expressing a general fact.) [2018.2.139]

Neutral *-o* is the most common inflection on stative predicates, to express that the state holds of the subject in the present, as in (33). (As shown in (20) above, *-do* also covers this function.) *-o* is also compatible with a future reading on stative verbs, as shown in (34).

- (33) Tonbor phung-**o**.
 Tonbor fat-NEUT
 ‘Tonbor is fat.’ [2018.2.134]
- (34) Ang tór-a durî, chu-**w**.
 1SG big-NMLZ after tall-NEUT
 ‘When I am bigger, I will be tall.’ [2018.3.74]

Note that in contrast to stative verbs, neutral inflection on an overt copula only has a future reading; present tense is expressed with imperfective *-do*. This is illustrated in (35).

- (35) a. Monbor loró hóng-**o**.
 Monbor priest COP-NEUT
 ‘Monbor will be a priest.’ [2017.1.52]
 Not: ‘Monbor is a priest.’

- b. Monbor loró hóng-**do**.
 Monbor priest COP-IPFV
 ‘Monbor is a priest.’ [2017.1.52]

On stative verbs, this contrast between neutral *-o* and imperfective *-do* does not hold. For instance, the imperfective-marked stative in (20) above can be equivalently expressed with neutral tense, as shown in (36), though this form is ambiguous between a present and future tense reading.

- (36) Ang chu-**w**.
 1SG tall-NEUT
 ‘I am tall.’ or ‘I will be tall.’ [2018.3.74]

In addition to its future and present habitual uses, neutral inflection can be used to express habitual actions that took place in the past, as in (37).⁷

- (37) Ái korkhyá phor-*o*, ang chakhál-*a* hóng-gai-*bô* krom-jíng omlê-*na*
 1SG.GEN child time-LOC 1SG anytime-DAT COP-COND-ADD forest-ALL play-INF
 lí-**w**.
 go-NEUT
 ‘When I was a child, I would always go to the forest to play.’ [2017.2.138]

The combination of neutral *-o* and past *-m* is less frequent than other verbal combinations, and seems to have two distinct uses depending on the verb it inflects. On the majority of verbs it gives rise to a modal meaning, similar to *-gam*, discussed above. This is illustrated in (38) and (39). (Note that sentences like (39) are ambiguous between a conditional interpretation and a counterfactual interpretation, as discussed in §2.4.6 below. This particular sentence was translated by the consultant as a counterfactual.)

- (38) Ná lí-gai-*sê*, tháng-**om**.
 2SG go-COND-CF right-MODAL
 ‘It would be good if you go.’ [2015.1.54]
- (39) Ná kusí-gai-*dô*, lí-**m**.
 2SG tell-COND-TOP go-MODAL
 ‘If you had told me, I would have gone.’ [2015.1.19]

Note: neutral *-w* deleted due to regular phonological processes (see §2.1.2 above)

When *-om* is used on the existential copula *tong*, however, it straightforwardly conveys past tense, as shown in (40) and (41). Speakers judge *tongom* as roughly equivalent to *tongdom* (with the regular past tense combination of *-do* and *-m*), though the latter is considered rare.

⁷Examples like these provide evidence against positing a null non-past morpheme that is in complementary distribution with past tense *-m*.

- (40) Phas-*tha* *khôlom* *tibûl* *shá-w* *tong-o-m*.
 five-CL pen table on-LOC exist-NEUT-PST
 ‘There were five pens on the table.’ [2018.2.72]
- (41) Ak-*do* *ái* *mis* *tong-o-m*, *thêbo* *ethâ-do* *cha-khá-kha*.
 before-TOP 1SG.GEN buffalo exist-NEUT-PST but now-TOP exist.NEG-KHA-KHA
 ‘I used to have water buffalo, but now I don’t.’ [2015.1.43]

Note that *tongom* cannot seem to get a modal reading, as shown in (42). Instead, the verb must be inflected with *-gam*.⁸

- (42) ‘If someone had brought water buffalo to Australia, there would be water buffalo in Australia now.’ [2015.1.45]
- a. *Shar-*pha* *chidî* *Australia-na* *mis* *lap-gai-dom*, *ethâ*
 who-PHA if Australia-DAT buffalo bring-COND-CFACT now
 Australia-w *mis* *tong-o-m*.
 Australia-LOC buffalo exist-NEUT-PST
- b. ✓ Shar-*pha* *chidî* *Australia-na* *mis* *lap-gai-dom*, *ethâ*
 who-PHA if Australia-DAT buffalo bring-COND-CFACT now
 Australia-w *mis* *tong-gam*.
 Australia-LOC buffalo exist-MODAL

The negation suffix *-ya* on its own indicates that the proposition does not hold in the present or will not hold in the future. This range of tense possibilities is similar to those of neutral *-o*: on stative verbs, *-ya* is typically interpreted in the present, as in (43), while on non-stative verbs it is typically interpreted as future, as in (44). As with neutral aspect, plain *-ya* negation can also receive a habitual reading, as in (45).

- (43) Maria *chu-ya*.
 Maria tall-NEG
 ‘Maria isn’t tall.’ [2015.1.82]
- (44) Khónana-*dô* *pe* *nó-w* *thá-w*, *chajíng-bô* *lí-ya*.
 tomorrow-TOP 3SG house-LOC stay-NEUT anywhere-ADD go-NEG
 ‘Tomorrow she will stay home. She won’t go anywhere.’ [2015.1.121]
- (45) Saldi *sái-bô* *kodâr-a* *lí-ya*.
 Saldi little-ADD walk-INF go-NEG
 ‘Saldi never goes for walks.’ [2016.2.30]

Negated verbs are interpreted as past tense with the past tense suffix *-m*, as in (46) and (47).

⁸Note: there are water buffalo in Australia. This was unknown to both me and my consultants at the time this sentence was elicited.

- (46) Ang sa nung-**ya-m**.
 1SG tea drink-NEG-PST
 ‘I didn’t drink tea.’ [2015.1.90]
- (47) Shâri-tha pajê-w ang mai chá-**ya-m**, thêbo ethâ-do chá-ga.
 four-CL hour-LOC 1SG rice eat-NEG-PST but now-TOP eat-PFV
 ‘I didn’t eat at four o’clock, but now I’ve eaten.’ [2018.3.66]

On stative verbs and the copula, *-yam* consistently receives an inchoative reading, as shown in (48) and (49). Non-inchoative past tense negation on statives is expressed periphrastically as described below.

- (48) Ang taktôr hóng-**ya-m**.
 1SG doctor COP-NEG-PST
 ‘I didn’t become a doctor.’ [2015.1.32]
- (49) Mukton phung-**ya-m**, # thêbo ethâ phung-ga.
 Mukton fat-NEG-PST but now fat-PFV
 ‘Mukton didn’t become fat, # but now he’s gotten fat.’ [2018.3.94]
 (Intended: ‘Mukton wasn’t fat, but now he’s gotten fat.’)
 Comment: “Mukton didn’t become fat ever.”

Tiwa has an additional periphrastic negation strategy, alongside inflecting the main verb with *-ya*. In this strategy, illustrated in (50)-(52), the verb is nominalized, marked with genitive case *-ne* (often reduced to *-n’*), and embedded under the negated form of the existential copula *cha*.⁹ These forms are usually translated with the English perfect on non-stative verbs, as in (50) and (51), and as present tense on stative verbs, as in (52).

⁹There is no morphologically transparent negated form of the existential copula *tong*, as shown in (1). Historically, *cha* is almost certainly a reduced form.

- (1) ‘not exist’ [2015.1.45]
 a. *tong-ya
 exist-NEG
 b. cha
 exist.NEG

The negated form of the predicational copula *hóng* ‘be’ also has a reduced form, as shown in (2), though note that the transparent form is not blocked. The reduced form is pronounced with nasalization on the vowel.

- (2) ‘not be’ [2015.1.32]
 a. hóng-ya
 COP-NEG
 b. hyá
 COP.NEG

- (50) Pe chajíng-bô lí-**wa-ne** **cha**.
 3SG anywhere-ADD go-NMLZ-GEN exist.NEG
 ‘She hasn’t gone anywhere.’ [2016.2.123]
- (51) Tonbor makhâ-go tu-ga, thêbo shó-**wa-n’** **cha**.
 Tonbor hill-ACC climb-PFV but reach-NMLZ-GEN exist.NEG
 ‘Tonbor is climbing the hill, but he hasn’t reached the top.’ [2018.2.87]
- (52) Mukton phung-dom, thêbo ethâ phung-**a-ne** **cha**.
 Mukton fat-PST but now fat-NMLZ-GEN exist.NEG
 ‘Mukton was fat, but now he’s not fat.’ [2018.3.94]

The negated copula in this periphrastic negation construction can be additionally marked with past tense *-dom* to receive a past perfect interpretation, as shown in (53). Evidence for a past perfect (over a purely past) interpretation comes from the impossibility of the follow up (which is acceptable with a plain past tense form of the verb, as shown in (54)).

- (53) Ang shâri-tha pajê-w mai chá-**wa-n’** **chai-dom**. (# Thin-tha pajê-w
 1SG four-CL hour-LOC rice eat-NMLZ-GEN exist.NEG-PST three-CL hour-LOC
 chá-ga.)
 eat-PFV
 ‘I had not eaten at four o’clock. (# I ate at three o’clock.)’ [2018.1.66]
- (54) Ang shâri-tha pajê-w mai chá-**ya-m**. Thin-tha pajê-w chá-ga.
 1SG four-CL hour-LOC rice eat-NEG-PST three-CL hour-LOC eat-PFV
 ‘I didn’t eat at four o’clock. I ate at three o’clock.’ [2018.1.66]

The past tense form of this periphrastic strategy is also used to express non-inchoative past tense negation on stative verbs and copulas, as shown in (55).

- (55) Ake-do ang taktôr hóng-**a-ne** **chai-dom**, ethâ-do taktôr hóng-ga.
 before-TOP 1SG doctor COP-NMLZ-GEN exist.NEG-PST now-TOP doctor COP-PFV
 ‘Before I wasn’t a doctor, but now I have become one.’ [2015.1.33]

There does not seem to be an analogous affirmative perfect construction in the language. For example, nominalized genitive marked clauses cannot be embedded under the non-negated existential copula, as shown in (56) and (57).

- (56) * Saldi pháde-**wa-n’** **tong-o**.
 Saldi marry-NMLZ-GEN exist-NEUT
 Intended: ‘Saldi is married.’ / ‘Saldi has gotten married.’ [2018.2.141]
- (57) * Ang shâri-tha pajê-w mai chá-**wa-ne** **tong{-o-m, -dom}**.
 1SG four-CL hour-LOC rice eat-NMLZ-GEN exist{-NEUT-PST, -PST}
 Intended: ‘I had eaten at four o’clock.’ [2018.1.66]

Unembedded nominalized, genitive marked verbs are instead used in questions and answers, as in (58) and (59). The effect of using *-wa-ne* over regular inflection implies that the event or state introduced by the verb is presupposed to hold of some individual; in both cases the speaker knows that someone got married.

- (58) A: Shar **pháde-wa-ne**?
 who marry-NMLZ-GEN
 ‘Who is it who got married?’
 B: Saldi-se **pháde-wa-ne**.
 Saldi-CF marry-NMLZ-GEN
 ‘It was Saldi who got married.’ [2018.2.141]
- (59) A: Lastoi **pháde-wa-ne** ná?
 Lastoi marry-NMLZ-GEN PQ
 ‘Was it Lastoi who got married?’
 Comment: “I heard there was some marriage.”
 B: Cha, **pháde-wa-n’** cha.
 exist.NEG marry-NMLZ-GEN exist.NEG
 ‘No, she didn’t get married.’
 A: Khádo shar **pháde-wa-ne**?
 then who marry-NMLZ-GEN
 ‘Then who got married?’ [2018.2.149]

Outside of questions and answers, these clauses are deemed “incomplete” sounding. They can, however, be adjoined to fully inflected clauses to form a ‘because’ clause, as in (60).

- (60) Saldi **pháde-wa-ne**, ang pibúr-e nó-na phi-do.
 Saldi marry-NMLZ-GEN 1SG 3PL-GEN house-DAT come-IPFV
 ‘I’ve come to their house because Saldi got married.’ [2018.2.149]

The tense and aspect suffixes described above exist alongside an articulated system of auxiliary verbs, described in more detail in §2.4.2, that contribute further aspectual (and directional and other) information. For example, the auxiliary verb *kar* ‘finish’ contributes telicity to an otherwise atelic predicate. This is illustrated in (61). Adding the auxiliary verb *kar* in (61a) is infelicitous, because of the presence of the temporal adverb *phas minítlô* ‘for five minutes’ which indicates how long the event lasted. In contrast, *kar* is felicitous in (61b), which has the adverb *phas minítolô* ‘in five minutes’ which entails that the event is completed. (This telicity test is remarkably similar to its English counterpart, with a locative temporal adverb only compatible with telic events.)

- (61) a. Lastoi **phas minít-lô** kakhîr-go nung (***kar**)-ga.
 Lastoi five minute-FOC milk-ACC drink (***AUX**)-PFV
 ‘Lastoi drank (***up**) the milk for five minutes.’ [2018.2.111]

- b. Lastoi **phas minít-o-lô** kakhîr-go nung (**kar**)-ga.
 Lastoi five minute-LOC-FOC milk-ACC drink (AUX)-PFV
 ‘Lastoi drank (up) the milk in five minutes.’ [2018.2.111]

Note that while *kar* clearly contributes telicity, I have not been able to identify any inherently telic accomplishment or achievement verbs in Tiwa (other than verbs whose entire meaning is ‘finish’ or ‘complete’). For instance, verbs like *lú* ‘build’ do not entail completion with any tense or aspect inflection, as shown by the felicity of the follow up in (62) and (63), unless the auxiliary verb *chon* ‘finish’ is explicitly added, as in (64).

- (62) Pibúr pe nó-gô {**lú-ga, lúi-dom**}, thêbo moshó-na phon-ya-m.
 3PL 3SG house-ACC {build-PFV, build-PST} but finish-INF can-NEG-PST
 ‘They built that house, but they weren’t able to finish.’ [2018.2.133]
- (63) Pibúr pe nó-gô **lú-w**, thêbo moshó-na phon-ya.
 3PL 3SG house-ACC build-NEUT but finish-INF can-NEG
 ‘They will build that house, but they won’t be able to finish.’ [2018.2.133]
- (64) Pibúr pe nó-gô **lúi chon-ga**, # thêbo moshó-na phon-ya-m.
 3PL 3SG house-ACC build finish-PFV, but finish-INF can-NEG-PST
 ‘They finished building that house, but they haven’t finished.’ [2018.2.133]

Example (51) above shows a similar lack of telicity for *makhâgo tu* ‘climbing the hill’.¹⁰

2.2.1.2 Agreement

Agreement in Tiwa is limited to 1SG subject agreement *-(â)ng*.¹¹ Agreement can appear either with an overt pronominal subject, as in (65), or with a null *pro*, as in (66). (Note that null pronouns are possible independent of agreement.)

- (65) Ang pe kashóng-gô kan lái-do-**ng**.
 1SG 3SG dress-ACC wear AUX-IPFV-1SG
 ‘I’m putting on the dress.’ [2015.1.41]
- (66) *pro* ái sôna ruphâ-go phal hál-ga-**ng**.
 1SG.GEN gold silver-ACC sell AUX-PFV-1SG
 ‘I sold my jewelry.’ [2018.1.89]

In matrix clauses, this agreement appears to be completely optional with no clear semantic or pragmatic distinction. Embedded clauses, however, reveal that agreement is interpreted

¹⁰These facts are strikingly similar to the behavior of Hindi perfective-marked verbs, which do not entail completion (e.g. Singh 1998). While those facts have been taken to indicate something special about the meaning of perfective in Hindi, the data above suggest the difference in Tiwa lies in the lexical verb itself, as the pattern holds across tense/aspect categories.

¹¹The form *-ng* appears after suffixes ending in vowels, and *-âng* after the past tense suffix *-m*. See Clem et al. (2020) for a full analysis of the distribution of these forms.

logophorically: the subject of the embedded clause must be interpreted as the subject (i.e. attitude holder) of the matrix clause, as shown in (67).

- (67) Maria_i atkhâl lá-ga, [CP *pro*_i chigál-ya-**ng** honmandé.]
 Maria think-PFV rise-NEG-1SG COMP
 ‘Maria_i thinks she_i won’t get up.’ [2018.2.115]
 Not: ‘Maria thinks I won’t get up.’

In contrast, (68) shows that in the absence of agreement, a 1SG embedded subject can be interpreted as either the speaker or the attitude holder.¹²

- (68) Saldi atkhâl lá-ga, [CP **ang** Lastoi-na khum os-ga honmandé.]
 Saldi think-PFV 1SG Lastoi-DAT flower give-PFV COMP
 ‘Saldi thinks that I gave a flower to Lastoi.’ [2018.2.142]
 Or: ‘Saldi_i thinks that she_i gave a flower to Lastoi.’

The logophoric interpretation of embedded agreement is not due to the embedded clause obligatorily being interpreted as a direct quote when there is subject agreement. Examples like (69) show that embedded clauses with agreement are not opaque: elements within the clause can long-distance scramble out (see §2.4.4 on scrambling).

- (69) Lastoi-na_i, Saldi_j atkhâl lá-ga, [CP *pro*_j *t*_i khum os-ga-**ng-lo** honmandé,]
 Lastoi-DAT Saldi think-PFV flower give-PFV-1SG-FOC COMP
 (thêbo pe_j khum os-ya-m.)
 but 3SG flower give-NEG-PST
 ‘Saldi_j thinks that she_j gave a flower to Lastoi, (but she didn’t.)’ [2018.2.129, 142]
- (70) Mukton-a_i, Saldi_j atkhâl lá-ga, [CP ang_j *t*_i khum os-ga-**ng-lo** honmandé,]
 Mukton-DAT Saldi think-PFV 1SG flower give-PFV-1SG-FOC COMP
 thêbo *pro*_j os-ya-m.
 but give-NEG-PST
 ‘Saldi_j thinks that she_j gave a flower to Mukton, but she_j didn’t.’ [2018.2.153]

An overt pronominal subject of the embedded clause need not actually bear 1SG features. This is shown in (71), in which the embedded verb shows 1SG agreement, but the embedded

¹²This flexibility in interpretation holds even in cases when another element scrambles out of the embedded clause, as in (1), suggesting that the ambiguity cannot be attributed to direct vs. indirect quotation.

- (1) Mukton-a_i, Saldi atkhâl lá-ga, [CP **ang** *t*_i khum os-ga-lo honmandé,] thêbo *pro*
 Mukton-DAT Saldi think-PFV 1SG flower give-PFV-FOC COMP but
 os-ya-m.
 give-NEG-PST
 ‘Saldi thinks that I gave a flower to Mukton, but I didn’t.’ [2018.2.153]
 Or: ‘Saldi_j thinks that she_j gave a flower to Mukton, but she_j didn’t.’

subject is a 3SG pronoun necessarily interpreted as coreferential with the matrix subject due to the presence of agreement.

- (71) Saldi_i atkhâl lá-ga, [_{CP} **pe**_i Mukton-a khum os-ga-**ng-lo** honmandé,]
 Saldi think-PFV 3SG Mukton-DAT flower give-PFV-1SG-FOC COMP
 thêbo os-ya-m.
 but give-NEG-PST
 ‘Saldi_i thinks that she_i gave a flower to Mukton, but she didn’t.’ [2018.2.153]

While the presence of agreement in embedded clauses forces the embedded subject to be coreferential with the matrix subject, regardless of phi-features, it does not affect non-subject 1SG pronouns, which can be interpreted as referring to the speaker in the presence of agreement. This is illustrated in (72).

- (72) Saldi_i atkhâl lá-ga, [_{CP} *pro*_i **ang-á** khum os-ga-**ng-lo** honmandé.]
 Saldi think-PFV 1SG-DAT flower give-PFV-1SG-FOC COMP
 ‘Saldi_i thinks that she_i gave a flower to me.’ [2018.2.153]

2.2.2 Case

Tiwa’s case marking system shows accusative alignment, with subjects unmarked and an accusative case suffix that marks direct objects. A complete list of Tiwa’s case markers is given in Table 2.6 below. These case markers surface as enclitics on the DP, regardless of

case	gloss	form
accusative	ACC	-gô
dative	DAT	-na
genitive	GEN	-ne
comitative, instrumental	COM	-rê
locative	LOC	-o
allative	ALL	-jîng, -jîng

Table 2.6: Case suffixes

DP-internal word order (which varies significantly; see §2.3.1). For instance, accusative case is suffixed to the noun in (73a), but the adjective in (73b).

- (73) ‘I tore down the old house.’ [2015.1.8]
 a. Ang [_{DP} kojâm nó-**gô**] phí hal-ga.
 1SG old house-ACC break AUX-PFV
 b. Ang [_{DP} nó kojâm-**go**] phí hal-ga.
 1SG house old-ACC break AUX-PFV

Subjects of non-nominalized clauses in Tiwa are unmarked. Direct objects are typically marked accusative, as in (73) above, but can also be unmarked, as in (74) and (75).

- (74) Saldi Mukton-*a_i* **khum** os-ga, arô Tonbor *pro_i* **lái** os-ga.
 Saldi Mukton-DAT flower give-PFV and Tonbor book give-PFV
 ‘Saldi gave Mukton a flower, and Tonbor gave him a book.’ [2018.2.118]
- (75) Sonali **ngá** pre-ga.
 Sonali fish buy-PFV
 ‘Sonali bought fish.’ [2018.2.82]

This variable marking of objects in Tiwa is a fairly typical case of Differential Object Marking: objects that are high in animacy, or are definite, are more likely to be marked accusative (Aissen 2003). Differential case marking in Tiwa does not appear to be based on structural position (cf. Sakha (Baker and Vinokurova 2010) and Amahuaca (Clem 2019)); while objects that appear higher in the structure (i.e. further to the left) are more likely to have overt accusative case marking, this is only a tendency. (76) shows an unmarked object that appears before the subject.

- (76) **So-shá-tha khúgri(-gô)**-lo Lastoi pre-ga.
 hundred-one-CL dog(-ACC)-FOC Lastoi buy-PFV
 ‘Lastoi bought a hundred dogs.’ [2018.1.146]

Personal pronoun objects are always marked accusative (77a), as are objects that contain demonstrative pronouns (77b) and possessors (77c). In contrast, objects that contain adjectives (78a), numerals (78b), or indefinite articles (78c) can (but need not) be unmarked. (The indefinite article in this example is formed from the indeterminate *indâ* ‘what’ and the particle *pha*. See §2.6.2 for more on indefinites.)

- (77) a. Má **ang*(-gó)** lak mán-ga.
 mother 1SG*(-ACC) meet-PFV
 ‘Mother met me.’ [2015.1.17]
- b. Sonali **pe ngá*(-gô)** pre-ga.
 Sonali 3SG fish*(-ACC) buy-PFV
 ‘Sonali bought that fish.’ [2018.2.82]
- c. Ang **Lastoi-ne mesám*(-gô)** cháí kar-ga.
 1SG Lastoi-GEN meat*(-ACC) eat AUX-PFV
 ‘I ate up Lastoi’s meat.’ [2018.2.71]
- (78) a. Mukton Lastoi-na **khum hûldya** os-ga.
 Mukton Lastoi-DAT flower yellow give-PFV
 ‘Mukton gave Lastoi a yellow flower.’ [2018.1.133]
- b. Sonali **phas-tha ngá** pre-ga.
 Sonali five-CL fish buy-PFV
 ‘Sonali bought five fish.’ [2018.2.82]

- c. Sonali **inda-pha ngá** pre-ga ná?
 Sonali what-PHA fish buy-PFV PQ
 ‘Did Sonali buy any fish?’ [2018.2.82]

Human objects show a strong preference for accusative case marking, but can be unmarked in generic or non-specific cases, as in (79).

- (79) Peshûna ang atkhâl mán-ga, pe shônggadi **líbing** chí-ya honmandé.
 then 1SG realize-PFV 3SG leopard person bite-NEG COMP
 ‘Then I realized that that leopard doesn’t eat people.’ [2017.2.138]

Like Japanese (see Harada 1973, among many others), Tiwa does not allow multiple realizations of accusative case within a clause (except with discontinuous DPs; see §2.4.5). This is shown in (80), which also shows that leaving an object unmarked for accusative rescues the structure. The ban on double accusative case marking in causative structures is discussed further in §2.4.2, where it is also shown that omitting what would be an accusative-marked object is also an acceptable repair strategy.

- (80) Ang ná-gô tú(*-gô) pre-na as hóng-dom.
 1SG 2SG-ACC chicken-ACC buy-INF hope-PST
 ‘I want you to buy a chicken.’ [2015.1.63]

Dative case in Tiwa marks indirect objects, as shown in (74) above.¹³ It is also used to mark a variety of nominal adjuncts, such as benefactors (81), goals (82), and addressees (83).

- (81) Ang sája mewâ-**na** nó-gô lú-ga.
 1SG one.CL man-DAT house-ACC build-PFV
 ‘I built the house for a man.’ [2017.2.119]
- (82) Sógol-lô hat-**a** lí-ga.
 everyone-FOC market-DAT go-PFV
 ‘Everyone went to market.’ [2016.1.133]
- (83) Pibúr Mukton-**a** lí-wa-gô kusí-ga.
 3PL Mukton-DAT go-NMLZ-ACC tell-PFV
 ‘They told Mukton about their going.’ [2017.2.128]

¹³Tiwa does not allow a double-accusative structure for ditransitive verbs. That is, ditransitives can never take two accusative arguments:

- (1) * Mukton Sonali-**go** lái-**gô** os-ga.
 Mukton Sonali-ACC book-ACC give-PFV
 Intended: ‘Mukton gave Sonali a book.’ [2018.2.64]

This restriction is not surprising, given the larger ban on multiple accusative-marked arguments in a single clause.

Dative case is also used to form the future counterparts of certain temporal expressions, which in their bare form are interpreted in the past. For example, *khóna* ‘yesterday’ can be suffixed with *-na* to form *khónana* ‘tomorrow’. This process is extremely productive: a selection of these expressions is given in Table 2.7. (This list is not exhaustive.)

base form		future form	
khóna	‘yesterday’	khóna- na	‘tomorrow’
sóne	‘the day before yesterday’	sóne- na	‘the day after tomorrow’
mokhále	‘last year’	mokhále- na	‘next year’
arkhále	‘the year before last’	arkhále- na	‘the year after next’
pakhál	‘when’ (past)	pakhál- a	‘when’ (future)
pakhál-khi	‘sometime’ (past)	pakhál-khi- na	‘sometime’ (future)

Table 2.7: Temporal expressions with dative

Evidence that these forms are not lexicalized, but truly bear dative case comes from case matching in sluicing constructions, such as (84). Here the complex *wh*-phrase in the sluice, which is clearly not a lexicalized unit, shows dative case marking which matches the dative found on the temporal disjuncts in the antecedent. (Note that case matching is found in sluicing more broadly in Tiwa.)

- (84) Sonali khóna-**na** khi sóne-**na** phi-w, thêbo indâ tin-**a** ang si-ya.
 Sonali tomorrow KHI next.day come-NEUT but what day-DAT 1SG know-NEG
 ‘Sonali will come tomorrow or the next day, but I don’t know what day.’ [2018.2.116]

Dative case is also selected for by some postpositions, such as comparative *khúli* ‘than’, as in (85) and benefactive *mushí* ‘for’, which is optional, as shown in (86).¹⁴

- (85) Monbor [PP Mansing-**a** **khúli**] chu-w.
 Monbor Mansing-DAT than tall-NEUT
 ‘Monbor is taller than Mansing.’ [2017.1.76]
- (86) Ang [PP **nága** (**mushí**)] kashóng pre-ga.
 1SG 2SG.DAT (for) dress buy-PFV
 ‘I bought this dress for you.’ [2017.2.140]

¹⁴*Mushí* also marks purposive infinitival clausal complement, as in (1).

- (1) Ang hat-jíng ságar pre-**na** (**mushí**) lí-ga.
 1SG market-ALL vegetable buy-INF (for) go-PFV
 ‘I went to market to buy vegetables.’ [2017.2.139]

Genitive case marks possessors and subjects of some nominalized clauses (including relative clauses).¹⁵ An example of a genitive marked possessor is given in (87), and a subject of a nominalized clause (which serves as a sentential object) in (88). (89) shows a genitive-marked subject in a nominalized relative clause (see §2.3.3).

- (87) [DP Saldi-**ne** lái] kumái lí-ga.
 Saldi-GEN book disappear AUX-PFV
 ‘Saldi’s book went missing.’ [2017.1.6]
- (88) Táw, ang [DP sája libíng-**e** tos-tha wá-gô pre-wa-go] nú-ga.
 today, 1SG one person-GEN ten-CL pig-ACC buy-NMLZ-ACC see-PFV
 ‘Today I saw someone buy ten pigs.’ [2017.2.84]
- (89) [DP [RC Lastoi-**ne** tá-wa] kashóng kojá-gô] Saldi pre-ga.
 Lastoi-GEN weave-NMLZ dress red-ACC Saldi buy-PFV
 ‘Saldi bought the red dress(es) that Lastoi made.’ [2017.2.48]

In addition to marking possessors which occur in the same DP as the possessum, genitive case also marks possessors in predicative possessive constructions (which use the existential copula), such as in (90) and (91). As these examples show, the possessor and the possessum do not form a constituent, but may be separated by additional material.

- (90) Mukton-**e** Guwahati-w karî tong-o.
 Mukton-GEN Guwahati-LOC car exist-NEUT
 ‘Mukton has a car in Guwahati.’ [2018.2.70]
- (91) Saldi-**ne** Lastoi-na khúli rong parâ tong-o.
 Saldi-GEN Lastoi-DAT than rice more exist-NEUT
 ‘Saldi has more rice than Lastoi.’ [2018.3.101]

As noted in §2.2.1 above genitive case is also used to mark nominalized clauses in certain constructions, such as the negative perfect. Genitive marked nominal clauses are also used to express ‘because’ clauses, as in (92).

- (92) Yathóng-rê phi-wa-**ne**, ang khúp hûlam-ga.
 leg-COM come-NMLZ-GEN 1SG INTS feel.hot-PFV
 ‘Because I came on foot I’m really hot.’ [2018.3.86]

Genitive case is also selected for by the postposition *phána* ‘from’, as shown in (93).

- (93) Peshûna, [PP pháng-**e** **phána**] shônggadi urî phi-ga.
 then tree-GEN from leopard jump AUX-PFV
 ‘Then, a leopard jumped down from a tree.’ [2017.1.63]

¹⁵Two exceptions to this are the nominalized, genitive-marked clauses discussed in §2.2.1 above, and nominalized adjunct clauses introduced by *durî* ‘after’ (see example (34) above). In these clauses, subjects do not take any overt case marking (thus patterning with subjects in non-nominalized clauses).

Comitative case *-rê* plays the same role as English *with*: it is used both to mark accompaniment, as in (94), and instruments, as in (95).

- (94) Saldi_i Mukton-**re** lí-ya-gai-dô, pe_i Tonbor-**re** lí-w.
 Saldi Mukton-COM go-NEG-COND-TOP 3SG Tonbor-COM go-NEUT
 ‘If Saldi does not go with Mukton, she’ll go with Tonbor.’ [2018.2.31]
- (95) Ang táp-**rê** ságar-gô khúdi-ga.
 1SG knife-COM vegetable-ACC chop-PFV
 ‘I chopped the vegetables with a knife.’ [2017.2.35]

The form *rê* is also used in nominal conjunction, as in (96). Orthographically, this use of *rê* is written as a separate word. (See §2.5.1 below for more on *rê* coordination.)

- (96) [DP Monbor **re** Mukton] loró hóng-do.
 Monbor and Mukton priest COP-IPFV
 ‘Monbor and Mukton are priests.’ [2017.1.52]

When a pronoun is marked with comitative case, the dative form of the pronoun is used as a base, as shown in (97). (See also §2.2.3 below.)

- (97) Monbor **pe-na-re** pasé-ga.
 Monbor 3SG-DAT-COM speak-PFV
 ‘Monbor spoke with him.’ [2017.1.8]

Locative case marks adjuncts which indicate the location (physical or temporal) of the event. Some examples are given in (98) and (99).

- (98) Pe-ne lái tibûl-**o** thái lái-do.
 3SG-GEN book table-LOC stay AUX-IPFV
 ‘Her book is on the table.’ [2017.2.129]
- (99) Mukton nu-tha pajê-**w** lí-ga.
 Mukton nine-CL hour-LOC go-PFV
 ‘Mukton left at nine o’clock.’ [2018.2.135]

Allative case usually marks adjuncts which indicate a goal or a direction in which an event is heading, as in (100), but may also indicate the location of an event, as in (101). The tone of the allative case marker is the opposite of the preceding tone.

- (100) Saldi hat-**jíng** lí-do.
 Saldi market-ALL go-IPFV
 ‘Saldi is going to market.’ [2018.2.141]
- (101) Sáning nó-w thái-do, sáning-lô payâr-**jíng** thái-do.
 two.CL.HUM home-LOC stay-IPFV two.CL.HUM-FOC outside-ALL stay-IPFV
 ‘Two are at home, two are outside.’ [2015.1.122]

Occasionally, dative case is stacked on top of allative case for goals/directions, as in (102).

- (102) Hat-**jíng-a** lí-ga.
 market-ALL-DAT go-PFV
 ‘He went to market.’ [2018.1.5]

Note that neither locative case nor allative case can appear directly on pronouns, as described more fully in §2.2.3 below.

2.2.3 Pronouns and demonstratives

Tiwa’s pronominal system, summarized in Table 2.8, encodes person, number, and, in third person plural pronouns, animacy. In addition to its personal pronouns, Tiwa has a subject-oriented reflexive pronoun which does not bear person or number features (though is often reduplicated when bound by a plural DP).

	SG	PL	
1	ang	ching	
2	ná	nabúr	
3	pe	pibúr	(+HUM)
		pimún	(-HUM)
REFL	othông		

Table 2.8: Pronouns

The case marked forms of Tiwa’s pronouns show some irregularities. These are bolded in Table 2.9. One interesting feature is that comitative marking on pronouns builds off a dative base. As shown in section 2.2.2 above, this is not the case for non-pronominal DPs, which can directly take comitative marking.

	1SG	2SG	3SG	3PL	2PL	3PL	REFL
ACC	ang- gó	ná-gô	pe-go	ching- gó	nabúr-gô	pibúr-gô	othông-go
DAT	ang- á	nága	pe-na	ching- á	nabúr-a	pibúr-a	othông-a
GEN	ái	né	pe-ne	ching- é	nabúr-e	pibúr-e	othê
COM	ang- á-rê	nága-rê	pen- a-re	ching- á-rê	nabúr- a-rê	pibúr- a-rê	othông- a-re

Table 2.9: Pronominal case forms

There are no locative or allative forms of the pronouns. For example, (103) shows that a locative marked pronoun cannot be used to express that a butterfly landed on the speaker. Instead, a full noun phrase is used, which can take the case marking. (104) shows a similar thing for allative. (Both examples are illustrated with the 1SG pronoun, but the restriction holds more generally.)

(103) ‘A butterfly landed on me.’ [2017.1.153]

- a. *Shûguri **ang-o** lamê-ga.
butterfly 1SG-LOC descend-PFV
- b. Shûguri **ái** **hán-o** lamê-ga.
butterfly 1SG.GEN body-LOC descend-PFV

(104) ‘A child is running towards me.’ [2017.1.153]

- a. *Korkhyá **ang-jíng** cholói phi-do.
child 1SG-ALL run AUX-IPFV
- b. Korkhyá **ái** **thai-jíng** cholói phi-do.
child 1SG.GEN place-ALL run AUX-IPFV

As indicated in the tables above, Tiwa has a dedicated reflexive pronoun *othông*. This pronoun must be bound by the subject of its clause, as it is in (105) and (106). Example (107) shows that this subject restriction is strict: *othông* cannot be bound by another higher argument, such as the causee in a causative construction. Instead, it must be bound by the causer, which is the syntactic subject.

(105) Ang_i **othông**-go_i ainâ-w nú-ga-ng.
1SG REFL-ACC mirror-LOC see-PFV-1SG

‘I saw myself in the mirror.’ [2017.1.2]

(106) Shar-bo_i [**othê_i** kishá tú-gô-bo] phal-ya-m.
who-ADD REFL.GEN one.CL chicken-ACC-ADD sell-NEG-PST

‘Nobody_i sold any of their_i chickens.’ [2018.2.24]

(107) Mukton_i Tonbor-a **othông**-go-lo_i thâne os-ga.
Mukton Tonbor-DAT REFL-ACC-FOC hit CAUS-PFV

‘Mukton_i made Tonbor hit him_i.’ [2018.2.19]

Not: ‘Mukton made Tonbor_j hit himself_j.’ or ‘Mukton_i made Tonbor_j hit him_k.’

As with reflexives in English, *othông* can also be used emphatically, as shown in (108).

(108) Sonali **othông**-lo lí-ga.
Sonali REFL-FOC go-PFV

‘Sonali herself went.’ [2017.1.25]

Othông does not bear person or number features, though is often reduplicated when bound by a plural DP, as in (109).

(109) Ching **othông othông**-go ainâ-w nú-ga.
1PL REFL REFL-ACC mirror-LOC see-PFV

‘We saw ourselves in the mirror.’ [2017.1.2]

The reflexive pronoun is additionally used to form reciprocals, along with the particle *kuthí*, as in (110).

- (110) Mukon arô Lastoi **othông kuthí** lak mán-ga.
 Mukton and Lastoi REFL RECIPIENT meet-PFV
 ‘Mukton and Lastoi met each other.’ [2017.1.39]

In addition to its personal and reflexive pronouns, Tiwa has proximal demonstratives that form a class with these elements, listed in Table 2.10. (As we will see in §2.3.4 below, 3rd person pronouns in Tiwa can occur with overt nominal material and are often translated into English as demonstratives.) Like 3rd person pronouns, the plural form of the proximal demonstrative distinguishes animate and inanimate references, and the comitative form is built off the dative. At least historically, these pronouns transparently contain the morpheme *he*, which is used in a variety of proximal expressions, including *hew* ‘here’ (HE-LOC) (see entries in Joseph 2014).

SG	PL	
hêbe	híbur	(+HUM)
	hímun	(-HUM)
hêbe-na-re ‘this-DAT-COM’		

Table 2.10: Proximal demonstratives

Two examples are given in (111) and (112).

- (111) Ang **hêbe** aikhôr-go kumún nang-do.
 1SG this picture like-IPFV
 ‘I like this picture.’ [2018.2.46]
- (112) Mukton **hímun** pháng-râw-go tu-na phon-o.
 Mukton these tree-PL-ACC climb-INF can-NEUT
 ‘Mukton can climb these trees.’ [2017.1.93]

2.2.4 Number marking

Bare noun phrases in Tiwa can be interpreted as either singular or plural. (In contrast, plurality is obligatorily encoded on personal pronouns, as described in §2.2.3 above.) For instance, the sentence in (113), which contains the intensifier *khúp* and the bare noun *míyâw* ‘cat’, is compatible with a scenario in which there is one cat that came many times, or with a scenario in which there is one coming event that involves many cats. Likewise, the sentence in (114) can mean either that Saldi bought the one red dress that Lastoi made, or the several red dresses that she made. (This sentence was originally offered by a consultant for the plural English translation.)

- (113) **Miyâw** khúp phi-do.
 cat INTS come-IPFV
 ‘One cat is coming many times.’ OR ‘Many cats are coming.’ [2017.2.27]

- (114) [DP Lastoi-ne tá-wa **kashóng** kojá-gô] Saldi pre lá-ga.
 Lastoi-GEN weave-NMLZ dress red-ACC Saldi buy AUX-PFV
 ‘Saldi bought the red dress(es) that Lastoi made.’ [2017.2.48]

Despite this flexibility in how bare noun phrases are interpreted, Tiwa does have two plural suffixes, *-râw* and *-mân*, illustrated in (115) and (116) respectively.¹⁶

- (115) Ang makhrí-**râw**-go nú-ga.
 1SG monkey-PL-ACC see-PFV
 ‘I saw (the) monkeys.’ [2017.2.2]
- (116) Ang makhrí-**mân**-go nú-ga.
 1SG monkey-PL-ACC see-PFV
 ‘I saw the monkeys.’ [2017.2.2]

Speakers sometimes characterize the difference between the two plural markers as one of animacy/humanness, with *-râw* marking humans (and sometimes animals) and *-mân* marking inanimates (and sometimes animals) (see also Joseph 2014). However, speakers also accept and produce counterexamples to this generalization:

- (117) Ang **lái-râw**-go lekhé-ga.
 1SG book-PL-ACC read-PFV
 ‘I read the books.’ [2018.1.3]
- (118) Phas chonâ **loró-mân**-a phûisa-go os-ga-ng.
 five CL.HUM priest-PL-DAT money-ACC give-PFV-1SG
 ‘I gave money to the five priests.’ [2018.1.17]

In (117), the supposedly human plural suffix *-râw* marks inanimate *lái* ‘book’, while in (118), the supposedly inanimate plural marker *-mân* marks the human noun *loró* ‘priest’. Instead of an animacy distinction, the difference between *-râw* and *-mân* appears to be one of definiteness, where *-mân* explicitly encodes definiteness (i.e. maximality). That *-mân* plurals must be interpreted as definite is evident from examples like (119). Here, the follow up in (119a) cannot be interpreted as definite, unless it is understood to mean that someone brought all the camels from Asia. Because *-mân* encodes definiteness, (119a) is judged infelicitous. In contrast, the *-râw* plural in (119b) is judged felicitous, showing that *-râw* plurals are compatible with indefinite interpretations.¹⁷

¹⁶Tiwa additionally has an associative plural marker *chógol*, which is used with proper names to denote a set of people associated with the referent (including the referent). This is illustrated in (1).

- (1) Mary **chógol** Diphu-jíng lí-ga.
 Mary ASSOC Diphu-ALL go-PFV
 ‘Mary and her companions went to Diphu.’ [2018.2.30]

Note that *chógol* also used with certain kinship terms to indicate respect.

¹⁷Note that examples like (119b) show that the presence of accusative case marking cannot be reduced to whether the argument is definite or not.

- (119) Ake-do, Asia tes-e marát-râw Australia tes-o cha núm,
 before-TOP Asia country-GEN animal-PL Australia country-LOC exist.NEG NUM
 ‘Before, there were no Asian animals in Australia,’ [2017.2.149]
- a. ✗ thêbo shar-khí-ne ut korâ-**man**-go lap-ga.
 but who-KHI-NE camel-PL-ACC bring-PFV
 ‘but someone brought the camels.’
- b. ✓ thêbo shar-khí-ne ut korâ-**raw**-go lap-ga.
 but who-KHI-NE camel-PL-ACC bring-PFV
 ‘but someone brought camels.’

As expected on a definiteness account, *-mân* plurals can refer back to referents introduced earlier in the discourse, as in (120).

- (120) Ake-do, ái krai-o pangái-lô khúgri re miyâw tong-o-m.
 before-TOP my village-LOC many-FOC dog and cat exist-NEUT-PST
 ‘Before, there were many dogs and cats in my village.’ [2017.2.149]
- ✓ Tin-shá, miyâw-**man**-do tuk mán-mande thi-ga, thêbo khúgri-**mân**-do tháng
 day-one cat-PL-TOP sick get-SUBORD die-PFV but dog-PL-TOP right
 thá-ga.
 stay-PFV
 ‘One day, the cats got sick and died, but the dogs stayed healthy.’

While *-mân* plurals must be interpreted as definite, *-râw* plurals may be interpreted as definite or indefinite, as in (119b) above. (121) shows a definite use of a *-râw* plural, which refers back to an earlier introduced referent.

- (121) Ang khúgri-râw arô miyâw-raw-go nú-ga. Miyâw-**raw** krái thái-do.
 1SG dog-PL and cat-PL-ACC see-PFV cat-PL cry AUX-IPFV
 ‘I saw cats and dogs. The cats were meowing.’ [2017.2.3]

This flexibility between indefinite and definite interpretations of *-râw* plurals is consistent with the behavior of bare noun phrases in Tiwa more generally, which may be interpreted as definite or indefinite (see §2.3.4 and §2.6.2 below). While *-râw* plurals can be definite, and *-mân* plurals must be, they differ in their definite interpretations. In particular, *-mân* plural have a strictly maximal interpretation, as illustrated by its infelicity in contexts like the one in (122). In contrast, definite *-râw* plurals pattern with English *the*.

- (122) Context: There are 20 boys and 20 girls outside. Mukton greeted 18 or 19 of the girls, but none of the boys.
 Tamûr-lo margî-raw arô mewâ-raw tong-o.
 many-FOC woman-PL and man-PL exist-NEUT
 ‘There are many boys and girls.’ [2018.3.109]

- a. # Mukton margî-**man**-go sêwa os-ga, thêbo mewâ-man-go sêwa os-ya-m.
 Mukton woman-PL-ACC greet-PFV but man-PL-ACC greet-NEG-PST
 ‘Mukton greeted the women, but not the men.’
 Comment: “He greeted all the girls.”
- b. ✓ Mukton margî-**raw**-go sêwa os-ga, thêbo mewâ-raw-go sêwa os-ya-m.
 Mukton woman-PL-ACC greet-PFV but man-PL-ACC greet-NEG-PST
 ‘Mukton greeted the women, but not the men.’

In some cases, both plural markers can appear on a single noun, as in (123).

- (123) Korkhyá-**râw-man** pol khél-a lí-ga.
 child-PL-PL ball play-INF go-PFV
 ‘(All) the children went to play ball.’ [2018.2.123]

Note that morphosyntactically neither plural suffix has to appear directly on the noun itself, but behaves like an enclitic to the noun phrase. For example, (124) shows that either plural marker can appear on the adjective if it follows the noun. Both always appear to the left of case marking. The exact structural position of number is discussed in §2.3.1 below.

- (124) [DP Lastoi-ne tá-wa kashóng kojá{-**râw**, -**mân**}-go] Saldi pre lá-ga.
 Lastoi-GEN weave-NMLZ dress red{-PL, PL}-ACC Saldi buy AUX-PFV
 ‘Saldi bought the red dresses that Lastoi made.’ [2017.2.48]

There is no strong correlation between the presence of plural demonstratives (see §2.2.3 above) and overt plural marking: bare nouns frequently co-occur with plural demonstratives, as in (125), but plural marking is also grammatical in such DPs, as shown in (126) and (127).

- (125) Ang [DP **hîmun** alû-go] khúdi-ga.
 1SG these potato-ACC cut-PFV
 ‘I cut up these potatoes.’ [2018.3.88]
- (126) Ang [DP **hîmun** miyâw-**raw**-go] nú-ga.
 1SG these cat-PL-ACC see-PFV
 ‘I saw these cats.’ [2018.1.102]
- (127) Mary [DP **hîmun** lái-**mân**-go] lekhé-ga.
 Mary these book-PL-ACC read-PFV
 ‘Mary has read these books.’ [2018.1.2]

2.2.5 Information structure

Tiwa primarily marks information structure through overt morphology on the relevant constituent.¹⁸ The core information structural suffixes are listed in Table 2.11.

¹⁸DPs in Tiwa are also subject to scrambling, however this does not correlate with traditional information structural categories in any clear way. See §2.4.4 for more details.

gloss	form
topic	-dô
focus	-lô
contrastive focus	-sê
scalar additive ('also/even')	-bô
'what about?'	-gâ

Table 2.11: Core information structure morphology

None of these information structure affixes are required for grammaticality, however they are extremely frequent and speakers consider them an intergral part of knowing how to speak Tiwa. Example (128) provides a mini-discourse with four of these affixes, illustrating some of their basic properties.

- (128) Q: Ná-**gâ** sa-go-**lo** nung-o na kuphî-go-**lo**?
 2SG-GA tea-ACC-FOC drink-NEUT ALTQ coffee-ACC-FOC
 'What about you, do you drink tea or coffee?' [2015.1.101]
- a. A: Ang-**do** kuphî-go-**lo** nung-o.
 1SG-TOP coffee-ACC-FOC drink-NEUT
 'I drink coffee.'
- b. B: Ang-**do** sa-go-**se** nung-o.
 1SG-TOP tea-ACC-CF drink-NEUT
 'And I drink tea.'

The topic marker *-dô* marks topic and is frequently used when two elements of a sentence are being explicitly contrasted, as in (129), where a contrast is drawn between *sa* 'tea' and *chu* 'alcohol'. The use of *-do* does not require a overtly mentioned contrasting element, however, and can be used in out of the blue situations, as in (130) where the speaker is introducing herself.

- (129) Ang sa-go-**do** khúp nung-o, thêbo chu-go-**do** nung-ya.
 1SG tea-ACC-TOP INTS drink-NEUT but alcohol-ACC-TOP drink-NEG
 'I drink a lot of tea, but I don't drink alcohol.' [2015.1.12]
- (130) [DP Ái mung-**do**] Ginny (hóng-do).
 my name-TOP Ginny (COP-IPFV)
 'My name is Ginny.' [2015.1.74]

As expected for a topic marker, *-dô* cannot appear on focused elements such as the answer to a *wh*-question, as shown in (131).

- (131) a. Q: Shar-go lak mán-ga?
 who-ACC meet-PFV
 'Who did you meet?'

- b. A: Maria-go(*-do) lak mán-ga.
 Maria-ACC(*-TOP) meet-PFV
 ‘I met Maria.’ [2015.1.70]

-dô almost always appears on DPs and temporal adverbs, but is also used on adjunct clauses such as conditional antecedents (see §2.4.6 below) and certain temporally subordinated nominalized clauses, as illustrated in (132).

- (132) Mahái-na shó-wa durî-do porôi-raw hon-ga, “Wá pisá-dô ching-á-rê
 field-DAT arrive-NMLZ after-TOP old.man-PL say-PFV piglet-TOP 1PL-DAT-COM
 sôman thá-na nang-ya.”
 together stay-INF should-NEG
 ‘After they arrived at the field the old men said, “The piglet should not stay with us.”’ [Wa Pisane Sadra]

Tiwa has two clear focus markers: *-lô* and *-sê*. In contrast to *-dô*, both *-lô* and *-sê* are acceptable on the answer to a *wh*-question, as shown in (133) and (128) above.

- (133) a. Q: Ná indâ khâri-go chá-ga?
 2SG what curry-ACC eat-PFV
 ‘What curry did you eat?’
 b. A: Ang-do alû khâri-go{-lo/-se} chá-ga.
 1SG-TOP potato curry-ACC-FOC/-CF eat-PFV
 ‘I ate potato curry.’ [2015.1.102]

Roughly, *-lô* marks a general information focus (which speakers refer to as “emphasis”; see also Joseph 2014), while *-sê* marks contrastive focus.¹⁹ More precisely, *-sê* is used when there is a clear contextual alternative to the focused element. Often this alternative is overt, as in (134), in which two *-sê* marked verbs are contrasted with each other, and in (135), in which the adverbial quantifier *prange* ‘sparsely’ is contrasted with *pángai* ‘plentifully’.

- (134) Lí-ya-sê tháng-ya, lí-w-sê tháng-ya.
 go-NEG-CF right-NEG go-NEUT-CF right-NEG
 ‘It will be bad if I don’t go, and it will be bad if I do go.’ [2015.1.23]
- (135) Ake-do Australia-w pángai-lô mis tong-o-m, thêbo ethâ-do
 before-TOP Australia-LOC plenty-FOC buffalo exist-NEUT-PST but now-TOP
 prange-se tong-do.
 sparsely-CF exist-IPFV
 ‘Before there were plenty of water buffalo in Australia, but now they are sparse.’
 [2015.1.45]

¹⁹Note that this distinction roughly corresponds to Kiss’ (1998) information vs identificational focus.

The contrasting alternative, however, need not be overt. Example (136), for instance, is understood to contrast the focus-marked *líwa* ‘going’ with an implicit alternative of not going. The sentence was translated as a comparative (with an implicit standard), despite not having any comparative syntax or morphology (see §2.4.7 below on comparatives).

- (136) Lí-wa-sê tháŋg-o.
 go-NMLZ-CF right-NEUT
 Lit. ‘Going is good.’ [2015.1.25]
 Translated by a speaker as ‘It’s better to go.’

As expected of a contrastive focus marker, *-sê* is used in corrections, as illustrated in (137).

- (137) Naturally occurring context: We hear a bleating/crying sound. [2015.1.107]
 a. J: Prún krái-do.
 goat cry-IPFV
 ‘A goat is crying.’
 b. B: Hyá, libíng-sê.
 COP.NEG person-CF
 ‘No, it’s a human.’

While *-lô* is compatible with overtly contrasting material (as shown, for example, in (135) above), and signals the presence of alternatives, it does not convey the same level of contrast that *-sê* does. This difference between *-sê* and *-lô* is made particularly clear by minimal pairs like (138). As the speaker comments indicate, the use of *-sê* strongly implies there is a clear contextually salient alternative that is being contrasted. *-lô*, on the other hand, does not make this implication.

- (138) ‘I’m going now.’ [2015.1.49]
 a. Ang ethâ-se lí-w-bo.
 1SG now-CF go-NEUT-BO
 Comment: “You were going to go before, but you stayed and now you’re going.”
 b. Ang ethâ-lo lí-w-bo.
 1SG now-FOC go-NEUT-BO
 Comment: “In a hurry, no time to sit and talk.”

Both *-lô* and *-sê* mark a variety of constituents, including DPs (133b), TPs (134), and adverbs (135). *-lô* is especially common on manner and quantity adverbs, as in (139)-(141).

- (139) John kripe-lo ngá pre-ga.
 John slowly-FOC fish buy-PFV
 ‘John slowly bought the fish.’ [2016.2.27]
 (140) Saldi ektábe-lô kodâr-a lí-w.
 Saldi always-FOC walk-INF go-NEUT
 ‘Saldi always goes for walks.’ [2016.2.31]

- (141) Ti-sham-**lo** ná-gô máp rí-ga-ng.
 two-CL.time-FOC 2SG-ACC mercy do-PFV-1SG
 ‘I forgave you twice.’ [2018.1.108]

The scalar additive *-bô* has different uses, depending on its environment. On non-quantificational expressions it’s usually translated as ‘also’ or ‘too’, indicating that the proposition holds of some other contextually salient alternative, as in (142). The proposition need not be identical, however, but may be a closely related alternative, as (143) shows.

- (142) Lastoi kit rojá-gai-dô, Sonali-**bo** rojá-w.
 Lastoi song sing-COND-TOP Sonali-ADD sing-NEUT
 ‘If Lastoi sings, Sonali does too.’ [2018.1.6]
- (143) Saldi Mukton-go nú-ga arô Lastoi-**bo** Tonbor-go nú-ga.
 Saldi Mukton-ACC see-PFV and Lastoi-ADD Tonbor-ACC see-PFV
 ‘Saldi saw Mukton and Lastoi saw Tonbor.’ [2018.1.84]

It can also appear on at least some quantificational phrases, without apparently contributing an ‘also’-type meaning. This is shown for a numeral in (144) and a universal quantifier (with a disjunctive restrictor) in (145).

- (144) [Thin chonâ-**bo**] kai kiníng khándal chá-ga.
 three CL.HUM-ADD DIST two.CL jackfruit eat-PFV
 ‘All three people ate two jackfruits each.’ [2016.1.185]
- (145) Ching [mile khándal ba thílu-gô-**bo**] chá-ga.
 1PL every jackfruit or banana-ACC-ADD eat-PFV
 ‘We ate every jackfruit and banana.’ [2018.1.25]

In downward-entailing environments, when *-bo* attaches to quantificational expressions, it is best translated as ‘even’, as in (146) and (147). These elements function as NPIs, as do indeterminate pronouns suffixed with *-bo* (see §2.6.2 below).

- (146) Saldi khôlom kishá-gô-**bo** khol lá-ya-m.
 Saldi pen one.CL-ACC-ADD pick.up AUX-NEG-PST
 ‘Saldi didn’t pick up any pens.’ / ‘Saldi didn’t pick up even one pen.’ [2018.1.159]
- (147) Saldi sái-**bô** kodâr-a lí-ya.
 Saldi little-ADD walk-INF go-NEG
 ‘Saldi never goes for walks.’ / ‘Saldi doesn’t go for walks even a little.’ [2016.2.30]

As described §2.4.6 below, *-bo* is also used with conditional morphology to form concessive clauses, as in (148). (We will see that all information structure particles combine with conditional morphology with different effects.)

- (148) Nokhá kó-gai-**bô**, pibúr kodâr-a lí-w.
 rain fall-COND-ADD 3PL walk-INF go-NEUT
 ‘Even if it rains, they will go for a walk.’ [2018.3.95]

The final core information structure particle *-ga* is mostly used in questions, as in (128) above, and is often translated as ‘what about?’, indicating a switch in topic. For example, (149) is appropriate in a context in which other people have already been asked whether they want to drink tea or not.

- (149) Ginny-**ga** sa nung-o na nung-ya?
 Ginny-GA tea drink-NEUT ALTQ drink-NEG
 ‘What about Ginny, will she drink tea or not?’ [2015.1.154]

While *-ga* seems most common in questions, there are examples of it in declaratives, as in (150) (which occurred in natural conversation). I am unsure what its precise contribution is in sentences like these; further investigation is required.²⁰

- (150) Pasé-wa-gô-lo Ginny-**ga** record rí lang-do arô.
 speak-NMLZ-ACC-FOC Ginny-GA record do AUX-IPFV ARO
 ‘Ginny’s recording what we speak about.’ [2015.1.110]

While for the most part Tiwa’s information structure affixes are relatively flexible in the syntactic categories they attach to, they do show restrictions. In particular, they cannot mark a nominal modifier within a DP, but must always affix to the DP as a whole outside of any case-marking. This is illustrated in (151), where the contrastive focus in the response has narrow focus on the noun.

- (151) Mukton karî kodâl-go pre-ga.
 Mukton car new-ACC buy-PFV
 ‘Mukton bought a new car.’ [2018.3.111]
 a. *Hyá, Mukton [DP bike-**se** kodâl-go] pre-ga.
 COP.NEG Mukton bike-CF new-ACC buy-PFV
 Intended: ‘No, Mukton bought a new bike.’
 b. Hyá, Mukton [DP bike kodâl-go] -**se** pre-ga.
 COP.NEG Mukton bike new-ACC -CF buy-PFV
 ‘No, Mukton bought a new bike.’

Instead, in order to unambiguously convey narrow focus (or topicalization) of a particular nominal constituent, a discontinuous DP structure must be used, as in (152).

- (152) Milton bike kodâl-go pre-ga.
 Milton bike new-ACC buy-PFV
 ‘Milton bought a new bike.’ [2018.2.60]
 a. Hyá, [DP karî-go] -**se** Milton [DP kodâl-go] pre-ga.
 COP.NEG car-ACC -CF Milton new-ACC buy-PFV
 ‘No, Milton bought a new car.’

²⁰*Arô* is a discourse particle with the same form as *arô* ‘and’. Further work is needed to establish what its contribution is in these and other sentences.

Discontinuous DPs are discussed in more detail in §2.4.5 below.

2.3 Nominals

In this section I discuss the syntax and semantics of nouns and their modifiers. I begin by laying out my assumptions about the structure of the DP, before turning to numeral modification, adjectives and relative clauses, and definiteness. Quantifiers and indefinites will be discussed separately in §2.6 below.

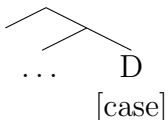
2.3.1 The DP

Bare nouns in Tiwa may serve as arguments, as well as predicates. (153) shows the bare noun *shônggadi* ‘leopard’, which is definite in this example, as the subject of a clause. In comparison, (154) shows the bare noun *lái* ‘book’ functioning as a predicate (along with a copular verb).

- (153) **Shônggadi** makhrí-râw-go lorê hál-ga.
 leopard monkey-PL-ACC chase AUX-PFV
 ‘The leopard chased the monkeys away.’ [2017.1.63]

- (154) Hêbe arô hêbe **lái** hóng-do.
 this and this book COP-IPFV
 ‘This and this are books.’ [2017.1.53]

For many languages, data such as (153) have been taken to indicate that the nominal constituent in question is an NP, rather than a full DP, since it lacks an overt determiner (e.g. Chierchia 1998). While such a position may ultimately be desirable for Tiwa for examples such as (153), I assume that all argument nominal constituents in Tiwa are full DPs, which may but need not bear case marking and take overt demonstrative pronouns, possessors, and indefinite articles. Following Clem and Dawson (2019), and in keeping with Tiwa’s more general head-finality (described in §2.4.1 below), I assume a head-final structure for the DP with case spelled out in D, as shown in (155). (If D does not receive a case feature, it is not overtly spelled out, as for subjects and unmarked objects.)

- (155) DP

 ... D
 [case]

As we will see below, modifiers such as numerals, adjectives, and relative clauses may precede or follow the head noun. In contrast, demonstratives (which are strictly speaking pronouns;

see §2.3.4), possessors and indefinite articles must precede the noun. This is shown in (156)-(158).²¹ I assume these elements are located in Spec,DP.

(156) ‘I got that ring.’ [2015.1.99]

- a. Ang [DP **pe** yastám-gô] mán-ga.
 1SG 3SG ring-ACC get-PFV
- b. * Ang [DP yastám **pe**-go] mán-ga.
 1SG ring 3SG-ACC get-PFV

(157) ‘Monbor saw Sonali’s cat.’ [2018.1.15]

- a. Monbor [DP **Sonali-ne** miyâw-go] -lo nú-ga.
 Monbor Sonali-GEN cat-ACC -FOC see-PFV
- b. * Monbor [DP miyâw **Sonali-ne**-go] -lo nú-ga.
 Monbor cat Sonali-GEN-ACC -FOC see-PFV

(158) ‘Maria met some Australian.’ [2016.1.90]

- a. Maria [DP **shar-pha** Australia walî-go] lak mán-ga.
 Maria who-PHA Australia person-ACC meet-PFV
- b. * Maria [DP Australia walî **shar-pha**-go] lak mán-ga.
 Maria Australia person who-PHA-ACC meet-PFV

In contrast to demonstratives, possessors, and indefinite articles, other nominal modifiers in Tiwa may precede or follow the head noun. Furthermore, in cases where there is more than one modifier, any order is permitted. The sentences in (159) illustrate this freedom of word order among the noun and its modifiers, in this case the numeral+classifier *khen-shá* ‘one’, the adjective *kojá* ‘red’ and the nominalized relative clause *nithawa* ‘beautiful’.²²

(159) ‘I bought one beautiful red dress.’ [2015.1.39]

- a. Ang [DP *khen-shá* *kojá* *nithâw-a* *kashóng-gô*] pre-ga.
 1SG CL.FLAT-one red beautiful-NMLZ dress-ACC buy-PFV
- b. Ang [DP *kojá* *khen-shá* *nithâw-a* *kashóng-gô*] pre-ga.
 1SG red CL.FLAT-one beautiful-NMLZ dress-ACC buy-PFV
- c. Ang [DP *kojá* *nithâw-a* *khen-shá* *kashóng-gô*] pre-ga.
 1SG red beautiful-NMLZ CL.FLAT-one dress-ACC buy-PFV
- d. Ang [DP *khen-shá* *nithâw-a* *kashóng* *kojá-gô*] pre-ga.
 1SG CL.FLAT-one beautiful-NMLZ dress red-ACC buy-PFV
- e. Ang [DP *kashóng* *khen-shá* *kojá* *nithâw-a-go*] pre-ga.
 1SG dress CL.FLAT-one red beautiful-NMLZ-ACC buy-PFV

²¹Note that the ungrammaticality of (157b) is not from the genitive-accusative sequence. Adjacent case markers frequently arise through ellipsis (see, for example, example (53) in Chapter 3, and Clem and Dawson 2019).

²²As discussed in §2.3.3 below, most adjectival meanings are encoded syntactically as verbs and show the same structure as non-stative verbs in nominal modification.

Like numerals, adjectives, and relative clauses, quantifiers can also precede or follow the head noun within the DP, though in the vast majority of cases they precede it. This flexibility is illustrated in (160) and (161).

(160) ‘I bought plenty of dresses.’ [2015.1.40]

- a. Ang [DP **tamûr** kashóng-gô] pre lá-ga.
 1SG plenty dress-ACC buy AUX-PFV
- b. Ang [DP kashóng **tamûr**-go] pre lá-ga.
 1SG dress plenty-ACC buy AUX-PFV

(161) ‘I met all the Umswai people.’ [2015.1.122]

- a. Ang [DP Umswai-ne libíng-râw **sógol**-gô] -lo lak mán-ga-ng.
 1SG Umswai-GEN person-PL every-ACC -FOC meet-PFV-1SG
- b. [DP Umswai-ne **sógol** libíng-râw-go] -lo lak mán-ga-ng.
 Umswai-GEN every person-PL-ACC -FOC meet-PFV-1SG

Quantifiers seem to be the most flexible of the modifiers in their position. As we will see in §2.4.5 below, they are the most common modifiers to appear discontinuous to the DP, along with numerals. They also can appear before demonstratives and possessors, as shown in (162) and (163). There does not seem to be any difference in interpretation between the varying word orders.

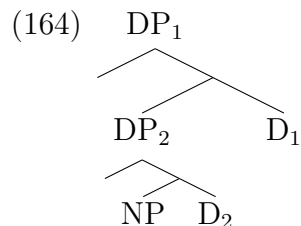
(162) ‘All those women went.’ [2018.3.71]

- a. [DP **Sógol** pibúr margî-raw] -lo lí-ga.
 every 3PL woman-PL -FOC go-PFV
- b. [DP Pibúr **sógol** margî-raw] -lo lí-ga.
 3PL every woman-PL -FOC go-PFV

(163) ‘All Lastoi’s children went.’ [2018.3.72]

- a. [DP **Sógol** Lastoi-ne korkhyá-râw] -lo lí-ga.
 every Lastoi-GEN child-PL -FOC go-PFV
- b. [DP Lastoi-ne **sógol** korkhyá-râw] -lo lí-ga.
 Lastoi-GEN every child-PL -FOC go-PFV

These word orders are compatible with the layered DP approach assumed by Clem and Dawson (2019), in which DPs may contain multiple DP shells, as in (164). (This proposal was originally made to capture the case marking patterns in discontinuous DPs; see §2.4.5 below. Both D heads are assumed to bear case features, though only one is spelled-out due to haplology.)



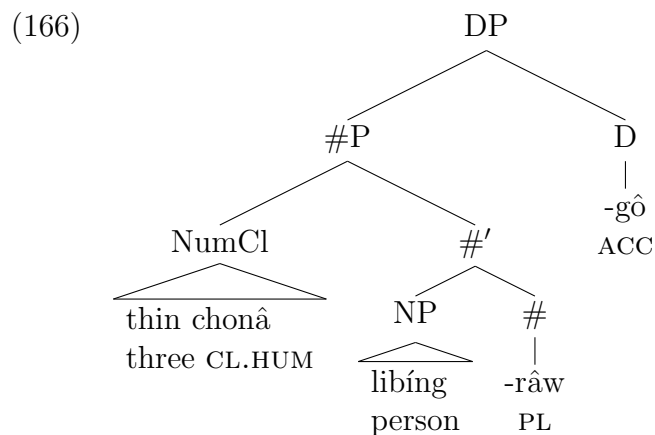
In the variable word order cases in (162) and (163) the quantifier could be moving to the specifier of the higher DP.

While the attested level of flexibility in nominal modification word order could in part be the result of variable adjunction sites, there is some evidence from the position of plural marking that movement is also at play. As shown in §2.2.4 above, plural marking is not affixed directly to the head noun itself, but behaves as an enclitic, surfacing after post-nominal modifiers. This includes numeral modifiers, as shown in (165a-b). Numeral modifiers, however, may also appear after plural marking but before case marking, as shown in (165c). Crucially, the reverse pattern does not hold: plural marking cannot appear to the left of the head noun, as shown in (165d).

(165) ‘I met three people.’ [2018.2.96]

- a. [DP Thin chonâ libíng **-râw** -go] lak mán-ga.
 three CL.HUM person -PL -ACC meet-PFV
- b. [DP Libíng thin chonâ **-raw** -go] lak mán-ga.
 person three CL.HUM -PL -ACC meet-PFV
- c. [DP Libíng **-râw** thin chonâ -go] lak mán-ga.
 person -PL three CL.HUM -ACC meet-PFV
- d. * [DP Thin chonâ **-raw** libíng -gô] lak mán-ga.
 three CL.HUM -PL person -ACC meet-PFV

These word order facts can be captured assuming the base structure in (166), in which *-râw* is the head of the number phrase #P, and the numeral and its classifier are located in Spec,#P (see §2.3.2 on the constituency of these elements). This structure reflects the order in (165a). The order in (165b) is derived through movement of the NP higher in the structure, while (165c) can be derived through movement of the #' constituent. (165d) cannot be derived (assuming that the #P itself cannot undergo remnant movement after the NP has moved out).



2.3.2 Numerals and classifiers

As discussed in §2.2.4 above, bare nouns may be interpreted as singular or plural, though may also be overtly marked plural. Nouns in Tiwa also cannot be directly modified by numerals, but instead require numeral classifiers. This is true of individual-denoting nouns such as *khûri* ‘cup’, as shown in (167), and substance-denoting nouns such as *ul* ‘wool’, as shown in (168).

- (167) ‘I broke five cups.’ [2018.1.92]
- a. * Ang **phas** khûri-go phí hál-ga.
1SG five cup-ACC break AUX-PFV
 - b. Ang **phas-tha** khûri-go phí hál-ga.
1SG five-CL cup-ACC break AUX-PFV
- (168) ‘I bought five kilograms of wool.’ [2018.1.93]
- a. * Ang **phas** ul-go pre-ga.
1SG five wool-ACC buy-PFV
 - b. Ang **phas ser** ul-go pre-ga.
1SG five CL.KG wool-ACC buy-PFV

While these features have sometimes been taken to indicate that a language lacks a countability distinction in its nouns (e.g. Chierchia 1998), Tiwa does semantically distinguish substance-denoting and individual-denoting nouns. One piece of evidence for this distinction comes from the classifiers that a noun can combine with. In particular, only individual-denoting nouns can be counted with the general count classifier *tha*. For instance, while *khûri* ‘cup’ in (167) above could appear with *tha*, (169) shows that the substance-denoting *ul* ‘wool’ cannot.²³

- (169) * Ang **phas-tha** ul-go pre-ga.
1SG five-CL wool-ACC buy-PFV
Intended: ‘I bought five units of wool.’ [2018.1.93]

Additional evidence for a countability distinction comes from combinatorial possibilities with distributive adjectives, and from quantity judgments, both discussed by Dawson 2018a.

Example (167) above shows that plural marking is not required with numeral modification greater than one. This is not surprising, since unmarked nouns can have plural extensions. However while plural marking is not required with numeral modification, it is allowed, as shown in (170), providing a counterexample to the Chierchia-Borer generalization that numeral classifiers and plural marking are incompatible (see Chierchia 1998 and Borer 2005).

- (170) Maria **thin-tha** lái-râw-go pre-ga.
Maria three-CL book-PL-ACC buy-PFV
‘Maria bought three books.’ [2016.2.114]

²³See Cheng and Sybesma 1998 on a similar distinction in Chinese.

The general count classifier *-tha* can be used with any count noun except where blocked by a more specific form. The most common of these more specific count classifiers are the human classifier *chonâ*, the classifier for flat objects *khêna* and the classifier for long objects *tál*. Several count classifiers have irregular forms when combined with ‘one’ or ‘two’, which are summarized in Table 2.12.

gloss	classifier	one	two	three
CL	-tha	kishá	kiníng	thin-tha
CL.HUM	chonâ	sája	sáning	thin chonâ
CL.FLAT	khêna	khen-shá	khíning/ti-khên(a)	thin khên(a)
CL.LONG	tál	tal-shá	ti-tál	thin tál

Table 2.12: Count classifiers

When counted, substance-denoting nouns must appear with a classifier that provides a unit of measurement. For instance, *ul* ‘wool’ in (168) above appears with a classifier meaning kilogram. Some measure classifiers have the same form as a noun. For instance, (171) shows that *khûri* ‘cup’ can serve as a classifier with *kakhîr* ‘milk’. Since clearly nominal uses of these forms cannot be directly modified by numerals, as (167) above shows, I assume they are separate lexical items.

- (171) Ang **phas khûri** kakhîr-go nung-ga.
 1SG five CL.cup milk-ACC drink-PFV
 ‘I drank five cups of milk.’ [2018.1.92]

Tiwa has many classifiers that provide various ways of measuring substance nouns, and counting count nouns in groups. A full list can be found under ‘classifier’ in the English-Tiwa section of Joseph’s (2014) dictionary (specifically pages 15-16).

Numeral classifiers and numerals in Tiwa form a constituent. Morphologically, they are often suppletive (see Table 2.12) and spelled out as a single word. Syntactically, they are always adjacent, and are displaced as a unit both within the DP and in discontinuous DP structures (see §2.4.5 below). Example (172) shows that the numeral and classifier can appear before or after the head noun, but cannot be separated by it. Because of this, I follow Krifka (1995) and Bale and Coon (2014) in assuming that the numeral and classifier do form a constituent to the exclusion of the noun.

- (172) ‘Lastoi met three children.’ [2017.2.53]
- Lastoi **thin chonâ** korkhyá-gô lak mán-ga.
 Lastoi three CL.HUM child-ACC meet-PFV
 - Lastoi korkhyá **thin chonâ**-go lak mán-ga.
 Lastoi child three CL.HUM-ACC meet-PFV
 - *Lastoi **thin** korkhyá **chonâ**-go lak mán-ga.
 Lastoi three child CL.HUM-ACC meet-PFV

For the most part, Tiwa's numerals are originally Indo-Aryan loanwords but combine straightforwardly with native Tibeto-Burman classifiers (Joseph 2014). The exception to this is the suffix *-shá* 'one', which is Tibeto-Burman and used with all numeral classifiers, and the irregular forms of 'two' in Table 2.12 above. When listing numerals in a sequence without classifiers (e.g. in phone numbers), the Indo-Aryan loan *ek* 'one' is used and a heavier version of 'two': *tui*.

Numerals in Tiwa resist distributive readings. This holds with respect to at least bare plurals, quantifiers, and other numerals, as illustrated in (173)-(175) respectively. Example (175) shows that distributive readings with respect to another numeral is impossible for both the subject and the object.

- (173) Mewâ-raw [**thin-tha** khándal-gô] chá-ga.
 man-PL three-CL jackfruit-ACC eat-PFV
 'The men ate three jackfruits.' [2017.1.66]
 ✓ The men shared three jackfruits among them.
 ✗ Each man ate three jackfruits.
- (174) [Sógol mewâ-raw] [**kiníng** thílu-gô] chá-ga.
 every man-PL two.CL banana-ACC eat-PFV
 'All the boys ate two bananas.' [2016.1.137]
 ✓ The priests gave the boys two bananas in total to share.
 ✗ The priest gave each boy two bananas each.
- (175) [Thin chonâ mewâ-raw] [**kiníng** khándal-gô] chá-ga.
 three CL.HUM man-PL two.CL jackfruit-ACC eat-PFV
 'Three men ate two jackfruits.' [2016.1.136]
 ✓ There were three men total, and together they shared two jackfruits.
 ✗ There were three men total, and each ate two jackfruits.
 ✗ There were two jackfruits total, and each was shared by three men.

Instead, an overt distributive element must be added, usually the distributive marker *kai*, as shown in (176)-(178).²⁴

- (176) Margî-raw [**kai** thin-tha thílu-gô] chá-ga.
 woman-PL DIST three-CL banana-ACC eat-PFV
 'The women ate three bananas each.' [2016.1.160]

²⁴At least for 'one', an alternative strategy is to double the numeral+classifier, as in (1).

- (1) Sógol-lô [**kishá kishá** ngá-gô] pre-ga.
 every-FOC one.CL one.CL fish-ACC buy-PFV
 'Everyone bought one fish each.' [2018.1.85]

- (177) [Sógol mewâ-raw] [**kai** kiníng thílu-gô] chá-ga.
 every man-PL DIST two.CL banana-ACC eat-PFV
 ‘All the boys ate two bananas each.’ [2016.1.137]
- (178) [Thin chonâ mewâ-raw] [**kai** kiníng khándal-gô] chá-ga.
 three CL.HUM man-PL DIST two.CL jackfruit-ACC eat-PFV
 ‘Three men ate two jackfruits each.’ [2016.1.136]

Distributive *kai* cannot modify a numeral in subject position in order to obtain the inverse distributive reading, as shown in (179).

- (179) * [**Kai** thin chonâ mewâ-raw] [kiníng khándal-gô] chá-ga.
 DIST three CL.HUM man-PL two.CL jackfruit-ACC eat-PFV
 Intended: ‘Two jackfruits were eaten by three men each.’ [2016.1.136]

Kai seems to form a constituent with the numeral+classifier. Example (180) shows that *kai* must precede the numeral+classifier; it cannot appear directly before the verb. (181b) shows that in structurally discontinuous DPs (see §2.4.5) *kai* can appear after the head noun so long as it directly precedes the numeral+classifier. (181c) shows that within a contiguous DP it cannot follow the numeral+classifier.

- (180) ‘The young men ate one banana each.’ [2018.2.123]
- a. Panthái-râw-man [**kai** kishá thílu-gô] chá-ga.
 youth-PL-PL DIST one.CL banana-ACC eat-PFV
- b. *Panthái-râw-man [kishá thílu-gô] **kai** chá-ga.
 youth-PL-PL one.CL banana-ACC DIST eat-PFV
- (181) ‘The young men ate three bananas each.’ [2018.2.124]
- a. Panthái-râw-man [[**kai** thin-tha] thílu-gô] chá-ga.
 youth-PL-PL DIST three-CL banana-ACC eat-PFV
- b. Panthái-râw-man [thílu-gô] [**kai** thin-tha] chá-ga.
 youth-PL-PL banana-ACC DIST three-CL eat-PFV
- c. *Panthái-râw-man [thin-tha **kai** thílu-gô] chá-ga.
 youth-PL-PL three-CL DIST banana-ACC eat-PFV

For a distributive reading with the numeral ‘one’, *kai* can either appear in front of the numeral+classifier, as in (180a), or simply with the classifier, as in (182). Even without the numeral ‘one’, this sentence is understood to mean ‘exactly one each’; it is rejected in a context in which each of the men ate one or more bananas.

- (182) Panthái-râw-man [**kai-tha** thílu-gô] chá-ga.
 youth-PL-PL DIST-CL banana-ACC eat-PFV
 ‘The young men ate one banana each.’ [2018.2.123]

Finally, Tiwa has a suffix *-mân* that attaches directly to the numeral+classifier phrase, and is often translated by speakers – and is listed in the dictionary – as conveying that the numeral is approximate. (I assume this suffix is a separate lexical item from the definite plural discussed in §2.2.4 above.) For example, the sentence in (183) was translated as conveying that the speaker saw approximately three kangaroos (i.e. she wasn't sure of the exact number).

- (183) Ang thin-tha-**man** kanggaro-go nú-ga.
 1SG three-CL-about kangaroo-ACC see-PFV
 'I saw approximately three kangaroos.' [2018.3.99]

In some cases, however, *-mân* is translated as 'more than' or 'at least', as in (184). This 'at least' interpretation is supported by the data in (185) which show that a follow up suggesting that more than the given numeral is okay, but not one suggesting fewer.

- (184) Ang tos-tha-**man** thílu-gô chá-ga.
 1SG ten-CL-about banana-ACC eat-PFV
 'I ate more than ten bananas.' [2018.2.73]
- (185) Lastoi thin-tha-**man** khúgri-gô pre-ga.
 Lastoi three-CL-about dog-ACC buy-PFV
 'Lastoi bought at least three dogs.' [2018.2.104]
- a. # Kiníng-gô pre-ga manó.
 two.CL-ACC buy-PFV maybe
 'She may have bought two.'
- b. Shar-tha-go pre-ga manó.
 four-CL-ACC buy-PFV maybe
 'She may have bought four.'

Whether or not this 'at least' interpretation is semantic or pragmatic requires further investigation.

2.3.3 Adjectives and relative clauses

Tiwa has a relatively small class of underived, nonverbal adjectives. These include color terms, 'old' and 'new', and a variety of other descriptions of (mostly physical) attributes. (186) and (187) provide examples of attributive uses of two of these.²⁵

²⁵It's actually unclear whether Tiwa has a separate syntactic category of adjectives. What I am calling adjectives here could actually be nominal; they do not show any distinct syntactic behavior. The fact that verbs are nominalized in order to modify a head noun, as discussed in this section, also supports this view: nominal elements can directly modify nouns.

- (186) Ang khúgri **kojá**-na tú hán os-ga.
 1SG dog red-DAT chicken meat give-PFV
 ‘I gave chicken to the red dog.’ [2018.3.86]
- (187) Mukton karî **kodâl**-go pre-ga.
 Mukton car new-ACC buy-PFV
 ‘Mukton bought a new car.’ [2018.2.60]

The majority of adjectival meanings, however, are encoded as verbs. (I will refer to these lexical items as adjectival verbs for convenience; this is not to imply that they show syntactic or semantic behavior that is distinct from other verbs.) The contrast between underived adjectives and these verbs can be clearly seen in predication: adjectives are not inflected, as shown in (188), and may appear with an overt copula, as shown in (189). In contrast, adjectival verbs are fully inflected as main verbs, as shown in (190).

- (188) Hêbe pol **phéder**.
 this ball round
 ‘This ball is round.’ [2018.2.152]
- (189) [Phêja-ne mó] **phéder** hóng-do.
 owl-GEN eye round COP-IPFV
 ‘Owls’ eyes are round.’ [2018.1.115]
- (190) Monbor khúp **nithâw-o**
 Monbor INTS beautiful-NEUT
 ‘Monbor is very handsome.’ [2017.1.41]

When used attributively, adjectival verbs are nominalized, as shown in (191) and (192).

- (191) Ang [**nithâw-a** kashóng-gô] kan-do.
 1SG beautiful-NMLZ dress-ACC wear-IPFV
 ‘I’m putting on a beautiful dress.’ [2015.1.39]
- (192) Mukton [shar-khí loró **chu-wa**-na] phûisa-go os-ga.
 Mukton who-KHI priest tall-NMLZ-DAT money-ACC give-PFV
 ‘Mukton gave money to some tall priest.’ [2018.2.65]

Nominalization is the broader strategy in the language for relative clauses, and I assume that the structures in (191) and (192) are no different. For instance, (193) the relative clause in (193) is formed by nominalizing the main verb.

- (193) [DP [RC Shillong-jíng lí-**wa**] libíng] pe-ne shâla-go plaw-ga.
 Shillong-ALL go-NMLZ person 3SG-GEN bag-ACC forget-PFV
 ‘The person that went to Shillong forgot his bag.’ [2018.1.29]

The head noun is external to the relative clause: it can appear to the right of nominalization, and it can be separated from the head noun by other material in the DP, as in (194).

- (194) [DP [RC Tonbor-go hán sha-**wa**] sája margî-go] ang lak mán-ga.
 Tonbor-ACC love-NMLZ one.CL woman-ACC 1SG meet-PFV
 ‘I met a woman that loves Tonbor.’ [2018.1.101]

Further evidence that the head noun is external is that it does not bear case marking associated with its thematic role within the relative clause. This is shown in (195), in which the head noun *margî* ‘woman’ is a recipient in the relativized clause but does not receive the expected dative case marking. Instead, it is unmarked, reflecting its role as the subject of the main clause. (As discussed in §2.2.2 above, and as this example shows, internal subjects of nominalized relative clauses bear genitive case marking.)

- (195) [DP [RC Mukton-e lái-gô os-**a**] margî] táw phi-do.
 Mukton-GEN book-ACC give-INF woman today come-PFV
 ‘The woman that Mukton gave a book to is coming today.’ [2017.2.116]

Example (195) also shows that non-subjects may be relativized. (196) provides a further example, showing that the head noun can be the object of the relative clause. (Note that the accusative case marking on the head noun *láí* ‘book’ comes from its role as the object of the main clause.)

- (196) [DP [RC Mukton-e lekhé-**wa**] lái-gô] Sonali pre-ga.
 Mukton-GEN read-NMLZ book-ACC Sonali buy-PFV
 ‘Sonali bought a book that Mukton read.’ [2018.2.83]

While nominalized relative clauses are non-finite, they can themselves contain finite complement clauses, as shown in (197). (See §2.4.3 below for more on clausal complements.)

- (197) Ang [DP [RC [CP John lí-ga honmandé] atkhâl lá-**wa**] margî-go]
 1SG John go-PFV COMP think-NMLZ woman-ACC
 lak mán-ga.
 meet-PFV
 ‘I met the woman that thinks that John went.’ [2016.2.132]

2.3.4 Definiteness

As alluded to in §2.2.4 above, bare nouns in Tiwa can be used in definite contexts. This includes uniqueness contexts, as in (198), in which both *sal* ‘sun’ and *agâs* ‘sky’ refer to inherently unique objects. (As we will see in §2.6.2 below, bare nouns can also be indefinite.)

- (198) **Sal** agâs-o thái-do.
 sun sky-LOC stay-IPFV
 ‘The sun is in the sky.’ [2017.1.28]

Definite bare nouns can also be used in familiar anaphoric contexts, in which the noun refers back to a previously introduced referent.

- (199) Preceding discourse (translated from Tiwa):
Once Saldi was working in the paddy field. Suddenly, elephants and monkeys ran out from the forest. The elephants stopped to look at her, and then went on their way. The monkeys started playing in the water. Then, a leopard jumped down from a tree.

Shônggadi makhrí-râw-go lorê hál-ga, arô Saldi arô-sham-shá sájai-lô
leopard monkey-PL-ACC chase AUX-PFV and Saldi and-CL.time-one alone-FOC
khrom chól thá-ga.
work do AUX-PFV

‘The leopard chased the monkeys away, and Saldi was alone again.’ [2017.1.63]

While bare nouns are frequently used in definite contexts, definiteness can also be conveyed with third person pronouns. For instance, the definite in (199) can be just as felicitously expressed as in (200), with an overt 3SG pronoun preceding the noun.

- (200) Preceding discourse: As in (199) above.

[**Pe shônggadi**] makhrí-râw-go lorê hál-ga, arô Saldi arô-sham-shá
3SG leopard monkey-PL-ACC chase AUX-PFV and Saldi and-CL.time-one
sájai-lô khrom chól thá-ga.
alone-FOC work do AUX-PFV

‘The leopard chased the monkeys away, and Saldi was alone again.’ [2017.1.63]

In discourse contexts with an overt linguistic antecedent, these pronouns are translated as the English definite article *the*. When they do not have a linguistic antecedent, however, they are usually translated as a demonstrative, as in (201), and like English demonstratives they can be used alongside pointing to pick out a particular referent.

- (201) **Pe khûri**-go_i ta pahâi-bo, *pro*_i pí khál-ga.
3SG cup-ACC NEG use-BO break AUX-PFV

‘Don’t use that cup, it’s broken.’ [2018.3.87]

This alternation in definiteness between bare nouns and those appearing with an overt pronoun or demonstrative is common cross-linguistically. Jenks (2015) shows that for many such languages bare definites are used to convey uniqueness, while demonstratives/pronouns are used to convey familiar definiteness. This characterization seems too strict for definiteness in Tiwa: bare nouns may be used in anaphoric contexts as in (199) above. Further, speakers accept pronouns with unique definites, as in (202) and (203).

- (202) (**Pe**) sal chanâs-do.
3SG sun shine-IPFV

‘The sun is shining.’ [2017.1.62]

- (203) Táv (**pe**) chonái khúp plas-do.
 today 3SG moon INTS bright-IPFV
 ‘The moon is very bright tonight.’ [2018.1.104]
 Comment with *pe*: ‘Rare.’

While the generalization that bare nouns are unique and nouns with pronouns are familiar is too strong, it does reflect an overall tendency. As the comment on (203) shows, the bare noun is preferred to express uniqueness. Similarly, overt pronouns appear to be more common in anaphoric contexts in texts.

Further, while the contrast between bare nouns and those with pronouns is not categorical in the contexts above, there is clear evidence for a semantic distinction from other contexts that Jenks discusses. For example, only the bare noun allows for sloppy readings, as shown in (204).

- (204) Ethâ, PM mewâ hóng-do.
 now PM man COP-IPFV
 ‘Now the PM is a man.’ [2018.1.105]
- a. Tin-shá-ne tin-a, **PM** margî hóng-o.
 day-one-GEN day-DAT PM woman COP-NEUT
 ‘One day, the PM will be a woman.’
- b. # Tin-shá-ne tin-a, **pe PM** margî hóng-o.
 day-one-GEN day-DAT 3SG PM woman COP-NEUT
 ‘One day, that PM will be a woman.’

This contrast is also found for *pro*-drop vs overt pronouns, as shown in (205), which is compatible with Jenks’ broader claim that bare nouns pattern with null pronouns.

- (205) Ethâ, PM mewâ hóng-do.
 now PM man COP-IPFV
 ‘Now the PM is a man.’ [2018.1.105]
- a. Tin-shá-ne tin-a, **pro** margî hóng-o.
 day-one-GEN day-DAT woman COP-NEUT
 ‘One day, they_{SG} will be a woman.’
- b. # Tin-shá-ne tin-a, **pe** margî hóng-o.
 day-one-GEN day-DAT 3SG woman COP-NEUT
 ‘One day, they_{SG} will be a woman.’

Finally, all the examples above showed a 3SG pronoun appearing with a noun. Plural pronouns are also possible, as shown in (206).

- (206) Ang **pibúr** loró-râw-go lak mán-ga.
 1SG 3PL priest-PL-ACC meet-PFV
 ‘I met those priests.’ [2018.1.102]

2.4 The clause

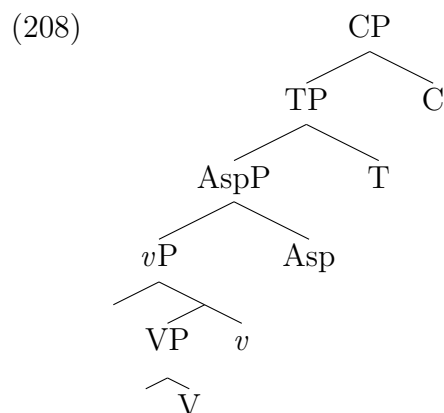
Tiwa is strongly head-final in all domains, with default SOV word order at the clausal level. Nominal and clausal elements freely scramble preverbally, and can also appear post-verbally. In this section, I discuss the basic structure of the clause, including auxiliary verbs and complement clauses, and word order variation, including scrambling, extraposition, and discontinuous DPs. I also discuss conditionals and comparatives, both of which will be relevant for the following chapters, and questions and imperatives.

2.4.1 The clausal spine

Tiwa is strongly head-final, including in the CP domain. Default order in matrix and embedded clauses is SOV, with tense and aspect suffixed to the verb. Overt complementizers in complement clauses always appear to the right of the clause, as in (207).

- (207) *pro* [_{CP} Sáning-bô phi-w **honmandé**] atkhâl lá-ga.
 two.CL-ADD come-NEUT COMP think-PFV
 ‘(She) thinks that they both will come.’ [2018.1.121]

Based on these ordering facts, I assume the head-final clause-structure for Tiwa in (208).



Nominal arguments and adjuncts typically appear to the left of the verb, as in (209), with default S-IO-DO order. These elements frequently scramble, as discussed in §2.4.4 below.

- (209) a. Sonali Umswai-na phi-ga.
 Sonali Umswai-DAT come-PFV
 ‘Sonali came to Umswai.’ [2018.1.21]
 b. Ang loró-râw-go lak mán-ga.
 1SG priest-PL-ACC meet-PFV
 ‘I met the priests.’ [2018.1.102]

verb	AUX meaning	lexical meaning
kar	completion	‘discontinue’
thá	continuation	‘stay’
nang	prospective	‘touch/need’
phi	direction towards	‘come’
lí	direction away from	‘go’
hál	finality	‘send’
mán	unintentional action	‘get’
ton	accident, final state	‘put’
lá	reflexive/self-beneficial	‘take’
os	causative	‘give’

Table 2.13: Common auxiliary verbs

Where present, auxiliary verbs bear aspect and tense inflection, while the main verb appears in its bare form. (212) provides an example of the root *thá* in both its lexical use in which it means ‘stay’ and its auxiliary use in which it conveys that the event is ongoing. (213) provides an auxiliary use of *hál* (lexically ‘send’), which adds a sense of finality to the event described.

- (212) a. Saldi Umswai-o **thái-do**.
 Saldi Umswai-LOC stay-IPFV
 ‘Saldi is staying in Umswai.’ [2018.2.103]
- b. Miyâw-raw **omlê thái-do**.
 cat-PL play AUX-IPFV
 ‘The cats are (still) playing.’ [2018.2.35]
- (213) Kiníng-gô-bo **phal hál-ga-ng**.
 two.CL-ACC-ADD sell AUX-PFV-1SG
 ‘I sold both.’ [2015.1.58]

When an auxiliary verb follows a verb root ending in /a/, /o/ or /u/ (i.e. non-front vowels), a palatal glide [j] is inserted, as illustrated in (214). Note that this is the same process that occurs when a verb root is suffixed with the imperfective suffix *-do*; see §2.2.1 above.

- (214) a. chái thái-do ‘still eating’ (> chá + thái-do)
 b. mokhói hál-ga ‘dropped’ (> mokhó + hál-ga)
 c. lúi thái-do ‘still building’ (> lú + thái-do)

The inflected auxiliary verb and the main verb usually form a phonological word with auxiliary-initial unaspirated stops undergoing voicing (see §2.1; Dawson 2017). This is voicing process is illustrated in (215) for the auxiliary *kar* (lexically ‘discontinue’), which follows a sonorant-final verb root. Orthographically, however, the main verb and auxiliary are written separately.

(215) /núŋ/ + /kâr-ka/ ('drink' + AUX-PFV) → [núŋgàrgà]

Auxiliary verbs and main verbs are always linearly contiguous except in two special – and optional – cases: focus drift (Dawson 2017) and negative imperatives. In focus drift, focus markers that appear to take scope over the entire TP may optionally appear suffixed to the main verb. This is illustrated in (216a), in which the contrastive focus marker *-sê* appears on the main verb, while the focus is semantically associated with the auxiliary and aspect marking: the construction is still going on. (216b) shows that this low placement of *-sê* is optional.

- (216) Nó lú-na-bô chón-a-ne cha,
 house build-INF-ADD finish-NMLZ-GEN exist.NEG
 'House construction isn't finished,' [2016.1.59]
 a. ethâ lúi-**sê** thái-do.
 now build-CF AUX-IPFV
 'it's still going on.'
 b. ethâ lúi thái-do-**sê**.
 now build AUX-IPFV-CF
 'it's still going on.'

Dawson (2017) analyzes focus drift as an instance of post-syntactic displacement of the focus marker in order to satisfy the prosodic needs of the main verb, which require phonological material to its right. This requirement is ordinarily satisfied by inflection, but in auxiliary verb constructions can be satisfied either through forming a phonological unit with the auxiliary verb, or through focus drift.

The main verb and the auxiliary can also optionally appear non-contiguous in negative imperative constructions. This is illustrated in (217).

- (217) 'Don't finish drinking it!' [2015.1.77]
 a. **Ta** nung kar!
 NEG drink AUX
 b. Nung **ta** kar!
 drink NEG AUX

As discussed in §2.4.9 below, negation in imperatives is preverbal, and I assume that this word order arises because the main verb undergoes movement to a higher projection (Rivero and Terzi 1995). If this is correct, the ordering facts in (217) suggest that in some cases both the main verb and the auxiliary move to this higher projection together, while in other cases only the auxiliary moves. This alternation can be captured by assuming that the main verb can optionally undergo head movement to Aux; if this movement happens, the V-Aux complex head can undergo further movement in imperatives, but if the main verb stays *in situ*, only the auxiliary moves.

In some cases, auxiliaries can be combined. This seems primarily limited to cases in which the second auxiliary is *thá* and *kar*, both of which have much more clearly aspectual meanings than the other auxiliaries. Some examples are shown in (218) and (219).

- (218) Top-e ngá-râw thi thái **kar**-ga.
 pond-GEN fish-PL die AUX AUX-PFV
 ‘The pond’s fish all died.’ / ‘The pond’s fish finished dying.’ [2018.2.77]
- (219) Lastoi kashóng kan lí **thá**-ga.
 Lastoi dress wear AUX AUX-PFV
 ‘Lastoi is wearing dresses these days.’ [2018.2.84]

As Table 2.13 above indicates, auxiliary verbs in Tiwa perform a variety of semantic functions, including contributing aspectual and directional information. For example *nang* conveys that an event has not yet (but is about to) commence, as in (220). (See also the brief discussion of *kar*, which contributes telicity, in §2.2.1 above.)

- (220) Lastoi kashóng kan **nang**-ga.
 Lastoi dress wear AUX-PFV
 ‘Lastoi is about to get dressed.’ [2018.2.85]

Other auxiliaries, such as *hál*, illustrated in (213) above, and *mán*, illustrated in (221)-(223), contribute other information regarding the main event, such as a sense of finality, or that the event was not intended by the agent or had some unintended consequence.

- (221) Ang né korkhyá-na phûisa os **mán**-ga.
 1SG 2SG.GEN child-DAT money give AUX-PFV
 ‘I gave money to your child by mistake.’ [2018.2.146]
- (222) Ang krai **mán**-ga.
 1SG cry AUX-PFV
 ‘I cried (but I was trying not to).’ [2018.2.147]
- (223) Ang hímun alû-go khúdi **mán**-ga. Máp rí-bo!
 1SG these potato-ACC chop AUX-PFV mercy do-BO
 ‘I accidentally cut up these potatoes. Forgive me!’ [2018.3.88]
 Context: The addressee had set the potatoes aside for later.

While I have described the auxiliary *lá* as conveying that an action is reflexive and/or self-beneficial, it is not a true reflexive in the argument-structural sense in that it does not reduce the valency of a predicate. Some examples are given in (224)-(226). True reflexivity is expressed solely with reflexive pronouns (see §2.2.3 above).

- (224) Ang sôna-ne yastám-gô pre **lá**-ga.
 1SG gold-GEN ring-ACC buy AUX-PFV
 ‘I bought myself a gold ring.’ [2015.1.98]

- (225) Lastoi thi **lá**-ga.
 Lastoi die AUX-PFV
 ‘Lastoi killed herself.’ [2018.2.76]
- (226) Mukton Lastoi-go ni **lá**-ga.
 Mukton Lastoi-ACC look AUX-PFV
 ‘Mukton checked Lastoi out.’ [2018.2.26]

In contrast, the auxiliary *os* truly is a causative in the sense that it introduces a new core argument as the subject. An example is given in (227), where (227a) provides a baseline showing that *mini* ‘laugh’ takes a nominative subject. In (227b), the auxiliary *os* is added along with an object. The subject is interpreted as the causer who made the object laugh.²⁶

- (227) a. Tonbor *mini*-ga.
 Tonbor laugh-PFV
 ‘Tonbor laughed.’ [2018.2.73]
- b. Tonbor Mansing-go *mini* **os**-ga.
 Tonbor Mansing-ACC laugh CAUS-PFV
 ‘Tonbor made Mansing laugh.’ [2018.2.74]

There is an alternation in the case marking on the causee: in some cases the causee is marked accusative, as in (227b) above, but in others the causee is marked dative, as in (228). As (229) shows, the two case marking options are sometimes judged by speakers to be interchangeable.

- (228) Mukton Lastoi-**na** ti-go nung **os**-ga.
 Mukton Lastoi-DAT water-ACC drink CAUS-PFV
 ‘Mukton fed Lastoi water.’ [2018.1.20]
- (229) ‘Saldi caused Tonbor to know that Mansing saw Lastoi.’ [2018.1.50]
- a. Saldi Tonbor-**a** si **os**-ga, Mansing Lastoi-go nú-ga honmandé.
 Saldi Tonbor-DAT know CAUS-PFV Mansing Lastoi-ACC see-PFV COMP
- b. Saldi Tonbor-**go** si **os**-ga, Mansing Lastoi-go nú-ga honmandé.
 Saldi Tonbor-ACC know CAUS-PFV Mansing Lastoi-ACC see-PFV COMP
- Comment: “Same meaning.”

²⁶Tiwa also has a number of semi-transparent lexicalized causative verbs, which are fossilized from an earlier causative strategy. Most of these involve aspiration of an otherwise unaspirated stop (presumably arising from the Proto-Sino-Tibetan **s-* causative prefix; Matisoff 2003), and some involve the prefix *mo-*. Some examples are listed in (1).

- (1) a. *pí* ‘break (intransitive)’ ; *phí* ‘break (transitive)’
 b. *kumá* ‘become lost’ ; *khúma* ‘lose’
 c. *krá* ‘cry’ ; *mokhrá* ‘make cry’
 d. *kói* ‘fall’ ; *mokhói* ‘drop’

Dative case becomes obligatory on the causee, however, when there is an accusative-marked object associated with the main verb, as shown in (230). (Note that this is the same pattern as in Japanese; Harada 1973, among others)

- (230) ‘Mukton caused Lastoi to kick Sonali.’ [2018.1.21]
- a. * Mukton Lastoi-**go** Sonali-**go** lathê os-ga.
 Mukton Lastoi-ACC Sonali-ACC kick CAUS-PFV
- b. Mukton Lastoi-**na** Sonali-**go** lathê os-ga.
 Mukton Lastoi-DAT Sonali-ACC kick CAUS-PFV

As in Japanese, this restriction is part of a larger ban on two accusative marked DPs within a single clause (see §2.2.2) above. The restriction only seems to concern surface realizations of accusative case; the causee may be marked accusative if the lower object is *pro*-dropped, as in (231), or if the object is simply not marked accusative, as in (232).

- (231) Sonali_i Umswai-na phi-ga. Mukton Lastoi-**go** *pro*_i lathê os-ga.
 Sonali Umswai-DAT come-PFV Mukton Lastoi-ACC kick -CAUS-PFV
 ‘Sonali came to Umswai. Mukton made Lastoi kick her.’ [2018.1.21]
 ✓ Lastoi kicks Sonali.
- (232) Mukton Lastoi-**go** ti(*-**go**) nung os-ga.
 Mukton Lastoi-ACC water(*-ACC) drink CAUS-PFV
 ‘Mukton fed Lastoi water.’ [2018.1.20]

2.4.3 Complement clauses

There are several strategies for clausal embedding in Tiwa, including finite complementation and nominalization, illustrated in (233) and (234) respectively.

- (233) Sonali [_{CP} Mansing lí-ga honmandé] si-ga.
 Sonali Mansing go-PFV COMP know-PFV
 ‘Sonali thinks that Mansing went.’ [2017.1.20]
- (234) Sonali [_{DP} Mansing-e lí-wa-gô] si-ga.
 Sonali Mansing-GEN go-NMLZ-ACC know-PFV
 ‘Sonali knows that Mansing went.’ [2017.1.36]

Finite embedded clauses often appear in different positions in the clause. They can appear immediately preverbally, as in (233) above, or to the left of other preverbal material, as in (235a). They can also appear post-verbally, as in (235b). This latter position is often preferred, especially when the complement clause is especially complex or long.

- (235) ‘Sonali thinks that Mansing went.’ [2017.1.20]
 a. [_{CP} Mansing lí-ga honmandé] Sonali si-ga.
 Mansing go-PFV COMP Sonali know-PFV
 b. Sonali si-ga, [_{CP} Mansing lí-ga honmandé.]
 Sonali know-PFV Mansing go-PFV COMP

I assume that finite complement clauses are base-generated preverbally as a complement to the verb – in fitting with Tiwa’s general head-finality – and optionally undergo extraposition to the right and scrambling to the left. Evidence for this preverbal base position comes from nominalized clauses, such as relative clauses, which can themselves contain finite complement clauses. In these structures, the complement clause must appear to the left of the nominalized verb, as shown in (236); a post-verbal position is unavailable.

- (236) ‘I met the woman that thinks that John went.’ [2016.2.132]
 a. Ang [_{DP} [_{RC} [_{CP} John lí-ga honmandé] atkhâl lá-wa] margî-go]
 1SG John go-PFV COMP think-NMLZ woman-ACC
 lak mán-ga.
 meet-PFV
 b. * [_{DP} [_{RC} Atkhâl lá-wa [_{CP} John lí-ga honmandé]] margî-go] ang
 think-NMLZ John go-PFV COMP woman-ACC 1SG
 lak mán-ga.
 meet-PFV

Note that historically, the complementizer is transparently derived from the verb *hon* ‘say’ with the subordinating affix *-mandé* ‘after’, which creates a temporally subordinated adjunct clause, as in (237).

- (237) Láí sígai chón-**mande**, Saldi saluri mán-ga.
 book study finish-after Saldi salary get-PFV
 ‘After finishing her studies, Saldi got a salaried job.’ [2018.2.137]

Since the presence of a *honmandé* clause does not entail that the attitude holder say anything aloud, and since there is no sense in which any such speech act would necessarily take place before the event described by the matrix verb, I follow Joseph (2014) in treating *honmandé* as a lexicalized complementizer.

In addition to the plain finite complementation described above, Tiwa has a proleptic finite complementation structure, described by Dawson and Deal (2019), in which the verb takes an additional accusative-marked nominal argument which must be semantically related to a pronoun (either overt or a null *pro*) in the complement clause. Two examples are given in (238) and (239).

- (238) Sonali **Mansing-go** si-ga [*pro* lí-ga honmandé.]
 Sonali Mansing-ACC know-PFV go-PFV COMP
 ‘Sonali knows that Mansing went.’ [2017.1.23]

- (239) Mansing **Mukton-go** atkhâl lá-ga, [Lastoi pe-na khúli parâ chu-w
 Mansing Mukton-ACC think-PFV Lastoi 3SG-DAT than more tall-NEUT
 honmandé.]
 COMP

‘Mansing thinks that Lastoi is taller than Mukton.’ [2018.2.118]

This additional argument is base-generated in the matrix clause, making this a proleptic structure (e.g. Davies 2005, Salzmann 2017) rather than an instance of hyperraising-to-object. Dawson and Deal (2019) present several arguments for this syntactic analysis, including the fact that the additional matrix argument can be linked to a pronoun within an island in the embedded clause, as with the coordinate structure in (240).

- (240) Lastoi **Monbor-go** atkhâl lái-do, [[pe arô Milton] Sonali-go hán sha-w
 Lastoi Monbor-ACC think-IPFV 3SG and Milton Sonali-ACC love-NEUT
 honmandé.]
 COMP

‘Lastoi thinks that Monbor and Milton love Sonali.’ [2017.2.12]

Dawson and Deal (2019) further describe the semantic effects of this structure. While plain embedded finite clauses allow for *de dicto*, *de re*, and intermediate third readings of indefinites within them, indefinite proleptic objects must receive a *de re* or third reading.

In addition to finite complementation, attitude verbs in Tiwa can also take an accusative-marked nominalized clausal argument, as shown in (234) above and (241). As in nominalized relative clauses (§2.3.3), the subject of the nominalized clause takes genitive case.

- (241) [Milton-e Lastoi-go nú-wa-gô] Mukton atkhâl lá-ga.
 Milton-GEN Lastoi-ACC see-NMLZ-ACC Mukton think-PFV

‘Mukton thought that Milton saw Lastoi.’ [2017.1.38]

As far as I can tell, any attitude verb that allows for a finite clausal complement also allows for a nominalized clausal complement, including *si* ‘know’ and *atkhâl lá* ‘think’, both illustrated above, as well as *hon* ‘say’, *plaw* ‘forget’, *sóng* ‘ask/tell’, *athâma nang* ‘be awestruck’, and *khâdu* ‘be happy’, among others. Further investigation is needed to establish any differences in interpretation between the two strategies.

Not every attitude verb in Tiwa allows for finite complementation and nominalized sentential objects. Some verbs, such as *hal* ‘want’ and *anggê* ‘request’ instead must take an infinitival complement, as in (242). Where overt, the notional subject of the infinitival clause in such structures must be marked accusative, as shown in (242a).

- (242) ‘Sonali {wanted, asked} Mansing to go.’ [2017.1.23, 37]
 a. Sonali Mansing*(-go) lí-na {hal-ga, anggê-ga}.
 Sonali Mansing*(-ACC) go-INF {want-PFV, request-PFV}
 b. *Sonali [Mansing-e lí-wa-gô] {hal-ga, anggê-ga}.
 Sonali Mansing-GEN go-NMLZ-ACC {want-PFV, request-PFV}

- c. * [Mansing lí-ga honmandé] Sonali {hal-ga, anggê-ga}.
 Mansing go-PFV COMP Sonali {want-PFV, request-PFV}

2.4.4 Scrambling and extraposition

While Tiwa has default SOV word order, arguments, adjuncts, adverbs, and finite complement clauses are frequently scrambled. As far as I can tell, every pre-verbal word order among these constituents is permitted. For example, (243) shows that the object may appear before the subject. (244) shows that the adverb *ethâ* ‘now’ can appear before, in-between, or after any arguments in the clause. (Example (235a) above illustrates scrambling for a finite complement clause.)

- (243) ‘I’m putting on a dress.’ [2015.1.46]
 a. Ang kashóng-gô kan láí-do.
 1SG dress-ACC wear AUX-IPFV
 b. Kashóng-gô ang kan láí-do.
 dress-ACC 1SG wear AUX-IPFV
- (244) ‘I’m putting on a dress now.’ [2015.1.50]
 a. Ethâ-se ang kashóng kan láí-do.
 now-CF 1SG dress wear AUX-IPFV
 b. Ang ethâ-se kashóng kan láí-do.
 1SG now-CF dress wear AUX-IPFV
 c. Ang kashóng ethâ-se kan láí-do.
 1SG dress now-CF wear AUX-IPFV

This clause-internal scrambling does not correlate with any clear information structural categories, which are typically marked with overt morphology, as described in §2.2.5 above. For instance, the contrastively focused adverb in (244) can appear in multiple positions within the clause. Likewise, the topic-marked object in (245) can either appear in its canonical position, or scramble over the subject.

- (245) ‘I’m putting on my dress, but not my scarf.’ [2015.1.146]
 a. Ang kashóng-gô-do kan láí-do, thêbo ré-sê cha.
 1SG dress-ACC-TOP wear AUX-IPFV but cloth-CF exist.NEG
 b. Kashóng-gô-do ang kan láí-do, thêbo ré-sê cha.
 dress-ACC-TOP 1SG wear AUX-IPFV but cloth-CF exist.NEG

Clause-internal scrambling in Tiwa does not affect binding relations, as shown in (246) and (247), suggesting that scrambled constituents can reconstruct for Condition A (cf. long-distance scrambling, discussed immediately below).

- (246) ‘Every child_i saw himself/herself_i in the mirror.’ [2018.2.11]
 a. [Sógol korkhyá-râw] arsî-w **othông-go** nú-ga.
 every child-PL mirror-LOC REFL-ACC see-PFV
 b. **Othông-go**_i [sógol korkhyá-râw] arsî-w *t_i* nú-ga.
 REFL-ACC every child-PL mirror-LOC see-PFV
- (247) ‘Every boy_i loves his_i mother.’ [2018.1.43]
 a. [Sógol mewâ-raw] [**othê** má-gô] hán sha-w.
 every man-PL REFL.GEN mum-ACC love-NEUT
 b. [**Othê** má-gô]_i [sógol mewâ-raw] *t_i* hán sha-w.
 REFL.GEN mum-ACC every man-PL love-NEUT

As discussed in §4.2.1 below, there is some initial evidence that scrambling of quantifiers can affect scope. Further investigation is necessary to establish how robust these effects are.

In addition to clause-internal scrambling, Tiwa also allows for long-distance scrambling, in which a constituent moves from within a finite complement clause to the beginning of the matrix clause, as in (248). As shown in (248c), this scrambled constituent must be sentence-initial.

- (248) ‘Saldi thinks that Lastoi gave Mukton flowers.’ [2018.1.46]
 a. Saldi atkhâl lá-ga, [Lastoi Mukton-a khum os-ga honmandé.]
 Saldi think-PFV Lastoi Mukton-DAT flower give-PFV COMP
 b. Mukton-a_i, Saldi atkhâl lá-ga, [Lastoi *t_i* khum os-ga honmandé.]
 Mukton-DAT Saldi think-PFV Lastoi flower give-PFV COMP
 c. *Saldi Mukton-a_i atkhâl lá-ga, [Lastoi *t_i* khum os-ga honmandé.]
 Saldi Mukton-DAT think-PFV Lastoi flower give-PFV COMP

Evidence that the clause-initial constituent has undergone movement from the embedded clause, rather than being base-generated as (for example) a hanging topic, comes from (i) the impossibility of an overt pronoun in its associated position in the embedded clause, and (ii) the fact that it cannot be linked to a position within an island. These properties are illustrated in (249) and (250)-(252) respectively, and stand in stark contrast to the behavior of proleptic objects described in §2.4.3 above (see also Dawson and Deal 2019). The island data involve a coordinate structure, conditional clause, and relative clause, respectively.

- (249) *Mukton-a_i, Saldi atkhâl lá-ga, [Lastoi **pe-na**_i khum os-ga honmandé.]
 Mukton-DAT Saldi think-PFV Lastoi 3SG-DAT flower give-PFV COMP
 Intended: ‘Saldi thinks that Lastoi gave Mukton flowers.’ [2018.1.46]
- (250) ‘Saldi thinks that Lastoi gave Mukton and Tonbor a flower.’ [2018.2.130]
 a. Saldi atkhâl lá-ga, [Lastoi Mukton-a arô Tonbor-a khum os-ga
 Saldi think-PFV Lastoi Mukton-DAT and Tonbor-DAT flower give-PFV
 honmandé.]
 COMP

- b. * Mukton- a_i , Saldi atkhâl lá-ga, [Lastoi (pe-na) $_i$ arô Tonbor-a khum Mukton-DAT Saldi think-PFV Lastoi (3SG-DAT) and Tonbor-DAT flower os-ga honmandé.]
give-PFV COMP
- (251) ‘I think that if Saldi gives Mukton a flower, it will be good.’ [2018.1.97]
- a. Ang atkhâl lá-ga, [[Saldi Mukton-a khum os-gai-do,] tháng-o
1SG think-PFV Saldi Mukton-DAT flower give-COND-TOP right-NEUT
honmandé.]
COMP
- b. * Mukton- a_i , ang atkhâl lá-ga, [[Saldi t_i khum os-gai-do,]
Mukton-DAT, 1SG think-PFV Saldi flower give-COND-TOP
tháng-o honmandé.]
right-NEUT COMP
- (252) ‘Saldi thinks that the woman that gave a flower to Mukton left.’ [2018.2.130]
- a. Saldi atkhâl lá-ga, [[RC Mukton-a khum os-a] margî lí-ga
Saldi think-PFV Mukton-DAT flower give-NMLZ woman go-PFV
honmandé.]
COMP
- b. * Mukton- a_i , Saldi atkhâl lá-ga, [[RC t_i khum os-a] margî lí-ga
Mukton-DAT Saldi think-PFV flower give-NMLZ woman go-PFV
honmandé.]
COMP

Unlike clause-internal scrambling, long-distance scrambling in Tiwa does affect binding. Example (253) shows that a scrambled reflexive cannot be bound by the subject of the complement clause, suggesting that it cannot reconstruct for Condition A (cf. examples (246) and (247) above).

- (253) ‘Saldi thinks that Lastoi $_i$ gave a flower to her $_i$ husband.’ [2018.1.46]
- a. Saldi atkhâl lá-ga, [Lastoi [othê soi-na] khum os-ga
Saldi think-PFV Lastoi REFL.GEN husband-DAT flower give-PFV
honmandé.]
COMP
- b. * [Othê soi-na] $_i$ Saldi atkhâl lá-ga, [Lastoi t_i khum os-ga
REFL.GEN husband-DAT Saldi think-PFV Lastoi flower give-PFV
honmandé.]
COMP
- Comment: “[It] cannot give clear meaning.”

Finally, in addition to leftward scrambling, nominal arguments and adjuncts, adverbs, and finite complement clauses can appear extraposed to the right of the main verb. This was

discussed for finite clauses in §4.3.1 above. Example (254) shows that one or more nominal arguments can appear after the verb. (255) shows that an adverb can also appear post-verbally. (Note: speakers accept such word orders for nominals and adverbs in elicitation settings, but rarely produce them. In contrast, they are relatively common in naturalistic conversational contexts, such as (255).)

- (254) ‘Saldi saw Mansing.’ [2018.1.49]
- a. Saldi Mansing-go nú-ga.
Saldi Mansing-ACC see-PFV
 - b. Saldi nú-ga Mansing-go.
Saldi see-PFV Mansing-ACC
 - c. Mansing-go nú-ga Saldi.
Mansing-ACC see-PFV Saldi
 - d. Nú-ga Saldi Mansing-go.
see-PFV Saldi Mansing-ACC

- (255) Q: Maria lí-ga ná?
Maria go-PFV PQ
‘Did Maria go?’

A: Ói, lí-do ethâ-se.
yes go-IPFV now-CF

‘Yes, just now she’s left.’ [2015.1.150]

Like clause-internal scrambling, extraposition does not seem to correlate with any one information structural category. Post-verbal arguments, for example, can be overtly marked with topic or focus marking, as shown in (256), or remain unmarked, as in (254) above.

- (256) Kashóng pre-ga ching{-do, -se, -lo}.
dress buy-PFV 1PL{-TOP, -CF, -FOC}
‘We bought a dress.’ [2015.1.106]

2.4.5 Discontinuous DPs

For the most part, the elements that scramble and extrapose are full clausal, adverbial or nominal constituents. However, Tiwa also allows for discontinuous DPs, as in (257), which shows two elements of the same notional DP separately by other clausal material.²⁷ As this

²⁷While the two pieces may be separated by other material, they may also appear linearly adjacent. Evidence from prosody, however, suggests that in these cases the pieces are structurally discontinuous, with each piece prosodically inflected as if it were a distinct DP (with a pitch rise at the right edge).

- (1) Lastoi [khólom-go] [thin-tha-go] mokhói hál-ga.
Lastoi pen-ACC three-CL-ACC drop AUX-PFV
‘Lastoi dropped three pens.’ [2018.2.65]

example shows, both pieces of the DP can scramble separately.

- (257) ‘Mukton fed rice to a newborn baby.’ [2018.2.28, 64]
- a. Mukton [korkhyá-na] mai-go [lurî-na] -lo cháí os-ga.
Mukton child-DAT rice-ACC tender-DAT -FOC eat CAUS-PFV
 - b. [Lurî-na] -lo Mukton [korkhyá-na] mai-go cháí os-ga.
tender-DAT -FOC Mukton child-DAT rice-ACC drink CAUS-PFV
 - c. [Korkhyá-na] Mukton [lurî-na] -lo mai-go cháí os-ga.
child-DAT Mukton tender-DAT -FOC rice-ACC eat CAUS-PFV
 - d. [Lurî-na] -lo Mukton mai-go [korkhyá-na] cháí os-ga.
tender-DAT -FOC Mukton rice-ACC child-DAT eat CAUS-PFV
 - e. [Korkhyá-na] Mukton mai-go [lurî-na] -lo cháí os-ga.
child-DAT Mukton rice-ACC tender-DAT -FOC eat CAUS-PFV

Both pieces of the discontinuous DP are marked for case, as shown in (257), with the exception of some discontinuous objects, as in (258). In these instances, accusative case marking is always possible, but can be omitted, in ways that are consistent with the differential object marking found with Tiwa accusative more broadly. More precisely, if a non-discontinuous DP must receive accusative case marking, both pieces of the analogous discontinuous DP must also be case marked.

- (258) *pro* [Ngá-gô] sâlang [mile(-go)] -lo pre-ga.
fish-ACC quickly every-ACC -FOC buy-PFV
‘She bought all the fish quickly.’ [2018.1.19-20]

Any nominal modifier can appear linearly discontinuous from the head noun, including adjectives and quantifiers, as shown in (257) and (258), as well as numerals, relative clauses, demonstratives, indefinite articles, and possessors, as shown in (259)-(263) respectively. Among the modifiers that appear discontinuous, the most common of these by far are quantifiers and numerals.

- (259) ‘I gave money to five priests.’ [2018.1.13, 140]
- a. Ang [phas chonâ loró-râw-a] phûisa os-ga.
1SG five CL priest-PL-DAT money give-PFV
 - b. [Phas chonâ-na] -lo ang [loró-râw-a] phûisa os-ga.
five CL-DAT -FOC 1SG priest-PL-DAT money give-PFV
- (260) ‘My mother gave water to the man that was running.’ [2018.1.14, 137]
- a. Ái má ti-go [cholói lí-wa libíng-a] os-ga.
my mum water-ACC run go-NMLZ person-DAT give-PFV
 - b. [Cholói lí-wa-na] -lô ái má ti-go [líbing-a] os-ga.
run AUX-NMLZ-DAT -FOC my mum water-ACC person-DAT give-PFV

- (261) ‘Mukton gave money to this person.’ [2018.2.20]
 a. Mukton [hêbe líbing-a] phûisa-go os-ga.
 Mukton this person-DAT money-ACC give-PFV
 b. Mukton [líbing-a] phûisa-go [hêbe-na] -lo os-ga.
 Mukton person-DAT money-ACC this-DAT -FOC give-PFV
- (262) ‘Mukton gave money to some priest.’ [2018.2.65]
 a. Mukton [shar-khí loró-na] phûisa-go os-ga.
 Mukton who-KHI priest-DAT money-ACC give-PFV
 b. Mukton [loró-na] phûisa-go [shar-khí-na] -lô os-ga.
 Mukton priest-DAT money-ACC who-KHI-DAT -LOC give-PFV
- (263) ‘Monbor saw Sonali’s cat.’ [2017.1.126]
 a. Monbor [Sonali-ne miyâw-go] khóna nú-ga.
 Monbor Sonali-GEN cat-ACC yesterday see-PFV
 b. Monbor [miyâw-go] khóna [Sonali-ne-go] -lo nú-ga.
 Monbor cat-ACC yesterday Sonali-GEN-ACC -FOC see-PFV

The discontinuous modifier is almost always focus-marked. As discussed in §2.2.5, focus markers cannot appear on a modifier within a continuous DP; I assume that discontinuous structures are usually employed to unambiguously convey narrow focus on a particular modifier.

Clem and Dawson (2019) present a movement-based account of discontinuous DPs which captures the fact that each element bears case marking and can scramble independently. In particular, they propose that a DP can contain multiple DP shells (see §2.3.1 above), and that the inner DP can move out of the larger DP structure, stranding a modifier in the specifier of the higher DP. The resulting two unnested DPs each bear case and can scramble independently.

2.4.6 Conditionals

Tiwa has a conditional verb suffix *-gai*, which is used in a variety of conditional constructions. On its own, *-gai* conveys a straightforward non-counterfactual conditional, as illustrated in (264). (Counterfactual conditionals, in which the antecedent is assumed to be false, will be discussed at the end of this section.) Tiwa additionally has an optional particle *chidî*, translated as ‘if’, which is never obligatory.

- (264) (**Chidî**) Maria pajíng-phâ lí-**gai**, ching-gó plaw hál-o.
 (if) Maria where-PHA go-COND 1PL-ACC forget AUX-NEUT
 ‘If Maria goes somewhere, she’ll forget us.’ [2016.1.7-8]

Conditional clauses in Tiwa are not inflected for tense or aspect. They can, however, be marked with negation, as shown in (265). Note that *chidî* is also optional with negated conditional clauses.

- (265) (Chidî) Maria shar-go-bo lak mán-**ya-gai**, khúp khâdu-gam.
 (if) Maria who-ACC-ADD meet-NEG-COND INTS happy-MODAL
 ‘If Maria doesn’t meet anyone, she would be very happy.’ [2016.1.7-8]

Most of the time, conditional clauses in Tiwa appear with the topic-marker *-dô*, as illustrated in (266) and (267).²⁸ The presence of *-dô* does not have a clear semantic or pragmatic affect on the conditional meaning (though we will see below that other information structure affixes do). As with plain *-gai* clauses, *chidî* is optional with *-dô*-marked conditionals.

- (266) Chidî Saldi parâ chá-**gai-dô**, phung-o.
 if Saldi more eat-COND-TOP fat-NEUT
 ‘If Saldi eats more, she’ll get fat.’ [2018.1.138]
- (267) (Chidî) nokhá kó-**gai-dô**, pibúr kodâr-a lí-w.
 (if) rain fall-COND-TOP 3PL walk-INF go-NEUT
 ‘If it rains, they’ll go for a walk.’ [2018.3.96]

While the particle *chidî* is usually initial in the conditional antecedent, it can be preceded by another element, as shown in (268). (I am unsure if more than one element can precede *chidî*; I’ve never encountered such a configuration, but I have not directly asked speakers.)

- (268) ‘It will be good if Saldi meets Mukton.’ [2018.1.96]
- a. Chidî Saldi Mukton-go lak mán-gai-dô, tháng-o.
 if Saldi Mukton-ACC meet-COND-TOP right-NEUT
 - b. **Saldi** chidî Mukton-go lak mán-gai-dô, tháng-o.
 Saldi if Mukton-ACC meet-COND-TOP right-NEUT
 - c. **Mukton-go** chidî Saldi lak mán-gai-dô, tháng-o.
 Mukton-ACC if Saldi meet-COND-TOP right-NEUT

In these cases, I assume that the pre-*chidî* element is not moving out of the conditional antecedent itself, but simply to a position within the antecedent but above *chidî*. I have not encountered an element associated with the antecedent appearing anywhere other than directly before *chidî*, and conditional antecedents do act as islands for known cases of movement (i.e. the long-distance scrambling described in §2.4.4 above; see in particular example (251)).

The conditional antecedent clause can appear in multiple positions within the matrix consequent clause. (269) shows that the conditional may be sentence-initial, or appear between a verb and its argument. (270) shows that a conditional clause can also appear after the consequent clause.

²⁸The affix *-dô* in conditionals has a falling tone, like the topic suffix, but unlike the imperfective suffix *-do*, which gets its tone from the preceding syllable. Further, conditional clauses may be marked with the other IS affixes, but not the other aspect affixes. I take these facts to indicate that *-dô* in conditionals really is the topic marker, and not imperfective.

- (269) ‘If Mukton doesn’t go, Saldi will be unhappy.’ [2018.2.41]
 a. [(Chidî) Mukton lí-ya-gai-dô,] Saldi kumún nang-ya.
 (if) Mukton go-NEG-COND-TOP Saldi well feel-NEG
 b. Saldi, [(chidî) Mukton lí-ya-gai-dô,] kumún nang-ya.
 Saldi (if) Mukton go-NEG-COND-TOP well feel-NEG
- (270) ‘If Saldi goes, she will get money.’ [2018.2.150]
 a. [Chidî Saldi lí-gai-dô,] (pe) phûisa-go mán-o.
 if Saldi go-COND-TOP (3SG) money-ACC get-NEUT
 b. (Pe) phûisa-go mán-o, [chidî Saldi lí-gai-dô.]
 (3SG) money-ACC get-NEUT if Saldi go-COND-TOP

The verb in the consequent of a *-gai(dô)* conditional is usually inflected with plain neutral aspect, as in most of the examples above, but can also be inflected with modal *-gam* (see §2.2.1 on verb inflection), as illustrated in (271), and (265) above.

- (271) Chidî Mukton ba Monbor phi-gai-do, Saldi khâdu-**gam**.
 if Mukton or Monbor come-COND-TOP Saldi happy-MODAL
 ‘If Mukton or Monbor comes, Saldi would be happy.’ [2017.1.32]

In addition to the topic marker *-dô*, conditional morphology combines with other information structure affixes with different effects. The most common of these apart from *-dô* are conditional clauses marked with the scalar additive *-bô*, which forms concessive conditionals, as in (272)-(274). These sentences assert that the consequent is true regardless of whether the antecedent holds or not. As (274) shows, *-bô*-marked conditionals are not compatible with *chidî* ‘if’.

- (272) Nokhá kó-**gai-bô** pibúr kodâr-a lí-dom.
 rain fall-COND-ADD 3PL walk-INF go-PST
 ‘Although it rained, they went for a walk.’ [2016.2.57]
- (273) Mukton-re hyá-**gai-bo**, Saldi hat-jíng lí-ga.
 Mukton-COM NEG.EXIST-COND-ADD Saldi market-ALL go-PFV
 ‘Even though it was not with Mukton, Saldi still went to market.’ [2018.2.32]
- (274) (*Chidî) nokhá kó-**gai-bô**, pibúr kodâr-a lí-w.
 (*if) rain fall-COND-ADD 3PL walk-INF go-NEUT
 ‘Even if it rains, they will go for a walk.’ [2018.3.96]

The other information structure suffixes are less frequent with conditional clauses, but behave more or less as expected. Conditional clauses marked with contrastive focus *-sê* are explicitly judged by speakers to be roughly equivalent to *-gaidô* clauses, but, as (275) shows, they are incompatible with the particle *chidî*. The presence of *-sê* does seem to imply contrast, as in (276), which is expected on a compositional account in which *-sê* contributes contrastive focus.

- (275) (*Chidî) nokhá kó-**gai-sê**, pibúr kodâr-a lí-w.
 (*if) rain fall-COND-CF 3PL walk-INF go-NEUT
 ‘If it rains, they will go for a walk.’ [2018.3.96]
- (276) Ang-do kuphî hóng-**gai-sê** nung-o, sa hóng-gai-dô nung-ya-khá.
 1SG-TOP coffee COP-COND-CF drink-NEUT tea COP-COND-TOP drink-NEG-KHA
 ‘I will drink if it’s coffee, not if it’s tea.’ [2015.1.101]

The general focus clitic *-lô* is also less frequent on conditional clauses, and has been rejected on some occasions by speakers in elicitation sessions. Nevertheless, examples do exist, as in (277) and (278) (see also Joseph 2014). The comment on (278) that *-gailô* conditionals invoke alternatives, as expected of a focus-marked conditional.

- (277) Ná lí-**gai-lô**, tháng-gam.
 2SG go-COND-FOC right-MODAL
 ‘It would be good if you go.’ [2015.1.54]
- (278) Ná phi-**gai-lo**, kam háje-w-bo.
 2SG come-COND-FOC work happy-NEUT-BO
 ‘If you come, the work will go nicely.’ [2017.1.143]
 Comment: “If you don’t come it will go bad.”

Finally, *ga* ‘what about?’ is also attested with conditional morphology in questions, reflecting its broader distribution (see §2.2.5).

- (279) Ang lí-**gai-gâ**, tháng-o na tháng-ya?
 1SG go-COND-GA right-NEUT ALTQ right-NEG
 ‘What about if I go, will it be good or not?’ [2015.1.22]

I do not have data that bears on whether *chidî* is possible with either *-gailô* or *-gaigâ* conditionals.

Regular *-gaidô* conditionals are compatible with (and volunteered in) counterfactual contexts, as in (280), with modal inflection on the consequent. (Such sentences in general appear to be ambiguous between a counterfactual and non-counterfactual reading.)

- (280) Context: Mukton failed his exams. His mother is telling us about it, and she says:
 Chidî Mukton parâ lái sígai-**gai-dô** ba sígai kirî-raw-e sígai
 if Mukton more book study-COND-TOP or teacher-PL-GEN teach
 os-a-go khôna-**gai-do**, pas hóng-gam.
 CAUS-NMLZ-ACC listen-COND-TOP pass COP-MODAL
 ‘If Mukton had studied more, or listened to his teachers, he would have passed.’
 [2018.1.138]

There is, however, an additional strategy that seems limited to counterfactual interpretations, in which the conditional is marked with *-dôm*, as in (281) and (282). While *-gaidô*

conditionals are translated as both non-counterfactual and counterfactual, *-gaidôm* conditionals are consistently translated as counterfactual. (I've treated *-dôm* here as a single suffix since *-m* does not appear with the other information structure affixes, though potentially it should be decomposed into the topic marker and a separate suffix *-m*.)²⁹ While my data suggests *-gaidôm* conditionals are uniformly interpreted as counterfactual, further investigation is needed to determine the exact semantics and pragmatics of these sentences (in contrast to plain *-gaidô* conditionals).

- (281) Chidí Lastoi Spain-jíng lí-**gai-dôm**, pe shar-pha-re pháde-gam, thêbo
 if Lastoi Spain-ALL go-COND-CFACT 3SG who-PHA-COM marry-MODAL, but
 pe lí-ya-m.
 3SG go-NEG-PST
 'If Lastoi had gone to Spain, she would have married someone, but she didn't go.'
 [2017.1.55]
- (282) Chidí kói lá-ya-**gai-dôm**, Mukton chinî-gam.
 if fall AUX-NEG-COND-CFACT Mukton win-MODAL
 'If he hadn't fallen, Mukton would have won.' [2017.1.94]

2.4.7 Comparatives

Gradable predicates in Tiwa can combine directly with a degree expression, as in (283).

- (283) Sonali **hat-shá** chu-w.
 Sonali meter-one tall-NEUT
 'Sonali is one meter tall.' [2017.1.79]

Comparatives in Tiwa are expressed with (i) an explicit standard of comparison, (ii) the morpheme *parâ* 'more' (with the standard left implicit), or (iii) both an explicit standard and the morpheme *parâ*. These three variations are illustrated in (284)-(286) respectively.

- (284) Monbor [**Mansing-a khúli**] chu-w.
 Monbor Mansing-DAT than tall-NEUT
 'Monbor is taller than Mansing.' [2017.1.76]
- (285) Context: The speaker is asked who has more flowers between Saldi and Lastoi.
 Saldi-ne **parâ** khum tong-o.
 Saldi-GEN more flower exist-NEUT
 'Saldi has more flowers.' [2018.1.148]

²⁹While it seems plausible that the presence of *m* in these counterfactual conditionals could have historically arisen from the past tense marker *-m* (given the connection between past tense and modal meanings cross-linguistically; Iatridou 2000), it seems unlikely that there's a synchronic relationship.

- (286) Saldi-ne [**Lastoi-na khúli**] **parâ** rong tong-o.
 Saldi-GEN Lastoi-DAT than more rice exist-NEUT
 ‘Saldi has more rice than Lastoi.’ [2018.3.101]

Comparatives can also involve an overt degree expression, with or without the presence of *parâ*, as shown in (287) and (288).

- (287) Milton [Lastoi-na khúli] **kiníng cm.** chu-w.
 Milton Lastoi-DAT than two.CL cm. tall-NEUT
 ‘Milton is two centimeters taller than Lastoi.’ [2017.1.79]
- (288) [Khóna-na khúli] táw **phas degree** parâ túng-do.
 yesterday-DAT than today five degree more hot-PFV
 ‘Today is five degrees hotter than yesterday.’ [2017.1.139]

The standard of comparison is introduced by the postposition *khúli* ‘than’, which selects for a dative-marked DP, and does not appear outside of comparative constructions. This DP can be a individual-denoting expression, as in (284) and (286) above, a degree expression, as in (289), a generalized quantifier, as in (290), or a nominalized clause, as in (291a). Example (291b) shows that a non-nominalized clause is not possible as a standard.

- (289) Lastoi [**hat-shá-na** khúli] (parâ) chu-w.
 Lastoi meter-one-DAT than (more) tall-NEUT.
 ‘Lastoi is taller than one meter.’ [2017.1.79]
- (290) John-do [**sógol-a** khúli] parâ chu-w.
 John-TOP everyone-DAT than more tall-NEUT
 ‘John is taller than everyone.’ / ‘John is the tallest.’ [2018.2.12]
- (291) ‘Milton bought more books than Lastoi bought cloth.’ [2018.2.61]
- a. [**Lastoi-ne ré-gô pre-wa-na** khúli] Milton lái-gô parâ
 Lastoi-GEN cloth-ACC buy-NMLZ-DAT than Milton book-ACC more
 pre-ga.
 buy-PFV
- b. * [**Lastoi ré-gô pre-ga(-na)** khúli] Milton lái-gô parâ pre-ga.
 Lastoi cloth-ACC buy-PFV(-DAT) than Milton book-ACC more buy-PFV

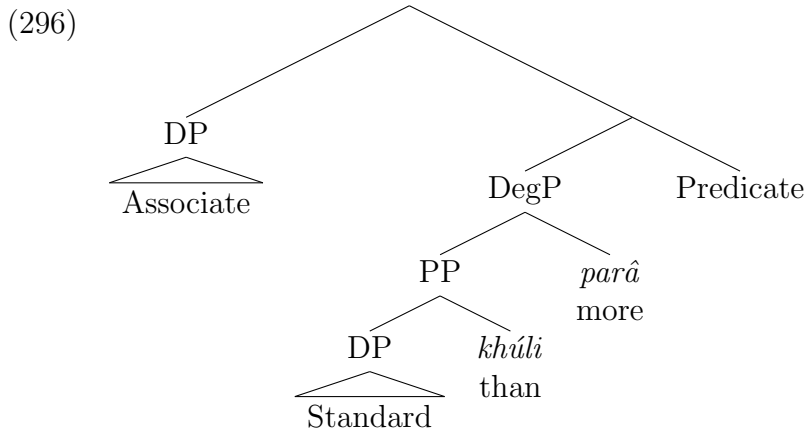
Non-clausal standards like (284) and (290) do not involve clausal reduction. Evidence against clausal reduction will be discussed in detail in Chapter 3, §3.7.1, including evidence from binding, case, quantifier scope, and the impossibility of multiple standards without overt clausal material.

The comparative morpheme *parâ* is optional for degree predicates like *chu* ‘tall’, as shown in (284) and (286) above, but required in other cases, like in (292)-(294). (This constraint on the optionality of *parâ* is similar to Hindi *zyaadaa*, and following Bhatt and Takahashi (2011), I assume that the comparative morpheme is always present underlyingly.)

- (292) Lastoi [Mukton-a khúli] ***(parâ)** láí lekhé-ga.
 Lastoi Mukton-DAT than *(more) book read-PFV
 ‘Lastoi read more books than Mukton.’ [2018.1.78]
- (293) [Lastoi-ne ré-gô pre-wa-na khúli] Milton láí-gô ***(parâ)** pre-ga.
 Lastoi-GEN cloth-ACC buy-NMLZ-DAT than Milton book-ACC *(more) buy-PFV
 ‘Milton bought more books than Lastoi bought cloth.’ [2018.2.61]
- (294) Saldi-ne [Lastoi-na khúli] ***(parâ)** rong tong-o.
 Saldi-GEN Lastoi-DAT than *(more) rice exist-NEUT
 ‘Saldi has more rice than Lastoi.’ [2018.3.101]

As with other arguments in Tiwa, the standard of comparison can scramble freely in the clause. However, there is some evidence that the standard underlyingly forms a constituent with the degree morpheme. Specifically the standard must appear to the left of *parâ*, as shown in (295), which is compatible with the structure in (296), assuming it may scramble out of the Degree Phrase (Bhatt and Takahashi 2011). This is the structure I will assume throughout this dissertation.

- (295) ‘Mukton’s brother is taller than Saldi’s brother.’ [2018.1.77]
- a. Mukton-e khái [PP Saldi-ne khái-na khúli] **parâ** chu-w.
 Mukton-GEN brother Saldi-GEN brother-DAT than more tall-NEUT
- b. [PP Saldi-ne khái-na khúli] Mukton-e khái **parâ** chu-w.
 Saldi-GEN brother-DAT than Mukton-GEN brother more tall-NEUT
- c. * Mukton-e khái **parâ** [PP Saldi-ne khái-na khúli] chu-w.
 Mukton-GEN brother more Saldi-GEN brother-DAT than tall-NEUT



Superlatives in Tiwa do not involve special morphology, but are formed from comparatives with a universal quantifier as the standard of comparison, as in (290) above. These superlatives receive an absolute reading, rather than a relative one, in the absence of overt contextual restriction, as shown in (297).

(297) Context: Mukton, Monbor, Lastoi, and Mansing are having a competition. They want to see who from among them can climb the tallest tree. There are many trees in the garden, some are very tall. None of them is able to climb the very tallest trees: they are simply too tall. Still, each one climbs whatever tree they can. Lastoi wins the competition: she climbed a tree that was taller than any of the trees the others climbed.

- a. # Lastoi [[RC [sógol-a khúli] chu-wa] pháng-gô] tu-ga.
 Lastoi every-DAT than tall-NMLZ tree-ACC climb-PFV

‘Lastoi climbed the tallest tree.’ [2016.1.137]

Comment: “The tallest of all the trees.”

- b. Lastoi, pibúr-e tu-wa pháng-mân-e phána, [[RC [sógol-a khúli]
 Lastoi 3PL-GEN climb-NMLZ tree-PL-GEN from every-DAT than
 chu-wa] pháng-gô] tu-ga.
 tall-NMLZ tree-ACC climb-PFV

‘Lastoi climbed the tallest tree from among the trees they climbed.’ [2016.1.137]

2.4.8 Questions

Polar questions in Tiwa are formed with the sentence-final polar question particle *ná*, illustrated in (298).

- (298) Ná mai shóng-do **ná**?
 2SG rice cook-IPFV PQ

‘Are you cooking?’ [2018.3.94]

For alternative questions, Tiwa has a separate strategy that does not use any of the non-interrogative disjunction particles described in §2.5.2 below. Instead, the dedicated particle *nâ* is placed between the two alternatives, as shown in (299), and there is no sentence final particle. (Note that the polar question particle has high tone, while the alternative question particle has falling tone.) As this example shows, the alternative question requires a response that identifies which of the two alternative propositions is true. It cannot be interpreted as a polar question, which would allow a simple yes or no answer.

- (299) Mukton [Saldi **na** Tonbor] -go nú-ga?
 Mukton Saldi ALTQ Tonbor -ACC see-PFV
 ‘Did Mukton see Saldi, or Tonbor?’ [2018.2.121]

- a. ✓ Saldi-go nú-ga.
 Saldi-ACC see-PFV
 ‘He saw Saldi.’

- b. # Oi, thêbo shar-go ang si-ya.
 yes but who-ACC 1SG know-NEG
 ‘Yes, but I don’t know who.’

While the question in (299) must be answered with one of the given alternatives, a polar question with a plain *ba* disjunction can receive just a yes or no answer. This is illustrated in (300).

- (300) Mukton [Saldi **ba** Tonbor] -go nú-ga **ná**?
 Mukton Saldi or Tonbor -ACC see-PFV PQ
 ‘Did Mukton see Saldi or Tonbor?’ [2018.2.121]
 ✓ Oi, thêbo shar-go ang si-ya.
 yes but who-ACC 1SG know-NEG
 ‘Yes, but I don’t know who.’

The alternatives that *na* coordinates can be within a syntactic island, as in the conditional in (301), suggesting there is no movement involved. (See also the discussion of *wh*-questions below.)

- (301) [Mukton **na** Saldi] phi-gai-do, Tonbor khâdu-w?
 Mukton ALTQ Saldi come-COND-TOP Tonbor happy-NEUT
 ‘Is it Mukton’s or Saldi’s coming that will make Tonbor happy?’ [2018.2.109]

Like alternative questions, *wh*-questions in Tiwa have no dedicated sentence-final particle. Instead, they simply contain a bare indeterminate pronoun, as in (302)-(304).

- (302) **Shar** lí-w?
 who go-NEUT
 ‘Who will go?’ [2018.2.142]
 (303) Saldi **indâ**-go pre lap-ga?
 Saldi what-ACC buy AUX-PFV
 ‘What did Saldi buy?’ [2016.2.38]
 (304) Ná khónana **pajíng** lí-w?
 2SG tomorrow where go-NEUT
 ‘Where are you going tomorrow?’ [2015.1.114]

Tiwa’s indeterminate pronouns are listed in Table 2.14, including two dative-marked complex forms which have distinct meanings: *indâ-na*, which means ‘why’, and *pakhâl-a*, which is the future form of ‘when’ (see §2.2.2 above). A final *wh*-word is *khui*, borrowed from Assamese (Joseph 2014), which always appears with a classifier. Note that there is no *khí* or *pha* indefinite built off *khui* (see §2.6.2).

gloss	<i>wh</i> -word
shar	who
indâ	what
pajíng	where
pathô	where
pakhál	when
padî	how
pasí	how much/many
pakhâ	which
inda-ná	why (what-DAT)
pakhál-a	when (future; when-DAT)
khui CL	how many

Table 2.14: *Wh*-words

As the table shows, there are two *wh*-words in Tiwa for ‘where’. These seem interchangeable, although *pajíng* is more frequent, and I have not been able to detect a difference between them. Speakers themselves do not have any clear intuitions about any difference in meaning, though it is possible that further investigation will uncover one.

The indeterminates *shar*, *indâ*, and *pakhâ* can appear with an overt NP restrictor, as shown in (305)-(307).³⁰

- (305) [**Shar** loró] phi-ga?
 who priest come-PFV
 ‘What priest came?’ [2017.1.27]
- (306) Sonali [**indâ** ngá] pre-ga?
 Sonali what fish buy-PFV
 ‘What fish did Sonali buy?’ [2018.2.82]
- (307) Saldi [**pakhâ** kashóng-gô] pre lap-ga?
 Saldi which dress-ACC buy AUX-PFV
 ‘Which dress did Saldi buy?’ [2016.2.38]

While both *pasí* and *khui* question quantity, *pasí* has a much broader distribution. Specifically, while *pasí* can be used within a DP with a classifier, as in (308), it can also be used to question the degree to which something holds more broadly. For instance, (309) shows that

³⁰Note that unlike English *what*, *indâ* is strictly used for non-human referents:

- (1) * [**Indâ** loró] phi-ga?
 what priest come-PFV
 Intended: ‘What priest came?’ [2017.1.27]

it can be used to ask about the weight of something (without having to specify a measure via a classifier), and (310) shows that it can be used to ask about much more abstract degrees.

- (308) Maria [**pasí** chonâ libíng-gô] lak mán-ga?
 Maria how.many CL.HUM person-ACC meet-PFV
 ‘How many people did Maria meet?’ [2016.2.100]
- (309) Pe ti **pasí** erlé-w?
 3SG water how.much weigh-NEUT
 ‘How much does that water weigh?’ [2017.1.51]
- (310) **Pasí** hájai Saldi rojá-na phon-o?
 how.much loudly Saldi sing-INF can-NEUT
 ‘How loudly can Saldi sing?’ [2017.1.138]

In contrast, *khui* is more restricted, and requires the presence of a classifier as shown in (311a) (where (311b) provides a contrast with *pasí*).

- (311) ‘How many cats did you see?’ [2017.2.32]
 a. Ná **khui*(-tha)** miyâw-go nú-ga?
 2SG how.many*(-CL) cat-ACC see-PFV
 b. Ná **pasí(-tha)** miyâw-go nú-ga?
 2SG how.many(-CL) cat-ACC see-PFV

In cases where there is a classifier, *khui* and *pasí* are interchangeable. For instance, (312) can be used in place of (308) above.

- (312) Maria [**khui** chonâ libíng-gô] lak mán-ga?
 Maria how.many CL.HUM person-ACC meet-PFV
 ‘How many people did Maria meet?’ [2016.2.100]

‘Why’ is formed by adding dative case to *indâ* ‘what’, as shown in (313) and (314).

- (313) **Inda-ná** Saldi pháde-ga?
 what-DAT Saldi marry-PFV
 ‘Why did Saldi get married?’ [2018.2.150]
- (314) Ná **inda-ná** Guwahati-jíng lí-ga?
 2SG what-DAT Guwahati-ALL go-PFV
 ‘Why did you go to Guwahati?’ [2018.2.150]

Indaná can also be used to introduce a ‘because’-clause in a declarative, as shown in (315).

- (315) Táp-gô kaw hál-ga-ng, **inda-ná** phóng pí hál-ga.
 knife-ACC throw AUX-PFV-1SG what-DAT handle break AUX-PFV
 ‘I threw away the knife because the handle broke.’ [2018.2.14]

Wh-words in Tiwa do not undergo obligatory movement (though they may scramble within the clause like any other element). Evidence against covert movement comes from the ability of *wh*-words to appear in islands, as in (316)-(318), which show a *wh*-word in a conditional antecedent, coordination, and relative clause respectively. (Note, there was no indication that these questions had to appear in echo-question contexts, as the English translations do.)

- (316) **Shar** phi-gai-do, Maria-bo phi-w?
 who come-COND-TOP Maria-ADD come-NEUT
 ‘If who comes will Maria come too?’ [2016.1.143]
- (317) Saldi [**shar** arô John] -go pasê-ga?
 Saldi who and John -ACC talk-PFV
 ‘Saldi talked to John and who?’ [2016.1.143]
- (318) Maria [[RC **shar-go** pháde-na hal-a] margî-go] lak mán-ga?
 Maria who-ACC marry-INF want-NMLZ woman-ACC meet-PFV
 ‘Maria met the woman that wants to marry who?’ [2016.1.144]

Further, embedded questions do not create islands for long distance scrambling, as shown in (319). This suggests there is no covert movement in the embedded clause.

- (319) ‘I don’t know who gave a flower to Mukton.’ [2018.2.142]
- a. Ang si-ya [**shar** Mukton-a khum os-ga honmandé.]
 1SG know-NEG who Mukton-DAT flower give-PFV COMP
- b. **Mukton-a_i** ang si-ya [**shar** *t_i* khum os-ga honmandé.]
 Mukton-DAT 1SG know-NEG who flower give-PFV COMP

2.4.9 Imperatives

Imperatives in Tiwa are relatively morphosyntactically typical, from a cross-linguistic perspective. As in many languages, the verb form in an imperative is the bare stem, as shown in (320) and (321).

- (320) Ná lí!
 2SG go
 ‘You go!’ [2015.1.20]
- (321) Pe khúgri-na mai **os**!
 that dog-DAT rice give
 ‘Give that dog rice!’ [2018.1.90]

As shown in (320), imperatives can have an overt subject. That subject need not be second person, as shown in (322)-(324), which show an indefinite, a free choice item, and an NPI respectively as subject (see §4.2.1 for more on these elements).³¹

(322) **Shar-pha sája** lí-bo!
 who-PHA one.CL go-BO
 ‘Someone go!’ [2018.3.85]

(323) **Shar hóng-gai-bô** lí-bo!
 who COP-COND-ADD go-BO
 ‘Anyone go!’ [2018.2.66]

Comment: “Group of people, I’m telling that anyone can go. Not telling everyone to go, just saying that anyone can go.”

(324) Mon kró-wa-rê-lo, **shar-bo** payâr-jíng ta na-bó.
 will good-NMLZ-COM-FOC who-ADD outside-ALL NEG go.out-BO
 ‘Please, nobody go outside.’ [Facebook post, 2020/04/01]

There are two verb roots which show allomorphy in their imperative form: *phi* ‘come’ has the imperative form *phoi* ‘come!’, and *lap* ‘bring’ has the imperative form *lapa* ‘bring (it)!’.

(325) a. Sâlang sâlang-lo **phoi!**
 fast fast-FOC come.IMP
 ‘Come quickly!’ [2018.1.28]
 b. Mon kró-wa-rê ang-á kishá-mân ngá-gô pre **lapa**, dei.
 will good-NMLZ-COM 1SG-DAT one.CL-about fish-ACC buy bring.IMP ok
 ‘Please bring me a fish or two, okay!’ [2018.2.8]

Negation takes a special form in imperatives in Tiwa. While negation in declaratives and questions is expressed as a suffix on the verb stem (*-ya* ‘NEG’), negation in imperatives is expressed with a preverbal particle *ta*.

(326) **Ta** lí!
 NEG go
 ‘Don’t go!’ [2015.1.30]

³¹Note that the verb in these examples is marked with the discourse particle *-bó*. This particle is not unique to imperatives, but is also used in declaratives, as in (1). In both declaratives and imperatives, *-bó* seems to add force to the assertion or command.

(1) Ang lí-w-bo!
 1SG go-NEUT-BO
 ‘I will go!’

- (327) Ang mahâ **ta** hóng.
 1SG like NEG COP
 ‘Don’t be like me.’ [2015.1.32]

These ordering facts are compatible with Rivero and Terzi’s (1995) proposal that the verb in an imperative moves to a higher functional projection. Since Tiwa is a strongly head final language, including in the CP domain, we would expect it to appear to the right of negation if the verb is moving to a higher projection.

In addition to plain imperatives, Tiwa has a special hortative strategy in which the verb is marked with the suffix *-nanâw*, as illustrated in (328) and (329). (Joseph (2014) treats *-nâw* as the hortative suffix which attaches to an infinitive verb stem. This could turn out to be the correct analysis.)

- (328) Lí-**nanâw**!
 go-HORT
 ‘Let’s go!’ [2015.1.19]
- (329) Chorê-**nanaw**-bó!
 begin-HORT-BO
 ‘Let’s begin!’ [2015.1.149]

2.5 Coordination

In this section, I describe the various strategies for coordination in Tiwa, treating conjunction and disjunction in turn. The discussion of disjunction in particular will set the stage for the in-depth studies of the two monomorphemic non-interrogative disjunction particles in the subsequent two chapters. Before delving into the various dedicated strategies that Tiwa has, however, it is worth noting that like many languages, Tiwa does use simple juxtaposition as a strategy for coordination. For the most part, these juxtapositions are interpreted as conjunctive and are restricted to clauses, as in (330), however, there are cases in which they may be interpreted as disjunctive, as in (331).

- (330) Prangshá lí-ga, prangshá thái-do.
 some go-PFV some stay-IPFV
 ‘Some went, some are staying.’ [2015.1.105]
- (331) Hêbe lái-gô ang si-w, [so-shá ti-so] kó-w
 this book-ACC 1SG know-NEUT hundred-one two-hundred cost-NEUT
 honmandé.
 COMP
 ‘I know this book costs one hundred or two hundred (rupees).’ [2017.2.44]

2.5.1 Conjunction

Tiwa has a cross-categorial conjunctive *arô* ‘and’, illustrated in (332)-(335). Example (332) shows that *arô* can coordinate two full clauses, (333) shows *arô* can coordinate two adverbs, (334) shows that *arô* can coordinate two noun phrases within a DP, and (335) shows that *arô* can coordinate two referential expressions (either case-marked or beneath the level of case-marking).

- (332) Lastoi phi-ga **arô** Mansing lí-ga.
 Lastoi come-PFV and Mansing go-PFV
 ‘Lastoi came and Mansing went.’ [2018.1.7]
- (333) Mukton [hájai-lô **arô** kumún-lô] rojá-w.
 Mukton loudly-FOC and well-FOC sing-NEUT
 ‘Mukton sings loudly and well.’ [2017.1.46]
- (334) Mansing [sógol [margî **arô** mewâ] -raw -go] lak mán-ga.
 Mansing every woman and man -PL -ACC meet-PFV
 ‘Mansing met every boy and girl.’ [2018.1.7]
- (335) Lastoi khóna [Mansing(-go) **arô** Mukton-go] lak mán-ga.
 Lastoi yesterday Mansing(-ACC) and Mukton-ACC meet-PFV
 ‘Lastoi met Mansing and Mukton yesterday.’ [2018.1.45]

Arô additionally has an adverbial use, meaning ‘again’, both on its own, as illustrated in (336), and in the expression *aroshamshá*, illustrated in (337).

- (336) Mukton khándal-gô cháí-mande, **arô** lí-w.
 Mukton jackfruit-ACC eat-after and go-NEUT
 ‘After eating jackfruit, Mukton will go again.’ [2018.1.9]
- (337) Sonali misâ-ga, arô ethâ-bo **arô**-sham-shá misâ-w.
 Sonali dance-PFV and now-ADD and-CL.time-one dance-NEUT
 ‘Sonali danced, and she will dance again now.’ [2018.2.137]

In addition to cross-categorial *arô*, Tiwa also coordinates nominals with the morpheme *rê*, which is identical in form to the comitative suffix *-rê* (see §2.2.2). While I will argue below that *rê* coordination does amount to comitative case marking, I follow Joseph (2014) in writing it as a separate word (glossed ‘and’). An example of *rê* conjunction is given in (338). Example (339) shows that *rê* cannot coordinate adverbs, in contrast to *arô*, as shown in (333) above.

- (338) [Mukton **re** Lastoi] sáning-bô hat-jíng lí-ga.
 Mukton and Lastoi two.CL.HUM-ADD market-ALL go-PFV
 ‘Mukton and Lastoi both went to market.’ [2018.1.4]

- (339) * Mukton [haǰai-lô **re** kumún-lô] roǰá-w.
 Mukton loudly-FOC and well-FOC sing-NEUT
 Intended: ‘Mukton sings loudly and well.’ [2017.1.46]

There is clear evidence that conjunctive *rê* is structurally distinct from the ordinary comitative marked clausal adjuncts described in §2.2.2 above. In particular, *rê*-conjunctions are treated as a single plural DP for the purposes of binding. For instance, (340) shows that a reduplicated reflexive pronoun is preferred, which would be impossible if the binding subject were the singular DP *Sonali*, with *Muktonre* treated as a clausal adjunct (see §2.2.3). The interpretation that the sentence receives further supports that analysis: Mukton and Sonali both saw themselves in the mirror. This contrasts starkly with (341), which contains an unambiguously comitative-marked clausal adjunct. In this sentence, only the singular subject *Mukton* binds the reflexive, and we see the expected non-reduplicated form of the pronoun. Further, this sentence does not entail that Sonali saw herself in the mirror; the comitative-marked adjunct does not bind the reflexive.

- (340) [Mukton **re** Sonali] ?(othông) othông-go ainâ-w nú-ga.
 Mukton and Sonali ?(REFL) REFL-ACC mirror-LOC see-PFV
 ‘Mukton and Sonali saw themselves in the mirror.’ [2017.1.3]
- (341) Mukton othông-go Sonali-**re** ainâ-w nú-ga.
 Mukton REFL-ACC Sonali-COM mirror-LOC see-PFV
 ‘Mukton saw himself with Sonali in the mirror.’ [2017.1.3]
 ✓ Sonali didn’t see herself; she saw Mukton.

While *re*-conjunction is clearly distinct from comitative-marked clausal adjunction, there is evidence that conjunctive *rê* is in fact comitative case. First, *rê* cannot coordinate two already case-marked nominals. For instance, (342) shows that two names must be coordinated with *re* beneath the level of accusative case marking (cf. *arô* in example (335) above). Further, example (343) shows that if the first conjunct is a pronoun, it must appear in dative case, regardless of the case of the DP that contains it. This is consistent with the behavior of comitative-marked pronouns more generally, which, as was shown in §2.2.3, always take dative case before comitative-marking.

- (342) Mukton [Monbor(*-go) **re** Sonali-go] ainâ-w nú-ga.
 Mukton Monbor(*-ACC) and Sonali-ACC mirror-LOC see-PFV
 ‘Mukton saw Monbor and Sonali in the mirror.’ [2017.1.4]
- (343) Mukton [othông*(-a) **re** Sonali-go] ainâ-w nú-ga.
 Mukton REFL*(-DAT) and Sonali-ACC mirror-NEUT see-PFV
 ‘Mukton saw himself and Sonali in the mirror.’ [2017.1.4]

The facts are compatible with an approach which treats the first *rê*-conjunct as a comitative-marked nominal that is adjoined to another nominal.

Finally, in addition to conjunctive *arô* and *re*, Tiwa has an adversative coordinator *thêbo*, equivalent to English ‘but’. I have only encountered examples in which *thêbo* coordinates two full clauses, however further investigation would be necessary to establish whether this is a necessity. Some examples of *thêbo* are given in (344) and (345).

- (344) Ang Umswai-o mun thá-ga, **thêbo** ái chor-go lak mán-ya-m.
 1SG Umswai-LOC such stay-PFV but 1SG.GEN friend-ACC meet-NEG-PST
 ‘I stayed in Umswai such a long time, but I didn’t meet my friends.’ [2015.1.135]
- (345) Ang si-ya Mukton pakhál lí-ga, **thêbo** nu-tha pajê-w pe hév
 1SG know-NEG Mukton when go-PFV but nine-CL hour-LOC 3SG here
 cha-khá-kha.
 NEG.EXIST-KHA-KHA
 ‘I don’t know when Mukton left, but at nine o’clock he was already gone.’ [2018.2.136]

2.5.2 Disjunction

Tiwa has several distinct strategies for expressing disjunction, including the monomorphemic particles *ba* and *khí*, the alternative question particle *na*, and a morphologically complex strategy that uses a negated conditional copula. These four broad strategies are illustrated in (346)-(349) respectively.

- (346) Lastoi [khónana **ba** sónena] phi-w.
 Lastoi tomorrow BA day.after come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2018.2.97]
- (347) Lastoi [khónana **khí** sónena (**khí**)] phi-w.
 Lastoi tomorrow KHI day.after (KHI) come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2018.2.90,97]
- (348) Lastoi [khónana **na** sónena] phi-w?
 Lastoi tomorrow ALTQ day.after come-NEUT
 ‘Will Lastoi will come tomorrow, or the day after?’ [2018.2.143]
- (349) Lastoi [khónana **hyá-gai-dô** sónena] phi-w.
 Lastoi tomorrow COP.NEG-COND-TOP day.after come-PFV
 ‘Lastoi will come tomorrow or the day after.’ [2018.2.97]
 (Lit. ‘Lastoi will come if not tomorrow, then the next day.’)

Chapters 3 and 4 deal with *ba* and *khí* disjunction in depth. In short, however, both are fully cross-categorial inclusive disjunctors, which implicate exclusivity and speaker ignorance in unembedded contexts. When embedded under other clausemate operators, *ba* disjunction must take narrow scope and *khí* disjunction must take wide scope. The particle *khí* is additionally used to form wide scope indefinites (see also §2.6.2), and for some speakers is realized in disjunction as a single particle between the disjuncts, but for others as a particle

that is placed after each disjunct. I analyze *ba* disjunctions as alternative-denoting, subject to existential closure at the propositional level or to direct quantification by an operator higher in the structure. I analyze *khí* disjunction as choice functional, where the choice function variable is existentially closed at the edge of a finite CP.

The alternative question particle *na* was introduced in §2.4.8. There it was shown that it is used only to form alternative questions; it cannot be treated as a polar question containing a disjunction (in contrast to *ba*). Like *ba* and *khí*, *na* is cross-categorial, as shown in (350)-(352). (It's unclear whether (350) shows a disjunction of two full clauses (with a null *pro* in the second clause), or two VPs. Possibly the structure is ambiguous.)

- (350) Saldi phâde-ga **na** phâde-ya-m?
 Saldi marry-PFV ALTQ marry-NEG-PST
 ‘Did Saldi get married or not?’ [2018.2.150]
- (351) Fido-ga [marát **na** libíng] hóng-do?
 Fido-GA animal ALTQ person COP-IPFV
 ‘Is Fido an animal or a person?’ [2018.3.103]
- (352) Mukton [Saldi **na** Tonbor] -go nú-ga?
 Mukton Saldi ALTQ Tonbor -ACC see-PFV
 ‘Did Mukton see Saldi, or Tonbor?’ [2018.2.108]

The final strategy for disjunction, illustrated in (349), involves a negated conditional copula. As with regular conditionals (§2.4.6), the conditional copula is usually topic-marked, as in (349) and (353a), but may be bare (353b) or marked with the scalar additive *-bô* (353c). As the comment on (353c) indicates, these variations are judged roughly equivalent, except that the scalar additive contributes a sense of certainty. This sense of certainty is not unexpected, given the semantics of *-bô*, and the sentence could also be translated as ‘Even if Saldi will not come today, she will come tomorrow.’

- (353) ‘Saldi will come today or tomorrow.’ [2018.2.15]
- a. Saldi [táw **hyá-gai-dô** khónana] phi-w.
 Saldi today COP.NEG-COND-TOP tomorrow come-NEUT
- b. Saldi [táw **hyá-gai** khónana] phi-w.
 Saldi today COP.NEG-COND tomorrow come-NEUT
- c. Saldi [táw **hyá-gai-bô** khónana] phi-w.
 Saldi today COP.NEG-COND-ADD tomorrow come-NEUT
- Comment: “Almost the same [as *hyágaidô*]. *hyágai-bô* sounds like it’s confirmed, more certain.”

The conditional copula strategy is very strongly preferred in non-past contexts, with neutral aspect on the main verb, rather than perfective or past inflection. For instance, the conditional copula as a disjunctive strategy was rejected in perfective-marked (354), regardless of

whether it was marked with either *-dô* or *-bô*. Speakers are highly conscious of this preference for neutral aspect, often commenting, for example, that *hyágaidô* is “mostly used in future” [2018.2.27].

- (354) * Saldi [táw hyá-gai(**{-dô, -bô}**) khóna] phi-ga.
 Saldi today COP.NEG-COND(**{-TOP, -ADD}**) yesterday come-NEUT
 ‘Saldi came today or yesterday.’ [2018.2.15]

This preference for neutral aspect is consistent with the conditional morphology – the consequent of a non-counterfactual conditional sentence is usually inflected with neutral aspect (see §2.4.6 above) – suggesting that the conditional copula is not treated as a completely lexicalized disjunct. Further evidence that the conditional copula does not behave like canonical disjunction comes from contexts in which one disjunct is preferred over the other, as in (355). Here, the speaker has a preference for coffee over tea, and can felicitously use a conditional copula if the preferred drink is the first disjunct. This asymmetry is expected given the conditional semantics: the consequent (tea-drinking) will be true if the antecedent (not-coffee-drinking) is true. In contrast, *ba* disjunction with either ordering of tea and coffee is rejected in this context.

- (355) Context: I prefer to drink coffee, but if there’s no coffee, I will drink tea. [2018.2.42]
- a. # [Sa **hyá-gai-dô** coffee] -go nung-o-ng.
 tea COP.NEG-COND-TOP coffee -ACC drink-NEUT-1SG
 ‘I will drink tea or coffee.’
- b. ✓ [Coffee **hyá-gai-dô** sa] -go nung-o-ng.
 tea COP.NEG-COND-TOP coffee -ACC drink-NEUT-1SG
 ‘I will drink coffee or tea.’

In terms of its scope, *hyágaidô* seems to pattern with *ba* with intensional operators but with *khí* with non-intensional operators. That is, the available data indicates that *hyágaidô* takes narrow scope with respect to conditionals, modals, and other intensional verbs, but takes wide scope with respect to negation, comparatives, and (probably) quantifiers. (However, we will see below that scalar additive *-bô*-marked *hyágai* scopes under negation.) Examples (356)-(358) show that *hyágaidô* disjunctions take narrow scope in intensional contexts, with a conditional, modal, and intensional verb respectively.

- (356) [Mukton **hyá-gai-dô** Monbor] phi-gai-do, Saldi khâdu-gam.
 Mukton COP.NEG-COND-TOP Monbor come-COND-TOP Saldi happy-MODAL
 ‘If Mukton or Monbor comes, Saldi would be happy.’ [2017.2.60]
- ✓ Saldi is in love with both Mukton and Monbor. She will be happy if either of them comes.
- ✗ Saldi is either in love with Mukton, or with Monbor, but we don’t know which one.

- (357) Sonali [Guwahati-jíng **hyá-gai-dô** Shillong-jíng] lí-na phon-o.
 Sonali Guwahati-ALL COP.NEG-COND-TOP Shillong-ALL go-INF can-NEUT
 ‘Sonali can go to Guwahati or Shillong.’ [2017.2.60-61]
 Comment: “Depends on her choice.”
 ✓ Saldi is allowed to go anywhere.
 ✗ Sonali is allowed to go to Guwahati, but not to any other city. I’ve forgotten whether which city it is though.
- (358) Sonali [miyâw **hyá-gai-dô** khúgri] -gô pishár-do.
 Sonali cat COP.NEG-COND-TOP dog -ACC search-IPFV
 ‘Sonali is looking for a cat or a dog.’ [2017.2.63]
 ✓ Sonali likes animals. She wants to keep a cat or a dog, but she doesn’t care which.
 ✗ Sonali is either searching for a cat or dog, but I’m in doubt about which.

In contrast, (359) shows that *hyágaidô* cannot scope beneath negation, but, as the speaker comment indicates, must receive a wide scope reading. (360) shows that *hyágaidô* must scope above a comparative operator. (In contrast, we will see in Chapter 3 that *ba* disjunctions do take narrow scope in comparatives.) Further testing with quantifiers is necessary, but *hyágaidô* was rejected in a narrow scope context from within a universal restrictor (in contrast to *ba*). I do not have a confirmation that it is acceptable in the wide scope context, however, the sentence itself was not judged ungrammatical.

- (359) Context: Neither Saldi nor Mukton will go to Guwahati. Both will stay in Umswai.
 # [Saldi **hyá-gai-dô** Mukton] Guwahati-jíng lí-ya. (Sáning-bô
 Saldi hyagaido Mukton Guwahati-ALL go-NEG (two.CL.HUM-ADD
 Umswai-o-se thá-w.)
 Umswai-LOC-CF stay-NEUT)
 ‘Saldi or Mukton won’t go to Guwahati. (They’ll both stay in Umswai.)’ [2018.2.16]
 Comment: “One will go, and one will stay.”
- (360) Mukton [[Tonbor **hyá-gai-dô** Lastoi] -na khúli] parâ chu-w.
 Mukton Tonbor COP.NEG-COND-TOP Lastoi -DAT than more tall-NEUT
 ‘Mukton is taller than Tonbor or Lastoi.’ [2018.1.139]
 ✓ Mukton is taller Tonbor, or he’s taller than Lastoi.
 ✗ Mukton is taller than both Tonbor and Lastoi.
- (361) Context: Lastoi loves all the boys and all the girls.
 # Lastoi sógol [mewâ-raw **hyá-gai-dô** margî-raw] -go hán shaw.
 Lastoi every boy-PL COP.NEG-COND-TOP woman-PL -ACC love-NEUT
 ‘Lastoi loves every boy or girl.’ [2018.1.95]

In contrast to topic-marked *hyágaidô*, scalar additive-marked *hyágaibô* does scope under negation, as shown in (362). This is compatible with the more general behavior of *-bô*-marked expressions, many of which function as NPIs (see §2.2.5 above and §2.6.2 below).

- (362) Context: Neither Saldi nor Mukton will go to Guwahati. Both will stay in Umswai.
 ✓ [Saldi **hyá-gai-bô** Mukton] Guwahati-jíng lí-ya. (Umswai-o-se
 Saldi COP.NEG-COND-TOP Mukton Guwahati-ALL go-NEG (Umswai-LOC-CF
 thá-w.)
 stay-NEUT)
 ‘Saldi or Mukton won’t go to Guwahati. (They’ll stay in Umswai.)’ [2018.2.16]
 Comment: “It sounds like both of them will not go.”

Further investigation – particularly for *hyágai* disjunctions in non-intensional contexts – is necessary to establish whether this pattern is robust.

Disjunctions formed with *hyágaidô* do not appear to entail exclusivity. While there is currently no available data from negation to illustrate this, evidence against semantic exclusivity comes from examples like (363), in which the speaker conveys that both disjuncts are epistemic possibilities. If *hyágaidô* did entail exclusivity, this would be unexpected.

- (363) [Lastoi **hyá-gai-dô** Mukton] phi-w, sáning-bô phi-w
 Lastoi COP.NEG-COND-TOP Mukton come-NEUT two.CL.HUM-ADD come-NEUT
 manó.
 maybe
 ‘Lastoi or Mukton will come, maybe they’ll both come.’ [2018.2.15]

Finally, the examples above show that *hyágaidô* is cross-categorial. In addition to the nominals in the examples above, *hyágaidô* can also coordinate clauses, as illustrated in (364).

- (364) Saldi sígai-na lí-na **hyá-gai-dô** nó-w thá-na mán-o.
 Saldi study-INF go-INF COP.NEG-COND-TOP house-NEUT stay-INF must-NEUT
 ‘Saldi must go for studies, or stay home.’ [2018.1.131]

Overall, the conditional copula strategy for disjunction is clearly morphologically and semantically complex and behaves in ways that are unusual for canonical disjunction, namely, it requires neutral aspect marking and there is an asymmetry between the two disjuncts in terms of which is preferred. While this strategy is fascinating, I will set it aside for the remainder of this dissertation to instead focus on the monomorphemic *ba* and *khí* strategies.

2.6 Quantification

In this section I wrap up the grammar sketch with a description of Tiwa’s system of quantification. In §2.6.1 I describe a class of quantificational nominal modifiers, which I refer to as ‘quantifiers’, and which exclude Tiwa’s indefinite articles. These elements are characterized by their quantificational semantics, their relatively free position within the DP (see §2.3.1), and their propensity to appear structurally discontinuous from the nominal which they quantify over (see §2.4.5). In §2.6.2 I delve into Tiwa’s system of indefinites, including bare nominals, the numeral ‘one’, and indeterminate-based articles. In this section I also explore Tiwa’s series of free choice indeterminates and NPIs.

2.6.1 Quantifiers

Some common quantifiers that I have identified are listed in Table 2.15 along with rough glosses. Note that Joseph (2014) does not uniformly treat these expressions as quantifiers (which he refers to as “(indefinite) pronouns”), but lists *tamûr* as an adverb.

quantifier	gloss
sógol	every(one) (human)
mile	every(thing) (non-human)
tamûr	plenty of
pángai	plenty of
prangshá	some of

Table 2.15: Quantifiers

While these elements often appear separated from their associated DP, as described in §2.4.5 above, they are distinct from true adverbials in that they can occur within the DP as direct nominal modifiers. This is shown in (365), in which the quantifier is unambiguously contained within a single DP without any clausal material.

- (365) Ang [Fr Tomey arô {**sógol, tamûr, pángai, prangshá**} margî-raw] -go
 1SG Fr Tomey and {every, plenty, plenty, some} woman-PL -ACC
 lak mán-ga.
 meet-PFV
 ‘I met Fr Tomey and {all, plenty, some} of (the) women.’ [2018.1.25]

Tiwa has two universal quantifiers *sógol* and *mile* which show a complementary distribution on the basis of animacy. Specifically, *sógol* is used for quantification over humans, as in (365), while *mile* is used for quantification over objects. The comment on (366b) shows that this animacy distinction is salient to speakers.

- (366) ‘All the cups fell.’ [2016.1.114]
 a. **Mile** khûri-raw kói hál-ga.
 every cup-PL fall AUX-PFV
 b. ***Sógol** khûri-raw kói hál-ga.
 every cup-PL fall AUX-PFV
 Comment: “*Sógol* for people only.”

Tamûr and *pángai* both translate as ‘plenty’, ‘many’ or ‘a lot’, and are often interchangeable, as in (365) above and (367).

- (367) ‘A lot of milk spilled on the ground.’ [2018.2.96]
 a. Há-w kakhîr **tamûr**-lo kói hál-ga.
 ground-LOC milk plenty-FOC fall AUX-PFV

- b. Há-w kakhîr **pángai**-lô kói hál-ga.
 ground-LOC milk plenty-FOC fall AUX-PFV

While further work is needed to uncover the semantic differences between *tamûr* and *pangái*, it is worth noting that they have very different etymologies. In particular, *tamûr* has another life as a numeral classifier used with substance-denoting nouns to mean ‘heaps’ or ‘piles’ (Joseph 2014). (Note that in its quantificational form it can be used with individual-denoting nouns, as shown in (365) above.) *Pángai*, in contrast, is derived from the verb *páng* ‘to be plentiful’, illustrated in (368).

- (368) Ái má-ne sha-wa khúp **páng**-o.
 1SG.GEN mum-GEN hurt-NMLZ INTS plenty-NEUT
 ‘My mother is in a lot of pain.’ (Lit. ‘My mother’s pain is plentiful.’) [2018.2.146]

Etymologically, *prangshá* ‘some of’ appears to be made up of the numeral ‘one’ *-shá* and the adverb *prang(e)*, which means scattered. It appears to be thoroughly lexicalized, however, and *prang(e)* does not combine with any other numerals (e.g. **ti prang* ‘two PRANG’, **thin prang* ‘three PRANG’ [2018.3.100]). Sentences with *prangshá* are often offered as translations of English plural ‘some’, including in out of the blue contexts, as in (369). At other times, however, *prangshá* has a partitive use, as in (370) and (371).

- (369) **Prangshá** miyâw-raw payâr-o omlê thái-do.
 some cat-PL play-NEUT play AUX-IPFV
 ‘Some cats are playing outside.’ [2017.1.76]
- (370) Monbor hímun lái-mân-e phána, **prangshá** lái-mân-go lekhé-ga ba
 Monbor these book-PL-GEN from some book-PL-ACC read-PFV or
 mile-go-lo lekhé-ga.
 all-ACC-FOC read-PFV
 ‘From among these books, Monbor either read some of them, or he read all of them.’
 [2018.1.36]
- (371) [**Prangshá** egâro chonâ libing-râw-go] lak mán-ga-ng.
 some eleven HUM.CL people-PL-ACC meet-PFV-1SG
 ‘I met some of those eleven people.’ [2018.2.33]

2.6.2 Indefinites

In this final part of the grammar sketch, I turn to Tiwa’s complex system of indefinites. First, I discuss indefinites formed from bare nouns and the numeral ‘one’. I will then turn to indefinites that are formed from the indeterminate pronouns introduced in §2.4.8. Finally, I will discuss Tiwa’s other series of indeterminate pronouns which are used to form free choice items and NPIs. Together with §2.5.2 on disjunction, this section provides an overview of existential quantification in Tiwa which sets the scene for the subsequent two chapters.

2.6.2.1 Bare nouns and the numeral ‘one’

While bare nouns can be definite, as shown in §2.3.4 above, they may also be indefinite. (372) shows that this is true of a bare noun object, and (373) shows the same for a bare noun subject. In neither example is there a contextually salient or explicitly given referent for the noun to refer to, showing that these are true indefinite uses.

(372) Context: Beginning a short story

Ang khóna **khúgri-gô** nú-ga.
1SG yesterday dog-ACC see-PFV
‘Yesterday I saw a dog.’ [2015.1.97]

(373) Preceding discourse (translated from Tiwa):

Once Saldi was working in the paddy field. Suddenly, elephants and monkeys ran out from the forest. The elephants stopped to look at her, and then went on their way. The monkeys started playing in the water.

Peshûna, pháng-e phána **shônggadi** urî phi-ga.
then tree-GEN from leopard jump AUX-PFV
‘Then, a leopard jumped down from a tree.’ [2017.1.63]

That bare nouns can be indefinite can also be clearly seen in negated sentences like (374). Here, the indefinite bare noun scopes beneath negation, and is compatible with a context in which there are no potential witnesses at all: the existential force of the bare noun scopes beneath negation.

(374) Hat-o kashóng cha-ne, Maria **kashóng** pre-ya-m.
market-LOC dress NEG.EXIST-GEN Maria dress buy-NEG-PST
‘Maria didn’t buy any dresses because there were no dresses in the market.’
[2016.1.130]

While bare nouns can introduce referents into the discourse, as shown in (372) and (373), the most common way of doing so is not with a bare noun, but with a noun modified by the numeral ‘one’ (and the appropriate classifier), as illustrated in (375). Especially for subjects and human-denoting nouns, this is by far the most common strategy for conveying indefiniteness.

(375) [Beginning of a story by consultant MM]

- a. Sham-shá **kishá** pakrajâ kungrí-w thoi thái-dom.
CL.time-one one.CL lion cave-LOC sleep AUX-PST
‘Once a lion was sleeping in a cave.’
- b. Púw **kishá** musí pisá omlê thá-ga.
there one.CL mouse small play AUX-PFV
‘A small mouse was playing there.’

It's unclear whether this sort of numeral modification directly introduces existential quantification (i.e. existential quantification is built into the lexical item), or whether it receives its existential force in the same way as the bare nouns in (372) and (373). One piece of evidence that may favor the latter view is that the numeral is not incompatible with other indefinite articles, such as *sharpha* and *sharkhí* (which are discussed below), as shown in (376) and (377). In these cases, the existential force is presumably being introduced by the dedicated indefinite article.

- (376) [Shar-pha **sája**] lí-bo!
 who-PHA one.CL go-BO
 'Someone go!' [2018.3.85]
- (377) [Shar-khí **sája** loró] lí-ga.
 who-KHI one.CL priest go-PFV
 'Some priest went.' [2018.3.85]

Regardless of how the indefinites in (375) receive their existential force, 'one' is the least-marked way of conveying indefiniteness in Tiwa and I will assume that such indefinites involve existential quantification over individuals. Throughout this dissertation, I will refer to such indefinites as 'plain indefinites'.

Plain indefinites on their own resist scoping under negation. Example (378) shows that a plain indefinite cannot be used in a narrow scope context, while (379) shows that it can be used in a wide scope context.

- (378) Context: Nobody talked to anyone at all. [2018.1.119]
 # Shar-bo [**sája** libíng-rê] pasê-ya-m.
 who-ADD one.CL person-COM talk-NEG-PST
 'Nobody talked with someone.'
- (379) Context: Three people met Lastoi, and four people met Mukton, but no one met Tonbor. [2018.2.40]
 ✓ Shar-bo [**sája** libíng-gô] lak mán-ya-m.
 who-ADD one.CL person-ACC meet-NEG-PST
 'Nobody met someone.'

Instead, plain indefinites are affixed with the scalar additive *-bô* to derive an unambiguous narrow scope reading, as in (380). (See also §2.2.5 above and the discussion below on free choice indeterminates.)

- (380) Shar-bo [**sája** libíng-gô-**bo**] lak mán-ya-m.
 who-ADD one.CL person-ACC meet-NEG-PST
 'Nobody met anyone.' (Lit. 'Nobody met even one person.')

As discussed in §2.3.2 above, numerals in Tiwa resist distributive readings with respect to plurals, quantifiers, and other numerals. This gives plain indefinites the appearance of

necessarily taking wide scope with respect to higher quantifiers, as in (381). However, the lack of a ‘narrow scope’ covarying reading could simply be attributable to this independent restriction on distributivity. As (382) shows, the distributive narrow scope reading is instead conveyed by either doubling the numeral or by adding the distributive morpheme *kai*.

- (381) Sógol margî-raw [**kishá** lái-gô] lekhé-ga.
 every woman-PL one.CL book-ACC read-PFV
 ‘Every woman read a/one book.’ [2017.1.17]
 ✓ There’s one book which all the women read.
 ✗ Each woman read a different book.
- (382) Context: Each woman read a different book. [2017.1.17]
 a. Sógol margî-raw [**kishá kishá** lái-gô] lekhé-ga.
 every woman-PL one.CL one.CL book-ACC read-PFV
 b. Sógol margî-raw [**kai-tha** lái-gô] lekhé-ga.
 every woman-PL DIST-CL book-ACC read-PFV

In contrast, plain indefinites do show variable scope with respect to conditional operators. For instance, (383) is judged felicitous in both a wide scope context, in which there’s a particular uncle that makes the conditional true, and a narrow scope context in which any uncle suffices.

- (383) Chidî [**sája** mamái] thi-gai-do, ang nó mán-o.
 if one.CL uncle die-COND-TOP 1SG house get-NEUT
 ‘If an uncle dies, I’ll get a house.’ [2018.1.73]
 ✓ There’s a particular uncle that owns a house, and he said when he dies I will inherit the house.
 ✓ I have three uncles, Mukton, Tonbor, Mansing, and if any of them dies I will get a house.

Further investigation is needed to establish the full scopal possibilities of plain indefinites, their relationship with indefinite bare nouns, and how a lack of distributivity constrains their interpretation.

2.6.2.2 Indeterminate-based indefinites

In addition to bare nouns and those modified with ‘one’, Tiwa has two dedicated indefinites which are both formed from indeterminate pronouns (which in their bare form function as *wh*-words; see §2.4.8 below). These are illustrated in (384) and (385).

- (384) **Shar-khí** phi-ga.
 who-KHI come-PFV
 ‘Someone came.’ [2017.1.97]

- (385) **Shar-pha** phi-ga.
 who-PHA come-PFV
 ‘Someone came.’ [2016.1.3]

For each indeterminate pronoun, there’s a corresponding *khi* and *pha* indefinite (with one exception, discussed below), as shown in Table 2.16.

indeterminate	gloss	<i>khi</i>	<i>pha</i>	gloss
shar	who	sharkhí	sharpha	‘someone’
indâ	what	indakhí	indapha	‘something’
pajíng	where	pajíngkhî	pajíngpha	‘somewhere’
pathô	where	pathôkhi	pathôpha	‘somewhere’
pakhál	when	pakhálkhî	pakhálpha	‘sometime’
padî	how	padikhí	padîpha	‘somehow’
pasí	how much	pasíkhî	–	‘some amount’
pakhâ	which	pakhâkhi	pakhâpha	‘someone/thing’ (d-linked)

Table 2.16: *khi* and *pha* indefinites

Both *khi* and *pha* indefinites built of *shar*, *indâ*, and *pakhâ* can appear with or without overt nominal restrictors (a more general property of the indeterminate pronouns themselves; see §2.4.8 above). As discussed in §2.5.2 above, *khi* is also used in disjunction. In contrast, the morpheme *pha* does not surface anywhere else in the language; it is only used in *pha* indefinites. Since the particle *khi* is the main focus of Chapter 4, I will leave in-depth discussion for that chapter. In short, however, *khi* indefinites take obligatory wide scope with respect to any other operator and very strongly convey speaker ignorance. I provide a unified analysis of *khi* indefinites and disjunction as introducing a choice function variable, which is existentially closed at the edge of a finite clause.

In unembedded contexts, *pha* indefinites also convey speaker ignorance. Speakers often comment that such uses of *pha* are only good if the speaker is ignorant with respect to the identity of the witness, as in (386).

- (386) O, **shar-pha** phi-do.
 oh, who-PHA come-IPFV
 ‘Oh, someone is coming.’ [2016.1.4]
 Comment: “I can see them. Can’t say if I know who it is.”

These ignorance effects almost certainly arise from constraints that *pha* indefinites place on their domains. Specifically, *pha* indefinites cannot quantify over singleton domains, as shown in (387) and (388). In (387), *pha* is rejected with a restrictor that is inherently singleton, at least in out of the blue contexts. It becomes acceptable, however, if the domain is expanded. Likewise, (388) shows that a *pha* indefinite is rejected in a context in which there is only one individual in the contextually restricted domain. It becomes acceptable, however, if the

context is adapted to include more than one individual. In contrast, plain indefinites and *khí* indefinites are compatible with the singleton-domain contexts in both examples (see Chapter 4, §4.7 on *khí*).

- (387) Ang [**shar-pha** India-ne PM-go] lak mán-a lí-do.
 1SG who-PHA India-GEN PM-ACC meet-INF go-IPFV
 ‘I’m going to meet an Indian Prime Minister.’ [2016.2.80]
 ✗ Out of the blue context.
 ✓ The speaker is attending an event at which all past and present Indian prime ministers are gathered.
- (388) **Shar-pha**-go sógol mewâ-raw sêwa os-ga.
 who-PHA-ACC every man-PL greet-PFV
 ‘All the men greeted someone.’ [2017.1.19]
 ✗ There is one person (we don’t know who it is), and all the men greeted him.
 ✓ There is a group of people, and all the men greeted a single person from the group, but we don’t know which one.

This inability to quantify over a singleton domain is likely responsible for the one gap in Table 2.16 above. Specifically, while every other *pha* indefinite is attested, (389) shows that *pha* cannot combine *pasí* ‘how much’, which in question is used to ask about the (maximal) degree to which something holds (see §2.4.8). Since there can only be one maximal degree to which something holds, it follows that *pha* cannot quantify over it.

- (389) * pasí-pha
 how.much-PHA
 Intended: ‘Some amount.’ [2016.2.94]

Kratzer and Shimoyama (2002) and Alonso-Ovalle and Menéndez-Benito (2010) show how such anti-singleton or domain-widening constraints can give rise to ignorance implicatures in non-downward-entailing environments. In particular, they argue that the ignorance effects found with German *irgendein* and Spanish *algún* arise as a quantity implicature: the hearer assumes that the speaker uses an indefinite that presupposes a non-singleton domain in order to avoid a false exhaustivity inference. I assume that the same reasoning process gives rise to the ignorance effects found with Tiwa *pha* indefinites (see Dawson 2018b for details). That the ignorance effects would be derived through a conversational implicature is consistent with the fact that they are reinforceable and cancelable, as shown in (390) and (391) respectively.

- (390) Maria **shar-pha**-go lak mán-ga, thêbo shar-go ang si-ya.
 Maria who-PHA-ACC meet-PFV but who-ACC 1SG know-NEG
 ‘Maria met someone, but I don’t know who.’ [2016.1.88]
- (391) Maria **shar-pha**-go lak mán-ga, arô shar-go ang si-w.
 Maria who-PHA-ACC meet-PFV and who-ACC 1SG know-NEUT
 ‘Maria met someone, and I know who.’ [2016.1.88]

pha indefinites show variable scope depending on the other operator and its syntactic position. First, *pha* indefinites robustly prefer to scope over clausemate negation, as shown in (392), but can scope under negation in certain syntactic contexts. These include when the *pha* indefinite occurs under a subject NPI which itself must scope under negation, as in (393), and when the *pha* indefinite is embedded under negation in a higher clause, as in (394).

- (392) Lastoi [**indâ-pha** lái-gô] pre-ya-m.
 Lastoi what-PHA book-ACC buy-NEG-PST
 ‘Lastoi didn’t buy some book.’ [2017.1.16]
 ✓ There’s a particular book Lastoi didn’t buy, but she did buy another book. $\exists > \neg$
 ✗ Lastoi didn’t buy any books. $*\neg > \exists$
- (393) Shar-bo **indâ-pha** pre-ya-m.
 who-ADD what-PHA buy-NEG-PST
 ‘Nobody bought anything.’ [2016.2.53]
 ✗ There’s one particular thing that no one bought, but people bought many other things. $*\exists > \neg$
 ✓ Nobody bought anything. $\neg > \exists$
- (394) Saldi **pajíng-pha** lí-ga honmandé tháing-a-ne cha.
 Saldi where-PHA go-PFV COMP right-NMLZ-GEN exist.NEG
 ‘It’s not correct that Saldi went somewhere.’ [2016.2.122]
 ✗ Saldi went to many places, but there is somewhere she didn’t go. $*\exists > \neg$
 ✓ Saldi didn’t go anywhere at all. $\neg > \exists$

The scope of *pha* indefinites with respect to other quantifiers is also determined in part by syntactic configuration. For instance, the *pha* indefinite subject in (395) was judged felicitous only in a context in which it scopes over the universally quantified object. In contrast, the *pha* indefinite object in (396) was judged to scope under the universally quantified subject. (This preference for surface scope could explain why a *pha* indefinite can scope under negation when within the scope of an NPI, as in (393); the indefinite necessarily scopes under the subject NPI and therefore must also scope under negation.)

- (395) **Shar-pha** mile lái-gô lekhé-ga.
 who-PHA every book-ACC read-PFV
 ‘Someone read every book.’ [2017.1.18]
 ✓ There are several woman, and one of them read all the books. $\exists > \forall$
 ✗ There are three books, and each book was read by a different woman. $*\forall > \exists$

- (396) Sógol mewâ-raw **shar-pha**-go sêwa os-ga.
 every man-PL who-PHA-ACC greet-PFV
 ‘Every man greeted someone.’ [2017.1.19]
 ✗ From among a group of people there was a particular person which every man
 greeted. * $\exists > \forall$
 ✓ Each man greeted a different person. $\forall > \exists$

Scrambling does seem to have an effect on scope. For example, if the *pha* object in (396) is scrambled over the subject, the scope judgments are reversed, as shown in (397). (Note that scrambling does not effect the ability of plain indefinites to receive a distributive reading.)

- (397) **Shar-pha**-go₁ sógol mewâ-raw *t*₁ sêwa os-ga.
 who-PHA-ACC every man-PL greet-PFV
 ‘Every man greeted someone.’ [2017.1.19]
 ✓ From among a group of people there was a particular person which every man
 greeted. $\exists > \forall$
 ✗ Each man greeted a different person. * $\forall > \exists$

While these structural effects are found in many cases, there have been instances in which a *pha* indefinite object has been judged felicitous in a context in which it apparently outscope the subject, as in (398). (Of course, since the narrow scope reading of the indefinite under the universal entails the wide scope reading, this example may not actually represent an inverse scope reading.) Further investigation into the effects of linear order and structural position on *pha*’s scopal possibilities is needed.

- (398) Sógol margî-raw **inda-pha**-go pre-ga.
 every woman-PL what-PHA-ACC buy-PFV
 ‘Every woman bought something.’ [2016.1.147]
 ✓ All the women went to market and bought something together (one item, that was very expensive).

pha indefinites very robustly resist scoping over conditional operators, as shown in (399) and (400). Note that (400) shows that *pha* indefinites can’t scope out of a conditional even if they do scope under a higher operator (i.e. an indeterminate scope reading is ruled out).

- (399) Chidí [**shar-pha** mamái] thi-gai-do, ang nó mán-o.
 if who-PHA uncle die-COND-TOP 1SG house get-NEUT
 ‘If an uncle dies, I’ll get a house.’ [2018.1.73]
 ✓ I have three uncles, Mukton, Tonbor, Mansing, and if any of them dies I will get a house.
 ✗ There’s a particular uncle that owns a house, and he said when he dies I will inherit the house.

- (400) Chidí [**shar-pha** korkhyá] fail hóng-gai-dô, sógol teacher-raw khúp khóso-w.
 if who-PHA child fail COP-COND-TOP every teacher-PL INTS sad-NEUT
 ‘If a child fails, every teacher will be very sad.’ [2016.1.164]
- ✓ Each teacher will be sad if any child fails.
 - ✗ For every teacher there is a different student that they will be very said about if that student fails.
 - ✗ There is one student who all the teachers love. Every teacher will be sad if that student fails.

As shown in §2.4.4 above, conditional antecedents are islands for movement. That *pha* indefinites cannot scope out of such environments is compatible with an approach on which *pha* indefinites introduce existential quantification over individuals, and the domain of quantification must consist of more than one individual. As with plain indefinites, however, further investigation is needed to determine the full scopal possibilities of *pha* indefinites, particularly with other intensional operators. In particular, such investigation will have to take into account the anti-singleton domain requirements of *pha* indefinites and the pragmatic effects they give rise to in order to avoid confounds.

2.6.2.3 Free choice indeterminates and NPIs

In addition to the indefinites described above, Tiwa has an additional series of indeterminate pronouns that are used to form free choice items and NPIs. These pronouns are listed in Table 2.17, and I will refer to them as free choice indeterminates. Note that this series lacks a unique human form of the pronoun; instead the regular indeterminate *shar* can be used in certain cases, discussed below. Likewise, there is no corresponding form of *indâ* ‘what’. Instead, *chakhâ*, the counterpart of *pakhâ* ‘which’, is used.

form	gloss
chakhâ	‘anything/whatever’
chajíng	‘anywhere/wherever’
chathô	‘anywhere/wherever’
chakhál	‘anytime/whenever’
chadí	‘any way/however’
chasí	‘any amount/however much’

Table 2.17: Free choice indeterminates

On their own, these pronouns receive a free choice reading roughly equivalent to English ‘ever’ pronouns.

- (401) Ang **chajíng-lô** lí-w, púw khâdu-w.
 1SG anywhere-FOC go-NEUT there happy-NEUT
 ‘Wherever I go, I will be happy there.’ [2018.3.75]

- (402) *pro* [DP *mai* [RC **chasí** *tong-a*] -go] *pre-ga*.
 rice however.much exist-NMLZ -ACC buy-PFV
 ‘She bought all the rice.’ (Lit. ‘She bought however much rice there was.’) [2016.2.111]

Often, these pronouns appear alongside a conditional copula that’s marked with the scalar additive suffix *-bô*, as in (403). (See §2.2.5 above on *-bô* and §2.4.6 on the conditional morpheme.) In some cases, this copula has been judged obligatory, as in the imperative in (404).

- (403) *Saldi chakhál-a hóng-gai-bô kodâr-a lí-w*.
 Saldi anytime-DAT COP-COND-ADD walk-INF go-NEUT
 ‘*Saldi* always goes for walks.’ / ‘*Saldi* goes for walks whenever.’ [2016.2.31]
- (404) **Chajíng** *(**hóng-gai-bô**) lí-bo!
 anywhere *(COP-COND-ADD) go-BO
 ‘Go wherever!’ [2016.1.12]

Free choice indeterminates are common more broadly in *-bo*-marked conditional clauses, illustrated in (405) and (406).

- (405) *Maria chajíng lí-gai-bô, khúp khâdu-gam*.
 Maria anywhere go-COND-ADD INTS happy-MODAL
 ‘Wherever *Maria* goes, she would be very happy.’
- (406) **Chasí** takhé-gai-bô, skul lí-ya-lô-khá.
 however.much urge-COND-ADD school go-NEG-FOC-KHA
 ‘Despite how much you urged, you won’t go to school anymore.’ [2015.1.37]

Free choice indeterminates can themselves be marked with scalar additive *-bo* and for the most part form NPIs which must be licensed by negation. This is illustrated in (407), which shows that *-bo*-marked *chajíng* must appear in the scope of negation (and that *chajíng* must be marked with *-bo* in this context).

- (407) a. *Maria chajíng-bô lí-ya-m*.
 Maria anywhere-ADD go-NEG-PST
 ‘*Maria* didn’t go anywhere.’ [2016.1.2,6]
- b. **Maria chajíng-bô lí-ga*.
 Maria anywhere-ADD go-PFV
- c. **Maria chajíng lí-ya-m*.
 Maria anywhere go-NEG-PST

There do appear to be cases, however, in which a *-bo*-marked free choice indeterminate does not have to appear under negation, and can yield a universal interpretation. The only examples that I have encountered of this involves *chakhál-a* ‘whenever-DAT’, as in (408), which could plausibly be lexicalized. (409) shows that it can appear in a negated sentence.

- (408) Saldi **chakhál-a-bô** Guwahati-jíng lí-na as hóng-do.
 Saldi anytime-DAT-ADD Guwahati-ALL go-INF hope-IPFV
 ‘Saldi has always wanted to go to Guwahati.’ [2016.2.24]
- (409) Pibúr **chakhál-a-bô** mai chá-wa-n’ cha.
 3PL anytime-DAT-ADD rice eat-NMLZ-GEN exist.NEG
 ‘They never eat rice.’ [2018.2.126]

While there is no dedicated human free choice indeterminate, the regular indeterminate *shar* ‘who’ patterns with the free choice indeterminates within the scope of *-bo*. For instance, it can appear alongside a conditional copula, as in (410), and in *-bo*-marked conditional clauses, as in (411), to get a free choice reading.

- (410) **Shar hóng-gai-bô** lí-bo!
 who COP-COND-ADD go-BO
 ‘Anyone go!’ ‘Whoever there is, go!’ [2018.2.66]
- (411) Maria **shar-go** lak mán-**gai-bô**, khúp khâdu-gam.
 Maria who-ACC meet-CON-ADD INTS happy-MODAL
 ‘Whoever Maria meets, she’ll be happy.’ [2016.1.8]

Similarly, it can be directly marked with *-bo* to yield an NPI which must be within the scope of (clausemate) negation, as shown in (412).

- (412) a. **Shar-bo** lí-ya-m.
 who-ADD go-NEG-PST
 ‘Nobody went.’ [2016.1.6]
- b. ***Shar-bo** lí-ga.
 who-ADD go-PFV
 Intended: ‘No one/someone went.’ [2016.2.47]

Tiwa additionally has a sole monomorphemic strong NPI *ekhó* ‘nothing’, which is strictly used for non-human objects, and which must be licensed by clausemate negation. It optionally appears with the scalar additive *-bo*, as shown in (413).

- (413) **Ekhó(-bô)** kói phi-ya-m.
 nothing-ADD fall AUX-NEG-PST
 ‘Nothing fell.’ [2016.1.6]
- (414) *Maria **ekhó(-bô)** pre-ga.
 Maria nothing-ADD buy-PFV
 Intended: ‘Maria bought nothing/something.’ [2016.1.2]

2.7 Summary

In this chapter, I have provided a broad overview of Tiwa grammar and outlined the orthography and glossing conventions used throughout this dissertation. While there are many parts of Tiwa phonology, morphology, syntax, semantics and pragmatics that require further investigation and detailed description, this outline provides core background and context for the remaining in-depth exploration of disjunction, indefinites, and their scope in the next two chapters.

Chapter 3

Disjunction as alternatives

3.1 Two approaches to disjunction

There are two main approaches to the semantics of natural language disjunction.¹ The first holds that disjunction can be identified with the Boolean join of propositional logic (e.g. Partee and Rooth 1983, Winter 2002, Fox 2007). The second proposes to treat disjunction as alternative-denoting (e.g. Simons 2005a, Alonso-Ovalle 2006, Aloni 2007). These two broad approaches are sketched out in (1) for propositional disjunction.²

- (1) a. *The traditional Boolean approach:*

$$\llbracket P \text{ or } Q \rrbracket = \llbracket P \rrbracket \vee \llbracket Q \rrbracket$$
 b. *The alternative approach:*

$$\llbracket P \text{ or } Q \rrbracket = \{ \llbracket P \rrbracket, \llbracket Q \rrbracket \}$$

The debate between the two approaches has hinged on several empirical phenomena, including free choice permission and the fact that disjunctions can take free upward scope. In this chapter, I consider these two approaches from the perspective of narrow scope *ba* disjunction in Tiwa and present distinct novel evidence in favor of the alternative approach. This evidence comes from *ba* disjunctions of names, which on the traditional Boolean account must be treated as generalized quantifiers. I show from their behavior in unreduced phrasal comparatives that *ba* disjunctions of names do not pattern with generalized quantifiers, but must be (in some sense) individual-denoting. This examination of *ba* disjunction across a range of environments also reveals significant cross-linguistic variation in the scope-taking capacity of disjunction, suggesting that languages can differ greatly in how they deal

¹These two approaches are the most common, but are not the only options on the market. Zimmermann (2001) proposes that disjunctions denote conjunctive lists of epistemically possible propositions, so that $\llbracket P \text{ or } Q \rrbracket = \diamond \llbracket P \rrbracket \wedge \diamond \llbracket Q \rrbracket$ (see Geurts 2005 for a similar proposal). Murray (2017) provides evidence from Cheyenne that this is an attested cross-linguistic strategy: languages sometimes do overtly form disjunctive meaning from conjunction and epistemic smodal markers. I assume that monomorphemic disjunction particles like English *or* and Tiwa *ba* should not be decomposed in this way.

²Throughout this dissertation I set aside the internal structure and composition of disjunctions, as the questions considered here do not hinge on disjunction-internal assumptions.

with alternative-denoting expressions (if indeed disjunction is alternative-denoting across languages).

The chapter is structured as follows. In §3.2 and §3.3 I provide a summary of the Boolean and alternative approach to disjunction, respectively. In §3.4, I briefly summarize some of the key empirical phenomena that have been invoked in the debate between the two approaches, and the answers that have been proposed. In §3.5, I discuss a distinct empirical prediction that differentiates the two accounts, but that has not previously figured into the debate – namely, that disjunctions of names on a Boolean account must be treated as generalized quantifier type, but on an alternative approach may be treated as individual-denoting. In §3.6 I turn to *ba* disjunction in Tiwa, showing that it bears similar properties to English *or*, but that in contrast to *or* it can only receive narrow scope readings with respect to other clausemate operators. In §3.7, I examine the behavior of *ba* disjunctions of names with respect to the predictions of the Boolean account, specifically showing that they do not behave like GQs in phrasal comparatives. I present an alternative-semantic analysis of *ba* disjunction in §3.8, which can capture the comparative data, and discuss some of the broader implications of *ba*'s general scopal inflexibility. §3.9 concludes.

3.2 Disjunction as the Boolean join

Natural language disjunction has traditionally been identified with the inclusive logical disjunction operator \vee , i.e. the Boolean join. On this view, at the propositional level, *or* takes in two propositions and yields true just in case one (or both) hold. For instance, on a Boolean account, the sentence in (2a) expresses the proposition in (2b). This sentence will be true in a given world so long as one of the disjuncts holds, and false if neither holds.

- (2) a. Frances is tall or she's on stilts.
 b. $\lambda w.tall_w(\text{Frances}) \vee \text{on-stilts}_w(\text{Frances})$

While \vee is strictly a propositional operator, the Boolean view of disjunction can be extended to cases in which disjunctors like *or* do not coordinate two propositions directly, but instead coordinate smaller constituents (von Stechow 1974, Keenan and Faltz 1978, Gazdar 1980, Partee and Rooth 1983). This extension, which is recursive in nature, crucially relies on the notion of a conjoinable type, as defined in (3): at its core, disjunction operates on truth values. Only functions that map arguments to truth values, and functions that map arguments to those functions (and so on) can be conjoined.

- (3) Definition: Conjoinable Type (Partee and Rooth 1983:4)
 a. t is a conjoinable type
 b. if b is a conjoinable type, then for all a , $\langle a, b \rangle$ is a conjoinable type

Partee and Rooth (1983) propose that disjunctors are interpreted as a generalized join operator \sqcup , defined syncategorematically in (4). Where *or* coordinates two elements that denote truth values, \sqcup is equivalent to the traditional disjunction operator (clause (a)). When *or*

coordinates any other conjoinable type, it returns a function of the same type that returns a join of the two outputs (clause (b)). Since every conjoinable function will ultimately return a truth value, the semantic value of cross-categorial *or* can be closely identified with logical disjunction.³

- (4) $\llbracket A \text{ or } B \rrbracket = \llbracket A \rrbracket \sqcup \llbracket B \rrbracket =$
 a. $\llbracket A \rrbracket \vee \llbracket B \rrbracket$, if A and B are of type t
 b. $\lambda\alpha_a.\llbracket A \rrbracket(\alpha) \sqcup \llbracket B \rrbracket(\alpha)$, if A and B are of type $\langle a, b \rangle$ and b is a conjoinable type

An illustration of this generalized interpretation of *or* is given in (5b) for the disjunction of adjectives in (5a). The resulting type $\langle e, st \rangle$ expression can then compose via Predicate Modification and Function Application with the surrounding material to result in the truth conditions in (5c).

- (5) a. Emily bought a black or grey sweater.
 b. $\llbracket \text{black or grey} \rrbracket$
 $= \llbracket \text{black} \rrbracket \sqcup \llbracket \text{grey} \rrbracket$
 $= \lambda x.\lambda w.\text{black}_w(x) \sqcup \lambda x.\lambda w.\text{grey}_w(x)$
 $= \lambda x.[\lambda w.\text{black}_w(x) \sqcup \lambda w.\text{grey}_w(x)]$
 $= \lambda x.\lambda w.[\text{black}_w(x) \vee \text{grey}_w(x)]$
 c. $\llbracket (5a) \rrbracket = \lambda w.\exists x[\llbracket \text{black}_w(x) \vee \text{grey}_w(x) \rrbracket \ \& \ \text{sweater}_w(x) \ \& \ \text{bought}_w(\text{Emily}, x)]$

The generalized Boolean approach to disjunction in (4) can handle without further stipulation the full range of cross-categorial disjunctions save one: disjunctions of apparently individual-denoting (type e) elements such as names, as in (6a), which are not a conjoinable type. This complication can be easily dealt with under the Boolean analysis by assuming that such expressions are lifted to type $\langle\langle e, t \rangle, t \rangle$ when coordinated. For example, the disjunction of names in (6a) can be treated as the generalized quantifier in (6b) to derive the truth-conditions in (6c).

- (6) a. Elizabeth II or Victoria is queen of England.
 b. $\llbracket \text{Elizabeth II or Victoria} \rrbracket$
 $= \llbracket \text{Elizabeth II} \rrbracket \sqcup \llbracket \text{Victoria} \rrbracket$
 $= \lambda P.P(\text{Elizabeth II}) \sqcup \lambda P.P(\text{Victoria})$
 $= \lambda P.[P(\text{Elizabeth II}) \vee P(\text{Victoria})]$
 c. $\llbracket (6a) \rrbracket = \lambda w.[\text{queen-of-England}_w(\text{Elizabeth II}) \vee \text{queen-of-England}_w(\text{Victoria})]$

Disjunctions of names are discussed in more detail in §3.5 below, and will form the central focus of the argument developed in this chapter.

While logical Boolean disjunction is inclusive (that is, it returns true if *at least* one disjunct is true), natural language disjunction is often understood to be exclusive (that is, it is understood to convey that *exactly* one disjunct is true). For example, if a speaker utters

³Note that *and* is similarly defined, except that it denotes a meet operator \sqcap , which results in logical conjunction \wedge .

the disjunction in (7), it is usually understood to mean that she forgot one or the other, but not both.⁴

- (7) Marguerite forgot her laptop or her purse. \rightsquigarrow Marguerite didn't forget both.

This apparent divergence between the disjunction of logic and English *or* can be explained on pragmatic grounds, through a quantity implicature that arises through competition with conjunctive *and* ([Grice 1975], Gazdar 1980, Sauerland 2004, among many others). Disjunctions are strictly less informative than conjunctions (which require that both conjuncts be true). When a hearer is presented with a disjunction $[P \vee Q]$, she reasons that the speaker does not have grounds for making the stronger claim $[P \wedge Q]$, and therefore believes it not to be true. The result is an enriched exclusive reading of the disjunction: A is true, or B is true, but not A and B. (This implicature can also be derived with a syntactic exhaustivity operator (Fox 2007). I present the neo-Gricean view for simplicity.)

Similar pragmatic reasoning can also explain why unembedded disjunctions also give rise to ignorance effects. In addition to exclusivity, (7) also typically conveys that the speaker cannot identify which disjunct makes the proposition true:

- (8) Marguerite forgot her laptop or her purse. \rightsquigarrow The speaker does not know which.

The disjunction in (8) is less informative than an alternative utterance with either of the individual disjuncts (e.g. *Marguerite forgot her laptop*). Hearers reason that the speaker did not make either more informative utterance because she do not know whether it is true.

In summary, the Boolean account of disjunction captures the intuitive link between natural language disjunction and logical disjunction, can easily handle cross-categoriality, and allows for a natural explanation of exclusivity and ignorance inferences through pragmatic competition.

3.3 The alternative view

The primary alternative to the Boolean view holds that natural language disjunction does not have any inherent force, but instead simply denotes a set of alternatives made up of the individual disjuncts. This approach is schematized in (9), which is repeated from (1) above.

- (9) $\llbracket A \text{ or } B \rrbracket = \{\llbracket A \rrbracket, \llbracket B \rrbracket\}$

There are several implementations of an alternative approach to disjunction (e.g. Simons 2005a, Alonso-Ovalle 2006, Aloni 2007, AnderBois 2012, Charlow 2014). While these implementations differ non-trivially, each can capture the range of data considered here. For concreteness I will follow the version proposed by Alonso-Ovalle (2006), which is cast in

⁴Note that this inference is pragmatic, rather than truth conditional. Evidence for this comes from the fact that the inference can be canceled (*Marguerite forgot her laptop or her purse, and possibly both*) and from the behavior of disjunction under negation. Specifically, if disjunction were truth-conditionally exclusive, the negation of the disjunction should be judged true if both disjuncts are true. This is not the case: *It's not the case the Marguerite forget her laptop or her purse* is false if she forgot both.

a relatively standard Hamblin semantics (e.g. Kratzer and Shimoyama 2002).⁵ For more explicit comparison of various alternative-semantic approaches to disjunction, see Charlow 2014 and Ciardelli and Roelofsen 2017.

Alternative approaches to disjunction treat disjunction as a set made up of the denotations of the individual disjuncts. This approach automatically captures disjunction’s cross-categorical nature: disjunctions can denote a set of any type of elements, provided that all the elements in a set are of the same type. For instance, the disjunction of propositions in (10a), repeated from (2a) above, expresses a set made up of the propositions that the individual disjuncts denote, as shown in (10b).

- (10) a. Frances is tall or she’s on stilts.
 b. $\{\lambda w'.\text{tall}_{w'}(\text{Frances}), \lambda w'.\text{on-stilts}_{w'}(\text{Frances})\}$

Likewise, the disjunction of properties in (11a), repeated from (5a) above, is treated as a set made up of the properties denoted by each disjunct, as shown in (11b).

- (11) a. Emily bought a black or grey sweater.
 b. $\{\lambda x.\lambda w.\text{black}_w(x), \lambda x.\lambda w.\text{grey}_w(x)\}$

On an alternative semantic approach, there is no need to apply a type-shift to otherwise individual-denoting elements as there is on the Boolean account. Instead, disjunctions of individuals denote a set made up of those individuals. For example, the disjunction of names in (12a), repeated from (6a) above, is treated as the set $\{\text{Elizabeth II, Victoria}\}$.

- (12) a. Elizabeth II or Victoria is queen of England.
 b. $\{\text{Elizabeth II, Victoria}\}$

This difference between the Boolean approach above and the alternative approach – and the predictions that follow – is discussed in more detail in §3.5 below.

In a standard Hamblin semantics, non-propositional alternatives, such as those in (11a) and (12a), can compose with other material in the structure to form a set of propositional alternatives. This is achieved through a modified version of function application that allows each alternative to compose point-wise with other material. A specific implementation of this pointwise function application, from Shimoyama 2006, is given in (13).

- (13) *Hamblin function application:* (Shimoyama 2006:153 (fn 20))
 If α is a branching node with daughters β and γ , and $\llbracket\beta\rrbracket^{w,g} \subseteq D_{\langle\sigma,\tau\rangle}$ and $\llbracket\gamma\rrbracket^{w,g} \subseteq D_\sigma$,
 then $\llbracket\alpha\rrbracket^{w,g} = \{f(x) \in D_\tau: f \in \llbracket\beta\rrbracket^{w,g} \ \& \ x \in \llbracket\gamma\rrbracket^{w,g}\}$

Under this implementation, non-disjunctive material is also treated as set denoting, albeit as a singleton set that contains that material’s regular denotation. For example, the predicate

⁵Hamblin semantics originates with the proposal by Hamblin (1973) that *wh*-words denote sets of alternatives, which allows them to form question meaning *in situ*. Hamblin’s insights have been applied to a wide range of empirical phenomena, including focus (Rooth 1985, 1992), indeterminate pronouns (Ramchand 1997, Kratzer and Shimoyama 2002), indefinites more broadly (Charlow 2014), and disjunction.

is queen of England in example (12a) is treated as a singleton set containing the property of being the the queen of England, as in (14a). When this singleton set composes with the non-singleton set of individuals in (12b), the result is the set of propositions in (14b), where the predicate function has applied to each individual.

- (14) a. $\llbracket \text{is queen of England} \rrbracket = \{\lambda x. \lambda w. \text{queen-of-England}_w(x)\}$
 b. $\llbracket \text{is queen of England} \rrbracket(\llbracket \text{Elizabeth II or Victoria} \rrbracket)$
 $= \{\lambda x. \lambda w. \text{queen-of-Eng}_w(x)(\text{Elizabeth II}), \lambda x. \lambda w. \text{queen-of-Eng}_w(x)(\text{Victoria})\}$
 $= \{\lambda w. \text{queen-of-England}_w(\text{Elizabeth II}), \lambda w. \text{queen-of-England}_w(\text{Victoria})\}$

A similar Hamblin composition rule can be defined for predicate modification, allowing the disjunction of adjectives in (11a) to compose with the noun.

Without further stipulation, the alternative approach to disjunction yields a set of propositions. This on its own is not an appropriate denotation for a declarative, like the examples above.⁶ Instead, these propositional alternatives are subject to existential closure, which derives the disjunctive interpretation (Alonso-Ovalle 2006). An existential closure rule which achieves this is given in (15).

- (15) *Existential Closure over Propositional Alternatives:*
 $\llbracket [\exists \alpha] \rrbracket = \lambda w. \exists p \in \llbracket \alpha \rrbracket [p(w)=1]$, where $\llbracket \alpha \rrbracket \subseteq D_{\langle st \rangle}$

This existential closure operator can apply to the propositional alternatives in (14b) to yield the proposition in (16), which has the appropriate truth conditions: the proposition is true if at least one disjunct is true.

- (16) $\llbracket (12a) \rrbracket = \llbracket [\exists [\text{Elizabeth II or Victoria is queen of England}]] \rrbracket$
 $= \lambda w. \exists p \in \{\lambda w'. \text{queen-of-Eng}_{w'}(\text{Eliz. II}), \lambda w'. \text{queen-of-Eng}_{w'}(\text{Victoria})\} [p(w)=1]$

In addition to capturing the truth-conditional content of disjunction, the alternative approach can also derive the exclusivity and ignorance inferences associated with unembedded disjunction. Alonso-Ovalle (2006) shows how Fox's (2007) strengthening algorithm can be applied to disjunctive alternatives in order to yield the strengthened exclusive reading. Alternatively, on a neo-Gricean account, exclusivity could be derived in the same manner as the some-but-not-all implicatures found with indefinites, assuming existential closure is in competition with (perhaps unlexicalized) universal quantification (see Charlow 2016 for an account along these lines for the existential closure associated with choice functions). Similarly, ignorance effects can be captured through competition with the individual disjuncts, which are strictly more informative than existential closure over a larger domain.

On an alternative approach to disjunction, existential closure is not the only way to deal with the disjunctive alternatives. Instead, alternatives may be quantified over directly by other operators already present in the structure. Aloni (2003, 2007) and Simons (2005), for instance, propose that disjunctive alternatives are quantified over directly by modals (yielding free choice permission effects; see §3.4 below). Likewise, Alonso-Ovalle (2006,

⁶Though cf. the treatment of sentence mood in Inquisitive Semantics (Ciardelli et al. 2013).

2009) proposes that conditional operators universally quantify over disjunctive alternatives in their antecedent. These operators do not compose pointwise with the alternatives, but instead take in the alternatives directly as an argument. This strategy for dealing with the alternatives, and its distribution relative to existential closure, will be discussed thoroughly in §3.8 below in light of the Tiwa data.

In summary, the alternative-semantic approach to disjunction presents a viable alternative to the Boolean approach. On this view, disjunction does not have any quantificational force itself, but simply introduces a set of alternatives which are either subject to existential closure or are handled directly by other operators in the structure. In the next section, we turn to a brief overview of some of the empirical phenomena that have been invoked to decide between the Boolean and alternative account. We will then turn to the domain that will form the basis of the novel argument presented here: disjunctions of otherwise individual-denoting elements, such as names.

3.4 The ongoing debate

The alternative approach to disjunction was originally proposed to deal with certain non-standard inference patterns that disjunction gives rise to in certain environments. The most widely discussed of these is the phenomenon of free choice permission (originally observed by von Wright 1968 and Kamp 1973), which arises when a disjunction is embedded under a deontic possibility modal or appears in an imperative. The issue is that sentences like (17) seem to necessarily convey that both disjuncts are deontic possibilities. Specifically, (17) conveys that Justine has the right to watch TV and she has the right to play video games (though perhaps not both). In effect, she has permission to do either, and she's free to choose which.

(17) Justine may watch TV or play video games.

Inference: Justine has the right to watch TV, and she has the right to play video games. It's her choice which she does.

This inference does not automatically fall out of a Boolean account of disjunction combined with a standard approach to deontic modals. On such an approach, (17) denotes the proposition in (18): the sentence will be true just in case there is some accessible deontically-satisfied world in which Justine either watches TV or plays video games.

(18) $\llbracket(17)\rrbracket = \lambda w. \exists w' \in \text{DEON}_w[\text{watch-TV}_{w'}(\text{Justine}) \vee \text{play-games}_{w'}(\text{Justine})]$

Crucially, the Boolean account predicts that (17) should be true in a situation in which Justine is allowed to watch TV, but she is not allowed to play video games: there is an accessible world in the deontic alternatives in which $[\text{watch-TV}(\text{Justine}) \vee \text{play-games}(\text{Justine})]$ is true. This, however, is not an appropriate context in which (17) can be used. The Boolean approach to disjunction thus, on its own, fails to capture the behavior of disjunction under deontic modals.

A key factor in inference patterns like free choice permission concerns the accessibility of the individual propositional disjuncts. Because the Boolean approach collapses the disjuncts into a single proposition, other operators are prevented from accessing the disjuncts separately. Thus, when the disjunction is embedded under a deontic possibility modal, for instance, the modal cannot retrieve each disjunctive proposition, and so cannot ensure that there is a deontically accessible world for each. In contrast, the alternative approach to disjunction keeps the individual disjuncts separate: rather than yielding a single proposition, disjunctions on the alternative account yield a set of distinct propositions. Other operators such as deontic modals can then be defined to take into account these propositional sets. For instance, Aloni (2007) proposes that *may* universally quantifies over the alternatives, as in (19). (See Simons 2005a for a similar but distinct proposal.)

- (19) MAY ϕ is true in w iff every alternative induced by ϕ is compatible with the set of accessible worlds (Aloni 2007:76)

In the same way, the alternative approach to disjunction has been successfully applied to non-standard inference patterns found in counterfactual conditionals, by assuming that the conditional operator can likewise universally quantify over the alternatives (Alonso-Ovalle 2006, 2009).

The alternative approach can also derive free choice permission pragmatically in a straightforward manner, as the individual disjuncts can be separately accessed in the pragmatic computation (Alonso-Ovalle 2006). Evidence that supports a pragmatic treatment of free choice permission comes from the behavior of modalized clauses under negation. If free choice permission were part of the truth conditions, the free choice inference should be able to be targeted by negation. For instance, sentences like (20) should entail that nobody has permission to choose between watching TV and playing video games. This is not what (20) conveys, as evidenced by its infelicity in a context such as (21).

- (20) Nobody may watch TV or play video games.
 (21) *Context compatible with negated free choice, but infelicitous for (20):*
 Nobody has both the right to watch TV and the right to play video games. Each person only has the right to do one.

(Since Kamp (1973), it has also been argued that free choice permission effects can be canceled, as in sentences like *Justine may watch TV or play video games, but I don't know which*. Fusco (to appear) however points out a confound in these data, and argues that sluices such as these force wide scope readings of disjunction rather than canceling the free choice permission associated with the narrow scope reading.)

In addition to deriving free choice permission, the alternative approach to disjunction has also been successfully leveraged to account the ability of disjunction to take free upward scope, in contrast to conjunction which is more restricted in its scope-taking ability (Rooth and Partee 1982). This asymmetry can be seen in examples like (22) and (23). Specifically, the disjunction in (22a) has a reading on which the disjunction scopes above both the attitude verb *wants* and the quantifier *someone* to receive a reading on which either Amelia wants

someone to give her a duck, or she wants someone to give her a robin, (but perhaps we don't know which). Importantly, on this wide scope reading of disjunction, the quantifier *someone* is read *de dicto*: Amelia doesn't care who it is who gives her whichever bird she's after. This reading is represented in (22b).

- (22) a. Amelia wants someone to give her a duck or a robin.
 b. *Possible reading*:
 $\lambda w. [\forall w' \in \text{BOUL}(\text{Amelia}, w) [\exists x \exists y [\text{duck}_{w'}(y) \ \& \ \text{give}_{w'}(x, \text{Amelia}, y)]] \vee$
 $[\forall w' \in \text{BOUL}(\text{Amelia}, w) [\exists x \exists y [\text{robin}_{w'}(y) \ \& \ \text{give}_{w'}(x, \text{Amelia}, y)]]]$
 c. *Reading roughly equivalent to*:
 Amelia wants someone_{de dicto} to give her a duck \vee Amelia wants someone_{de dicto} to give her a robin.

In contrast, the conjunction *and* cannot receive a parallel wide scope reading, as demonstrated in (23). In particular (23a) cannot receive a reading on which Amelia both wants someone (*de dicto*) to give her a duck and someone (also *de dicto*) to give her a robin. This unavailable reading is represented in (23b).

- (23) a. Amelia wants someone to give her a duck and a robin.
 b. *Absent reading*:
 $\lambda w. [\forall w' \in \text{BOUL}(\text{Amelia}, w) [\exists x \exists y [\text{duck}_{w'}(y) \ \& \ \text{give}_{w'}(x, \text{Amelia}, y)]]] \wedge$
 $[\forall w' \in \text{BOUL}(\text{Amelia}, w) [\exists x \exists y [\text{robin}_{w'}(y) \ \& \ \text{give}_{w'}(x, \text{Amelia}, y)]]]$
 c. *Absent reading roughly equivalent to*:
 Amelia wants someone_{de dicto} to give her a duck \wedge Amelia wants someone_{de dicto} to give her a robin.

The alternative approach to disjunction can provide an explanation for this asymmetry. Simons (2005a,b), for instance, proposes that disjunctive sets of alternatives can compose pointwise with quantificational operators such as modals, distributing the quantificational force over the individual disjuncts and thereby yielding a wide scope reading. Alternatively, Charlow (2014) proposes that alternative-denoting elements like disjunctions must take scope in a more traditional sense, and unlike their non-alternative-denoting counterparts, can induce scopal pied-piping which allows them to escape scope islands. If conjunctions do not denote sets of alternatives, the scopal asymmetry is explained. (The relationship between alternatives and scope will be examined in detail in §3.8.3 below, in light of the Tiwa facts to be presented in §3.6.)

While alternative-based approaches to disjunction present a unified solution to non-standard inference patterns and disjunction's scopal flexibility, there are alternative ways to explain the problematic data that allow a core Boolean account to be maintained. Fox (2007), for instance, shows that free choice permission can be derived pragmatically on a traditional Boolean account with the right pragmatic setup, namely, recursively applied exhaustivity operators (see example (20) above for evidence that a pragmatic approach is appropriate). Other pragmatic accounts of free choice permission, treating disjunction as the Boolean join,

have been proposed by Simons (2005b), Schulz (2005), Franke (2009), and van Rooij (2010). In a similar vein, Klinedinst (2009) presents a modified Lewisian counterfactual semantics which allows disjunction's non-standard inference patterns in counterfactual conditionals to be derived on a Boolean approach. Further, even if these sorts of non-standard inferences should in fact be attributed to alternatives, a Boolean approach need not be completely ruled out: Roelofsen (2019) suggests that a hybrid alternative-Boolean account can be adopted on which disjunction is fundamentally the Boolean join, but its inquisitive nature gives rise to separate propositional alternatives.

In addition to non-standard inference patterns, the problem of free upward scope can also be dealt with while maintaining a fundamentally core Boolean analysis of disjunction. One option is to assume that exceptionally wide scoping readings of disjunction simply arise through a distinct mechanism. This is the approach adopted by Rooth and Partee (1982). A more recent proposal in this vein holds that wide scope readings of disjunctions are choice functional, but that the base disjunction is Boolean (e.g. Winter 2002, Schlenker 2006).⁷ Another option is to assume that wide scope readings are derived via type-shifts of the Boolean disjunction, allowing operators higher in the structure to distribute over each disjunct (e.g. Hendricks 1988). The challenge on this approach is to rule out the application of these type-shifts to Boolean conjunction. While the precise details of these solutions may require further work, it is important to note that disjunction's exceptional wide scope in itself is not incompatible with a Boolean approach.⁸

In summary, the alternative approach to disjunction has been put forward as an elegant solution to a number of issues that the traditional Boolean approach faces in its simplest form. However, these issues are not insurmountable: by assuming the right pragmatic setup, and adopting a distinct mechanism for deriving wide scope, the traditional approach can be maintained. In the next section, we will turn to a difference between the traditional and alternative approaches to disjunction that has not yet figured heavily in the debate, but which has the potential to mediate between the two in a distinct way: the treatment of disjunctions of ordinarily individual-denoting elements such as proper names. This will set the ground for the novel argument from Tiwa developed in subsequent sections that disjunctors do not denote the Boolean join, but instead yield a set of alternatives.

⁷This approach is complicated by the fact that the choice function needs to access the disjuncts separately in order to select one. See Chapter 4, footnote 9 for more discussion. Note also that in Chapter 4 we will see evidence, originally observed by Charlow (2014), that a choice functional approach to wide scope disjunction in English over-generates wide scope readings.

⁸Note that wide scope readings of disjunction cannot simply be derived via standard covert movement. As Rooth and Partee (1982) note, a movement account would predict that the individual disjuncts would take wide scope along with the force of the disjunction itself. The data in (22) show that this is not necessarily the case: *a robin* and *a duck* can be read *de dicto* with respect to the attitude verb, even as the disjunction takes wide scope. Furthermore, disjunctions can scope out of islands (Schlenker 2006), which is unexpected on a standard movement account.

3.5 Disjunctions of names

The Boolean and alternative approaches to disjunction differ in their treatment of elements that are typically assumed to denote individuals, such as proper names. As outlined in §3.2 above, individual-denoting elements cannot be directly disjoined on the Boolean approach, but instead must undergo a type-lift to generalized quantifier type $\langle et, t \rangle$. This is schematized in (24).

- (24) *Disjunction of individual-denoting elements on the Boolean approach:*
 $\llbracket a \text{ or } b \rrbracket = \lambda P. P(\llbracket a \rrbracket) \vee P(\llbracket b \rrbracket)$, where a and b are type e

In contrast, on an alternative-semantic approach, disjunctions of individuals can simply be treated as a set made up of those individuals, as shown in (25); no type-lift is needed.

- (25) *Disjunction of individual-denoting elements on an alternative approach:*
 $\llbracket a \text{ or } b \rrbracket = \{a, b\}$, where a and b are of type e

The necessity of lifting typically individual-denoting expressions on the Boolean account is not in itself a disadvantage. Type-lifting individuals to GQ type is already necessary on either approach to account for disjunctions of individual-denoting expressions and *bona fide* generalized quantifiers as in (26) (Partee 1987).

- (26) To get this approved, Billy had to talk to the dean or every department chair.

On either account, both disjuncts must be of the same type in order to be disjoined. In sentences like (26), this requires that the individual-denoting expression *the dean* be lifted, as in (27).

- (27) $\llbracket \text{the dean or every department chair} \rrbracket =$
 a. $\lambda P. [P(\iota x[\text{dean}(x)]) \vee \forall y \in \text{department-chair}[P(y)]]$ *Boolean approach*
 b. $\{\lambda P. P(\iota x[\text{dean}(x)]), \lambda P. \forall y \in \text{department-chair}[P(y)]\}$ *Alternative approach*

Since this lift is independently necessary, it is straightforward to assume it applies to any individual-denoting element in a disjunction, given the nature of the Boolean join.

While the necessity of a lift of all otherwise individual-denoting disjuncts is not in itself a disadvantage for the Boolean account, it does make a concrete empirical prediction. Specifically, it predicts that disjunctions of names should show the range of behavior expected of a type $\langle et, t \rangle$ expression, rather than a type e expression. In contrast, the alternative-account predicts that disjunctions of names should behave like sets of individuals.

This prediction is difficult to test for English: to my knowledge, there are no clear and distinct behaviors of English generalized quantifiers which can be investigated for disjunctions of names without encountering confounds (though see footnote 15 below). For example, generalized quantifiers in English are associated with scopal flexibility. While this scopal flexibility is also found with disjunctions of names, it is not limited to disjunctions of names (or disjunctions of regular generalized quantifiers). Instead, all disjunctions in English are scopally flexible, including disjunctions of properties and disjunctions of propositions, as shown in (28) and (29) respectively.

- (28) Isabella didn't eat an apricot or peach.
 ✓ \neg [Isabella ate an apricot \vee Isabella ate a peach]
 ✓ $[\neg$ Isabella ate an apricot] \vee $[\neg$ Isabella ate a peach]
- (29) Every member thinks that the moon landing is a hoax or that Elvis is still alive.
 ✓ $\forall x \in \text{member}[x \text{ thinks the moon landing is a hoax } \vee x \text{ thinks Elvis is still alive}]$
 ✓ $[\forall x \in \text{member}[x \text{ thinks the moon landing is a hoax}]] \vee [\forall x \in \text{member}[x \text{ thinks Elvis is still alive}]]$

Further, as discussed in footnote 8, the particular wide scope readings that disjunctions can receive cannot always be derived via standard movement, since the individual disjuncts can be read with narrow scope even when the disjunction itself is read with wide scope. Since some other non-QR scopal mechanism is necessary to derive wide scope readings of disjunction, there is no way to tease apart whether the scopal flexibility of disjunctions of names is due to having GQ type or due to this other necessary mechanism.

While this difference between the two approaches in the treatment of disjunctions of names cannot be tested in this way in English, that does not mean it cannot be tested at all. In the remainder of this chapter, I turn to *ba* disjunction in Tiwa, which unlike English *or* does not exhibit scopal flexibility. This lack of scopal flexibility removes the confounding factor of an additional scope mechanism from the equation, and provides an initial clue against the Boolean approach: where generalized quantifiers in Tiwa are scopally flexible, *ba* disjunctions of names are not.

3.6 *ba* disjunction in Tiwa

In this section, I lay out the core properties of *ba* disjunction in Tiwa. I show that it behaves exactly like English *or* with respect to its distribution and pragmatic effects, but that it lacks the scopal flexibility that *or* exhibits. Instead, *ba* disjunctions must take narrow scope with respect to any operator higher in the structure. This feature of *ba* disjunction provides initial evidence against a Boolean account of disjunction, as disjunctions of names do not show the scopal flexibility expected of generalized quantifiers, and sets the stage for the central argument from unreduced phrasal comparatives presented in §3.7.

As introduced in Chapter 1, disjunction in Tiwa can be expressed with the particle *ba*. Some basic examples are provided in (30) and (31).

- (30) [Saldi **ba** Mukton] khál lí-ga.
 Saldi BA Mukton flee AUX-PFV
 'Saldi or Mukton ran away.' [2017.2.38]
- (31) Mukton [mísam **ba** mikhrím] -gô chá-ga.
 Mukton meat BA mushroom -ACC eat-PFV
 'Mukton ate mushrooms or meat.' [2017.2.63]

Like English *or*, *ba* disjunction is fully cross-categorial. In (30) two proper names are disjoined. (31) shows a disjunction of two nouns, beneath accusative case marking.⁹ (32) provides an example of a disjunction of nominal adjuncts, namely, two numerals (plus classifiers). Examples (33) and (34) show *ba* disjunctions of two full finite clauses.

- (32) Monbor-e [thin chonâ **ba** shâri chonâ] korkhyá-râw tong-o.
 Monbor-GEN three CL.HUM BA four CL.HUM child-PL exist-NEUT
 ‘Monbor has three or four children.’ [2018.1.36]
- (33) [_{CP} Saldi-ne lái-gô_i Mukton láng lí-ga] **ba** [_{CP} *pro*_i kumái lí-ga.]
 Saldi-GEN book-ACC Mukton take AUX-PFV BA disappear AUX-PFV
 ‘Either Mukton took Lastoi’s book, or it (just) disappeared.’ [2017.1.10]
- (34) [_{CP} Lastoi phi-ga] **ba** [_{CP} Mansing phi-ga.]
 Lastoi come-PFV BA Mansing come-PFV
 ‘Lastoi came or Mansing came.’ [2017.1.33, 2018.1.7]

Also like English *or*, *ba* disjunctions in unembedded contexts are generally understood exclusively. For example, the sentence in (35) was rejected in a context in which both disjuncts held. The speaker comment indicates that an exclusive interpretation is preferred.

- (35) [Lastoi **ba** Saldi] klas 4 sígai os-o.
 Lastoi BA Saldi class 4 teach AUX-NEUT
 ‘Lastoi or Saldi teach fourth grade.’ [2018.1.70]
 ✗ Lastoi and Saldi both teach class 4 in school.
 Comment: “Cannot be both. It is either.”

Nevertheless, *ba* disjunctions are semantically inclusive (just like English *or*). Evidence for this comes from their behavior under negation: if *ba* disjunctions were semantically exclusive, under negation they should be judged true if both disjuncts hold. (36) shows that this is not the case: *ba* disjunction under negation can only mean that neither disjunct holds.

- (36) [Mukton **ba** Lastoi] hat-jíng lí-ya-m.
 Mukton BA Lastoi market-ALL go-NEG-PST
 ‘Neither Mukton nor Lastoi went to market.’ [2018.1.4]
 ✗ Mukton and Lastoi both went to market.
 Comment: “Seems like both of them did not go.”

Unembedded *ba* disjunction also gives rise to ignorance inferences. For example, when asked about the grammaticality of (30) above, the speaker nodded and elaborated on its felicitous use with the comment in (37).

⁹Two case marked nominals can also be disjoined by *ba*, as shown in (1).

- (1) Saldi [pe sígai kirî-go **ba** pe loró-gô] lak mán-ga.
 Saldi 3SG teacher-ACC BA 3SG priest-ACC meet-PFV
 ‘Saldi met that teacher or that priest.’ [2018.2.38]

(37) Comment on (30): “Not sure. For Saldi not sure, for Mukton not sure.”

These ignorance implicatures disappear in downward-entailing contexts, like (36).

An additional similarity to English *or* is that *ba* disjunctions receive free choice permission readings under deontic modals. This is illustrated in (38), where the nominal disjunction *sa ba coffee* is embedded under the deontic possibility modal *phon* ‘can’. Just as with its English translation, this sentence is judged infelicitous in a context in which Saldi is only allowed to drink tea. Instead, it conveys that she has the right to choose what she drinks, as indicated by the speaker’s comment. (See also example (45) below.)

- (38) Saldi [sa **ba** coffee] -go nung-a phon-o.
 Saldi tea BA coffee -ACC drink-INF can-NEUT
 ‘Saldi may drink tea or coffee.’ [2018.1.6, 2018.3.72]
 ✓ Saldi is allowed to drink tea and she’s allowed to drink coffee; it’s her choice which.
 ✗ Saldi is allowed to drink tea, but not coffee.
 Speaker comment: “Means she can drink any.”

3.6.1 Obligatory narrow scope

The data presented above show that Tiwa *ba* and English *or* display much of the same behavior. There is, however, a striking difference between the two in their scope-taking abilities. While English *or* is scopally flexible (and shows free upward scope; §3.4), *ba* disjunction in Tiwa must take narrow scope with respect to any operator higher in the structure. Before showing this for a variety of different operators, it is worth noting that *ba* disjunction does not need to be licensed by a higher operator: examples (30)–(35) above show that *ba* is grammatical and felicitous in a sentence without any other visible operators. This indicates that the narrow scope restriction illustrated in this section is distinct from seemingly related phenomena such as negative polarity.

First, *ba* disjunctions must take narrow scope with respect to negation higher in the structure. This is shown in (39) for a disjunction of names in subject position.¹⁰ This sentence was rejected in the wide scope context in which the negated predicate only holds of one disjunct. In contrast, it was accepted in a context in which negation scopes over the disjunction: the predicate holds of neither disjunct.

- (39) [Saldi **ba** Lastoi] Guwahati-jíng lí-ya-m.
 Saldi BA Lastoi Guwahati-ALL go-NEG-PST
 ‘Neither Saldi nor Lastoi went to Guwahati.’ [2017.2.38]
 ✓ Neither Saldi nor Lastoi went to Guwahati. Both stayed in Umswai. $\neg > ba$
 ✗ Either Saldi didn’t go to Guwahati, or Lastoi didn’t, but I can’t remember who. $*ba > \neg$

¹⁰Subjects in Tiwa are structurally lower than clausemate negation, as evidenced by the fact that NPIs are licensed in subject positions (see Chapter 2, §2.6.2).

‘Every priest went to see Lastoi or Mukton.’ [2018.1.22-3]

? Both Mukton and Lastoi are sick. Some priests went to visit Mukton, and others went to visit Lastoi. ${}^? \forall > ba$

✗ Either Lastoi or Mukton is very sick, but I can’t remember who. All the priests went to visit that sick person, whoever it was. $*ba > \forall$

In addition to negation and quantifiers, *ba* disjunctions must also take narrow scope with respect to clearly intensional operators, such as conditionals, attitude verbs, and modal auxiliaries. A conditional example is given in (43), where the *ba* disjunction is in the antecedent. This sentence is judged felicitous in a narrow scope context in which the truth of either disjunct is sufficient for the consequent to be true. It is judged infelicitous in a wide scope context in which the conditional only holds of one disjunct.

(43) [Mukton **ba** Monbor] phi-gai-do, Saldi khâdu-gam.

Mukton BA Monbor come-COND-TOP Saldi happy-MODAL

‘If Mukton or Monbor comes, Saldi would be happy.’ [2017.2.60]

✓ Saldi is in love with both Mukton and Monbor. She will be happy if either of them comes. $if > ba$

✗ Saldi is in love with either Mukton or Monbor, but we don’t know who. Whoever it is, she’ll be happy if he comes to visit. $*ba > if$

Example (44) shows *ba*’s obligatory narrow scope with the attitude verb *as hóng* ‘want’. This sentence is judged felicitous in the narrow scope context in which both disjuncts are included in the wants of the attitude holder Lastoi; it is rejected in the wide scope context in which only one disjunct is.

(44) Lastoi [PM **ba** president] -go lak mán-a as hóng-do.

Lastoi PM BA president -ACC meet-INF want-IPFV

‘Lastoi wants to meet the PM or the president.’ [2018.1.56]

✓ Lastoi is very interested in politics. It’s her dream to meet the PM or the president of India. If she could meet either one, she would be very happy.

✗ Lastoi hates Modi (the PM). She never wants to meet him. But we can’t remember whether it’s Modi or the president that she hates.

Similarly, example (45) shows obligatory narrow scope of *ba* with respect to a deontic modal auxiliary. This sentence is rejected in the wide scope context in which only one of the disjuncts is permissible. In contrast, it is judged felicitous if both are, and the subject is free to choose between the two. (Note that this narrow scope reading also shows free choice permission effects, which are discussed in §3.4 above. What’s important here is that *ba* disjunction cannot get the wide scope reading.)

(45) Sonali [Guwahati **ba** Shillong] -jǐng lí-na phon-o.

Sonali Guwahati BA Shillong -ALL go-INF may-NEUT

‘Sonali may go to Guwahati or Shillong.’ [2017.2.61]

- ✓ Saldi is allowed to go anywhere she likes, and her parents always give her money to go here and there.
- ✗ Sonali is allowed to go to Guwahati but not to any other city. I've forgotten which city she's allowed to go to.

These examples show that *ba* disjunction systematically receives narrow scope readings with respect to operators higher in the structure. This stands in stark contrast to English *or*, which is scopally flexible: each of the English translations above can be used (given the right intonation) in the wide scope contexts provided.

ba's obligatory narrow scope already provides some evidence that *ba* disjunctions of names are not generalized quantifier type. In particular, the negation example from (39) above, which contains a disjunction of two names, contrasts starkly with the behavior of other potential generalized quantifiers in the language, such as *pha* indefinites. Examples like (46) show that *pha* indefinites not only can receive wide scope readings with respect to clausemate negation, but that speakers distinctly prefer them.¹²

- (46) Lastoi indâ-pha lái-gô pre-ya-m.
 Lastoi what-PHA book-ACC buy-NEG-PST
 'Lastoi didn't buy some book.' [2017.1.16]

- ✓ There's a particular book Lastoi didn't buy, but she did buy another book.
- ✗ Lastoi didn't buy any books.

If *pha* indefinites are generalized existential quantifiers (as I suggest in Dawson 2018b), and *ba* is the Boolean join, further explanation is needed for why they show different scopal behavior when interacting with clausemate negation. In the next section, we turn to even stronger evidence against a Boolean account of *ba* disjunction: *ba* disjunctions of names do not behave like generalized quantifiers in unreduced phrasal comparatives.

3.7 Testing the prediction: *ba* disjunction in unreduced phrasal comparatives

In order to properly test the prediction that *ba* disjunctions of names are type $\langle et, t \rangle$, we need to examine their behavior in an environment in which such expressions show some clear, distinct, and obligatory behavior that necessarily follows from their type. In this

¹²Note that *pha* indefinites can scope under clausemate negation in other syntactic contexts, for example, if the *pha* indefinite is outscoped by an NPI which itself must scope under negation:

- (1) Sharbo indâ-pha pre-ya-m.
 nobody what-PHA buy-NEG-PST
 'Nobody bought anything.' [2016.2.53]
- ✗ There's one particular thing no one bought, but people bought many other things.
 - ✓ Nobody bought anything.

section, I turn to such an environment – unreduced phrasal comparatives – and show that *ba* disjunction of names do not behave like other type $\langle et, t \rangle$ expressions, namely generalized quantifiers. Instead, their behavior can only be captured by assuming that *ba* disjunctions of names are, at least in some sense, individual-denoting. The section is structured as follows. First, in §3.7.1, I give the necessary background on phrasal comparatives in Tiwa, showing that the standard of comparison is not a reduced clause, but simply a DP. Following Bhatt and Takahashi (2011), I assume that the comparative morpheme in unreduced phrasal comparatives compares two type *e* individuals directly. In §3.7.2, I examine the behavior of generalized quantifier standards, showing that they necessarily QR out of the degree phrase in order to resolve the type mismatch with comparative morpheme. This provides a clear baseline for comparison with *ba* disjunctions of names. In §3.7.3 I turn to the behavior of *ba* disjunctions of names in phrasal comparatives, showing that they do not behave like generalized quantifiers, but instead must be interpreted *in situ* within the degree phrase. This finding will provide the key evidence in favor of the alternative-based analysis presented in §3.8.

3.7.1 Phrasal comparatives in Tiwa

Languages differ in how they build up comparative meaning (i.a. Beck et al. 2009, Bhatt and Takahashi 2007, 2011). One difference concerns phrasal comparatives, like those in (47) and (48), in which the standard of comparison appears, at least on the surface, to be a simple DP.

(47) Patricia is taller than Marianne.

(48) Saldi_{*i*} othê_{*i*} pai-na khúli parâ chu-w.
 Saldi ANPH.GEN sister-DAT than more tall-NEUT
 ‘Saldi_{*i*} is taller than her_{*i*} sister.’ [2018.1.80]

Bhatt and Takahashi (2007, 2011) argue that despite their surface similarity, phrasal comparatives in different languages can correspond to different underlying structures, with clear semantic ramifications. Specifically, they argue that in languages like English, such structures are derived through clausal reduction, such that the standard of comparison is not in fact a DP, but a reduced CP. This underlying structure is represented in (49). In contrast, they demonstrate that in languages like Hindi – and we will see for Tiwa too – there is no clausal reduction: the standard is simply a DP. This structure is represented for Tiwa in (50).

(49) Patricia is taller [PP than [CP Marianne ~~is tall~~.]]

(50) Saldi_{*i*} [PP [DP othê_{*i*} pai-na] khúli] parâ chu-w.
 Saldi ANPH.GEN sister-DAT than more tall-NEUT
 ‘Saldi_{*i*} is taller than her_{*i*} sister.’ [2018.1.80]

There is clear syntactic evidence in Tiwa for an unreduced analysis of phrasal comparatives. As discussed in Chapter 2, §2.4.7, the standard of comparison in Tiwa – regardless of whether

it is phrasal or clausal – must be syntactically nominal and must bear dative case. If phrasal comparatives like (48) were underlyingly clausal, the underlying clausal structure would be that of a nominalized clause, like in the full clausal comparative in (51).

- (51) Saldi_i [PP [DP pe-ne_i pai-ne chu-wa-na] khúli] parâ chu-w.
 Saldi 3SG-GEN sister-GEN tall-NMLZ-DAT than more tall-NEUT
 ‘Saldi_i is taller than her_i sister is tall.’ [2018.1.80]

The first piece of evidence against a reduction analysis for phrasal comparatives comes from the binding of reflexive pronouns. Phrasal comparatives like (48) above allow for an reflexive possessive pronoun *othê*, bound by the subject. (See Chapter 2, §2.2.3 on reflexive pronouns.) This reflexive pronoun is disallowed in a full clausal comparative, as shown in (52): the binding subject is not sufficiently local.

- (52) * Saldi_i [PP [DP othê_i pai-ne chu-wa-na] khúli] parâ chu-w.
 Saldi ANPH.GEN sister-GEN tall-NMLZ-DAT than more tall-NEUT
 Intended: ‘Saldi_i is taller than her_i sister is tall.’ [2018.1.80]

If (48) were derived via reduction from a clausal comparative, we would expect the reflexive pronoun to be acceptable in its unreduced counterpart. Instead, the availability of reflexive pronouns in phrasal comparatives is explained if there is no clausal reduction: since (48) is monoclausal, the reflexive is bound within its local clause.

A second piece of evidence against a reduction analysis comes from case marking. Nominalized clauses can be reduced in Tiwa outside of comparatives. An example of this is given in (53), with nominalized sentential objects. Here, the object of the second clause is underlyingly *thintha miyâwe thiwago* ‘the death of three cats’. The nominalized verb has been elided under identity with the object in the first clause: *thintha miyâwe thiwago*. Importantly, the genitive case marking on the remaining DP (the subject of the nominalized clause) is preserved, resulting in a surface case-stacking configuration.

- (53) Khóna ang [DP kining wá-ne thi-wa-go] nú-ga, arô ná [DP **thin-tha**
 yesterday 1SG two.CL pig-GEN die-NMLZ-ACC see-PFV and 2SG three-CL
miyâw-e-go] nú-ga.
 cat-GEN-ACC see-PFV
 ‘Yesterday I saw the death of three pigs, and you saw (the death of) three cats.’
 [2018.2.102]

If phrasal comparatives in Tiwa were derived via reduction of a full nominalized clause, we would expect the case marking assigned in the underlying clause to survive on the remaining DP, just as it does in the reduction in (53). This is not what we find. For example, we would expect a standard that would be the subject of the nominalized clause to bear genitive case (as it does in (53); see also Chapter 2, §2.2.2). (54) shows that this is not what we find: the standard is only marked with the dative case assigned by the postposition *khúli*. Likewise, we would expect that a standard that would be an adjunct in the nominalized clause would

bear the appropriate adjunct case marking. (55) shows that again this not what we find: what should be a comitative marked adjunct is only marked with dative case.

- (54) Saldi [_{PP} Lastoi(*-ne)-na khúli] parâ chu-w.
 Saldi Lastoi(*-GEN)-DAT than more tall-NEUT
 ‘Saldi is taller than Lastoi.’ [2018.2.108]
- (55) Pángai líbing-râw [_{PP} Mukton(*-re)-na khúli] Lastoi-re parâ pasê-w.
 plenty person-PL Mukton(*-COM)-DAT than Lastoi-COM more talk-NEUT
 ‘More people spoke with Lastoi than with Mukton.’ [2018.1.79]

These case facts suggest that the phrasal standard does not receive case marking from a reduced clause, in turn suggesting that there is no underlying clausal structure in the standard.

A final piece of syntactic evidence against a reduction analysis of Tiwa phrasal comparatives comes from the impossibility of multiple standards without overt clausal structure. In full clausal comparatives in Tiwa, the standard can contain two points of comparison, just as they can in English. This is illustrated in (56), which compares the number of books that Mukton read yesterday with the number of books that Lastoi read today.

- (56) [_{PP} Khóna Mukton-e lái-gô lekhé-wa-na khúli] táw Lastoi
 yesterday Mukton-GEN book-ACC read-NMLZ-DAT than today Lastoi
 lái-gô parâ lekhé-ga.
 book-ACC more read-PFV
 ‘Lastoi read more books today than Mukton read yesterday.’ [2018.1.80]

If phrasal comparatives could be derived via phrasal reduction, we might expect that clausal standards with multiple comparison points could also be reduced, leaving behind more than one remnant. This is the case in both Japanese (Bhatt and Takahashi 2011) and English. It is not the case in Tiwa, however, as shown in (57).

- (57) * [_{PP} Khóna Mukton-a khúli] táw Lastoi lái-gô parâ lekhé-ga.
 yesterday Mukton-DAT than today Lastoi book-ACC more read-PFV
 Intended: ‘Lastoi read more books today than Mukton yesterday.’ [2018.1.94]

The data presented here provide syntactic evidence that there is no hidden clausal structure in phrasal comparatives in Tiwa. Instead, phrasal comparatives consist of a single DP.

That Tiwa phrasal comparatives are not reduced clausal comparatives has semantic consequences for the denotation of the comparative morpheme. Clausal comparatives are standardly assumed to involve comparison between two predicates of degrees: one predicate of degrees is supplied by the clausal standard, while the other is supplied by the matrix clause (Cresswell 1977, von Stechow 1984). In unreduced phrasal comparatives, however, there is only one degree predicate – the matrix predicate. The standard, in the phrasal examples considered above, simply denotes an individual, as shown in (58) for the comparative in (50).

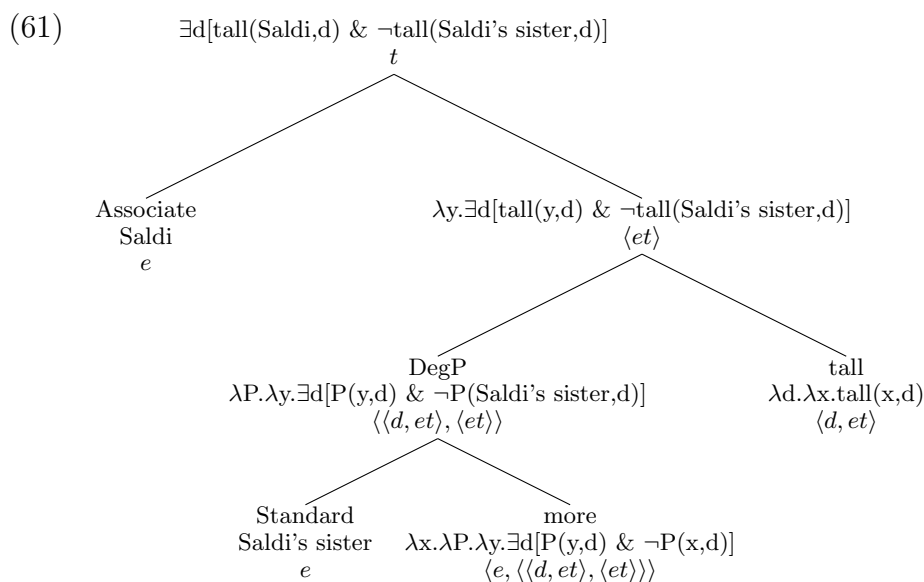
- (58) [[othê_i paina khúli]]^g ‘than her_i sister’ = Saldi’s sister type *e*

Bhatt and Takahashi (2007, 2011) argue that the comparative morpheme in unreduced phrasal comparatives directly compares two individuals – the standard and the associate – with respect to the matrix degree predicate. The denotation for this phrasal comparative morpheme is given in (59). (Note that for simplicity I’m omitting world arguments until §3.8, as they do not affect the argumentation.)

$$(59) \llbracket \text{parâ}_{phr} \rrbracket^g = \lambda x. \lambda P_{\langle d, et \rangle}. \lambda y. \exists d [P(y, d) \ \& \ \neg P(x, d)]$$

This analysis yields the appropriate comparative truth conditions in (60): there is some degree to which Saldi is tall, but Saldi’s sister is not tall. The full derivation is provided in (61).¹³

$$(60) \llbracket (59) \rrbracket^g = \exists d [\text{tall}(\text{Saldi}, d) \ \& \ \neg \text{tall}(\text{Saldi's sister}, d)]$$



3.7.2 Quantifiers in phrasal comparatives

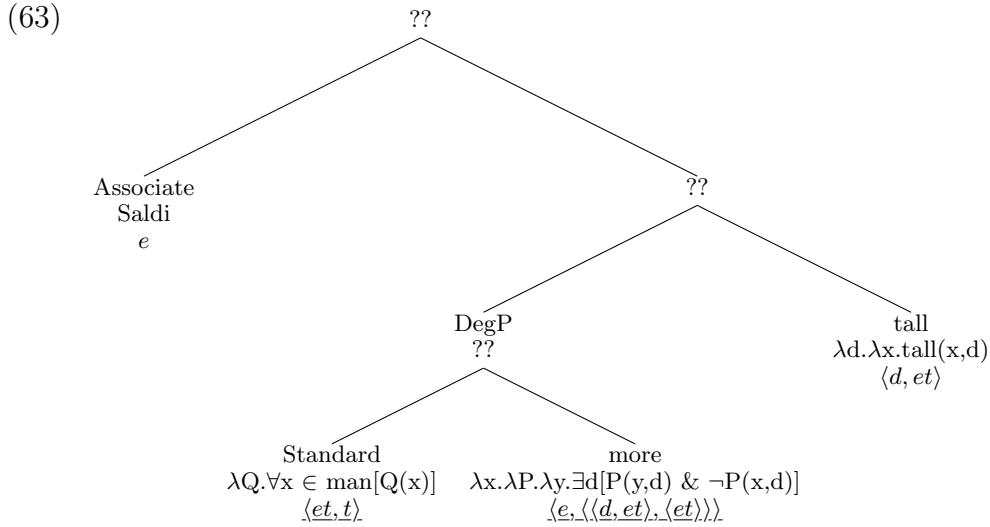
As Bhatt and Takahashi (2011) note, the unreduced phrasal analysis presented above makes a key prediction with respect to the behavior of generalized quantifier standards, like the one in (62).

- (62) Saldi [PP **sógol** mewâ-na khúli] parâ chu-w.
 Saldi every man-DAT than more tall-NEUT
 ‘Saldi is taller than every man.’ [2018.2.23]

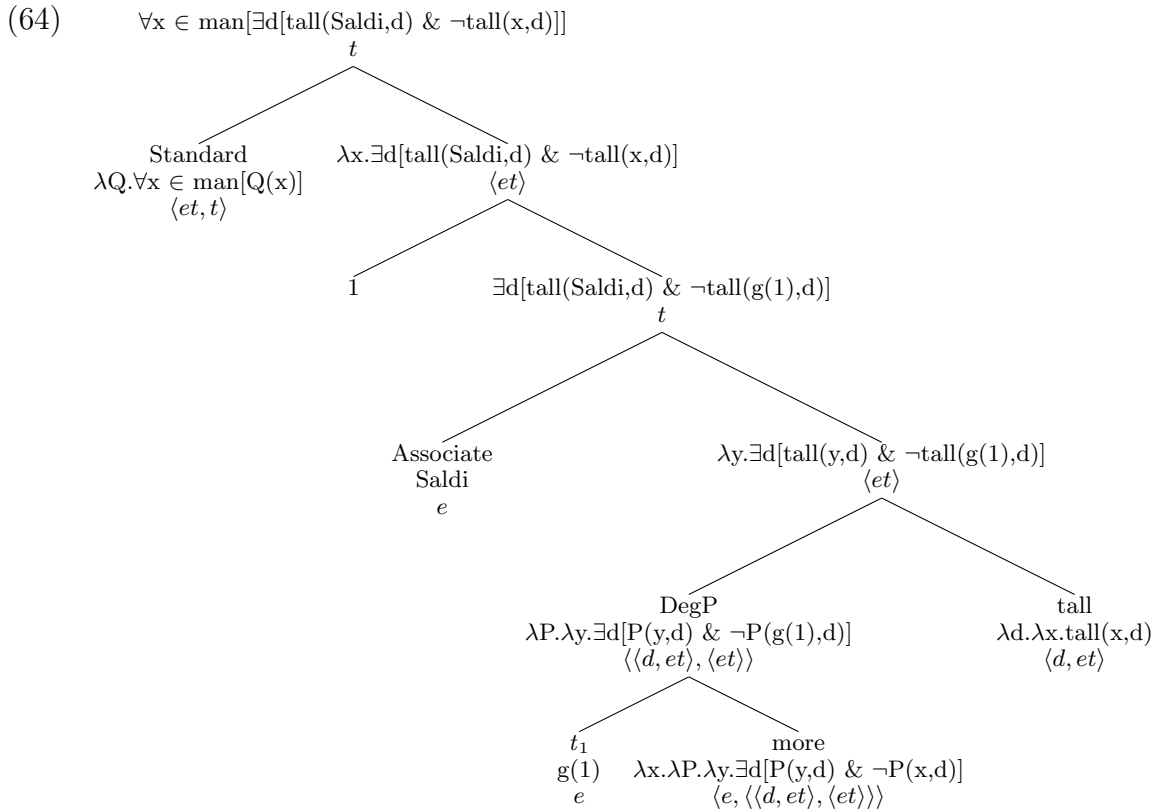
In particular, the unreduced phrasal analysis predicts that the quantificational standard must receive a wide scope reading with respect to the comparative morpheme. This prediction follows from the type of the phrasal comparative morpheme and the type of the standard.

¹³See Chapter 2, §2.4.7 for evidence that the standard forms a constituent with the degree phrase.

As shown in (63), a generalized quantifier standard leads to a type mismatch in the degree phrase: the type $\langle et, t \rangle$ standard cannot compose directly with the type $\langle e, \langle \langle d, et \rangle, \langle et \rangle \rangle$ comparative morpheme.



To resolve this type mismatch, the quantificational standard must raise out of the degree phrase, as shown in (64). This gives rise to the obligatory wide scope reading of the standard captured in the truth conditions in (65).



- (65) *Unreduced phrasal analysis predicts:*
 $\llbracket (62) \rrbracket = \forall x \in \text{man}[\exists d[\text{tall}(\text{Saldi},d) \ \& \ \neg \text{tall}(x,d)]]$

In contrast, a reduced clausal analysis of (62) could in principle allow for the possibility of the narrow scope reading in (66), which predicts that the sentence would be true so long as Saldi is taller than at least one of the men.

- (66) *Reduced clausal analysis predicts:*
 $\llbracket (62) \rrbracket = \exists d[\text{tall}(\text{Saldi},d) \ \& \ \neg \forall x \in \text{man}[\text{tall}(x,d)]]$

The unreduced phrasal analysis makes the right prediction for the Tiwa sentence in (62). It is judged felicitous in the wide scope context in (67), but infelicitous in the narrow scope context in (68).

- (67) *Felicitous wide scope context for (62):*
 ✓ There are three men: Mukton, Mansing, and Milton. Mukton is 1m, Mansing is 1.3m, and Milton is 1.4m. Saldi is 1.6m.
- (68) *Infelicitous narrow scope context for (62):*
 ✗ There are three men: Mukton, Mansing, and Milton. Mukton is 1m, Mansing is 1.3m, and Milton is 1.4m. Saldi is 1.2m.

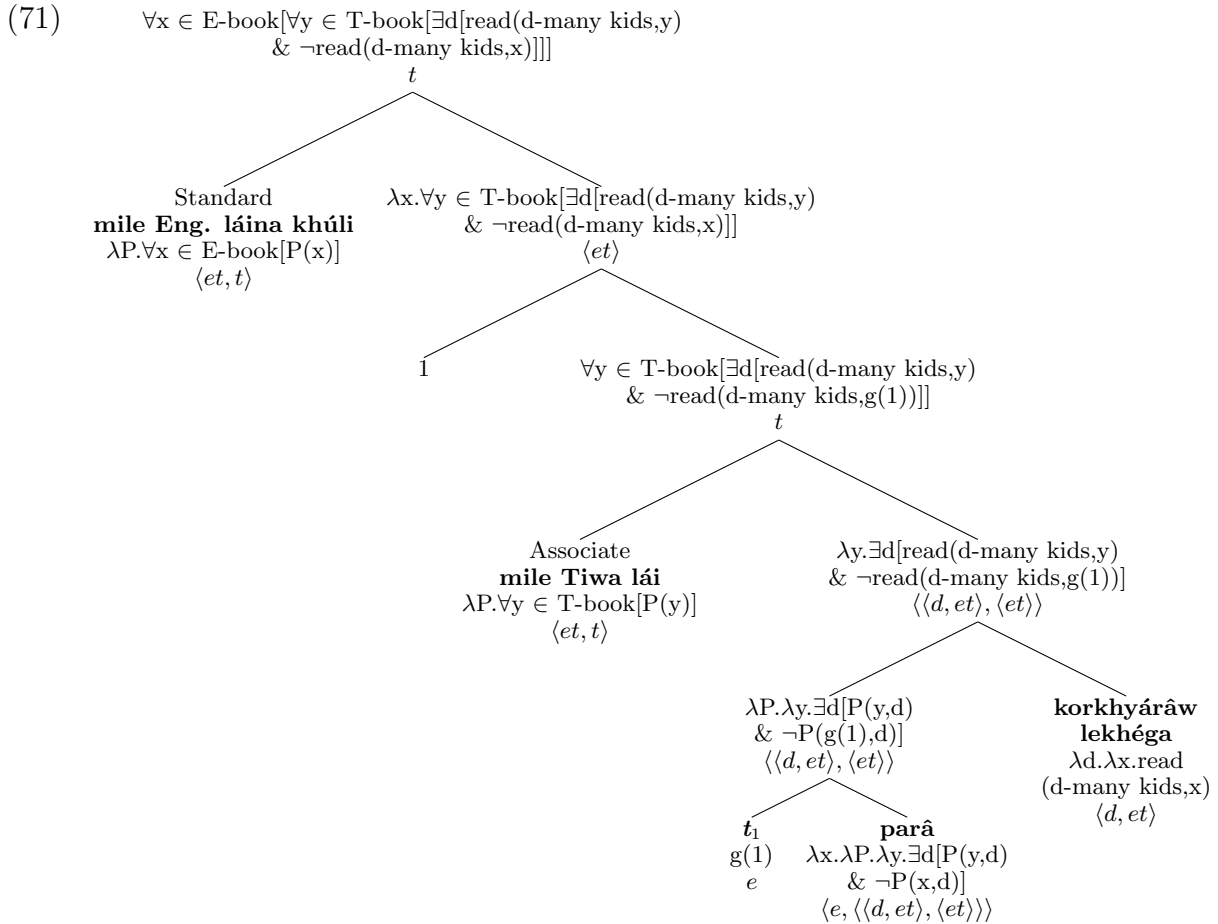
As Bhatt and Takahashi (2011) note, the English equivalent of sentences like (62) also obligatorily receive wide scope readings, contrary to the predictions of their assumed clausal analysis. They also observe, however, that this wide scope requirement holds even when there is a full clausal standard (as in *Saldi is taller than every man is tall*). Accordingly, they suggest that the obligatory wide scope in English comparatives arises through an independent constraint, namely, that a quantifier must QR out the standard if it c-commands the degree trace. Since Tiwa phrasal comparatives do not contain clausal structure, this constraint could not be responsible for the obligatory wide scope reading for (62).

Importantly, however, the requirement that a quantificational standard scope over the comparative morpheme in unreduced phrasal comparatives holds even when this independent constraint does not apply in English. To show this, Bhatt and Takahashi examine comparatives in which the quantificational standard is an object, like the one in (69).

- (69) Korkhyá-râw [PP **mile** English lái-na khúli] [DP mile Tiwa lái-gô] parâ
 child-PL every English book-DAT than every Tiwa book-ACC more
 lekhé-ga.
 read-PFV
 ‘More children read every Tiwa book than **every** English book.’ [2018.2.22]

As in the comparative in (62), the quantificational standard must raise out of the degree phrase in order to resolve the type mismatch between the standard the phrasal comparative morpheme. This movement, shown in the tree in (71), gives rise to the truth conditions in (70).

(70) $\llbracket(69)\rrbracket = \forall x \in \text{English-book}[\forall y \in \text{Tiwa-book}[\exists d[\text{read}(\text{d-many children}, y) \ \& \ \neg(\text{d-many children}, x)]]]$



Crucially, the comparative in (69) also contains a quantificational associate *mile Tiwa lai* ‘every Tiwa book’, which, due to the syntax and semantics of the unreduced phrasal comparative, will also necessarily take wide scope. The resulting truth conditions yield a reading of pointwise comparison: for every English book and for every Tiwa book, there is some number of children that read the Tiwa book that didn’t read the English book. This pointwise comparison is exactly the reading that the Tiwa sentence receives. That is, it is judged felicitous in the context in (72).

(72) *Felicitous wide scope context for (69) (pointwise comparison):*

- ✓ There are three Tiwa books (A,B,C) and three English books (D,E,F). A and B were read by 5 children each. C was read by 4 children. D, E, and F were read by 3 children each.

This pointwise reading that the Tiwa comparative receives is markedly different from the reading available to the English translation provided in (69). Instead, the English reading reflects the predicted truth conditions of a clausal comparative: the standard (and the

associate) scope below the comparative morpheme. These truth conditions are given in (73), and correctly predict that the English sentence is felicitous in a context in which there is a single (maximal) number of children that read every Tiwa book, but not every English book.

- (73) *Narrow-scope clausal truth conditions:*
 $\exists d[\forall y \in \text{Tiwa-book}[\text{read}(d\text{-many children, } y)] \ \& \ \neg\forall x \in \text{Eng-book}[\text{read}(d\text{-many children, } x)]]$

In contrast, the Tiwa comparative in (69) lacks this narrow scope reading. It is judged infelicitous in the context in (74), providing further evidence in favor of the unreduced phrasal analysis presented in §3.7.1.

- (74) *Infelicitous narrow scope context for (69):*
 ✗ There are four children: Mukton, Tonbor, Sonali, and Lastoi. Each child read every Tiwa book, but only Sonali and Lastoi read every English book.

In the above examples, the quantificational standard had to raise out of the degree phrase in order to resolve a type mismatch. This obligatory movement resulted in obligatory wide scope readings of the quantificational standard with respect to the comparative morpheme. This type-motivated scope-taking provides a clear environment in which to test the Boolean prediction that *ba* disjunctions of names are type $\langle et, t \rangle$: they too should have to raise out of the degree phrase in phrasal comparatives in order to resolve the type mismatch.

3.7.3 Disjunctions of names in phrasal comparatives

Like quantifiers such as *mile* ‘every’, *ba* disjunctions of names can function as the standard of comparison in a phrasal comparative. This is illustrated in (75).

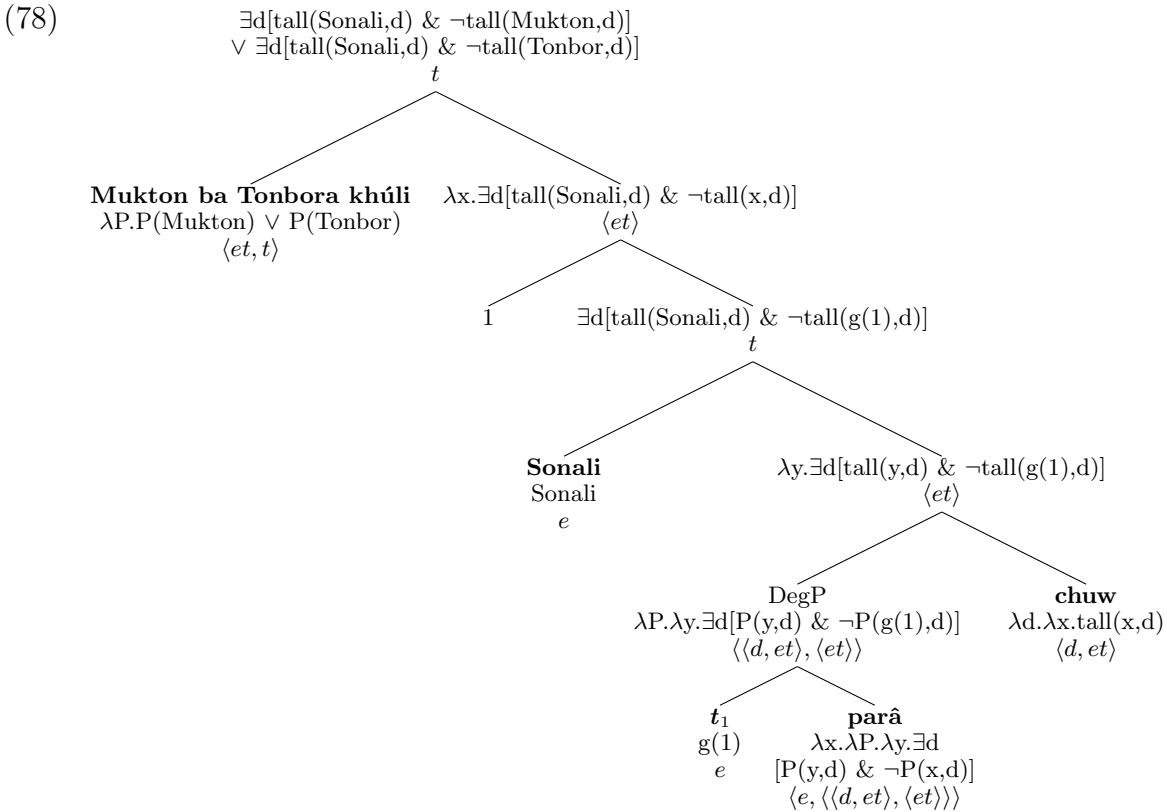
- (75) Sonali [PP [Mukton **ba** Tonbor] -na khúli parâ] chu-w.
 Sonali Mukton BA Tonbor -DAT than more tall-NEUT
 ‘Sonali is taller than Mukton or Tonbor.’ [2018.2.100]

As discussed in §3.5 above, on a Boolean account, typically individual-denoting elements such as names must be lifted to generalized quantifier type in order to be disjoined. Therefore, an analysis of *ba* as the Boolean join would entail that the disjunction in (75) be interpreted as the type $\langle et, t \rangle$ expression in (76).

- (76) $\llbracket \text{Mukton ba Tonbor} \rrbracket = \lambda P.P(\text{Mukton}) \vee P(\text{Tonbor})$

This interpretation leads to the same type mismatch as we saw for *bone fide* generalized quantifiers in (62) and (69) above. In order to resolve this type mismatch, the standard must raise out of the degree phrase, as indicated in (78), giving rise to truth conditions in (77).

- (77) *Predicted reading of (75) on a Boolean account:*
 $\exists d[\text{tall}(\text{Sonali}, d) \ \& \ \neg\text{tall}(\text{Mukton}, d)] \vee \exists d[\text{tall}(\text{Sonali}, d) \ \& \ \neg\text{tall}(\text{Tonbor}, d)]$



Crucially, these truth conditions represent the wide scope reading of disjunction over the comparative morpheme: the sentence should be true in a situation in which Sonali is either taller than Mukton, or she's taller than Tonbor. This is not the reading that (75) receives; it is judged infelicitous in exactly that context:

(79) *Infelicitous wide scope context for (75):*

✗ Sonali is taller than Mukton, or she's taller than Tonbor, but I can't remember which.

Instead, (75) conveys that Sonali is taller than both Mukton and Tonbor, as shown by its felicity in the context in (80). That is, (75) conveys that there's a degree to which Sonali is tall, to which neither Mukton nor Tonbor is tall: the comparative outscopes the disjunction.¹⁴

¹⁴Note that this obligatory narrow scope reading is independent of the surface position of the standard. Even when the standard overtly scrambles out of the degree phrase, as in (1), the wide scope reading predicted by the Boolean account is unavailable. Instead, regardless of the surface position of the standard, the disjunction must be interpreted within the degree phrase.

- (1) [PP [Tonbor **ba** Lastoi] -na khúli]₁ Mukton [DEGP t₁ **parâ**] chu-w.
 Tonbor BA Lastoi -DAT than Mukton more tall-NEUT

'Mukton is taller than Tonbor or Lastoi.' [Elicited via WhatsApp, 08/13/2019]

✓ Mukton is taller than both Tonbor and Lastoi.

✗ Mukton is taller than Tonbor, or he's taller than Lastoi, but we can't remember which.

- (80) *Felicitous narrow scope context for (75):*
 ✓ Sonali is taller than both Mukton and Tonbor.

On a Boolean approach to disjunction, this narrow scope reading could be derived if the standard is a reduced clause. Were there hidden clausal structure in (75), the comparative morpheme would take a full predicate of degrees as its argument, allowing the force of the disjunction to remain below the quantificational force of the comparative. The reading that would result is given (81). Indeed, this reading is attested in English, as predicted by the reduction analysis of phrasal comparatives (von Stechow 1974).¹⁵

- (81) *Boolean account requires clausal reduction:*
 $\exists d[\text{tall}(\text{Sonali},d) \ \& \ \neg[\text{tall}(\text{Mukton},d) \ \vee \ \text{tall}(\text{Tonbor},d)]]$

However, as we saw in §3.7.1 above, Tiwa phrasal comparatives do not contain hidden clausal structure: a phrasal standard is simply a dative-marked DP. The attested narrow scope reading is thus unexpected on a Boolean account, and stands in stark contrast to the obligatory wide scope readings of quantificational standards seen in §3.7.2.¹⁶ Consequently, these data provide strong evidence against a Boolean analysis of *ba* disjunction: *ba* cannot denote the Boolean join. In the remainder of this chapter, I will turn to the alternative approach to disjunction, and show that unlike the Boolean approach, it can capture the narrow scope behavior of *ba* disjunction in unreduced phrasal comparatives.

3.8 *ba* disjunctions as alternative-denoting

In this section, I provide an analysis of *ba* disjunction that can capture its narrow scope behavior in unreduced phrasal comparatives. This analysis takes as its starting point the alternative-based approach sketched out in §3.3, and is cast in a Hamblin semantics. While the basic analysis is largely drawn from Alonso-Ovalle’s (2006) proposal for English *or*, I will extend the analysis to consider the interaction of disjunction with a wider range of operators, suggesting that all downward-entailing operators quantify over alternatives, while existential closure occurs within the scope of non-downward-entailing operators. In developing the

¹⁵The fact that the narrow scope reading of disjunction is attested from subject position in English actually provides some English-internal evidence against a Boolean approach to disjunction. As mentioned in §3.7.2 above, subject quantifiers in comparative standards obligatorily receive a wide scope reading with respect to the comparative morpheme (Bhatt and Takahashi 2011). If English disjunctions of names are treated as type $\langle et, t \rangle$, as necessary on the Boolean approach, we might expect that they would pattern with *bona fide* quantifiers in also obligatorily scoping out of the degree phrase.

¹⁶The behavior of quantificational standards seen in §3.7.2 rules out an alternative way of capturing the narrow scope reading of disjunction on the Boolean account, namely, that the comparative morpheme can take a GQ-type argument directly, as in (1).

$$(1) \quad \llbracket \text{par}\hat{a}_{quant} \rrbracket = \lambda Q_{\langle et, t \rangle} \cdot \lambda P_{\langle d, et \rangle} \cdot \lambda x. \exists d [P(x, d) \ \& \ \neg Q(P(d))]$$

If this were an available denotation for *par* \hat{a} , the quantificational standards in (62) and (69) should also have narrow scope readings.

analysis, we will also contend with the primary difference between English *or* and Tiwa *ba* – their scopal (in)flexibility – exploring how cross-linguistic variation in scope taking can be captured on an alternative approach to disjunction.

3.8.1 The basic analysis

Following Simons (2005a), Alonso-Ovalle (2006), and Aloni (2007), I propose that *ba* disjunctions simply denote a set of alternatives made up of the individual disjuncts. For instance, the disjunction of full clauses in (82a), repeated from (34) above, denotes the set of propositions in (82b). Likewise, the disjunction of names in (83a), repeated from (30) above, denotes the set of individuals in (83b).

- (82) a. [_{CP} Lastoi phi-ga] **ba** [_{CP} Mansing phi-ga.]
 Lastoi come-PFV BA Mansing come-PFV
 ‘Lastoi came or Mansing came.’ [2017.1.33]
 b. $\llbracket \text{Lastoi phiga ba Mansing phiga} \rrbracket = \{ \lambda w. \text{came}_w(\text{Lastoi}), \lambda w. \text{came}_w(\text{Mansing}) \}$
- (83) a. [Saldi **ba** Mukton] khál lí-ga.
 Saldi BA Mukton flee AUX-PFV
 ‘Saldi or Mukton ran away.’ [2017.2.38]
 b. $\llbracket \text{Saldi ba Mukton} \rrbracket = \{ \text{Saldi}, \text{Mukton} \}$

Non-propositional alternatives, like those in (83b), can percolate up through the structure via pointwise function application to form sets of higher-typed elements. For example, the set of individuals in (83b) composes pointwise with the predicate to form the set of propositions in (84).

- (84) $\llbracket \llbracket \text{Saldi ba Mukton} \rrbracket \text{ khál lí-ga.} \rrbracket$
 = $\{ [\lambda x. \lambda w. \text{run-away}_w(x)](\text{Saldi}), [\lambda x. \lambda w. \text{run-away}_w(x)](\text{Mukton}) \}$
 = $\{ \lambda w. \text{run-away}_w(\text{Saldi}), \lambda w. \text{run-away}_w(\text{Mukton}) \}$

Propositional alternatives are subject to existential closure, yielding the appropriate disjunctive reading. Existential closure is shown for (82b) and (84) in (85).

- (85) a. $\llbracket \llbracket (82a) \rrbracket \rrbracket = \lambda w. \exists p \in \{ \lambda w'. \text{came}_{w'}(\text{Lastoi}), \lambda w'. \text{came}_{w'}(\text{Mansing}) \} [p(w)=1]$
 b. $\llbracket \llbracket (83a) \rrbracket \rrbracket = \lambda w. \exists p \in \{ \lambda w'. \text{run-away}_{w'}(\text{Saldi}), \lambda w'. \text{run-away}_{w'}(\text{Mukton}) \} [p(w)=1]$

Following Alonso-Ovalle (2006), I assume that while propositional alternatives may be existentially closed, disjunctive alternatives are not always subject to existential closure. Instead, the alternatives may be quantified over directly by another element in the structure.

While direct quantification was originally proposed to deal with the non-standard inference patterns discussed in §3.4 – and so only discussed by Simons, Alonso-Ovalle and Aloni for modals and conditionals – the comparative data from Tiwa provide further motivation

for assuming the alternatives can be dealt with in this way. As discussed in §3.7.3, *ba* disjunctions must compose *in situ* within the degree phrase in order to receive the attested obligatory narrow scope reading in sentences like (86), repeated from (75).

- (86) Sonali [DEGP [PP [Mukton **ba** Tonbor] -na khúli] parâ] chu-w.
 Sonali Mukton BA Tonbor -DAT than more tall-NEUT
 ‘Sonali is taller than Mukton or Tonbor.’ [2018.2.100]

Existential closure cannot apply within the degree phrase, since there are no propositional alternatives; the *ba* disjunction denotes a set of individuals, as indicated in (87).

- (87)
- | | |
|-------------------------|--|
| DegP | |
| Standard | Comp |
| Mukton ba Tonbor | parâ |
| {e} | $\langle e, \langle \langle d, \langle e, st \rangle \rangle, \langle e, st \rangle \rangle \rangle$ |

If existential closure were the only way of dealing with disjunctive alternatives, the disjunctive standard would need to compose pointwise with the comparative (and other, higher material) to yield a set of propositions. Existential closure at the propositional level would then result in the proposition in (88), which represents exactly the wide scope reading of disjunction that we are trying to rule out.

- (88) *With only existential closure over propositions:*
 $\llbracket (86) \rrbracket =$
 $\lambda w. \exists p \in \{ \lambda w'. \exists d [\text{tall}_{w'}(S) \ \& \ \neg \text{tall}_{w'}(M)], \lambda w'. \exists d [\text{tall}_{w'}(S) \ \& \ \neg \text{tall}_{w'}(T)] \} [p(w)=1]$

Instead, I propose that the comparative morpheme – like the conditional for Alonso-Ovalle (2006, 2009) and *may* for Aloni (2007) – universally quantifies over the alternatives introduced by the *ba* disjunction. In particular, I propose that the comparative morpheme in (86) has the denotation in (89). This comparative morpheme directly takes in the set of individuals denoted by the standard, as well as the degree predicate and the individual-denoting associate, and returns true just in case for each individual in the standard set, there is a degree to which the predicate holds of the associate which does not also hold of that individual. (Exactly how this alternative-handling comparative morpheme relates to the non-alternative version in §3.7.1 above will be made clear in the next section.)

- (89) $\llbracket \text{parâ} \rrbracket = \lambda \alpha. \lambda P_{\langle d, \langle e, st \rangle \rangle}. \lambda y. \lambda w. \forall x \in \alpha [\exists d [P_w(y, d) \ \& \ \neg P_w(x, d)]]$, where $\alpha \subseteq D_e$

For (86), this denotation yields the proposition in (90), which captures the attested narrow scope reading: Sonali must be taller than both Mukton and Tonbor.

- (90) $\llbracket (86) \rrbracket = \lambda w. \forall x \in \{ \text{Mukton}, \text{Tonbor} \} [\exists d [\text{tall}_w(\text{Sonali}, d) \ \& \ \neg \text{tall}_w(x, d)]]$

Crucially, the alternative-based analysis of *ba* disjunction is able to produce these truth-conditions where the Boolean account fails. So long as other operators can directly quantify

over disjunctive alternatives, as has been independently assumed by Alonso-Ovalle (2006) and Aloni (2007), the *ba* disjunction can be interpreted *in situ* in the degree phrase, allowing it to scope under the comparative morpheme despite not containing any propositional material.¹⁷

3.8.2 Handling the alternatives

The analysis sketched out above assumes that there are two ways of dealing with the alternatives introduced by disjunction: (i) existential closure and (ii) direct quantification. Both mechanisms are necessary to capture the full range of data: existential closure is necessary to derive disjunctive interpretations of unembedded disjunctions, while direct quantification is necessary to derive narrow scope readings of disjunction in unreduced phrasal comparatives. The exact distribution of these two mechanisms, however, has remained an open question. While Alonso-Ovalle (2006) also explicitly invokes both, for example, he limits his discussion to conditionals and modals. To my knowledge there has not been a systematic investigation of their distribution more broadly.

Taking a wide look at the Tiwa data in §3.6 suggests that direct universal quantification yields the desired reading for downward-entailing operators, but that existential closure is necessary in non-downward-entailing environments. This distribution for the particular environments considered in §3.6 is detailed in Table 3.1.¹⁸

\exists -closure	direct \forall -quantification
root clauses	negation
universal (nuclear scope)	universal (restrictor)
modals	conditionals
attitude verbs	standard of comparison ¹⁹

Table 3.1: Distribution of existential closure vs. direct manipulation

¹⁷This analysis makes two clear predictions that I would like to highlight here. First, since I have proposed that the comparative morpheme universally quantifies over the disjunctive alternatives, negated comparatives with *ba* disjunctions should be true so long as the comparative does not hold of one of the disjuncts. The second prediction concerns *ba* disjunctions of non-individuals. In particular, a *ba* disjunction of generalized quantifiers (or a name and a generalized quantifier) should denote a set of type $\langle et, t \rangle$ elements, leading to a type mismatch in phrasal comparatives. This disjunction will presumably have to move to resolve the mismatch, which should yield a wide scope reading of the disjunction over the comparative operator. Unfortunately I do not at present have data that bears on either prediction.

¹⁸I am assuming here that free choice permission effects under deontic possibility modals arise pragmatically as they do in English (see §3.4), and so direct quantification is not appropriate (cf. Simons 2005a and Aloni 2007). See Alonso-Ovalle (2006) for a detailed pragmatic account.

¹⁹That the standard of comparison is a downward-entailing environment is not uncontroversial (see e.g. Hoeksema 1983, Heim 2006, Giannakidou and Yoon 2010, and Alrenga and Kennedy 2014). Given the behavior of *ba* disjunction, I will abstract away from this ongoing debate, and make the simplifying assumption here that it is indeed downward-entailing, at least in Tiwa.

We already saw in (90) above that direct quantification yields the attested narrow scope reading for the standard of a comparative. This same direct quantification also yields the correct results for other downward-entailing environments, such as negation, conditionals, and the restrictor of a universal quantifier. For instance, the obligatory narrow scope reading of disjunction under negation for sentences like (91a), repeated from (39) above, can be captured by assuming that negation applies to each propositional alternative, yielding the proposition in (91c).

- (91) a. [Saldi **ba** Lastoi] Guwahati-jíng lí-ya-m.
 Saldi BA Lastoi Guwahati-ALL go-NEG-PST
 ‘Neither Saldi nor Lastoi went to Guwahati.’ [2017.2.38]
 b. $[[\text{NEG}]] = \lambda\alpha.\lambda w.\forall p \in \alpha[\neg p(w)]$, where $\alpha \subseteq D_{(st)}$
 c. $[[\text{(91a)}]] = \lambda w.\forall p \in \{\lambda w'.\text{go-to}_{w'}(\text{Saldi, Guw}), \lambda w'.\text{go-to}_{w'}(\text{Lastoi, Guw})\}[\neg p(w)]$

Similarly, the obligatory narrow scope reading of (92a), repeated from (41) above, can be captured on this approach. This sentence can only convey that Lastoi loves both the boys and the girls, which is exactly what is derived if *sógol* ‘every’ universally quantifies over the set of properties denoted by the *ba* disjunction.

- (92) a. Lastoi [_{DP} sógol [mewâ-raw **ba** margî-raw] -go] hán sha-w.
 Lastoi every boy-PL BA woman-PL -ACC love-NEUT
 ‘Lastoi loves all the boys or girls.’ [2018.1.55, 95]
 b. $[[\text{sógol ‘every’}]] = \lambda\alpha.\lambda Q.\lambda w.\forall P \in \alpha[\forall x \in P[Q_w(x)]]$, where $\alpha \subseteq D_{(et)}$
 c. $[[\text{(92a)}]] = \lambda w.\forall P \in \{\lambda y.\text{boy}(y), \lambda y.\text{girl}(y)\}[\forall x \in P[\text{love}_w(\text{Lastoi, } x)]]$

In contrast, direct quantification does not yield the correct results for non-downward-entailing environments. This can be clearly seen for deontic necessity modals, like the one in (93). If the modal were able to directly quantify over the disjunctive alternatives, we would expect (93) to be able to convey that both propositional disjuncts are deontic necessities. This, however, is not a reading that (93) can receive; instead, it conveys that only one propositional disjunct is necessary.

- (93) Saldi [Mukton **ba** Monbor] -go pasé-na mán-o.
 Saldi Mukton BA Monbor -ACC speak-DAT must-NEUT
 ‘Saldi must talk to Mukton or Monbor.’ [2017.1.35]
 ✓ Saldi needs either Mukton or Monbor’s signature. It doesn’t matter which.
 ✗ Saldi needs both signatures.

The attested reading is compatible with existential closure of the embedded propositional alternatives that the *ba* disjunction (in combination with pointwise function application) gives rise to, as indicated in (94). (The exclusive interpretation of disjunction arises pragmatically through competition with conjunction, as it does elsewhere; see §3.3 above.)

- (94) $[[\text{(93)}]] = \lambda w.\forall w' \in \text{DEON}(w)[\exists p \in \{\lambda w''.\text{speak-to}_{w''}(\text{Saldi, Mukton}), \lambda w''.\text{speak-to}_{w''}(\text{Saldi, Monbor})\}[p(w')=1]]$

Direct quantification, then, is limited to downward-entailing operators. Within the alternative semantic analysis sketched out above, there are two ways to implement this direct quantification across the relevant range of operators. The first is to assume that each downward-entailing operator has a single denotation that always universally quantifies over a set. For example, the basic denotation for negation is the denotation given in (91b). For the majority of sentences which do not contain *ba* disjunctions, the set that the operator quantifies over will necessarily be singleton, thus yielding a proposition that is truth-conditionally equivalent to the traditional, non-alternative semantic proposition. Direct quantification, then, is directly built into the denotations of downward-entailing operators. This approach is compatible with the broader assumptions of standard Hamblin semantics as laid out in Kratzer and Shimoyama 2002, which assumes that non-alternative-denoting material simply denotes a singleton set (see §3.3 above).

An alternative is to assume, contra the standard Hamblin approach, that non-alternative denoting elements do not ordinarily denote singleton sets, and that composition proceeds via regular function application unless alternatives are encountered. On this approach, downward-entailing operators would have their ordinary basic denotations, but would undergo a type-shift when their sister denotes a set of alternatives. This type shift is given in (95).

- (95) *Type shifter for downward-entailing operators:*
 $\lambda f_{(\alpha,\beta)}. \lambda A_{\{\alpha\}}. \forall a \in A[f(a)]$, where $A_{\{\alpha\}}$ is a set of elements of type α

If this approach is correct, the type-shift would need to be constrained so that it can only apply to downward-entailing operators. The question of how to constrain such a type-shift without resorting to a lexical diacritic clearly connects to larger questions about the semantic and pragmatic nature of downward-entailing-ness. Unfortunately, I do not have a satisfying answer to offer at this point, and so I leave an in-depth investigation of these questions for future research.

3.8.3 Obligatory narrow scope

The analysis sketched out above can derive all the narrow scope readings that are attested for *ba* disjunction. The question remains, however, of how to ensure that *ba* disjunctions must take obligatory narrow scope, rather than also allowing wide scope. This question is especially relevant given the scopal flexibility of other plausibly alternative-denoting disjunctions like English *or*-phrases, and the fact that the alternative-denoting nature of disjunction has been central to deriving (exceptional) wide scope readings on several theories (e.g. Simons 2005a, Charlow 2014).

The first thing to deal with is whether wide scope readings of *ba* disjunctions are ruled out semantically, or whether their absence is due to pragmatic competition with Tiwa's dedicated wide scope disjunction particle *khí*.²⁰ That is, do speakers reject wide scope readings

²⁰The semantics and pragmatics of *khí* disjunction are dealt with in detail in Chapter 4.

of *ba* disjunctions because these readings could be unambiguously conveyed with *khí* disjunction? (Note, this would be a type of manner implicature, arising from the submaxim “avoid ambiguity” (Grice 1975), rather than a more familiar quantity implicature.) If obligatory narrow scope can indeed be attributed to this sort of pragmatic competition, then the difference between scopally-flexible English *or* and scopally-rigid Tiwa *ba* could be entirely due to the differing inventories between the two languages. The remarkable similarity between *ba* and *or* in every other respect, as outlined in §3.6, would then follow automatically.

While this pragmatic story is appealing, it is unlikely that *ba* disjunction’s obligatory narrow scope is due to pragmatic competition with *khí*. The reason is that in order to derive *ba*’s obligatory narrow scope through competition with *khí* across the full range of environments, *ba* would have to not be in competition with conjunctive *arô*. To see this, consider the reading that *ba* disjunction receives in comparatives, like the one in (75) in §3.7.3 above. This reading is truth-conditionally equivalent to the reading that conjunction would receive, as indicated in (96).

(96) *ba* comparatives mutually entail conjunctive comparatives:

$$\begin{aligned} \forall x \in \{\text{Mukton, Tonbor}\} [\exists d [\text{tall}(\text{Sonali}, d) \ \& \ \neg \text{tall}(x, d)]] \\ \leftrightarrow \quad \exists d [\text{tall}(\text{Sonali}, d) \ \& \ \neg \text{tall}(\text{Mukton}, d)] \ \& \ \exists d [\text{tall}(\text{Sonali}, d) \ \& \ \neg \text{tall}(\text{Tonbor}, d)] \end{aligned}$$

The reading that conjunction receives is unambiguous; it could only entail that Sonali is taller than both Mukton and Tonbor. If *ba* disjunction is semantically ambiguous, and its wide scope reading is ordinarily ruled out through competition with unambiguous wide scope *khí* disjunction, we might expect the opposite to happen through competition with conjunction. That is, hearers may wonder why the speaker is using ambiguous *ba* disjunction when they could have used unambiguous conjunction. Together with competition with wide scope *khí* disjunction, we would then expect *ba*’s semantic scope ambiguity to re-emerge in phrasal comparatives. This, however, is not what we find, as evidenced by the judgments in §3.7.3.

One way to rescue the pragmatic story would be to assume that *ba* disjunction is in fact not in competition with conjunction for the calculation of this sort of manner implicature. This seems unlikely, however, especially since we know that *ba* disjunction is in competition with conjunction in the calculation of quantity implicatures like exclusivity and ignorance (cf. the behavior of disjunction where there is no competition with conjunction; Bowler 2014, Singh et al. 2016). Thus on the pragmatic story of obligatory narrow scope, *ba* would have to be in competition with conjunction only for quantity implicatures, but not for manner implicatures. This, however, seems implausible. Instead, I conclude that the consistent judgments of speakers that *ba* disjunctions can only have narrow scope readings are a direct result of the semantics of *ba*: there simply is no other reading available.²¹

In order to capture the obligatory narrow scope of *ba* disjunction semantically, we need to consider how wide scope readings could arise in the first place. There have been two

²¹Another way to test whether *ba*’s obligatory narrow scope is semantic or pragmatic would be to investigate intermediate scope readings. Since *khí* disjunction must always take widest possible scope (see Chapter 4), on a pragmatic story we would expect *ba*’s scopal ambiguity to emerge in intermediate scope contexts. Unfortunately, I do not presently have data that bear on this prediction.

main proposals on an alternative approach to disjunction. The first, introduced by Simons (2005a,b), is that disjunctive alternatives may compose pointwise with higher operators (rather than being quantified over by them). The result of this pointwise function application is that the force of the operator distributes over the disjuncts, deriving wide scope disjunction. This process is discussed in §3.8.1 above for comparatives (see example (88)). Clearly, this use of pointwise function application must be blocked in Tiwa. This is somewhat easy to achieve for downward-entailing operators, if it is assumed that the basic lexical denotation of a downward-entailing operator is such that it always quantifies over the set denoted by its sister (see §3.8.2); pointwise function application would be ruled out due to the type of the operator and its sister set. However, there is no equivalent explanation for non-downward-entailing operators, which do not quantify over alternatives. For these operators, we need a way to ensure that existential closure always applies within their scope.

One way to conceptualize *ba*'s obligatory narrow scope is to assume that alternatives are dealt with as soon as possible in the derivation. While the alternatives *ba* introduces do percolate up to form sets of higher-typed alternatives when necessary, these alternatives are quantified over as soon as a downward-entailing operator is encountered (either because downward-entailing operators always quantify over alternatives, or because they undergo the type-shift in (95) above). If no such operator is encountered, existential closure occurs as soon as there are propositional alternatives (i.e. as soon as possible). This derives obligatory narrow scope under modals and attitude verbs, and in the nuclear scope of a quantifier (assuming that the quantifier undergoes obligatory QR, which allows for existential closure over propositions beneath the abstraction). A possible explanation for why a language would insist on dealing with alternatives as soon as it can could be related to the increased computational burden of pointwise function application, which is only used where necessary. Since this increased computational burden is a broad processing concern, it would presumably apply to a factor across languages, though the precise mechanisms for handling the alternatives may vary.²²

While Simons' pointwise function application is one possible way of deriving wide scope disjunction, it is not the only possible route to wide scope on an alternative approach. In particular, Charlow (2014) proposes that although disjunction is fundamentally alternative-denoting – for him this is the source of disjunction's ability to scope out of islands – it is also quantificational in the sense that it must take semantic scope. Framed in a continuation-

²²How this pressure would interact with the calculation of *wh*-questions in Tiwa remains to be seen. As shown in Chapter 2, §2.4.8, *wh*-questions do not involve movement in Tiwa; instead, the alternative-denoting indeterminate pronoun is interpreted *in situ*. If *wh*-questions in Tiwa are interpreted via pointwise function application, as in Hamblin's (1973) original proposal, the alternatives must be able to compose pointwise with any other operator. That is, the type shifter for DE operators and existential closure over propositional alternatives must both be prevented from applying in *wh*-questions only. Alternatively, *wh*-questions in Tiwa could be interpreted via a (covert) choice functional Q-particle, as proposed by Cable (2010), which would remove the need for any pointwise calculation, or by some other means. Note that the alternatives introduced by indeterminate pronouns are dealt with immediately in indeterminate-based indefinites by either the particle *pha*, which introduces existential quantification, or the particle *khí*, which introduces as choice function variable (Dawson 2018b; Chapter 4).

based grammar (which allows the disjunction to be interpreted *in situ*), he specifically proposes that disjunctions undergo a type shift that allows them to take in their surrounding propositional material (i.e. their continuation) as an argument. This material is applied to each alternative in the disjunctive set, distributing any operators the material contains over the alternatives, thus deriving the wide scope reading of disjunction. As in other continuation-based grammars (see e.g. Barker 2002), scopal ambiguity is captured via flexibility in composition: while disjunction may scope over other operators, the semantic composition can also allow the reverse.²³

To capture its obligatory narrow scope, *ba* disjunction must be prevented from taking its continuation as an argument. On Charlow's account, this means that *ba* disjunction must be prevented from undergoing the type shift that allows alternative-sets to take scope.²⁴ One possibility that immediately presents itself is that the type-shift is blocked for *ba* disjunction due to Tiwa's lexicalized wide scope disjunction particle *khí*, potentially analogous to the unavailability of the ι type shift in languages with a lexicalized definite article (Chierchia 1998, Dayal 2004). This blocking story, however, is not straight-forward. Charlow's type shifter is designed to derive the range of wide scope readings that attested for English disjunction. As we will see in Chapter 4, there are wide scope readings available to *khí* disjunction in binding contexts which are specifically ruled out by Charlow's system, and conversely *khí* disjunction cannot receive intermediate scope readings which are derivable on Charlow's account. If blocking of a type shift is limited to cases in which the lexical element has precisely the same semantic effect as the type shift, we would not expect it to apply here. An alternative non-blocking possibility is that Tiwa simply lacks this sort of type shift all together. Whether or not this is the case depends on whether such type shifts are necessary in Tiwa for other phenomena that invoke alternatives, like focus and *wh*-questions (indeed, Charlow's system is set up to derive the behavior of alternative-denoting elements more generally). Further work is needed to determine whether this is the case.

In summary, *ba* disjunction in Tiwa must lack access to the mechanisms that can derive wide scope readings of alternative-denoting disjunction. While I have argued here that the presence of lexicalized wide scope disjunction is not directly responsible for *ba*'s obligatory narrow scope (either via implicature or blocking), the fact that Tiwa has both obligatory narrow scope disjunction and obligatory wide scope disjunction leaves open the intriguing possibility that the two are connected. Is it the case, for example, that a language could have an obligatory narrow scope disjunction particle like *ba*, but lack a dedicated strategy for wide scope disjunction? Or, is dedicated wide scope disjunction in Tiwa responsible for *ba*'s obligatory scope in some way other than the options discussed above? These questions will be impossible to answer without a significant increase in research on disjunction cross-

²³Charlow's analysis is considerably more complicated than the portrait I have sketched out here. In particular, he invokes different monads which mediate the composition in different ways, allowing him to account for a much wider range of phenomena.

²⁴Charlow's account differs from other continuation-based grammars in explicitly invoking type lifts. For Barker (2002), for example, each element always takes its continuation as an argument. On this approach, *ba*'s obligatory narrow scope is even more difficult to capture.

linguistically.

3.9 Conclusion

In this chapter, I have presented a novel argument against a traditional Boolean approach to disjunction. Specifically, I have shown that in Tiwa, *ba* disjunctions of names do not behave like generalized quantifiers in unreduced phrasal comparatives, going directly against a necessary assumption of the Boolean account. In contrast, I have presented an alternative-based analysis that can capture the obligatory narrow scope reading that *ba* disjunctions do receive in comparatives. This analysis follows prior work in assuming that alternatives can be quantified over directly by an operator higher in the structure, in addition to being existentially closed. I have suggested that it is downward-entailing operators in particular that quantify over alternatives.

In addition to providing evidence in favor of an alternative-account, this investigation of *ba* disjunction in Tiwa also reveals cross-linguistic variation in disjunction's scope-taking abilities. In particular, Tiwa shows that a language can have an obligatory narrow scope disjunction, even when that disjunction doesn't require licensing by a higher operator. Taken together with the alternative analysis which is necessary to derive the full set of *ba*'s narrow scope readings, the Tiwa data show that alternatives do not always give rise to exceptional wide scope, contra the proposal in Charlow 2014. Capturing the precise relationship between alternatives, scope, and a language's lexical inventory for disjunction will require further cross-linguistic investigation.

Chapter 4

Paths to exceptional wide scope

4.1 Deriving wide scope

It's long been known that indefinites and disjunction, in contrast to other quantifiers and conjunction, can scope out of islands (e.g. Farkas 1981, Fodor and Sag 1982, Rooth and Partee 1982). One influential approach to this asymmetry has been to assume that these elements – at least on their wide scope readings – are interpreted via choice functions, i.e., functions that take in a (non-empty) set, and return a member of that set (see Reinhart 1997, Winter 1997, Kratzer 1998 and Matthewson 1999 on indefinites, and Winter 2002 and Schlenker 2006 on disjunction). On this approach, the indefinite article or disjunctive is interpreted *in situ* as a choice function variable that takes in the set characterized by the indefinite restrictor or the disjuncts. Existential closure of the choice function variable takes place non-locally, high in the structure, deriving wide scope.¹ For instance, the natural wide scope interpretation of the indefinite in (1a), in which there is a particular Texan friend of mine who can get us tickets (while perhaps my other Texan friends can't), is captured by the truth conditions in (1b). Under this analysis, the indefinite does not undergo island-violating movement in order to scope above the conditional operator.

- (1) a. If [**a** friend of mine from Texas] comes, we'll get VIP tickets to the game.
 b. $\exists f[\{x: x \text{ is a friend of mine from Texas}\}] \text{ comes} \rightarrow \text{we get VIP tickets}]$
 where f is a choice function

The wide scope reading of disjunction in (2a) can be similarly captured. On this reading, brought out clearly by the follow up, only one of Amelia or Khaleda is able to get the tickets, but the speaker cannot remember which one. Just as for the indefinite, this wide scope reading can be captured with the truth conditions in (2b), in which the choice function variable selects from the set of Amelia and Khaleda.

¹Not all choice functional theories posit existential closure of the choice function variable. In particular, Kratzer (1998, 2003) argues for a free variable choice functional analysis of wide scope indefinites. This point will be taken up in detail in §4.4.2 and §4.7.

- (2) a. If [Amelia **or** Khaleda] comes, we'll get VIP tickets to the game. (I can't remember who it is though.)
 b. $\exists f[f(\{\text{Amelia, Khaleda}\}) \text{ comes} \rightarrow \text{we get VIP tickets}]$
 where f is a choice function

While choice functions can derive exceptional wide scope readings of indefinites and disjunction, the approach is known to face problems in some cases. In particular, Chierchia (2001) and Schwarz (2001) observe that, unconstrained, the analysis over-generates wide scope readings for certain indefinites, like English *a*. Charlow (2014) makes a similar observation for disjunction. These authors consider sentences in which the set that the choice function variable would select from contains a variable bound by a higher operator. Specifically, they point to sentences containing downward-entailing quantifiers like those in (3a) and (4a), which are predicted to have, but crucially lack, the readings in (3b) and (4b). That is, the choice functional analysis incorrectly predicts the sentences should be true so long as there is a way of selecting from among each candidate's papers or each candidate's vita and portfolio such that no candidate submitted whatever is selected for her.²

- (3) a. No candidate_{*i*} submitted [**a** paper she_{*i*} had written.]
 b. $\exists f[\neg \exists x[x \text{ submitted } f(\{y: y \text{ is a paper } x \text{ wrote}\})]]$
- (4) a. No candidate_{*i*} submitted [her_{*i*} vita **or** her_{*i*} portfolio.]
 b. $\exists f[\neg \exists x[x \text{ submitted } f(\{x\text{'s vita, } x\text{'s portfolio}\})]]$

Ruling out these problematic wide scope readings in a choice functional account is difficult to do short of stipulating low existential closure in these cases only, and undermines the original elegance of choice functional analyses as a solution for all exceptional wide scope phenomena. As a consequence, a number of non-choice-functional theories of indefinite and/or disjunction scope have been proposed that rule out wide scope readings of sentences like (3a) and (4a), while still allowing for the island-violating exceptional wide scope in (1a) and (2a) (e.g. Endriss 2009; Brasoveanu and Farkas 2011; Charlow 2014, 2019).

Indefinites are clearly not semantically uniform, both across languages and within a single language. In particular, indefinites differ significantly in their scope taking capacity. For example, where English *a* shows variable scope, indefinites in St'át'imcets (Salish; British Columbia) take obligatory wide scope over all other operators (Matthewson 1999). Indefinites also do not all behave in the same way in the downward-entailing contexts introduced above: while *a* cannot scope above an operator that binds into its restrictor, the specific indefinite *a certain* seems like it can (Schwarz 2001). Variation in disjunction scope has received less attention, but, as we will see in this chapter, shows similar patterns: while English *or* is scopally flexible, Tiwa *khí* takes obligatory wide scope, and can receive the sorts of readings missing for *or* in sentences like (4a). This level of variation in scope taking among indefinites and disjunctions calls for an explanation, and in this chapter, I will explicitly argue that while choice functions are not responsible for the exceptional wide scope

²A more detailed explication of the predicted readings is given in §4.6 below.

of variable scope elements like English *a* and *or*, they are the source of wide scope for at least some indefinites and disjunction. The key implication is that there are multiple distinct routes to exceptional wide scope in natural language, and these different routes come with distinct empirical properties.

The proposal I make in this chapter is grounded in a case study of obligatory wide scope indefinites and disjunction in Tiwa. Specifically, I examine the scopal behavior of indefinites and disjunction formed with the particle *khí*, such as those illustrated in (5) and (6), and show that a choice functional analysis along the lines of (1a) and (2a) does not overgenerate for *khí* phrases in the way that it does for English *a* and *or*. Instead, it makes exactly the right predictions. To capture these facts, I provide a unified choice functional analysis in which *khí* introduces a choice function variable that is existentially closed at the edge of a finite clause.

- (5) [Shar-**khí**] phi-dom.
 who-KHI come-PST
 ‘Someone came.’ [2017.1.81]
- (6) Lastoi [khónana **khí** sónena] phi-w.
 Lastoi tomorrow KHI day.after come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2017.1.14]

The Tiwa data are important for two key reasons, both of which expand our understanding of exceptional wide scope phenomena in natural language. The first is that *khí* indefinites differ starkly in their pragmatics from so-called “specific” indefinites like English *a certain*, which can likewise seemingly outscope a binding operator. Specifically, where *a certain* is associated with a sense of speaker knowledge (e.g. Hintikka 1986), *khí* indefinites are associated very strongly with speaker ignorance. This pragmatic difference, I argue, stems from whether or not the choice function variable the indefinite introduces is subject to existential closure (e.g. Matthewson 1999) or left free (e.g. Kratzer 1998). If this account is correct, it provides evidence for both choice functional strategies in natural language.

The second reason the Tiwa data presented here are significant is that they provide a clear example of an obligatory wide scope disjunction that can outscope a binding operator with the expected covarying readings. To my knowledge, this is the first case of a disjunction morpheme that behaves this way to be discussed in the context of scope mechanisms, and provides evidence in favor of multiple paths to exceptional wide scope for disjunction, as well as indefinites.

The chapter is structured as follows. In §4.2 I introduce the particle *khí* and its use in indefinites and disjunction. In §4.3 I lay out the scopal properties of *khí* phrases, showing that they must take wide scope within their clause, and rule out several initially plausible analyses. In §4.4 I develop a choice functional analysis that accounts for the distribution of *khí* and its scopal properties. This section contains discussion of some finer points of choice functional analyses, including whether the choice function variable is existentially closed. In §4.5 I turn to indefinites and disjunctions that contain bound pronouns, showing that

the analysis generates the attested covarying wide scope readings. In this section I also consider particular discourse contexts that may be problematic for the analysis. In §4.6 I turn to indefinites and disjunctions that contain pronouns bound by downward-entailing quantifiers, such as those in (3a) and (4a) and their Tiwa counterparts. I show that the choice functional analysis does not over-generate for *khí* phrases, but instead makes exactly the right predictions. These data, I suggest, make clear that a choice functional analysis is appropriate. In §4.7 I compare the Tiwa data to the readings that functional indefinites like *a certain* receives, examining their pragmatics, and proposing that the differences can be derived through the precise nature of the choice functional analysis, namely, whether there is existential closure or not. Finally, in §4.8 I turn to the broader question of variation among indefinites and disjunction and discuss a possible correlation between obligatory wide scope and choice functions. I conclude in §4.9.

4.2 *khí* phrases in Tiwa

The particle *khí* is used to form indefinites and disjunctions in Tiwa, and does not occur elsewhere. An example of each is illustrated in (7) and (8), both repeated from the introduction.

- (7) [Shar-**khí**] phi-dom.
 who-KHI come-PST
 ‘Someone came.’ [2017.1.81]
- (8) Lastoi [khónana **khí** sónena] phi-w.
 Lastoi tomorrow KHI day.after come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2017.1.14]

In this section, I lay out the basic properties of *khí* indefinites and disjunction, and how they fit into the larger system of indefinites and disjunction in Tiwa. In §4.3, I turn to their scopal properties, showing that they take obligatory wide scope within their finite clause and that this scopal pattern cannot be derived via standard movement, their status as topics, or obligatory domain restriction.

4.2.1 Indefinites

khí indefinites are formed through suffixation of *khí* to an indeterminate pronoun. For instance, in (7) above, *khí* is suffixed to the indeterminate *shar* ‘who’ to form the indefinite *sharkhí* ‘someone’. Another example is given in (9). Here, *khí* is suffixed to the indeterminate *pajíng* ‘where’ to form the indefinite *pajíngkhí* ‘somewhere’.

- (9) John [pajíng-**khí**] lí-ga.
 John where-KHI go-PFV
 ‘John went somewhere.’ [2016.1.19]

khí indefinites are fully productive. The table in (10) shows the full series of *khí* indefinites in Tiwa: for each indeterminate pronoun, which functions as a *wh*-word in its bare form, there is a corresponding *khí* indefinite.³

(10)	base gloss	Wh	- <i>khí</i>	
	who	shar	sharkhí	‘someone’
	what	indâ	indakhí	‘something’
	where	pajíng	pajíngkhî	‘somewhere’
	where	pathô	pathôkhi	‘somewhere’
	when	pakhál	pakhálkhî	‘sometime’
	how	padî	padikhí	‘somehow’
	how much	pasí	pasíkhî	‘some amount’
	which	pakhâ	pakhâkhi	‘someone/thing’ (d-linked)

khí indefinites can occur with or without an NP restrictor. (5) above shows *sharkhí* ‘someone’ without an overt restrictor; (11) below shows it with one (in this case *Karô mewâ* ‘Garo man’).⁴

- (11) Saldi [shar-**khí** Karô mewâ] -go phâde-ga.
 Saldi who-KHI Garo man -ACC marry-PFV
 ‘Saldi married some Garo man.’ [2017.1.81]

As outlined in Chapter 2 (§2.6.2), Tiwa has several other indefinites in addition to its *khí* series. The most common indefinite in Tiwa, formed with the numeral ‘one’, is illustrated in (12). The anti-singleton *pha* series, discussed by Dawson (2018b) and illustrated in (13), are also formed from indeterminate pronouns. Unlike *khí*, the particle *pha* is not also used to form disjunction.

- (12) [**Sája** libíng] phi-dom.
 one.CL person come-PST
 ‘Someone came.’ [2017.1.81]
- (13) [Shar-**pha**] phi-dom.
 who-PHA come-PST
 ‘Someone came.’ [2017.1.81]

The three indefinite strategies in (7) and (12)-(13) are essentially truth-conditionally equivalent in sentences without other operators, though they do give rise to distinct pragmatic effects (see Dawson 2018b for discussion and analysis of these effects). However, when other operators are introduced, clear scopal differences emerge. Specifically, while *pha* and *sája*

³See Chapter 2, §2.4.8 and Dawson (to appear b) for more details on Tiwa’s indeterminate pronouns.

⁴Note that throughout this chapter I offset case marking to clearly show the indefinite and its restrictor, or the disjunction. As discussed in Chapter 2, §2.2.2, case forms a phonological word with the last element in the DP.

indefinites show variable scope, depending on the other operator and their syntactic environment, *khí* indefinites must take widest scope within their finite clause. These scope facts will be the subject of §4.3.

4.2.2 Disjunction

khí is also used to form disjunctions. This is illustrated in (14), repeated again from the introduction, in which *khí* appears between the two individual disjuncts *khónana* ‘tomorrow’ and *sónena* ‘day after tomorrow’.

- (14) Lastoi [khónana **khí** sónena] phi-w.
 Lastoi tomorrow KHI day.after come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2017.1.14]

There is some variation in the form of *khí* disjunction. For some speakers, *khí* occurs once between the disjuncts, as above. For others, it occurs twice: once after each disjunct. This is illustrated in (15). This difference in form does not reflect a semantic distinction; for single-*khí* speakers and double-*khí* speakers, *khí* disjunction behaves identically in its scopal possibilities. Throughout the rest of this chapter, I use single-*khí* examples, and assume that the variation is purely morphological.⁵

- (15) Lastoi [khónana **khí** sónena **khí**] phi-w.
 Lastoi tomorrow KHI day.after KHI come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2018.2.90]

khí disjunction is cross-categorial. It can coordinate adverbs, as in (8) above, as well as CPs, TPs, DPs, and NPs. A disjunction of two full CPs is shown in (16). Disjunctions of TPs, DPs, and NPs are illustrated in (18), (22), and (35) below.

- (16) [CP Mukton lái-gô_i lang lí-ga] **khí** [CP *pro*_i kumái lí-ga.]
 Mukton book-ACC take AUX-PFV KHI disappear AUX-PFV
 ‘Either Mukton took the book, or it disappeared.’ [2017.1.10]

khí disjunctions are also inclusive (as perhaps all natural language disjunctions are). Evidence for inclusivity comes from *khí*'s behavior under the scope of higher-clausal negation. (While we will see below that *khí* must scope above clausemate operators, it can scope below operators in a higher clause; see §4.4.2 for more on this point.) (17) shows that *khí* disjunction can scope under higher clausal negation. Here, the *khí* disjunction is contained in a finite CP that is embedded under negation in the matrix clause. This sentence is felicitous

⁵I believe that this interspeaker variation reflects a change in progress in the morphosyntactic form of *khí* disjunction. Double-*khí* is the only form used by older speakers; single-*khí* is only used by younger speakers (who also accept double-*khí* forms). Possibly this change is by analogy to the other coordinators in Tiwa, namely the narrow scope disjunction *ba* and the conjunction *arô* ‘and’, both of which only have a singly expounded variant.

in a context in which the speaker is asserting that neither Saldi nor Lastoi went to Guwahati (i.e., that neither disjunct holds – a narrow scope reading of disjunction with respect to negation).

- (17) [CP [Saldi **khí** Lastoi] Guwahati-jíng lí-ga honmandé] tháng-a-ne
 Saldi KHI Lastoi Guwahati-ALL go-PFV COMP right-NMLZ-GEN
 cha. Pibúr sáning-bô lí-ya-m.
 exist.NEG 3PL two-ADD go-NEG-PST
 ‘It’s not true that Saldi or Lastoi went to Guwahati. They both didn’t go.’ [2018.1.100]
 ✓ Someone has asserted that Saldi and Lastoi went to Guwahati. The speaker disagrees; she knows that **neither of them went**. $\neg > khí$

This reading is compatible with a treatment of *khí* disjunction as either inclusive or exclusive. (18) provides the crucial test case to distinguish the two. If *khí* disjunction is exclusive, in addition to being true in scenarios such as in (17), it should also be true in scenarios such as in (18), in which both disjuncts hold. As (18) shows, this is not the case. Instead, as indicated by the speaker’s comment, this sentence is taken to only be true if neither disjunct holds.

- (18) [CP Mansing [rojá-ga **khí** misâ-ga] honmandé] tháng-a-ne cha.
 Mansing [sing-PFV KHI dance-PFV] COMP right-NMLZ-GEN exist.NEG
 ‘It’s not correct that Mansing sang or danced.’ [2018.1.69]
 ✗ At the festival, Mansing sang and he danced.
 Comment: “He didn’t do either.”

These facts are easily explained if *khí* disjunction is taken to be semantically inclusive, rather than exclusive. I take any exclusivity effects to arise pragmatically, through competition with conjunction and with the individual disjuncts (Sauerland 2004, Fox 2007; see also Chapter 3).

khí disjunction exists alongside obligatory narrow scope *ba* disjunction, discussed in detail in Chapter 3, and illustrated in (19). When unembedded, *khí* and *ba* disjunctions yield truth-conditionally equivalent propositions. Differences emerge, however, when there are higher operators in the structure: where, as we will see below, *khí* disjunction must take wide scope, *ba* disjunction must take narrow scope.

- (19) Lastoi [khónana **ba** sónena] phi-w.
 Lastoi tomorrow BA day.after come-NEUT
 ‘Lastoi will come tomorrow or the day after.’ [2017.1.14]

As discussed in Chapter 2 (§2.4.8), neither *khí* nor *ba* are used to form alternative questions (though both may be used in polar questions, with different effects; see §4.4.2 below). Instead, like many other languages (Haspelmath 2007), Tiwa has a dedicated alternative question particle *nâ*, illustrated in (20).

- (20) Lastoi [*khónana na sónena*] phi-w?
 Lastoi tomorrow ALTQ day.after come-NEUT
 ‘Will Lastoi come tomorrow, or the day after?’ [2018.2.143]
 Possible answers: *khónana* ‘tomorrow’, *sónena* ‘the day after tomorrow’
 Infelicitous answer: *ói* ‘yes’, *cha* ‘no’

4.3 Widest scope in the minimal finite clause

Both *khí* indefinites and *khí* disjunctions must take widest scope within their minimal finite clause, including from within islands. In this section, I will illustrate these scope facts, and rule out a variety of initially plausible analyses that might account for *khí*’s exceptional wide scope. While indefinite scope is a familiar topic in the literature, disjunction scope is less commonly discussed. For discussion of disjunction as a scope taking element in English, see Rooth and Partee 1982, Larson 1985, Winter 2002, and Schlenker 2006, among others. See also the discussion of narrow scope *ba* disjunction in Chapter 3.

4.3.1 Widest scope in minimal finite clause

(21) provides an example of a *khí* indefinite embedded under clausemate negation. As this example shows, the indefinite *indakhí kashóng* ‘some dress’ must be interpreted outside the scope of negation: there must be a dress that exists, and Maria must not have bought that dress (though she may have bought others). This sentence is rejected in contexts in which there are no dresses. Instead, this narrow scope context is conveyed using an NPI.

- (21) Maria [*inda-khí kashóng*] pre-ya-m.
 Maria what-KHI dress buy-NEG-PST
 ‘Maria didn’t buy some dress.’ [2016.1.130]
 ✓ Maria went to market, and she bought all of the dresses except for one. *khí* > ¬
 ✗ Maria went to market and bought many things, but she didn’t buy dresses because
 there were none. * ¬ > *khí*

The same facts hold for *khí* disjunction. The sentence in (22) is judged felicitous in a context in which either Saldi didn’t go to Guwahati, or Lastoi didn’t (but the speaker can’t remember which). It is judged infelicitous in the narrow scope context in which neither of them went. (Note that for this example, and for other disjunction examples below, *ba* disjunction is judged felicitous in the narrow scope contexts that *khí* disjunction is rejected in; see Chapter 3.)

- (22) [Saldi *khí* Lastoi] Guwahati-jíng lí-ya-m.
 Saldi KHI Lastoi Guwahati-ALL go-NEG-PST
 ‘Saldi or Lastoi didn’t go to Guwahati.’ [2018.1.23]

- ✓ Either Saldi didn't go to Guwahati, or Lastoi didn't, but the speaker can't remember who. $khí > \neg$
 ✗ Neither Saldi nor Lastoi went to Guwahati. $* \neg > khí$

Similar facts hold for *khí*'s scope with respect to universal quantifiers. This is shown for a *khí* indefinite in (23), in which the object *indakhí hat* 'some market' must outscope the universal subject *sogól* 'everyone'. This sentence is judged felicitous only if there is a single market that everyone went to; it is rejected if each person went to a different market.

- (23) Sogól-lô [inda-**khí** hat] -a lí-ga.
 everyone-FOC what-KHI market -DAT go-PFV
 'Everyone went to some market.' [2016.1.133]

- ✓ Everyone went to a particular market to shop together. $khí > \forall$
 ✗ Everyone was going to market. To save time, they split up, and everyone went to a different market. $* \forall > khí$

(24) shows a similar sentence with a *khí* disjunction. Here, the disjunctive object *Lastoi khí Mukton* 'Lastoi or Mukton' outscopes the universal subject: either every priest visited Lastoi or every priest visited Mukton. The sentence is infelicitous in the narrow scope context in which some priests visited one, while the rest visited the other.

- (24) Sógol loró-râw [Lastoi **khí** Mukton] -go ni-na lí-ga.
 every priest-PL Lastoi KHI Mukton -ACC see-INF go-PFV
 'Every priest went to visit Lastoi or Mukton.' [2018.1.22-23]

- ✓ Either Lastoi or Mukton is very sick, but I can't remember who. All the priests went to visit that sick person, whoever it was. $khí > \forall$
 ✗ Mukton and Lastoi are both sick. Some priests went to visit Mukton, and all the others visited Lastoi. $* \forall > khí$

khí phrases must also take wide scope over intensional operators in their finite clause. (25) shows this for a *khí* indefinite under a deontic necessity modal. Here, Maria must see a specific nun in order to satisfy what's required of her. The sentence is rejected in a context in which seeing any nun will be adequate.

- (25) Maria [shar-**khí** sister] -go lak mán-a mán-o.
 Maria who-KHI sister -ACC meet-INF must-NEUT
 'Maria has to meet some nun.' [2016.2.52]

- ✓ Maria has a form that needs a signature from sister superior. None of the other nuns' signatures will do. $khí > \square$
 ✗ Maria has a form that needs a signature from a nun. Any of the nuns will do. $* \square > khí$

(26) shows a very similar sentence with a *khí* disjunction embedded under the modal. This sentence is felicitous in the wide scope context in which Saldi must meet with one of the two nuns, but we don't know which. It is judged infelicitous if meeting either nun is sufficient.

- (26) Saldi [sister Lily **khí** sister Irene] -go lak mán-a mán-o.
 Saldi sister Lily KHI sister Irene -ACC meet-INF must-NEUT
 ‘Saldi must meet Sister Lily or Sister Irene.’ [2016.2.102]

✓ Saldi needs a signature from a particular nun. I know it’s either Sister Lily or Sister Irene, but I don’t know which. *khí* > □
 ✗ Saldi needs a signature from one of the nuns on a form. A signature from either of Sister Lily or Sister Irene would do. *□ > *khí*

khí phrases must also take wide scope with respect to attitude verbs that select non-finite complements. (27), for example, shows a *khí* indefinite embedded under the attitude verb *hal* ‘want’, which takes an infinitival complement. This sentence can only be used in a context in which there is a specific person that the speaker wants to marry (though perhaps she hasn’t met him). It cannot be used to convey that the speaker wants to marry any man that’s been to Delhi.

- (27) Ang [shar-**khí** [_{RC} Delhi-jíng shó-wa] mewâ] -go pháde-na hal-do.
 1SG who-KHI Delhi-ALL reach-NMLZ man -ACC marry-INF want-IPFV
 ‘I want to marry some man that’s been to Delhi.’ [2016.2.120]

✓ The speaker saw him the other day, but hasn’t actually met him. *khí* > want
 ✗ The speaker wants to marry any man that’s been to Delhi. * want > *khí*

(28) shows the pattern for *khí* disjunction under the attitude verb *as hóng* ‘hope to’. This example is felicitous in a context in which Lastoi wants to meet the president, but not the prime minister, but the speaker can’t remember which it is. It is infelicitous in a context in which Lastoi wants to meet either politician.

- (28) Lastoi [PM **khí** president] -go lak mán-a as hóng-do.
 Lastoi PM KHI president -ACC meet-INF hope-IPFV
 ‘Lastoi hopes to meet the prime minister or the president.’ [2018.1.56]

✓ Lastoi hates Modi (the PM), and never wants to meet him, but she does want to meet the president. We can’t remember who she hates and who she wants to meet. *khí* > hope
 ✗ Lastoi is very interested in politics. It’s her dream to meet the PM or the president of India. If she could meet either one, she would be very happy. * hope > *khí*

These examples all show that *khí* phrases must take wide scope with respect to a variety of operators in their minimal finite clause.

4.3.2 Evidence against scope-taking by standard movement

The obligatory wide scope of the above examples could in principle be derived through obligatory (covert) movement of the *khí* phrase above the other relevant operators. In this section, I will show that *khí* phrases take exceptional wide scope out of islands, indicating

that standard movement is not what derives wide scope. A further, stronger argument from binding that supports the same conclusion will be given in §4.6 below, namely, that the existential force of a *khí* phrase can scope above a quantifier that binds into its restrictor.

First, *khí* phrases inside conditional antecedents must take wide scope over the conditional operator. This is shown for a *khí* indefinite in (29). This sentence is felicitous in a context in which there is some particular nun that would make Saldi happy (but none of the others would). It is judged infelicitous if Saldi would be happy meeting any nun.

- (29) Chidí [shar-**khí** sister] -go lak mán-a phi-gai-do, Saldi khúp
 if who-KHI sister -ACC meet-INF come-COND-TOP Saldi very
 khâdu-gam.
 happy-MODAL

‘If Saldi meets some nun, she would be very happy.’ [2016.1.131]

- ✓ There are several nuns that live in a convent nearby, and Saldi doesn’t like any of them, except for one. She always likes to talk with that one sister. *khí* > if
 ✗ Saldi loves nuns. She always wants to talk to any nun she sees. She’s even thinking of becoming one. Every time she sees any nun, she feels very happy. * if > *khí*

Conditional antecedents are islands for overt syntactic movement in Tiwa (Dawson and Deal 2019; Chapter 2, §2.4.4). They are also scope islands: the universal quantifier *sógol*, for instance, cannot receive a wide scope reading over a conditional operator, as shown in (30). As indicated by its rejection in the given context, this sentence cannot be interpreted to mean that the conditional holds of each teacher independently, where the universal would scope over the conditional. Instead, as the comment suggests, the sentence is only true if Lastoi has to talk to all the teachers in order to leave.

- (30) Lastoi [**sógol** teacher-raw-re] pase-gai-do, lí-w.
 Lastoi every teacher-PL-COM talk-COND-TOP go-NEUT
 ‘If Lastoi talks to every teacher, she will go.’ [2017.1.129]

- ✗ Lastoi needs to get permission from one of her teachers to leave school early. Any teacher can give her permission, she simply needs to talk to one. As soon as she does, she will leave. * \forall > if

Comment: “She needs to talk to every teacher.”

Example (31) shows that *khí* disjunction, like *khí* indefinites, also scopes out of conditional antecedents. Here, the speaker conveys that Saldi would be happy if Mukton comes, or she would be happy if Monbor comes (but the speaker doesn’t remember who). In contrast, it is infelicitous in a context in which Saldi would be happy if either of them comes.

- (31) [Mukton **khí** Monbor] phi-gai-do, Saldi khâdu-gam.
 Mukton KHI Monbor come-COND-TOP Saldi happy-MODAL

‘If Mukton or Monbor comes, Saldi would be happy.’ [2017.1.33]

- ✓ Saldi is either in love with Mukton, or she is in love with Monbor, but the speaker

doesn't know who. Whoever it is, Saldi will be happy if he comes to visit. *khí* > if
 ✗ Saldi is in love with both Mukton and Monbor. She will be happy if either of them
 comes. *if > *khí*

Note that conditional antecedents in Tiwa are non-finite, unlike in English: the verb is not inflected for tense or aspect. This fact is relevant to the scope of *khí* phrases: the one case in which a *khí* phrase can scope beneath another operator is when the phrase is contained in a finite CP embedded under that operator (see §4.4.2). The behavior of the *khí* phrases in (29) and (31) is compatible with the generalization that they scope at the edge of their minimal finite clause, which in this case is the matrix clause.

Relative clauses in Tiwa are also non-finite (in contrast to English): they are formed through low nominalization of a clause and are unable to bear tense or aspect inflection. They are also islands for syntactic movement (Dawson and Deal 2019; Chapter 2, §2.4.4). Just as *khí* phrases must scope out of conditional antecedents, they must also scope out of relative clause islands. Example (32) shows this for a *khí* indefinite. In this sentence, the *khí* indefinite *indakhí design* 'some design' is inside a relative clause that modifies the object of the matrix clause. This *khí* indefinite must scope above the universal quantifier that is the subject of the matrix clause. Specifically, this sentence conveys that there is a particular design that each woman loves; it cannot convey that each woman loves a different design.⁶

- (32) Sógol margî-raw [DP mile kashóng [RC [inda-**khí** design] tong-a] -go]
 every woman-PL every dress what-KHI design exist-NMLZ -ACC
 moná chí-w.
 love-NEUT

'Every woman loves every dress that has some design.' [2016.2.56]

- ✓ There's a very nice new dress design that every woman loves. Each woman loves
 any dress that has this new design. *khí* > \forall women
 ✗ Maria loves Tiwa designs, Saldi loves Bodo designs, and Emilia loves Garo designs.
 Each of them loves any dress that has that design. * \forall women > *khí*

Example (33) shows that like *khí* indefinites, *khí* disjunctions must also scope out of relative clause islands. In this example, the *khí* disjunction is the subject of a relative clause that modifies the matrix object of the intensional verb *pishár* 'look for'. Here, the *khí* disjunction must outscope this intensional verb. That is, this sentence is felicitous in a context in which Saldi is looking for a book, and either Lastoi read it, or Mukton did, but the speaker can't remember who. It cannot be used in a context in which Saldi is looking for a book read by either of them.

- (33) Saldi [DP [RC [Lastoi **khí** Mukton] -e lekhê-wa] lái-gô] pishár-do.
 Saldi Lastoi KHI Mukton -GEN read-NMLZ book-ACC search-IPFV

⁶Note that this example also illustrates that *khí* indefinites cannot receive intermediate scope readings: it is rejected in a context in which the indefinite would scope above *mîle kashóng* 'every dress' but under *sógol margîraw* 'every woman'.

‘Saldi is looking for the book that Lastoi or Mukton read.’ [2018.1.102]

- ✓ Saldi is looking for a particular book in the library. One of her friends read it – either Lastoi or Mukton – but I can’t remember which friend. *khí* > search
 ✗ Saldi is looking for a book in the library, and wants it to be a book that was read by either of Lastoi or Mukton. *search > *khí*

In addition to the island data, another argument against a standard movement account of *khí*’s obligatory wide scope comes from cases in which the quantificational force of the individual disjuncts does not take scope along with the disjunctive itself (see Rooth and Partee (1982) on this observation for English disjunction). In (34), the disjunction must be read with wide scope over the attitude verb: Lastoi either wants to marry a Bhutanese man, or she wants to marry a Nepali man. The existential force of the individual disjuncts, however, must be read with narrow scope with respect to the attitude verb: Lastoi does not have a particular man (or pair of men) in mind.

- (34) Lastoi [Bhutan-e mewâ **khí** Nepal-e mewâ] -go lak mán-a as hóng-do.
 Lastoi Bhutan-GEN man KHI Nepal-GEN man -ACC meet-IPFV hope-IPFV
 ‘Lastoi hopes to meet a Bhutanese man or a Nepali man.’ [2018.3.120]

- ✓ Lastoi has never met a man from Bhutan before, but she has heard that they are very attractive. The speaker knows that Lastoi feels this way, but she can’t remember if it is Bhutanese or Nepali men that Lastoi likes.

If the wide scope of the disjunction were derived via movement, we would expect the individual disjuncts to likewise scope wide since they too will have moved. (34) shows that this isn’t the case.

A distinct argument against a standard QR-style account of wide scope for *khí* phrases comes from the cross-categoriality of *khí* disjunction (see §4.2.2 above). A relevant example is given in (35), which shows a disjunction of two nominal properties within the restrictor of a universal quantifier. If this sentence had a narrow scope reading of disjunction, the universal quantifier would quantify over individuals that are either boys or girls, giving the reading that Lastoi loves both. This sentence is judged infelicitous in such a context, showing it lacks such a reading. In contrast, it is judged felicitous in the wide scope context in which it is either every boy that Lastoi loves, or every girl. Such a wide scope reading of a restrictor over its quantifier cannot be derived via standard QR.

- (35) Lastoi [DP sógol [mewâ-raw **khí** margî-raw] -go] hán sha-w.
 Lastoi every boy-PL KHI woman-PL -ACC love-NEUT
 ‘Lastoi loves all the boys or girls.’ [2018.1.55, 95]

- ✓ The speaker knows that Lastoi loves only the boys or only the girls, but she can’t remember which it is. *khí* > \forall
 ✗ Lastoi loves all the boys and she loves all the girls. * \forall > *khí*

The data in this section have provided evidence against a standard movement account of the scope of *khí*. By themselves, however, they do not rule out movement altogether. Charlow

(2019), for instance, presents a movement analysis of indefinite scope that circumvents the issue of islands (movement is island-bound, but roll-up movement is possible for alternative-denoting elements such as indefinites and disjunctions). The binding data in §4.6 below will provide additional, strong evidence that *khí* phrases do not take scope via movement, but must be interpreted *in situ*.

4.3.3 Evidence against domain restriction and topicality as sources of wide scope

Before presenting a choice functional analysis of *khí* phrases which captures the data presented above, there are two other non-movement approaches to exceptional wide scope readings that can be ruled out at this stage. The first is a proposal by Schwarzschild (2002) that apparent exceptional wide scope is an illusion that arises from extreme domain restriction. In particular, he observes that wide scope readings of indefinites are equivalent to narrow scope readings when the domain of the indefinite consists of a single individual. For instance, the reading of (36a) on which there is a particular friend of mine that could get us the tickets can be captured with the narrow scope reading of the indefinite under the conditional in (36b) if the context restricts the set of friends of mine from Texas to a single individual. Schwarzschild contends that all apparent exceptional wide scope readings of indefinites arise in this way – i.e., indefinites do not in fact take exceptional wide scope.

- (36) a. If [a friend of mine from Texas] comes, we'll get VIP tickets to the game.
 b. $[\exists x[x \text{ is a friend of mine from Texas \& } x \text{ comes}]] \rightarrow \text{we get VIP tickets}$
 where $|\llbracket \text{friend of mine from Texas} \rrbracket^c| = 1$

For *khí* indefinites, it is difficult to rule out obligatory singleton domain restriction. Indeed, such a restriction is not implausible in light of the fact that other indefinites are known to impose constraints on their domain, like the anti-singleton requirement of Spanish *algún* (Alonso-Ovalle and Menéndez-Benito 2010) and Tiwa *pha* indefinites (Dawson 2018b; Chapter 2, §2.6.2). On this account, a *khí* indefinite would then denote a regular existential quantifier that presupposes a singleton domain, giving rise to apparent obligatory wide scope.

This account, however, cannot explain the obligatory wide scope of *khí* disjunction. While the domain of an indefinite could always in principle be singleton due to contextual restriction, disjunctions differ in that they give their domain explicitly. If *khí* did simply introduce existential quantification, the domain that it quantifies over in (31) above, for instance, would be a set of two individuals: {Mukton, Monbor}. Such a domain is incompatible with a singleton domain requirement, and we would therefore expect *khí* disjunction to be ill-formed. One possibility that avoids this unwelcome prediction would be to assume that the *khí* used in disjunction is a distinct lexical item. If we adopted this approach, however, we would still need to invoke an alternative mechanism for deriving obligatory wide scope for disjunction (e.g. choice functions, as proposed below). Rather than positing two separate mechanisms for *khí* disjunction and *khí* indefinites, it is far more plausible to assume that there is a single

mechanism that applies to both, and that whatever gives rise to the obligatory wide scope of *khí* disjunction is also responsible for the parallel behavior of *khí* indefinites.

Another non-movement proposal that has been put forward to explain the exceptional wide scope of indefinites comes from Endriss (2009). Endriss draws on the striking fact that indefinites, in contrast to other quantifiers, make suitable topics. Adopting a structured meaning approach to information structure (Krifka 1992), she proposes that quantificational topics are interpreted dynamically as a separate background frame which provides a suitable witness. The comment portion of the sentence is then predicated of that witness. The effect is that the topical indefinite is interpreted outside the scope of the rest of the sentence, deriving exceptional wide scope. On her approach, the topical indefinite need not move; wide scope is purely a consequence of the interpretation mechanism.

For *khí* phrases, which we saw must take wide scope from within islands, Endriss' account would entail obligatory topichood in (at least) these environments. This is something that is fairly easy to test in Tiwa, since information structure is encoded morphologically (see Chapter 2, §2.2.5 for a detailed description of the relevant affixes). The available data suggest, contrary to a topichood account, that *khí* indefinites within islands can be overtly focus marked and still give rise to wide scope interpretations. Specifically, when presented with the sentence in (37), which shows a *khí* indefinite with overt focus marking in the antecedent of a conditional, a consultant accepted the sentence as grammatical, and provided the comment that the sentence conveys that there is a particular person whose going would be good. This comment suggests that a wide scope reading is available, despite the indefinite being focused. (In contrast, a focus marked *pha* indefinite in the same sentence was translated as 'If anyone came, it would be good', suggesting a narrow scope reading of the indefinite under the conditional.)

(37) [Shar-**khí**-lô] lí-gai-dô, thang-gam.
 who-KHI-FOC go-COND-TOP good-MODAL

'If someone went, it would be good.' [2016.2.124]

Comment: "I'm thinking about who to send, and I think of one particular person."

I conclude from these data (and the fact that *khí* phrases may be focused more broadly) that *khí*'s obligatory wide scope is not due to obligatory topichood.

4.4 A choice functional approach

In the sections above, we saw that the particle *khí* is used to form wide scope indefinites and disjunctions in Tiwa. These *khí* phrases must take widest scope within their finite clause, but at least sometimes scope under operators in higher clauses (examples (17) and (18) above). In this section, I develop an analysis of *khí* that provides a unified account of *khí*'s indefinite and disjunctive uses and that captures these scope facts. The analysis I propose breaks down into two key components. First, *khí* introduces a choice function variable that takes in a set. This set is introduced by either an indeterminate pronoun or a disjunction. Second,

the choice function variable that *khí* introduces is existentially closed in the CP domain of a finite clause. Each of these components will be discussed in turn.

4.4.1 *khí* as a choice function variable

The core of my proposal is that *khí* lexicalizes a choice function variable, which combines with a set. Specifically, I propose that *khí* has the denotation in (38).

$$(38) \quad \llbracket khí_i \rrbracket^g = \lambda\alpha.g(i)(\alpha), \text{ where } \alpha \text{ is a set and } g(i) \text{ is a choice function}$$

This proposal for the denotation of *khí* builds on analyses of similar particles in the literature, such as Japanese *ka* (Hagstrom 1998, Yatsushiro 2001, 2009), Sinhala *də* (Hagstrom 1998, Cable 2010, Slade 2011), Russian *to* (Yanovich 2005), and Tlingit *sá* (Cable 2010). What these particles have in common is that they can all combine with indeterminate pronouns to form indefinites.⁷ Following this body of work, I assume that the choice function variable that *khí* denotes takes in a set of alternatives and returns a member of it.

This explicit appeal to sets in the semantics proper marks a departure from choice functional accounts of English indefinites, which are often assumed to combine with a property, e.g. the denotation of a common noun or NP and select a member from its extension (e.g. Winter 1997). While this may seem like a small difference, the assumption that *khí* combines with a Hamblin-style set, rather than a property, is essential to capturing the distribution of *khí*. First, *khí* cannot combine directly with an element that clearly does denote a property, such as a noun, to create an indefinite meaning. This is shown in (39). This restriction stands in contrast to the plain indefinite in Tiwa (the numeral ‘one’), which does combine directly with nouns, as shown in (40).

$$(39) \quad * \text{ margî-} \mathbf{khí}$$

woman-KHI
Intended: ‘a woman’

$$(40) \quad \mathbf{sája} \text{ margî}$$

one.CL woman
‘a woman’

Instead *khí* indefinites can only be formed by suffixing *khí* to an indeterminate pronoun which may or may not take an overt NP restrictor:

$$(41) \quad \text{shar-} \mathbf{khí} \text{ margî}$$

who-KHI woman
‘a woman’

⁷One way in which these particles differ is in what else they can combine with. Japanese *ka* and Sinhala *də* both have question and disjunctive uses, in addition to their use in indefinites. Tlingit *sá* lacks a disjunctive use, but is used in questions and indefinites. Russian *to* seems confined to indefinites.

This fact is naturally explained by assuming that *khí* must combine directly with a set in the semantics proper. Indeterminate pronouns, which also function as *wh*-words, are standardly assumed to denote a set of alternatives. Approaches to this idea differ in whether they treat the alternatives as a focus semantic value (Rooth 1985, 1992, Beck 2006, Cable 2010), or whether the alternatives are part of the regular semantic value in a Hamblin-style semantics (Ramchand 1997, Kratzer and Shimoyama 2002, Yanovich 2005, Shimoyama 2006, a.o.). For simplicity, I adopt a Hamblin approach to the alternatives here, in which indeterminate pronouns in Tiwa literally denote contextually restricted sets, as illustrated in (42).⁸ (Here the contextual restriction is represented as a contextually determined property *R* (cf. von Stechow 1994). Nothing crucial hinges on this choice; see Schwarz 2009 and references therein for an approach to contextual restriction in terms of situation variables.)

- (42) *Indeterminate pronouns in Tiwa:*
- a. $\llbracket \text{shar} \rrbracket^g = \{x: \text{human}(x) \ \& \ R(x)\}$
 - b. $\llbracket \text{indâ} \rrbracket^g = \{x: \text{thing}(x) \ \& \ R(x)\}$
 - c. $\llbracket \text{pajíng} \rrbracket^g = \{x: \text{place}(x) \ \& \ R(x)\}$

khí is able to combine directly with these sets, introducing a choice function variable that takes them in and returns a member. For example, suppose the contextually relevant places are Shillong, Guwahati, Umswai, and Nongpoh. In this context, the indeterminate *pajíng* will denote the set of those places: {Shillong, Guwahati, Umswai, Nongpoh}. When *khí* combines with this set, it introduces a variable over choice functions. Depending on the value of the choice function, some member of the set will be selected and returned. For example, f_1 , when it combines with $\llbracket \text{pajíng} \rrbracket$ in this context, could return Guwahati, whereas f_2 could return Nongpoh. This example is illustrated in (43).

- (43) a. $\llbracket \text{pajíng-khî}_1 \rrbracket^g = f_1(\{\text{Shillong, Guwahati, Umswai, Nongpoh}\}) = \text{Guwahati}$
 b. $\llbracket \text{pajíng-khî}_2 \rrbracket^g = f_2(\{\text{Shillong, Guwahati, Umswai, Nongpoh}\}) = \text{Nongpoh}$

The assumption that *khí* combines with a set also provides a natural account for (i) *khí*'s use in disjunction, and (ii) the cross-categoriality of this disjunction. Just as indeterminate pronouns have been treated as denoting sets of alternatives, there are also precedents in the literature for a similar treatment of disjunction. As discussed in Chapter 3, Simons (2005a), Alonso-Ovalle (2006), and Aloni (2007) argue for an alternatives-based approach to disjunction based (in part) on the free choice effects that disjunction gives rise to under the scope of modals. An alternatives-based account, they show, allows the modal operator

⁸See Dawson (to appear b) for an extension of this analysis to the other uses of indeterminates in Tiwa and a detailed description and analysis of NP restriction in this system. In brief, bare indeterminates can also take NP restrictors, showing that this is a property of the indeterminate pronoun, rather than *khí* indefinites specifically. I propose that indeterminates can combine first with a property before yielding a set, as in (1).

(1) $\llbracket \text{shar} \rrbracket^g = \lambda P. \{x: \text{human}(x) \ \& \ P(x) \ \& \ R(x)\}$

The choice function *khí* introduces takes in this modified set.

to have separate access to each disjunct in a way that a Boolean approach cannot.⁹ I build on this work in Chapter 3, arguing that an alternative approach is necessary based on the behavior of *ba* disjunction in phrasal comparatives. Following this tradition, I assume that *khí* disjunctions likewise denote sets made up of the individual disjuncts, over which *khí* introduces a choice function variable. For example, a *khí* disjunction of two individuals will denote a choice function variable that takes in the set of those two individuals, as illustrated in (44).¹⁰

$$(44) \quad \llbracket \text{Lastoi } \mathbf{khí}_1 \text{ Mukton} \rrbracket = f_1(\{\text{Lastoi}, \text{Mukton}\})$$

Just like for indefinites, different values of *f* will return different members of the set: for some values of *f*, *Lastoi* will be returned, and for others, *Mukton* will be returned.

Crucially, the choice functional treatment of *khí* adopted here provides a route to accounting for the cross-categoriality of *khí* disjunction. Because *khí* simply takes in a set and returns a member of that set, it does not matter what the type of the individual members of that set is.¹¹ For instance, if *khí* takes in a set of individuals, as in (44), it will return an individual. If *khí* takes in a set of properties, such as in the disjunction in (35) above, it will return a property, as in (45).

$$(45) \quad \llbracket \text{mewâraw } \mathbf{khí}_1 \text{ margîraw} \rrbracket \text{ ‘boys or girls’} = f_1(\{\lambda x.\text{boy}(x), \lambda x.\text{girl}(x)\})$$

The denotation for *khí* given in (38) thus accounts for its distribution: *khí* must combine with a set, and this set can either be introduced by an indeterminate pronoun, or by a disjunction.¹²

⁹Winter (2002) and Schlenker (2006), in presenting choice functional analyses of wide scope readings of English disjunction, grapple with the difficulties a Boolean analysis poses as well. Specifically, if the choice function variable takes in the denotation of a Boolean join, there must be a mechanism for separating out the individual components that go into that join. The alternatives-based approach argued for here avoids that problem.

¹⁰It is perhaps surprising that *khí* does not combine directly with a *ba* disjunction (e.g. [*Lastoi ba Mukton*]-*khí*), since *ba* disjunctions themselves simply denote sets of alternatives. I assume that this restriction is morphosyntactic rather than semantic. For example, *ba* and *khí* may both occupy the Junction head in the coordinate structure and therefore cannot co-occur.

¹¹See also Yanovich 2005 on generalized choice functions, and Yatsushiro 2009 on cross-categoriality for Japanese *ka* indefinites, which take as their sister constituents of various types/syntactic categories.

¹²Example (1) shows that *khí* does not associate with focus, which is also typically assumed to invoke alternatives (e.g. Rooth 1992).

- (1) *Saldi Mukton-re-lo-**khí** thá-ga.
 Saldi Mukton-COM-FOC-KHI stay-PFV
 Intended: ‘Saldi stayed with Mukton.’ [2018.2.130]

In Rooth’s theory this generalization could arise because the focus alternatives associated with *-lô*-marked constituents must be handled by \sim (and introducing a choice function via *khí* would prevent this). Another possible explanation could be that *-lô* invokes alternatives as a separate focus semantic value, while indefinites and disjunctions invoke Hamblin-style alternatives in the ordinary semantic domain. *khí* would only operate on those Hamblin-style alternatives.

4.4.2 Existential closure

I have proposed above that *khí* introduces a choice function variable that combines with a set. On a choice functional analysis, there are two ways to capture the apparent wide scope facts laid out in §4.3: (i) the choice function variable is existentially closed above other relevant operators (Reinhart 1997, Winter 1997, Matthewson 1999, among many others), or (ii) the choice function variable is left free (Kratzer 1998, Renans 2018). Under this second view, the indefinite or disjunction does not actually scopally interact with other operators; it is not a scope taking element at all, but is instead referential. In this section, I will provide an initial argument for existential closure of the choice function variable that *khí* introduces at a finite CP boundary. In §4.7, I will return to the question of existential closure vs. free variable approaches, and further argue that existential closure is necessary to capture the pragmatics of *khí* phrases.

A clear argument for existential closure of the choice function variable comes from the behavior of embedded disjunction. On a free variable account, the choice function that *khí* introduces would refer to a specific choice function, and should therefore not interact scopally with other operators. Contrary to the predictions of a free variable account, however, *khí* disjunctions can, in some instances, take narrow scope with respect to operators in higher clauses. The clearest case of this arises with *khí* disjunction under the scope of higher-clausal sentential negation. Two examples of this were shown in (17) and (18) in §4.2.2 above. Another example is given in (46). This sentence is used to convey that neither Lastoi nor Mukton came, a narrow scope reading of disjunction with respect to negation.

- (46) [CP [Lastoi **khí** Mukton] phi-ga honmandé] tháng-a-ne cha.
 Lastoi KHI Mukton come-PFV COMP right-NMLZ-GEN exist.NEG

‘It’s not true that Lastoi or Mukton came.’ [2018.3.118]

✓ The speaker is telling us that neither Lastoi or Mukton came. $\neg > khí$

If the choice function variable that *khí* denoted were always free, these sentences should only have an apparent “wide scope” reading, in which the negation can hold of only one disjunct, as is found with clausemate negation (example (22) above). Example (46) shows that this is not the case. The narrow scope readings we do find, however, can be captured by assuming existential closure of the choice function variable at edge of the finite CP that contains the disjunction. So long as existential closure cannot occur lower in the structure, widest scope in the minimal finite CP is ensured, deriving the scope facts of §4.3. An implementation of this approach will be given at the end of this section.

While existential closure is necessary to capture the narrow scope readings in (17)-(18) and (46), it is in theory possible that the choice function variable remains free in some cases (perhaps even in all cases in which the *khí* phrase does seemingly take widest scope). Some initial data that may favor such an approach is the fact that *khí* indefinites, in contrast to *khí* disjunctions, resist narrow scope readings under higher-clause negation. This is illustrated in (47), which was judged felicitous in a context in which Saldi went to many places (precluding

a narrow scope interpretation of the indefinite), but there is one place that she didn't go. In contrast, it was judged infelicitous in a context in which Saldi didn't go anywhere.¹³

- (47) [CP Saldi [pajíng-**khî**] lí-ga honmandé] tháng-a-ne cha.
 Saldi where-KHI go-PFV COMP right-NMLZ-GEN exist.NEG

'It's not true that Saldi went somewhere.' [2016.2.122]

- ✓ Saldi went to many places, but there is somewhere she didn't go. $khí > \neg$
 ✗ Saldi didn't go anywhere at all. $* \neg > khí$

One view might be that in sentences like (46) the choice function variable is existentially closed at the edge of the embedded clause, while in (47) it remains free, deriving the apparent "wide scope" reading. Under this view *khí* phrases that take widest scope in a single finite clause could be ambiguous between existential closure and a free variable reading, or could always result from the free variable reading. In §4.7 I will present an argument against this approach from the pragmatic inferences that speakers draw. In particular, I will argue that a uniform account of the ignorance effects that are found with *khí* indefinites and disjunction are best explained if there is always existential closure of the choice function variable. (In the case of (47), existential closure would occur at the edge of the matrix CP, rather than the embedded one.) Anticipating this argument, I will assume that existential closure of the choice function variable always takes place.

Concretely, I propose that the choice function variable *khí* introduces is always bound by a closure operator that is located in the CP domain of a finite clause. This closure operator is defined in (48).

$$(48) \quad [[\exists_i \text{ CP}]]^g = \exists f[[\text{CP}]]^{g[f/i]}$$

The syntactic location of this operator is crucial in deriving the scope patterns *khí* phrases exhibit. First, because this closure operator is located in the finite CP domain, the obligatory wide scope of *khí* indefinites with respect to clausemate operators is guaranteed (cf. Reinhart 1997, Winter 1997, and Renans 2018, who allow existential closure at various heights in the structure). Second, it allows for narrow scope with respect to higher-clausal sentential negation (examples (17)-(18) and (46) above): the *khí* phrases in these examples are in a finite CP that is embedded under the negation (cf. Matthewson 1999 who only allows existential closure at the very highest level of the sentence). The wide scope of the *khí* indefinite from within an embedded finite CP in (47) is also derived: existential closure may occur not at the edge of the embedded CP, but at the edge of the matrix CP.¹⁴

¹³It is unclear to me why *khí* indefinites resist scoping under higher clausal negation while *khí* disjunctions prefer to. The pattern is robust, and certainly calls for explanation (whether pragmatic or semantic), but requires further investigation into a wider range of sentence types with embedded finite CPs. For now I will set aside this larger question.

¹⁴As it currently stands, the analysis overgenerates wide scope readings of *khí* disjunction over higher-clause negation and narrow scope readings of *khí* indefinites under higher-clause negation. As discussed in footnote 13, further work is needed to understand exactly why this disparity in scope exists between *khí* indefinites and disjunction, and whether the unattested readings should be ruled out pragmatically or semantically.

This account of existential closure is close in spirit with the one presented by Yatsushiro (2001, 2009) for Japanese, and that of Cable (2010) for Tlingit. Both authors posit high existential closure that is tied to a particular syntactic position. Yatsushiro places closure at TP to ensure wide scope with respect to *mo* universals. (She does not consider positions higher than this.) Cable places existential closure in the IP so that it does not interfere with the interpretation of *wh*-questions in the CP domain.¹⁵ In contrast, I propose above that the site of existential closure in Tiwa is higher in the clausal spine (namely in the CP domain).

Evidence for this high position of existential closure comes from the scope of *khí* phrases with respect to operators associated with illocutionary force, typically assumed to be located in C (or, at the very least, higher than IP/TP). Specifically, *khí* phrases must outscope the illocutionary force associated with questions and imperatives (see Dawson to appear a). Example (49) provides shows this for a polar question. Here a *khí* disjunction is embedded under the polar question operator *ná*. Unlike its English translation (and the *ba* disjunction counterpart in Tiwa), this sentence cannot be used to inquire whether Mukton met either of Saldi or Tonbor, with the disjunction scoping under the question operator. Instead, this sentence is used in a context in which the speaker has forgotten who it is Mukton was supposed to see, but knows it's either Saldi or Tonbor, and asks whether Mukton saw that person. Put another way, in using a *khí* disjunction in a question, the speaker is effectively uttering a disjunction of two questions: Did Mukton see Saldi?, or did Mukton see Tonbor? The implication is that the speaker isn't sure which question she intends to utter.

(49) Mukton [Saldi **khí** Tonbor] -go nú-ga ná?

Mukton Saldi KHI Tonbor -ACC see-PFV PQ

‘Did Mukton see Saldi or Tonbor?’ [2018.2.108-9]

✓ The speaker is asking whether Mukton has seen a particular person, but can't remember whether it's Saldi or Tonbor. *khí* > ?

✗ The speaker is asking whether Mukton has seen either of Saldi or Tonbor.

* ? > *khí*

(50) provides a parallel imperative example (see also Dawson to appear a). Unlike the English translation, this Tiwa sentence cannot be used in a context in which the speaker is telling the addressee to speak with either of Fr Tomey or Fr Jonas, with the disjunction scoping under the directive force of the imperative. (Such a command would instead be conveyed with *ba* disjunction.) Instead, this imperative is used in a much more unusual context in which, for instance, the addressee is supposed to talk to one of the priests but the speaker has forgotten which one. Nevertheless she tells the addressee to talk whichever priest it is. The effect is roughly equivalent to uttering a disjunction of two imperatives: Go talk to Fr Tomey!, or go talk to Fr Jonas! Again, the implication is that the speaker isn't sure which imperative she intends to utter.

¹⁵In Tlingit (as well as Japanese and Sinhala), the particle assumed to denote a choice function variable is also used in *wh*-questions. Under Cable's analysis, the phrase that contains the choice function particle moves to a projection higher than the IP in *wh*-questions, and consequently cannot be bound by existential closure.

- (50) [Fr Tomey **khí** Fr Jonas] -re pásé-na lí-bo!
 Fr Tomey KHI Fr Jonas -COM talk-INF go-BO

‘Go and talk with Fr Tomey or Fr Jonas!’ [2018.3.111]

✓ The addressee has to go and talk with one of the priests, either Fr Tomey or Fr Jonas, but the speaker isn’t sure who. The speaker is telling the addressee to talk to whichever one it is. *khí* > !

✗ The speaker is telling the addressee to talk to either Fr Tomey or Fr Jonas, and it’s the addressee’s choice which. *! > *khí*

These unusual readings are explained if *khí* takes wide scope with respect to the operators responsible for illocutionary force, just as it does for all other clausemate operators.¹⁶ The analysis proposed above, in which existential closure occurs only in the CP domain, provides a ready explanation for this.

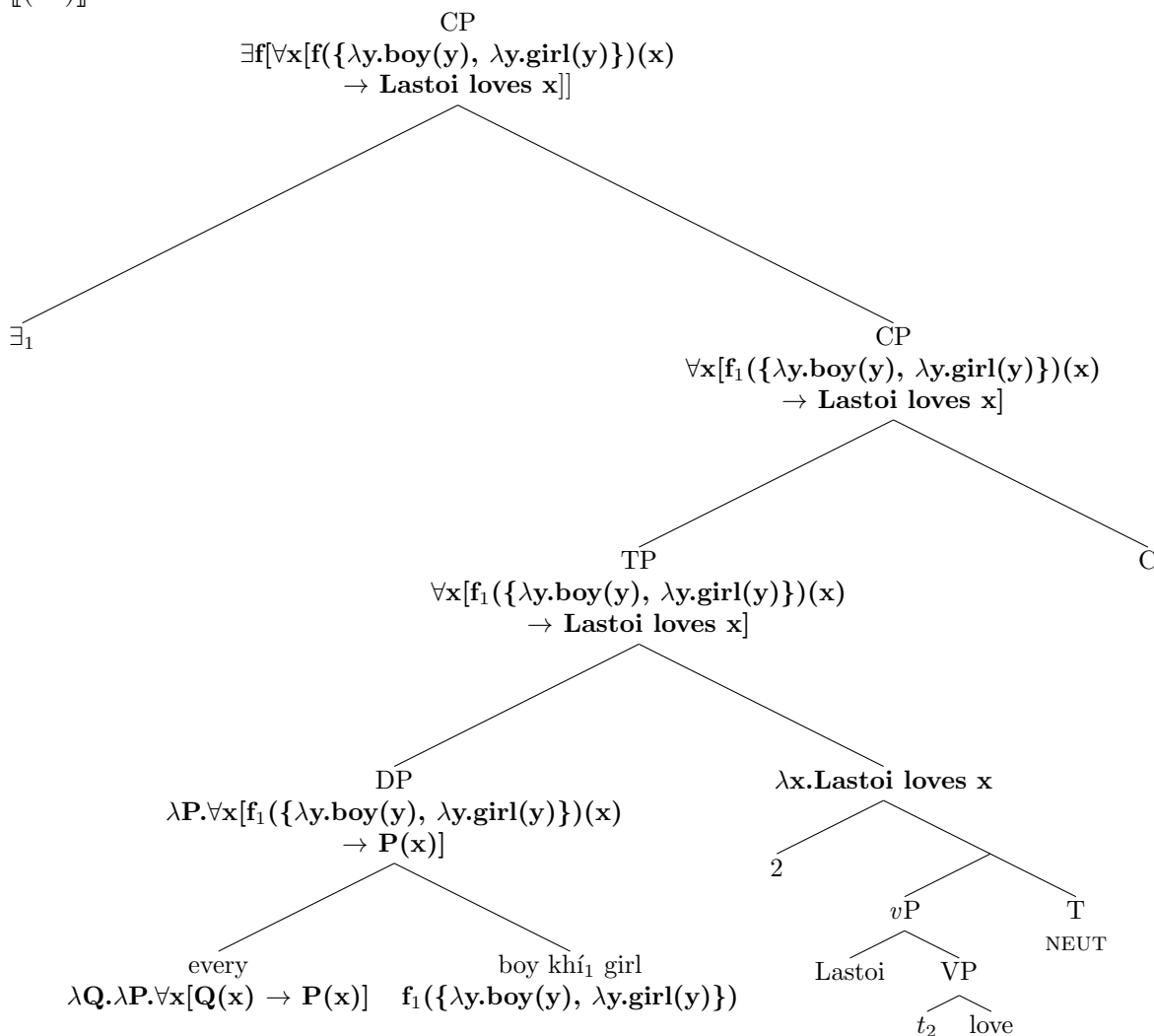
4.4.3 Summary

In this section I have argued for a choice functional account of *khí* phrases, in which *khí* introduces a choice function variable that takes in a set (introduced by an indeterminate pronoun or a disjunction) and returns a member of that set. This choice function variable is existentially closed by an operator located in the domain of a finite CP (whether that is an embedded CP, as in (46), or the root CP). The analysis crucially captures the scopal properties of *khí* phrases: they must scope at least at the edge of their minimal finite clause. The analysis also provides an explanation for the cross-categoriality of *khí* disjunctions, and for sentences in which a standard movement account is clearly precluded. I conclude this section with an example that illustrates these last two points. Example (51), repeated from (35) above, shows a *khí* disjunction as the restrictor to a universal quantifier.

- (51) Lastoi [DP sógol [mewâ-raw **khí** margî-raw] -go] hán sha-w.
 Lastoi every boy-PL KHI woman-PL -ACC love-NEUT
 ‘Lastoi loves all the boys or girls.’ [2018.1.55]

The proposed structure and truth conditions for this sentence are given in (52). Here, the quantificational DP that contains the disjunction QRs as a whole from its base object position. The disjunction itself remains *in situ* within its DP, embedded under the quantifier. The choice function *khí* introduces takes in a set of two properties, returning one which becomes the restrictor to the quantifier. Existential closure is adjoined to the CP, ensuring that the disjunction scopes above the universal quantifier: there is a value of the restrictor that makes the sentence true.

¹⁶See Dawson to appear for a discussion of the implications that the data in (50) have for theories of imperatives.

(52) $\llbracket(51)\rrbracket^g =$ 

4.5 Binding into indefinites and disjunction

The analysis of the preceding section captures the distribution of the morpheme *khí* and the scope facts presented in §4.3. In this section, I turn to the first of two related kinds of sentences that have figured heavily in the indefinite scope literature: sentences in which a (non-downward-entailing) quantifier binds into the indefinite restrictor, such as in (53) (see Ruys 1992, Abusch 1994, Kratzer 1998, Chierchia 2001 and Schwarz 2001, among many others). I consider the downward-entailing counterparts of these sentences in §4.6.

(53) Every artist_i sold [a work that she_i had made in graduate school.]

Binding into an indefinite restrictor gives rise to the kinds of covarying readings that, in the absence of a bound pronoun, are typically associated with narrow scope indefinites. For

instance, (53) conveys that each artist sold a different painting (namely, one that she had made in graduate school).

Similar configurations can be found with disjunction. Each disjunct in (54) contains a pronoun bound by the quantificational subject. Just as in the indefinite case, (54) can convey that some students forgot their hats, while others forgot their backpacks: the witness to the disjunction varies for each student. (Note that this sentence has a distinct wide scope reading in which either each student forgot her hat, or each student forgot her backpack (Charlow 2014). This reading will be discussed in §4.6.)

(54) Every student_{*i*} forgot [her_{*i*} hat **or** her_{*i*} backpack].

Sentences such as (53) and (54) are interesting in light of a choice functional analysis because these covarying readings can be derived even with wide scope existential closure of the choice function variable. While, under a standard movement analysis of indefinite scope, wide scope is ruled out for binding reasons, a choice functional analysis allows the indefinite itself to be interpreted *in situ* (thus resulting in the right c-command relations for binding), while its existential force occurs above the binder. This is illustrated for the sentences above in (55) and (56) respectively.

(55) $\exists f[\forall x[\text{artist}(x) \rightarrow x \text{ sold } f(\{y: \text{artwork}(y) \ \& \ x \text{ made } y \text{ in graduate school}\})]]]$

(56) $\exists f[\forall x[\text{student}(x) \rightarrow x \text{ forgot } f(\{x\text{'s hat, } x\text{'s backpack}\})]]]$

In both these cases, the set that the choice function takes in varies for each value of *x*: in (55) it takes in the set of each artist's works from graduate school, and in (56) it takes in the set of each student's hat and backpack. As a consequence, the choice function selects a different artwork for each artist, and a different hat or backpack for each student.

In this section, I will show that introducing a bound pronoun in Tiwa likewise gives rise to covarying readings in *khí* indefinites and disjunction, and that these readings are compatible with the analysis presented in §4.4. I will also discuss an argument from bound-pronoun sentences highlighted by Geurts (2000) (among others) which provides initial evidence against a basic wide-scope choice functional analysis of English indefinites and disjunction, and show that preliminary data in Tiwa suggests this problem does not arise. Evidence in favor of a choice functional approach for Tiwa that comes from downward-entailing quantifiers will be given in §4.6.

4.5.1 Bound pronouns in *khí* phrases

In Tiwa, introducing a bound pronoun into a *khí* phrase gives rise to covarying readings that are unavailable in the absence of a bound pronoun. Recall from §4.3 that *khí* indefinites and disjunction must take wide scope with respect to quantifiers higher in the structure: covarying readings are impossible. The relevant data are repeated here in (57) and (58).

(57) Sogól-lô [inda-**khí** hat] -a lí-ga.
 everyone-FOC what-KHI market -DAT go-PFV

‘Everyone went to some market.’ [2016.1.133]

✓ Everyone went to a particular market to shop together.

✗ Everyone was going to market. To save time, they split up, and everyone went to a different market.

- (58) Sógol loró-râw [Lastoi **khí** Mukton] -go ni-na lí-ga.
 every priest-PL Lastoi KHI Mukton -ACC see-INF go-PFV

‘Every priest went to visit Lastoi or Mukton.’ [2018.1.22-23]

✓ Either Lastoi or Mukton is very sick, but I can’t remember who. All the priests went to visit that sick person, whoever it was.

✗ Mukton and Lastoi are both sick. Some priests went to visit Mukton, and all the others visited Lastoi.

When a pronoun that is bound by the quantifier is introduced into the indefinite restrictor or individual disjuncts, covarying readings become available. This is shown for an indefinite in (59). The *khí* indefinite in this example contains an reflexive possessive pronoun that is bound by the quantificational subject of the clause.¹⁷ This sentence is felicitous in a covarying context in which each woman is happy with some grandchild of hers.

- (59) Sógol margî-raw_i [pakhâ-**khi** othê_i shú thúi] -rê sôman khâdu-w.
 every woman-PL which-KHI REFL.GEN grandchild -COM together happy-NEUT

‘Every woman_i is happy together with some grandchild of hers_i.’ [2018.1.76]

✓ Each woman has different grandchildren, and each is happy to be with some grandchild of hers.

The same holds of *khí* disjunction. Example (58) above shows that *khí* disjunction alone can’t covary with a higher quantifier. Example (60) shows that when there is a bound pronoun in the individual disjuncts, it can. Here the reflexive pronouns are the subjects of relative clauses that modify the head noun of each disjunct. This sentence is felicitous in a context in which some men ate the bananas they bought, while others ate their mangoes.

- (60) Sógol mewâ-raw_i [othê_i pre-wa thílu **khí** othê_i pre-wa thíjugi]
 every man-PL REFL.GEN buy-NMLZ banana KHI REFL.GEN buy-NMLZ mango
 -gô chá-ga.
 -ACC eat-PFV

‘Every man_i ate the banana he_i bought or the mango he_i bought.’ [2018.2.49]

✓ Mukton, Mansing, and Tonbor each bought a banana and a mango from the market. Mukton ate his banana, but not his mango. Mansing and Tonbor ate their mangos, but decided to save their bananas.

¹⁷The bound pronoun in this example, and all those below, is the genitive form of Tiwa’s reflexive pronoun which is either a possessor or the subject of a relative clause. As shown in Chapter 2, §2.2.3, Tiwa’s reflexive pronouns are subject-oriented.

The readings of (59) and (60) can be captured by the truth conditions in (61) and (62) respectively, both of which are generated by the analysis developed in §4.4. In (61), the choice function selects from a different set of grandchildren for each woman, necessarily selecting a different child. In (62) the choice function selects from a different set of fruit for each man, again necessarily selecting a different piece.

- (61) *Truth conditions of (59):*
 $\exists f[\forall x[\text{woman}(x) \rightarrow x \text{ is happy with } f(\{y: y \text{ is a grandchild of } x\})]]$
- (62) *Truth conditions of (60):*
 $\exists f[\forall x[\text{man}(x) \rightarrow x \text{ ate } f(\{\text{the banana } x \text{ bought, the mango } x \text{ bought}\})]]$

4.5.2 Covariation and static sets

One argument that has been raised against a wide scope choice functional analysis of English sentences like (53) and (54) comes from discourse contexts in which the set that the choice function selects from ostensibly remains constant for each value of the bound pronoun. (See particularly Geurts (2000) for this argument. The issue itself was first raised by Winter (1997, pg. 444), who suggests some solutions, discussed below.) In such contexts, the covarying reading should disappear. The reasoning for this is as follows. If the existential force of the choice function outscopes the quantifier, there must be a single choice function that witnesses this existential claim, regardless of the value of the bound pronoun. Therefore, if the set that the choice function takes in happens to be the same for each value, the choice function should select the same member in each case. The result is that a covarying reading should not arise in certain contexts, even if there is a bound pronoun in the restrictor.

To illustrate, consider the sentence in (63). Free of context, this sentence is similar to the sentences above: the most natural reading is that each girl gave a flower to a different boy.

- (63) Every girl_{*i*} gave a flower to [a boy she_{*i*} fancied.] (Geurts 2000:734)

Suppose, however, that each girl (say, Zola, Ursula, and Vinita) likes exactly the same set of boys: Dev, Chris, and Henry. In this context, the set that the choice function takes in will be identical for each girl. If there is wide scope existential closure of the choice function variable, as in (64), then a single choice function must witness this existential quantification if the sentence is to be judged true. But, since the set the choice function combines with is identical for each girl, any choice function will select the same boy. For instance, f_4 will always return Dev when applied to the set of Dev, Chris and Henry, as illustrated in (65).

- (64) $\exists f[\forall x[\text{girl}(x) \rightarrow x \text{ gave a flower to } f(\{y: y \text{ is a boy } x \text{ fancied}\})]]$
- (65) $f_4(\{y: y \text{ is a boy Zola likes}\}) = f_4(\{\text{Dev, Chris, Henry}\}) = \text{Dev}$
 $f_4(\{y: y \text{ is a boy Ursula likes}\}) = f_4(\{\text{Dev, Chris, Henry}\}) = \text{Dev}$
 $f_4(\{y: y \text{ is a boy Vinita likes}\}) = f_4(\{\text{Dev, Chris, Henry}\}) = \text{Dev}$

Contra this prediction, the sentence in (63) does allow a covarying reading in a context in which each girl likes the same set of boys.

While this prediction has been leveled as an argument against a wide scope choice functional reading of English indefinites, Winter (1997, pg. 444-445) notes that there are two potential ways to get around the problem. First, the problem for (63) can be avoided if the choice function is intensionalized. For instance, if instead of taking in sets of individuals, the choice function takes in intensional properties, as Winter proposes, the set will not be identical for each value of x . Under this view, (63) above can be interpreted as in (66). Because the girls do not like the same set of boys in every possible world, the choice function can return a different value for each girl, circumventing the problem.¹⁸

$$(66) \quad \lambda w. \exists f[\forall x[\text{girl}(x)(w) \rightarrow \\ x \text{ gave a flower to } f(\lambda y. \lambda w'. y \text{ is a boy } x \text{ fancied in } w' \ \& \ R(w')(w))(w) \text{ in } w]]$$

A second potential solution is to assume that the indefinite introduces a Skolemized choice function variable (Kratzer 1998), rather than the basic choice function variable we have been assuming. Under this view, the choice function takes two arguments: the set that the choice function will select from, but also an additional implicit argument which can itself be bound by the quantifier, as illustrated in (67). This implicit argument essentially determines which function applies to the set, with the effect that it will be distinct for each value of the bound implicit argument. Consequently, a different individual boy can be selected from the set for each girl.

$$(67) \quad \exists f[\forall x[\text{girl}(x) \rightarrow x \text{ gave a flower to } f(x, \{y: y \text{ is a boy } x \text{ fancied}\})]]$$

The particular contexts discussed above present a problem for a basic non-Skolemized, non-intensional choice function analysis of English indefinites and disjunction. For Tiwa, the available data are not conclusive. The one available relevant example, however, suggests that the same problems might not arise. This example is given in (68). Here, since Mukton, Tonbor, and Mansing are brothers, the set of their parents remains constant. On the analysis argued for in §4.4, this sentence is predicted to not allow a covarying reading in this context: the choice function should select the same parent for all of the boys.

(68) Sógol mewâ-raw_i [othê_i má-rê **khí** othê_i pha-re] pásé-ga.
 every man-PL REFL.GEN mum-COM KHI REFL.GEN dad-COM speak-PFV
 ‘Every boy_i talked with his_i mum or with his_i dad.’ [2018.2.45]

✗ Mukton, Tonbor, and Mansing are all brothers. Today Mukton spoke to their mother, but not their father. Tonbor and Mansing spoke to their father, but not their mother.

Comment: “Sounds like they all have different parents.”

¹⁸This implementation of intensionalized choice functions comes from Romero (1999), who proposes that an intensionalized choice function takes in an intensional property and returns an individual concept. Earlier work (e.g. von Stechow 2000 (cited by Romero as a 1996 manuscript) and Winter 1997) propose that the choice function takes in an intensional property and returns an individual.

This is exactly what we find: the sentence is rejected if Mukton spoke to their mother, but his brothers spoke to their father. The speaker's comment suggests that the covarying scenario could be rescued if the boys are not brothers, that is, if the set of his mother and father varies for each boy. Notice that the English translation is in contrast perfectly felicitous in the covarying context in (68). Further testing is necessary to see if these facts holds more widely. In particular, we need positive evidence that the sentence in (68) is felicitous in a context in which Mukton, Tonbor, and Mansing are all brothers, and all of them spoke with their mother (or all of them spoke with their father).

If further testing of sentences such as (68) reveals that the predictions of a basic choice functional analysis do cause problems in Tiwa as well, it will be necessary to adopt one of the solutions discussed above. In the case that such a solution would be necessary, I suggest that intensionalization is preferable for Tiwa, as the Skolemization approach runs into over-generation problems. Specifically, since the presence of a bound pronoun is necessary for covarying readings, Skolemization would have to be ruled out for *khí* indefinites and disjunctions like those in (57) and (58) above which lack bound pronouns, otherwise they too would be predicted to allow covarying readings. (That is, we would expect the quantifier to be able to bind the implicit argument.) Intensionalization does not run into these same difficulties: if there is no bound pronoun, the set will be constant. Because it is unclear whether such a move is necessary, I set aside intensionalization for the remainder of this chapter.

4.6 Outscoping the binding operator

In the last section we saw that bound pronouns lead to covarying readings and that these readings are compatible with an analysis that posits only wide-scope existential closure over choice functions. Of course, these covarying readings are also in principle compatible with true narrow scope truth conditions of the indefinite or disjunction. For instance, the covarying reading that arises for (53), repeated in (69), can be captured by positing low existential closure of a choice function variable, as in (69a), or a plain generalized quantifier analysis on which the existential scopes beneath the universal, as in (69b).

- (69) Every artist_{*i*} sold [a work that she_{*i*} had made in graduate school.]
- a. $\forall x[\text{artist}(x) \rightarrow \exists f[x \text{ sold } f(\{y: \text{artwork}(y) \ \& \ x \text{ made } y \text{ in graduate school}\})]]$
 - b. $\forall x[\text{artist}(x) \rightarrow \exists y[x \text{ sold } y \ \& \ \text{artwork}(y) \ \& \ x \text{ made } y \text{ in graduate school}]]$

Likewise, the covarying reading of the disjunction in (54) can be captured by a choice function with low existential closure, as in (70a), or even with a plain Boolean join analysis, as in (70b). (An alternatives-based analysis of disjunction, like the one proposed for *ba* in Chapter 3, can also derive the appropriate narrow scope reading.)

- (70) Every student_{*i*} forgot [her_{*i*} hat **or** her_{*i*} backpack.]
- a. $\forall x[\text{student}(x) \rightarrow \exists f[x \text{ forgot } f(\{x\text{'s hat, } x\text{'s backpack}\})]]$

- b. $\forall x[\text{student}(x) \rightarrow [x \text{ forgot } x\text{'s hat} \vee x \text{ forgot } x\text{'s backpack}]]$

While these analyses over-generate narrow scope readings for *khí* phrases in Tiwa (which take obligatory wide scope), they are more compelling for a language like English, in which indefinites and disjunction have flexible scope. In this section, following Chierchia (2001), Schwarz (2001) and Charlow (2014), I will first discuss why covarying readings cannot arise from a wide scope choice functional analysis of English *a* and *or*: in introducing a bound pronoun into an indefinite or disjunction, the indefinite or disjunction is prevented from taking the predicted covarying wide scope reading over the operator that binds the pronoun. This generalization for indefinites has been termed The Binder Roof Constraint by Brasoveanu and Farkas (2011), and has figured significantly in recent theories of exceptional scope (e.g. those of Endriss (2009), Brasoveanu and Farkas (2011) and Charlow (2014, 2019)). Then, after showing why a choice functional analysis goes wrong for *a* and *or*, I will crucially show that *khí* phrases in Tiwa are not subject to the Binder Roof Constraint, but receive exactly the readings that the choice functional analysis predicts.

4.6.1 Downward-entailing environments in English

One issue for a choice functional analysis of the bound-pronoun English examples in §4.5 is that there is a narrow scope parse that also derives appropriate truth conditions. In other words, it is unclear if the indefinite or disjunction ever does receive a true wide scope reading in these configurations. Chierchia (2001) and Schwarz (2001) devise a way to tease apart the two options by examining indefinites with bound pronouns in downward-entailing environments. If the indefinite does truly have a wide scope reading in such contexts, the truth conditions will be distinct from the narrow scope reading. This is illustrated here for the sentence in (71), based on an example from Schwarz (2001).

- (71) No candidate_{*i*} submitted [a paper she_{*i*} had written.]

In this sentence, the indefinite contains a pronoun that is bound by the negative existential quantifier *no candidate*. Under a narrow scope reading of the indefinite, the sentence entails that no candidate submitted any paper that she wrote. By contrast, the true wide scope choice functional reading yields completely distinct truth conditions. Specifically, the truth conditions in (72) predict that the sentence should be true under its wide scope reading so long as there's a way of selecting from among papers that each candidate wrote such that no candidate submitted whatever paper is selected for her. That is, it should be true so long as no candidate submitted all of her papers.

- (72) $\exists f[\neg \exists x[\text{candidate}(x) \ \& \ x \text{ submitted } f(\{y: y \text{ is a paper } x \text{ wrote}\})]]$

This is not a reading that (71) has. To see this, consider a scenario where there are three candidates: Ope, Julie and Premica. Just as in the bound-pronoun examples in §4.5, the set that the choice function takes in will differ for each candidate. (73) shows a possible value of *f*, which witnesses the existential quantification over choice functions in (72).

- (73) $f_{12}(\{y: y \text{ is a paper Ope wrote}\}) = \text{“A first reconstruction of Proto-World”}$
 $f_{12}(\{y: y \text{ is a paper Julie wrote}\}) = \text{“Xenolinguistics: from Uhura to Embassytown”}$
 $f_{12}(\{y: y \text{ is a paper Premica wrote}\}) = \text{“Quantifier scope in Sumerian”}$

Because this is a possible value of f , the truth conditions in (72) are met if each candidate didn't submit the paper selected for her, even if each candidate did submit every other paper she wrote. The English sentence in (71) is completely false in such a scenario, showing that the wide scope choice functional analysis that gives rise to (72) over-generates. Instead, this sentence can only have the true narrow scope reading which entails that no candidate submitted any paper that she wrote.

The facts for English disjunction are more complicated, due to the existence of a true, non-covarying wide scope reading. As Charlow (2014, p. 107) notes, a sentence like (74) has a reading on which either no candidate submitted her vita, or no candidate submitted her portfolio (but perhaps the speaker can't remember which). On this reading, *or* scopes above the quantificational subject *no candidate*.¹⁹

- (74) No candidate_{*i*} submitted [her_{*i*} vita **or** her_{*i*} portfolio].

There is, however, another wide scope reading that is ruled out for (74), namely, the covarying one predicted by the choice functional analysis (Charlow 2014). This predicted reading is given in (75): the sentence should be true so long as there is a way of selecting from among each candidate's vita and portfolio such that no candidate submitted whatever is picked for her. That is, (74) is predicted to be true so long as no candidate submitted both her vita and her portfolio.

- (75) $\exists f[\neg \exists x[\text{candidate}(x) \ \& \ x \text{ submitted } f(\{x\text{'s vita, } x\text{'s portfolio})]]]$

Just like for the indefinite example in (71), this is not a reading (74) has. The only wide scope reading available to (74) is the one in which one of the disjuncts makes the sentence true, with covariation between candidates and vitas and portfolios blocked. This distinct wide scope reading cannot be derived with choice functions, suggesting that an alternate analysis is appropriate (e.g. that of Charlow 2014).

The facts laid out in this section pose serious problems for a simple choice functional analysis of wide scope readings of English indefinites and disjunction like *a* and *or*: there is no clear reason why the presence of bound pronouns in indefinites or disjunction should rule out wide existential closure of the choice function variable over the binder. It is, of course, possible to stipulate this fact. Chierchia (2001), for instance, suggests that choice functions must be existentially closed immediately in the scope of a quantifier that binds into an indefinite. (See also Schwarz (2001, 2011), who lays out similar stipulations.) However, there is no obvious motivating factor for such a restriction: existential closure does not affect binding relations. And, as we will see in the next section, even if such a stipulation were to be made, it would have to be language-specific: *khí* phrases in Tiwa do not show the same restrictions.

¹⁹As Charlow notes, the availability of this reading shows that disjunction is not subject to the Binder Roof Constraint in the strictest sense.

The data considered in this section have been taken as strong evidence against a choice functional approach to wide scope readings of English *a* and *or*, and have been central to the development of alternate theories of exceptional wide scope. Endriss (2009), for example, proposes that exceptional wide scope of indefinites arises when those indefinites are interpreted as topics (see §4.3.3 above). For her, the absence of wide scope readings in the sorts of configurations discussed above is due to the (very plausible) fact that those indefinites do not make suitable topics. Brasoveanu and Farkas (2011) present an analysis of indefinite scope in an Independence-Friendly Logic in which the semantics of indefinites is cast in terms of choosing a suitable witness: witness choice may be made either dependent on a higher quantifier or independent of it. Under their theory, the Binder Roof Constraint is derived through the role that the restrictor plays in witness choice: the presence of a bound pronoun in the restrictor requires the witness choice of the indefinite to be dependent on the quantifier that binds the pronoun. Charlow (2019) argues that an indefinite denotes a set of alternatives and this is what allows it to take exceptional wide scope. Under his analysis, alternative-denoting elements can undergo a type shift which allows them to take scope via island-bound movement in order to compose with their nuclear scope. The result of this composition is a set of alternatives which is either existentially closed, or itself can be type-shifted into a scope-taking element. Cases of seemingly exceptional wide scope result when the island itself takes scope above higher operators (i.e. there is scopal pied-piping). Under his system, the Binder Roof Constraint holds because an indefinite cannot move over an operator that binds into it, and therefore cannot take scope over it.²⁰ These three theories present viable alternatives to choice functions in deriving the exceptional wide scope of elements that obey the Binder Roof Constraint, making a stipulation about existential closure in a choice functional account even less attractive.

4.6.2 *khí* phrases outscope binding operators

English *a* and *or* cannot scope above an operator that binds into them with a covarying reading. This poses a problem for a choice functional approach and suggests that it may not be appropriate for these lexical items. In this section, I will show that the *khí* phrases are not constrained in the same way: *khí* indefinites and disjunction can take wide scope over a downward-entailing quantifier that binds into them, maintaining the expected covariation and yielding the expected (weak) reading. This fact provides strong evidence in favor of the choice functional analysis presented in §4.4, and rules out an additional type of movement based analysis that was not already ruled out by the island data in §4.3.2 (namely that of Charlow 2019, which is designed to capture the Binder Roof Constraint).

The test sentences in this section all contain an indefinite or disjunction with a bound reflexive pronoun in the indefinite restrictor or the disjuncts. While in §4.5 this pronoun was bound by a universal quantifier in subject position, the pronouns in these sentences are

²⁰Charlow (2014) presents the same core ideas in a continuations-based grammar in which the indefinite is interpreted *in situ*. See discussion in Chapter 3.

bound by the NPI existential pronoun *sharbo* ‘nobody’. Unlike in English, NPIs are licensed in subject position in Tiwa. This is shown for *sharbo* in (76). Note that *sharbo* is only licensed by clausemate negation (see Chapter 2, §2.6.2).²¹

- (76) a. **Sharbo** lí-ya-m.
 nobody go-NEG-PST
 ‘Nobody went.’ [2016.1.6]
- b. ***Sharbo** lí-ga.
 nobody go-PFV
 Intended: ‘No one/someone went.’ [2016.2.47]

Since *sharbo* is necessarily under the scope of negation, it allows for an ideal test case for indefinite and disjunction scope in Tiwa. Specifically, if the *khí* phrase can scope above negation when *sharbo* binds into it, it must necessarily scope over *sharbo* as well. Using sentences in which *sharbo* binds a reflexive pronoun, I will show first that *khí* indefinites can scope over a quantifier that binds into them, and then show that the same facts hold for *khí* disjunction.

Our first *khí* indefinite example is given in (77). In this sentence the bound reflexive pronoun is the subject of a relative clause that modifies the *khí* indefinite object of the main clause. (Note that a phaskai is a piece of traditional Tiwa clothing.)

- (77) Sharbo_i [pakhâ-**khí** [RC othê_i ta-wa] pháskai] -gô phal-a
 nobody which-KHI REFL.GEN weave-NMLZ phaskai -ACC sell-INF
 as hóng-ya-m.
 want-NEG-PST
 ‘Nobody_i wanted to sell a phaskai that she_i wove.’ [2018.3.50]

Under the choice functional analysis presented in §4.4, this sentence is predicted to have the truth conditions in (78): existential closure of the choice function variable occurs outside the scope of clausal negation and the existential that binds into the *khí* indefinite. Specifically, the analysis predicts that (77) should be true so long as for each woman there is a phaskai that she wove that she doesn’t want to sell. Crucially, the sentence is predicted to be true in these circumstances even if each person wants to sell the other phaskai that she wove.

- (78) $\lambda w. \exists f[\neg \exists x[\forall w' \in \text{BOUL}(x,w)[x \text{ sells } f(\{y: \text{phaskai}(y) \ \& \ x \text{ wove } y\}) \text{ in } w']]]$

This is exactly the right prediction for (77). In contrast to its English translation, this sentence is felicitous in the context in (79), in which each person who wove a phaskai had exactly one phaskai she didn’t want to sell.

- (79) *Felicitous wide scope context for (77):*
 ✓ Saldi, Lastoi and Sonali all wove many phaskai. Each woman was planning to sell

²¹*Sharbo* is morphologically decomposable into an indeterminate pronoun and the scalar additive particle *-bo* ‘also/even’ (see Chapter 2, §2.6.2). In these examples I gloss *sharbo* as ‘nobody’ for readability. See Ramchand 1997 for a compositional Hamblin-style analysis of indeterminate+additive NPIs in Bengali.

all the phaskai that she wove, but when the time came to sell, each woman decided to keep one for herself.

Another example is given in (80). This sentence has the same structure as the last example: the indefinite contains a bound reflexive pronoun as the subject of a modifying relative clause.

- (80) Sharbo_i [pakhâ-**khí** [RC othê_i pre la-wa] khugrí] -gô marê
 nobody which-KHI REFL.GEN buy AUX-NMLZ dog -ACC kill
 ton-ya-m.
 AUX-NEG-PST

‘Nobody_i killed a dog that he_i bought.’ [2018.3.48, 75]

The predicted truth conditions of this sentence are given in (81). The sentence is predicted to be true just in case that for each person there is some dog that the person bought which he didn’t kill, regardless of whether or not he killed other dogs.

- (81) $\exists f[\neg\exists x[x \text{ killed } f(\{y: \text{dog}(y) \ \& \ x \text{ bought } y\})]]$

Just like for the phaskai example, these predictions are exactly correct for (80): the sentence is felicitous in the context in (82), unlike its English translation.

- (82) *Felicitous wide scope context for (80):*
 ✓ Each person bought several dogs. Because of a rabies outbreak, each person killed all their dogs, except for one: every person kept one of the dogs that they bought.

Further, this sentence is judged infelicitous in a narrow scope context in which each person killed all the dogs that he bought, shown in (83).

- (83) *Infelicitous narrow scope context for (80):*
 ✗ Each person bought several dogs. A rabies outbreak meant that all the dogs had to be killed. However, each person refused to kill their own dogs.

Given that *khí* indefinites must take wide scope in general, it is not surprising that this sentence only receives a wide scope reading.

Just as *khí* indefinites have the predicted covarying wide scope readings, so too do *khí* disjunctions. (84) provides the first example of this. As above, the bound pronoun is the subject of a relative clause, which here modifies each disjunct.

- (84) Sharbo_i [othê_i ta-wa kashóng-gô **khí** othê_i ta-wa
 nobody REFL.GEN weave-NMLZ kashong-ACC KHI REFL.GEN weave-NMLZ
 pháskai-gô] phál-a as hóng-ya-m.
 paskai-ACC sell-INF want-NEG-PST

‘Nobody_i wanted to sell the kashong that she_i wove or the phaskai that she_i wove.’
 [2018.3.118]

The predicted truth conditions of this sentence are given in (85): the sentence is predicted to be true so long as each woman doesn't want to sell her either her phaskai or her kashong, even if some women don't want to sell their kashong and others don't want to sell their phaskai. (A kashong is another piece of traditional Tiwa clothing.)

$$(85) \quad \lambda w. \exists f[\neg \exists x[\forall w' \in \text{BOUL}(x, w)[x \text{ sells } f(\{\text{kashong } x \text{ wove, phaskai } x \text{ wove}\}) \text{ in } w']]]]$$

This is exactly the reading that (84) receives. Unlike its English translation, (84) is judged felicitous in the context in (86).

(86) *Felicitous wide scope context for (84):*

✓ Saldi, Sonali and Lastoi each wove many kashong and phaskai. Each woman was planning to sell all the things they wove, but when the time came they did not want to sell them all. Each woman kept one: Saldi kept her phaskai, Sonali kept her kashong, and Lastoi also kept her kashong.

Another example is given in (87). Here each disjunct contains a reflexive possessor.

(87) Sharbo_i [othê_i khûrikha kam-go **khí** othê_i sôrjon munthûri kam-go
nobody REFL.GEN math work-ACC KHI REFL.GEN science work-ACC
] chol-ya-m.
do-NEG-PST

‘Nobody_i did his_i math homework or his_i science homework.’ [2018.3.115]

The predicted truth conditions are given in (88). The sentence is predicted to be true so long as everybody failed to do one of the two homework assignments.

$$(88) \quad \exists f[\neg \exists x[x \text{ did } f(\{x\text{'s math HW, } x\text{'s science HW}\})]]]$$

Again, this is exactly what we find. (87) is judged felicitous in the context in (89), in which some boys didn't do their math homework, while others didn't do their science.

(89) *Felicitous wide scope context for (87):*

✓ Mukton, Tonbor, and Mansing did almost all their school work. Mukton didn't do his math homework (but he did his science), and Tonbor and Mansing didn't do their science homework (but they did their math).

As with *khí* indefinites, the *khí* disjunction in (87) unsurprisingly lacks the narrow scope reading that is available to its English translation. That is, it is judged infelicitous in a context in which no boy did any of his homework:

(90) *Infelicitous narrow scope context for (87):*

✗ Nobody did any homework.

These data show that, in stark contrast to English *a* and *or*, *khí* phrases in Tiwa can scope above a downward-entailing quantifier that binds into them. That is, they receive exactly the wide scope readings that a choice functional analysis predicts, regardless of whether there is a bound pronoun or not in the restrictor or the disjuncts of the *khí* phrase. This fact provides strong evidence in favor of a choice functional approach to the exceptional wide scope that *khí* phrases exhibit.

4.7 The pragmatics of choice functions

I have argued above that a choice functional analysis is appropriate for *khí* phrases in Tiwa on the basis of their ability to scope above an operator that binds into them. In this section, I compare *khí* phrases to another element that can seemingly outscope a binding operator and for which a choice functional analysis has been proposed: the indefinite *a certain*. I show that *khí* phrases differ strikingly from indefinites like *a certain* in a key way, namely, that while indefinites like *a certain* often convey speaker knowledge with respect to the witness (or way of selecting the witness), *khí* phrases very strongly convey speaker ignorance. I suggest that this difference could be captured on a choice functional approach to both by appealing to the presence or absence of existential closure of the choice function variable. In particular, I argue that the ignorance associated with *khí* phrases arises in part as a manner implicature through competition with non-choice functional indefinites and disjunction, and that existential closure of the choice function variable is essential to deriving these effects. In discussing *khí*'s ignorance effects and how they can be derived, this section also situates *khí* indefinites in the broader picture of epistemic indefinites cross-linguistically.

4.7.1 *A certain*

While the plain indefinite *a* in English cannot scope above an operator that binds into it, the indefinite *a certain* can (Schwarz 2001).²² For instance, the sentence in (91) can convey that each candidate failed to submit one paper, while she successfully remembered to submit the others. This stands in stark contrast to the plain indefinite *a*, which can only receive a narrow scope reading (see §4.6.1 above).

(91) No candidate_{*i*} submitted [**a certain** paper she_{*i*} had written.]

The reading that *a certain* receives in (91) has been described as “functional” in the sense that it suggests that there is a systematic way of relating candidates to papers that they didn't submit (see in particular Hintikka 1986 and Enç 1991). For instance, a natural scenario for (91) would be one in which each candidate purposely failed to submit her most controversial work. In contrast, it is infelicitous if the speaker simply wishes to convey that each candidate didn't submit a paper (and from the speaker's perspective it's entirely random which).

Functional readings of *a certain* indefinites are available even in the absence of a bound pronoun. As Hintikka (1986) observes, while the sentence in (92) has a clear wide scope interpretation (on which, for instance, every true Englishman adores the queen), it also has a covarying functional interpretation on which every true Englishman adores his mother.

(92) Every true Englishman adores [**a certain** woman.] (Hintikka 1986:334)

²²I follow Abusch and Rooth (1997) and many others in treating *a certain* as a lexicalized determiner.

In contrast, the *a certain* indefinite in (92) never allows for a true narrow scope reading on which each true Englishman simply adores any woman. *A certain*, then, is another obligatory wide scope indefinite, which additionally allows for covarying functional readings.

Building on Hintikka's original analysis, which explicitly invokes functions, Kratzer (1998) argues that both the wide scope and functional interpretations of *a certain* can be captured by assuming a (Skolemized) choice functional analysis in which the choice function variable is not subject to existential closure, but is left free. (Skolemization is necessary to capture the covarying functional reading of (92), which lacks an overt bound pronoun; see §4.5.2.) Schwarz (2001) adopts Kratzer's proposal, showing that it captures the functional reading in the sort of downward-entailing context in (91), as shown in (93).

$$(93) \quad \llbracket(91)\rrbracket^g = \neg\exists x[\text{candidate}(x) \ \& \ x \text{ submitted } f(x, \{y: y \text{ is a paper } x \text{ wrote}\})]$$

These truth conditions convey that no candidate submitted whatever paper is selected for her by the value of the choice function variable – for instance, the ‘most controversial paper’ function. Because the choice function variable is always left free, *a certain* cannot receive true narrow scope readings, and the covarying functional reading arises as a pseudo-scope phenomenon through Skolemization. (Indeed, on this analysis *a certain* does not scopally interact with other operators at all. I will, however, continue to refer to the non-covarying reading of *a certain* as a wide scope reading for simplicity.)

An important aspect of both the functional and wide scope readings that *a certain* receives is the sense that the speaker often has a particular witness – or way of selecting a witness – in mind (see, e.g., Hintikka 1986, Enç 1991, Abusch and Rooth 1997, Jayez and Tovena 2006). For instance, (91) is perhaps most felicitously uttered in a context in which the speaker knows that each candidate failed to submit her most controversial paper. It would, in contrast, be highly unusual to use it in a context in which the speaker has no knowledge of the papers that the candidates failed to submit. This aspect of the pragmatics of *a certain* is compatible with the free choice function variable approach adopted by Kratzer and Schwarz, calling to mind in particular Fodor and Sag's (1982) referential analysis of wide scope indefinites. For them, indefinites have a referential reading on which the referent need not be contextually supplied or known to the addressee, but is simply an individual that the speaker has in mind. On a free choice function variable approach, the value of the choice function likewise need not be contextually supplied or known to the addressee, but could well refer to a particular choice function the speaker has in mind.²³

There is a large literature around the knowledge inferences found with *a certain* and similar indefinites cross-linguistically, and a free choice function variable analysis is by no

²³Yanovich (2013) proposes that *a certain* additionally comes with a presupposition that the speaker knows the value of the choice function variable. This, however, is likely too strong, as *a certain* indefinites do not necessarily require the speaker know the identity of the witness or function, as will be discussed in §4.7.3 below. Kratzer (2003) argues that the absence of knowledge of a particular function or witness is not a problem for a free variable approach; a speaker can refer without necessarily knowing what she is referring to – it's enough to know that it exists. As discussed in §4.7.3, I assume that the knowledge inferences that arise are pragmatic.

means the only way capture these inferences. What is important for our immediate purposes here is that the free choice function variable approach can derive the “wide scope” reading of the *a certain* indefinite over an operator that binds into it, as in (91), provides a natural explanation for functional readings more broadly (by literally invoking functions), and is compatible with speaker knowledge effects. For alternative approaches that pay particular attention to the felicity conditions of these sorts of indefinites (both in English and cross-linguistically), see Abusch and Rooth (1997), Farkas (2002b), Jayez and Tovenà (2002, 2006), Onea and Geist (2011), Kagan (2011), Ebert et al. (2013) and Martin (2013).

4.7.2 The pragmatics of *khí*

In Tiwa, *khí* phrases that contain bound pronouns are compatible with contexts that facilitate functional readings. For instance, (94) was judged felicitous in a context in which no student listens to whatever teacher it is that (s)he dislikes – there is a contextually salient way of selecting a teacher for each student. (Note that (94) also provides another example of a violation of the Binder Roof Constraint for *khí* indefinites.)

- (94) Context: Mukton, Lastoi, and Tonbor are all generally very good students, always obeying their teachers. But each one really does not like one teacher. Mukton hates Madame A, Lastoi hates Sir B, and Tonbor hates Sir C.

✓ Sharbo_i [pakhâ-**khí** othê_i sígai ojâ] -go khôna-ya-m.
 nobody which-KHI REFL.GEN teacher -ACC hear-NEG-PST
 ‘Nobody_i listened to some teacher of his/hers_i.’ [2018.3.52]

The possibility of functional readings such as these is compatible with the choice functional analysis of *khí* proposed above; for (94), the witnessing choice function is the one which selects whichever teacher is hated. While the examples discussed in §4.6.2 were judged felicitous without a contextually provided way of selecting the witness, it is possible that consultants imagined an enriched context in which there was such contextual support. For instance, the speaker may have assumed for (84) above that each woman kept her favorite piece from among those she wove (though she did not make any comments to that effect).²⁴

²⁴It’s unclear whether functional readings of *khí* phrases are available in the absence of a bound pronoun, as they are for *a certain*. As shown in §4.3, *khí* phrases are generally rejected in covarying contexts, and in §4.5.2 I take this to mean that a Skolemized approach for *khí* over-generates in a way that it doesn’t for *a certain*. Initial evidence suggests that even when there is contextual functional support, functional covarying readings are not available in the absence of a bound pronoun, as shown in (1).

- (1) Context: Mukton, Mansing, and Tonbor are all generally very good students who always obey their teachers. But each student has one teacher he really doesn’t like. Mukton hates Madame A, Mansing hates Sir B, and Tonbor hates Sir C. None of these students ever listens to that teacher that he hates.

Sharbo [pakhâ-**khí** sígai ojâ-go] khânjur sa-ya.
 nobody which-KHI teacher-ACC listen-NEG
 ‘Nobody listens to some teacher.’ [elicited on WhatsApp, 05/06/2019]

While *khí* phrases are compatible with functional contexts, as expected on a choice functional approach, they differ from *a certain* and similar indefinites in a striking way: rather than conveying speaker knowledge, they convey speaker ignorance. These ignorance effects are highly salient to speakers, who, when presented with *khí* sentences, frequently comment that the speaker is lacking information. For instance, when presented with the disjunction in (95), a consultant commented that the sentence was felicitous to use if the speaker is in doubt about the number of children Monbor has.

- (95) Monbor-e [thin-tha **khí** shari-tha] korkhyá tong-o.
 Monbor-GEN three-CL KHI four-CL child exist-NEUT
 ‘Monbor has three or four children.’ [2018.1.3]

Comment: “If in doubt. Someone told me he has three children but I have forgotten whether it’s three or four.”

Similarly, when presented with (96), a consultant accepted the sentence on the condition that we do not know the witness to the indefinite.

- (96) [Shar-**khí** margî] mile lái-gô lekhé-ga.
 who-KHI woman every book-ACC read-PFV
 ‘Some woman read every book.’ [2017.1.18]

Comment: “If we do not know the girl.”

These ignorance effects are much stronger than those found with unembedded *ba* disjunctions or with other indefinites, which do not prompt the same degree of commentary on the speaker’s knowledge state. Indeed, while *ba* disjunction and other indefinites are accepted in ignorance contexts, speakers frequently offer *khí* phrases as a clearer way of conveying that ignorance.²⁵

While the ignorance effects found with *khí* phrases are very strong, they do behave like a conversational implicature. For instance, these ignorance effects can be, and frequently are, reinforced overtly with *via* sluicing. This is illustrated for *khí* indefinites in (97) and *khí* disjunction in (98).

- (97) a. John [pajíng-**khî**] lí-ga, thêbo pajíng ang si-ya.
 John where-KHI go-PFV but where 1SG know-NEG
 ‘John went somewhere, but I don’t know where.’ [2016.2.19]

Comment: “It sounds like all the students hate one teacher.”

Functional readings, however, are subtle and further testing would be necessary to rule them out entirely for *khí* phrases that lack bound pronouns, for example by testing them in the sorts of experimental contexts devised by Martí and Ionin (2019) in investigating functional readings of Russian indefinites.

²⁵That is not to say that unembedded *ba* disjunctions do not give rise to ignorance inferences, simply that these inferences are weaker and/or less salient to speakers. Similarly, *pha* indefinites in Tiwa do implicate speaker ignorance with respect to the witness, but these implicatures are likewise less salient. See Chapter 3 on *ba* disjunction, and Dawson 2018b and Chapter 2 (§2.6.2) on *pha* indefinites.

- b. Maria [*pasí-khî lái*] -gô *pre-ga, thêbo pasí ang si-ya.*
 Maria how.many-KHI book -ACC buy-PFV but how.many 1SG know-NEG
 ‘Maria read some number of books, but I don’t know how many.’ [2016.2.113]
- c. Maria [*inda-khí phot-shá*] -gô *pre lá-ga, thêbo ang si-ya.*
 Maria what-KHI thing-one -ACC buy AUX-PFV but 1SG know-NEG
 ‘Maria bought herself something, but I don’t know what.’ [2015.1.126]
- (98) a. Sharbo [*khándal khí thílu*] -gô *chá-ya-m, thêbo pakhâ-go ang*
 nobody jackfruit KHI banana -ACC eat-NEG-PST but which-ACC 1SG
si-ya.
 know-NEG
 ‘Nobody ate jackfruit or banana, but I don’t know which.’ [2018.1.117]
- b. Q: How do you spell ‘Guwahati’?
 A: [*Gauhati khí Guwahati,*] *thêbo pakhâ ang si-ya.*
 Gauhati KHI Guwahati but which 1SG know-NEG
 ‘Either Gauhati or Guwahati, but I don’t know which.’ [2018.1.119]
- c. Sonali [*khónana khí sonena*] *phi-w, thêbo indâ tin-a ang*
 Sonali tomorrow KHI day.after come-NEUT but what day-DAT 1SG
si-ya.
 know-NEG
 ‘Sonali will come tomorrow or the day after, but I don’t know what day.’
 [2018.2.116]

Similarly, *khî*’s ignorance effects can be canceled and/or generally absent in appropriate discourse contexts. For example, a *khí* indefinite is felicitous in a context in which the speaker can identify the witness, but chooses not to tell the addressee, as in (99) and (100). That the speaker can explicitly indicate that she won’t share the information shows that she is not simply feigning ignorance.

- (99) Context: Mukton went to Paris, but I don’t want to tell you where he went.
 ✓ Mukton [*pajíng-khî*] *lí-ga, thêbo ang sóng-ya pajíng.*
 Mukton where-KHI go-PFV but 1SG tell-NEG where
 ‘Mukton went somewhere, but I won’t tell you where.’ [2017.1.141]
- (100) Sonali [*shar-khí*] -gô *sháre-do. Ang-do si-w shar-go, thêbo*
 Sonali who-KHI -ACC flirt-IPFV 1SG-TOP know-NEUT who-ACC but
nága-do kusí-ya.
 2SG.DAT-TOP tell-NEG
 ‘Sonali is flirting with someone. I know who it is, but I’m not going to tell you.’
 [2017.2.55]

The example in (101) shows that ignorance effects can also be absent with *khí* disjunction in the right context. Here, the addressees know that the speaker knows where the ball is,

and the speaker knows they know this. Because there is a clear contextual reason for not identifying which disjunct makes the proposition true, the speaker can use a *khí* disjunction without implicating ignorance.

(101) Context: Me and the children are playing a game. We have one ball, and I hide it somewhere, and they have to find it. Whoever finds it first wins. I give them a clue.

✓ Pol [tewsâl-o **khí** pagân-o] thái-do.
 ball church-LOC KHI garden-LOC stay-IPFV

‘The ball is in the church or in the garden.’ [2018.1.44]

Note that, while possible, it is not easy to cancel *khí*’s ignorance effects. Speakers often reject an attempt at cancelation by offering an alternative sentence with a *ba* disjunction or another indefinite. The difficulty with which *khí*’s ignorance effects are canceled is compatible with the manner implicature account sketched out below; manner implicatures are in general more difficult to cancel than quantity implicatures (Rett 2020).

That an obligatory wide scope disjunction would implicate speaker ignorance is unsurprising. Indeed, the most natural context in which to use wide scope (or unembedded) disjunction is one in which the speaker does not know which disjunct makes the proposition true – otherwise (being cooperative) she would have used that disjunct itself. For wide scope indefinites, however, ignorance effects are not a given. Cross-linguistically, wide scope indefinites are often associated with speaker knowledge, rather than speaker ignorance, as in the case of *a certain*, discussed above, and *koe* indefinites in Russian (Haspelmath 1997, Geist and Onea 2007, Kagan 2011, among others). While there are many indefinites cross-linguistically that convey speaker ignorance – such as French *un quelconque* and Spanish *algún* – many of these are associated with a degree of scopal flexibility (e.g. Jayez and Tovena 2006 on *un quelconque*) and even a preference against scoping out of certain islands (e.g. Alonso-Ovalle and Menéndez-Benito 2013 on *algún*). A notable exception to this generalization are Russian *to* indefinites, which prefer wide scope readings and convey speaker ignorance (e.g. Geist and Onea 2007). These are discussed further below.

A key source of ignorance effects for many indefinites is their non-singleton domain requirements. Jayez and Tovena (2006), for example, show that French *un quelconque* cannot quantify over a singleton domain, and attribute its ignorance effects to its nature as an epistemic free choice item. Similarly, Alonso-Ovalle and Menéndez-Benito (2010) show that Spanish *algún* presupposes that its domain is non-singleton, and (following Kratzer and Shimoyama 2002 on German *irgendein*) derive its ignorance effects as a quantity implicature. In Dawson 2018b I show that Tiwa’s *pha* indefinites impose a similar anti-singleton constraint, and likewise convey speaker ignorance.

The ignorance effects of *khí* phrases cannot be accounted for by appealing to non-singleton domain requirements. While *khí* disjunctions by nature have non-singleton domains, *khí* indefinites can freely combine with restrictors that have inherently singleton extensions (Dawson 2018b). For instance, the *khí* indefinite in (102) was judged felicitous, even though the extension is necessarily singleton, as there can only be one Indian Prime Minister. (In

contrast, a *pha* indefinite is rejected in this sentence – unless the context explicitly includes past and present prime ministers; see example (387) in Chapter 2, §2.6.2.) Similarly, the *khí* indefinite in (103) was accepted even though the speaker presumably knows there could only be one country called Zambia.

- (102) Ang [shar-**khí** India-ne PM] -go lak mán-a lí-do.
 1SG who-KHI India-GEN PM -ACC meet-INF go-IPFV
 ‘I’m going to meet some Indian Prime Minister.’ [2016.2.80]
- (103) Mukton [pajíng-**khî** Zambia hon-a tes] -a lí-ga.
 Mukton where-KHI Zambia say-NMLZ country -DAT go-PFV
 ‘Mukton went to some country called Zambia.’ [2017.1.141]

The acceptability of *khí* indefinites such as these shows that *khí*’s ignorance effects do not arise due to non-singleton domain requirements.

The singleton domain examples in (102) and (103) raise the question of what ignorance exactly *khí* conveys. For *khí* disjunctions, the ignorance uniformly concerns which disjunct makes the proposition true. For *khí* indefinites, the picture is more nuanced. Example (102), for instance, can be used in a scenario in which the speaker knows that the Prime Minister is Narendra Modi; she can thus identify the witness in some sense. A consultant reports that the use of a *khí* in this sentence instead conveys that the speaker is unfamiliar with Modi, because, for example, she has not met him before. The use of *khí* in (103) (like its English translation) conveys that the speaker is likewise unfamiliar with Zambia.²⁶

Looking more broadly, *khí* indefinites convey that the speaker is unfamiliar with respect to some relevant aspect of the witness. Often this is some regular identifying property, such as the witness’s name, as indicated by the speaker’s comment on (104).

- (104) Ang [shar-**khí** Delhi-jíng lí-wa mewâ] -go si-ga.
 1SG who-KHI Delhi-ALL go-NMLZ man -ACC know-PFV
 ‘I know some man who’s been to Delhi.’ [2017.1.54]
- Comment: “We do not know his name, but we know what he looks like, we could recognize him.”

However, the property may be much less conventional than that. The example in (105) provides a pertinent example. Here the restrictor to the *khí* indefinite is a noun that isn’t normally associated with speaker ignorance: *chor* ‘friend’. As expected, given *khí*’s pragmatics, this sentence cannot simply be followed up by asserting the speaker’s familiarity with the witness as in (105a). However, the follow-up becomes acceptable if *khí* is clearly intended to convey ignorance about some other aspect of the witness. For instance, (105b) shows that *khí* can convey ignorance with respect to the witness’ hair color, which is contextually relevant because the speaker is searching for him and hair color is a good way to spot someone.

²⁶On the ignorance effects found with English *some*, see Weir 2012.

- (105) Ang [shar-**khí** chor] -go lak mán-a lí-do.
 1SG who-KHI friend -ACC meet-INF go-IPFV
 ‘I’m going to meet a friend.’ [2017.2.6]
- a. # Pe ái kró-wa chor.
 3SG my good-NMLZ friend
 ‘He’s a good friend of mine.’
- b. ✓ Pe ái kró-wa chor, thêbo ang pe-ne khúni-ne ajâr-go
 3SG my good-NMLZ friend but 1SG 3SG-GEN hair-GEN color-ACC
 plaw-ga. Pegâne angá pe-go pishár-a sâsti hóng-o.
 forget-PFV therefore 1SG.DAT 3SG-ACC search-INF trouble COP-NEUT
 ‘He’s a good friend of mine, but I forget what color hair he has, so I’m going to have trouble searching for him.’

Examples like these show that *khí* indefinites do not necessarily convey that the speaker cannot identify the witness at all, but that the speaker cannot identify the witness with respect to some salient/contextually relevant property.²⁷ In the next section, I will attribute these ignorance readings to *khí*’s choice functional nature.

While *khí* phrases are clearly quite different from epistemic indefinites like French *un quelconque* and Spanish *algún*, they do bear resemblance to Russian *to* indefinites, which are also associated with preferential wide scope and speaker ignorance (Haspelmath 1997, Geist and Onea 2007, Kagan 2011).²⁸ Kagan (2011) further reports that *to* indefinites signal that the speaker cannot identify the witness in some contextually relevant way, similar to what we saw for *khí* indefinites above. She presents an analysis on which *to* indefinites come with a felicity condition (which she treats as a conventional implicature) that requires there to be no single individual across all the speaker’s doxastic worlds for whom the sentence is true. Whether or not this condition accurately captures *to*’s ignorance component, the reinforcement and cancelation data in (97)-(101) above suggest that this sort of lexicalized felicity condition is not appropriate for *khí* phrases in Tiwa. Geist and Onea (2007) take a different approach to the ignorance effects of *to* indefinites, proposing that they instead arise as a conversational implicature through competition with *koé* indefinites. Specifically,

²⁷This flexibility in the ignorance is central to Aloni and Port’s (2015) understanding of epistemic indefinites. Their key observation is that what it means to identify a witness will vary in different contexts. Couched in conceptual covers (Aloni 2001), such as naming, ostension, and description, Aloni and Port propose that epistemic indefinites are only licensed when there is a shift in the conceptual cover being used to identify the witness. This analysis treats this restriction as felicity condition associated with the lexical item itself, but given the evidence presented above that *khí*’s ignorance effects can be absent in certain contexts, I opt to treat the effects as a conversational implicature and tie them to *khí*’s choice functional nature (which is independently needed to account for its scopal behavior).

²⁸*to*’s preference for wide scope is not as strict as *khí*’s obligatory wide scope. Yanovich (2005), for instance, reports that *to* indefinites may scope under a conditional, and Kagan (2011) observes that they may scope under quantificational adverbs (something I have not tested in Tiwa). More recently, Martí and Ionin (2019) show experimentally that *to* allows for true (i.e. non-functional) narrow scope readings with respect to higher quantifiers.

they propose that *koe* is lexically referentially anchored to the speaker, which gives rise to speaker knowledge effects. *To* indefinites, in contrast, are lexically underspecified, but implicate speaker ignorance due to competition with *koe*. While a similar account would capture the behavior of *khí*'s ignorance effects as a conversational implicature, it cannot be extended to the Tiwa data. In particular, Tiwa lacks an indefinite (or disjunction) that conveys speaker knowledge: *pha* indefinites also convey speaker ignorance, and *sája* indefinites are neutral with respect to speaker knowledge (Dawson 2018b). There is simply no competitor associated with knowledge that would give rise to ignorance effects with *khí*.²⁹

4.7.3 Choice functions, existential closure and ignorance

While the ignorance effects of *khí* phrases do not arise through competition with an indefinite (or disjunction) that conveys speaker knowledge, I will argue that competition is ultimately the source of speaker ignorance. Specifically, I propose that speaker ignorance arises through competition with non-choice functional indefinites and disjunction on the one hand, and referential expressions and the individual disjuncts on the other. I additionally suggest that existential closure is essential to deriving ignorance effects, providing further evidence in favor of the analysis adopted in §4.4. For ease of discussion, I first consider *khí* indefinites in detail, extending the account to *khí* disjunction at the end of the section.

When a speaker uses a *khí* indefinite, she opts not to use a plain indefinite. For instance, when a speaker utters (106), repeated from (96) above, she could have equally uttered (107).

(106) [Shar-**khí** margî] mile lái-gô lekhé-ga.
 who-KHI woman every book-ACC read-PFV

‘Some woman read every book.’ [2017.1.18]

(107) [**Sája** margî] mile lái-gô lekhé-ga.
 one.CL woman every book-ACC read-PFV

‘Some woman read every book.’ [2017.1.18]

These two sentences are truth-conditionally equivalent. Like (106), the indefinite in (107) scopes above the quantificational object; it was judged felicitous in a context in which a single woman read all the books, but infelicitous in a context in which each book was read by a different woman.³⁰ On the (simplifying) assumption that plain indefinites like *sája*

²⁹The only other ignorance-conveying wide scope indefinite that I am aware of is Sinhala's *də* series, discussed by Slade (2015). While Slade provides a thorough discussion of the contexts that license *də* indefinites, he does not present a full semantic or pragmatic analysis. As we will see in §4.8 below, *də* is remarkably similar to Tiwa *khí* in its scopal behavior, and I assume its ignorance effects arise in a similar manner.

³⁰Note that the impossibility of the inverse scope reading for (107) follows from *sája* indefinites' resistance to distributive readings more broadly. See Chapter 2, §2.6.2 for discussion.

introduce existential quantification directly over individuals, the truth conditions of each sentence are given in (108) and (109) respectively.³¹

(108) $\llbracket(106)\rrbracket = \exists f[\forall x[\text{book}(x) \rightarrow f(\{y: \text{woman}(y)\}) \text{ read } x]]$

(109) $\llbracket(107)\rrbracket = \exists y[\text{woman}(y) \ \& \ \forall x[\text{book}(x) \rightarrow y \text{ read } x]]$

Because neither indefinite is more informative than the other, competition between them does not give rise to a quantity implicature. Instead, I propose that ignorance arises from competition between these indefinites (and more informative referential expressions) by way of a manner implicature in the following way.

khí indefinites are more complex than plain indefinites, both in their structure and in their semantics. Structurally, *khí* indefinites involve a full indeterminate pronoun and an additional particle, where plain indefinites (at least on the surface) only involve a numeral. Semantically, *khí* indefinites introduce higher-order quantification over choice functions, where plain indefinites introduce quantification directly over individuals. The choice to use a more complex but truth-conditionally equivalent form is the basis of the manner implicature.

Rett (2020) notes that by nature the particular effects of manner implicatures are based on the semantics of the marked form that the speaker chose to use. When a speaker opts to use a *khí* indefinite rather than its less-marked plain competitor, she quantifies over choice functions rather than directly over individuals. In doing so, the speaker highlights ways of selecting an individual from the domain without explicitly doing so. The addressee may wonder why this is the case; if how the witness is identified is so important – that is, important enough to invoke through the use of a more marked indefinite form – why did the speaker not simply identify the witness or name the way of identifying it explicitly? For example, in (105) above, why did the speaker not name her friend, or (in the case that the addressee does not know the friend) at least provide contextually relevant identifying information (e.g. ‘my friend with red hair’)? There are two obvious reasons a speaker would fail to identify a witness: (i) because she does not wish to, or (ii) because she cannot, due to lack of information. We saw in §4.7.2 above that *khí* phrases can be used in the first case, given enough contextual support, but otherwise very strongly implicate the second.

³¹Plain indefinites in Tiwa (as in English) can scope out of islands. For instance, the plain indefinites in (1) can receive a wide scope reading from within a conditional antecedent. (As shown in Chapter 2, §2.5.2, plain indefinites can also receive narrow scope readings under conditional operators.)

- (1) Lastoi [**sája** ticher-go] pásé-gai-dô, lí-w.
Lastoi one.CL teacher-ACC speak-COND-TOP go-NEUT

‘If Lastoi talks to a teacher, she will go.’ [2017.1.156]

✓ Lastoi needs to get permission from a particular teacher in order to leave school early; no other teacher can grant her permission.

Plain indefinites, therefore, have a reading on which they are truth-conditionally equivalent to *khí* indefinites in (almost) all cases. Unfortunately, I do not have data for plain indefinites in the downward-entailing contexts discussed above. Further investigation is required to determine how plain indefinites take scope (e.g. whether through singleton domains (Schwarzschild 2002), topicalization (Endriss 2009), witness selection (Brasoveanu and Farkas 2011), or roll-up movement (Charlow 2019)).

This then is the source of speaker ignorance: the speaker highlights ways of identifying the witness by using a choice functional indefinite, thereby indicating they are relevant to the conversation, while declining to do so. I assume that the prevalence of ignorance over withholding effects are due to the assumption on the part of the hearer that the speaker is being cooperative.

But what of the difference between *khí* indefinites and *a certain*? Given their scope behavior in the downward-entailing contexts discussed in §4.6.2 and §4.7.1 above, both plausibly invoke choice functions and therefore ways of identifying individuals. Given this, why do they differ so starkly in their pragmatic effects? The difference, I believe, comes down to the presence or absence of existential closure of the choice function variable. When an English speaker uses an *a certain* indefinite, she chooses not to use a definite, thereby suggesting that the witness to the indefinite is not recoverable from context or that she does not wish to reveal it. She does, however, refer (rather than, say, existentially quantify over individuals), suggesting that she has a particular value in mind. In contrast, since *khí* indefinites do not refer, this implication is missing and the opposite – speaker ignorance – arises.

As noted in footnote 23 above, the use of *a certain* does not entail that the speaker has a particular function in mind. For example, Enç (1991) notes that sentences like (110) can be felicitously used in a context in which the speaker cannot identify which tasks the children were given or the way in which they were assigned.

(110) The teacher gave each child **a certain** task to work on during the afternoon.
(Enç 1991:19)

On the account sketched out here, this is expected if there is some other reason to invoke choice functions. For example, the speaker in (110) could be highlighting that there was a systematic way in which the teacher assigned tasks to children (i.e., she is invoking choice functions to give rise to the functional reading). That speaker knowledge would be absent in cases like these is compatible with the account sketched here; knowledge effects are not lexically encoded, but arise simply because the speaker refers.

The ignorance effects that arise with *khí* disjunction are less surprising than they are with *khí* indefinites. That a wide scope disjunction would implicate speaker ignorance is wholly expected: the speaker knows enough to narrow down the domain to (at least) two disjuncts, but she does not reveal which one makes the proposition true. The most plausible explanation for this, assuming the speaker is cooperative, is that she does not know which disjunct makes the proposition true. In unembedded contexts, however, the sense of ignorance that *khí* disjunctions convey is significantly stronger than the ignorance conveyed by *ba* disjunctions. This, I suggest, follows from the same sort of competition discussed above for *khí* indefinites. Specifically, in unembedded contexts *ba* and *khí* disjunction are truth-conditionally equivalent. The hearer may then wonder why the speaker invokes a more complex form involving quantification over choice functions, rather than the set of disjuncts itself, and concludes that the speaker is highlighting ways of selecting the true disjunct from the set because she does not know how to do so.

In this section, I have argued that the pragmatics of *khí* phrases are most readily understood if they introduce existential closure over choice function variables. If this account is correct, the uniform ignorance effects found with *khí* phrases constitutes an additional argument in favor of the analysis proposed in §4.4 above, in which existential closure of the choice function variable always take place at the edge of a finite CP.

4.8 Obligatory wide scope: the cross-linguistic outlook

In §4.6 we saw that *khí* indefinites and disjunction show strikingly different behavior from indefinites and disjunctions like English *a* and *or*. While *a* and *or* phrases cannot give rise to (covarying) wide scope readings over a downward-entailing operator that binds into them, *khí* phrases do. In the last section, we saw that another English indefinite – namely, *a certain* – patterns with *khí* in its ability to receive “wide scope” readings in similar configurations (though we also saw that the pragmatics of *a certain* suggests that it is not truly quantificational). The differences in whether or not a given lexical item can scope above a binding operator call for an explanation and I would like to suggest that the most straightforward way to do this is to assume that elements that can outscope a binding operator are always choice functional, while elements that cannot never are. If this approach is correct, it removes the need for a Chierchia-style stipulation for elements like English *a* and *or* that states that the choice function variable must be existentially closed in the immediate scope of a quantifier that binds into its argument. Indeed, the Tiwa facts shown in §4.6 make such a stipulation particularly unattractive since it could not hold cross-linguistically; while English *or* and *a* would obey such a requirement, it would necessarily be absent for *khí* phrases, ruling out a universal underlying functional explanation for why the stipulation might hold. Instead, I propose that the empirical differences between Tiwa’s *khí* phrases and English *a* and *or* are most naturally captured by assuming that *khí* phrases are uniformly choice functional, ensuring their unconstrained wide scope, while the exceptional wide scope found with *a* and *or* arises through a separate mechanism (e.g. the roll up movement proposed by Charlow (2019)). If this turns out to be correct, the implication is that there are multiple routes that natural language employs in deriving exceptional wide scope. While this conclusion may also be reached on the basis of *a certain*’s “scopal” behavior, the Tiwa facts are important because they (i) provide evidence in favor of existentially closed choice functional indefinites in natural language, and (ii) along with the Sinhala data discussed below, provide the first case (to my knowledge) of clearly choice functional disjunction (i.e. one that gives rise to covarying wide scope readings).

In the remainder of this section, I will turn to the larger question of whether there is a strong correlation between choice functions and obligatory wide scope. The data examined so far suggests that there may be: it is the obligatory wide scope indefinites and disjunctions (namely, *khí* phrases and *a certain*) which can characteristically outscope a binding operator,

while variable scope indefinites and disjunctions like English *a* and *or* cannot. In particular, I will explore this potential correlation through the following two questions: (i) are all obligatory wide scope indefinites and disjunctions choice functional? and (ii) are choice functions ever responsible for wide scope readings of scopally ambiguous indefinites or disjunction? While a complete empirically-grounded answer to either question will require significantly more cross-linguistic investigation, I will sketch out some potential conclusions on the basis of two other cross-linguistic cases in which indefinites or disjunction have been reported to scope above a quantifier that binds into them. These cases are the Sinhala Q-particle *də* (Wathugala and Dawson 2019) and the Ga indefinites *ko* and *kome* (Renans 2018).

Sinhala (Indo-Aryan; Sri Lanka) has a Q-particle *də* that, in addition to its use in questions, is used to form indefinites and disjunction (Weerasooriya 2017, Wathugala and Dawson 2019). Basic examples of these two uses are illustrated in (111) and (112). As shown in (111), *də* indefinites are formed through suffixation of *də* to an indeterminate base, parallel to Tiwa *khí* indefinites. Disjunctions are formed by suffixing *də* to each disjunct, as shown in (112).

(111) John [monəwa-**də**] biiw-a.

John what-də drank-A

‘John drank something.’ (Weerasooriya 2017:573)

(112) John [paan-**də** bat-**də**] kæw-a. (Mamə danne næ monəwa-də kiəla.)

John bread-də rice-də ate-A 1SG know not what-Də COMP

‘John ate bread or rice. (I don’t know which.)’ (Wathugala and Dawson 2019)

Hagstrom (1998), Cable (2010) and Slade (2011) have argued for a unified analysis of the question and indefinite use of *də* as a choice function variable which is bound by either an interrogative operator in the CP domain or existential closure in the TP/IP domain. Wathugala and Dawson (2019) extend this analysis to (non-interrogative) *də* disjunction, and provide two pieces of additional support. The first is that *də* indefinites and disjunction must take wide scope over clausemate operators, including from within islands, which is expected under an analysis in which existential closure has a fixed position high in the structure.³² The second, most crucial piece of supporting evidence is that *də* indefinites and disjunction, just like *khí* phrases in Tiwa, give rise to the predicted wide scope covarying readings from downward-entailing environments when they contain a bound pronoun. This is shown in (113) and (114). In (113), the *də* indefinite is modified by a relative clause that contains a pronoun bound by the subject NPI.³³ A choice functional analysis in which *də* is bound by existential closure higher than the subject predicts that the sentence should have the reading in (113b). As the felicitous context in (113a) shows, this is exactly the case. The sentence can convey that for each baby there is some toy that the baby cannot reach, even if each baby can reach several other toys.

³²Note that *də* patterns with Tiwa *khí* in giving rise to strong ignorance inferences (see especially Slade 2015 on *də* indefinites). If the pragmatic analysis in §4.7 above is correct, these effects provide independent evidence for existential closure of the choice function variable.

³³As in Tiwa, this NPI is formed from an indeterminate pronoun and the scalar additive suffix.

- (113) a. Kahaṭa-wat_i [[RC eyaa_i kæmiti] monəwa-**də**] ganna bæ.
 who.DAT-ADD 3SG like something-də reach cannot
 ‘No one_i can reach a toy that she_i likes.’ (Wathugala and Dawson 2019)
 ✓ There are three babies. Each baby can reach several toys that she likes, but for each baby there is a toy that she likes that she cannot reach.
- b. $\exists f[\neg\exists x[x \text{ can reach } f(\{y: \text{toy}(y) \ \& \ x \text{ likes } y\})]]$

(114) shows similar facts for *də* disjunction. In this case, each disjunct contains a possessive pronoun bound by the NPI subject. The predicted truth conditions are given in (114b). Again, these truth conditions are appropriate: (114a) is judged felicitous in a case in which each person does not live with one of his/her parents, even if each person lives with his/her other parent.

- (114) a. Kauru-wat_i [eyaage_i amma-**də** eyaage_i taatta-**də**] ekka jivat wenne næ.
 who-ADD 3SG.GEN mother-də 3SG.GEN father-də live.with not
 ‘No one_i lives with her_i mother or her_i father.’ (Wathugala and Dawson 2019)
 ✓ There are three people: X, Y, Z. X lives with her mother, but not her father. Y lives with her father, but not her mother. Z lives with his mother, but not his father.
- b. $\exists f[\neg\exists x[x \text{ lives with } f(\{x\text{'s mother, } x\text{'s father}\})]]$

Sinhala *də* indefinites and disjunction, then, behave the same as Tiwa’s *khí* phrases when a quantifier binds into them: they can receive the expected bona fide covarying wide scope readings that the choice function analysis predicts, suggesting that they too are choice functional. Significantly, what *də* and *khí* also have in common, in contrast to indefinites and disjunction like English *a* and *or*, is that they take obligatory wide scope generally. This correlation of variable vs. obligatory wide scope and the ability to outscope a binding operator is summarized in Table 4.1. If the behavior of Tiwa *khí* and Sinhala *də* are representative of obligatory wide scope indefinites and disjunction more broadly, they lend support to the idea that obligatory wide scope elements are necessarily choice functional: all obligatory wide scope indefinites and disjunctions can (and must) outscope a binding operator (and the bottom left cell of the table will remain unfilled).

Scope	Can outscope a binder?	
	no	yes
variable	English <i>a</i> , <i>or</i>	
obligatory wide	–	Tiwa <i>khí</i> , Sinhala <i>də</i>

Table 4.1: Scope and the Binder Roof Constraint

The constellation of properties that Tiwa *khí* and Sinhala *də* share are not shared by every element that seems to allow for covarying wide scope readings over a operator that binds into it. Renans (2018) presents a choice functional analysis of two indefinite articles in Ga

(Kwa; Ghana), *ko* and *kome*, which she argues denote Skolemized choice function variables. Unlike Tiwa *khí* and Sinhala *də* (see example (39) for Tiwa), these articles combine directly with a nominal property and (can) give rise to covarying readings under quantifiers even in the absence of a bound pronoun.³⁴ Both properties are illustrated in (115).

- (115) Yei lɛ fɛɛ kane [wolo **ko/kome**.]
 women DET every read book INDEF/INDEF
 ‘Every woman read some book.’
 ✓ When I came to the library yesterday, four women were reading a book. Each of them was reading a different book. (Renans 2018:407)

While *kome* indefinites must take wide scope with respect to clausemate negation, *ko* shows variable scope. To capture this pattern, Renans proposes that *kome* indefinites denote free Skolemized choice function variables (thus deriving covariation with quantifiers but obligatory wide scope with negation), while *ko* denotes a Skolemized choice function variable subject to existential closure at various heights.

To support this analysis, Renans presents data indicating that both *ko* and *kome* are able to take scope over operators that bind into them, giving rise to the predicted wide scope readings. These data are shown in (116).

- (116) Nikaselɔ ko kɛ e-wolo **ko/kome** ni e-³ma lɛ e-ya-aa.
 student INDEF and 3SG-letter INDEF/INDEF REL 3SG-write DET 3SG-send-NEG
 ‘No student sent a letter (s)he wrote.’
 ✓ There were three students: Mary, Sue, and Joe. All of them wrote letters, but none of them sent all of them. (Renans 2018:411)

The kind of covarying wide scope readings that *ko* and *kome* seem to receive in (116) can be captured by the choice functional analysis Renans proposes, given in (117a) and (117b) respectively. (Note that Skolemization does not play a necessary role in these truth conditions, but does for sentences like (115) above which lacks a bound pronoun.)

- (117) a. *ko*: $\exists f[\neg\exists x[\text{student}(x) \ \& \ x \ \text{sent} \ f(x, \{y: y \ \text{is a letter } x \ \text{wrote}\})]]$
 b. *kome*: $\neg\exists x[\text{student}(x) \ \& \ x \ \text{sent} \ f(x, \{y: y \ \text{is a letter } x \ \text{wrote}\})]$

If *ko* and *kome* indefinites can scope above a quantifier that binds into them, each provides another case of an indefinite for which a choice functional analysis makes the right prediction.

While the Sinhala facts discussed above are compatible with the conclusion that all obligatory wide scope indefinites and disjunctions are choice functional, the Ga facts suggest that the reverse implication does not hold: indefinites like *ko* that show variable scope may also scope above an operator that binds into them and therefore (according to the reasoning above) are also choice functional. That is, *ko* appears to fill one of the gaps in Table 4.1 above, repeated and expanded here in Table 4.2.

³⁴More specifically, *ko* must give rise to covarying readings, while *kome* can either covary or be witnessed by a single individual.

Scope	Can outscope a binder?	
	no	yes
variable	English <i>a</i> , <i>or</i>	(?)Ga <i>ko</i>
obligatory wide	–	Tiwa <i>khí</i> , Sinhala <i>də</i>

Table 4.2: Scope and the Binder Roof Constraint, with Ga *ko*

While Renans analyzes *ko* as uniformly choice functional, with existential closure possible at various heights, a slight reanalysis of the Ga facts could preserve the correlation between choice functions, wide scope, and the ability to outscope a binding operator. In particular, the data Renans presents are also compatible with an analysis on which *ko* is ambiguous between a generalized existential quantifier and a choice function variable (cf. Kratzer’s (1998) analysis of English *a*). Under such a view, narrow scope readings of *ko* arise from its generalized quantifier parse, while (at least some) wide scope readings arise from its choice functional parse (with the variable either left free, or existentially closed high in the structure). The availability of this choice functional parse is what would allow for the covarying wide scope reading in (116). This reanalysis would preserve the apparent correlation between wide scope and the ability to scope above a binding operator, while still capturing the available Ga data. If this analysis is on the right track, the result is a contrast between choice functional indefinites and disjunction which obligatorily take wide scope (cf. Matthewson 1999) and which can scope above operators that bind into them, and variable scope indefinites and disjunction which cannot scope above binding operators. Just as Kratzer (1998) originally proposed for English *a*, Ga *ko* would be ambiguous and thus allow the full range of readings discussed here.³⁵

There is, however, an alternate explanation for the Ga data presented in (116). As Renans (2018, fn. 15) notes, another interpretation of these data is that the subject *ko* indefinite scopes above negation (recall that *ko* indefinites show variable scope with respect to clausemate negation). If this is the case, the sentence could instead translate as ‘A student didn’t send a letter (s)he wrote’, which is strictly true in the given context. If this turns out to be the correct interpretation, the object indefinite then does not necessarily scope above the indefinite that binds into it, but just over negation. Variable scope *ko* might then prove to be subject to the Binder Roof Constraint in the same way as English *a*, and the top right cell in the table would remain unfilled.

While further investigation is necessary to shed light on whether *ko* or *kome* truly can outscope a binding operator, I would like to conclude this section by turning our attention to a factor that may ultimately favor the view that there is a strong two-way correlation between choice functions and obligatory wide scope – namely, learnability. Throughout this chapter, I have argued that the key empirical evidence in favor of a choice functional approach to exceptional wide scope for certain lexical items comes from their ability to outscope an

³⁵Whether or not this analysis is viable would also depend on the availability of intermediate scope readings from within islands.

operator that binds into them. Indeed, this ability seems to be one of the only things that Tiwa *khí* phrases and Ga *ko* have in common. Such configurations, however, are extremely rare, and it seems unlikely that a child would be exposed to enough of this sort of data to be able to posit choice functions as the scope mechanism at play over whatever mechanism is responsible for wide scope readings of indefinites and disjunctions like English *a* and *or*. That is, in the absence of some other clue, it is unclear why a child learning Ga would end up with a choice functional analysis of exceptional wide scope readings of *ko* indefinites, rather than an analysis akin to that posited by learners of English for *a*. Conversely, if the obligatory wide scope of indefinites and disjunctions like Tiwa *khí* phrases ultimately do stem from different scope mechanisms, it is unclear why a child learning Tiwa would choose a choice functional analysis over an alternative. If, however, lexicalized obligatory wide scope for indefinites and disjunction always arises via choice functions, this learnability issue is solved: the child would be exposed to enough data to show that *khí* phrases take obligatory wide scope in ordinary contexts, and can thus safely posit a choice functional analysis even in the absence of Binder Roof Constraint contexts.

This learnability issue aside, determining whether or not the strong correlation between choice functions and obligatory wide scope ultimately holds requires significantly more research into the ability of a given indefinite or disjunction to outscope a binding operator.

4.9 Conclusion

In this chapter, I have argued that a choice functional analysis is exactly appropriate for deriving the obligatory exceptional wide scope of *khí* indefinites and disjunction in Tiwa. Where such an analysis faces shortcomings for variable scope indefinites and disjunction like English *a* and *or*, it makes the right predictions for *khí*: *khí* phrases can scope over operators that bind into them. In addition to capturing the scope facts, I have also argued that a choice functional analysis naturally captures the distribution of the particle *khí* in Tiwa and provides an account for the cross-categoriality of *khí* disjunction.

In addition to providing evidence in favor of a choice functional mechanism for wide scope in natural language, the Tiwa data reveal significant variation among indefinites and disjunction. In particular, *khí* indefinites contrast starkly in their pragmatics from specific indefinites like English *a certain*, which are also plausibly choice functional. I proposed that this difference can be attributed to the absence or presence of existential closure of the choice function variable, revealing lexical differences among how choice functions are employed. The Tiwa data also provide a clear case of a choice functional disjunction, which gives rise to distinct wide scope readings that are not found with variable scope disjunction like English *or*. The implication is that just as there are distinct mechanisms that derive exceptional wide scope readings of indefinites, so too there are distinct mechanisms at play in deriving wide scope readings of disjunction.

Chapter 5

Conclusion

Tiwa lexicalizes disjunction scope, in part by drawing on a dedicated wide scope mechanism that is also found with indefinites. In the preceding chapters, I have provided an analysis of *ba* and *khí* disjunction and indefinites, and discussed some of the broader implications that the Tiwa data raise for semantic theory. In this final chapter, I provide a brief summary of these findings and draw out some potential further conclusions about the nature of disjunction, indefinites, and their connection in natural language. I also briefly examine the interaction of *ba* and *khí* within a single sentence, provide discussion of some open questions both for Tiwa and for the larger cross-linguistic picture, and lay out potential directions for future research.

5.1 Summary of findings and broader implications

In Chapters 3 and 4, we saw that *ba* disjunction must take narrow scope with respect to higher clausemate operators, while *khí* disjunction and indefinites must take wide scope. I presented an analysis that captures these scope facts. Specifically, I proposed that *ba* disjunctions denote a set of alternatives which percolate up through the structure until they are either universally quantified over by a downward-entailing operator, or existentially closed at the propositional level. In contrast, I argued that *khí* disjunction and indefinites are choice functional: the morpheme *khí* introduces a choice function variable that takes in a set of alternatives, and is existentially closed at the edge of a finite CP.

The findings of these two chapters are important for several reasons. As discussed in Chapter 4, the *khí* data significantly expand our understanding of the range of scope mechanisms at play in natural language. Where the wide scope readings of variable scope elements like English *a* and *or* do not involve choice functions, as their limited ability to outscope a binding operator shows, obligatory wide scope elements like *khí* phrases do. Further, while *khí* indefinites are similar to *a certain* in outscoping a binding operator, they differ starkly in their pragmatic effects, suggesting variation in whether choice function variables are left free (*a certain*) or existentially closed (*khí*). The finding that obligatory wide scope *khí*

disjunction is choice functional is particularly significant in that it provides further evidence of the link between disjunction and indefinites in natural language: both indefinites and disjunction can be choice functional, and, just as there are multiple routes to exceptional wide scope for indefinites, so too are there multiple routes to exceptional wide scope for disjunction.

Another key finding is that while Tiwa has multiple monomorphemic strategies for non-interrogative disjunction, neither disjunctive can be identified with the Boolean join of propositional logic. Instead, both strategies rely on alternatives, lending support to theories that treat natural language disjunction as fundamentally alternative-denoting (namely those of Simons 2005a, Alonso-Ovalle 2006, Aloni 2007, AnderBois 2012 and Charlow 2014). The fact that Tiwa does not have the Boolean join does not of course rule out the possibility that it can be found in some natural language, and I have provided a distinct novel test for the Boolean join in languages that have unreduced phrasal comparatives. Specifically, I've shown that a disjunctive cannot have a Boolean join interpretation if a disjunction of typically individual-denoting elements like proper names can receive a narrow scope reading in the standard of an unreduced phrasal comparative. The discovery of this test is important because unlike arguments against a Boolean approach from phenomena like free choice permission, there is no alternate pragmatic explanation that might preserve the Boolean account. Several languages, including Hindi, Turkish, and Russian (Bhatt and Takahashi 2007, 2011, Hofstetter 2009, Berezovskaya and Hohaus 2015), are already known to have unreduced phrasal comparatives, making this test immediately applicable to a variety of unrelated languages. One thing worth considering regarding the presence of the Boolean join in natural language is the extent to which indefinites and disjunction in natural language always do draw on the same semantic resources, as discussed in detail in Chapter 1 and illustrated again in Chapter 4. If this parallel proves to be universal, the absence of the Boolean join in natural language is not surprising: disjunction is simply a subtype of existential quantification.

Finally, an additional related finding of this dissertation is that neither of Tiwa's two disjunctives semantically encode exclusivity. Instead, the exclusivity effects of both *ba* and *khí* disjunction arise through pragmatic competition, just as they do for English *or*. While this finding is not particularly surprising – to my knowledge, there is no language that has been shown to have a semantically exclusive disjunctive – it is an interesting fact to consider in light of the semantic connection between disjunction and indefinites. In particular, if natural languages always draw on the same semantic resources for expressing disjunction and indefinites, we expect them to show the same sorts of semantic variation. What would be the indefinite analog to an exclusive disjunctive? Presumably, an indefinite that entails that the proposition holds of exactly one individual in the indefinite's domain. Just as exclusive disjunction is so far unattested in natural language, so too is this analogous exclusive indefinite.

5.2 The interaction of *ba* and *khí*

Throughout this dissertation, I have considered the particles *ba* and *khí* separately. The analysis assigned to each, however, does not prevent them from co-occurring, and indeed we find that they can. In this section, I discuss the ways *ba* and *khí* can co-occur and lay out a further prediction of the analysis developed in the preceding chapters, namely, that even when embedded within each other, *ba* should take narrow scope with respect to higher operators and *khí* should take wide scope.

The sentences in (1a-b) provide examples of a *ba* disjunction and a *khí* disjunction within a single conditional antecedent. (1c-d) show that the same disjunctive may also be used twice.

- (1) ‘If Lastoi or Saldi eats peanuts or pepper, there will be trouble.’ [2018.1.72]
- a. Chidî [Lastoi **ba** Saldi] [peanuts **khí** Asâm chalú] chá-gai-dô, sâsti
 if Lastoi BA Saldi peanuts KHI Assam chili eat-COND-TOP trouble
 hóng-o.
 COP-NEUT
- b. Chidî [Lastoi **khí** Saldi] [peanuts **ba** Asâm chalú] chá-gai-dô, sâsti
 if Lastoi KHI Saldi peanuts BA Assam chili eat-COND-TOP trouble
 hóng-o.
 COP-NEUT
- c. Chidî [Lastoi **ba** Saldi] [peanuts **ba** Asâm chalú] chá-gai-dô, sâsti
 if Lastoi BA Saldi peanuts BA Assam chili eat-COND-TOP trouble
 hóng-o.
 COP-NEUT
- d. Chidî [Lastoi **khí** Saldi] [peanuts **khí** Asâm chalú] chá-gai-dô, sâsti
 if Lastoi KHI Saldi peanuts KHI Assam chili eat-COND-TOP trouble
 hóng-o.
 COP-NEUT

The English translation in (1) is four-ways ambiguous. In particular, it could be used in the four distinct contexts in (2), which represent different scope readings of the two disjunctions with respect to the conditional.

- (2) a. Context: peanuts or pepper > if > Lastoi or Saldi
 Lastoi and Saldi are allergic to something – either peanuts or pepper, we can’t remember which. If either girl eats whatever food it is, we’ll get in trouble.
- b. Context: Lastoi or Saldi > if > peanuts or pepper
 One of the girls – Lastoi or Saldi, we can’t remember which – is allergic to both peanuts and pepper. If that girl eats either food, we’ll get in trouble.
- c. Context: if > {Lastoi or Saldi, peanuts or pepper}
 Lastoi and Saldi are allergic to peanuts and pepper. If either girl eats either food, we’ll get in trouble.

- d. Context: {Lastoi or Saldi, peanuts or pepper} > if

One of the girls is allergic to one of the foods, but we can't remember which girl or which food. If that girls eats whatever food it is, we'll get in trouble.

The analysis developed in this dissertation predicts that each of the Tiwa sentences in (1) should be unambiguous. Specifically, any *ba* disjunction must scope under the conditional operator (which universally quantifies over the *ba* alternatives) and any *khí* disjunction must scope over the conditional operator, with its choice function variable existentially closed at the edge of the matrix CP. This is what we find: my consultant indicated that (1a) can only be used in a context like (2a), (1b) can only be used in a context like (2b), and so on.

In (1), *ba* and *khí* appear separately within a single clause. The two particles can also be embedded within one another. (3) provides an example of a *ba* disjunction embedded within the first disjunct of a *khí* disjunction. Here, the *ba*-alternatives are existentially closed within the scope of the modal within the first *khí* disjunct, while *khí* itself introduces a choice function variable that takes in a set of two modal propositions. This sentence receives the expected reading on which one of the *khí* disjuncts is true, and if it's the first, Saldi has the choice between the two *ba* disjuncts.

- (3) [Saldi_i [rojá-na **ba** misâ-na] phon-o] **khí** [*pro*_i lekhé-na phon-o.]
 Saldi sing-INF BA dance-INF can-NEUT KHI read-INF can-NEUT

‘Saldi can sing or dance, or she can read.’ [2018.2.60]

✓ I can't remember whether Saldi is allowed to sing or dance, or whether she is allowed to read. In one case, she can choose between singing or dancing. In the other case, she only has permission to read.

Examples (4) and (5) show that a *khí* indefinite can appear in a *ba* disjunction. According to my analysis, the *khí* indefinites introduce choice function variables which are existentially closed at the highest level, while the *ba* alternatives percolate up and are existentially closed when they form a set of propositions. Since there are no other scope-taking operators for *ba* and *khí* to interact with, the result for both is a reading roughly equivalent to the English translations, with ignorance about the witnesses to the *khí* indefinites strongly implicated.

- (4) [Maria **ba** shar-**khí**] Guwahati-jíng lí-ga.
 Maria BA who-KHI Guwahati-ALL go-PFV

‘Maria or someone went to Guwahati.’ [2016.2.60]

- (5) Saldi [shar-**khí** mewâ-go **ba** shar-**khí** margî-go] lak mán-ga.
 Saldi who-KHI man-ACC BA who-KHI woman-ACC meet-PFV

‘Saldi met some man or some woman.’ [2018.3.99]

The analyses developed in this dissertation make clear predictions about the scopal interaction of embedded *ba* and *khí* particles with respect to other operators. In particular, *khí* disjunction and indefinites are always expected to scope above any higher operator, while *ba* disjunctions are expected to scope below higher operators. Since *khí* phrases are interpreted

in situ as a choice function variable selecting an alternative – and existential closure of the variable takes place after *ba* alternatives are dealt with – they do not interfere with pointwise function application or quantification over those *ba* alternatives. Likewise, the presence of *ba* alternatives and their pointwise composition with surrounding material does not impact the existential closure of the choice function variable that takes place at the CP-level.

5.3 Open questions and future directions

In addition to the conclusions that I have drawn above, and further predictions of the analysis, there are a number of open questions both regarding disjunction and indefinites in Tiwa, and the broader cross-linguistic picture. These open questions provide clear directions for future research that could arise from this work.

The first of these open questions was raised in Chapter 3, namely, what is the connection between *ba* disjunction’s obligatory narrow scope and the presence of a dedicated wide scope disjunction strategy? Is there, for instance, a language that has an obligatory narrow scope disjunctive particle that lacks an equivalent of *khí*? Conversely, is there a language with the equivalent of *khí*, that has a flexible scope disjunctive particle like English *or*? Establishing the cross-linguistic picture in this respect will be essential for any deeper understanding on this topic. One language that might shed light on these questions is Sinhala, which has multiple strategies for disjunction, one of which (namely *də* disjunction) takes obligatory wide scope (Wathugala and Dawson 2019). While Sinhala’s *hari* disjunction is already known to not be equivalent to Tiwa *ba* – it is a PPI, for instance (Weerasooriya 2017) – investigating its scopal possibilities more broadly would bear directly on these questions. Another line of inquiry that has the potential to shed light on the relationship between *ba*’s narrow scope and the presence of *khí* is the question of intermediate disjunction scope in Tiwa, which I have not yet systematically investigated. Can, for instance, *ba* take wide scope over an operator in intermediate scope contexts, if *khí* disjunction must take widest scope? If so, this would suggest – *contra* what I argue in Chapter 3 – that *ba*’s obligatory narrow scope is a pragmatic phenomenon.

Another question that the existence of *ba* disjunction gives rise to concerns the connection between disjunction and indefinites. Specifically, I have suggested above that if indefinites and disjunction draw on the same semantic resources, we expect to see parallel variation in the two domains. *ba* provides a case of a disjunction particle that does not require licensing by a higher operator, but that must take narrow scope with respect to any operator that occurs higher in the structure. To my knowledge, there are no known indefinites that behave in precisely this way. For instance, while there are many indefinites that must take narrow scope under a higher operator – such as English *any* and Hungarian *egy-egy* (Farkas 1997) – these indefinites cannot appear independent of those operators. Whether or not an indefinite that behaves precisely like *ba* exists in natural language is an open question.

An outstanding question from Chapter 4 concerns the extent to which the correlation between choice functions and obligatory wide scope holds cross-linguistically. I have suggested that flexible scope indefinites and disjunction are never choice functional, while obligatory

wide scope indefinites and disjunction always are. Whether or not this generalization proves to be true requires significantly more cross-linguistic investigation into whether a given indefinite or disjunction can scope above an operator that binds into it.

Finally, there is a larger question that I have largely left aside in this dissertation, but which concerns the connection of the particle *khí* to the broader phenomenon of Q-particles (Cable 2010). Q-particles are elements that appear alongside indeterminate pronouns and are used in both questions (thus Q) and to form non-interrogative indefinite pronouns, such as Tlingit *sá* (Cable 2010) and Sinhala *də* (Hagstrom 1998, Slade 2011, Weerasooriya 2017, Wathugala and Dawson 2019). Such elements are often analyzed as introducing choice function variables (see references in Chapter 4, §4.4), which are bound by either a question operator or existential closure. These particles show significant variation in their distribution. For instance while Tlingit *sá* only appears in the presence of indeterminate pronouns, Sinhala *də* is also used in disjunction, to form alternative questions, and as a polar question marker. (Japanese *ka* shows the same distribution; Uegaki 2018). Tiwa *khí* is not used in questions, but its connection to Q-particles is clear, both in its ability to combine with indeterminates to form indefinites, and in its choice functional analysis. The precise nature of the connection and how it fits into the typology of exceptional scope I have developed is a question for future research.

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