Alternative Semantics Across Languages

Case Studies on Disjunctive Questions and Free Choice Items in Samoan and Yoruba

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List of Abbreviations and Markings

Glosses:

1	first person pronoun
2	second person pronoun
3	third person pronoun
ALT	focus/alternative marker
DIR	directional preposition
DEM	demonstrative determiner
DET(spec.)	specific determiner (Samoan)
DET(nsp.)	non-specific indefinite determiner (Samoan)
EMPH	emphatic particle
ERG	ergative marker
FCI	free choice marker
TAM(pres.)	present TAM marker
TAM(fut.)	future TAM marker
TAM(perf.)	past perfective or past perfect TAM marker
TAM(prog.)	progressive TAM marker
NEG	negation
NEG_{FS}	focus sensitive negation
NOMNL	nominalizing morpheme
PREP	preposition
PL	plural
PRON	resumptive pronoun
POSS	possessive marker
Q	question particle
REL	relative clause complementizer
SG	singular
SPEC	specificity marker (Yoruba)

Ratings:

✓/no marking	acceptable
*	unacceptable (ill-formed sentence)
#	unacceptable (well-formed sentence unacceptable in context)
??	degraded or variable acceptability among consultants

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Abstract

Alternative semantics and the associated compositional machinery has become an important part of the formal semanticist's toolbox. Beyond its origins as a tool to model the semantics of questions (Hamblin 1973) and focus (Rooth 1985), alternative semantics is now used in a myriad of ways to model phenomena at the semantics/pragmatics interface including Negative Polarity Items (Lahiri 1998, Krifka 1992, Chierchia 2013), Free Choice (Kratzer and Shimoyama 2002, Aloni 2007, Menéndez-Benito 2010), Quantifier particles crosslinguistically (Kratzer and Shimoyama 2002, Szabolcsi 2015), Disjunction (Alonso-Ovalle 2006, M. Simons 2016) and by proponents of the 'grammatical view' of scalar implicatures in conjunction with the alternative sensitive exhausitivty operator (Chierchia, Fox, and Spector 2012, Fox 2007). Since the early days of alternative semantics, there has also been considerable discussion among formal semanticists about formal aspects of the compositional system for modeling alternative semantics for focus and just how much expressive power this system needs to adequately model association with focus and associated discourse phenomena (Rooth 1985, Rooth 1992, Rooth 1996, Kratzer 1991, Wold 1996, Krifka 2001, Krifka 2006, Beck 2006, Romero and Novel 2013). This question has not been addressed to the same extent for other phenomena where alternatives have been argued to play a role in the compositional semantics. While the tools from alternative semantics have proved extremely useful in modeling the behavior of these other grammatical phenomena, it remains an open question to what extent they rely on the same grammatical system. This is the question at the heart of this thesis: Where do the alternatives introduced by free choice items and disjunction fit into the compositional system of alternative introduction and manipulation underlying focus and questions? How do they interact? This thesis contributes two case studies that address this issue from a crosslinguistic perspective.

The first case study looks at alternatives introduced by disjunction in Yoruba disjunctive questions. In Yoruba, a Niger-Congo language, polar and alternative disjunctive questions are disambiguated via a syntactic and morphological focus

fronting strategy that expresses exhaustive focus elsewhere in the language, (1).

(1)   a.   *Ṣe Kemi ra   bata   tabi iwe?*
           Q Kemi buy shoes or   book
           'Did Kemi buy the book or the shoes?' (Polar Q)

      b.   *Ṣe bata tabi iwe   ni   Kemi ra?*
           Q book or   shoes ALT Kemi buy
           'Did Kemi buy the BOOK or the SHOES?' (Alt Q)

I argue that the interpretation of alternative questions in Yoruba arises via the introduction of alternatives by disjunction which are operated on, first by an alternative sensitive maximality operator responsible for the exhaustivity inference observed with Yoruba ex-situ focus, and subsequently by an alternative sensitive Q-operator. The way in which these different alternative evaluating operators must both associate with a single alternative-introducing element is evidence that all of these elements (focus, questions, exhaustive inferences) employ the same kind of alternatives and, furthermore, that the grammatical system responsible for generating and manipulating alternatives must have the power to selectively evaluate alternatives.

The second case study looks at a Free Choice Item in Samoan, a Polynesian language. In Samoan, the determiner *so'o se* is morphologically composed of a non-specific determiner *se*, and a particle *'o*, which has been argued in previous work to mark the introduction of alternatives, (2). The use of *so'o se* gives rise to a universal free choice interpretation and shares a similar restricted distribution with other universal free choice items crosslinguistically.

(2)   *E   mafai   ona alu so'o   se   tagata i le unifesite*
      TAM *possible that go* FCI+ALT DET(nsp.) person to the university
      'Anybody can go to university.'

I argue that the free choice interpretation and restricted distribution of *so'o se* in Samoan comes about through a semantic composition employing alternatives and their interaction with two covert alternative evaluating operators: an exhaustivity-contributing operator as well as a universal quantifier over alterna-

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tives, like in the proposal by Menéndez-Benito 2010 for the Spanish FCI *cualquier*. As with the disjunctive questions in the previous chapter, the account requires adopting a view of alternatives under which they are able to pass on alternatives, and able to selectively bind distinguished variables. On the other hand, puzzling data from a lack of intervention effects with *so'o se* complicates the picture, suggesting that covert movement of the alternative-introducing FCI occurs, at least in some cases.

Overall, this thesis argues for a view of alternative evaluating operators as a single compositional mechanism available in natural language grammar that is at work across various phenomena including focus, questions, disjunction and the derivation of free choice interpretations. Furthermore, it highlights an interesting crosslinguistic regularity concerning the areas in which alternatives come to be used.

The thesis is structured as follows: Chapter 1 provide an overview of different theoretical approaches to building and manipulating alternative sets, as well as the empirical predictions they make, concentrating on data from focus and *wh*-questions. Chapter 2 is devoted to the case study of Yoruba disjunctive questions and Chapter 3 to the Samoan FCI *so'o se*.

1

Alternative Sets: Composition and Empirical Predictions

1.1 Chapter Overview

This chapter provides an introduction to the compositional mechanisms used to build and manipulate alternative sets. The focus will be on discussing the different ways to derive alternative sets compositionally and how to identify different compositional mechanisms on the basis of empirical data. Sections 1-3 are each devoted to a different compositional mechanim: Section 2 covers set formation via binding of traces left by movement, Section 3 deals with Rooth/Hamblin alternative semantics and Section 4 covers set formation via (distinguished) variable binding without movement. For each, I first introduce how alternative sets are derived, using examples from *wh*-questions and association with focus and then discuss the empirical predictions they make and the extent to which they are born out by empirical data (mostly from English). There is considerable discussion in previous semantic literature devoted to exactly this question (Rooth 1985, Rooth 1992, Rooth 1996, Kratzer 1991, Krifka 1992, Stechow 1991 Wold 1996, Beck 2016) and this chapter aims to give an overview of the main arguments that have been made there as well as to indentify empirical tests that can be used for investigating alternative semantic composition in other, less studied phenomena including disjunction and free choice items. I argue in this chapter, following the conclusions

drawn in previous work (Kratzer 1991, Wold 1996 Beck 2016) that in order to best capture the behavior of alternatives in focus and questions, as well as the way in which they interact, a compositional mechanism with the expressive power of variable binding is necessary, but that data from a lack of locality restrictions suggests that this mechanism is independent of LF movement.

Section 5 takes a brief look at two further frameworks that have been prominent in the discussion of alterntive semantic phenomena: Structured Meanings (Jacobs 1983, Stechow 1982, Krifka 1992,) and Inquisitive Semantics (Ciardelli, Groenendijk, and Roelofsen 2013). In terms of the empirical coverage of these two systems, I suggest that a structured meanings would be a viable alternative to the distinguished variable framework chosen in section 3, under the right assumptions about how structured meanings are derived from the LF-syntax. On the other hand, the framework of Inquisitve Semantics poses a challenge for the view of alternatives whereby a single compositional system for deriving sets of alternatives underlies both focus and questions. Section 6 sums up and highlights some open questions that serve as a jumping off point for the case studies in Chapters 2 and 3.

1.2 Movement and Variable Binding

1.2.1 Semantic Composition

Working in framework for semantic interpretation based on Heim and Kratzer 1998, which I will use throughout the dissertation, one way to derive sets of alternatives is via variable binding by a lambda abstractor. The predicate abstraction rule in (2) triggered by the presence of a binding index at LF causes lambda binding of a variable or trace in its scope. Lambda abtraction over a variable of semantic type σ in node of type τ yields a function of type $\langle \sigma, \tau \rangle$ and if $\tau = $ t,

this function can be used interchangeably with the set of things it maps to true. This is used, among other things, to generate the predicate denoted by relative clauses, to derive the nuclear scope of quantifiers, as well as to generate bound variable interpretations of pronouns. In (1-a), for example, this is the mechanism used to derive the function that serves as the second argument of the quantifier *every*: The predicate abstraction rule triggered by the binding index *1* within the VP introduces a lambda binder that bind both the pronoun he_1 and the trace t_1 to generate the VP denotation $\lambda x.\ x\ invited\ x's\ mother$.

(1)   a.   *Every boy invited his mother.*
       b. $[_{TP}\ [_{DP}\ \text{every boy}\ ]\ [_{VP}\ 1\ [\ t_1\ [\ \text{invited}\ [_{DP}\ he_1\ \text{'s mother}]\ ]]]]]$

(2)   PREDICATE ABSTRACTION RULE   (Heim & Krazter 1998, p. 144)
       If α is a branching node whose daughters are β_i and γ, where β_i is a relative pronoun or "such", and i$\in \mathbb{N}$ then for any variable assignment a:
       $[\![\alpha]\!]^a = \lambda x \in D.[\![\gamma]\!]^{a[x/i]}$.

Even though we don't tend to think of relative clauses, generalized quantifiers and bound pronouns as phenomena involving sets of alternatives, the same compositional mechanism can be used to build sets of any ontological type and in particular to model the kind of sets used in the interpretation of questions or for association with focus senstive particles like *only* or *even*. I will briefly sketch how this can be done for *wh*-questions and association with focus.

Wh-questions. A prominent approach to the semantics of questions takes them to denote sets of propositions: either the set of possible answers (Hamblin 1973) or the set of true answers (Karttunen 1977).[1] One way of generating these sets of propositions going back to Karttunen 1977 is to allow the *wh*-phrase to denote an existential quantifier, (4-a), which undergoes QR to take wide scope relative to a

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[1]This is by no means the only proposal that has been made for the meaning of questions. Notably Groenendijk and Stokhof 1984 have argued that questions denote not a set of propositions but rather a proposition corresponding to the exhaustive true answer to a question in a world.

set forming Q-operator, as in (4-b). For example, in a sentence like (3-a), below, the existential quantifier *who* moves into SpecCP, above the Q-operator, yielding an LF structure as in (3-b). This will derive the set of all propositions in which some individual brought salad (i.e. the worlds in which Nadine brought salad, the worlds in which Julia bought salad, etc.). This derivation is sketched in (5).

(3) a. *Who brought salad?*

    b. $[_{CP}$ who $[_{C'}$ 1 [Q [λw [$_{VP}$ t_1 [brought$_w$ salad]]]]]]]

(4) a. $[\![\text{who}]\!] = \lambda P_{\langle e,\langle st,t \rangle\rangle}.\lambda p_{\langle st \rangle}.\exists x_{\langle e \rangle}[person(x)\&p \in P(x)]$

    b. $[\![\ Q\ ]\!] = \lambda p_{\langle s,t \rangle}.\lambda q_{\langle s,t \rangle}.p = q$

(5) $[\![\ (3\text{-b})\ ]\!]^g$

$= [\![\text{who}]\!]^g([\![\ [\ 1\ [\ Q\ [\ \lambda w\ [\ t_1\ [\ \text{brought}_w\ \text{salad}\ ]]]]]]\ ]\!]^g\ )$ FA

$= [\![\text{who}]\!]^g(\lambda x_{\langle e \rangle}.[\![\ [\ Q\ [\ \lambda w\ [\ t_1\ [\ \text{brought}_w\ \text{salad}\ ]]]]]\ ]\!]^{g[x/1]}\ )$ PA

$= [\![\text{who}]\!]^g(\lambda x_{\langle e \rangle}.[(\lambda p_{\langle st \rangle}.\lambda q_{\langle st \rangle}.p = q)([\![\ \lambda w\ [\ t_1\ [\ \text{brought}_w\ \text{salad}\ ]]]\!]^{g[x/1]})])$ LEX

$= [\![\text{who}]\!]^g(\lambda x_{\langle e \rangle}.[(\lambda p_{\langle st \rangle}.\lambda q_{\langle st \rangle}.p = q)(\lambda w.\ \text{x brought}_w\ \text{salad})])$ den. TP

$= [\![\text{who}]\!]^g(\lambda x_{\langle e \rangle}.\lambda q_{\langle st \rangle}.q = \lambda w.\ \text{x brought}_w\ \text{salad})$ Simpl.

$= \lambda P_{\langle e \langle st,t \rangle\rangle}\lambda p_{\langle st \rangle}.\exists y_{\langle e \rangle}[\text{pers.}(y)\&p \in P(y)](\lambda x_{\langle e \rangle}.\lambda q_{\langle st \rangle}.q = \lambda w.\ \text{x bring}_w\ \text{salad})$ LEX

$= \lambda p_{\langle st \rangle}.\exists y_{\langle e \rangle}[\text{person}(y)\&p = \lambda w.\text{y brought}_w\ \text{salad}]$ Simpl.

There are many empirical reasons for adding further complexity to the representation of embedded and root questions and a considerable amount of research has been done which investigates how root and embedded question interpretations arise. (cf. e.g. Dayal 1996, Beck and Rullmann 1999, Groenendijk and Stokhof 1984 a.m.o). Some of this work will become relevant later, when we discuss exhaustivity in connection with the Yoruba *ni*-fronting construction and disjunctive questions. For now, I will not go into the different possibilities for doing so since, for the most part, this is a distinct question from the one we are interested in at the moment, namely which compositional mechanisms are responsible for the set of alternative propositions at the heart of a question meaning.

Association with only. Focus sensitive particles, such as English *only* and *even* give rise to different truth conditions depending on the placementof focus in their scope (cf. Rooth 1985, Beaver and Clark 2009). For example, in (6) depending on the placement of a pitch accent indicating focus the same string of words can either express the proposition that Nadine brought no dish other than potato salad to the party (6-a), or that Nadine didn't bring potato salad to any other event, (6-b).

(6)   a.   *Nadine only brought* POTATO SALAD *to the party* .
      b.   *Nadine only brought Potato Salad to the* PARTY.

Within a framework that gives us only regular variable binding as a means to derive the relevant sets of alternatives, the two different interpretations could be acheived by assuming that the focussed constituent and focus sensitive operator undergo quantifier raising at LF. For the sentences in (6), the LF structures would then be as in (7-a) and (7-b). The movement creates a bipartition of the sentence (into the focussed constituent and background material) and *only* will take both of these components as its arguments, as in the lexical entry in (8). A derivation using a Heim & Kratzer style semantics is spelled out in (9) for the LF in (7-a).

(7)   a.   [[only [potato salad]] [1 [$_{TP}$ λw [Nadine brought$_w$ t$_1$ to the pary]]]]
      b.   [[only [the party]] [1 [$_{TP}$ λw [Nadine brought$_w$ potato salad to t$_1$]]]]

(8) $[\![only]\!] = \lambda w.\lambda x.\lambda P_{\langle e\langle s,t\rangle\rangle}.P(x)(w) : \forall y[y \neq x \rightarrow \neg P(y)(w)]$

(9) $[\![$ (7-a) $]\!]^g$

    $= [\![only]\!]^g([\![potato\ salad]\!]^g)([\![$ [1 [$\lambda_{w'}$ [Nadine brought$_{w'}$ t$_1$ to the party] $]\!]^g$)   FA

    $= \lambda w.\lambda x.\lambda P.P(x)(w){:}\forall y[y \neq x \rightarrow \neg P(y)(w)](salad)(\lambda x'.[\![\lambda w'\ N.\ bring_{w'}t_1]\!]^{g[x'/1]})$ LEX

    $= \lambda w.\lambda x.\lambda P.P(x)(w){:}\forall y[y \neq x \rightarrow \neg P(y)(w)](salad)(\lambda x'.\lambda w'\ Nadine\ bring_{w'}\ x')$ den. TP

    $= \lambda w.N.\ brought_w\ salad{:}\forall y[y \neq salad \rightarrow \neg N.\ brought_w\ (y)]$ Simpl.

This approach has been taken in earlier work on focus particles that predates

alternative semantics (cf. eg. Anderson 1972, the discussion of *even* in Karttunen and Peters 1979) and shares similarities to accounts of focus that employ structured propositions (Jacobs 1983, Stechow 1982, Krifka 1992), although these accounts do not necessarily rely on LF movement. The majority of current approaches to focus sensitivity since Rooth 1985 use additional compositional machinery to derive the interpretation of focus sensitive particles (Rooth 1992, Beaver and Clark 2003, Beaver and Clark 2009, Beck 2016, Wold 1996, Kratzer 1991 a.m.o). I will get into the empirical reasons for doing so shortly. One remark on focus movement is worth making before moving on: There are a number of current accounts of association with focus that maintain some version of focus movement (Krifka 2006, Erlewine and Kotek 2016 Drubig 1994, Wagner 2006). While these accounts do assume that focus movement take place, the semantic analyses generally differ from early accounts employing focus movement in that the semantic composition also uses additional machinery for compositionally deriving and manipulating the intended sets of alternatives, such as structured propositions or Roothian focus alternatives, in addition to focus movement and ordinary variable binding.

1.2.2   Empirical Considerations

The compositional approach to focus outlined above is not used in much of the current work on association with focus. Instead, other compositional mechanisms for deriving alternative sets are more prominent in the literature on focus and, increasingly, this is true for work on questions as well (e.g. Shimoyama 2006, Beck 2006, Cable 2007). A major reason for this is evidence against the presence of covert movement to derive the interpretation of focus and in-situ *wh*-phrases.

Several arguments have been brought in previous work against a movement based account of association with focus. For one thing, the absence of locality constraints parallel to those observed for quantifier raising with other quantifiers poses a problem for movement based accounts (c.f. e.g. Rooth 1985, Wold 1996 for Focus, Shimoyama 2006 for *wh*-phrases in Japanese) Under a movement based ac-

count of focus and questions, overt or covert movement of a *wh*-phrase or focussed constituent plays a key role in determining the set of propositional alternatives that ends up as the question interpertation, or serving as an argument to a focus sensitive particle. As such, constraints that affect other types of covert movement (e.g. QR) are expected to affect the kind of interpretation that can be derived in *wh*-questions and with focus association. Anderson 1972 and Rooth 1985 first observed that focus association does not seem to behave like other quantifiers when it comes to locality conditions. The example in (10) illustrates that locality constraints, such as complex NP-islands restrict overt and covert movement (Ross 1967, May 1977) but does not affect association with the focus sensitive particles *only*.

(10)   a.   *John has dated a woman* [$_{RelC}$ *who loves every man*].
                *$\forall x[man(x) \rightarrow \exists y[woman(y)\&loves(y,x)\&dated(John,y)]$

         b.   *John only dated a woman* [$_{RelC}$ *who loves Sean Connery$_F$*]
                $\forall x[x \neq Sean\ Connery \rightarrow \neg[\exists y[woman(y)\&loves(y,x)\&dated(John,y)]]]$

It is not completely clear which locality constraints affect quantifier raising at LF and different claims have been made about this in the literature. However, a clear contrast is found between the behavior of a universal quantifer like English *every* and focus sensitive *only* (a different form of universal) when they are embedded within islands for movement. Similarly, for *wh*-in-situ, previous work has observed that *wh*-phrases in *wh*-in-situ languages like Japanese or Mandarin are not subject to the same locality restrictions as overlty moved *wh*-phrases (cf. Huang 1982, Cheng 1997, Shimoyama 2006). The following examples illustrate this apparent island insensitivity of *wh*-in-situ, both in *wh*-in-situ languages and in language like English, when in-situ *wh*-phrases occur in multiple questions. These empirical facts have been interpreted in different ways by different authors. Some, like Huang 1982 take it as evidence that covert movement is not subject to island constraints in the same way as overt movement is, while others argue that

they are evidence no movement takes place, e.g. Cheng 1997. Still others have proposed that covert movement takes place, but pied-piping of the entire island rescues apparent island violations (Drubig 1994)[2]

(11)　*Bótōng xǐhuān shéi xiě　de　shū?*
　　　Botong like　　who write PRT book?
　　　'For which person x: Botong likes the book that x wrote?'
　　　(Mandarin, Bayer 2005 p. 5)

(12)　*Mary-wa　[[John-ni　nani-o　ageta] hito-ni]　atta-no?*
　　　Mary-TOP　John-DAT what-ACC gave　man-DAT meet-Q
　　　'For which thing x did Mary meet a man who gave x to John?
　　　(Japanese, Pesetsky 1987)

(13)　*Who likes the books[$_{RelC}$ that criticize who]?*

A second issue with the movement based account of association with focus is that it does not allow for a single focus sensitive particle (e.g. an *only* or an *even*) to associate with multiple focussed constituents within a sentence, as in (14). That's because single focus sensitive or alternative evaluating operator cannot simultaneously undergo movement from and leave a trace in two different syntactic position. This gives rise to the prediction that instances of multiple association with a single focus sensitive operator are not possible, contrary to observation. (cf. Rooth 1985).

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[2]Some movement based a accounts, both of focus (Drubig 1994, Krifka 2006, Wagner 2006) and *wh*-in-situ (Pesetsky 1987, Pesetsky 2000, Kotek and Erlewine 2016) argue that focus movement still takes place and that apparent island violations involve covert pied-piping of the entire island. However, if focus movement does happen in this way, some distinct compositional mechanism would be necessary to compositionally derive alternatives. Krifka 2006 illustrates this point with examples like (i), where this kind of a pied-piping account, additional compositional machinery is needed to derive the contrast in interpretation between the two sentences.

(i)　　a.　*I only like the man [$_{RelC}$ that introduced Bill$_F$ to Sue].*
　　　　b.　*I only like the man [$_{RelC}$ that introduced Bill to Sue$_F$].*

(14)   *Nadine only introduced ALEX to VERA.*

        "Nadine introduced Alex to Vera and made no further introductions."

Note that, in this case, the argument can't be extended to multiple in-situ *wh*-phrases, because their semantic can be modeled using two independent existential quantifiers (contributed by each *wh*-phrase) that each undergo QR to a position outside the scope of the set-forming Q operator as schematized in the LF in (15).

(15)   a.   [which boy [which girl [Q [t_1 loves t_2]]]]
        b. $\lambda p.\exists x.\exists y.p = \lambda w.$x loves y in w

The upshot is that while ordinary variable binding triggered by movement does provide a way to derive the alternative sets we need for question meaning and to model association with focus, the predictions it makes suggest that empirically, this type of account falls short in several respects. This is nothing new, in fact this point is a central piece of Rooth 1985 dissertation and it has become standard to employ other compositional mechanisms to model these phenomena. When it comes to questions, similar conclusions have been reached in much recent work on the semantics of *wh*-questions and indeterminate pronouns (Shimoyama 2006, Beck 2006, Beck 2016).

1.3   Rooth/Hamblin Alternative Semantics

1.3.1   Semantic Composition

A second way to derive alternative sets in both questions and focus constructions dates back to the work of Hamblin 1973, for questions, and Rooth 1985 for focus. The key component here is a lexical item or syntactic feature, which introduces sets of alternatives into the semantic composition. Modified composition rules

allow these sets to combine with other lexical material, such as for example, the pointwise function application rule in (16).

(16)   POINTWISE FUNCTION APPLICATION
       If α is a branching node with daughters β, γ, and $[\![\beta]\!]^{w,g} \subseteq D_\tau$ and $[\![\gamma]\!]^{w,g} \subseteq D_{\langle\sigma\tau\rangle}$,
       Then, $[\![\alpha]\!]^{w,g} = \{a \in D_\tau : \exists b \exists c[b \in [\![\beta]\!]^{w,g} \& c \in [\![\gamma]\!]^{w,g} \& a = c(b)]\}$
       (Kratzer and Shimoyama 2002, p. 7)

A key innovation of Rooth's 1985 account is the addition of a separate 'layer' of semantic composition for alternatives, the alternative semantic tier. Alternatives resulting from focus are calculated on this level of representation, while the 'ordinary' semantic composition proceeds in parallel via regular function application. The two separate tiers in Rooth's set-up enable an expression containing a focus to keep track of the set of alternatives introduced by focus, as well as the focus value at the same time - something that can not be done in Hamblin's original proposal where alternatives are introduced in the 'ordinary' semantic composition. On the other hand, accounts framed a Hamblin style alternative semantics can be translated into a Roothian system by using alternative evaluating operators that take an expression's alternative semantic value and use it to replace the ordinary value (cf. e.g. Beck (2006)'s account of *wh*-questions framed in a Roothian two tiered system). For that reason, I will sketch the analysis of both questions and focus using a Roothian two-tiered alternative semantics. The main rules for semantic composition are provided below (the phrasing of the rules are taken from the appendix of Beck's (2016) handbook article on focus sensitivity). In (17), the rule for F-marked constituents introduces a set of alternatives of the same semantic type as the focussed constituent and (18) introduces a set of alternatives as the alternative value of a *wh*-phrase. (19)-(21) modify Heim & Kratzer style semantic system to accomodate the two tiered system.

(17)   FOCUS

For any α and any g:

$[\![\alpha_F]\!]_o^g = [\![\alpha]\!]_o^g$

$[\![\alpha_F]\!]_{alt}^g \subseteq D_\tau$ where τ is the semantic type of α

(18)   WH-PHRASES

$[\![what]\!]_o$ is undefined

$[\![what]\!]_{alt} \subseteq D_e$

(19)   LEXICAL TERMINAL NODES

IF α is a lexical item, then for any g:

$[\![\alpha]\!]_o^g = [\![\alpha]\!]_o$ which is defined in the lexicon

$[\![\alpha]\!]_{alt}^g = \{[\![\alpha]\!]_o\}$

(20)   PRONOUNS AND TRACES

If α_i is a pronoun or a trace, then for any g:

$[\![\alpha_i]\!]_o^g = g(i)$

$[\![\alpha_i]\!]_{alt}^g = \{[\![\alpha_i]\!]_o^g\}$

(21)   FUNCTION APPLICATION

If α is a branching node with daughters β and γ, then for any g:

if $[\![\beta]\!]_o^g$ is a function whose domain includes $[\![\gamma]\!]_o^g$

$[\![\alpha]\!]_o^g = [\![\beta]\!]_o^g([\![\gamma]\!]_o^g)$

$[\![\alpha]\!]_{alt}^g = \{\beta'(\gamma') : \beta' \in [\![\beta]\!]_{alt}^g \text{ and } \gamma' \in [\![\gamma]\!]_{alt}^g\}$

While adapting a rule for predicate modification to work with sets of alternatives can be done straightforwardly, this is not the case for predicate abstraction. This problem was identified already in Rooth's dissertation (Rooth 1985, p.45-57) and despite having received a certain amount of discussion in the formal semantics literature (Kratzer and Shimoyama 2002, Romero and Novel 2013 Charlow 2014) is often overlooked in current accounts relying on alternative semantics.

The problem can be avoided in a semantic framework where assignment functions are brought into the model (cf. Rooth 1985 p. 45-57, Romero and Novel 2013 p. 176). Appendix 1 provides compositional rules for a semantics which can combine predicate abstraction with expanding set alterantives, but to keep this overview manageable I will not switch to this type of a framework in the rest of this section.

In a Roothain alternative semantics introducing alternatives and their semantic composition is only the first step. The alternative sets need to be used, e.g. by focus sensitive operators, to derive the semantic effect of focus. A class of operators function as the interface between the alternative and ordinary semantic tiers: they modify the ordinary semantic value of an expression using the content of the alternative semantic tier. I will refer to these operators as alternative evaluating operators throughout. Opinions vary in the semantic literature as to the nature of these operators and whether they are an open or closed class, crosslinguistically variable or stable. On one end of the spectrum a theory like Rooth's original 1985 proposal makes focus sensitive particles themselves like *only* and *even* into alternative evaluating operators. These particles can directly access the alternative semantic value of their sister constituent, as illustrated by the lexical entry for *only* in (22). This is known as direct association with focus.

(22)   MEANING RULE *only* (direct association)
         only combining with a clause ϕ yields the proposition:
         $\lambda w.\lambda p.p : \forall p[p \in [\![p]\!]_{Alt} \wedge p(w) = 1 \rightarrow p \subseteq [\![\phi]\!]_o]$

(23)   [only [$_{TP}$ Nadine brought potato salad$_F$]]

On the other end of the spectrum, theories like Rooth's 1992 proposal take a more restrictive view of this class of operators. Rooth 1992 suggests that a single alternative evaluating operator $\sim$ functions as the interface between the ordinary and alternative semantics for all focus sensitive constructions. This operator has the function of restricting a free variable, it's sister at LF, to a subset of the focus

semantic value. This is known as an indirect association with focus.

(24) MEANING RULE $\sim$
Where ϕ is a syntactic phrase and C is a syntactically covert semantic variable, $\phi \sim C$ introduces the presupposition that C is a subset of $[\![\phi]\!]_f$ containing $[\![\phi]\!]_o$ and at least one other element.
(Rooth 1996, p. 279)

(25) $[\![only]\!] = \lambda w.\lambda C.\lambda p.p : \forall q[q \in C \rightarrow (q(w) = 1 \rightarrow q \subseteq p)]$

(26) $[[only\ C] [[\sim C] [\lambda w [_{TP} \text{Nadine brought potato salad}_F]]]]$

This is an empirical question. Beaver and Clark 2003, Beaver and Clark 2009 argue that both kinds of focus evaluating operators are available in natural language. Based on data demonstrating that while quantificational adverbs like *always* can be restricted by sets other than the focus, adverbs like *only* strictly associate with focussed material. They argue that this is evidence that the latter should associate directly with the foucs, rather than by the indirect mechanism proposed in Rooth's work while the former associates only indirectly. Beck 2016 points out that similar predictions to direct association can be derived by adding further stipulations on the value of the restrictor of quantifiers like *only* (e.g. requiring the restrictor set to be a subset of the QUD), allowing us to retain a more unified semantics for focus.

For questions, a Q-operator like the one in (27) is responsible for deriving the question set in a Roothian two-tiered framework. Unlike the movement-based account of *wh*-questions in the previous section, this type of analysis requires an LF-structure where the *wh*-pronoun remains in the scope of the Q-operator, as in (28). This fits well for *wh*-in-situ languages. For *wh*-fronting languages, we must assume that either the Q-operator is in a position higher than it is typically assumed to be (above the moved *wh*-word in SpecCP) or that the moved *wh*-

pronoun is reconstructed to a position below the Q-operator at LF.

(27)   MEANING RULE Q
       If $\alpha = [Q\ \beta]$, then for any g:
       $[\![\alpha]\!]_o^g = [\![\beta]\!]_{alt}^g$
       $[\![\alpha]\!]_{alt}^g = \{[\![\alpha]\!]_o^g\}$

(28)   [Q [λw [what [1 [$_{TP}$ Nadine brought t_1 to the party]]]]]

Under this view of alternatives, a broader range of lexical items such as the covert exhaustivity operator and negative polarity items would also be able to access the alternative semantic tier. We have not yet spelled out how this could happen, but we will return to this question later. For now, let's consider the empirical predictions that this framework makes for the interpretation of focus and questions.

1.3.2   Empirical Predictions

In simple cases, the set of alternatives derived under a movement based approach is identical to the one derived with Rooth/Hamblin alternatives. However, in many cases the two approaches differ in their empirical predictions. Unlike in a movement-based account, alternative sets can be derived in-situ for use in *wh*-questions and focus association, so locality conditions on movement are not predicted to limit the formation of alternative sets (cf. also Rooth 1985 and Kratzer and Shimoyama 2002, Beck 2006). Consquently, they do not predict island-effects to arise in cases of association with focus or with *wh*-phrases unless overt or covert movement is required for independent reasons. At least in English, this prediction seems to be borne out for focus. As we've seen in 2.1.2, association with a focus sensitive operator is possible across an island for movement, for example, across a

relative clause island and similarly, in-situ *wh*-phrases within islands do not necessarily lead to ungrammaticality, suggesting that their interpretation is not derived via covert movment.

Furthermore, a Hamblin/Rooth alternative semantics allows a single alternative evaluating operator to associate with several alternative introducers in its scope. In fact, as observed by Kratzer 1991, Wold 1996, Rooth 1996 and many others, after composition by pointwise function applications the original individual alternatives contributed by a particular lexical item are no longer recoverable. In terms of empirical predictions, this means that examples where a single focus sensitive operator targets two foci, as in (14), are predicted to be accpetable, unlike in the movement based account. In fact, an alternative evaluating operator *must* operate on alternatives contributed by all alternative introducing items in its scope. [3]

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[3]A related prediction that has been discussed in connection with multiple foci are cases where two foci necessarily co-vary, as in Kratzer 1991's famous 'tanglewood sentence' in (i). Kratzer points out that, intuitively what this sentence means is something like "The only place such that I went there because you went to that same place is Tanglewood", which is derived by universal quantification over an altenative set where the alternatives introduced by each of the two foci are the same, as in (i)-a. However, Roothian alternative semantics does not provide a way to co-index alternatives in that way and we instead get an alternative set as in (i)-b, which leads to a different, untattested reading when it serves as the restrictor for the universal quantifier *only*.

(i)   *I only went to Tanglewood$_F$ because you did ~~go to Tanglewood$_F$~~.*

    a.   { I went to Tanglewood because you went to Tanglewood, I went to Elk Lodge because you went to Elk Lodge ... }

    b.   { I went to Tanglewood because you went to Tanglewood, I went to Elk Lodge because you went to Tanglewood, ... }

Kratzer uses the Tanglewood sentences as an argument against a Roothian alternative semantics in favor of one using distinguished variables, however since her original article, the vailidity of these types of examples as an empirical data point has been called into question. Kotek and Erlewine 2016 argue that these interpretations can be derived in a Roothian framework, provided we assume a structure where a higher focussed DP binds traces in two places, as in (ii) below. For that reason, they argue that so called 'Tanglewood' sentences are not convincing empirical evidence against a Rooth/Hamblin alternative semantics.

(ii)   [only [$_{DP}$ Tanglewood$_F$]$_1$ I went to t_1 because you did ~~go to t_1~~.]

The limited flexibility that alternative evaluating operators have in a Rooth/Hamblin alternative semantics to 'choose' the alternatives over which they operate makes another important prediction, namely that focus intervention effects occur in configurations where an alternative evaluating operator is blocked from associating across a second intervening operator in configurations like (29).

(29)   *[Op$_1$ ... [OP$_2$ ... [F$_1$/Wh$_1$ ... F$_2$/Wh$_2$]]]

Focus intervention effects are useful tool to investigate the way semantic composition of alternatives happens and thus play an important recurring part in this dissertation. Before moving on to discuss the particular predictions of a Rooth/Hamblin alternative semantics, let us take a moment to introduce them briefly. The term intervention effects, first discussed in Beck 1997, refers to a phenomenon whereby a class of operators can blocks certain types of long distance relationships (e.g. between an in-situ *wh*-item and its associated Q-complementizer). In the following examples, for instance, the presence of a negation or an exclusive particle cause ungrammaticality when they separate an in-situ *wh*-phrase from its associated Q-operator at LF.

(30)   a.   *??Wen hat nur Karl wem vorgestellt.*
              Who.acc has only Karl who.dat introduce
              'Who did only Karl introduce to whom?'
        b.   *??Wen hat niemand wem vorgestellt?*
              Who.acc has nobody who.dat introduced
              'Who did nobody introduce to whom?'

The class of intervening operators is broad and includes negation, negative and universal quantifiers, NPIs, and focus sensitive particles like *only* or *even*. Intervention effects are largely though of as a phenomenon related to questions, particularily those containing in-situ *wh*-items (including multiple questions, sim-

ple questions in *wh*-in-situ languages, scope marking questions), although different accounts deleniate the phenomenon in different ways, some suggesting that the phenomenon extends more broadly than just in questions and others confining an account to just a subset of intervening operators. Intervetion effects have been attributed to a number of different underlying causes. Early accounts including Beck 1997 and Pesetsky 2000 attribute the the phenomenon to constraints on covert movement, while more recent approaches have looked for information structural or semantic explanation of the phenomenon, pointing out that the constraints on covert movement are somewhat stipulative in nature[4]. Other more recent accounts attribute intervention to various semantic or information structural properties (e.g. anti-additivity Mayr 2013, Tomioka 2007). The account of Beck (2006) arguest that intervention effects (or at least a subset of them) arise as a result of the way that different alternative evaluating operators interact with each other. This latter account of intervention is particularly interesting for us, because it provides a means of better understanding the way alternative semantic composition happens.

There is by now mounting crosslinguistic evidence suggesting that something along the line of the focus intervention effect discussed by Beck (2006) is observed crosslinguistically, when focus sensitive particles occur in the relevant LF positions to cause intervention in both questions and, potentially also, in multiple focus construction (though the data on this latter point is less clear). Focus intervention effects in *wh*-questions have been observed by now in a wide range of typologically distinct languages including German, English, Hindi, Korean and Turkish (Beck 1997);Mandarin and Malayalam (Kim 2002); French, Japanese (Pe-

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[4]From the perspective of semantic composition, under a movement based account of focus association and questions nothing prevents focus intervention configurations from deriving a well-formed interpretation. The same configuration is observed, for example in sentences with ambiguities arising from multiple quantifiers taking different scopes, like (i).

(i)   *Bill gave some paper to every student.*

    a.   [Every student$_2$ [Some paper$_1$ [Bill gave t$_1$ to t$_2$]]]

    b.   [Some paper$_1$ [Every student$_2$ [Bill gave t$_1$ to t$_2$]]]

setsky 2000), Passmaquoddy (Bruening and Lin 2001), Thai (Ruangjaroon 2002) Amharic (Eilam 2008), Russian, Palestinian Arabic (Howell et al. to appear). Beyond *wh*-questions, some authors have claimed that similar intervention effects are found in focus constructions, when an intervener separates an alternative evaluating operator and the focus it associates with (Beck and Vasishth 2009)[5] .

How does alternative evaluation cause intervention and what are the predictions for a Rooth/Hamblin style alternative semantics? In the previous section, we saw that in a Roothian compositional system for computing alternatives alternative sets are created by quantifying over all the alternatives introducing items within a constituent. In particular, in an intervention configuration like (31) below, where a focus evaluating $\sim$ occurs in an position at LF between a wh-item and its evaluating Q operator, the set of alternatives that the lower $\sim$ operator will use to restrict the value of C is a set obtained by quantifying over both the position of the wh-item as well as the focus, resulting in the set in (31-c).

(31)   a. ??*Wen hat nur Karl wem vorgestellt?*
         b.   [Q_i whom$_1$ [only$_C$ [$\sim$ C ... [Karl$_F$ t_1 to whom introduced]]]
         c.   [[Karl$_F$ t_1 to whom introduce]]^{alt} = {x introduced t_1 to y | x, y $\in$ D$_e$}

Compostion of the $\sim$ operator with this constituent will result in an alternative semantic value that is a singleton set (containing the ordinary semantic value of its sister), resulting in an uninterpretable structure, since the ordinary semantic value of the wh-word *whom* is undefined. Beck's (2006) account of focus intervention argues that this uninterpretability is the root cause of the degradedness observed with focus intervention constructions.

The empirical prediction of a Rooth/Hambin alternative semantics is thus that

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[5]These type of sentences are first discussed in Wold 1996 and are considered by some linguists to be grammatical (Krifka 2006). Others report that they are degraded (Beck 2006), and experimental data collected by Beck and Vasishth 2009 shows that, compared to similarly complex sentences where there is no focus intervention, this kind of structure is indeed found to be degraded by native speakers.

configurations like (31) where a $\sim$ operator separates an in-situ wh-phrase from its evaluating Q operator should produce ungrammaticality.

Let's consider now the prediction for the inverse configuration, where a Q operator separates a Focus from its evaluating $\sim$ at LF, sketched below in (32).

(32)　　a.　*I only asked who Mary$_F$ likes.*
　　　　b.　[only$_C$ [$\sim$ C [I asked [Q [who Mary$_F$ likes]]]]]
　　　　c.　[[Q who Mary$_F$ likes]]^o = { Mary likes x | x $\in$ D$_e$}
　　　　d.　[[Q who Mary$_F$ likes]]^{alt} = {{Mary like x | x $\in$ D$_e$}

The interpretation of this LF structure will fail, but for slightly different reasons. In this case, it is the Q-operator that will evaluate all of the alternatives within its scope: The ordinary semantic value of the embedded question will be as in (32-c) and its alternative value will be the singleton containing the orindary semantic value as its element, as in (32-d). The issue with this structure occurs when it then combines with the higher $\sim$ operator. The meaning rule for $\sim$ requires that the alternative set is uses to restrict C contain an element besides the ordinary semantic value, but this will not be the case, since the alternatives introduced by the focussed element were evaluated by Q.

To summarize, the Rooth/Hamblin account of alternatives predicts that LF structures like (31) and (32) should both produce ungrammaticality. The evidence both for English and other langauges indicates that this prediction is not equally well borne out for *wh*-questions and focus. While focus appears to reliably cause intervention effects, the alternative evaluating Q-operator does not, as illustraded by the grammaticality of (32).

A third framework for alternative semantics, which employs a form of variable binding not triggered by movement, circumvents this problem by allowing selective association of alternative evaluating operators with the alternative-introducing elements in their scope. We turn to this next.

1.4 Variable Binding without Movement

1.4.1 Building Alternative Sets

A second variant of the two-tiered system aims at solving some empirical issues raised with Rooth's system of focus evaluation. Under this approach, first developed by Kratzer 1991 and pursued in Wold 1996 and Beck 2006, Beck 2016, the two tiers of Rooth's focus semantics are modeled via two separate assignment functions. The ordinary semantic value of an expression corresponds to its interpretation relative to the regular assignment function g. The alternative semantic value corresponds to the expression's interpretation relative to g and to a different variable assignment function, h, which assigns values to variables introduced by F-marked constituents and *wh*-phrases. Operators such as Rooth's focus evaluating $\sim$ operator or the interrogative Q operator bind these variables to create alternative sets. Because we are no longer dealing with alternative values that are sets, standard Heim & Kratze style composition principles (including predicate abstraction) can be used. Below, I give the compositional rules from Beck 2016 for a distinguished variable framework.

(33)   LEXICAL TERMINAL NODES
       If α is a lexical item, then for any g,h:
       $[\![\alpha]\!]^g = [\![\alpha]\!]$ which comes from the lexicon
       $[\![\alpha]\!]^{g,h} = [\![\alpha]\!]^g$

(34)   PRONOUNS AND TRACES
       If α_i is a pronoun or a tracee, then for any g,h,:
       $[\![\alpha_i]\!]^g = g(i)$
       $[\![\alpha_i]\!]^{g,h} = [\![\alpha_i]\!]^g$

(35)   FUNCTION APPLICATION

If $\alpha = [\beta\gamma]$ then for any g,h:

if $[\![\beta]\!]^g$ is a function whose domain includes $[\![\gamma]\!]^g$, then:

$[\![\alpha]\!]^g = [\![\beta]\!]^g([\![\gamma]\!]^g)$

$[\![\alpha]\!]^{g,h} = [\![\beta]\!]^{g,h}([\![\gamma]\!]^{g,h})$

(36)   PREDICATE ABSTRACTION

If $\alpha = [i\beta]$ where i is a numerical index or relative pronoun, then for any g,h:

$[\![\alpha]\!]^g = \lambda x.[\![\beta]\!]^{g[x/i]}$

$[\![\alpha]\!]^{g,h} = \lambda x.[\![\beta]\!]^{g[x/i],h}$

Lexical items which, under a Roothian framework would introduce sets of alternatives are modeled as introducing a variable which is assinged a value by the assignment function h. For example, a focussed constituents, when evaluated relative to the assignment function g and h contributes a distinguished variable. Similarly, *wh*-pronouns contribute a distinguished variable. Note that in the latter case, the value of a *wh*-phrase relative to only g is undefined.

(37)   FOCUS

For any α_{Fi}, and any g,h: $[\![\alpha_{Fi}]\!]^g = [\![\alpha]\!]^g$

$[\![\alpha_{Fi}]\!]^{g,h} = h(i)$ "if i is in the domain of h, $[\![\alpha]\!]^g$ otherwise

(38)   WH-PRONOUN

$[\![what_i]\!]^g$ is undefined

$[\![what_i]\!]^{g,h} = $ h(i) if i is in the domain of h, $[\![what_i]\!]^g$ otherwise

Like in a Roothian framework, a set of alternative evaluating operators function as the interface between the two levels of representation. Now, however, this is done by binding a distinguished variable introduced by focus or a *wh*-pronoun to create a set of alternatives. As before, we can think about the inventory of such op-

erators and whether e.g. focus sensitive operaotrs can bind distinguished variables directly, or whether there is evidence for a more limited inventory of alternativ evaluating operators. This framework provides extra flexibility: Under a Roothian account, the internal structure of an alternative set could not be accessed by a focus sensitive operator, but this is no longer the case for a distinguished variables framework - we now have the option to model selective and unselective operators. Using variable binding to generate alternative sets provides the flexibility to let alternative evaluating operators target particular distinguished variables in their scope. This has important empirical consquences which will be discussed in the next section. For now, let's look at what $\sim$ and Q operators that selectively and unselectively bind distinguished variables would look like.

(39)   QUESTION OPERATOR (SELECTIVE)
    If $\alpha = [Q_i\beta]$then for any g,h:
    $[\![\alpha]\!]^g = \{[\![\beta]\!]^{g,\emptyset[x/i]}|x \in D\}$
    $[\![\alpha]\!]^{g,h} = \{[\![\beta]\!]^{g,h[x/i]}|x \in D\}$

(40) $\sim$ OPERATOR (UNSELECTIVE - ROOTH'S SQUIGGLE):
    If $\alpha = [\sim C\beta]$, then for any g,h:
    $[\![\alpha]\!]^g$ is only defined if g(C) $\subseteq \{[\![\beta]\!]^{g,h}|$h a total distinguished variable assignment$\}$.
    Then, $[\![\alpha]\!]^g = [\![\beta]\!]^g$
    $[\![\alpha]\!]^{g,h} = [\![\beta]\!]^{g,\emptyset}$

(41)   QUESTION OPERATOR (UNSELECTIVE):
    If $\alpha = [Q_i\beta]$then for any g,h:
    $[\![\alpha]\!]^g = \{[\![\beta]\!]^{g,\emptyset}\}$
    $[\![\alpha]\!]^{g,h} = \{[\![\beta]\!]^{g,h}|$h a total distinguished variable assignment$\}$

(42) $\sim$ OPERATOR (WOLD'S SQUIGGLE):
    If $\alpha = [\sim_i C\beta]$, then for any g,h:
    $[\![\alpha]\!]^g$ is only defined if g(C) $\subseteq \{[\![\beta]\!]^{g,h[x/i]}|x \in D_i\}$.

Then, $[\![\alpha]\!]^g = [\![\beta]\!]^g$

$[\![\alpha]\!]^{g,h} = [\![\beta]\!]^{g,h}$

An interesting technical difference between the two frameworks is that here alternative sets are not, strictly speaking introduced by the *wh*-phrase or focussed constituent, but rather created by the alternative evaluating operator via abstraction over the distinguished variables they introduce. This simplifies the semantic composition to some extent, because alternative sets are built directly where we need them to be, rather than being carried all the way through the semantic composition. This also means that the problems with predicate abstraction discussed in the last section for a Rooth/Hamblin alternative semantics do no arise in this framework. Before moving on to the empirical predictions made by this kind of an account, let us briefly spell out the derivation of a simple *wh*-question and of an example with containing a focus sensitive particle.

Question Derivation

(43)   *Who brought salad?*

      [Q_i [λw [who$_i$ [brought salad w]]]]

(44)   [[brought salad w]]^g = [[brought salad w]]^{g,h} = $\lambda x.x$ *brought salad in w*

(45)   a.   [[λw who$_i$ brought salad w]]^g is undefined

      b.   [[λw who$_i$ brought salad w]]^g = $\lambda w.$ *h(i) brought salad in w*

(46)   [[[Q_i λw who$_i$ brought salad w]]^g

      = { $\lambda w.$ x bought salad in w | $x \in D_e$ }

Focus Derivation

(47)   *Only Alex$_F$ brought salad.*

[Only C [$\sim_i$ C [λw [Alex$_{Fi}$ brought salad w]]]]]

(48)   a.   [[λw Alex$_{Fi}$ brought salad w]]^g = λw. Alex brought salad in w
       b.   [[λw Alex$_{Fi}$ brought salad w]]^{g,h} = λw. h(i) brought salad in w

(49)   [[[$\sim_i$ C [λw [Alex$_{Fi}$ brought salad w]]]]]]^g and [[[$\sim_i$ C [λw [Alex$_{Fi}$ brought salad w]]]]]]^{g,h} are defined iff $C \subseteq \{\lambda w.$ x brought salad in w $|x \in D_e\}$. If so:
       a.   [[$\sim_i$ C λw Alex$_{Fi}$ brought salad w]]^g = λw.*Alex brought salad in w*
       b.   [[$\sim_i$ C λw Alex$_{Fi}$ brought salad w]]^{g,h} = λw. *h(i) brought salad in w*

(50)   [[Only C $\sim_i$ C λw Alex$_{Fi}$ brought salad w]]^g is only defined if
       $C \subseteq \{\lambda w.$ x brought potato salad in w $|x \in D_e\}$ If so:
       [[Only C $\sim_i$ C λw Alex$_{Fi}$ brought salad w]]^g =
       $\lambda w. \forall p \in C[p \subseteq \lambda w.$ *Alex brought salad in w* $\vee \neg p(w)]$

1.4.2   Empirical Predictions

When it comes to LF syntax, the predictions of a distinguished variables account are alinged with those from a Rooth/Hamblin alternative semantics, since neither requires overt or covert movement of a focus or *wh*-phrase in order to derive alternative sets. As such, the prediction about the lack of locality restrictions on *wh*-in-situ and for association with focus are the same. Differences between the two types of alternative semantics arise via the different semantic composition. In an alternative semantics employing distinguished variables an alternative evaluating $\sim$ or Q operator could bind multiple variables, provided it carries the indicies of both foci or *wh*-phrase. As Kratzer 1991 points out, a system for alternatives with the full power of variable binding additionally makes it possible to capture cases where two foci are co-indexed, as in the Tanglewood example, without a need for covert movement to occur. However, as we noted in 2.2.2, the data from

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Tanglewood-type examples is not particularly conclusive, since it seems possible to derive the same interpretation under a Rooth/Hamblin alternative semantics by allowing one of the focussed phrases to move to a higher position and bind traces in both the matrix and embedded clause.

Intervention Effects

The data from constraints on movement and multiple occurences do not help choose between a Rooth/Hamblin style alternative semantics and one that employs distinguished variables, although they do present problems for an account that derives alternative sets solely from abstraction over traces left by movement. Predictions about intervention effects, on the other hand, do differ between the two accounts, allowing to draw an empirical distiniction between the two. We saw in 2.2. that a Hamblin/Rooth alternative semantics does not allow for selective association only with alternatives introduced by a particular lexical item and, as a result, does not allow for association from across a lower alternative evaluating operator. Distinguished variables allow for more flexibility in this respect: since the alternative sets are created by binding a variable within the scope of the alternative evaluating operator stacked intervention cofingurations do not pose a problem a priori. On the other hand, as mentioned above, it is possible to define unselective alternative evaluating operatos in this system, which would cause intervention effects in the same way that Rooth's $\sim$ operator does. This makes the following two predictions: First, the pattern of intervention with distinguished variables depends on the binding properties of individual alternative evaluating operators. It has the flexibility that allows alternative evaluating operators to bind distinguished variables unselectively, however it it is possible to also have unselective binders, which would cause intervention effects. Second, if an alternative evaluating operator does cause intervention effects, all alternative evaluating operators are predicted to be sensitive to intervention by it.

Summary of Empirical Considerations and Open Questions

The previous paragraphs illustrated the empirical arguments in favor of a sys-

tem for generating alternatives that has the expressive power of distinguished variables. The distinguised variable framework allows us to model cases that require selective association of an operator with alternative introducers in their scope, e.g. association with focus within a question. This was not possible in a Rooth/Hamblin alternative semantic framework. Furthermore, since this system does not employ movement and traces to trigger variable binding, it is also able to correctly capture the lack of locality effects observed with focus, giving it an advantage over movement based accounts. Finally, we argued that using this compositional system to model both the alternatives at work in focus constructions and in questions gives us a better way to capture focus intervention data.

This section has not addressed some open empirical questions about the way this system is constrained. A Kratzer/Wold/Beck system employing distinguished variables must stipulate that the alternative evaluating operator responisble for focus is unselective, while the operator responsible for creating question meanings is selective in order to correctly derive the empirical pattern of interventione effects observed for English and other languages (c.f Beck 2016). Crosslinguistic work (e.g.Howell et al. to appear) has shown that this pattern shows surprizing crosslinguistic uniformity that is unexpected given the theoretical possibilities in a Woldian distinguished variable framework. In a study of 7 languages carried out by Howell et al. to appear each language's question and focus sensitive operators behaved like English, i.e. displayed focus intervention effects (indicating an unselective $\sim$) but allowed for association with alternatives across a Q operator.. This pattern is not immediately explained within the distinguished variable framework laid out in this section and poses an interesting question for future work.

1.5 Structured Meanings and Inquistive Semantics

Two additional frameworks for alternative semantics have been missing from the previous discussion: Structured meanings (Stechow 1982, Stechow 1991, Jacobs 1983, Krifka 1992) and Inquisitive semantics (Ciardelli, Groenendijk, and Roelofsen 2013). The former predates a Roothian alternative semantics while the latter is a relatively new innovation. I will briefly outline the core idea behind each, but will not provide a detailed discussion because I do not think that either offers significantly better empirical coverage than the approach to alternatives using distinguished variables that I have chosen.

1.5.1 Structured Meanings

A structured meaning approach to focus and questions uses lambda binding to abstract over an alternative-introducing constituent. Oftentimes, work within the structured meaning framework does not explicitly spell out how this λ-binding is triggered at the syntax/semantics interface and different syntactic assumptions made about how this is done will change the empirical predictions made by this approach. Let's review briefly how this system works. For a more complete discussion of the compositional system the reader is referred to Krifka 1992. The core idea behind a structured meaning approach is that focus induces a bipartition of the material in the sentence into a background and focus portion, as in (51) below. Applying the focus value to the background derives a conventional semantic value.

(51) a. *Nadine saw Alex$_F$*.
         BFS: $\langle$ Alex, λx. Nadine saw$_w$ x $\rangle$
      b. *Who did Nadine see?*
         BFS: $\langle$ Who, λx. Nadine saw$_w$ x $\rangle$

Focus sensitive elements express a particular relationship between the focus and background value, as for example with the focus sensitive particle *only* in(52) below.

(52)   For any background-focus structure $\langle \alpha, \beta \rangle$:
         $\text{only}(\langle \alpha, \beta \rangle) \Leftrightarrow \alpha(\beta)\&\forall X[X \approx \beta\&\alpha(X) \rightarrow X = \beta$
         where $\approx$ represents the contextually determined relationship of 'comparability'

In terms of its empirical coverage, the structured meaning approach amounts to something very similar to a system using distinguished (or ordinary) variables to build alternative sets. It has the expressive power that allows for selective association with focus and has been extended to cover cases of multiple focus (cf. Krifka 1992). It is possible to model both selective and unselective alternative evaluating operators and, in that way, model the different intervention behavior observed by different alternative evaluating opertors.

As Wold 1996 points out in his original discussion of the distinguished variable framework, a major difference between the structured meaning approach and distinguished variables concerns assumptions about the syntax/semantics interface and how the structured representations are obtained. Given a fully worked-out account of how structured meaning representations are derived at the syntax semantics interface, this framework could be a viable alternative to the techincal implimention using distinguished variables that I will use in the rest fo the dissertation.

1.5.2   Inquisitive Semantics

Inquisitve Semantics is a relatively recent semantic framework that includes a notion of alternatives and has been used for proposals about a number of phenom-

ena at the semantics/pragmatics interface including free choice, disjunction and questions (Ciardelli, Groenendijk, and Roelofsen 2013). The core innovation of inquisitive semantics is to divide interpretation into two components: the 'informative' content of an utterance serves to rule out worlds from the common ground, while the 'inquisitive' context highlights a set of alternatives, raising the question which of these hold (much in the same way as the question under discussion). Alternatives that make up the 'inquisitive' content are introduced by disjunction or via an existential quantifier (defined as a disjunction of indefinite length).

On its own, inquisitive logic is not a compositional system, though a compositional typed inquisitive semantics has been developed in Ciardelli, Roelofsen, and Theiler 2015 and Ciardelli, Roelofsen, and Theiler 2017. As far as I am aware, although focus is presumed by proponents of the inquisitive approach to be sensitive to the inquisitive content of preceding utterances in discourse, the kind of alternatives that determine inquisitive content in this system have not been used to derive a representation of focus. Some accounts that employ an inquisitive framework rely on a system of Roothian focus alternatives in addition to the alternatives introduced by inquisitive content (cf. e.g Ciardelli, Roelofsen, and Theiler 2015, fn. 28 or AnderBois 2012's proposal for disjunctive questions in Yucatec Maya). This is somewhat conceptually unattractive, but would be justified if there were empirical evidence for treating questions and other 'inquisitive' phenomena differently from association with focus. It is not obvious how inquisitive semantics can handle data from focus intervention and, more generally, the interaction of focus sensitivity with other alternative evaluating operators. This is not to say that a proposal could not be developed for explaining focus intervention effects in an inquisitive framework, but in the absence of one the compositional system employing distinguished variables is more useful for investigating the quesiton of how alternatives from focus questions and other alternative evaluating operators interact with each other.

1.6 Summing up

This chapter has served as an introduction to a few common ways to derive alternative sets compositionally for use in a range of phenomena. We've concentrated here on the semantics of *wh*-questions and focus association, but have not touched on other phenomena that have been argued in the formal semantic literature to employ similar compositional mechanisms: disjunction, free choice indefinites and scalar implicatures generated via a grammatical exhaustivity operator. The main take-away from the chapter is that, to an extent, the different mechanisms on the market (movement and variable binding, Roothian focus alternatives, distinguished variable binding) each make different empirical predictions and, consequently, determining where to use which compositional mechanism requires looking at the relevant data. The upshot of the chapter can be summarized as a set of diagnostic questions and predictions each framework make for them.

- LOCALITY CONSTRAINTS
  Is the construction sensitive to locality constraints on movement (such as the complex NP constraint, the coordinate structure constraint, adjunct island constraint cf. Ross 1967)?

- MULTIPLE ASSOCIATION
  Does the construction allow for association of an operator with two different foci/variables?

- INTERVENTION EFFECT SENSITIVITY
  Is the construction sensitive to invervention effects by operators that have been observed to cause focus intervention effects elsewhere in the language?

- SELECTIVE ASSOCIATION
  Can the construction selectively target alternative introducers within its scope? In other words, does it cause intervention effects if its alternative

evaluating operator occurs in an LF position between a second alterntive evaluating operator and the alternative introducer it targets?

Table 1 sums up the empirical predictions of the three compositional systems considered in this chapter for deriving alternative sets: Movement and variable binding, Rooth/Hamblin expanding alternative sets, and Woldian distinguished varaiables.

	Movement	Rooth/Hamblin	D.V.
Locality Constraints	Yes	No	No
Multiple Association	No	Yes	Yes
Selective Association	Yes	No	Yes
Sensitivity to Intervention	No	Yes	Yes

These questions and their results come from arguments that have been made for and against different systems for building alternatives: The question about syntactic movement constraints and about the ability to associate with multiple foci come originally from Rooth 1985's inital arguments for an alternative semantics.The questions regarding sensitivity to and causation of intervention come from the discussion in Wold 1996 about multiple association with focus and in Beck 2006 about focus intervention effects.

It is important to stress that these tests need to be carried out within the context of the structure of the language and construction that are being investigated. For example, if a focus or *wh*-phrase in a language obligatorily undergoes overt or covert movement (e.g. in obligatory *wh*-fronting languages) then it will be sensitive to expected constraints on movement, but this does not rule out other compositional mechanisms, like set expansion or distinguished variable binding. We can't conclude on the basis of island sensitivity alone that something does not employ an alternative semantics We need to look at other tests, like multiple focus and intervention to better understand what is going on here. The reverse case is more straightforward: if a construction is sensitive to syntactic islands, then we can be relatively sure the relevant alternative sets are not being generated by movement

and variable binding.[6] In the same way, before using the tests for intervention effects, we need to ensure that the examples we are testing build the relevant LF-configurations under which intervention should arise (i.e. nested alternative evaluating opreators) and this may not always be possible, for example in languages where *wh*-words never occur in-situ, testing for intervention in *wh*-questions may not be conclusive.

In this chapter we've seen initial evidence that using a single compositional system with the power to selectively bind variables without relying on movement, such as Kratzer and Wold's distinguished variable framework, makes the best predictions for both focus and questions for the data from English. The situation across languages has not been investigated to the same extent, however, the cross-linguistic prevalence of intervention effects (Beck 1997, Bruening and Lin 2001,Pesetsky 2000, Ruangjaroon 2002, Eilam 2008 and others) and their surprizing crosslinguistic uniformity (Howell et al. to appear) provides initial data suggesting that this may also be the case for other languages. Going forward, I will therefore adopt a framework employing distinguised variables to model alternatives, while making sure to test these empirical predictions thoroughly for the particular constructions and langauges to be investigated in later chapters.

Looking ahead: Alternatives beyond Focus and Questions

The notion of alternative sets has come to be employed more broadly than just for the analysis of focus and questions. In particular, the EXH operator which plays a growing role in modeling of phenomena at the semantics/pragmatics interface (Fox 2007, Chierchia, Fox, and Spector 2012, a.m.o) takes a set of (propositional) alternatives as an argument, restricting the universal quantifier at its core. Despite the prominence of accounts employing the EXH operator for pragmatic

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[6]There are a number of accounts that still argue in favor of focus movement (cf. Erlewine and Kotek 2016, Kotek and Erlewine 2016, Krifka 2006, Wagner 2006, Drubig 1994) and explain island violations via pied-piping of the entire island with the moved focussed constituent. In order to get the compositional semantics right in these cases, though, some version of alternative semantics is still needed in order to separate the true focus, which forms the basis for the focus alternatives, from the other pied piped material.

phenomena, NPIs, FCIs, explicit discussion of the compositional derivation of the alternatives which serve as the restrictor to EXH has not received much attention in the semantics literature. Some accounts suggest that it should work with the $\sim$ operator, in the same way as overt *only*, while others make it an alternative evaluating operator in its own right. Furthermore, one needs to consider how the alternative sets that restrict EXH are generated. Prominent neo-gricean accounts take the alternatives to be generated by a lexical horn scale activated by certain lexical items, yet others (e.g Fox and Katzir 2011) propose that presence of a focus feature is always involved in these cases and that the underlying compositional mechanisms are the same as for alternative generation with focus. It's worth noting here that these accounts often adopt variants of a Roothian framework where the set of alternatives generated by a focussed constituent differs from Rooth's original proposal. Katzir 2007 and Fox and Katzir 2011 develop a system which, like Rooth's treats alternatives as distinct from the ordinary semantic contribution of an utterance, but the alternatives generated for a focussed constituent vary however: While for Rooth alternatives are determined on the basis of semantic type, Fox and Katzir 2011 propose that the syntactic makeup of the focussed consitutent impose further constraints on what can count as an alternative.

Beyond EXH, some analyses employ lexical items that can directly access alternatives, e.g. to derive universal quantifier or existential interpretation (e.g. Kratzer and Shimoyama 2002's analysis of japanese *mo* and *ka* and of German *irgendein*) or to derive patterns associated with the interaction of disjunction and modality (e.g. Alonso-Ovalle 2006). The above mentioned accounts employ pointwise function application on the ordinary semantic tier in combination with a closure operator.

Looking in more detail at the crosslinguistic data for some of these other operators and the compositional systems that underlie them will play a central role in the upcoming discussion of Yoruba disjunctive questions and Samoan FCIs. For disjunctive questions in Yoruba, we will look in particular at how disjunction can be integrated into the view of questions sketched in this chapter and will use a

variant of the exhaustivity operator to derive their pragmatic particularities. For Samoan, the empirical questions outlined above will be used to compare different possible compositional approaches to the semantics of a universal free choice construction and to argue for applications of alternatives beyond focus and questions.

Appendix:
Predicate Abstraction and Alternatives

Rooth/Hamblin alternative semantics is not straighforwardly compatible with predicate abstraction in a Heim and Kratzer 1998 style semantic framework. The so called "predicate abstraction problem" was already identified in Rooth 1985 and has been discussed by a number of other formal semanticists since then (Poesio 1996, Kratzer and Shimoyama 2002, Shan 2004 Romero and Novel 2013, Charlow 2014, Kotek 2017). The goal of this appendix is to lay out the problem briefly and outline ways in which a Heim & Krazter style system could be made compatible with predicate abstraction over alternative sets. The main point here is to illustrate that, although accounting for predicate abstraction with Rooth/Hamblin alternatives adds complexity to the semantic composition, it is possible.

The issue with a "naive" predicate abstraction rule as in (53) is that it generates an object of the wrong type for further semantic composition, e.g. with a quantifier. Rather than yielding a set of functions it creates a function into a set of alternatives ($\langle e\langle t, t\rangle$) that will not be able to combine with higher operators suchs as quantifiers.

(53)   NAIVE PREDICATE ABSTRACTION
        For any node α, binding index n and assignment function g,
        $[\![n\alpha]\!]_o^g = \lambda x.[\![\alpha]\!]_o^{g[x/n]}$
        $[\![n\alpha]\!]_{alt}^g = \lambda x.[\![\alpha]\!]_{alt}^{g[x/n]}$

This problem has been addressed in a number of ways in the literature. Kratzer and Shimoyama [2002] changed the rule for predicate abstraction to yield sets of predicates, so that it looks something like in (54) and can derive alternative sets of the right type, as in (55) [7].

(54)   KRATZER & SHIMOYANA PREDICATE ABSTRACTION
         For any node α, binding index n and assignment function g,
         $[\![\ n\ \alpha]\!]_o^g = \lambda x.[\![\alpha]\!]_o^{g[x/n]}$
         $[\![\ n\ \alpha]\!]_{alt}^g = \{f : \forall x f(x) \in [\![\alpha]\!]_{alt}^{g[x/n]}\}$

(55)   EXAMPLE $[\![\ [\ 1\ [\ \text{Julia}_F\ \text{saw}\ t_1\ ]\ ]\!]_{alt}^g =$
         $\{f : \forall x[f(x) \in [\![\ [\ \text{Julia}_F\ \text{saw}\ t_1\ ]\ ]\!]^g[x/1]_{alt}\} =$
         $\{f : \forall x[f(y) \in \{saw(y,x) : y \in D_e\}\}$

However, it's been pointed out by Romero and Novel [2013] that this PA-rule derives too many alternatives if the set it operates on is not a singleton set. The alternative value of the expression in (55), for example, will contain all the functions we want ($\lambda x.$ Amrah saw x, $\lambda x.$ Benny saw x, $\lambda x.$ Cosima saw x ...) but it will contain other functions, which are not uniform with respect to the see-er, i.e. the alternative set also contains the function g below which, for different arguments (say, x_1, x_2, x_3), maps each of them to true if they were seen by a different alternative to Julia.

(56) $\{\ \langle x_1, saw(A, x_1)\rangle,\ \langle x_2, saw(B, x_2)\rangle,\ \langle x_3, saw(C, x_3)\rangle\ ...\}$

Other accounts, including Rooth [1985], Poesio [1996], Romero and Novel [2013],

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[7]This is an adapation of the predicate abstraction rule in Kratzer & Shimoyama to a Rooth-style two tiered alternative semantics.

instead switch to a framework where assignment functions are part of the model. In such a framework, lexical items have an additional argument, (57), and composition rules are adjusted accordingly.

(57)　　$[\![$ saw $]\!]_o = \lambda g.\lambda x.\lambda y.saw(x,y)$
　　　　$[\![$ saw $]\!]_a lt = \{\lambda g.\lambda x.\lambda y.saw(x,y)\}$

(58)　　FUNCTION APPLICATION
　　　　For any semantic types τ and σ and nodes α and β whose semantic type is $\langle a \langle \sigma, \tau \rangle \rangle$ and $\langle a, \sigma \rangle$ respectively (a being the semantic type of assignment functions):
　　　　$[\![\alpha\beta]\!]_o = \lambda g.\alpha(g)(\beta(g))$
　　　　$[\![\alpha\beta]\!]_{alt} = \{\lambda g.f(g)(x(g)) : f \in [\![\alpha]\!]_{alt} \& x \in [\![\beta]\!]_{alt}\}$

(59)　　PRONOUNS AND TRACES
　　　　For any pronoun or trace α and any index i,
　　　　$[\![\alpha_i]\!]_o = \lambda g.g(i)$
　　　　$[\![\alpha_i]\!]_a lt = \{\lambda g.g(i)\}$

(60)　　PREDICATE ABSTRACTION
　　　　For any binding index n and any node $alpha$,
　　　　$[\![n\ \alpha]\!]_o = \lambda g.\lambda x.[\![\alpha]\!]_o(g[x/n])$
　　　　$[\![n\ \alpha]\!]_a lt = \{\lambda g.\lambda x.f(g[x/i])|f \in [\![\alpha]\!]_{alt}$

There are some remaining challenges related to restricting alternatives under this approach, but we will not explore this in detail (but see Romero & Novel 2013 for a detailed discussion of the issue). Crucially, though, we have seen that it is possible to circumvent the predicate abstraction problem in a Rooth/Hamblin alternative semantics.

2

Alternatives in Yoruba Disjunctive Questions

2.1 Chapter Overview

This chapter investigates where alternatives introduced by disjunction fit into the compositional system for deriving alternative sets for focus and questions, focussing on a case study of disjunctive questions in Yoruba, a Niger-Congo language. Natural language disjunction has received a great deal of attention from formal semanticists (Gazdar 1980, Rooth and Partee 1982, Larson 1985,T. E. Zimmermann 2000, M. Simons 2016, Fox 2007, Aloni 2007, Alonso-Ovalle 2006 a.m.o) and there is a growing trend towards employing alternatives to explain a variety of phenomena surrounding the interpretation of disjunction, including free choice effects (Fox 2007, Alonso-Ovalle 2006) and conversational implicatures (Sauerland 2004), as well as its behavior in questions (Stechow 1991, Beck and Kim 2006). But, there is no consensus in the semantic literature about the nature of these alternatives. How are they introduced and what alternative evaluating operators can manipulate them? Are they similar in nature to the alternatives from *wh*-questions and focus and do they employ the same compositional machinery?

Questions containing a disjunction, disjunctive questions, are an interesting phenomenon to investigate in connection with these issues, because their inter-

pretation is derived via the interaction of alternatives from disjunction with a familiar alternative evaluating operator, namely the Q-operator. (At least under some accounts - we'll get into the details later in Section 2.2.) Disjunctive questions in Yoruba are particularly interesting because they are disambiguated by the use of a syntactic and morphological focus marking construction (in alternative (1-b) but not polar (1-a) questions) which is associated with exhaustive inferences elsewhere in the language. As such, they provide a way to look at how operators that generate exhaustivity inferences are involved in the derivation of alternative question interpretations and to investigate their interaction with the alternatives from disjunction, focus and questions.

(1)   Yoruba disjunctive questons

    a. *Ṣe Kemi ra   bata tabi iwe?*   ✓PolQ, # AltQ
        Q Kemi buy shoes or   book
        'Did Kemi buy (one of) the shoes or the book'

    b. *Ṣe bata   tabi iwe   ni Kemi ra?*   # PolQ, ✓ AltQ
        Q shoes or   book NI Kemi buy
        'Which of the shoes or the book did Kemi buy?'

The chapter develops a compositional analysis of disjunctive polar and alternative questions in Yoruba which builds on previous alternative semantic accounts of disjunctive questions (Stechow 1991, Beck and Kim 2006). It also provides a detailed account of the exhaustivizing *ni*-fronting construction in Yoruba and incorporates this it into the accout of Yoruba disjunctive questions to account for the pragmatic inferences associated with alternative questions. The resulting analysis requires a framework for alternatives under which both the exhaustivity operator and the Q-operator can access and manipulate alternatives introduced by the same alternative introducing item (disjunction), providing more evidence that a single compositional system is responsible for introducing and manipulating alternative sets across the board and that the alternative evaluating exhaustivity operator can "pass on" distinguished variables in its scope to higher operators.

The chapter is structured as follows: Section 2.2 introduces disjunctive question and summarized previous accounts of how their interpretations and pragmatic effects are derived compositionally. Section 2.3 provides an introduction to the Yoruba language, and discusses data collection and methodology. Section 2.4 looks in particular detail at the grammar of alternatives in Yoruba, providing an analysis of the syntactic and morphological focus marking strategy found obligatorily in *wh*-questions, alternative questions and association with focus. Section 2.5 turns to Yoruba disjunctive questions, and provides a survey of the key data. Section 2.6.1 spells out a compositional account of disjunctive questions building on previous alternative-based accounts, like Beck and Kim 2006, but adapted to work with the distinguished variables framework argued for in Chapter 1 and that can derive both alternative and polar questions. Section 2.6.2 combines this account of disjunctive questions with the account of exhaustivity in *ni*-fronting constructions in order to derive the pragmatic inferences associated with alternative questions. Section 2.6.3 Elaborates on a modification to the semantics of the Q-operator allowing us to model presupposition projection through questions, and 2.7 puts all of these ingredients togehter, and shows how they capture the data discussed in Section 2.5.

2.2 Background: A first look at Disjunctive Questions

2.2.1 What are Alternative and Polar Questions?

In English and many other languages disjunctive questions, like (2) below, have two possible readings depending on their intonation. The *Polar Question* reading (2-a), pronounced with a final rising tone, amounts to a polar (yes/no) question about a disjunctive statement. The *Alternative Question* reading (2-b), pronounced with a emphasis on both disjuncts in a rise-fall pattern, asks which of the two alternatives

specified by the disjunction is true, presupposing that there is a single true disjunct (Bartels 1999, Pruitt and Roelofsen 2013, Biezma and Rawlins 2012).

(2)   *Did Sarah buy the shoes or the book?*

   a.   Polar question
        Did Sarah buy the shoes$_{L-H}$ or the book$_{L-H-\%H}$.
        'Did Sarah buy one of these two things?'
        (Answers: Yes/No)

   b.   Alternative question
        Did Sarah buy the shoes$_{L-H}$ or the book$_{L-H-\%L}$.
        'Which of the book or the shoes did Sarah buy?'
        (Answers: The shoes., The book., # Yes/No, # Both, # Neither)

Following a standard Hamblin/Karttunen approach to semantics of questions, where interrogatives are taken to denote the set of possible (true) answers to them (Hamblin 1973 or Karttunen 1977), the denotation of disjunctive questions like (2-a) and (2-b) are usually taken to be the set of possible propositions answering them, i.e. (3-a) and (3-b) respectively.

(3)   a.   Polar question
            $\{\lambda w.$ S. bought the book in w $\vee$ S. bought the shoes in w,
            $\lambda w. \neg($S. bought the shoes in w $\vee$ S.bought the book in w). $\}$

       b.   Alternative question
            $\{\lambda w.$ S. bought the book in w, $\lambda w.$ S. bought the shoes in w.$\}$

Alternative questions have been reported to carry requirements on the context of utterance not shared by polar questions (Biezma and Rawlins 2012, Pruitt and Roelofsen 2013). Intuitively, alternative questions require that speaker and hearer share the knowledge that that one, and only one, of the two specified alternatives

be true. For example, to utter a question like (2-b), the context should establish that Sarah bought either the book or the shoes and that she didn't buy both of them. Many accounts treat these as presuppositions and, indeed, this seems to be supported by data from projection. For example it seem like the uniqueness and existence requirements project through holes for presupposition like *know*, as illustrated below in (4) and (5). These sentences, where an alternative question is embedded under *know*, are not felicitous unless the utterance context establishes that one and only one of the alternatives specified in the alternative question is true. (See also Biezma and Rawlins 2012)

(4)   Projection of existence presupposition
        CONTEXT: In the last Canadian federal election there were three main candidates for Prime Minister: Justin Trudeau, Steven Harper and Tom Mulcair. We are talking about who our friends voted for and both have no idea which way Tim voted. However, you know that his girlfriend Tina knows who he voted for. You tell me:
        # *Tina knows whether Tim voted for Steven Harper or Justin Trudeau.*
        (Bad with alternative question intonation, OK with polar question intonation.)

(5)   Projection of uniqueness presupposition
        CONTEXT: Three members of your running club (Albert, Bob and Carl) recently ran a 10km race. You were not there but a friend from the club, who also didn't attend tells you "Two of them ran the race in under 45 minutes, but I can't remember who. Dennis went to watch the race. He would know the results."
        # *Dennis knows whether Albert or Bob ran the race in under 45 minutes.*

A successful account of disjunctive questions should, first of all, explain how the two question denotations are derived compositionally from their ingredients, including (for English) the different intonation contours of the two questions. Second, it should provide an explanation for the pragmatic restrictions on alternative

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questions. Before moving on to the Yoruba data, the rest of this section will provide some background on current accounts of alternative questions and how they do this.

2.2.2 Semantics of Disjunctive Questions

Several approaches have been proposed to derive alternative and polar question sets. I will introduce three main types of accounts: *Quantificational Accounts* (dating back to Larson 1985) treat the disjunction as an existential quantificational item, that takes scope in the sentence below or above a question-forming Q operator to derive the polar and alternative questions respectively. On these accounts the distinction between polar and alternative questions is mainly a scope ambiguity. Similar accounts have been pursued more recently, for example, by Nicolae 2013. A variant of the quantificational analysis, pursued in Romero and Han 2003 employs a scopally mobile quantifier over choice functions while leaving the disjunction itself in-situ. *Alternative semantics accounts* (dating back to von Stechow 1991 and pursued in Beck and Kim 2006 Erlewine 2014, Howell 2016, Biezma and Rawlins 2012 Biezma and Rawlins 2015) seek to integrate disjunctive question into an alternative semantic apporach to questions by allowing the disjunction to introduce alternatives in the same way as a *wh*-phrase would. A third class of accounts, I'll call them *Big Disjunct Accounts*, pursued for example in Uegaki 2014, Mayr 2016 derives the question meaning of AltQ by combining the denotations of two polar questions. These different approaches all derive the same question sets, but they do so via different compositional mean. I will provide a brief summary of how each type of analysis works.

Quantificational Accounts (Larson 1985, Nicolae 2013) treat disjunction as an existential quantifier which can take scope either above a question forming Q-operator or below it, to derive an alternative or polar question interpretation respectively. The sentence in (6), for example, would have the LFs in (7).

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The disjunction denotes an existential quantifier as in (8) of type $\langle et, t \rangle$. [1] The denotation for the Q-operator in the alternative question, (9-a) is familiar from accounts of *wh*-questions, while a separate polar Q-operator is used to derive the polar question interpretation. I am using a separate Q-operator for polar questions here to keep things simple, but a semantics that uses the same Q-operator in both question types would also be possible.

(6)   *Did Sarah buy the shoes or the book*

(7)   a.   LF Alternative question

         [2 [[$_{DisjP}$ the shoes or the book] [1 [[Q_{wh} $t_{2,\langle st \rangle}$] [λw.[Sara buy$_w$ t_1]]]]]]

        b.   LF Polar question

         [Q_{Pol} [λw. [[$_{DisjP}$ the shoes or the book] [1 [Sara buy$_w$ t_1]]]]]

(8) $[\![$The shoes or the book$]\!]$ = $\lambda P_{\langle et \rangle}.P$(the book) $\vee$ P(the shoes)

(9)   a. $[\![Q_{wh}]\!] = \lambda p.\lambda q.q = p$

        b. $[\![Q_{pol}]\!] = \lambda p.\lambda q.q = \{p, \neg p\}$

Alternative Semantic Accounts (Beck and Kim 2006, Erlewine 2014, Biezma and Rawlins 2012) allow disjunction to introduce Hamblin alternatives, either in the ordinary semantics or a Roothian two-leveled alternative semantics, depending on the account. Under this type of account, LF-movement of the disjunction is not required. Instead, in alternative questions a Q-operator accesses the alternative semantic value of its sister constituents which contains two alternatives built from pointwise semantic composition with each of the two disjuncts.

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[1] Note that in order to retain the same semantic type of the quantifier ($\langle \langle e, t \rangle t \rangle$) for both polar and alternative question LFs, I need to make some non-standard additions ot the LF of the alternative questions: An $\langle st \rangle$-type trace in the first argument position of the Q-operator is bound by a lambda-abstractor above the disjunction phrase (cf. also Nicolae 2013 who cites lecture notes by Irene Heim), allowing the the sister node to the disjucntion to remain an expression of type $\langle et \rangle$.

The LF for both the alternative question and polar questions leave the disjunction in situ (though it may need to undergo QR to avoid a type mismatch in object position), and looks something like (10) for (6). The disjunction operator in (11) introduces two alternatives, one for each disjunct. In the case of the alternative question, the Q operator in (12) uses the two memebered set of propositions created via pointwise semantic composition with each of the alternatives introduced by disjunction to generate the question set.

(10) a. [Q [$_{CP}$ Sarah bought [DisjP the shoes or the book]]

(11) $[\![A \text{ } or \text{ } B]\!]^g_{alt} = \{[\![A]\!], [\![B]\!]\}$

(12) If $\alpha = [Q\beta]$ then for any g:
      $[\![\alpha]\!]^g_o = [\![\beta]\!]^g_{alt}$
      $[\![\alpha]\!]^g_{alt} = \{[\![\alpha]\!]^g_o\}$

A derivation for polar disjunctive questions is not spelled out explicitly in Beck and Kim 2006's account but would presumably require the alternatives introduced by the disjunction be existentially closed by a closure operator over alternatives within the scope of Q, as in (13), so that, the alternative value of the proposition embedded under Q is a singleton set. The polar disjunctive question is then derived in the same way as other non-disjunctive polar questions.

(13) [Q$_{pol}$ [$\exists_{alt}$ [Sara bought [$_{DisjP}$ the shoes or the book]]]]

Big Disjunct Accounts (Uegaki 2014, Mayr 2016) requires an LF syntax where each disjunct is a full clause. In Uegaki's account for Japanese, Alternative questions are assigned an LF structure as in (14), where the *or* embeds two polar questions. Uegaki's account assumes a standard denotation for the Q-operator,

as in (15), and that this same operator is at work in polar questions, which come out to denote singleton sets. The disjunction contributes generalized disjunction, yielding the union of the two singleton question sets from each of the disjunctions.

(14) $[_{DisjP}$ $[_{CP}$ Q $[_{IP}$ Sarah bought the shoes]] OR $[_{CP}$ Q $[_{IP}$ Sarah bought the book]]]

(15) $[\![Q]\!] = \lambda p.\lambda q.q = p$

(16) $[\![or]\!] = \lambda Q_{\langle st,t \rangle}.\lambda P_{\langle st,t \rangle}.\lambda p.Q(p) \vee P(p)$

On Uegaki's account polar disjunctive questions, where the disjunction scopes lower than the Q-operator, derive a singleton question set containing a disjunctive statement. To get to a more standard two-memberd polar question set, he assumes that a partition operator (PART, in (17)) applies to matrix questions. It returns a partition over words and, when applied to a singleton question set, will returns the standard two-membered polar question set.

(17) $[\![$ PART $]\!] = \lambda Q_{\langle st,t \rangle}.\{p' | p' = \lambda w \exists w'[\forall p \in Q[p(w) = p(w')]]\}$

These three families of accounts derive the same question sets for alternative questions, but they do so in different ways. As we saw in Chapter 1, different compositional mechanisms for creating alternative sets will lead to differing empirical predictions regarding the behavior of alternative and polar questions. The next section looks at the data concering how alternatives sets come about in disjunctive questions and the predictions of these three families of accounts.

2.2.3 The Alternatives in Alternative Questions

In Chapter 1 locality restrictions and intervention effects were used to choose between different compositional machinery for building *wh*-questions. Between the three compositional tools discussed (movement and binding of traces, Rooth/Hamblin alternatives and (distinguished) variable binding without movement) the latter was argued to capture the empirical data best. On a conceptual level, it would be attractive to have single compositional mechanism responsible for creating alternative sets in all question types, *wh*-questions and disjunctive questions, so having chosen a framwork for *wh*-questions that works with distingusihed variables, it would be attractive to extend it to the derivation of alternative questions. On the other hand, there is a possibility that alternative questions are derived in a different way from *wh*-questions, so it is worth discussing the relevant empirical data. Work by Beck and Kim 2006 has put forward a strong argument in favor of an alternative semantics for alternative questions. First, they present data showing that in several languages disjunction in alternative questions is not subject to the same kind of locality restrictions that overtly moved *wh*-phrases are. Furthermore, they observe that the possible *de dicto* interpretations of alternative questions with a disjunction embedded below a propositional attitude verb also speak against an account where the disjunction is obligatorily moved outside the scope of the attitude verb.

(18) a. *Are you looking for someone whose parents live on an island that is close to Australia or Africa?*

b. * *Which country are you looking for someone whose parents live on an island that is close to?* (Beck and Kim 2006, p.190)

(19) *Does Tina need a hammer or a screwdriver?*
{ that it is necessary that Tina has a hammer (any hammer) , that it is necessary that Tina has a screwdriver (any screwdriver)}
(Beck and Kim 2006, p.192)

Looking at the analyses discussed in the previous section, the movement data speaks against a quantificational account, which derives alternative sets via QR of an indefinite (Larson 1985, Nicolae 2013), and is compatible with both an alternative semantic account, like the one Beck and Kim argue for, as well as a "big disjunct" analysis like Uegaki's and Mayr's[2] .

Beck & Kim's second data point comes from intervention effects in alternative questions: When focus sensitive operators occur in disjunctive questions in a position separating the disjunction and the question's Q-complementizer at LF, as schematized in (20),the alternative question reading is blocked and only the polar question reading becomes available. Examples (21) and (22) illustrate intervention effects caused by *only* and by negation in alternative questions. The examples in (21) have an acceptable polar question interpretation in all three sentences, whereas the alternative question interpretation is blocked for the sentences in (b) and (c) where the alternative sensitive items *only* and negation are present. In (22), the sentences do not have a plausible polar question interpretation (under the simplifying assumption that babies are either boys or girls) and therefore becomes unacceptable outright in the (b) and (c) examples where the alternative question interpretation is blocked.

(20) $[Q ... [\sim ... [[_{DisjP} \text{ A or B}]]]$

(21)   a.   *Did Mary introdue Sue to Bill or (to) Tom?*
              Answers: Yes/No, Bill/Tom

         b.   *Did only Mary introduce Sue to Bill or (to) Tom?*
              Answer: Yes/No, # Bill # Tom

         c.   *Didn't Mary introdue Sue to Bill or (to) Tom?*
              Answers: Yes/No, # Bill, # Tom

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[2]The locality restriction data are compatible with an account that employs quantificiation over choice functions (Romero and Han 2003), so long as quantification over the choice function variable is not subject to locality conditions.

(22)   a.   *Is Sue's baby a boy or a girl?*

          b.   **Is only Sue's baby a boy or a girl?*

          c.   **Isn't Sue's baby a boy or a girl*

Beyond the data on intervention effects in German, Korean, English and Hungarian from Beck and Kim 2006, intervention effects in disjunctive questions have been observed in a wide range of languages including Mandarin (Erlewine 2014), Yoruba (Howell 2016), Palestinian Arabic (Braun 2018) and more. I am not aware of a language where the configuration in (20) does not produce intervention effects. Beck and Kim argue that these intervention effects arise in the same way as intervention effects in *wh*-questions, namely because the presence of a focus evaluating operator ($\sim$) associated with the focus particle prevents the association of the Q-operator with alternatives from the disjunction. [3] What does this mean for the accounts of disjucntive questions in the previous section? Under a quantificational account, as we saw with *wh*-questions in chapter 1, there is no semantic reason why the presence of a focus sensitive particles should cause a problem for semantic composition in alternative questions. The QR-based acconts are not explanatory, although they could be made compatible with the occurence of intervention effects, e.g. with a suitable syntactic theory of intervetion. The intervention data are a bigger problem for analyses which treat alternative questions as a disjunction of polar questions (Uegaki 2014 and Mayr 2016). Under these accounts, the

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[3]Interestingly, intervention effects with quantifiers like *every* and *nobody* seem much better in alternative questions.

(i)   a.   Context: You made sugarfree cake and gluten-free muffins for your son to bring to his school's bake sale. You hear from one of your friends that there was one of your desserts that nobody dared to try. You ask her:
               Did nobody try the sugarfree cake or the gluten-free muffins?

          b.   Context: There are two new routes at the climbing gym this week a blue one and a white one. Your friend told you that there is one of them that everyone managed to climb. You ask her:
               Did everyone manage to climb the white route or the blue route?

disjunction operator is located too high in the LF-structure to be influenced by the presence of an alternative evaluating operator. Mayr 2016 suggests that the intervention effect could be derived from the presence of the exhaustivity operator and its interaction with the focus sensitive operators in intervention configurations. However, increasingly work on focus sensitive particles and exhaustivity suggestes that the presence of an embedded EXH operator may not give rise to intervention effects when occurs in an intervening position between focus sensitive operator and its associated focus (Bade and Sachs 2019, Crnič 2012).Uegaki 2014 takes a diffent approach, namely, he attributes the badness in intervention configurations to a violation of the Focus Deletion Constraint from Heim 1997 which disallows the deletion of a focussed constituent unless its associated focus evaluating operator is also deleted. I do not understand how this constraint would lead to unacceptability in the intervention sentences discussed above (e.g. in (21) or (22).) Consider (21): It would be associated with an LF as in (23). This does not constitute a violation of the Focus Deletion Constraint, since the *only* (presumably along with its ∼ and C, although they are covert anyways) in the second disjunct is elided here along with its Focus.

(23)   *Did only Mary introduce Sue to Bill or (to) Tom?*

      a.   [[Q [only ∼ C_1 Mary$_F$ introduce Sue to Bill]] OR [[~~only ∼ C_2~~ ~~Mary$_F$ introduce Sue~~ to Tom]

To summarize, the data covered in this section suggested that a QR based account was on the wrong track given the evidence againts covert movement having taken place and that neither the quantification accounts nor the 'big disjunct' analysis could properly account for intervention effects. We focussed on data from English here, but noted that similar crosslinguistic data is avaiable in a range of languages suggesting that pattern is not subject to substantial crosslinguistic variation.

2.2.4 The Pragmatics of Disjunctive Questions

The accounts sketched above derive question sets for alternative and polar questions but they do not, on their own, provide an account of how the pragmatic restrictions of alternative questions come about. The majority of accounts do so by adding an element that contributes some kind of exhaustivity inference as well as a pragmatic restriction ensuring the truth of one of the two disjuncts, but accounts vary as to the particular way in which this implemented.

Biezma & Rawlins (2012) argue that the particular pragmatics of alternative questions is derived by taking the final fall intonation contour of alternative questions to contribute a definedness condition requiring that the alternatives in the question set are identical with what they call the salient alternatives in the context, which are defined as possible answers to the QUD, (24). Pragmatic conditions on these salient propositional alternatives require that they be mutually exclusive and contain a true alternative in each world in the context set, (25).

(24)   CLOSURE OPERATOR
$$[\![[_{[Q]}\alpha]_{H*L-L\%}]\!]^c = [\![[_{[Q]}\alpha]]\!]^c$$
defined only if SalientAlts(c) = $[\![[_{[Q]}\alpha]]\!]^c$

(25)   CONDITIONS ON SALIENT PROPOSITIONAL ALTERNATIVES
(i) $\forall w \in cs_c : \exists p \in \text{SalientAlts}(c): p(w) = 1$
(ii) $\forall w \in cs_c : \forall p, q \in \text{SalientAlts}(c): (p = q \lor \neg(p(w)\&q(w)))$

Biezma & Rawlins (2012)'s account is interesting but raises several questions which are not answered explicitly in their proposal: The notion of the QUD plays a crucial role in determining whether the definedness conditions of the alternative question are satisfied, yet they do not provide a detailed formalization of what they take the QUD to be. In particular for embedded questions, which don't receive

an explicit treatment in the paper, it is not clear how to use requirements on the QUD in order to derive the presuppositions of the alternative questions.

Another approach, taken both in Nicolae 2013 as well as in Mayr 2016 puts the exhaustivity inference into the semantics by inserting an exhaustivity operator at LF. Nicolae, who is working in a quantificational scope based account, argues that alternative questions obligatorily contain a covert *only* within the scope of the question, as in (26), while Mayr, working in a 'big disjunct'-type analysis, simply inserts an exhaustivity operator within in each disjunct, as in (27). Both of these EXH based accounts additionally need a pragmatic constraint that there be a true alternative within the question set, to make sure the existence requirement is fulfilled.

(26)   [λ p. [$\exists$ Mary or Sue] [1 [Q p] only λw John kissed$_w$ t1$_F$]]

(27)   [[Q EXH John kissed Mary$_F$] or [Q EXH John kissed Sue$_F$]]

These accounts each raise some questions: Mayr 2016 requires clause-sized disjuncts in order to work. While there is some preliminary evidence from a few languages that alternative questions may have underlying large-sized disjuncts (cf. eg. Uegaki 2014 for Japanese), I am not sure it is supported across all languages where alternative questions have been investigated. In particular, as we will see in Section 4 of this chapter, there is evidence that in Yoruba disjuncts in alternative questions may be smaller in size. On the other hand, Nicolae 2013's proposal requires F-marking of the trace of a *wh*-pronoun. This seems problematic given that other *wh*-items do not support this kind of F-marking, as illustrated in the example in (28).

(28)   *Who did John only kiss?*
        # For which person x: John kissed x and didn't kiss anyone else.

Thus, while the different available accounts for the pragmatics of disjunctive questions can be boiled down to a common core involving requirements for uniqueness and exhaustivity on the possible answers in the question set, the implementation across different proposals varies and more empirical crosslinguistic data will be useful to narrow down the field of options.

2.2.5 Disjunctive Questions Across Languages

IThe semantics of disjunctive questions has benefitted from empirical investigation across a number of languages including German and Korean (Beck & Kim 2006) Mandarin(Erlewine 2014) Japanese (Uegaki 2014), Polish (Mayr 2016) Yucatec Maya (AnderBois 2012), Yoruba (Howell 2016), Palestinian Arabic (Braun 2018). Many common characteristics of alternative and polar questions have been observed in these unrelated languages, suggesting that some of the key compositional ingredients may be universal. Both alternative and polar disjunctive question types are found across languages. I am not aware of any language that does not have these two distinct disjunctive question types - though there are languages which employ different disjunction operators in each type (e.g. in Mandarin (Erlewine 2014) and Palestinian Arabic (Braun 2018)). What's more, alternative questions across languages have the same felicity conditions described for English above and are sensitive to intervention effects in the same way (cf. eg. Howell et al. to appear which reports intervention effects in disjunctive questions for Russian, Hindi, Turkish, Samoan, Yoruba and Palestinian Arabic). Another similarity across languages is that alternative questions often contain focus marking on disjunction while polar disjunctive questions do not. The particular means of focus marking depends on the language. In some languages, focus marking is intonational (like English), while in others syntactic and/or morphological focus marking is used (e.g. in Yucatec Maya (AnderBois 2012), and Yoruba (Howell 2016)). A secondary goal for the analysis of the Yoruba data in this chapter will be to better understand the compositional components at work and how they might be reflected in the analysis

of other languages.

2.3 Background: An Introduction to Yoruba

2.3.1 A first look at Yoruba and a brief grammar sketch

Yoruba is a language in the Niger-Congo family spoken by more than 20 million people[4], mainly in South-West Nigeria and Benin. It is closely related to other languages within the Volta-Niger branch of the Niger-Congo family which also includes Igbo and Gbe languages such as Ewe and Fon. Unesco's Atlas of the World's Languages in Danger (Moseley 2010), which gives languages one of six ratings ranging from "safe" to "exstinct" classifies Yoruba as "safe: The language is spoken by all generations. The inter- generational transmission of the language is uninterrupted" However, some Yoruba scholars have pointed out that the language does face risks: Fabunmi and Salawu 2005 discuss for example the risk from competition with English, which is associated with higher prestige and used more frequently for education, in the media and in professional settings.

Like many non-european languages, Yoruba is understudied in formal Semantics and Pragmatics. A number of descriptive grammars of Yoruba exist. The first published grammar of Yoruba, (Crowther 1852), was written by a Yoruba, Samuel Ajayi Crowther, working for the Church Missionary Society. More recent grammars include Bamgbose 2000, Awobuluyi 1978). There is also a good amount of work by linguists within the generative tradition on various aspects of Yoruba's syntax, semantics and information structure, for example on nominals and the pronominal system (Ajiboye 2005, Adesola 2006a, Anand 2006), comparison constructions (Vanderelst 2010, Howell 2013), clause structure and functional

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[4]Estimates of current number of speakers range between 20-30 million depending on the source. A survey in 1993 (Johnstone 1993) reported 19,380,800 speakers and current estimations based on models of population growth approach 30 million (Glück 2010)

projections(Awoyale 1985), as well as the syntactic and information structural properties of focus fronting constructions (Yusuf 1990, Awoyale 1985, Bisang and Sonaiya 2000, Jones 2006, Vanderelst 2007).

Yoruba is a rigidly SVO language with very limited inflectional morphology. Nouns and adjectives do not bear gender, number or case marking (though pronouns do differ by case). Determiners are optional, but indefiniteness, specificity and plurality may optionally be indicated by post-nominal modifiers (cf. Ajiboye 2005). Verbs do not agree in person, number or gender and are not marked for tense or aspect. Rather, tense aspect and modality are expressed by a series of particles occuring between the subject and verb. Sentences without a TAM marker receive a default past perfective or present imperfective interpretation depending on the context of utterance. Reagarding its phonology and orthography: Yoruba is a tone language with three tones (high, mid and low tone) and has the following 17 phonemic consonants: b, t, d, k, g, k͡p (written p), g͡b (written gb), f,s, ʃ(written ṣ), h, m, n, r, l, y, w and the following 7 phonemic vowels i, e, ɛ(written ẹ), a, ɔ(written ọ), o and u. Tones are indicated by diachritics (´ for high, ` for low, no diachritic for mid), although tone marking is frequently omitted by native speakers and has not been included here. The orthography for Yoruba dates back to Crowther's 19th centruy grammar and was standardized in 1966. For a more detailed sketch of the grammar, the reader is referred to Adesola 2005.

2.3.2   A note on the Yoruba Data

Unless indicated otherwise, the data reported in this dissertation come from my own elicitation with native speaker consultants speaking primarily the Oyo dialect. Elicitation took place with Yoruba native speakers who were born and grew up in Nigeria, but were currently living in either Tübingen, Germany; London, England or Amherst, USA. The majority of consultants were postgraduate students, who had left Nigera to pursue graduate studies. In total, 15 adult Yoruba native speaker consultants participated in data elicitation. Participants' ages ranged from mid-

twenties to mid-fifties and the male to female ration was approximately 2:1.

During data elicitation, I relied on methodological techniques for semantic field-work discussed in Matthewson 2004, Chelliah and Reuse 2011. In particular, elicitation was comprised primarily of the following types of tasks: 1) Translation tasks: Consultants were given a sentence in English together with a context and asked to provide a translation for the English sentence that approximated the meaning of the English sentence as best as possible. Due to the inability to guarantee a complete overlap in meaning between the English target sentence and its translation, translation tasks were used primarily as a first step in exploring a phenomenon or construction. 2) Acceptability judgements in context: Cosultants were presented with a sentence in Yoruba and an accompanying context, given in picture or text form, or in a combination of the two. They were asked to judge how accpetable the sentence sounded in the described context and their response was recorded along with any other comments offered. Following Matthewson 2004 participants were not asked to provide analysis, nor were they asked to decide whether a sentence was ungrammatical or simlpy infelicitous. However, I did often use follow up questions such as "can you think of another situation where it would be more appropriate to use this sentence" to get a better idea of which aspects of a particular target sentence were unacceptable if it was not accepted in the context presented to the speaker.

2.4   An Analysis of Yoruba *ni*-fronting

This section is devoted to the grammar of alternatives in Yoruba and, in particular, the syntax and semantics of a commonly used focus marking strategy in Yoruba which involves fronting of a focussed constituent as well as morphological marking. This will be useful for two reasons. For one, it will be useful for the analysis of disjunctive questons because *ni*-fronting is obligatorily present in alternative questions in Yoruba and understanding its syntax, its semantic and pragmatic

contributions elsewhere in the language will provide insight into the analysis of alternative questions. Also, it will provide an opportunity to discuss *wh*-questions and focus association in Yoruba and, in this way, to take a first look at the grammar of alternatives in Yoruba more generally. *wh*-questions and new information focus marking in Yoruba both involve fronting and morphological marking of the focus or *wh*-phrase. In the case of *wh*-questions, fronting is obligatory, whereas it is optional (but very frequently used) for marking new informaiton focus. An example of a question/answer pair is given in (29-b). Besides marking *wh*-phrases and new information focus, it marks focused constituents in cases of association with focus and can also mark contrastive topics (cf. also Bisang and Sonaiya 2000, Vanderelst 2007, Jones 2006).

(29)   *Ni*-marking in *wh*-questions and answers

    a.   *Ki*   **ni** *Ade ra?*
        What ni Ade buy
        'What did Ade buy?'

    b.   *Eja* **ni** *Ade ra.*
        Fish ni Ade buy
        'Ade bought FISH.'

This type of focus fronting construction is common in West African languages. Similar focus marking strategies are found in other Niger-Congo languages including Ga (Renans 2016), Akan (Duah 2015) as well as in some Chadic languages including Hausa (K. Hartmann and M. Zimmermann 2007), with which there is significant language contact. Though the basic patter of ex-situ focus marking in these languages looks outwardly similar and, broadly speaking, has a similar semantic effects, the details of their their distribution, their syntax and their semantic contribution differ sublty from one another. A detailed look at the microvaration affecting this construction and how it may have arisen via diachronic change would be a very interesting issue for follow up work, but it is beyond the scope of this thesis. For now, I will concentrate on the Yoruba data and provide

comparison with other languages where relevant.

(30) *Ampesie **na** Kwame di-ie*   (Akan, Duah 2015, p.7)
      Ampesie PART Kwame eat-COMPL
      'It was AMPESIE that Kwame ate.]

(31) *Adeswolo **(ni)** Kofi kane-o*   (Ga, Renans 2016, p. 25)
      Newspaper (PRT) Koi read-IMPF
      'Kofi reads a NEWSPAPER.'

(32) *Kiifii **(nee)** su-ka   kaamaa*
      fish   (PRT) 3pl-rel.perf catch
      (Hausa, Hartmann & Zimmermann 2007, p. 4)

      'They caught FISH.'

This section provides a detailed look at the syntax and semantics of *ni-* focus fronting in Yoruba: I argue that *ni*-fronting is derived by movement of a constituent containing an F or *wh*-feature to a position withing a designated focus phrase (FocP) and that movement is licensed by the presence of a distinguished variable within the moved constituent. I argue that, in addition, *ni*-fronting contributes a maximality presupposition that gives rise to exhaustivity inferences, whose strength can be modulated by contextual restriction. The rest of the section is structured as follows: I will look first at the syntax of *ni*-fronting construction, followed by their semantic licensing and, finally, the exhaustivity inferences that accompany them.

2.4.1   Syntax of ni-fronting

Descriptively speaking *ni*-fronting involves placement of a focussed constituent or *wh*-phrase in a clause initial position followed by *ni*. *Ni* and fronting obligatorily co-occur, i.e. fronting of a constituent without an accompanying *ni* is unacceptable

(29), as is use of *ni* in a non-fronted position[5]. Note though, that an entire clause may occur in the 'pre-*ni*' position, for example in all new sentences as a response the question *"what happened?"*.

(33)   ***Fronting without *ni*-marking**

    a.   **Ki   Ade ra*
        What Ade buy
        Intended: "What did Ade buy?"

    b.   **Eja Ade ra*
        Fish Ade buy
        Intended: "Ade bought FISH"

    *ni-marking without fronting

    a. #*Ade ra eja ni.*
        Ade buy fish ni
        Intended: 'Ade bought FISH'[6]

If a subject undergoes *ni*-fronting a resumptive pronoun occurs in the canonical subject position, as in (34). Number and person agreement of the resumptive pronoun is optional, though most often the third person singluar pronoun *o* is used regarless of person and number of the subject. (cf. Adesola 2005).

(34)   a. *Ọla ni ó   ra   iṣu.*
        Ọla ALT 3.sg buy yams
        'It was Ola who bought yams.
        (Adesola 2005, p. 95)

    b. *Awa ni o   ra   apo*
        We   ALT 3.sg buy bag
        'We were the people who bought a bag.'
        (Adesola 2005, p. 109)

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[5]This is a point of variation from some of the other languages. K. Hartmann and M. Zimmermann 2007, for example have data from Hausa showing that the morphological marker *nee/cee* and syntactic focus marking are independent from one another.

[6]This sentence is acceptable as a response to"what happened?", where presumably the entire CP has undergone *ni*-fronting.

In colloquial speech the focus marker is often contracted to *l'* rather than *ni* when it precedes the 3rd person sigular resumptive pronoun o. (See also Bisang and Sonaiya 2000.)

(35)   a.   Ta   l' o   ra aṣọ?
                  Who NI 3.sg buy clothes
                  'Who bought clothes?'

        b.   Ayọ l'   o   ra aṣọ.
                  Ayo ALT 3.sg buy clothes
                  'Ayo bought clothes.' (Bisang & Sonayia 2000, p. 179-180)

Nominal and clausal constituents can undergo *ni*-fronting (as in (29-b) and (36)) but other kinds of constituents cannot (V, VP, TP and APs) ((37) and (38-a)) although they can be nominalized (marked by partial reduplication) and then fronted as in (38-b) In some cases larger constituents containing a narrow focussed constituent can undergo focus fronting, as for example in (39)

(36)   [$_{CP}$ *Baba   ra   ile   ni Ibadan*] *ni   Segun so fun mi.*
               Father buy house in Ibadan   FOC Segun said to   me
               'Segun told me that dad bought a house in Ibadan.'

(37)   *[$_{TP}$ *Maa Yoruba*] *ni Ade le   so*
              Fut   Yoruba   ni Ade can speak
           Intended: It will be Yoruba that Ade can speak.

(38)   a.   *[$_{VP}$ *Ga   (ju   Ade lo)   ] ni Olu ga   ju   Ade lo*
                    be.tall (exceed Ade prep)   ni Olu be.tall exceed Ade prep
                Intended: 'Olu is TALLER than Ade (not fatter).'
        b.   [$_{NP}$ *Gi-ga   (ju   Ade lọ)   ] ni Olu ga   ju   Ade lọ.*
                    nom-be.tall exceed Ade prep   ni Olu be.tall exceed Ade prep
                'Olu is TALLER than Ade (not fatter).'

(39) *Pe   Segun yege ninu Idanwo Ede   Geesi   nikan l'   o   ya   mi*
That Segun pass in   exam   language english only   ALT PRON open my
lenu.   Ko   ya   mi lenu   pe   o   se dada ninu ise   idanwo to
mouth. NEG open my mouth that he be good in   other exams *rel-pron*
ku.
write.
'It only surprised me that Segun passed the English$_F$ exam. It didn't surprise
me that he did well in other exams.'

Multiple *ni*-fronting within a single clause is ruled out, both in declarative
sentences as well as in *wh*-questions. Multiple *wh*-questions were judged ungram-
matical by native speakers, regardless of whether the second *wh*-phrase is fronted
or left in-situ. Multiple questions have been reported in the literature on Yoruba
Adesola 2006b, but the consultants I worked with consistently rejected multiple
questions, including those judged acceptable in Adesola 2006b offering paraphrases
with universal quantifiers, like in (41) instead.

(40)   a. **Ta   ni   o   ra kini?*
            Who ni pron. see what

       b. **Ta   ni ki   ni o   ra*
            Who ni What ni pron. see
            Intended: Who saw what?

(41)   Context: Olu just renturned home and has brought presents for everyone.

       a. **Kini   Olu fun   Tani?*
            What Olu give who

       b. *Kini   Olu fun   enikan-kan*
            What Olu give person-each
            'What did Olu give to whom? (What did Olu give to each person?)'

Yoruba *ni*-fronting has been analyzed by some authors as a biclausal predicate
cleft construction (Jones 2006, Yusuf 1990) with an underlying syntactic structure
as in (42), similar to a Percus 1997-style analysis of English *it*-clefts. Other authors

take it to be an instance of focus movement within a single clause to the specifier of a designed focus phrase, similar in structure to Kiss 1998's analysis of Hungarian, as in (43) (Aboh 2004, Bisang and Sonaiya 2000 Vanderelst 2007).

(42)   Predicate-Cleft analysis (Yusuf 1990, Jones 2006)

```
                        TP
                     /      \
              Predicate       T'
                  |          /    \
               be fish   Copula    DP_definite
                           |           |
                           ni    the thing that Ade bought
```
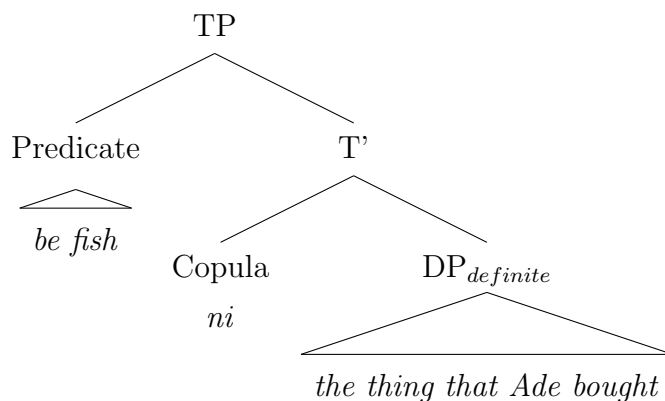
(43)   Focus Movement analysis (Aboh 2004, Bisang & Sonaiya 2000)

```
              FocP
             /     \
         fish_1     Foc
                   /    \
                  ni     TP
                         |
                   Ade bought t_1
```
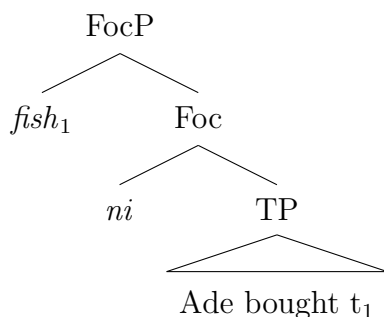
It's important to note here that choosing one of these syntactic analyses for the underlying structure of Yoruba *ni*-fronting constructions will not determine its semantics and pragmatics (or vice-versa). What I mean by that is that, if we choose a Kiss-style focus movement analysis to model the structure of Yoruba *ni*-fronting, it would still be compatible with a different semantic effect than the exhaustive focus Kiss describes for Hungarian, depending on our assumptions about the licensing requirements for focus fronting in Yoruba and covert semantic operators. Simi-

larly, if we choose a Percus-style cleft analysis, it is imaginable that the resulting semantics may be different from English it-clefts. For example, these structures in Yoruba may lack the covert definite and therefore have a different semantics from English it-clefts, despite a similar-looking syntax. (See also van der Wal 2016 for fieldwork data showing that similar structural focus marking strategies across languages do not imply a uniform semantics or pragmatics.)

What can be used to decide between these two different syntactic accounts? One thing that cannot is data from island effects. There is evidence from the presence of island effects, (44-c), that *ni*-fronting constructions are indeed derived via syntactic movement, rather than being merged in a higher position as K. Hartmann and M. Zimmermann 2007 claim for Hausa, but this does not help in deciding between both of the accounts sketched above since both are derived by movement (fronting of the focussed constituent in (43) and *wh*-movement to form the relative clause in (42)).

(44)   a.   *Bolu gba obinrin ti o le so ede Hausa si iṣe.*]
            Bolu take woman rel pron can speak langauge Hause for job
            'Bolu hired a woman who can speak Hausa.'

       b.   **Ede Hausa ni Bolu gba obinrin ti o le so si iṣe*
            Language Hausa NI Bolu take woman rel pron can speak for job
            Intended: 'Bolu hired a woman who can speak HAUSA.'

       c.   **Ede wo ni Bolu gba obinrin ti o le so si iṣe*
            Language which NI Bolu take woman rel pron can speak for job
            Intended: 'For which language x : Did Bolu hire a woman who can speak x'

Two syntactic arguments do help to decided between the focus movement and predicate cleft account, and they point towards focus movement. The first argument comes from restrictions on the types of constituents that can be fronted. As we saw above, not all predicates can undergo fronting. This is surprizing if these constructions have a structure as in (42). If the lexical material preceeding *ni* is a

predicate, we would expect verbal predicates to be possible as well. We would also predict that TAM marking would be possible on the initial predicate, but overt TAM marking on the material preceeding *ni* is ungrammatical, as in (45) (unless it is an entire fronted CP).

(45) *[$_{TP}$ *Maa Yoruba*] *ni Ade le   so*
          Fut   Yoruba   ni Ade can speak
       Intended: It will be Yoruba that Ade can speak.

The second argument comes from the structure of relative clauses: On the cleft analysis, we would expect to see signs of relative clause formation within the material that appears after *ni*. In Yoruba, relative clauses obligatorily employ a relative complementizer *ti*, as in the relative clause in (46) below. *Ni*-fronting constructions on the other hand do not and cannot occur with an overt relative clause complementizer.

(46) *Mo ti   ri   ọkunrin* *(ti) *Kemi m   ba-soṛọ ri.*
       I   perf. see man   REL Kemi impf. talk-to before.
       'I have seen the man that Kemi is talking to before.'

The lack of a relative clause complementizer and the restrictions on constituents that can occur in the pre-ni position are suprizing if we are dealing with a predicate cleft as sketched above. Based on these data, I take the structure of Yoruba *ni*-fronting constructions to involve focus fronting to a designated focus position be as in (43).

2.4.2   Semantics of ni-fronting

What effect does *ni*-fronting have on the semantics and pragmatics of the utterances in which it occurs? To better understand its semantic effect, it will be useful

to look at its distribution. *Ni*-fronting is used to mark a relatively diverse family of phenomena including different types of foci and contrstive topics, as well as in *wh-* and alternative questions. In some of these, like when it marks the associate of a focus sensitive particle or a *wh*-phrase, it is obligatory, whereas in others, e.g. when it marks new information focus, or contrastive focus, it is optional. Several examples of the types of constructions in which *ni*-fronting occurs are illustrated below:

Focus. *ni*-fronting can mark a number of different types of foci, including new information focus, contrastive focus, as in (50), the associate of focus sensitive particles, and contrastive topics (51). See also Bisang and Sonaiya 2000 for a similar remark about the broad use of *ni*-fronting.

(47) **New information focus**
Context: There is a new book on the table when your flatmate gets home. He asks you 'Who bought the book'. You answer...

> Emi ni mo ra iwe naa.
> 1.sg.strong ALT 1.sg.weak buy book SPEC
> 'It was me who bought the book.'

(48) **Association with focus sensitive exclusive particle *nikan***

a. *Eja nikan ni Bolu ra.*
Fish only NI Bolu ra
'Bolu only bought FISH.'

b. **Bolu nikan ra Eja*
*Bolu ra Eja nikan

(49) **Association with focus sensitive negation *kọ*[7]**

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[7]Yoruba has two negation markers, *ko* and *kọ*. The former does not co-occur with focus marking and yields VP-negation. The latter requires *ni*-fronting and produces an interpretation similar to a negated cleft, with an existence presupposition.

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a. *Kemi kọ ni o fo ferese.*
Kemi neg NI pron. break windown
'It was not Kemi who broke the window.'

b. **Kemi kọ fo ferese.*

(50) **contrastive focus**

Context: Is Isaac fat?

Rara, o ga ni, sugbon ko sanra.
No, pron. be.tall NI, but neg fat
'No, he is TALL, but he is not fat.'

(51) **Contrastive Topic**[8]

Context: Some friends are trying to figure out how many languages they speak between everyone in their group of friends, so they need to know which languages everyone speakes. They are tallying up the languges that everyone speaks: Paul speaks English and German, Marta speaks Portuguese, Spanish and English... etc. One of their friends, Ade, is not there today, so someone asks "What about Ade, which languages does he speak." Marta answers:

Ade ni o le gbo Ede Hausa, Ede Yoruba
Ade NI pron. can understand language Hausa, language Yoruba
ati Ede Geesi
and langauge English.
'Ade can speak Hausa, Yoruba, and English'

Questions: In Yoruba *wh*-interrogatives *wh*-phrases obligatorily undergo *ni*-fronting, similar to a focussed phrase. *wh*-phrases never occur without *ni* fronting.[9]

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[8]Differing judgements have been presented in Vanderelst 2007, (p. 50) who claims that *ni* marking of contrastive topcis is not possible.

[9]*wh*-words in Yoruba are *Tani* (who), *Kini* (what), *NP wo ni* (Which NP), *Nibo ni, Bawo ni* (how) *Elo/Meloo ni* (how much/many) *Kilode ni* (why).

(52)   a.   *Ki   ni Ade ra?*
            What ni Ade buy
            'What did Ade buy?'

       b.   **Ki   Ade ra*
            what Ade buy

       c.   **Ade ra   Ki(ni)*
            Ade   buy what

The wide distribution of *ni*-fronting suggests that the semantic contribution of *ni*-fronting is something relatively general. A common denominator in all of these constructions is alternatives. The difference between them is how the alternatives are used by the grammar. Alternatives introduced by the *ni*-fronted constituent differ in the alternative evaluating operators they combine with and the resulting grammatical function of the alternative set (e.g. to form the question set in the case of *wh*-questions, or as the restriction of the universal quantifier of the exclusive particle).

I will spell out the correlation between *ni*-fronting and alternatives as a syntactic licensing requirement on *ni*-fronting. The distinguished variable introducing F or WH feature on the fronted constituent licenses movement to the specifier of FocP, so *ni*-fronting only occurs when an alternative introducing item is present. Note that, in some cases, larger constituents may undergo *ni*-fronting than the narrowly focussed constituent. For example if the focus is contained within an island for movement, such as a relative clause, the entire relative clause may undergo focus fronting. To capture this, I propose the following licensing condition on *ni*-fronting:

(53)   LICENSING CONDITION ON NI-FRONTING
       A nominal or clausal constituent may undergo movement to the Spec. FocP if it contains a F-feature or a *wh*-feature and does not contain a smaller nominal or clausal constituent that contains this feature and could have undergone *ni*-fronting instead.

In some cases, e.g. when a *wh*-phrase or the associate of a focus sensitive particle is fronted, *ni*-fronting is obligatory, while in others, e.g. marking the answer to a question under discussion, the corresponding sentence without *ni*-fronting is perfectly acceptable. The optionality of *ni*-marking in these cases raises the question whether it is possible that an F-marked constituent can go unmarked by *ni*-fronting? And, if it does, is it marked in some other way? Yoruba has no separate morphological or syntactic focus marking strategy which leaves only phonological prominence as an option for overtly signalling whether a constituent is F-marked or not. As a tone language, pitch accent is determined already to some extent by the lexicon. Still, focussed constituent could be made phonologically prominent in some other way, for example by lengthening of focussed constituents. There is no easily perceivable differene between in-situ focussed constituents and their non-focussed counterparts in Yoruba. Bisang & Sonaiya (2000) even refer to in-situ focus as *invisible* focus, but controlled experimental data should be collected to verify whether there might in fact be a subtle difference between focussed and non-focussed consitutents.[10] The answer to this question will have to wait for future work. For now, I will just touch on two possible ways the analysis could go. If experimental results indicate that focus *is* somehow prosodically marked, the licensing condition presented above would need to be amended to specify when which type of focus marking can be used. An intuitive generalization is that foci whose purpose is to relate an utterance to a QUD or prior discourse (e.g. new information focus, contrastive focus) are the ones which can remain in situ, but I leave a more precise spelling out of this generalization for future work. If, on the other hand, experimental results revealed that there was no perceivable difference between in-situ focus and non-focussed consitutents, an account could be pursued whereby F-marking always induces focus fronting, and in-situ "focus"

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[10] Similar questions have also been addressed in the literature on second occurence of focus as well as in other Niger-Congo and Afroasiatic tone languages, where syntactic and/or morphological focus marking is used as a primary strategy. Some experiments have been done to address this question in these languages and the results from different languages appear to be mixed: for Hausa (K. Hartmann and M. Zimmermann 2007) and Norther Soto (Zerbian 2007) there is evidence that in-situ focus is not prosodically marked, whereas some other tone languages do appear to mark focus prosodically (see e.g. Yip 2002 and Manfredi 2007 on several Bantu languages).

does not involve the introduction of a distingushed variable. This would require a departure from a standard Roothian view of question/answer congruence, whereby a focus value of an utterancemust match the QUD, but it is possible that the rules governing discourse congruence are subject to crosslinguistic variation and, for example, in Yoruba discourse congruence would simply require an utterance's focus value to be a member of the QUD. This would effectively prevent a sentence with the wrong syntactic focus marking from being an acceptable answer, while allowing a sentence without overt focus marking to serve as an acceptable answer. I am not in a position to investigate this question in more detail without data the nature of in-situ focus marking in Yoruba. This will not be a big problem in the rest of the chapter, since the focus will be on alternative questions, which are obligatorily marked via *ni*-fronting.

2.4.3   Ni-fronting and exhaustive inferences

The previous section established that *ni*-fronting serves to mark constituents that introduce a distinguished variable into the semantic composition, but it did not discuss other semantic effects it might have. A matter of debate in the literature on Yoruba concerns whether *ni* fronting is obligatorily accompanied by an exhaustivity inference, or even whether it is exhaustivity that licenses the use of *ni*-fronting. For a *ni*-frotning construction of the form *NP ni Predicate* the relevant exhaustivity inference can be paraphrased as "Pred does not hold for all alternatives to NP". Within West African languages that exhibit similar morpho-syntactic focus fronting strategies, some appear to come with a strong requirement of exhaustivity (cf. eg. Renans 2016 on *ni* in Ga , or K. Hartmann and M. Zimmermann 2007 on *nee/cee* in Hausa).While in others similar patterns of focus marking have been argued to lack strong exhaustivity requirements, though they may be accompanied by exhaustivity inferences arising in a less systematic way due to pragmatic reasoning (cf. eg. Grubic, Renans, and Duah to appear's conclusion about focus marking in Ngamo).

Scholars working on Yoruba have come to different conclusions regarding the exhaustivity of *ni*-fronting constructions: Bisang & Sonaiya (2000) suggest that *ni* requires that the predicate be exhaustively true of the fronted constituent. They state: "The basis for both [copular and focus-marking] functions of *ni* is a preconstructed domain, a presupposed set of items out of which the speaker exhaustivly selects one or more that she assumes to be relevant" (p.169). Vanderelst 2007 also concludes *ni*-fronting in Yoruba is an instance of exhaustive identificational focus and provides a number of tests for exhaustivity that appear to point towards an exhaustive interpretation of *ni*-fronting, including incompatibility with additives, unacceptability in answers to mention some questions. On the other hand, Jones 2006 discusses similar data that leads her to conclude that Yoruba *ni*-fronting constructions are not obligatorily exhaustive. As Vanderelst (2007) notes, the reported judgements on similar data points vary sharply between the two: Jones (2006) reports that the following exchange was judged as acceptable while Vanderelst (2007)'s consultants were reported to reject the similar exchange in (55):

(54)   a.   A: Tani   o   lọ?
                Who-ALT PRON go
            'Who went?'

        b.   B: Akin ni   o   lọ.
                Akin ALT PRON go
            'Akin went.'

        c.   A: Tani   elo   miran ti   o   lo
                Who-ALT somebody else   REL PRON go
            'Who else went.'

        d.   B: Ade ni
                Ade ALT
            'Ade did.'

            (Jones 2006, p.148)

(55)   a.   Sandra l'   o   ra   iwe
            Sandra ALT PRON buy book
            'It's Sandra who bought a book.'

       b. #ati   Tani
            and who-ALT
            (Vanderelst 2007, p.55)

My own fieldwork produced a mixed picture: Consultants I worked with accepted some instances of *ni* fronting in contexts where an exhaustive meaning component would have derived a contradiction, for example in combination with an additive particle *pelu*, (56-c) as well as in mention some questions, (57) [11]. But, in other examples, when *ni*-fronting occured in a context of utterance in conflict with an exhaustivity presupposition, sentences were judged as unacceptable, as in (65)[12].

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[11]These judgements are in direct contrast to the claims made in Vanderelst, who gives the following exaples in (i) and (ii).

(i)   [situation: John speaks with Nadjib, a Yoruba mother tongue speaker. Both know tha many people speak Yoruba in London. Nadjib knows that John needs only one mother tongue speaker to test some data.]

      a.   John: Tani   o maa-n fọ   Yoruba ni London?
           John: Who.ALT 3s HAB   speak Yoruba in London
           'Who speaks Yoruba in London?'
      b.   Nadjib: # Isaac maa-n fọ   Yoruba
           Nadjib: Isaac HAB   speak Yoruba
           'Isaac speaks Yoruba. (Vanderelst 2007, p. 56)

(ii) [Where did Sandra go?]

      a.   Oja   ni o lọ. o si tun   lo   si churchi paapaa
           market FM 3s went. 3s and did.also went to church also
           (Vanderelst 2007, p. 57)

[12]The same sentence was accepted in the minimally different context below:

(i)   a.   Context 2 (Minimal pair: Ade is talking to a unique person)
           You hear that Ade is talking to someone in his office. You don't know who it is, but
           clearly they are getting in trouble. You wonder if it your friend Kemi, since she's
           often making mischeif. You ask:
      b.   *Ṣe Kemi ni Ade ba-sorọ?*
           Q Kemi NI Ade talk-to.
           'Was it Kemi that Ade talked to?'

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(56)   CONTEXT: You were not able to attend your friends wedding, so you ask
two friends who where there who attended:

a. *Ta   ni o   wa   si igbeyawo?*
Who NI 3.sg come to wedding
'Who came to the wedding?'

b. *Iya   rẹ ati Olu ni o   wa.*
mother my and Olu NI 3.sg came
'My mother and Olu came.'

c. *Babatunde ati Ṣegun ni o   wa   pelu*
Babatunde and Segun NI 3.sg came additive
'Babatunde and Ṣegun came too

(57)   a. *Iru   oun jẹ wo   ni awon ọmọde feran lati jẹ loda   ariya?*
Kind thing eat which NI pl.   kids   like to eat during party
'What kinds of food to kids like to eat at birthdays?'

b. *Irẹsi ni awon ọmọde feran lati hab jẹ loda   ariya*
Rice ni pl.   kids   like   to   fut. eat during party
'Kids like to eat rice at birhtday parties.'

(58)   Context: Ade is a school teacher. He arranged to talk with students who
are doing poorly in his class to talk about how how they can improve
their grades. You are wondering who she set up meetings with, but in
particular you are wondering whether she talked to your friend Kemi, who
you suspect is failing the class. You ask:

a. #*Ṣe Kemi ni Ade ba-sorọ?*
Q Kemi NI Ade talk-to.
Intended: 'Did Ade talk to Kemi$_F$?'

b. ✓ *Ṣe Ade ba   Kemi sorọ*
Q   Ade talk-to Kemi talk-to
'Did Ade talk to Kemi?'

The upshot from these differing reports is that, while a presupposition about

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exhaustivity frequently accompanies *ni*-fronting constructions, it seems to sometimes be absent. One possibility is that the 'strength' of the exhaustivity inference varies across dialects within the Yoruba dialect continuum. The native dialect of the Yoruba consultants is not the same across (or even within) the articles discussed above, nor is it constant across the consultants I worked with. I did not observe a correlation between consultants' judgements with respect to exhaustivity and their native dialect, but given the microvariation found across closely related Niger-Congo languages, it might be worthwhile to investigate this possibility in a more systematic way. On the other hand, this difficult-to-pin-down behavior of the exhaustivity inference in *ni*-fronting is reminiscent of experimental results from reportedly exhaustive constructions in other laugages, including Hungarian identificational focus and English it-cleft constructions. Experimental results by Onea and Beaver 2009 on Hungarian pre-verbal focus show that the strenght of the exhaustivity requirement is significantly less pronouned than that of an overt exclusive and J. M. Hartmann 2016 provides similar experimental data on English it-clefts showing that they are often judged relatively acceptable even in contexts violating exhaustivity. Similarly in Ga, Renans 2016 who presents a good case that *ni*-marking in that language causes an exhaustive inference reports some cases where judgements regarding the exhaustivity requirements were mixed. Regarding the sentence in (59), she reports: "While the language consultants gave mixed acceptability judgments regarding cancellation of the exhaustivity effect with the subject as the pivot, they gave clear judgments when the DO was the pivot. All in all the data suggest that the exhaustivity generated by the particle ni is rather not cancellable."

(59)   *?Felix ni   kane wolo nye.   Ni   Kofi hu   kane wolo nye.*
       Felix   PRT read book yesterday. And Kofi also read book yesterday
       'It was Felix who read a book yesterday and Kofi also read a book yesterday.')

       (Renans 2016, p. 106)

There are several ways that the variable presence of the exhaustive inferences could be reflected in the theory: 1) One strategy is to posit that *ni*-fronting does not, by itself, contribute an exhaustivity inference but rather frequently co-occur with an covert operator which does so. 2) Another way of doing so would be to claim that *ni*-fronting always contributes an exhaustivity inference, but that the strength of the inference may depend on the extent to which the set of alternatives can be contextually restricted in a given context. Both approaches raise questions: The first needs to specify when a covert exhaustivity operator must be inserted and when it can be absent, whereas the second needs to come up with an explanation for what governs contextual restriction. I will pursue the second approach here.

Another issue connected with the question about *ni*-fronting in Yoruba and exhaustivity is how to explain cases where *ni*-fronting marks the associate of an overt exhaustive particle, as in (60), or what to do in cases where the *ni*-marked material is something that cannot readliy be exhaustified - such as a universal quantifier like in (61).

(60)   *Eja nikan ni Bolu ra.*
         Fish only   NI Bolu bought
         'Bolu onl bought FISH.'

(61)   CONTEXT: The school band recently put on a concert, which was a huge success. Some of the teachers are talking about it afterwards. One person says: "Can you believe it, most of the students went to the concert." Another corrects him: Not just most of the students went to the concert....

         Gbogbo akẹẹko l'   o   lọ sibi-aṣeye naa.
         every   student ALT PRON go concert   SPEC
         'Every student went to the the concert.'

In the (60) the focussed constituent has already been exhaustified by the over exclusive particle *nikan*. I am not sure how an additional exclusive particle like Chierchia Fox and Spector's EXH could be added to the semantic representation

here. In (61) the focussed constituent is a universal quantifier and these are known to be incompatible with exhaustification by an overt exclusive particle, as in (62) below. Both data points suggest that the exhaustive interpretation frequently found with *ni*-fronting constructions is likely not due to explicit exhaustification of the pre-*ni* constituent by assertional exhaustivity operator like the one proposed by Chierchia, Fox, and Spector 2012, (63).

(62) #Only [every student]$_F$ came to the party.

(63) $\llbracket EXH \rrbracket^g = \lambda w.\lambda C.\lambda p.p(w)\&\forall q \in C[q(w) \rightarrow p \subseteq q]$

The projective behavior of the exhaustive inference in (65) is different from what a CFS style exhausitvity operator would predict. The context in which the sentence is judged unacceptable is not actually incompatible with an exhaustivity inference - it simply does not establish that the exhaustivity inference is part of the common ground. Since EXH's exhaustivity contribution is asserted, not presupposed this is not expected. The projective behavior of the uniqueness requirement in *ni*-fronting constructions indicates that the inferences is not part of the at-issue content of the utterance. The uniqueness requirement projects in questions, as in (65) and through other "holes" for presupposition projection like *negation*. Again, this is not the expected behavior from Chierchia, Fox, and Spector 2012's exhaustivity operator, where exhaustivity inferences have been noted to be absent from downward entailing contexts.

(64)   a. CONTEXT 1: ADE IS TALKING TO A UNIQUE PERSON
            You hear that Ade is talking to someone in his office. You don't know
            who it is, but clearly they are getting in trouble. You wonder if it
            your friend Kemi, since she's often making mischeif. You ask:
        b. *Ṣe Kemi ni Ade ba-sọrọ?*
            Q   Kemi NI Ade talk   to.
            'Was it Kemi that Ade talked to?'

(65) a. Context 2: Ade is talking to several people

Ade is a school teacher. He arranged to talk with students who are doing poorly in his class to talk about how how they can improve their grades. You are wondering who she set up meetings with, but in particular you are wondering whether she talked to your friend Kemi, who you suspect is failing the class. You ask:

b. #Ṣe Kemi ni Ade ba-sorọ?
Q Kemi NI Ade talk to.
'Was it Kemi that Ade talked to?'

c. ✓ Ṣe Ade ba Kemi sorọ
Q Ade talk-to Kemi talk-to
'Did Ade talk to Kemi?'

(66) Kemi kọ ni o fo ferese.
Kemi NEG$_{fs}$ ALT PRON break window.
'It wasn't Kemi who broke the window.' ⤳ someone broke the window.

In this respect, the intuitions about Yoruba polar questions with *ni* fronting are similar to those about English it- clefts, which can co-occur with some quantifers (cf. Büring and Križ 2013) and overt exclusive particles, as in (67) and (68) and seem to require exhaustivity be established in the common ground, rather than as part of the assertion, as in (69).

(67) *It was every child that got frightened, not just the girls!*
(Wedgewood, Petho, and Cann 2006, p.10)

(68) Context: A: I know Fred bought a copy of my book. Did anyone else?
B: *No, It was only Fred who bought it.*
(Büring and Križ 2013, p. 13)

(69) a. Context 1: We know that one of the grad students rented an e-bike

for the annual department bike tour.

Was it Konstantin who rented an e-bike?

b.   Context 2: We know that one or more of the grad students rented e-bikes for the annual department bike tour.

\# *Was it Konstantin who rented an e-bike?*

(70)   a.   It wasn't Konstantin who rented an e-bike.

I suggest that the contribution of *ni*-fronting is due to a focus sensitive maximality operator, in (71). The maximality operator applies to propositions containing distinguished variables. It adds a presupposition that, within the set of propositional alternatives formed by subsitution of the distinguished variable, there is a unique maximal true proposition, which entails all the other true propositions.

(71)   MEANING RULE FOR MAX

If $\alpha = [MAX_i\ w\ \beta]$, then for any g,h:

$[\![\alpha]\!]^g$ is defined iff:

$\exists p[p \in \{[\![\beta]\!]^{g,\phi[x/i]} | x \in D_e\} \& p(w) \& \forall q[q \in \{[\![\beta]\!]^{g,\phi[x/i]} | x \in D_e\} \& q(w) \to p \subseteq q]]$

If so:

$[\![\alpha]\!]^g =$ the unique p s.t. $\forall q[q \in \{[\![\beta]\!]^{g,\phi[x/i]} | x \in De\} \& q(w) \to p \subseteq q]$

$[\![\alpha]\!]^{g,h} =$ the unique p s.t. $\forall q[q\{[\![\beta]\!]^{g,h[x/i]} | x \in De\} \& q(w) \to p \subseteq q]$

MAX resembles Dayal's maximal informativity operator (Dayal 1996) except that the alternatives on which it operates can be generated from focus, if *ni*-fronted material is a not a *wh*-phrase. This approach can explain the closeness in derived meaning to it-clefts which involve maximality in the form of the covert definite assumed e.g. in Percus 1997 or via a homogeneity presupposition as in Büring and Križ 2013. In fact, this is also not far from the proposal from Renans 2016 for Ga or Fominyam and Šimik 2017 for Awing, which both propose presupposition-contributing operators responsible for deriving the exhaustive inference.

Let us look in some more detail at how this proposal accounts for the observed behavior of *ni*-fronting in Yoruba. Projection of the uniqueness and existence inferences introduced by *ni*-fronting is predicted because the MAX operator introduces these requirements as a presuppostion. This also explains their lack of cancelability in contexts where they are not supported, such as (65).[13]. The apparent variability with which *ni*-fronting occurs needs to be addressed under this proposal. There are at least two possible approaches to account for the cases of *ni*-fronting where the exhaustivity inference is apparently missing: One is to say that the MAX-operator is not a direct result of *ni*-marking but rather a covert opperator that operates on sets of alternatives whenever possible, but not always. The difficulty with this approach is determining under what circumstances it is obligatory and when it is optional. This is a persistent problem in accounts relying on covert exhaustivity operators crosslinguistically (see e.g. Bade 2015 for a discussion of obligatory insertion of EXH). Another approach is to assume that *ni*-fronting always leads to the presence of a MAX-operator at LF and to explain cases where it seems to be absent by restricting the relevant set of alternatives in order to weaken the exhaustivity requirement. For example, this kind of approach has already been pursued in Xiang 2016 to account for mention some questions under an account where (matrix) questions are always accompanied by an exhaustivity operator. I will take the second of these approaches and suggest that cases of *ni*-fronting which apparently lack exhaustivity inferences in Yoruba are the result of contextual restriction applying to the maximality operator.

2.4.4 Summary: Yoruba *ni*-fronting

Let's briefly summarize what we know about *ni*-fronting in Yoruba so far. Syntactically, I argued that *ni*-fronting is an instance of focus movement of a constituent to the specifier of a focus phrase headed by the focus marker *ni*, and provided

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[13]Given the growing literature on obligatory implicatures (Magri 2009, Bade 2015), it is no longer clear that non-cancelability is a good test for distinguishing between presupposition and implicatures.

evidence for this account over a predicate-cleft analysis. In order to explain the distribution of *ni*-fronting across constructions that introduce alternatives into the semantic composition I posited that *ni*-fronting is licensed by the presence of a distinguished variable within the fronted constituent and, furthermore, that whenever a constituent is marked with an F-feature or a *wh*-feature it must undergo *ni*-fronting to the specifier of a FocP. I also claimed that *ni*-fronting introduces an alternative sensitive operator which contributes a presupposition that the assertion is the maximal true assertion from among a set of propositional alternatives. I argued that this maximality operator can better explain the behavior of *ni*-fronting: its projective behavior, its compatibility with constituents that cannot easily undergo exhaustification with a Chierchia, Fox and Spector EXH, and its co-occurence with exhaustive particles. I also argued that the cases where an exhaustivity inference appears to be absent involve restriction of the set of alternatives manipulated by the exhaustivity operator. Now that we have worked out a proposal for the semantics and syntax of *ni*-fronting, the next section will tackle the role it plays in alternative questions.

2.5   A first look at Yoruba disjunctive questions

In Yoruba, alternative and polar question readings are disambiguated by the *ni*-fronting focus marking strategy discussed in the previous section: If the disjunction remains in its base position, as in (72-a), it is unambiguously interpreted as a polar question, whereas if it undergoes *ni*-fronting as in (72-b) it receives only an alternative question interpretation.

(72)　　a.　*Ṣe Kemi ra   bata   tabi iwe?*
　　　　　　Q Kemi buy shoes or   book
　　　　　　'Did Kemi buy the shoes or the book'　　　　✓ PolQ, # AltQ

　　　　b.　*Ṣe bata   tabi iwe   ni Kemi ra?*
　　　　　　Q shoes or   book NI Kemi buy
　　　　　　'Did Kemi buy the shoes or the book'　　　　# PolQ, ✓ AltQ

This generalization was drawn on the basis of two tests. The first was looking at the possible answers to a disjunctive question: A question was taken to have a polar question interpretation iff it could be felicitously answered with *yes* or *no*.[14]

(73)   A: *Did you bring cheesecake or salad?*
        B: ✓ *Yes.*

The second tests was whether a question form could be used in "partition-contexts": If a disjunctive question could be used in a context where the two disjuncts partition the common ground, then it must have an alternative question interpretation, as in (74). In such contexts, a polar question would not have an informative answer and would, consequently be infelicitous. So, if a disjunctive question is possible in this context, it must have an alternative question interpretation.

(74)   *Did the coin come up heads or tails?*

In Yoruba these two tests provided evidence for the correlation between the question forms with our without *ni*-fronting and their interpretations as an AltQ or PolQ respectively. Speakers judged *beeni* (yes) and *rara* (no) to be appropri-

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[14]Note however that drawing conclusions about the availability of alternative question readings based on this test is a little trickier: the ability to felicitously answer a question with one of the two alternatives (i.e. *the shoes*, *the book*) is not conclusive evidence for the availability of an alternative question reading, because it is always possible to provide an indirect answer to a question by making an assertion that entails one of the answers in the question set. In this case, answering with one of the disjuncts would entail a *yes* answer. Another example is the following exchange. In this case, we would not want to draw the conclusion that B's response is a proposition in the question set.

(i)   A:*Did you bring a dessert?*
        B: I brought cheesecake.

ate as answers to non-fronted questions, but not to fronted question, as in (75), suggesting that only the former had an available polar question interpretation. On the other hand, in partition contexts where the alternatives specified in the disjunction formed a partition of the common ground, disjunctive questions with *ni*-fronting are judged acceptable while non-fronted ones are judged odd, suggesting that non-fronted disjunctive questions cannot receive an alternative question interpretation.

(75)   **Possible Answers**

 a.   *Se Kemi tabi Ade ni o   ra   Adire naa?*
       Q Kemi or   Ade NI pron. buy Adire dem.
       'Did KEMI or ADE buy the Adire (a Yoruba tie-dyed cloth) ?'

       Answers: # *Rara* (no), # *Beeni* (yes), ✓ *Ade ni* ✓ *Kemi ni*

 b.   *Se Kemi tabi Ade ra   Adire naa?*
       Q Kemi or   Ade buy Adire dem.
       Did Kemi or Ade buy the Adire?

       Answers: ✓ *Rara* (ni), ✓ *Beeni* (yes)

(76)   **Partition Context**

 a.   *Ṣe ọkunrin tabi obinrin ni   ọmọ naa?*
       Q male   or   female NO chile the
       'Is the baby a boy or a girl?'

 b. #*Ṣe ọmọ naa ọkunrin tab obinrin?*
       Q child the male   or female
       'Is the baby a boy or a girl?'

Pragmatic restrictions on alternative disjunctive questions are similar to those observed in English: In Yoruba, native speaker judgments confirmed that the use of alternative questions is infelicitous in contexts where it has not been established that there is at most one true alternative. In the following example, the common ground of the interlocutors contains worlds where both alternatives are true (i.e. Both Segun and Tunji voted for Buhari) and worlds where neither alternative is

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true (i.e. Neither of them voted for Buhari), so the question is judged as inappropriate.

(77)   CONTEXT: You know that your friends Segun and Tunji were planning to vote in election but were undecided about who to vote for. You have not talked to either of them since the election, but your friend Ade has and might know more. You ask him:

a. #*Ṣe Segun tabi Tunji ni o   dibo fun Buhari?*
   Q Segun or   Tunji NI pron vote for buhari
   'Did Segun or Tunji vote for Buhari?'

b. *Ṣe Segun tabi Tunji dibo fun Buhari?*
    Q Segun or   Tunji vote for Buhari
    'Did Segun or Tunji vote for Buhari?

Data from embedded alternative questions suggests that the existence and uniqueness requirements behave like a presupposition in Yoruba. For example, when the question above is embedded under negation and *know*, the felicitly requirement persists.[15]

(78)   Context: Bolu knows that both Segun and Tunji voted in the recent election, but he does not know who they voted for...

_____

[15]Here a consultant's comment proved to be very helpful in determining that this requirement was indeed the source of the oddness of these examples. He suggested that the same sentence would be perfectly acceptable in a context as in (i):

(i)   CONTEXT: At work Bolu's colleauges are keeping track of how many colleages will vote for Buhari and how many will vote for Goodluck Johnathan on a blackboard where each person can put a tickmark under the name of the person he will vote for. At lunchtime, Bolu goes out and only Segun and Tunji are in the office. When he gets back there is a new tickmark under Buhari's column. Then it's possible to say:
   Bolu ko   mo   boya Segun tabi Tunji ni o   dibo fun Buhari
   Bolu NEG know Q   Segun or   Tunji NI pron. vote for Buhari.
   'Bolu doesn't know whether SEGUN or TUNJI voted for Buhari.'

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#*Bolu ko   mo   boya Segun tabi Tunji ni   o   dibo fun Buhari.*
Bolu NEG know Q   Segun or   Tunji FOC pron. vote for Buhari
Intended: Bolu doesn't know whether SEGUN or TUNJI voted for

Buhari

2.5.1   The structure of Yoruba disjunctive questions

Syntactically, *ni*-fronting in disjunctive questions is parallel to *ni*-fronting else-where in the langauge: The same syntactic restrictions apply to fronted disjunc-tion - for example only nominal or clausal constituents can preceed *ni*, fronting of disjunction in subject position requires a resumptive pronoun in place of the moved subject and, finally, there are similar contstraints on movement (e.g. complex NP island constraints). An intuitively simple proposal for the structure of Alternative questions in one where the disjunction in alternative questions undergoes the same kind of fronting to the specifier of a FocP that foci and *wh*-phrases do, resulting in the structure (80) for alternative questions. In polar questions, no overt movement takes place, and so it has an LF structure as in (79).

(79)   Polar Question
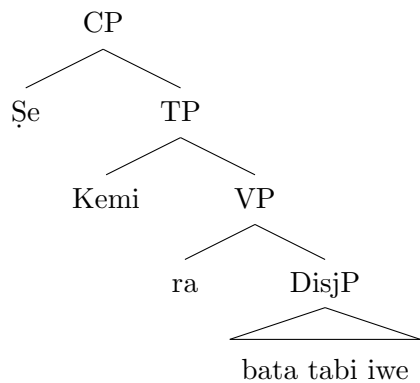
(80)   Alternative Question
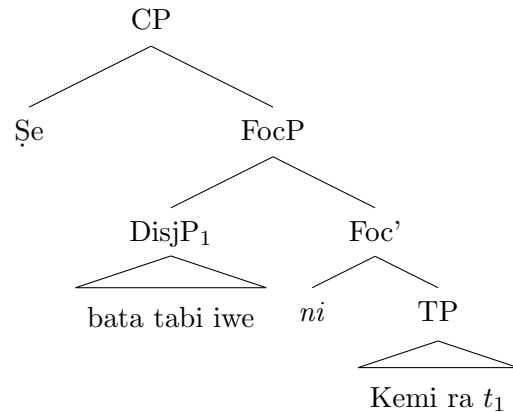
This is the LF structure that I will argue for in the end, but I will briefly con-sider another possibility for the syntactic derivation of Yoruba alternative ques-tions. Another way to derive the surface word order for AltQs is to assume that

the disjuncts in alternative questions are underlyingly clausal, that *ni*-fronting happens in each of the two disjoined clauses and any doubled material is elided, as in (81). [16]

(81)

```
                         CP
                ┌─────────┴─────────┐
               ṣe                    │
                         ┌───────────┼───────────┐
                       FocP         tabi        FocP
                     ┌───┴───┐       or       ┌───┴───┐
                  bata ni Ade ra          iwe ni Ade ra
```
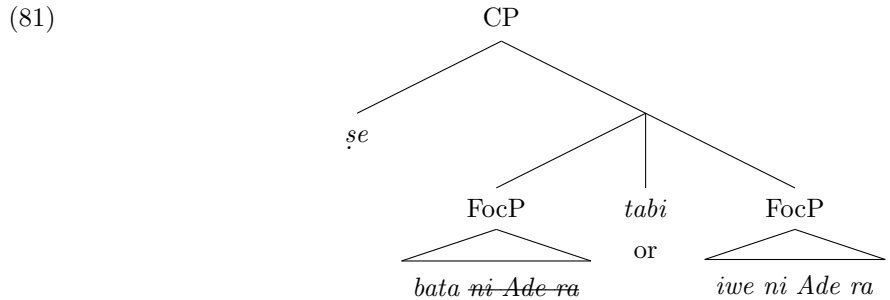
There are a few indications that the big-disjunct analysis is on the wrong track for Yoruba: For one thing, the pattern of deletion would be unusual: the material following *ni* would need to be deleted from the first disjunct rather than the second[17] Clausal disjuncts are possible in Yoruba alternative questions, but when they do occur, deletion occurs within the second disjunct. For example, the following alternative question was judged grammatical by consultants and likely involves CP-sized disjuncts with elipsis in the second disjunct.

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[16]Actually, there are two possible variants of this structures are: either one where a single Q-operator outscopes the disjunction, as in (81), or one where the disjuntion embeds two polar questions, along the lines of Uegaki 2014 or Mayr 2016, as in (i). The arguments to be laid out against a clausal disjunct analysis apply equally to both.

(i)

```
                         CP
                ┌─────────┼─────────┐
               CP        tabi       CP
             ┌──┴──┐      or      ┌──┴──┐
        ṣe bata ni Ade ra     ṣe iwe ni Ade ra
```
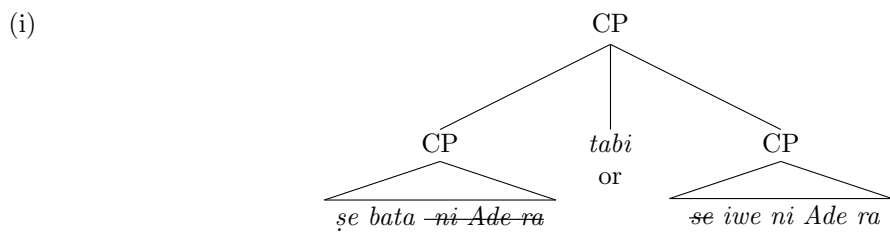
[17]Even work that argues for clausal disjuncts and ellipsis in *either/or* (Schwarz 1999) and AltQs (Romero and Han 2003) assume right node raising, like in (i), in order to avoid requiring deletion of material in the first disjunct.

(i)   Did Mary or John finish the paper?
       Did [Mary t$_1$] or [John t$_1$] [$_{VP}$ finish the paper]$_i$? (Romero & Han 2003)

(82)   a.   *Ṣe Kemi ni o   wa   tabi Ade?*
            Q Kemi ni pron come or   Ade
            'Was it Kemi or Ade who came?'

   b.   [Q [$_{DisjP}$ [$_{CP}$ Kemi ni o wa] tabi [$_{CP}$ Ade ~~ni o wa~~]]

A semantic argument comes from the presence of intervention effects by focus sensitive operators in alternative questions: As we discussed in Section 3 of this chapter, accounts under which alternative questions are derived from clause-sized disjuncts do not provide a satisfactory explanation for the occurence of intervention effects from focus sensitive particles. Reiterating from Section 3: Under an analysis with clausal disjuncts, a focus sensitive particle targeting focussed material within each of the disjoined clauses should not lead to the loss of a polar question interpretation or to ungrammaticality since the configuration required for intervention effects does not occur. Instead they would have a LF like the sketch in (83), where the focus sensitive operators would not interact with the association of the disjunction and Q.

(83)   [Q [$_{CP}$ only$_C$ C ... F$_1$ ...] OR [$_{CP}$ only$_C$ C ... F$_2$ ...]]

As will see in more detail in the next section, the presence of an alternative evaluating operator targeting material in the pre-*ni* position of a disjunctive question leads to the disappearance of an alternative question interpretation.

Taken together, these two arguments suggest that Yoruba alternative questions involve fronting of a DP or CP sized disjunction to a focus position, rather than tje disjunction of two clausal disjuncts, which each contain a focussed constituent.

2.5.2 Disjunctive Questions and Intervention in Yoruba

So far, we've seen that Yoruba disjunctive questions are disambiguated by *ni*-fronting: In alternative questions the disjunction occurs to the left of *ni*, while polar questions arise if the disjunction is left in situ. We also saw that alternative questions carry the same existence and uniqueness presupposition observed in other lanuages. The previous section argued that alternative question interpretations require a syntactic structure where the disjunction undergoes *ni*-fronting to a position in the specifier of FocP. Section 2.4 argued that elsewhere in Yoruba, this focus marking strategy is licensed by the introduction of a distinguished variable (and consequently alternatives) into the semantic composition as well as contributing a maximality presupposition. This obligatory focus fronting of the disjunction is a first indication that alternatives are involved in the derivation of AltQs . This section provides further support for this conjecture from intervention effects in alternative questions in Yoruba.

Determining whether Yoruba disjunctive questions are sensitive to intervention effects is a little more difficult than doing so for languages like English, because the disjunction in alternative questions undergoes fronting, similar to fronted *wh*-words. Moving a *wh*-phrase or disjunction to a position outside the scope of the intervening alternative evaluating operator is predicted to and has been observe to obviate intervention effects (Beck 1997, Pesetsky 2000, Beck and Kim 2006). As such, the presence of a focus sensitive operator targeting non-fronted material is not expected to cause intervention. However, it is possible to create the necessary syntactic configuration for intervention in a different way. In particular, if a focus sensitive operator targets the same disjunction as the Q-operator, in a structure like (84) intervention is predicted to occur.

(84)   [Q_i [only/neg$_C$ [$\sim_C$ [[$_{DisjP}$ XP or$_i$ YP]$_{ii}$ ...]]]

This prediction is born out by examples where the exclusive particle *nikan* or

the focus sensitive negation *ko̩* targets the disjunction, as in (85).

(85)   **Intervention by exclusive particle (*nikan*)**

    a.   CONTEXT: You know that only one of your two sisters Taiwo or Ke-
hinde will go to Lagos, but you're not sure which of the two will go.
You ask your mother:

    b.   *S̩e Taiwo tabi Kehinde ni o   maa lo si Eko.*
Q Taiwo or Kehinde NI pron. will go to Lagos
'Is it Taiwo or Kehinde who will go to Lagos.

    c.   #*S̩e Taiwo tabi Kehinde* **nikan** *ni o   maa lo si Eko*
Q Taiwo or Kehinde only NI pron. will go to Lagos
Intended: 'Will only Taiwo or only Kehinde go to Lagos?'[18]

(86)   **Intervention by negation (*ko̩*)**

    a.   CONTEXT:A window breaks while your daughters Taiwo and Kehinde
are playing outside. They both come in and swear it was the other
one. Your neighbor was outside and saw the event. You want to know
who is the one telling the truth, so you ask:

    b.   *S̩e Taiwo tabi Kehinde ni o fo   ferese?*
Q Taiwo or Kehinde NI pron break window
'Was it Taiwo or Kehinde who broke the window.'

    c.   **S̩e Taiwo tabi Kehinde* **ko̩**   *ni o   fo   ferese?*
Q Taiwo or Kehinde NEG_{fs} NI pron. break window
Intended: 'Was the one who didn't break the window Taiwo or Ke-
hinde?'

In (85)-b and (86)-b, the control questions without an intervening focus sensi-

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[18]Consultant's comment: You want to confirm if one of them will go.

tive operator, the questions are interpreted as grammatical alternative questions (a polar question interpretation is not available due to fronting of the disjunction). When an exclusive particle targeting the disjunction is added, (85), the sentence is no longer acceptable as an alternative question, but is instead acceptable with a polar question interpretation that can be paraphrases as "Is it true that only one of Taiwo or Kehinde will go to Lagos." This corresponds to judgements from English but is particularly interesting in Yoruba because, in this configuration, a polar question reading is possible despite the focus fronting (contra the generalization in 2.4.1 that polar question interpretations are only available with in-situ disjunction). In this case, the presence of the distinguished variable evaluated by the focus sensitive particle *nikan* licenses *ni*-fronting independently of polar question formation. In (86)-c, when the focus sensitive negation intervenes, consultants judged the question outright unacceptable, even as a polar question. I do not have an explanation for the difference in judgements between (85)-c and (86)-c.

We can draw two conclusions from the presence of intervention effects in Yoruba alternative questions. First, it provides evidence that alternative questions get their interpretation via manipulation of alternatives introduced by disjunction via a compositional mechanisms that is also used for the evaluation of focus. If this were not the case, the interaction of the focus particle and alternative question formation should not be problematic. Second, as discussed in the previous section, focus intervnetion effects are not predicted to occur under a clausal view of alternative questions, where (85)-c has an LF as in (87). Thus, the intervention effects provide additional evidence for an LF-syntax as in (88).

(87)   [Q [$_{CP}$ Taiwo only ni PRO go to lagos] or [$_{CP}$ Kehinde ~~only ni PRO go to lagos~~]]

(88)   [Q [$_{CP}$ only [$_{D}isjP$ Taiwo or Kehinde]$_F$ ni PRO go to lagos]

With these conclusions about the LF-structure of disjunctive questions and the

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compositional mechanisms responsible for their interpretation, the next section will spell out a proposal for the interpretation of alternative questions.

2.6 An analysis of Yoruba disjunctive questions

2.6.1 Deriving Alternative and Polar Question Sets

In Section 2.2 of this chapter, we introduced a proposals to derive alternative question interpretations in an alternative semantic framework due to Beck & Kim (Beck and Kim 2006) and adopted in a number of accounts of disjunctive questions Erlewine 2014, Biezma and Rawlins 2012). Given the evidence from intervention effects in Yoruba, I will adopt a similar alternative-based semantics for alternative questions in disjunctive questions. Specifically, the semantics I spell out in this section uses a system employing distinguished variables to generate alternative sets. The reason for doing so is to make the analysis compatible with the treatment of focus from Chapter 1. The disjunction will introduce a distinguished variable along with a presupposition restricting the value assigned to it by the distinguised variable assignment function to one of the two disjunction, as in (89). Abstraction over this distinguished variable by an alternative evaluating operator, in this case Q, (90), will yield the two membered set of alternatives. In fact, this semantics for disjunction will be modified slightly in the final version of the proposal in order to account for its non-alternative generating counterpart in polar questions and I will amend the Q-operator in order to fix a problem with presupposition projection in questions, but for the sake of clarity, I will use these two meaning rules to illustrate how the semantic composition works.

(89)   MEANING RULE FOR DISJUNCTION (first version)
       If $\alpha = [\beta_{\langle\tau\rangle} or_i \gamma_{\langle\tau\rangle}]$ then for any g,h and any semantic type τ,
       $[\![\alpha]\!]^g = \lambda P_{\langle\tau,t\rangle}.\exists x[x \in \{[\![\beta]\!]^g, [\![\gamma]\!]^g\} \wedge P(x)]$

If $i \in Dom(h)$: $[\![\alpha]\!]^{g,h} = \lambda P_{\langle \tau, t \rangle} : h(i) \in \{[\![beta]\!]^{g,h}, [\![\gamma]\!]^{g,h}\}.P(h(i))$
Otherwise, $[\![\alpha]\!]^{g,h} = [\![\alpha]\!]^g$

(90)   MEANING RULE FOR Q (first version)
If $\alpha = [Q_i\beta]$, then for any g,h and semantic type τ determined by i:
$[\![\alpha]\!]^g = \{[\![\beta]\!]^{g,\phi[x/i]}|x \in D_{\langle \tau \rangle}\}$
$[\![\alpha]\!]^g = \{[\![\beta]\!]^{g,h[x/i]}|x \in D_{\langle \tau \rangle}\}$
(cf. Beck 2016, Appendix B.)

To derive an alternative question meaning, the Q-operator is co-indexed with the disjunction, as in the LF in (91). Q binds the distingusihed variable introduced within the disjunction, forming a set of propositions by abstracting over the distinguished variable to create the question in (92).

(91) $[\ Q_i\ [_{TP}\ \lambda w\ [_{DisjP}\ A\ or_i\ B\ ]\ 1\ [\ \text{Kemi bought}_w\ t_1\ ]\ ]\ ]$

(92) $[\![CP]\!]^g = \{[\![TP]\!]^{g,\phi[x/i]}|x \in D_e\}$

    a. $= \{\lambda w : x \in \{\text{the shoes, the book}\}. \text{Kemi bought x in w}|x \in D_e\}$
    b. $= \{\lambda w. \text{Kemi bought x in w}|x \in \{\text{the shoes, the book}\}\}$

A brief comment about (92) is in order here. Going through the compositional derivation will yield (92-a). This is equivalant to (92-b), a more familiar notation for the two membered alternative set for the AltQ. To see that (92-a) and (92-b) are the same, consider (92-a). For x = the shoes or x= the book, the presupposition of the proposition in (92-a) is true in all worlds, so the proposition is defined for any w. For x = y where y is any other expression of type $\langle e \rangle$, the presupposition in (92-a) will not be true in any world, and so the resulting proposition will not be defined for any w, and can therefore be omitted from the question set.

What about the polar questions? To derive a polar question meaning, there

are several options: The same Q-operator could bind a covert verum operator, producing the alternative set containing the original disjunctive proposition and its negation , a different (non-alternative evaluating) Q-operator could be used to create this set, or following singleton-set approaches to polar questions (cf. Uegaki 2014, Biezma and Rawlins 2012), the singleton set containing the proposition derived by the PolQ LF could be taken as the question. I will pursue the first of these options. The verum operator [19] introduces a distinguished variable of type $\langle st, st \rangle$. To generate the standard two membered alternative set, a presupposition is introduced restricting $\langle st, st \rangle$ alternatives to the identity funtion on propositions and the function that will yield a propositions's complement. The logical form of a polar question is in (94) and derives the question set in (95).

(93) $[\![\text{VER}]\!] = \lambda P_{\langle st, st \rangle}.P \in \{\lambda p.p, \lambda p.W - p\} : P(h(i_{\langle st, st \rangle}))$

(94) $[_{CP} \text{ Q}_i \text{ [VER i}_{st,st}] \text{ [}_{TP} \lambda w. \text{ [}_{DijsP} \text{ the shoes or the book] 1 [Kemi bought}_w \text{ } t_1]]]$

(95)   { $\lambda w.\exists x[x \in \{shoes, book\}$& Kemi bought x in w,
                    $\lambda w.\neg\exists x[x \in \{shoes, book\}$& Kemi bought x in w }

Under this account, the difference between the polar and alternative question meaning is a difference of co-indexation: To derive the alternative question interpretation Q is co-indexed with the disjunction and to derive the polar question interpretation it is not. But, I have not yet addressed what happens to the distinguished variable when it is not bound by Q. As it stands now, the distinguished variable introduced by the disjunction is free. Techincally, I do not think this would lead to a crash in these examples given the meaning rule for disjunction and

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[19]Note that the term *verum* is also used in work by Romero and Han 2004 for an epistemic operator argued to be responisble for bias in polar questions and absent in unbiased questions, which are derived via a 'normal' polar question operator. My using the same terminology was accidental and I don't mean to make any claims about or relpace Romero's operator. The goal of this 'verum' operator, which might as well have been called'polarity' operator is simply to provide a means of deriving a two-membered question set via the same alternative semantic machinery as for *wh*-questions.

for Q proposed above. Recall that, the Q-operator above generates the question set from the value of its sister expression relative to an assignment function containing a single index/assignment pair (to bind distinguished variables co-indexed with Q). The semantic framework is set up in such a way that if a distinguished variable's index is not in h, its value relative to g and h is equal to its value relative to g (i.e. it's ordinary value). According to the meaning rule for dijsunction in (89), this makes it an ordinary existential quantifier.

However, leaving the distinguished variable introduced by disjunction unbound will cause problems in cases where an unselective distinguished variable binder is higher up in the structure. For example, in (96-a) which is has the LF in (96-b), the set of alternatives that restricts the *only* will not be the right set. The alternatives restricting only would vary not only in the value for the focussed subject, but also the disjunction in object position, as (97-b) instead of the intended alternatives in (97-a).

(96)   a.   Did only Kemi$_F$ buy the book or the shoes?

        b. $[_{CP}$ Q$_i$ [VER i$_{st,st}$] [only$_c$ $\sim_C$] $[_{TP}$ $\lambda w.$ $[_{DijsP}$ the shoes or the book] 1 [Kemi bought$_w$ t_1]]]

(97)   a.   { $\lambda w.x$ bought$_w$ y $|x \in D_e$ & $y \in$ {the shoes, the book} }

             = {Mary bought the shoes, Mary bought the book, Bill bought the shoes, Bill bought the book, ...}

        b.   { $\lambda w.\exists y[y \in$ {the shoes, the book} & x bought$_w$ y $|x \in D_e$ }

             = {Mary bought the shoes or the book, Bill bought the shoes or the book, ...}

One solution would be to introduce an existential closure operator over the distinguished variable somewhere in the structure below other alternative evaluating operators (cf. Alonso-Ovalle 2006). I will pursue a slightly different solution, but this raises an interesting question about whether the interpretation of disjunc-

tion always comes about via the evaluation of alternatives, or if it evaluated via quantification in the ordinary semantics under some circumstances. I will spell out the latter kind of an account for Yoruba. If *ni*-fronting obligatorily marks the introduction of a distinguished variable in the semantic composition, then its abensce with disjunction in PolQs indicates that ordinary quantification may be a better solution, however open questions remain about the status of in-situ focus in Yoruba. I leave this interesting question for follow up work.

Instead, I will assume that the disjunction is decomposed into a variable and a part that restricts the variable to one of the values of the two disjuncts. In polar disjunctive questions it is an ordinary variable while in alternative questions it is an F- or *wh-* marked distinguished variable. In polar questions, a scopally mobile existential operator binds this variable, similar to Larson 1985's scoping mechanism for either/whether.[20]. This explains the need for *ni-* marking on the disjunction in alternative questions and, moreover, why a focus marking on disjunction in alternative but not polar questions is so common crosslinguistically (cf. Biezma and Rawlins 2015). It also solves the problem of non-intervention by focus sensitive operators in polar questions: Because the distinguished variable is introduce by focus marking, rather than the disjunction itself, it is not present in polar questions in the first place, and does not affect the alternative set produced by the $\sim$ operator.

Under this amended proposal the disjunction would be composed of the following elements: A variable (either distinguished or ordinary), the disjunction (the two memberd set containing both disjuncts) and a covert operator that introduces a presupposition restricting the value of this variable to a member of the set contributed by its sister, (98). The LFs for an alternative and polar disjunctive questions would be as in (100) and (102) respectively.

(98)   **Disjunction**

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[20]Note: This could also be done via a choice-function variable and it would not significantly affect the analysis.

a. $[\![\text{ or }]\!] = \lambda x.\lambda y.\lambda z.z \in \{x, y\}$

b. $[\![\text{RESTR}]\!] = \lambda P.\lambda x : P(x).x$

(99) Did Kemi buy the BOOK or the SHOES?

(100)

(101) Did Kemi buy the book or the shoes?

(102)

CP
- Q_i
- VER$_i$
- TP
  - λw
  - $\exists_2$
    - Kemi
    - bought$_w$
      - x_2
      - RESTR
        $\lambda P_{\langle e,t\rangle}.\lambda x_{\langle e\rangle} : P(x).x$
      - DisjP
        Shoes or Book
        $\lambda x.x \in \{S, B\}$
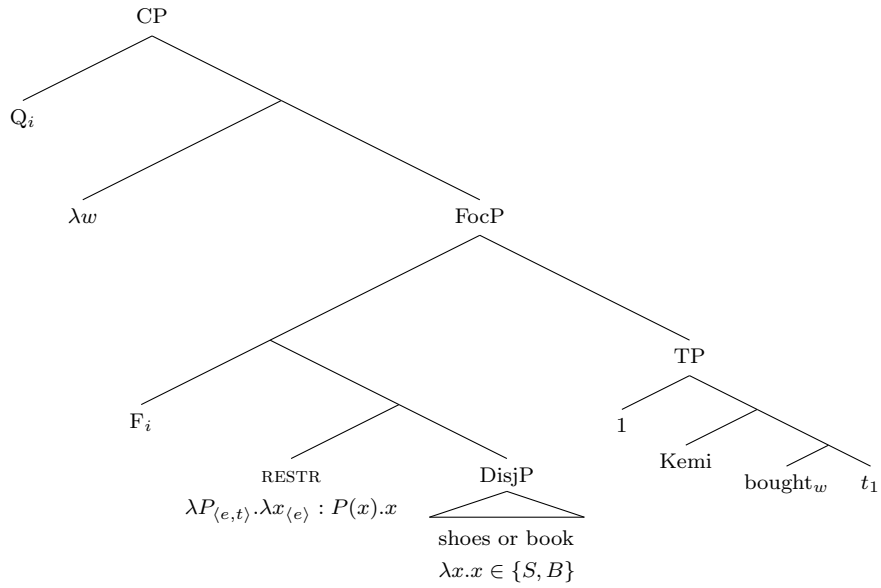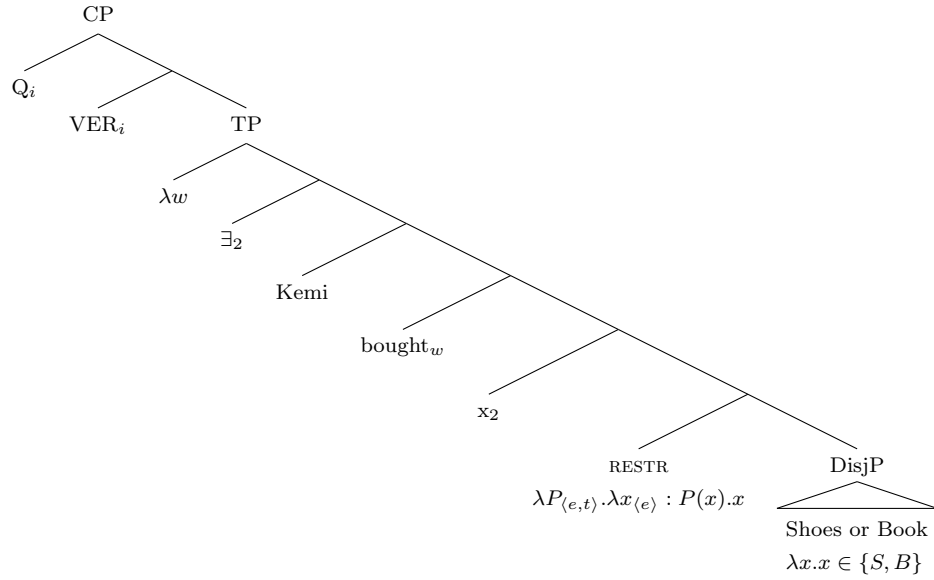
This will be the final proposal for the polar question, but the alternative question will need some modification, since this analysis of alternative questions does not address the question how the presuppositions discussed in 2.2.4 (in General) and 2.4.2 (specifically for Yoruba) arise.

2.6.2 Deriving the Presuppositions of Alternative Questions

As we saw in 2.2.4, previous accounts discussing the formal pragmatics of disjunctive quesiton have varied in their details, but almost all take the presuppositions in alternative questions to arise from 1) an item that introduces exhaustivity and 2) a requirement that the question have a true answer. I have argued in the previous section that *ni*-fronting is licensed by the presence of a distinguished variable and introduces a presupposition via the MAX-operator. For alternative questions, I propose that when *ni*-fronting occurs, a MAX operator uses the distinguished variables introduced by the disjunction and adds a presupposition that there is a unique true maximal alternative in the set of alternatives. The Q-operator then

derives the alternative set and allows for presupposition projection of the presupposition, so that it becomes a presupposition of the question as a whole. This proposal suggests that the source of the presupposition in alternative questions is a grammatical one, stemming from the presence at LF of the MAX-operator triggered by *ni*-fronting. The LF-structure for an alternative question is given in (103).

(103)
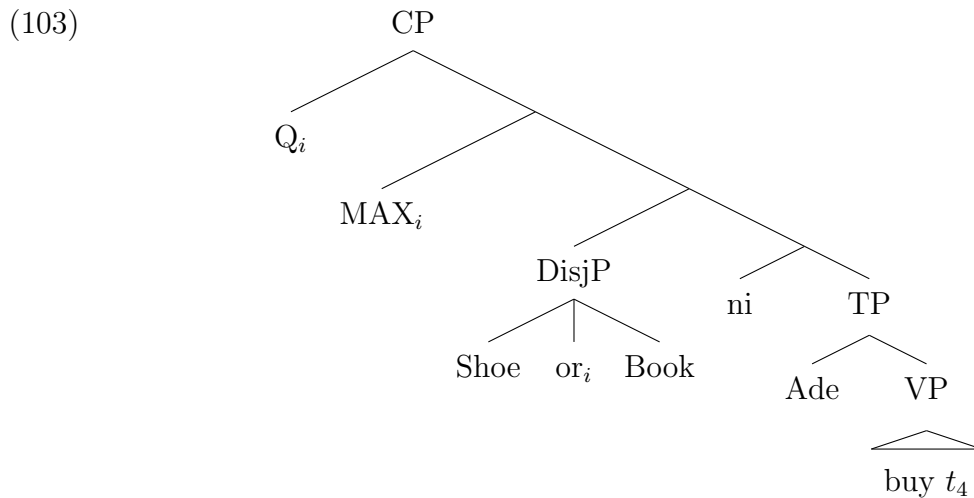
The result will be a question intension with a presupposition that there must be a maximal true alternative in the set of alternatives derived by the max, as in (104):

(104) $\lambda w : \exists p[p \in ALT \& p(w) \& \forall q[q \in ALT\{\& q(w) \to p \subseteq q]]. \lambda p'.p' \in ALT$
Where $ALT = \{\lambda w.\ \text{Ade bought}_w x | x \in \{ \text{Shoes, Book}\} \}$

2.6.3   Aside on Presupposition Projection and Q

There is an issue with presupposition projection that comes up when we put all the ingredients of this analysis together. Nothing in the compositional semantic system developed so far ensures that the presupposition contributed by the MAX-operator

projects. The observation that presuppositions project in questions dates back to early work on presupposition (Langendoen and Savin 1971), but the meaning rule that I have been using so far does not capture this. The presuppositions of the expression to which Q is applied will end up as presuppositions on the propositions in the question set, rather than a presupposition on the question as a whole. Specifically for the analysis of alternative questions, each proposition in the question set contains a presupposition that there is a true maximal alternative but the question itself does not have a definedness conditions. Intuitively, the presupposition that *ni*-fronting introduces should end up as a presupposition on the question as a whole, but the meaning rule for Q in Section 2.6 does not do that. In fact, this is part of a bigger problem - the same issue arises for any presupposition introduced within a question in this set-up. The way I propose to solve this problem, following a suggestion in Rullmann and Beck 1998 and Spector 2016 is by requiring the truth or falsity of at least one proposition in the question set in order for the question to be defined. Technically I will amend the meaning rule for Q to produce question intensions (functions from worlds to question sets) rather than simply question sets and adding a domain restriction on the question intension to worlds where at least one of the propositions in the question set is true or false. Thus, in order for a question set to be defined for some world w, the presuppositions of at least one possible answer must be fulfilled in w. If a presupposition is shared by all propositions in the question set, it will become a definedness condition on the question as a whole.

(105)   **Meaning Rule Q**

For any $\alpha = [Q_i \ \beta]$, any type τ determined by i and any g, h:

$[\![\alpha]\!]^g(w)$ is defined iff $\exists p[p \in \{[\![\beta]\!]^{g,h[x/i]}|x \in D_\tau\} \ \& \ (p(w) \vee \neg p(w))]$

If so: $[\![\alpha]\!]^g = \lambda w.\lambda p.p \in \{[\![\beta]\!]^{g,\emptyset[x/i]}|x \in D_\tau\}$

$[\![\alpha]\!]^{g,h} = \lambda w.\lambda p.p \in \{[\![\beta]\!]^{g,h[x/i]}|x \in D_\tau\}$

This shift from a question set to question intensions is arguably needed anyways: Rooth 2016 makes a case that we need to use question intensions rather

than simple question sets in order to capture the world-dependece of *wh*-word restrictions. And various previous work has argued for felicity conditions on questions requiring the truth (or falsity) of propositions within a question set: Dayal 1996's maximal informaitivity requires a true answer that entails all other true answers, Rullmann and Beck 1998 claim that, in order to ensure projection of the presuppositions in which-phrases there must be a true answer and at least two possible answers, Spector 2016 requires both a true and a false answer in the question set. These requirements are all stronger than the one I propose but would all equally ensure that presuppositions contained within the question set project. The precise condition will lead to differnces affecting exactly what projection pattern is expected. I will not delve into the benefits and drawbacks of choosing one variant over the other. The main point I want to make here is that by adding a requirement of this kind, we can take care of the problem of getting the maximality presupposition introduced by *ni* to project.

Let's see how this works in an example, starting with a simple polar question. I'll use an example of a polar question with the maximality presupposition introduce by *ni*-fronting in Yoruba,(106-a) but the same reasoning applies to any polar question with a presupposition trigger in it.

(106) a. *Ṣe Adebimpe ni Ade ba-ṣọrọ*
           Q Adebimpe NI Ade talk-to
           'Was it Adebimpe that Ade talked to?'

b.

```
                Q_i
               /   \
           VER_i    FocP
                   /    \
                 MAX     Adebimpe
                        ni    \
                         1     TP
                              /   \
                          Ade talk to t_1
```
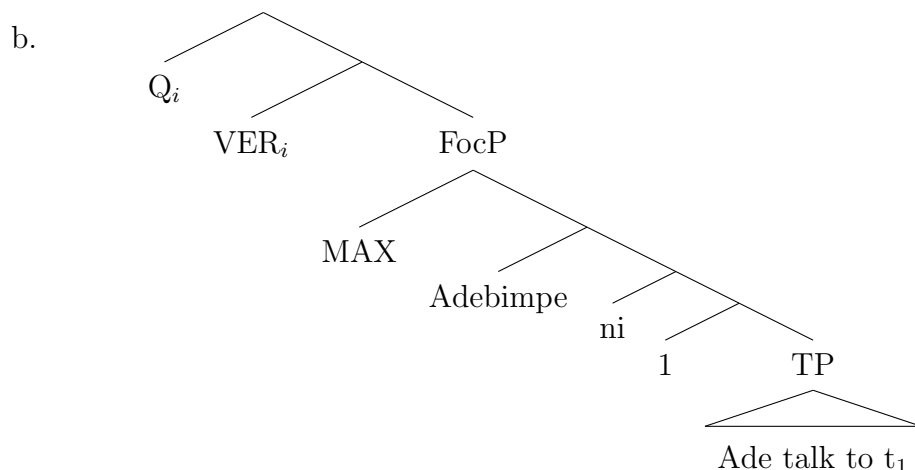
In this question, the Max-operator introduces a definedness condition on the FocP that there is a proposition of the form $\lambda w.$ x Ade talked$_w$ to x which entails all othe true propositions in the alternative set. Then, Q binds the verum operator above MAX to yield the question set which contains the original TP (including the presupposition) and its negation (also including the presupposition).

This ammended Q-operator guarantees projection as long as each proposition in the question set share the same presupposition, but what about when the presuppositions differ across the different propositions in the question set. For example, if the presupposition is a claim about the *wh*-item, as in (107-a), the prediction made by this solution is that these requirements should project existentially: The presupposition should be true for one of the questions in the question set, in order for the question to be defined.

(107)   a.   *Who did you go out with again?*
             Presupposition: You went on a date with someone before.
        b.   *Which girl rented an e-bike*
             Presupposition: exactly one girl rented an e-bike

Rullmann and Beck 1998 and Spector 2016's versions would each require at

least two defined propositions in the question set, producing for (107-a) the stronger presupposition that you went out with at least two people and for (107-b) the requirement that there be at least two (relevant) girls (cf. also Beck & Rullmann 1988). I leave the question of whether this is a better fit for capturing presupposition proejction open, as for AltQs and the presupposition introduced by the MAX-operator this will not make a difference. In the next section, I will spell out how the ammended Q-operator, the MAX-operator and the proposed LF for AltQs and PolQs derives the desired interpretation.

2.7 Putting it all together

The last sections developed an account of all the ingredients involved in the interpretation of Yoruba alternative and polar disjunctive questions: An alternative semantics for disjunctive questions using distinguished variables, the exhaustivity contributing *ni*-fronting focus marking construction that occurs in alternative but not polar questions and a semantics for the interrogative operator that allows for the projection of presuppositions introduced within its scope. This section spells out how these different ingredients are combined in order to derive the interpretation of Yoruba polar and alternative questions.

A. Alternative Questions

The LF-Syntax for the example sentence in (108) is as in (109). The licensing condition in (110) licenses focus movement of the disjunction in AltQs.

(108)   *Ṣe bata tabi iwe ni Kemi ra*
          Q shoes or book ALT Kemi buy
          'Did Kemi buy the SHOES or the BOOK?'

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(109)

CP
- Q$_i$
- FocP
  - Max$_i$
  - Foc'
    - λw_2
    - DisjP
      - F$_i$
      - RESTR
        - NP
          - the shoes
        - or
        - NP
          - the book
    - IP
      - 1
      - Kemi
      - VP
        - buy$_{w2}$ t_1
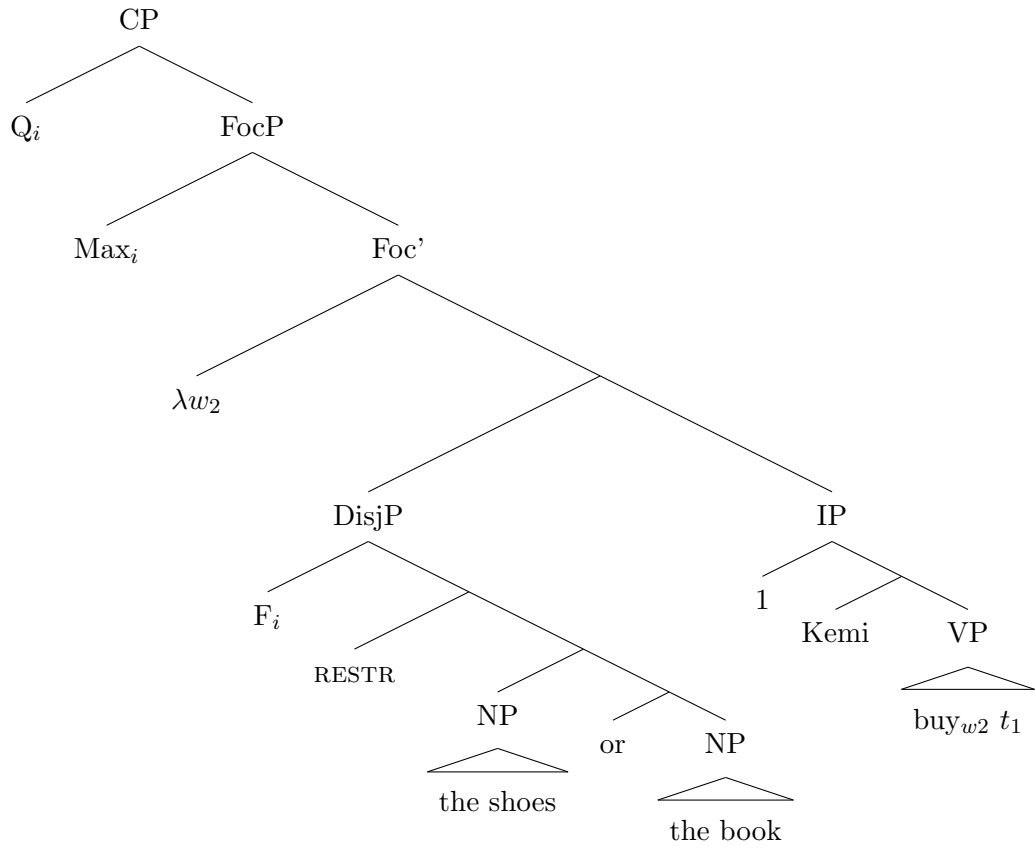
(110)　**Licensing Condition on Focus Fronting**

A nominal or clausal constituent may undergo movement to the specifier of FocP if it contains a F-feature or a *wh*-feature and does not contain a smaller nominal or clausal constituent that contains this feature and could have undergone *ni*-fronting instead.

Lexical Entries and Meaning Rules

The final proposal for the Lexical Entries and Meaning Rules involved in the semantic composition is repeated below.

(111)　**Meaning Rule Q**

For any $\alpha = [Q_i \ \beta]$, any type τ determined by i and any g, h:

$[\![\alpha]\!]^g(w)$ is defined only if $\exists p[p \in \{[\![\beta]\!]^{g,h[x/i]}|x \in D_\tau\} \ \& \ (p(w) \lor \neg p(w))]$

If so: $[\![\alpha]\!]^g = \lambda w.\lambda p.p \in \{[\![\beta]\!]^{g,\emptyset[x/i]}|x \in D_\tau\}$

$\qquad [\![\alpha]\!]^{g,h} = \lambda w.\lambda p.p \in \{[\![\beta]\!]^{g,h[x/i]}|x \in D_\tau\}$

(112)   **Meaning Rule for MAX**

For any $\alpha = [MAX_i\ \beta]$, any type τ determined by i and any g, h

$[\![\alpha]\!]^g$ is defined only if:

$\exists p[p \in \{[\![\beta]\!]^{g,\emptyset[x/i]}|x \in D_e\}\&p(w)\&\forall q[q \in \{[\![\beta]\!]^{g,\emptyset[x/i]}|x \in D_e\}\&q(w) \to p \subseteq q]]$

If so: $[\![\alpha]\!]^g = [\![\beta]\!]^g$

$\qquad [\![\alpha]\!]^{g,h} = [\![\beta]\!]^{g,h}$

(113)   **Disjunction**

a. $[\![$ or $]\!] = \lambda x.\lambda y.\lambda z.z \in \{x, y\}$

b. $[\![$ RESTR $]\!] = \lambda P.\lambda x.P(x).x$

Lexical entries for other terminal nodes are as expected in a Heim & Kratzer (1998) framework, so for any g, h, the definite NPs in the disjunction are assigned the denotations in (114) (ignoring their presuppositions to keep the derivation manageable) and the IP has the denotation in (115).

(114)   a. $[\![$ the shoes $]\!] =$ the unique contextually salient shoes (SHOES)

b. $[\![$ the book $]\!] =$ the unique contextually salient book (BOOK)

(115) $[\![\ [_{IP}\ 1\ [\text{ Kemi bought}_{w2}\ t_1\ ]]\ ]\!]^{g,h} = \lambda x.$ Kemi bought x in $g(w_2)$

Derivation of Alternative Question Interpretation

(116)   **Denotation of DisjP**

$[\![\ [_{DisjP}\ F_i\ [\text{ RESTR }[\ [_{NP}\ \text{The Shoes}]\ [\text{ or }[_{NP}\ \text{the book}]]]]]\ ]\!]^{g,h}$

$= ([\![\text{ RESTR }]\!]^{g,h}\ ([\![\text{ or }]\!]^{g,h}\ ([\![\text{ the book }]\!]^{g,h})([\![\text{ the shoes }]\!]^{g,h})))([\![\ F_i\ ]\!]^{g,h})$

$= (\lambda P_{\langle e,t\rangle}.\lambda x_{\langle e\rangle} : P(x).x(\lambda x.\lambda y.\lambda z.z \in \{x, y\}([\![\text{the book}]\!]^{g,h})([\![\text{the shoes}]\!]^{g,h})))([\![F_i]\!]^{g,h})$

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$= (\lambda P_{\langle e,t \rangle}.\lambda x_{\langle e \rangle} : P(x).x \ (\lambda x.\lambda y.\lambda z.z \in \{x, y\} \ (\text{BOOK}) \ (\text{SHOES})))(\ [\![\ F_i \ ]\!]^{g,h})$

$= (\lambda P_{\langle e,t \rangle}.\lambda x_{\langle e \rangle} : P(x).x \ (\lambda x.\lambda y.\lambda z.z \in \{x, y\} \ (\text{BOOK}) \ (\text{SHOES})))(h(F_i))$

$= (\lambda P_{\langle e,t \rangle}.\lambda x_{\langle e \rangle} : P(x).x \ (\lambda z.z \in \{\text{BOOK}, \text{SHOES}\}))(\ h(F_i))$

$= \lambda x_{\langle e \rangle} : x \in \{\text{SHOES}, \text{BOOK}\}.x \ (h(F_i))$

$= \mathbf{h(F_i) \ if \ h(F_i) \ is \ in \ \{SHOES, BOOK\}, \ undefined \ otherwise}$

(117) **Denotation of Foc'**

$[\![\ [\lambda w_2 \ [[_{DisjP} \text{ the shoes or the book}] \ [_{IP} \ 1 \text{ Kemi buy}_{w2} \ t_1]]] \ ]\!]^{g,h}$

$= \lambda w.[\![\ [\ [_{DisjP} \text{ the shoes or the book}] \ [_{IP} \ 1 \text{ Kemi buy}_{w2} \ t_1]] \ ]\!]^{g[w/2],h}$

$= \lambda w.([\![[_{IP} \ 1 \text{ Kemi buy } t_1]\!]^{g[w/2],h} \ ([\![[_{DisjP} \text{ the book or the shoes}] \ ]\!]^{g[w/2],h}))$

$= \lambda w.((\lambda x. \text{ Kemi bought x in g}[w/2](w_2))([\![[_{DisjP} \ ... \ ] \ ]\!]^{g[w/2],h})$

$= \lambda w.((\lambda x. \text{ Kemi bought x in g}[w/2](w_2))(h(F_i)))$

     if $h(F_i)$ is in $\{\text{BOOK}, \text{SHOES}\}$ undefined otherwise

$= \mathbf{\lambda w.Kemi \ bought \ h(F_i) \ in \ w}$

     if $h(F_i)$ is in $\{$BOOK, SHOES$\}$, undefined otherwise

(118) **Denotation of FocP**

$[\![[_{FocP}\text{Max}_i \ [_{Foc'} \lambda w_2[\text{ the shoes or the book}][\ 1 \text{ Kemi buy}_w 2 \ t_1]]]] \ ]\!]^{g,h}$

$= \lambda w : \exists p.[p \in \{[\![\text{Foc'}]\!]^{g,h[x/i]}|x \in D_e\}\&p(w)\&$
$\forall q.[q \in \{[\![\text{Foc'}]\!]^{g,h[x/i]}|x \in D_e\}\&q(w) \rightarrow p \subseteq q]]. \ [\![\text{Foc'}]\!]^{g,h}(w)$

$= \lambda w : \exists p.[p \in \{\lambda w'. \ \text{buy}(\text{Kemi}, h[x/i](F_i), w') \ |x \in \{\text{S, B}\}\}\&p(w)\&$
$\forall q.[q \in \{\lambda w'.\text{buy } (\text{K}, h[x/i](F_i), w')|x \in \{\text{S, B}\}\}\&q(w) \rightarrow p \subseteq q]].$
$\text{buy } (\text{Kemi}, h(F_i), w)$

$= \mathbf{\lambda w : \exists p.[p \in \{\lambda w'. \ buy(K, x, w') \ |x \in \{S, B\}\}\&p(w)\&}$
$\mathbf{\forall q.[q \in \{\lambda w'.buy \ (K, x, w')|x \in \{S, B\}\}\&q(w) \rightarrow p \subseteq q]].}$
$\mathbf{buy(Kemi, h(F_i), w)}$

(119) **Denotation of CP**

$[[_{CP}Q_i \ [_{FocP} \ \text{Max}_i \ [\lambda w_2[\ \text{the shoes or the book}][\ 1 \ \text{Kemi buy}_w2 \ t_1]]]]] \ ]^g$

$= \lambda w' : \exists p'[p' \in \{[\![\text{FP}]\!]^{g,h[x'/i]}|x' \in D_e\} \& p(w') \vee \neg p(w').\{[\![\text{FP}]\!]^{g,h[x'/i]}|x' \in D_e\}$

$= \lambda w' : \exists p'[p' \in \{\lambda w. \exists p.[p \in \{\lambda w''. \ \text{buy(Kemi, x, w'')} \ |x \in \{\text{S, B}\}\} \& p(w) \&$

$\quad \forall q.[q \in \{\lambda w''.\text{buy (Kemi, x, w'')}|x \in \{\text{S, B}\}\} \& q(w') \to p \subseteq q]].$

$\quad \{\lambda w : \exists p.[p \in \{\lambda w''. \ \text{buy(Kemi, x, w'')} \ |x \in \{\text{S, B}\}\} \& p(w) \&$

$\quad \forall q.[q \in \{\lambda w''.\text{buy (K, x, w'')}|x \in \{\text{S, B}\}\} \& q(w') \to p \subseteq q]].$

$\quad \text{buy (Kemi, h[x'/i](F}_i), \ \text{w})| \ \text{x'} \in D_e\}$

$= \boldsymbol{\lambda w : \exists p[p \in \{\lambda w''.buy(Kemi, x, w'')|x \in \{\text{S, B}\}\} \& p(w) \&}$

$\quad \boldsymbol{\forall q[q \in \{\lambda w''.buy(Kemi, x, w'')|x \in \{\text{S, B}\}\} \& q(w) \to p \subseteq q]].}$

$\quad \boldsymbol{\{\lambda w'.buy(Kemi, x', w')|x' \in \{\text{S, B}\}\}}$

The derivation of the alternative question produces a question intension with the following definedness conditions for a world w: 1) There exists a proposition in the question set which is true in w and which entails all other true propositions in the question set. This presupposition, which derived compositionally from the presuppositional contribution of the maximailty operator and its interaction with the presupposition introduced by our meaning rule for Q is responsible for the uniqueness and exhaustivity felicity conditions for alternative questions in Yoruba pointed out earlier in the chapter. In contexts where those felicity conditions are satisfied, the alternatives in the question set are the familiar ones corresponding to the two disjuncts.

B. Polar Questions

LF and Leixcal Entries

The disjunctive polar question has an LF as in (120). Since the DisjP does not contain a distinguished variable, focus fronting is not licensed by (110).

(120)
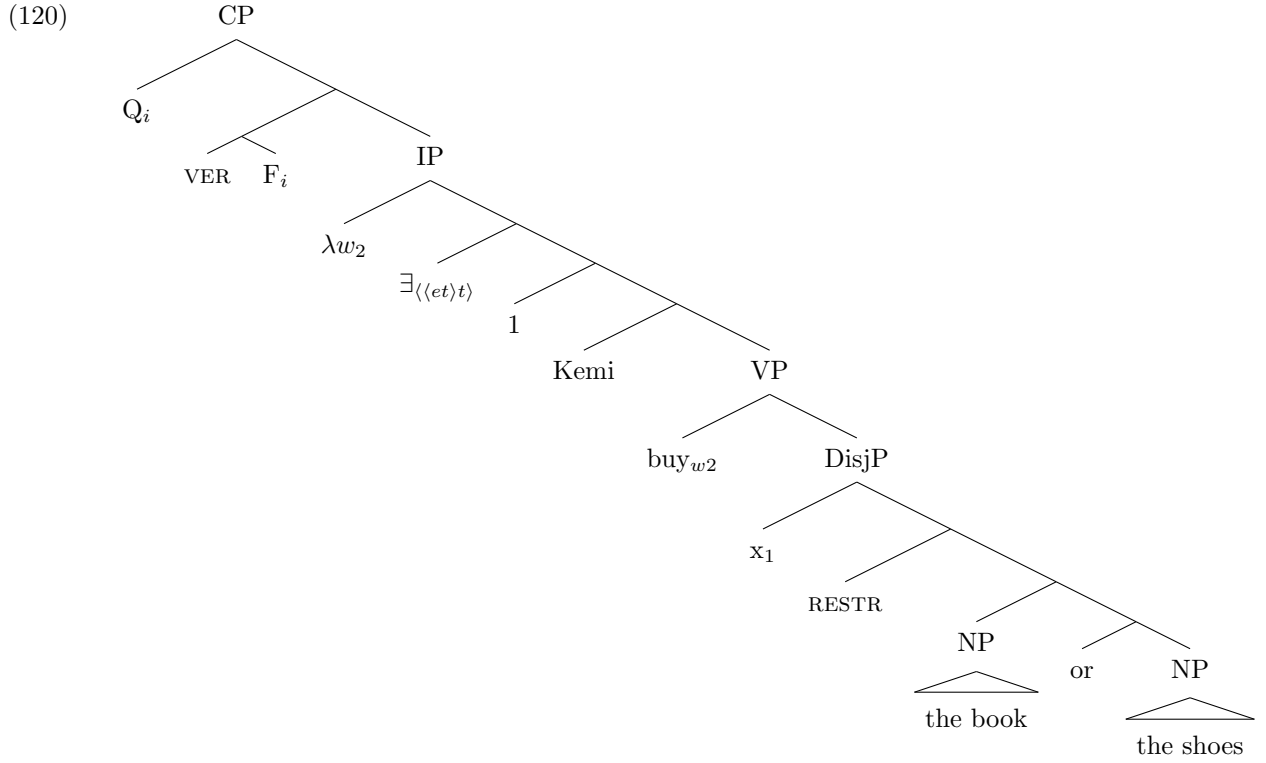
Lexical Entries and Meaning Rules for Disjunction and Q are the same as above. Polar disjunctive questions have a silent verum operator whose lexical entry is decomposed into a distinguished variable of type $\langle st, st \rangle$ and a presuppositional part, as shown in (121). A covert existential closure operator, in (122), is responsible for binding the variable introduced by disjunction.

(121) $[\![\text{VER } F_i]\!]^{g,h} = (\lambda P_{\langle st,st \rangle} : P \in \{\lambda p.p, \lambda p.W - p\}.P)(h(F_{i,\langle st,st \rangle}))$

(122) $[\![\exists]\!] = \lambda p_{\langle et \rangle}.\exists x[x \in p]$

Derivation of Polar Question Interpretation

(123)   **Denotation of DisjP**

$[\![[_{DisjP} \text{ x}_i [\text{RESTR} [[_{NP} \text{ The shoes}] [\text{ or } [_{NP} \text{ the book}]]]]]]\!]^{g,h}$

$= (\llbracket \text{ RESTR } \rrbracket^{g,h} \, (\llbracket \text{ or } \rrbracket^{g,h} \, (\llbracket \text{ the book } \rrbracket^{g,h})(\llbracket \text{ the shoes } \rrbracket^{g,h})))(\llbracket \text{ x}_1 \rrbracket^{g,h}$

$= (\lambda P_{\langle e,t \rangle}.\lambda x_{\langle e \rangle} : P(x).x(\; \lambda x.\lambda y.\lambda z.z \in \{x,y\} \; (\text{ BOOK}) (\text{SHOES})))(\; g(x_1))$

$= (\lambda P_{\langle e,t \rangle}.\lambda x_{\langle e \rangle} : P(x).x(\; \lambda z.z \in \{ \text{ BOOK, SHOES } \} \;))(\; g(x_1))$

$= \lambda x_{\langle e \rangle} : x \in \{\text{SHOES, BOOK}\}.x \; (g(x_1))$

$= g(x_1)$ if $g(x_1)$ is in \{shoes, book\}, undefined otherwise

(124) **Denotation of the Scope of $\exists$**

$\llbracket [\text{ 1 Kemi buy}_{w2} \; [_{DisjP} \; ...]] \; \rrbracket^{g[w/2],h}$

$= \lambda x.\llbracket \; [\text{Kemi buy}_{w2} \; [_{DijsP} \; ... \;]] \; \rrbracket^{g[x/1],h}$

$= \lambda x.(\llbracket \text{buy } \rrbracket^{g[x/1],h}(\llbracket \text{w}_2 \rrbracket^{g[x/1],h})(\llbracket \text{Kemi } \rrbracket^{g[x/1],h})(\llbracket \text{DisjP} \rrbracket^{g[x/1],h}))$

$= \lambda x.((\lambda w.\lambda y.\lambda z. \; z \text{ bought y in w})(g[x/1](w_2))(\llbracket \text{DisjP} \rrbracket^{g[x/1],h})(\text{Kemi})$

$= \lambda x.\text{Kemi bought } \llbracket \text{DisjP} \rrbracket^{g[x/1],h} \text{ in } g[x/1](w_2)$

$= \lambda x.\text{Kemi bought } g_{[x/1]}(x_1) \text{ in } g_{[x/1]}(w_2) \text{ if } g_{[x/1]}(x_1) \in \{\text{BOOK, SHOES}\},$ undefined otherwise

$= \lambda x : x \in \{\text{shoes, book}\}. \text{ Kemi bought x in } g(w_2)$

(125) **Denotation of IP**

$\llbracket \; [_{IP} \; \lambda w_2 \; [\; \exists \; 1 \; [\text{Kemi bought } [_{DisjP} \text{ the book or the shoes }]]] \; \rrbracket^{g,h}$

$= \lambda w.\llbracket \; [\; \exists \; 1 \; [\text{Kemi buy}_{w2} \; [_{DisjP} \text{ the book or the shoes }]]] \; \rrbracket^{g[w/2],h}$

$= \lambda w.(\llbracket \exists \rrbracket^{g[w/2],h}(\llbracket \; 1 \; \text{Kemi buy}_{w2} \; [_{DisjP} \; ...]] \; \rrbracket^{g[w/2],h}))$

$= \lambda w.(\lambda P.\exists x[P(x)](\llbracket \; [1 \; \text{Kemi buy}_{w2} \; [_{DijsP} \; ...]] \; \rrbracket^{g[w/2],h}))$

$= \lambda w.(\lambda P.\exists x[P(x)](\lambda y : y \in \{\text{S, B}\}.\text{Kemi bought y in } g_{[w/2]}(w_2) \;))$

$= \lambda w.(\lambda P.\exists x[P(x)](\lambda y : y \in \{\text{SHOES, BOOK}\}.\text{Kemi bought y in w})$

$= \lambda w.\exists x[x \in \{\text{shoes, book}\} \; \& \; \text{Kemi bought x in w}]$

(126)   **Denotation of CP**

$\llbracket [_{CP} \text{ Q}_i \text{ VER}_i [_{IP} \text{ Kemi buy the shoes or the book }]] \rrbracket^g$

$= \lambda w : \exists p[p \in \{\llbracket [\text{VER}_i [_{IP} \text{ ... }]] \rrbracket^{g,h[X/i]} | X \in D_{\langle st,st \rangle}\} \& p(w) \vee \neg p(w)].$
$\{\llbracket [\text{ VER}_i [_{IP} \text{ Kemi buy the shoes or the book}]] \rrbracket^{g,h[X/i]} | X \in D_{\langle st,st \rangle}\}$

$= \lambda w : \exists p[p \in \{\llbracket \text{VER}_i \rrbracket^{g,h[X/i]}(\lambda w.\exists y[y \in \{\text{SHOES, BOOK}\}$
$\& \text{ buy(Kemi, y, w)}])|X \in D_{\langle st,st \rangle}\} \& p(w) \vee \neg p(w)].$
$\{\llbracket \text{VER}_i \rrbracket^{g,h[X/i]}(\lambda w.\exists y[y \& y \in \{\text{S., B.}\} \& buy(Kemi, y, w)])|X \in D_{\langle st,st \rangle}\}$

$= \lambda w : \exists p[p \in \{(\lambda P_{\langle st,st \rangle} : P \in \{\lambda p.p, \lambda p.W - p\}.P)(h[X/i](F_i))(\lambda w.\exists y[y \in$
$\{\text{SHOES, BOOK}\} \& \text{ buy(Kemi, y, w)}])|X \in D_{\langle st,st \rangle}\} \& p(w) \vee \neg p(w)].$
$\{(\lambda P_{\langle st,st \rangle} : P \in \{\lambda p.p, \lambda p.W - p\}.P)(h[X/i](F_i))(\lambda w.\exists y[y \in$
$\{\text{SHOES, BOOK}\} \& \text{ buy(Kemi, y, w)}])|X \in D_{\langle st,st \rangle}\}$

$= \lambda w : \exists p[p \in \{X(\lambda w.\exists y[y \in \{\text{SHOES, BOOK}\}$
$\& \text{buy(Kemi, y, w)}])|X \in \{\lambda p.p, \lambda p.W - p\}\} \& p(w) \vee \neg p(w)].$
$\{X(\lambda w.\exists y[y \in \{\text{S., B.}\} \& \text{ buy(Kemi, y, w)}])|X \in \{\lambda p.p, \lambda p.W - p\}\}$

$\mathbf{= \lambda w' : \exists p[p \in \{\lambda w.\exists y[y \in \{shoes, book\} \ \& \ buy(Kemi, y, w)])}$
$\mathbf{\lambda w.\neg \exists y[y \in \{s., b.\} \ \& \ buy(K., y, w)]) \ \} \ \& p(w') \vee \neg p(w')].}$
$\mathbf{\{\lambda w.\exists y[y \in \{shoes, book \} \ \& \ buy(Kemi, y, w)]),}$
$\mathbf{\lambda w.\neg \exists y[y \in \{shoes, book \} \ \& \ buy(Kemi, y, w)]) \ \}}$

The resulting question intension again contains a presupposition that there is a proposition in the question set that is true in w, but in this case, the presupposition is satisfied in all worlds, since the alternatives in the question set are the propositional argument of VER and its complement. This derivation derives a polar question interpretation without presuppositions with the familiar set of alternatives for polar questions.

2.7.1 Summary and Conclusion

To summarize, this section spelled out how together the different ingredients discussed throughout the chapter derive an alternative question interpretation that carries the contextual felicity conditions on alternative questions in Yoruba observed at the beginning of the chapter, and how some of the same ingredients, with the exception of the maximality operator from *ni*-fronting, combine in polar questions to generate a yes-no question set.

In alternative questions, because MAX and the Q-operator use the same distinguished variable to generate the alternative propositions for maximality presupposition and the question set respectively, the result is the same as if a more conventional Maximal Informativity operator had been applied to the question set (e.g. by a covert higher operator) or by pragmatic constraints on the question (Biezma and Rawlins 2012) qnd, at least for alternative questions, a similar result could also be obtained by applying a more conventional Chierchia, Fox, and Spector 2012 style EXH operator to the proposition within the scope of the Q-operator. However, a major advantage of the current proposal is that is allows for a unified account of the grammatical elements involved, not only across alternative and polar questions, but looking beyond them to *ni*-fronting constructions more broadly across Yoruba from *wh*-questions to focus association. When it comes to the central question of the thesis, how other alternative- introducing and evaluating elements like disjunction an exhaustivizing operators like *max* fit into the compositional system of alternative-evaluation for focus and questions, the analysis from the interpretation of alternative and polar questions in Yoruba provides evidence for a view under which all of these diverse elements share a core compositional system and, specifically, one that allows the alternatives introduced by disjunction be be evaluated by a focus sensitive maximality operator, before being passed on to the Q-operator.

3

Alternatives and the Samoan Free Choice Item *so'o se*

3.1 Chapter Overview

The majority of recent approaches to free choice items employ sets of alternatives to derive free choice effects compositionally (Kratzer and Shimoyama 2002, Chierchia 2013, Menéndez-Benito 2010, a.m.o), yet relatively little work has been done investigating the extent to which the alternative sets used by free choice items overlap with the kind of alternatives used in questions and with focus. Do these different types of alternative employ the same compositional machinery, discussed in the previous sections in the context of focus and questions, or not? How do the two interact with each other? This chapter is devoted to a case study of a Samoan free choice item. The goals of the chapter are twofold: First, it will provide an analysis of the way the interpretation Samoan free choice item *so'o se NP* is derived compositionally and explain its restricted distribution. Second, it uses the example of Samoan free choice item *so'o se NP* to investigate the way that free choice items interact with alternatives.

Some of the data points towards an analysis employing alternatives of the same type as the ones at work in the analysis of focus and questions: A similar morphological process appears to mark the presence of alternatives in FCIs, questions and

focus and the quantificational scope of FCIs is not bounded by islands for covert movement like true univeral quantifiers are. However, data from intervention effects provides a challenge to this view: The Samoan free choice item *so'o se NP* neither causes intervention effects, nor is it subject to intervention by alternative evaluating operators, that are known to cause intervention effects elsewhere in the language. In light of this conflicting data, I propose an account under which *so'o se NP* introduces alternatives, similar to Menéndez-Benito 2010's account of the Spanisch FCI *cualquiera*. In order to explain the lack of intervention effects, I suggest that FCIs can undergo covert movement, when necessary to a position outside the scope of an intervener.

The chapter is structured as follows: Section 3.2 provides an introduction to free choice items, their crosslinguistic variation and similarities (section 3.2.2) and the different assumptions about alternatives inherent in different accounts of free choice items (section 3.2.3). In this section three main approaches to the semantics of free choice items are introduced which may correspond to different types of FCIs crosslinguistically. The approaches considered are a domain widening approach, in the style of Kratzer and Shimoyama 2002 in the spirit of earlier work by Kadmon and Landman 1993; A modal quantification approach including early work by Dayal 1996, as well as alternative semantic versions, where modality and alternative semantics are combined to derive a free choice interpretation (Aloni 2003). Finally, we look at accounts where the quantificational force of free choice items is independent of the modal operator though modality still has an effect in these approaches, (e.g Saeboe 2001, or an alternative semantic version in Menéndez-Benito 2010). Section 3 turns to Samoan. After a some preliminaries about the Samoan language and the provenance of the data, in 3.3.1, it provides an overview of the determiner system in Samoan, which will be relevant for understanding the free choice item *so'o se*, (section 3.3.2) and presents some background information on the grammar of alternatives in focus and question looks in Samoan (section 3.3.3). Section 4 introduces the free choice determiner *so'o se* and discusses data concerning its interpretation (3.4.2), its distribution (3.4.3) and the way it behaves with respect to the tests for alternatives from chapter 1 (3.4.4). Section 5 proposes an

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analysis (3.5.1) and discusses how this analysis can capture the data from section 4 (3.5.2).

3.2 Free Choice Items and Alternative Semantics

3.2.1 Free Choice Items Background

Free choice items are a class of lexical items that give rise to a particular kind of inference, roughly, one that says "every element of some particular set is a valid option". Classic examples are the determiner *any* in English, when used in non-downward entailing contexts, or the German determiner *irgendein*, within the scope of certain modals.

(1)   a.   *Pick any card!*
             ⤳ You have to pick a card, all cards are permitted options.
        b.   *Du muss irgendein Artzt heiraten.*
             ⤳ You must marry a doctor, all doctors are permissible options.

A wide variety of free choice items have been identified across different languages and, while they have some similarities, they also differ significantly from one another in imporant ways. Most of these items only give rise to free choice inferences under particular conditions and are ungrammatical or have other kinds of meanings elsewhere. But the details of when exactly free choice inferences arise and what the particular licensing conditions differ across FCIs in different languages. Some FCIs, like *any*, are simultaneously FCIs and NPIs and give rise to free choice inferences in non-downward entailing contexts when a modal licenser is present. Other FCIs, like the Spanish *cuqalquier*, do not have NPI counterparts

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and require a modal licenser whenever they are used. Others, like the modal indefinite *irgendein* cause free choice inferences only when embedded under certain types of modals and cause other types of inferences (e.g. about the ingnorance or indifference of a speaker) elsewhere. Given the variety of FCIs crosslinguistically, a completely unified account of FCIs across languages is unlikely and, in general, the accounts of FCIs on the market are usually tailored to explain data from a particular FCI in one language. One aspect that many recent analyses share is that the employ the manipulation of sets of alternatives to derive the free choice inference (Chierchia 2013, Kratzer and Shimoyama 2002, Menéndez-Benito 2010, Aloni 2003), although they differ with respect to their assumptions about these alternatives, how they come about and how they are manipulated. This will be the question I focus on for the free choice item *so'o se* in Samoan. What evidence is there for an account using alternatives, and what should it look like? Before moving on to Samoan, it will be useful to look at approaches to FCIs that have been proposed in previous formal semantic literature. I will consider three main ones:

Domain Widening. The domain widening approach to FCIs was first proposed in Kadmon and Landman 1993's account of the FCI/NPI *any* in English and subsequenly developed into more refined compositional proposals, e.g in Kratzer and Shimoyama 2002 and Chierchia 2013. Kadmon and Landmand argue that *any* contributues a widening of the domain of the NP it combines with, to include marginal cases which may otherwise have been omitted via contextual restriction. Under Kadmon & Landman's account, domain widening is the core contribution of *any*, and it can either operate on a generic universal to derive the free choice interpretation or to an indefinite in NPI-licensing contexts. It comes with the additional requirement that the use of *any* produce an utterance that is stronger than the non-*any* alternative which might have been used in its place in order to explain *any*'s felicity conditions. The core intuition behind the domain widening account has been developed in more detail in later work, making crucial use of alternatives (in this case other possible domains a quantifier could have, i.e. "domain alternatives") in order to derive the free choice interpretation composi-

tionally. This is what Kratzer and Shimoyama 2002 do to derive the interpretation of German *irgendein* and is also the strategy purused in Chierchia 2013, although their accounts differ somewhat in the details.

Kratzer and Shimoyama 2002's account allow the German FCI *irgendein* to introduce alternatives, for example the alternatives introduced by the indefinite *irgendein Mann* would be the set of all men. Like Kadmon and Landman, Krazter and Shimoyama say that a core feature of irgendein is that it induces domain widening, so that *irgendein Mann* includes the set of men from all possible contextually given domains, i.e. all possible men. Then, modals distribute over the propositional alternatives created from the individual alternatives introduce by irgendein. This makes them alternative evaluating operators. However, the modals themselves do not automatically derive the free choice inferences. The meaning rules for Kratzer and Shimoyama's necessity and possibility modals are given in (2).

(2)   a.   For $[\![\alpha]\!]^{w,g} \subseteq D_{\langle st \rangle}$: $[\![\text{kann } \alpha]\!]^{w,g} =$
             $\{\lambda w.\exists w''[w''$ is accessible from w' $\&\exists p[p \in [\![\alpha]\!]^{w',g}\&p(w'') = 1]]\}$
        (i)   For $[\![\alpha]\!]^{w,g} \subseteq D_{\langle st \rangle}$: $[\![\text{muss } \alpha]\!]^{w,g} =$
             $\{\lambda w.\forall w''[w''$ is accessible from w' $\to \exists p[p \in [\![\alpha]\!]^{w',g}\&p(w'') = 1]]\}$

The modals simply assert that there is some alternative which is true in some/all worlds. The inference that this is the case for all propositional alternatives is derived as a conversational implicature via gricean reasoning. They suggest that using the weaker *irgendein* as opposed to its stronger domain alternatives is licensed in upward entailing contexts in order to prevent exhaustivity inferences that would have arisen with the use of stronger domain alternatives. Via gricean reasoning, the hearer reasons that, if the speaker wanted to prevent exhaustivity inferences from excluding any of the stronger domain alternatives, she must think they are all viable possibilities. This is then strengthened to the inference that all subdomain alternatives are possibly true, in other words - there is free choice

between all subdomain alternatives (even the singleton set). This is the free choice inference. In Kratzer's proposal, this last bit happens outside of the semantic composition via Gricean reasoning. The domain alternatives are not alternatives in a compositional sense.

Chierchia 2013 proposes an account of Free Choice Items as part of a typology of Polarity Sensitive and Free Choice Items which aims to provide a unified account for FCI/NPIs such as English *any*. Under this proposal, FCIs are underlyinging indefinites and the universal force of univeral FCIs comes about via a complex system of exhaustification over alternatives. The indefinite (or disjunction) activates two types of alternatives in Chierchia's system: exhaustified domain alternatives as well as scalar alternatives. As an example for the sentence in (3), the scalar and domain alternatives are as follows:

(3)   *You may choose a or b.*
        Assertion: $\Diamond$ a $\vee$ b
        Exhaustified Domain Alternatives: EXH $\Diamond$ a, EXH $\Diamond$ b
        Scalar Alternatives $\Diamond$ a$\wedge$ b
        Result of double exhaustification: $\Diamond a \wedge \Diamond b \wedge \neg \Diamond(a \wedge b)$
        (Chierchia 2013, p. 311)

This yields an existential free choice interpretation. In order to derive universal free choice, he proposes two requirements which will conspire to derive the universal reading. First, the wide scope constraint, requires that the FCI take wide scope relative to its licensing modal, second a requirement which he calls Modal Containment, requires that the modal base for the free choice implicature (FC) be a subset of the modal base for the free choice implicature (SC). Chierchia shows that these two contraints together weaken the scalar modal base, yielding the following meaning for a universal FCI (from Chierchia 2013).

(4)   a. *Any student could speak up*

b. LF: $O_{exh-da} \, O_{\sigma A}$ [any student$_{+\sigma,+d}$] could$_i$ [t$_i$ speak up]]]

c. Truth conditions: $O_{exh-da} \, O_{\sigma A}(\$exists\, x \in D[student(x) \wedge \Diamond speakup(x)])$

d. $\forall x \in D[student(x) \rightarrow \Diamond_{FC} speakup(x)]) \wedge \neg\forall x \in D[student(x) \rightarrow \Diamond_{SC} speakup(x)])$

"For every student a there is a world in which a speaks up, even though there are also worlds in which not every student speaks up." (Chierchia 2013, p. 316)

Universal quantification over invidiuals/possible individuals. Other approachs to FCIs derive free choice inferences and distribution via universal quantification, though they differ in their details. An influential proposal to explain the licensing and modal flavour of English *any* is Dayal 1998. She takes *any* to quantify universally over possible individuals of a certain category (to be more precise, individal/situation pairs, that correspond to situations containing individuals of the relevant kind), as in (5). This proposal aims to provide an explanation for intuitions that *any* introduces a modal dimension into the quantification. It captures the intuition that the claim made by (5) is not just about all the flowers that happen to be present in a particular situations, but about all situations containing contextually relevant flowers. Dayal does not discuss in detail how this interpretation arises compositionally from the LF of (5), and indeed figuring it out is somewhat tricky. Presumably some kind of scoping mechanism is necessary in order to get the correct interpretation for sentences like in (5). which her account attributes the truth conditions in (5-b) and where the FCI is located in a position below the modal in the surface syntax. Unlike with scoping of a simple universal quantifier over individuals, we need to make sure that we get the proper co-indexing for the situations. As Kratzer and Shimoyama 2002 point out, this is not trivial.

(5) a. *You may pick any flower.*

b. $\forall(s,x)[flower(s,x) \rightarrow \exists s'[s' Acc_@ \& s < s' \& pick(you,x,s')]$

Another variant of the universal quantification analysis is Saeboe 2001's account of FCIs in Scandinavian. Under this account, FCIs contribute two things: simple universal quantification over individuals and a covert propositional operator that returns the intension of its sister. Saebo claims that this operator explains the requirement of FCIs to occur with a modal element, since the intension will cause a type mismatch without one. Regarding the semantic composition, Saeboe 2001 assumes covert movement of the universal quantifier to a position outside the scope of the modal associated with it, in order to derive the wide-scope-universal flavour of the FCI, although crucially the NP restricting the FCI remains embedded.

(6) a. *You may sing any song.*
     b. $[\ \forall\ y_i\ [\text{May}_{w'}\ [\ \phi\ [\text{you sing}_w\ t_i\ \text{song}_w\ ]]]]$

Quantification over (propositional) alternatives. A third approach to FCIs employs a Hamblin style alternative semantics to derive free choice inferences. This kind of account is pursued in Menéndez-Benito 2010 for Spanish *Cualquier* and in Aloni 2007 for English *any*. In each of these accounts, the FCI introduces alternatives into the semantic composition, which are manipulated by some alternative evaluating operator(s) in order to give rise to free choice inferences.

Aloni 2007 suggests that FCI *any* is an existential quantifier and that existential quantifeirs and disjunction introduce alternatives into the semantic composition. Without going into the details, the alternatives introduced by an existential will end up being the set of alternative propositions verifying the existential statement. She further assumes that modals are alternative evaluating operators, specifically she claims "MAY and MUST operate over the sets of propositional alternatives introduced in their scope. Intuitively, (i) MAY ϕ is true in w iff every alternative induced by ϕ is compatible with the set of accessible worlds $\lambda v.wRv$; (ii) MUST ϕ is true in w iff at least one alternative induced by ϕ is entailed by $\lambda v.wRv$." (Aloni 2007, p. 76). Aloni's definitions for possibility and necessity modals are

paraphased in (7) below.

(7)   Aloni's definitions for modals MAY and MUST (paraphrased)
For any model M, world w, and assignment function g:
MAY ϕ iff $\forall \alpha \in ALT(\phi)_{M,g} : \exists v \in W : wRv \& v \in \alpha$
MUST ϕ iff $\exists \alpha \in ALT(\phi)_{M,g} : \forall v \in W : wRv \to v \in alpha$

The universal quantification over alternatives by the necessity modal is what gives the apparent universal force to the underlyingly existential *any*. Similar to Kadmon and Landman 1993, Aloni claims that *any* carries felicity conditions requiring strenghtening and, in this way, can explain its restricted distribution.

Menendez-Benito's account relies on two alternative evaluating operators to derive free choice inferences. First, an exhaustivity operator is present within the scope of *cualquier*'s modal licenser, then another alternative evaluating operator universally quantifies over alternatives. In the example below, from Menéndez-Benito 2010 she assumes an LF as in (8-b). This derives the assertion in (8-c), which says that for all the cards in the deck, choosing only that card is a permissible options. The paper presents arguements why the extra exhaustivity operator, and consequently the alternative-semantic set up is necessary based on the difference in interpretation to regular universal quantification and based on the fact that it can, to some extent, explain the attested distribution of cualquier - in particular it's occurence with possibility but not necessity modals and its badness in episodic sentences.

(8)   a.   *Puedes coger cualquier carta de esta baraja.*
           you can take   any   card   of   this   deck
        b.   [$\forall$ [$\Diamond$ [*Excl* you take [$_{NP}$ cualquier card]]]]
        c. $\forall x[card - in - this - deck(x) \to \Diamond$[you take only x]]

Compositionally, this account uses Hamblin alternatives introduced in the ordinary semantics. A covert operator, *Excl* is responsible for adding an exclusivity requirement on each alternative. (So, in the example above, after combining with *Excl* the set of alternatives is { "that you take only card A", "that you take only card B", ... }) The possibility modal combines pointwise with these alternatives and finally a universal quantifier over them to yield the free choice interpretation. Regarding alternatives, the compositional set-up of Menendez-Benito also requires a system for doing alternative semantics where alternatives can be passed on across an alternative evaluating item.

The approaches to FCIs summarized in this section make different assumptions regarding the nature of alternatives, their evaluating operators and the way the two interact to create alternative stets. In the next subsection, I will take a more detailed look at the predictions the various accounts make when it comes to the tests for alternatives discussed in chapter 1.

3.2.2 Free Choice and Alternatives

The majority of more recent accounts of free choice items use alternatives (Aloni 2007, Chierchia 2013, Menéndez-Benito 2010, Kratzer and Shimoyama 2002) but, as the previous section showed, assumptions about the nature of these alternatives differ substantially from one account to another. Another question left open by many accounts is the relationship of these alternatives to the alternatives from focus and questions: Is the same semantic system that we have looked at in detail in the first two chapters responsible for manipulating alternatives at work in FCIs? In the rest of this chapter, this is precisely the question I will address for the Samoan FCI *so'o se*. Before looking at the data from Samoan, though, it will be useful to think about what kind of empirical predictions the options outlined above for deriving free choice make when it comes to the tests from chapter 1 for investigating alternative semantics. Recall from Chapter 1, we discussed four tests: 1) Sensitivity to locality restrictions, like syntactic islands; 2) Possibility

for multiple association; 3) Sensitivity to intervention effects and 4) causation of intervention effects.

Starting with 1) Sensitivity to locality restrictions: If the free choice interpretation is derived via the presence of a high-scoping universal quantifiers over ordinary variables over individuals or individual-situation pairs, (as in Saeboe 2001 and Dayal 1998 respectively), and the FCI originates in a synatctic position within the scope of a modal operator, it will need to undergo movement in order to receive the wide scope universal interpretation. Accordingly, is expected to be subject to the same locality restrictions on QR that other (universal) quantifiers are sensitive to. So a prediction of these kinds of accounts is that FCIs should be sensitive to Islands. On the other hand, if the free choice inference is a result of alternative-semantic composition to form propositional alternatives that get manipulated by some alternative evaluating operator (as in Menéndez-Benito 2010, Aloni 2003, or because of pramatic reasoning (as in Kratzer and Shimoyama 2002, Chierchia 2013), syntactic islands are not predicted to block the derivation of free choice interpretations.

The English FCI *any* and the German *irgendein* unlike a true universal quantifier, can escape from islands for movement like relative clauses and *if*-clauses. Consider the differences between the interpretation of (9) and (10), or (11) and (12). The wide scope universal readings of the two sentences with the universal quantifier *every* are blocked by a relative clause and an if-clause respectively, but this is not the case for the FCIs. The accounts based alternative semantic composition or pragmatic reasoning fare better here at explaining data from locality restrictions.

(9)   *You can read the book that any teacher recommended.*
       For all teachers x, there is an accesible world where you read the book recommended by x.

(10)   *You can read the book that every teacher recommended.*

For all teachers x, there is an accessible world where you read the book recommended by x.

(11) *Wenn du irgendeinen Arzt heiratest, wird deine Mutter glücklich sein.*
For all doctors x, if you marry x your mother will be happy.

(12) *Wenn du jeden Arzt heiratest, wird deine Mutter glücklich sein.*
For all doctors x, if you marry x your mother will be happy.

Before drawing conclusions about FCIs in general based on this pattern, it's important to keep in mind the potential for crosslinguistic variation in the data. For example, Saeboe 2001 notes that the data from Scandinavian FCIs may differ with respect to the scope FCIs can have in *if*-clauses.

The second test, multiple association, is not applicable in the case of FCIs. Recall from Chapter 1 that one argument used to argue for an alternative semantics for focus was the ability of a single focus sensitive operator to bind multiple foci at one time. Sentences with multiple FCIs are possible but their interpretation could be derived either from a single alternative evaluator working with propositional alternatives or via covert movement of two (silent) universal quantifiers. Unlike with the non-conservative universal *only*, a single universal quantifier over a pair of variables will derive the same interpretation as two universal quantifiers.

The final two empirical tests concerning intervention effects are perhaps the most interesting for understanding the kind of alternatives involved in the interpretation of FCIs. If FCIs involve alternatives of the same kind as the ones in focus and questions, we would expect intervention effects to show up. However, where we expect to find them will also depend on the nature of the alternative evaluating operators involved (selective vs. unselective) as well as their syntactic position and the syntactic position of the item introducing alternatives.

Generally speaking, if FCIs cause intervention effects, either in questions or

with focus association, this will provide evidence that they work with the same kind of alternatives and, furthermore, that the alternative operator involved in their interpretation is an unselective binder of distinguished variables. On the other hand, if FCIs don't cause intervention effects, this could be due to a number of reasons. The relevant alternative evaluating operator may be selective and able to pass on alternatives, like the Q-operator, or it might be that the compositional mechanisms involved are not the same as those from focus and questions. For example, 'pragmatic reasoning that is not directly part of the compositional semantics could be responsible for deriving the FCI meaning and would not be expected to cause intervention effects . It could also be that the position of the alternative evaluating operator at LF is simply not right to cause intervention effects.

Whether or not free choice items are sensitive to intervention effects will be a more conclusive test to determine whether alternatives of the same type as focus and questions are involved in the semantics of FCIs. To derive the interpretation of an FCI in an account like the one in Kratzer and Shimoyama 2002 or Aloni 2003, the alterantives generated by the FCI need to reach their licensing modal in order to derive an interpretation that distributes the different alternatives over possible worlds. If there is an alternative evaluating operator in between that does not allow alterntives to be passed on, such as the unselective $\sim$ operator from Chapter 1, we predict that these sentences should be ungrammatical.

There is little discussion in the previous work on free choice items or intervention effects bearing on these question. For the English FCI *any* the presence of a negative-polarity item counterpart complicates the picture, since intervention configurations will often create contexts which license NPIs and, and we would need to disentangle the NPI and FCI contributions in these cases before drawing conclusions about intervention.

Investigating intervention effects with FCIs in languages that don't have an NPI counterpart may be more straightforward, however I am not aware of any

free choice item without an NPI counterpart for which this has been done. Some preliminary data collected on the French FCI *n'importe qu'* suggests that it may be sensitive to intervention effects. For example, in (13), a reading where the universal from the FCI has a higher scope than negation is not possible and instead the reading obtained is one where the FCI scopes lower than the negation.[1]. Furthermore, in multiple questions, initial data ((14)) suggests that the presence of an FCI may block association of an in-situ *wh*-prhase with its evaluating operator.

(13) Kerry n' acceptera pas n'importe quel   accord avec l'   Iran.
      Kerry ne accept-fut not FCI   which deal   with def. Iran
      'Kerry won't accept just any deal with Iran.'

      PRESUPPOSITION: *There is a deal Kerry would accept.*

      ASSERTION: *All deals are not equivalent (in view of what Kerry would accept).*

(14) ??/*Où est-ce que n'importe quels élèves peuvent acheter quels livres?
      Where Q FCI which students can buy which books
      'Where can any (old) students buy which books?'

However, these are only initial data points and more thorough investigation is required to draw conclusions both for French and in general about the intervention behavior of FCIs. A cross-linguistic investigation of intervention in FCIs is beyond the scope of this project and I will instead turn the focus to the Samoan determiner *so'o se*.

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[1]Further data indicates this might not always be the case, and that while *n'importe qu-* is not licensed by negation DE operators, in some cases it can get an NPI reading as in the following example:

(i)   Il est incapable de fair du mal a n'importe qui.
      He is incapable of do det. harm to FCI who
      "He is incapable of hurting anyone.'

3.3 An Introduction to Samoan

Samoan is a language in the Polynesian branch of the Autronesian language family spoken primarily on the Islands of Samoa and American Samoa, with an estimated 169,000 speakers in Samoa and 407,420 worldwide (G. Simons and Fenning 2018). It is not listed in the World Atlast of Languages in Danger complied by Unesco (Moseley 2010), signifying that it has been classified a relatively 'safe' language from the perspective of language endangerment. It has institutional status in both Samoa and American Samoa.

Image Source: CIA World Factbook entry "Samoa"
https://www.cia.gov/library/publications/the-world-factbook/geos/ws.html

The grammar of Samoan is understudied compared to most European lanaugages. There are several published descriptive grammars of Samoan, including Pratt 1893 Pawley 1966 Mosel and Hovdhaugen 1992 and textbooks for foreign language learners including Mosel, So'o, et al. 1997 and Hunkin 2009. Additionally, various aspects of the semantics, syntax and phonology of Samoan have been investigated by linguists working within in the generative tradition (topics include clause structure and VSO word order (Pawley 1966, Collins 2017); ergativity (Yu

2011, Chung 1978); the grammar of comparison (Hohaus 2015), information structure and focus marking (Calhoun 2015, Hohaus and Howell 2015, among others).

Samoan is an ergative/absolutive language that has a predominantly VSO word order, although there are many constructions that deviate from the cannoncial VSO order (for example some personal pronouns occur pre-verbally, noun incorporation can cause an object to occur post-verbally, constituents can be fronted for information structural reasons, etc.). Clauses in Samoan are formed by an initial TAM marker, followed by a verb, then the ergative argument (if present) and the absolutive argument, as illustrated by the example below from Collins (2017).

(15) *sā   tuli   e   le   tamāloa lona atali'i*
      PAST chase ERG SPEC man   his   son
      'The man chased his son.'

Samoan has little inflectional morphology: Verbs are not marked for gender or person, nor are nouns marked for gender, but plural agreement is marked on some verbs via partial reduplication or irregular verb forms and certain nouns have a distinct plural form. A set of prepositions are used to mark case and different thematic roles, while TAM markers occuring before the verb indicate tense and aspect information.

According to G. Simons and Fenning 2018 there is "no significant dialectal variation but important register based distinction in phonology". The *tautala lelei*, commonly refered to as t-language, is used in formal settings, in written texts, news broadcasts and formal speeches, while the *tautala leaga*, or k-language is used in colloquial settings and has no written counterpart. The *tautala lelei*, or t-language, is the form found in the vast majority of work on the grammar of Samoan and was also the form used by the consultants I worked with during elicitation. Samoan has 5 vowels: a, e(ϵ), i, o and u. Vowel length is phonemic

and long vowels are indicated with a macron diachritic(¯)[2]. Phonemic consonants are f, g (ŋ), l, m, n, p, s, t, v, ' (ʔ). h, and r and k are found in some lowanwords. In the colloquial k-language t is pronounced as [k].

Unless otherwise indicated, the data in this chapter are from fieldwork work with native speakers of Samoan carried out in Apia, Samoa; Auckland and Wellington, New Zealand; and Honolulu, Hawaii. The consultants' age ranged from early 20s to beyond 70 for one informant. With one exception, speakers were born and grew up in Samoa or American Samoa and all used Samoan at home as a primary language. Elicitation was composed primarily of translation and acceptability judgement tasks, following guideline for semantic fieldwork discussed in Matthewson 2004, Chelliah and Reuse 2011. The elicitation methodology was the same as for Yoruba, as described in Chapter 2 Section 2.3.

3.3.1 The determiner system in Samoan

This section provides a brief introduction to the system of determienrs in Sāmoan. The free choice determiner *so'o se*, the focus of this chapter, is morphologically made up of the non-specific determiner *se*, the alternative marker *'o* and a third morpheme *so*. I will propose a decompositional analysis of *so'o se* based on these three components and so it will be useful to understand the semantics of the determiner *se* in isolation first. The grammar of Samoan differentiates between specific and nonspecific NPs: The former are marked with the determiner *le*, if singular, or unmarked (∅), if plural, while the latter are marked with the determiner *se* in the singular and *ni* in the plural, as summarized in table below.

This is the paradigm reported in grammars and textbooks, eg. Mosel and Hovdhaugen 1992, Marsack 1975, Hunkin 2009 however, in practise, *ni* was rarely

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[2]The macron is not used consistently in Samoan texts and by Samoan consultants to mark long vowels. Tualaulelei, Mayer, and Hunkin 2015 explains that this is due to inconsistent use of macrons in older texts and changes in language policy surrounding diachrictics over time. The most recent convention is to include diachritic markings on long vowels.

Table 3.1: Determiners in Samoan

	singular	plural
specific	le	Ø
non-specific	se	ni

used by consultants, while *se* and *le* were often used together with plural NPs. In the following sentence, for example, the plural form of children *tamaitiiti* is used with the singular determiner *se* and was judged completely accpetable by consultants.

(16) | *E* | *mafai* | *ona* | *avai* **se** | | **tamaitiiti** *mai so* |
|---|---|---|---|---|---|
| TAM(pres) | possible | COMP. | join DET(spec)DIR | FCI | ALT DET |

'o	*se*	*nu'u i*		*le*	*aufaipese.*
(spec)	village	in	DET(nonspec)	choir.

'Children from any village can sing in the choir.'

While some authors (eg. Hunkin 2009) label the Samoan determiners 'definite' and 'indefinite', they pattern differently from English definites and indefinites. The 'definite' *le/l'* can introduce a discourse referent, while the use of *se* is restricted to uses of narrow scope indefinites in English. Regarding the specific *le*, Mosel and Hovdhaugen 1992 note "The specific article singular *le/l* indicates that the noun phrase refers to one particular entity regardless of whether it is definite or indefinite, or to the whole class of what is denoted by the nucleus of the noun phrase." (M&H 259). They give the example from the beginning of a story in (17) to illustrate the difference:

(17)   *'O le ulugali'i fanau la tama 'o le teine 'o Sina*
        'O det.spec couple give.birth POSS 3.dual child O det.spec O Sina
        'There was a couple that had a child, a girl called Sina.'
        (M & H, 259)

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These intuitions are formalized somewhat in (Collins to appear) who argues that NPs with *le* should be analysed as wide-scope (specific) indefinites. Collins provides more data from elicitation with native speakers showing that *le* always receives wide scope with respect to other operators in the sentences, but differs from definites in that it can introduce discourse referents. The plural counterpart, an unmarked plural *NP*, also receives a wide-scope indefinite interpretation, though bare NPs can also occur in predicates with a narrow scope indefinite interpretation arising through a form of noun incorporation (Collins to appear).

(18)   *Afai 'olea tapē e   lo'u uso   le   pua'a, 'olea mafai 'ona   mātou*
       If   FUT kill ERG my brother SPEC pig,   FUT can   COMP we
       'ai se   'aiga tele.
       eat NONSPEC meal big
       'If my brother kills a (particular) pig, we can eat a big meal.' NOT 'If my
       brother kills any old pic, we can eat a big meal.' (Collins to appear, ex.
       (14-c))

Turning to the nonspecific articles, Mosel and Hovdhaugen 1992 claim "The nonspecific article *se/s* expresses the fact that the noun phrase does not refer to a particular, specified item, but to any member of the conceptual category denoted by the nucleus of the noun phrase and its adjuncts. [...]Common noun phrases introducing the discourse topic are marked by the nonspecific article if its exact identitiy is not known or is unimportant." (M& H, 261). (Collins to appear) suggests that *se* and *ni* are indefinites that obligatorily take narrow scope with respect to other operators in the sentence. The generalizations made by Mosel and Hovdhaugen 1992 and Collins to appear were also supported in my own fieldwork. I found that, ignorning instances of *se* in *so'o se NP* constructions, the indefinite DPs always took narrow scope w.r.t other operators in the sentence, such as negation. The plural counterpart to *se*, *ni* is also reported to receive a narrow scope indefinite interpretation, though it was used extremely infrequently by my consultants.

(19) a. *Aumai se niu!*
Bring DET(spec) coconut
Bring me a coconut (no matter which one)!

b. *Aumai ni niu!*
BringDET(spec.pl) coconut
Bring me coconuts (no matter which ones)!

(Mosel & Hovdhaugen 1992, 261)

(20) *Sa fesili mai se tamaitai po 'o ai lo ma tama.*

TAM ask dir det.nsp lady Q O who poss 1.exc.du father

'A lady asked us who our father was.'

(Mosel & Hovdhauge 1992)

(21) *E le'i iloa ā e se isi lenā mea.*
TAM not.yet know EMPH ERG indef. one that thing
'No one yet knows that thing.'

'There is someone who doesn't yet know that thing.'

(Collins to appear, p. 5)

(22) *Na lē siva se teine.*
TAM NEG dance indef. girl

Judgement for (22): ✓   Judgement for (22): #
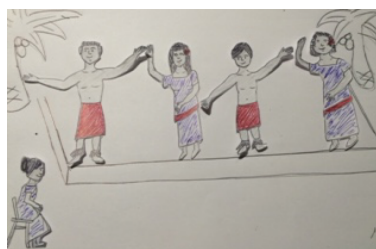
To my knowledge, the only account of the formal semantics of determiners in

Sāmoan is Collins to appear. His proposal is spelled out in a dynamic framework and, simplifying somewhat, can be spelled out in a static semantic framework as follows: Both *le* and *se* introduce a choice function variable that is applied to its NP sister. The difference between *se* and *le* is in the position of closure operators that can quantify over this choice function variable: For *le*, the existential closure operator takes matrix scope, while for *se* it must be as local as possible to the choice function variable.

(23)   a.   *Na   lē   siva   se   teine.*
          TAM NEG dance indef. girl
       b.   [NEG [$\exists_i$ [dance [$i_{\langle et,e \rangle}$ [$_{NP}$ girl]]]]]

(24)   a.   *Na   lē   siva   le   teine.*
          TAM NEG dance indef. girl
       b.   [$\exists_i$ [NEG [dance [$i_{\langle et,e \rangle}$ [$_{NP}$ girl]]]]]

Looking ahead to the analysis of *se* in *so'o se* free choice constructions, I will build on Collins's analysis of *se* contributing a choice function variable to develop the compositional analysis of free choice items, but I leave the details for later in the chapter. For now, I will introduce another key ingredient in the morphological make-up of Samoan free choice determiners: the alterantive marker *'o*.

3.3.2   Marking alternatives in Samoan

This section provides an introduction to the grammar of alternatives in Samoan. Samoan appears to morphologically mark expressions which introduce alternatives with a morpheme *'o* (/ʔo/). Despite being members of different language families with little to no contact, the Samoan focus and *wh*-marking strategy bears an interesting resemblance to the morphological and syntactic focus marking strategy in Yoruba discussed in the previous section, though there are some important differences. The discussion of *'o* marking and its associated focus movement in this

chapter will provide an introduction to the grammar of alternatives from focus and questions in Samoan, as well as setting the scene for the decompositional analysis of the free choice determiner *so'o se*.

In Sāmoan, the morpheme *ʔo* (written *'o*) marks nominal consitutents in a range of constructions including *wh*-phrases in questions, new information focus in answers to questions, associates of focus sensitive particles, contrastive foci, NPs with the free choice item *so'o* and with disjunction *po'o*. The wide grammatical distribution of *'o* and *ko*, its congate in other polynesian languages, has lead to a number of differing conclusions about its grammatical function. It has been classified as a nominative marker (Downs 1949), a copula or predicativizer (Mosel and Hovdhaugen 1992), 'specifier, designator or emphatic subject marker' (Pawley 1966), or a topic marker (Chapin 1970). (See also Massam, Lee, and Rolle 2006 for a smiliar picture of the different analyses proposed for *ko* across Polynesian languages.) Hohaus & Howell (2015) propose a semantic analysis of *o'* whereby it serves to mark nominal expressions that introduce alternatives into the semantic composition. Their primary argument comes from its distribution: it is consistently found in places that formal semantics would tell us to expect alternatives including *wh*-questions and new information focus, like in (25), next to the associate of the exclusive particle *na'o*, (26), in disjunctions, (27), and as part of the FCI *so'o se*, (28).[3]

(25)   *wh*-PHRASES AND ANSWERS TO A QUD

    a.   *'O a   mea'ai na aumai e   Pita?*
        ALT what thing   eat perf.   bring erg.   Pita
        'What food did Pita bring?'

    b.   *'O le   talo na   aumai e   Pita*
        ALT spec. taro perf. bring erg. Pita
        'Pita brought TARO.'

---

[3]For the exclusive particle, the disjunction and the FCI Sāmoan orthography write the *'o* as part of the word, i.e. *na'o*, *po'o* and *so'o* rather than *na 'o*, *po 'o* or *so 'o*. I have separated them in glossed translations to make the morphological make-up clear.

(26)   EXCLUSIVE PARTICLE *na'o*

Context: Last weekend was vert stormy. So stormy, that hardly anyone left their house. Normally the church is full on Sundays, but last Sunday...

a.   *Na 'o le 'aiga o le faife'au na ō i le*
only alt. spec. family pos spec. pastor perf. go.pl prep. spec.
lotu!
church
'Only the pastor's family went to the church.'

(27)   DISJUNCTION IN ALTERNATIVE QUESTION

a.   O' *Ese po 'o Fiti na fa'aitau le lavalava?*
alt. ese or alt. Fiti TAM buy spec. sarong
'Was it Ese or Fiti who bought the lavalava.

(28)   FREE CHOCE ITEM *so'o*

a.   *Ave* **so 'o se** *pepa*
take FCI ALT DET(nspec) card
'Pick any card. '

Morphological marking of *wh*-phrases and new information or contrastive focus is obligatorily accompanied by fronting of the *'o*-marked phrase, (29) and (30). Despite finding several reported examples of in-situ *'o*-marking of *wh*-phrases and foci in previous work, instances of post-verbal *'o*-marking were not accepted by native speakers consulted for the work reported in Hohaus and Howell 2015 or my later fieldwork: *'o*-marked foci were always fronted. An exception to this generalization is when *'o* occured with the exclusive particle, disjunction or within the FCI *so'o*. Here fronting was possible, but not obligatory, as in (31).

(29)   Context: What did Pita bring?

a.   *'O le talo na aumai e Pita*
ALT spec. taro perf. bring erg. Pita

'Pita brought TARO.'

b. *Na aumai e   Pita 'o   le   talo
    perf. bring erg. Pita alt. spec. taro
    Intended: 'Pita brought TARO.'

(30) Context: Eseta and Peter are watching a dance competition on TV, but
      Eseta has to leave for work before the competition ends and the prize is
      awarded. That evening, when she sees Peter again she asks:

      a. 'o ai e   mālō le   tauvaga
          ALT who TAM(pres) win   DET(spec) contest
          'Who won the contest.'

      b. *e   mālō (e) ai le   tauvaga
          TAM WIN(ERG) who DET(spec) contest

(31) Context: Last weekend was very stormy. So stormy that hardly anyone
      left home. Normally church is full on Sunday but this weekend...

      a. Na 'o le   'aiga o le   faife'au na
          only ALT DET(spec) family POSS DET(spec) pastor   TAM(past)
          ō   i le   lotu
          go(pl) to DET(spec) church
          'Only the pastor's family went to church.'

      b. Na   ō   na 'o le   'aiga o   le faife'au textiti le
          TAM(past) go(pl) the family POSS the   pastor to the   church
          lotu

          'Only the pastor's family went to church.'

Contrastive and QUD-foci can either be marked with 'o, and fronted, or they
can occur in their canonical post-verbal positions, as illustrated by the following
possible ansers to an object *wh*-question from a production study by Calhoun
2015. (Calhoun reports that, as an answer to (32-a), (32-b) was chosen 71% of the
time and (32-c) 29% of the time.) Calhoun suggests that there there is an under-
lying phonological motivation for the fronting of *o'* marked constituents, because
they result in a structure where the focussed phrase is maximally phonologically

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prominent.

(32)   (Data and glosses from Calhoun 2015)

   a.   *'O le ā le mea na toso e Sione analeilā?*
        PRES DET what DET thing PAST pull ERG Sione yesterday
        'What did Sione pull earlier?'

   b.   *Na toso e Sione le maea (analeilā).*
        PAST pull ERG Sione DET rope (earlier)
        'Sione pulled the rope earlier'

   c.   *'O le maea na toso e Sione (analeilā)*
        PRES DET rope PAST pull ERG Sione (earlier)
        'It was the rope that Sione pulled earlier'

Calhoun's study looked at phonological and syntactic focus marking of subjects and objects bearing contrastive or QUD focus. Her results show variation between speakers as to whether syntactic or phonological focus marking was chosen. Simplifying Calhoun's results somewhat, one group of participants, made up of primarily older speakers, preferred marking both contrastive and QUD focus via fronting, whereas a second group, primarily comprised of younger participants preferred in-situ foci with prosodic marking. Calhoun summarizes the results as follows: "This suggests that in situ prosodic marking of focus, as opposed to fronting, is increasingly favoured to mark focus by younger speakers; and the final accent may no longer be solely an edge-marking phrase accent. However, like the older speakers, these speakers did not show effects of focus on the accent type for the agent. This suggests that for young speakers there is some sort of hybrid, or unstable, focus marking system, the exact nature of needs to be investigated further. As suggested in section 3, this could stem from contact-related language change because of the influence of English, which primarily uses in situ prosodic marking of focus." (Calhoun 2015: 222)

The change in progress suggested by Calhoun's work is an interesting challenge for providing a semantic characterization of the occurence of *'o*-marking. Given the

prevalence of *in-situ* phonological focus marking among yonger speakers, it seems that *'o*-marking is not the only means of marking alternatives in Sāmoan (at least not any more). As such a licensing condition requiring *'o*-marking any time alternatives are introduced would be too strong. Instead I propose that *'o* is licensed by the introduction of alternatives, but is not required if a focus is phonologically marked. *'O* marking of a focus triggers fronting, which (following Calhoun (2015)) serves to align the focus with the maximally phonologically prominent sentence initial position. I conjecture that in constructions where *'o*-marking is still obligatory (with the exclusive particle, FCI, disjunction and *wh*-phrases) the *'o* marker has undergone diachronic morpho-syntactic reanalysis to form a single lexical item with its associated exclusive/FCI/disjunction/*wh*-phrase and, while it may still indicate the presence of alternatives, it cannot be replaced by phonological focus marking in the same way.

There is one more aspect of the grammar of alternatives in Sāmoan that I would like to address before moving on to look at *so'o se* in the next section, namely what intervention effects in Sāmoan reveal about the interaction of alternatives from focus and questions. Hohaus and Howell 2015 and Howell et al. to appear provide data showing that Samoan focus sensitive operators give rise to similar intervention effects when they intervene between an alternative evaluating operator and distinguished variable it binds. Focus intervention effects are not observed in *wh*-questions because *wh*-phrases may not be left in situ in simple *wh*-questions and multiple *wh*-questions are judged bad regardless of the position of *wh*-phrases. However, when a focus sensitive operator, like the exclusive *na'o*, intervenes between a disjunction and its associated Q-operator in a disjunctive question, the alternative question interpretation is blocked (as in (33-c)). Conversly, data from foci embedded within questions showed that the Q-operator in Samoan did not block association with focus, reflecting a stable crosslinguistic pattern (as in (34)).

(33)   Context:

a. Sa   alu na 'o Tupe i Faleolo po 'o   Falealili?
   TAM(past) go only ALT Tupe to Faleolo or ALT Falealili
b. *'Which of Faleolo or Falealili did only Tupe go to?'

c. 'Did only Tupe go to one of these two places?'

(34)   Context: During a crime investigation, the police were interested in two questions: Who noticed a certain boat and who noticed a certain car. But there have been developments and there's just one question now that matters, as the police is no longer interested in the boat.

     E   tauā na'o   le fesili   pe'o ai sā iloa   atu
     TAM vital EXCL+ALT the question Q   ALT who TAM(past) notice
     le   ta'avale.
     DIR the   car
     'Only the question who noticed the CAR matters.' (Elicited by Vera Hohaus, see Howell et al. to appear appendix.)

This suggests that, when it comes to the underlying grammar of alternatives in association with focus and questions, the grammatical mechanisms responsible for generating and manipulating alternative sets is similar to the one we argued for in English in Chapter 1, i.e. one in which the alternative evaluating operator responsible for deriving question meanings is a selective binder of distinguished variables, while the operator responsible for association with focus is unselective.

3.4 A first look at the free choice determiner *so'o se* in Samoan

Previous work has identified *so'o* as a potential free choice item in Sāmoan based on intuitions about its meaning, but so far no one has looked in-depth at its interpretive effect , the contexts in which it occurs, and how it behaves with respect to intervention effects. To my knowledge no detailed account of the semantics of

so'o has been proposed. Mosel and Hovdhaugen 1992 report that "*So'o* expresses the fact that the speaker is referring to any entity of the conceptual category denoted by the noun phrase" (Mosel and Hovdhaugen 1992, p.271). Hohaus and Howell 2015 mention *so'o* as a further evidence for the their proposal that *'o* marks alternatives, suggesting that *so'o* should receive alternative-based account, but they do not spell out an analysis of it. This section provides an in depth look at the data on *so'o se* that will inform the theoretical proposal outlined in section 3.5. The data is divided into three subsections: First I will look at the restricted distribution of *so'o-se* and try to summarize its licensing conditions. Then, section 3.4.2 will turn to data related to its interpretation and scope behavior relative to other operators. Finally, 3.4.3 will turn to its behavior in intervetion configurations.

3.4.1   Distribution of *so'ose*

Like other free choice items crosslinugistically, the distribution of *so'o se* is restricted. Broadly speaking, it must occur in the scope of some modal element. It is licensed in the scope of possibility modals, as in (35) and (36) in the antecedents of conditionals as in (39) and (40), in imperatives as in (37) and (38) and in generic statements, as in (41).

In the scope of possibility modals:

(35)   *Na   te   mafaia so 'o   se   mea   e   mana'o ai*
        TAM 3.sg do   FCI+ALT indef. thing TAM want   pron.
        "He could do anything that he wants."

(36)   *E   mafai   ona alu so' o se   tagata i   le univesite*
        TAM possible that go FCI   ALT indef. person in the   university.
        "Anyone can go to university."

Imperatives:

(37) *Fufulu so 'o se ta'avale!*
clean FCI ALT indef. car
'Wash any car!'

(38) *Ave so 'o se pepa!*
Take FCI ALT indef. card
"Pick any card!"

Antecedents of conditionals

(39) *E ave i ai e ona matua tupe pe a faitau so 'o se*
TAM give to pron. ERG his parents money if pron. read FCI ALT
tusi.
ind. book
"His parents give him money if he reads any book."

(40) Context: Maria's mother has always wanted a doctor in the family, but none of her children became doctors. Her last hope is that one of her children will marry a doctor. She's not picky: her children's husbands don't need to be rich or beautiful. Any doctor will do.

> *Afai ae fa'aipoipo Maria i so'o se fomai lava, e*
> If PART marry Maria PREP FCI+ALT DET doctor EMPH, TAM
> *fiafia ai lana lona tina*
> be.happy like DEMONSTR. her mother.
> 'If Maria marries a doctor, her mother will be happy about it.'

Generic Statements

(41) Context: Sina is convinced that Ioane must be in love with her, since he was talking to her all the way home from school on the bus. But, her

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friend Peter thinks she is wrong. He says:

E   *talanoa Ioane i*   *so'o*   *se*   *teine i*
TAM(pres) talk   Ioane PREP FCI+ALT DET(spec) PREP inside
totonu o   *le*   *pasi*
POSS   DET BUS
'John talks to any girl on the bus

It is not judged accetable by native speakers when it occurs in episodic state-
ments or within the scope of necessity modals, although it can be rescued from
these enviornments by subtrigging similar to observations about FCIs in English
from Dayal 1998.

Ungrammatical in episodic sentences

(42)   *Sa   *talanoa Ioane ma*   *so 'o se*   *teine i*   *le*   *maketi i*   *le 4*   *i le*
        TAM talk   Ioane with FCI   ALT ind. girl at. def.   market at def. 4 in
        afiafi.
        def.   afternoon
        Intended: "John was talking to some girl/every girl in the market at 4 in the
        afternoon."

(43)   **Na lē sau so'o se tama i le koneseti sa fai ā'oga*
        TAM(past) NEG come FCI+ALT DET boy to the concert TAM make church
        Intended: "No boys came to the concert put on by the church"

Ungrammtical with necessity modals

(44)   *E   *tatau*   *ona pese so'o se*   *tamiti i*   *le aufaipese*
        TAM necessary that sing FCI   ALT indef. child in def.   choir
        Intended: 'Any child must sing in the choir.'

Resuce by Subtrigging

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(45) So 'o   se   tagata e   alu i Apia e   tatau   ona 'aumai se
FCI+ALT INDEF. person TAM go to Apia TAM necessary that bring   INDEF.
falaoa.
bread
'Anybody who goes to Apia should bring bread with him.' (Mosel & Hovdhau-
gen 1992, p. 463)

Unlike the FCI *any* in English, *so'o* does not have an NPI counterpart. It is
not accepted by speakers in contexts where NPIs are licensed, like in the scope of
negation, (46)-(47) or in polar questions. When *so'o* occurs with both negation
and a modal licenser, it is not interperted as an NPI but, rather as a negation of
the free choice statement, like in (48) below.

Ungrammatical in negated sentence without modal licenser

(46) *Na lēsiva so   'o   se   teine.*
TAM NEG   dance FCI ALT indef. girl
Intended: There wasn't any girl dancing.

(47) *Sa   lē   fa'atau e   Eseta so'o se   mea.*
TAM NEG buy   ERG Eseta FCI ALT indef. thing.
Inteded: Eseta didn't buy anything.

**In sentences with modal licenser and negation, negated FCI rather
than NPI reading**

(48) *E   lē   mafai ona ou ai so 'o se   mea.*
TAM NEG possible that 1sg. eat FCI ALT indef. thing
"I can't eat certain things" $\neg\forall x[thing(x) \rightarrow \Diamond I\ eat(x)]$

#"I can't eat anything."   # $\forall x[thing(x) \rightarrow \neg\Diamond I\ eat(x)]$

The table below summarizes the distribution of *so'o se*. The picture is rem-
iniscent of other universal FCIs without an NPI counterpart, such as Spanish

qualquier(a) (Menéndez-Benito 2010), French *n'importe qu-* (Jayez and Tovena 2005) and Greek *otidhipote* (Giannakidou 2001).

Table 3.2: Licensing Environments of *so'o*

Licensing Environment	
Scope of possibility modal	✓
Scope of necessity modal	*
Imperative	✓
Antecedent of conditional	✓
Epidsodic NPI-licensing environment	*
Generic	✓
Rescue by subtrigging	yes

3.4.2 Interpretation of *so'o se*

The scope of DPs with *so'o se* is fixed, regardless of the surface position of the FCI. Similar to other universal FCIs, DPs with *so'o se* appear to cause an interpretation that can, in most cases roughly be paraphrased as wide-scope universal interpretation relative to its modal licenser, as in the following sentences with a possibility modal and with an FCI in the antecedent of a conditional.

(49) a. *E mafai ona alu so 'o se tagata i*
TAM possible that go FCI ALT DET(nsp.) to DET(spec.)
le unifesite
university
'Anyone can go to university.'

$\forall x[\exists w[w \in Acc \& person(x,w) \text{go to university}(x,w)]]$

(50) *Afai ae fa'aipoipo Maria i so'o se fomai lava, e*
If PART marry Maria PREP FCI+ALT DET doctor EMPH, TAM
fiafia ai lana lona tina
be.happy like DEMONSTR. her mother.
'If Maria marries a doctor, her mother will be happy about it.'

$\forall x[\forall w[w \in Acc \& \text{doctor(x,w)} \& \text{marry(Maria x,w)} \rightarrow$ Maria's mother

is happy in w]]

Like universal free choice items in other languages, though, the wide scope universal pattern falls short in some cases, like for example in imperatives, where *so'o se* is also licensed, but a paraphrase with a wide scope univeral does not correspond to the attested reading.

(51)   *Fufulu so   'o   se   taavale.*
         Wash any ALT nonspec. car
         'Wash a car of your choice, any car is permitted.'
         * $\forall cars[\forall w[w \in \text{DesireWorlds}_{me,w} \rightarrow wash(you, x, w)]]$

In summary, the data from Samoan determiner *so'o se* regarding its interpretation and distribution shows a pattern that is similar universal free choice items described in other languages, including Spanish *cualquier* and French *n'importe qu'*. It requires a modal licenser in all cases where it is used (unlike English FCI/NPI *any*) and gives rise to a wide scope universal interpretation relative to its modal licenser in most cases, with the notable exception of imperatives.

3.4.3   Alternatives and Intervention

In 3.3.3 I suggested, following Hohaus and Howell 2015, that the *'o* in so'o is a morpheme marking the presence of alternatives. This hypothesis fits together well with alternative-based accounts of universal FCIs in other languages (Menéndez-Benito 2010, Aloni 2007, a.o.) This section will present data from intervention effects with *so'o* which poses a challenge for the view that interpretation of *so'o* employs the same compositional machinery as the alternatives used for association with focus and to derive questions. *So'o* does not cause intervention effects when it occurs in a position between an alternative introducing element and its binder, nor is it sensitive to intervention by alternative evaluating operators that cause

intervention elsewhere (the ∼-operator occuring with the exclusive *na'o*).

In configurations like in (52-a), the presence of an FCI does not cause an intervention effect in the question, similar to the way focus sensitive operators would. The examples in (53) and (54), which are instances of this kind of configuration, were judged acceptable by multiple native speakers.

(52) *Non-intervention by FCI*

    a.   ✓ [Q_i ...[$\forall_{ii}$ .. [$\Diamond$ ... [wh_i... *so'o se* NP_{ii}]]]]

(53) CONTEXT: Sina and Anna are on vacation. There are two beaches on the island they are visiting: Return to Paradise Beach is safe and sandy. Anybody can swim there. The other beach, Vaiala Beach sometimes has strong currents and it's recommended that only advanced swimmers use that beach. Sina and Anna are out for the day, but Sina can't remember which beach is which. She asks Anna:

    E   mafai   ona a'au so'o se   tagata i   le Return to
    TAM possible that swim *fci*   ALT indef. person in def.   Return
    Paradise Beach   po'o   le Vaiala Beach?
    to   Paradise Beach or def.   Vaiala   Beach?
    Can *anyone* swim at Return to Paradise beach or Vaiala Beach?

(54) CONTEXT: At the local highschool there are too many kids who want to join the rugby team, so the coach has put in place age restrictions. Only kids between 15 and 17 can join the team. On the other hand, anybody between 11 and 17 can join the choir. Peter forgot which rules were for which so he asks his teacher:

    E   mafai   ona auai so'o se   tamaiti e   11   i   le 17   i   le
    TAM possible that join FCI ALT indef.   child TAM 11 to def. 17 in
    aufaipese po'o le aulakapi?
    def.   choir or def.   rugby-team
    "Can any boy from 11 to 17 join the choir or the rugby team?"

These judgements contrast with speaker judgments about intervention by the exclusive particle, which blocked polar question interpertations when it occured intervened between a disjunction and its associated Q-operator, as the examples of intervention by the exclusive particle *na'o* in Section 3.3.3 illustrated. (An example of intervention by *na'o* is repeated in (55) below.)

(55) CONTEXT: Sina and Ioane are having a canoe race. Everyone except Sina's father thinks Sina will win. He thinks Ioane will win. Please answer the following question about the story:

> #*Sa   talitonu na'o le   tama o Sina o'le'a malo Sina po'o*
> TAM beleive only indef. father of Sina WILL win Sina or
> *Ioane?*
> Ioane
> 'Did only Sina's father think Sina or Ioane would win?'

The fact that *so'o* does not cause intervention in the same way that *na'o* does is, on its own, not add odds with an alternative semantic account. As discussed in Chapter 1, the lack of intervention effect causation could be either an indication that so'o does not come with an alternative evaluating operator, or it could be the case that *so'o* does introduce an alternative evaluating operator which selectively binds distinguished variables, similar to the Q-operator, which also does not cause intervention effects.

However, intervention effects do not arise when an otherwise intervention-causing operator is inserted in a position between the FCI and the place where its associated universal quantifier takes scope. This is more difficult to explain under an alternative-based account. In configurations like (56-b), the presence of the unselective alternative evaluating ∼-operator accompanying a focus sensitive particle in a scope position between the FCI and its associated universal closure operator (which must have as least as wide scope as the licensing $\Diamond$) does not cause badness. The examples in (57) and (58), were judged acceptable by native speakers.

(56)   *Unsuccecptibility of FCI to Intervention by known Intervener*

a.   *[Q_i ... [$\sim_C$ [F_{ii}... wh_i]]]]

b.   ✓ [$\forall_i$ ... [$\Diamond$ ... [$\sim_C$ [F_{ii}... *so'o se* NP_i]]]]]

(57)   Tina and Iosefo are biology students at the National University of Samoa. They have a summer job helping their professors, Dr. Laupepa and Dr. Schmidt study the plants growing on Savai'i. Tina and Iosefo must to go every village on Savai'i and make a list of the plants they find there. This takes a lot of time: They usually need one week for each village.
One week, Tina needs to stay home to care for her mother who is sick. Tina, Iosefo and the professors decide that Iosefo will visit one village alone while Tina is away. Tina asks the professor which villages Iosefo could go to alone. Dr. Schmidt thinks that Tuasivi or Sasina would be fine for Iosefo to visit alone. Dr. Laupepa thinks that any village would be OK.

E	*mafai*	*ona*	*alu*	*na'o*	*Iosefo*	*i*	*so'o*
TAM(pres)	possible	that	go	only+ALT	Iosefo	to	FCI+ALT

se	*nu'u!*
DET(nsp.)	village

'It's possible for only Iosefo to go to any village.'

(Elicitation carried out by Vera Hohaus, sentence accepted by 6/7 speakers tested)

(58)   In Auckland many choirs have the same problem: A lot of women want to sing in the choir, but very few men do. (But the choirs do need the men!) Some choirs in Auckland therefore have a requirement that if a woman wants to join the choir, she has to bring along a man. Sina has just moved to Auckland and she loves to sing. Her new frien from work tells here:

a.
E	*mafai*	*ona*	*auai*	*na'o*	*se*	*tamaloa*	*i*	*so'o*	*se*
TAM	possible	that	join	only	DET	man	in	FCI+ALT	DET

'aufaipese.
choir
'It's possible for just/only a man$_F$ to join any choir.'

b.   *Ae   e   lē   mafai   ona auai na'o se   tama'ita'i i   so'o*
but TAM NEG possible that join ONLY DET woman   in FCI+ALT
se   'aufaipese
choir
'But it's not possible for just/only a woman$_F$ to join any choir.'

(Elicitation carried out by Vera Hohaus, sentence accepted by 2/2 speakers tested)

This data is tricky for an analysis where free choice items employ the same type of alternatives that are used to derive the interpretation of focus sensitive particles like *na'o*. If this were the case, we would expect for semantic composition to crash when the alternatives generated by the FCI encountered an unselective alternative evaluating operator in the scope of the modal operator, regardless of whether the alternative evaluating operator is selective or unselective.

3.5   Analysis

The final proposal for Samoan builds on the alternative semantic account of universal FCIs by Menéndez-Benito 2010, the analysis of *'o* in Samoan as a marker of constituents introducing alternatives suggested in Hohaus and Howell 2015 and the account of the non-specific determiner *se* by Collins to appear a choice function variable.

Like Collins to appear, I propose that *se* introduces a choice function variable of tyle $\langle\langle et \rangle e \rangle$ that combines with an NP to pick out an entity it maps to true. The key difference between *se* without *so'o* in non-FCI constructions and with *so'o* is that, when marked with *so'o*, the choice function variable introduced is a distinguished variable, as in (59), requiring an alternative evaluating operator to

bind it. In this case, it is the covert universal quantifier over alternatives proposed in Menéndez-Benito 2010 (adapted here to work with a system for alternative using distinguished variables), as in (60).

(59)   **Semantic contribution of *so'o se***
         $[\![$ so'o se $]\!]^g$ is undefined
         $[\![$ so'o se$_i$ $]\!]^{g,h} = i_{\langle et,e \rangle}$

(60)   **Meaning rule for $\forall_{ALT}$**
         For any node α with daughters $\forall_{ALTi}$ and β
         and for any type τ determined by i,
         $[\![\alpha]\!]^g = \lambda w. \forall p [p \in \{[\![\beta]\!]^{g,h[i/x]} | x \in D_\tau\} \rightarrow p(w)]$
         $[\![\beta]\!]^{g,h} = \lambda w. \forall p [p \in \{[\![\beta]\!]^{g,h[i/x]} | x \in D_\tau\} \rightarrow p(w)]$

The free choice universal interpretation will be derived by universal quantification over all possible alternative choice functions by the universal closure operator, without requiring movement of the DP *so'o se*. An example calculation for the example in (61) with the logical form in (62) is provided below.

(61)   E   mafai   ona alu so 'o se   tagata i le   unifasite
         TAM possible that go FCI ALT det(nsp.) person to det(spec.) university
         'Anybody can go to university.'

(62)

$\langle st \rangle$

$\forall_{ALTi}$ $\langle st \rangle$

λw_1

$\langle st,t \rangle$ $\langle st \rangle$

mafai w_1 R λw_2 $\langle t \rangle$

$\Diamond$

DP   VP

$\langle e \rangle$

NP alu_{w_2} i le unifasite

so'o $\text{se}_{i,\langle et,e \rangle}$ tagata_{w_2}
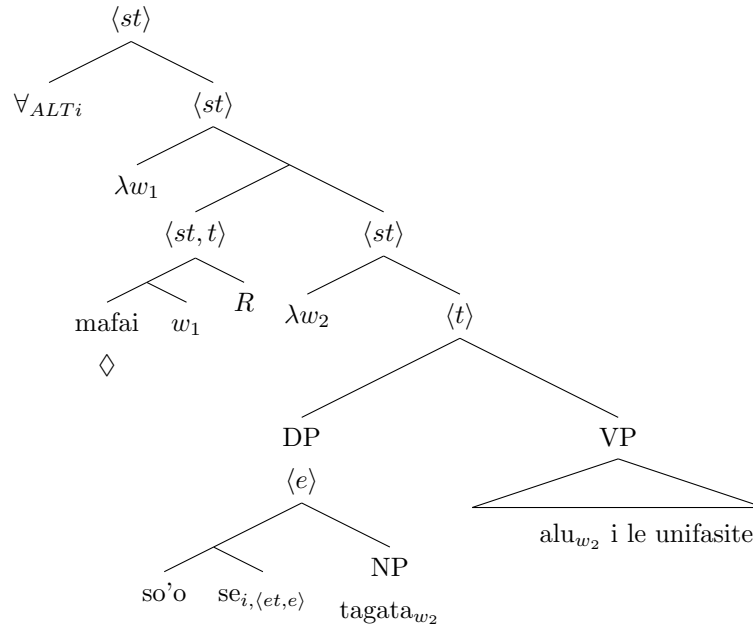
Besides the denotations of the determiner *so'o se* and the presence of the covert universal closure operator, the lexical entries for other terminal nodes are as expected from Heim & Kratzer 1998. In particular, the possibility modal *mafai* , the NP *tagata* (person) and the VP *alu i le unifasite* (go to university) denote the following:

(63) $[\![\text{ mafai }]\!]^g = \lambda w.\lambda R_{\langle s,st \rangle}.\lambda p_{\langle st \rangle}.\exists w'.[R(w,w') \& p(w')]$

(64) $[\![\text{ tagata}_w]\!]^g = \lambda x.\text{x is a person in g(w)}$

(65) $[\![\text{ alu}_w \text{ i le unifasite }]\!]^g = \lambda x.\ \text{x goes to university in g(w)}$

Derivation of the Free Choice Interpretation

(66)   **Derivation of the Free Choice DP**
$[\![[_{DP} \text{ so'o se}_i [_{NP} \text{ tagata}_{w'}]]]\!]^{g,h}$
$= [\![\text{ so'o se}_i]\!]^{g,h}([\![\text{ tagata}_{w'}]\!]^{g,h})$

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$= (\mathrm{h}(\mathrm{i}_{\langle et,e\rangle}))(\llbracket\ \mathrm{tagata}_{w'}\ \rrbracket^{g,h})$

$= (\mathrm{h}(\mathrm{i}_{\langle et,e\rangle}))(\lambda x.\ \mathrm{x\ is\ a\ person\ in\ g(w_2)})$

(67)   **Derivation of the Scope of** $\forall$

$\llbracket\ [\ \lambda w_1\ [\ \Diamond\ \mathrm{w_1\ R}]\ \lambda w_2\ [_{DP}\ \text{so'o se NP}_{w2}]\ [_{VP}\ \text{alu i le unifasite}_{w2}\ ]]\ \rrbracket^{g,h}$

$= \lambda w.\llbracket\ [\ [\Diamond\ \mathrm{w_1\ R}]\ \lambda w_2\ [_{DP}\ \text{so'o se NP}_{w2}]\ [_{VP}\ \text{alu i le unifasite}_{w2}\ ]]\ \rrbracket^{g[w/1],h}$

$= \lambda w.(\llbracket\ [\Diamond\ \mathrm{w_1\ R}]\ \rrbracket^{g[w/1],h}\ (\llbracket\ [\lambda w_2\ [_{DP}\ \text{so'o se NP}_{w2}]\ [_{VP}\ ...\ ]]\ \rrbracket^{g[w/1],h}))$

$= \lambda w.\llbracket\ [\Diamond\ \mathrm{w_1\ R}]\ \rrbracket^{g[w/1],h}\ (\lambda w'.\llbracket\ [[_{DP}...][_{VP}...]]\ \rrbracket^{g[1/w,2/w']}))$

$= \lambda w.\llbracket\ [\Diamond\ \mathrm{w_1\ R}]\rrbracket^{g[w/1,h}(\lambda w'.\llbracket\ \mathrm{VP}\ \rrbracket^{g[1/w,2/w']}(\llbracket\ \mathrm{DP}\ \rrbracket^{g[1/w,2/w'],h}))$

$=\lambda w.\llbracket[\Diamond\ \mathrm{w_1\ R}]\rrbracket^{g[w/1],h}(\lambda w'.((h(i_{\langle et,e\rangle}))(\lambda x.person(x,w')))\ \text{goes to}$
    university in w')

$= \lambda w.\exists w'[R(w,w'')\&(((h(i_{\langle et,e\rangle}))(\lambda x.person(x,w')))\ \text{goes to}$
    university in w')]

(68)   **Denotation of CP**

$\llbracket[\forall_i\ [\ \lambda w_1\ [\ \Diamond\ \mathrm{w_1\ R}]\ \lambda w_2\ [_{DP}\ \text{so'o se}_i\ \text{NP}_{w2}]\ [_{VP}\ \text{alu i le unifasite}_{w2}\ ]]\ \rrbracket^g$

$= \lambda w.\forall p[p \in \{\llbracket[\lambda w_1\ [\ \Diamond\ \mathrm{w_1\ R}]\ \lambda w_2\ [_{DP}\ \text{so'o se NP}_{w2}]\ [_{VP}\ \text{alu i le}$
    $\text{unifasite}_{w2}\ ]]\ \rrbracket^{g,h[i/x]}|x \in D_{et,t}\} \rightarrow p(w)\}$

This analysis of *so'o se* constructions provides a framework for understanding how the interpretation of FCIs in Samoan are composed of the morphological pieces that make them up, and which are at work elsewhere in the language - including the non-specific determiner *se* and the alternative-marker *'o* indicating the presence of a distinguished variable in the constituent it marks. However, it leaves open questions for further investigation. The most pressing question is how to reconcile this analysis with the observation that interventione effects are missing from free choice constructions when a focus sensitive particle intervenes between *so'o se* and the licensing modal. Recall from the previous section that sentences such as (69) were judged accetable event though their logical form would need to

look something like in (70).

(69)   *E*   *mafai   ona alu na'o   Iosefo i   so'o*
        TAM(pres) possible that go only+ALT Iosefo to FCI+ALT
        se   nu'u!
        DET(nsp.) village
        'It's possible for only Iosefo to go to any village.'
        (Elicitation carried out by Vera Hohaus, sentence accepted by 6/7
        speakers tested)

(70)   [∀$_i$ [◊ [only$_C$ [∼$_C$ [Iosefo$_F$ go to [xi village]]]]]]

The lack of intervention effects in this example could be explained by movement of the distinguished variable within the scope of the modal to a position higher than the alternative evaluating ∼ operator, rescuing it from intervention. However, more elicitation work is needed to investigate this conjecture, which will have to remain as future work. In general, investigation of intervention effects with free choice items in other languages has not received much attention from formal semanticists and a more complete understanding of the crosslinguistic picture of intervention in FCIs would be an interesting aveune for further research.

4

Conclusion

This dissertation has presented two case studies of grammatical phenomena which most contemporary formal semantic analyses model using some form of alternative semantics. The first looked at disjunctive questions in Yoruba and the second at a free choice item in Samoan. The goal of both case studies was to better understand the compositional mechanisms available in the grammar to generate, compute and maniupulate alternative sets across a range of different grammatical phenomena and langauges. While the compositional machinery for generating and manipulating alternatives in focus and *wh*-questions has been investigated quite thoroughly in previous work (e.g. Rooth 1985, Kratzer 1991, Wold 1996, Beck 2006), this is not necessarily the case for other phenomena whose semantics is often argued to involve similar sets of alternatives, such as disjunction, free choice items and exhaustivity inferences. Furthermore, like the majority of formal semantic theory, much of the foundational work on the nature of alternative semantic composition is based on the analysis of well-studied European languages, particularly English. The goal of these two case studies was to broaden our understanding of the grammar of alternatives in two dimensions, across constructions and across languages. The specific question the project set out to answer was the following: Where do the alternatives introduced by free choice items and disjunction fit into the compositional system of alternative introduction and manipulation underlying focus and *wh*-questions? Let's take stock of the what we learned about this question

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from the dissertation's two case studies.

Chapter 2, the case study of Yoruba disjunctive questions, developed a decompositional analysis of polar and alternative disjunctive questions in Yoruba, building in particular upon a morphological and syntactic marking strategy (*ni*-fronting) used in alternative disjunctive questions as well as in focus constructions and *wh*-questions. I argued that *ni*-fronting marks constituents that introduce distinguished variables into the semantic composition. A second key ingredient of the analysis was an exhaustivity-contributing maximality inference that co-occurs with *ni*-fronting constructions in Yoruba, both in focus constructions and questions. In terms of the overt morphology as well as the covert compositional machinery, I argued that the data from Yoruba points towards a view of alternative semantics where alternative introduced by focus, *wh*-phrases and disjunction all generate the same type of alternatives from a compositional perspective and where alternative evaluating operators including $\sim$ and Q and MAX operate on the same kinds of alternatives using a single compositional system. Intervention effects observed in Yoruba disjunctive questions provided further evidence for this analysis whereby the same compositional system for alternatives is at work across questions, focus and disjunction. I also argued that deriving the pragmatics of alternative disjunctive questions in Yoruba requires the successive evaluation of the same set of question alternatives introduced by disjunction first by the Q-operator and then by MAX. This is significant because it provides further evidence for a compositional system that allows alternative evaluating operators to selectively target alternatives from particular alternative introducing-items in their scope and to "pass on" alternatives to higher operators.

Chapter 3, the case study of Samoan FCI *so'o se*, started with a similar morphological observation about a morphological marker *'o*, which appears in an number of constructions that are generally analysed as involving alternative semantics including *wh*-questions, focus marking, disjunction, as well as in the free choice determiner *so'o se*. The chapter builds on work reported in Hohaus and Howell 2015 that analyses *'o* as a marker of constituents that introduce alternatives. Chapter

3 presents new fieldwork data on the distribution and interpretation of the free choice determiner *so'o se*, which reveals a pattern similar to universal free choice items from other languages such as Spanish *qualquier(a)* (Menéndez-Benito 2010), French *n'importe qu-* (Jayez and Tovena 2005) and Greek *otidhipote* (Giannakidou 2001). For the Samoan data, I argued that the morphological marking and the interpretation of *so'o se* relative to islands for movement provided data in favor of an analysis using alternatives, rather than a movement and variable binding one. However, data from intervention effects raises questions about an alternative semantic analysis. The FCI *so'o se* did not cause intervention effects and furthermore, it was not subject to intervention by alternative evaluating operators known to cause intervention elsewhere in the language. I conjectured that the lack of intervention effects could be explained if the FCIs are able to undergo covert movement to a position outside the scope of their intervening operator, rescuing the interpretation in cases of potential intervention. The final proposal was a decompositional analysis that leveraged the analysis of *'o* as a marker of distinguished variables from Hohaus and Howell 2015, Collins to appear's account of *se* as a narrow scope indefinite and Menéndez-Benito 2010's alternative semantic account of FCIs as universal quantification and exhaustification over alternatives. Some major empirical questions about the intervention behavior of Samoan FCIs and intervention effects with FCIs more generally would benefit from further in-depth investigation.

The two case studies of different grammatical phenomena in langauges that are not closely related to each other offer a unified perspective on the grammar of alternatives crosslinguistically. Both Samoan and Yoruba have a syntactic and morphological mechanism for marking alternatives which is used beyond the familiar cases of *wh*-questions and focus marking. This suggests that in some languages, the introduction of alternatives may be encoded by a feature ALT that applies more broadly than an F or *wh*-feature. The semantic analysis developed in each of the two case studies suggested furthermore that in both languages, the same compositional apparatus for generating and manipulating alternatives is employed more widely that just in focus and questions. Disjunction and free choice

determiners can introduce alternatives that are sensitive to the presence of alternative evaluating operators familiar from focus constructions and wh-question, while other alternative evaluating operators, such as the exhaustivizing MAX can target alternatives generated by different kinds of alternative-introducers: focussed constitutents, *wh*-phrases and disjunction.

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