

A Hamblin Semantics for Alternative Questions in Yoruba¹

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Abstract. Alternative and polar question interpretations of disjunctive questions in Yoruba (Niger-Congo, Nigeria) are syntactically disambiguated by obligatory fronting of the disjunction in the case of alternative but not of polar questions to a focus position at the left edge of the clause. This paper investigates the role of focus fronting and the accompanying focus particle *ni* in the compositional derivation of the alternative question set as well as for the triggering of a presupposition requiring mutual exclusivity of the two alternative propositions in the question set. The main claim is that movement to a designated focus position licenses the generation of alternatives which compose with the rest of the material in the question via Hamblin Function Application to derive an alternative question interpretation. The focus particle *ni* is argued to contribute a homogeneity presupposition both in alternative questions and elsewhere in the language which, when applied pointwise to each alternative in the question set, derives the mutual exclusivity requirement. The proposal developed here for Yoruba supports a view under which focus (marking the generation of alternatives) plays a stable role in deriving alternative question interpretations crosslinguistically, but differences in the semantic contribution of focus markers may yield subtle differences in the presuppositions they carry.

Keywords: Disjunctive Questions, Alternative Semantics, Crosslinguistic Variation

1. Introduction

The observation that disjunctive questions like (1) are associated with two kinds of interpretations, illustrated by the paraphrases in (1-a) and (1-b), is remarkably stable crosslinguistically (cf. (Beck & Kim 2006) for Korean, (Erlewine 2014) for Mandarin, (Uegaki 2014) for Japanese and by now a number of proposals have been made to explain how these two interpretations are derived compositionally (for a recent overview see Biezma & Rawlins 2015).

- (1) *Did Kemi buy the shoes or a book?*
- | | | |
|----|---|-----------------------------|
| a. | I want to know which of the two Kemi bought | Alternative Question (AltQ) |
| b. | I want to know whether she bought one of the two. | Polar Question (PolQ) |

This paper contributes data from Yoruba, a language in which AltQ and PolQ interpretations are syntactically disambiguated, to the empirical landscape and evaluates two major approaches to the compositional semantics of disjunctive questions with respect to how well they can capture the pat-

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tern of AltQ and PolQ interpretations in Yoruba. The first is the quantificational analysis developed in Larson (1985) and more recently defended by Nicolae (2013) while the second is an alternative semantic one argued for by Beck & Kim (2006), Erlewine (2014) and Biezma & Rawlins (2015). We argue that an alternative semantic approach is best suited to the Yoruba data for two reasons: Firstly, because it can provide an explanation for the one-to-one correspondence between focus fronting and alternative question interpretations, under the assumption that alternative-introducing constituents (including *wh*-pronouns and foci) obligatorily undergo fronting to a designated focus position. Secondly, it explains the interference of focus sensitive elements with the generation of AltQ interpretations, known as intervention effects (Beck 2006, Beck & Kim 2006), which remain unexplained by the quantificational approach. The paper also considers how mutual exclusivity presuppositions (cf. Biezma & Rawlins 2012) arise under the chosen account of alternative questions. We suggest that the focus particle *ni*, which obligatorily follows material that has undergone focus fronting in Yoruba, is responsible for the generation of this inference, via the introduction of a homogeneity presupposition modelled on the one proposed for English *it*-clefts by Buring & Križ (2013). We argue that, while the role of focus in generating the alternatives needed for an AltQ interpretation is crosslinguistically stable, the semantic contribution of the focus marker may be variable crosslinguistically, leading to variability in the presuppositions associated with alternative questions. The paper is structured as follows:

Section 2 presents the data on disjunctive questions in Yoruba: 2.1 on when AltQ and PolQ interpretations are available together with assumptions about their underlying syntax and 2.2 on the presuppositions carried by Yoruba AltQs. Section 3 spells out how the quantificational and alternative semantic analyses could be implemented for Yoruba (in 3.1 and 3.2 respectively) and then discusses evidence in favour of the alternative semantic approach (in 3.3). Section 4 develops a proposal for deriving the mutual exclusivity presupposition of AltQs via a homogeneity presupposition and then provides evidence for the claim that this presupposition comes from the focus particle *ni*. Section 5 concludes by considering the crosslinguistic picture.

2. Core Data

2.1. Building Alternative and Polar Questions in Yoruba

In Yoruba disjunctive questions, the syntactic position of the disjunction and presence or absence of a focus-marking particle, *ni*, determines whether a polar or alternative question interpretation is generated²: If the disjunction occurs in its canonical position, the question is unambiguously inter-

²In order to determine which interpretations were available for each syntactic configuration, two tests were used: The first was felicitous answers: If a question could be felicitously answered with *yes* or *no* (in an appropriate context), then it was taken to have a polar question interpretation. The second was felicity in a context where an answer to a PolQ interpretation would be uninformative, as in (i): If a question was felicitous in such a context it was deemed to have an alternative question interpretation.

(i) Context for (1): You know one of your two daughters, Adebimpe and Kemi, bought an *adire* [tye-dyed cloth] but you don't know which one. You ask...

preted as a polar question, as in (2-b)³ and (3-b). When the disjunction occurs at the left edge of the clause, following a question particle and followed by a focus-marking particle, as in (2-a) and (3-a), the question is unambiguously interpreted as an alternative question. This generalization is further supported by the fact that disjunctive questions which only allowed for an alternative question reading, because the two alternatives partition the space of logical possibilities, are rejected as unacceptable by native speakers when the disjunction is in its canonical position, (4-a). In these cases only the fronted form, (4-b), is acceptable.

- (2) a. *Şe* [*DisjP* *bata tabi iwe*] *ni* *Kemi ra*?
 Q shoes or book FOC Kemi buy
 “Did Kemi buy the SHOES or the BOOK?” (AltQ✓; PolQ#)
- b. *Şe* *Kemi ra* [*DisjP* *bata tabi iwe*]?
 Q Kemi buy shoes or book
 “Did Kemi buy shoes or a BOOK?” (AltQ#, PolQ✓)
- (3) a. *Şe* [*DisjP* *Kemi tabi Adebimpe*] *ni* *o ra adire naa*
 Q Kemi or Adebimpe FOC PRON buy cloth the
 “Did KEMI or ADEBIMPE buy the cloth” (AltQ✓; PolQ#)
- b. *Şe* [*DisjP* *Kemi tabi Adebimpe*] *ra adire naa*
 Q Kemi or Adebimpe buy adire the
 “Did Kemi or Adebime buy the cloth” (AltQ#, PolQ✓)
- (4) a. #*Şe* *omọ naa* [*DisjP* *okunrin tabi obinrin*]?
 Q child the male or female
 Intended: “Is the child a boy or a girl?”
- b. *Şe* [*DisjP* *okunrin tabi obinrin*] *ni* *omọ naa*?
 Q male or female FOC child the
 “Is the child a boy or a girl?”

I assume that the surface word order in AltQs is derived via movement of the disjunction from its base position to the specifier of a designated focus phrase headed by the focus marker *ni*, as in (5-a), while the polar question reflects base word order, (5-b).⁴

³Unless otherwise noted, all data are from fieldwork carried out by the author in Tübingen, London and Amherst. Examples are transcribed using standard Yoruba orthography. The following abbreviations are used in the glosses: FOC=focus particle, Q=interrogative particle, PRON=resumptive subject pronoun, NEG=negation NEG_{FS}=focus sensitive negation, REL=relative clause complementizer.

⁴An alternative syntactic derivation for Yoruba AltQs compatible with the data discussed so far, is as in (i). I will leave this possibility aside in what follows.

(i) [_{CP} *Şe* [_{DisjP} [_{FOCP} *Bata* [_{FOC'} *ni* *Kemi* *ra*]] *tabi* [_{Disj} [_{FOCP} *Iwe* [_{FOC'} *ni* *Kemi* *ra*]]]]]

- (5) a. $[_{CP} \text{Şe } [_{TP} \text{Kemi ra } [_{DisjP} \text{bata tabi iwe}]]]$ (PolQ)
 b. $[_{CP} \text{Şe } [_{FOcP} [_{DisjP} \text{bata tabi iwe}]_1 [_{FOc'} \text{ni}_{FOc} [_{TP} \text{Kemi ra } t_1]]]]]$ (AltQ)

Fronting of disjunction in AltQs closely resembles *wh*- and focus fronting in Yoruba, which have been argued to involve movement to the specifier of a focus phrase (Bisang & Sonaiya 2000, Aboh 2003). They are morphologically similar in that they all require the insertion of a particle, *ni*, after the fronted element and syntactically, they all exhibit similar locality restrictions. The examples below show, for example, that *wh*-movement (6-b) disjunction fronting (6-c) and focus fronting (6-d) are disallowed from within a relative clause.

- (6) a. *Bolu gba obinrin ti o le so Ede Hausa si iše.*
 Bolu take woman REL PRON can speak language Hausa for job.
 “Bolu hired a woman who can speak Hausa.”
 b. **Ede wo ni Bolu gba obinrin ti o le so si iše.*
 Language which FOC Bolu hire woman REL PRON can speak for job
 Intended: “For which language x : Bolu hired a woman who can speak x.”
 c. **Şe Ede Hausa tabi Ede Igbo ni Bolu gba obinrin ti o le so si iše.*
 Q lang. Hausa or lang. Igbo FOC Bolu hire woman REL PRON can speak for job
 Intended: “For which of Hausa or Igbo: Bolue hired a woman who can speak x.”
 d. **Ede Hausa ni Bolu gba obinrin ti o le so si iše.*
 language Hausa FOC Bolu hire woman REL PRON can speak for job
 Intended: “Bolu hired a woman who can speak HAUSA.”

The Yoruba pattern is relatively rare crosslinguistically, although it has been reported in other unrelated languages, e.g. Yucatec Maya (AnderBois 2014). What is more common is for alternative questions to require focus marking of some kind, e.g. a pitch accent. We will spell out a compositional account for AltQ and PolQ interpretations that can shed some light on the one-to-one correspondence between focus fronting (or focus more generally) and AltQ interpretations, but first we present some data bearing on the presuppositions associated with AltQs.

2.2. Presuppositions of Alternative Questions

Two presuppositions, termed *exhaustivity presupposition* and the *mutual exclusivity presupposition* have been discussed in connection with alternative questions (Biezma & Rawlins 2012). The former restricts them to use in contexts where the two specified alternatives partition the common ground, ruling out *neither* as a felicitous answer, as in (7-a). The latter excludes contexts where both alternatives are true simultaneously, ruling out *both* as a felicitous answer, as in (7-b)

- (7) *Did Kemi buy SHOES or a BOOK?*
- a. \rightsquigarrow Kemi bought one of the two
 - b. \rightsquigarrow Kemi didn't buy both

The Yoruba facts are subtly different: While they seem to trigger the same mutual exclusivity presuppositions as English AltQs, native speaker judgements differed from English in contexts where the exhaustivity presupposition was not satisfied. Yoruba AltQs were judged infelicitous when they occurred in contexts leaving open the possibility that both alternatives were true, (8), confirming the mutual exclusivity presupposition⁵. But, unlike English, Yoruba alternative questions were accepted by speakers in context where it was compatible with the conversational participants' beliefs that neither alternative was true, e.g in (9) and (10).

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

Bolu ko mo boya Segun tabi Tunji ni o dibo fun Buhari.
 Bolu NEG know Q Segun or Tunji FOC PRON vote for Buhari.
 "Bolu doesn't know whether SEGUN or TUNJI voted for Buhari."

- (9) CONTEXT: Your family takes turns cooking dinner, but you've forgotten whose turn it is tonight. You know it's not your turn, but it could be your brother's, your mother's or your father's. You ask:

Se Tunji tabi Baba ni o maa se ounje loni.
 Q Tunji or father FOC PRON will cook food today
 'Will TUNJI or DAD cook dinner today?'

- (10) CONTEXT: Bolu comes home and finds a new *adire* on the table. It could have been bought by one of his daughters, Kemi or Adebimpe, but it also might have been bought by his wife.

Bolu ko mo boya Kemi tabi Adebimpe ni o ra adire.
 Bolu NEG know Q Kemi or Adebimpe FOC PRON buy *adire*
 'Bolu doesn't know whether KEMI or ADEBIMPE bought the *adire*.'

A satisfactory analysis of disjunctive questions should provide an account of how the presupposition(s) associated with alternative questions arise and address the question of crosslinguistic variation in the nature of these presuppositions highlighted by the Yoruba data. We will return to this topic in section 4 and propose a modification of the alternative semantic account advocated in section 3 which can do so.

⁵Note that the projective behavior of the mutual exclusivity inference, e.g. under *know*, is an indication that it is presupposed material.

3. The Compositional Interpretation of Alternative and Polar Questions

Following much previous work on the semantics of disjunctive questions (Beck & Kim 2006, Romero & Han 2003, Biezma & Rawlins 2012, and many others) we take the denotations of the polar and alternative disjunctive question in (1) to be the sets in (11-b) and (11-a) respectively.

- (11) a. PolQ: $\{\lambda w. \text{Kemi bought a book or the shoes in } w, \lambda w. \text{Kemi didn't buy a book or the shoes in } w\}$
 b. AltQ: $\{\lambda w. \text{Kemi bought a book in } w. \lambda w. \text{Kemi bought the shoes in } w. \}$

The goal in this section, then, is to provide a compositional semantics that will generate the set in (11-a) for (2-b) and the set in (11-b) for (2-a). We will consider two major approaches to this problem: The first, including early work by Larson (1985) as well as more recent proposals, for example by Nicolae (2013), derives the two different sets from variable scope of a quantificational disjunctive operator relative to a question particle under a Karttunen (1977)-style interrogative semantics. The second type of account, pursued for example by Beck & Kim (2006) and Erlewine (2014) relies on a disjunctive operator whose semantic contribution varies in alternative and polar questions. In AltQs, a disjunction operator that introduces alternatives is responsible for the generation of alternative question interpretations, while in PolQs the disjunction contributes an existential quantifier meaning. We'll look first at how a quantificational analysis could be applied to the Yoruba data, followed by a sketch of an alternative semantic account. Then Section 2.3 assesses the evidence for both analyses and argues in favour of an alternative semantic account based on data from intervention effects and focus-marking.

3.1. The Quantificational Analysis

A first approach to deriving the question sets of polar and alternative questions builds on a Karttunen semantics for questions where *wh*-pronouns contribute existential quantification and outscope a set forming Q-operator, (12-a). The structure and derivation of alternative questions under this approach is similar to that of *wh*-question with the existential quantification coming from the disjunctive operator, given in (12-b)⁶.

- (12) a. $\llbracket Q \rrbracket = \lambda p_{\langle st \rangle}. \lambda q_{\langle st \rangle}. p = q$
 b. $\llbracket or \rrbracket = \lambda x. \lambda y. \lambda P_{\langle et \rangle} \exists z [(z = x \vee z = y) \wedge P(x)]$

The alternative question in (3-a) is associated with the LF in (13-a) and yields the denotation in (13-b), which is the desired set of propositions for an AltQ interpretation. Note however that the

⁶A slight modification of a Karttunen interrogative semantics is required in order to maintain a standard type $\langle \langle et \rangle t \rangle$ denotation for the existential quantifier. Here I follow Nicolae (2013) who credits lecture notes by Irene Heim.

final movement of the DisjP to a position higher than the Q must take place covertly. In the overt syntax the disjunction remains in the specifier of the FocP, between the interrogative particle *Şe* and the focus particle *ni*.

- (13) a. $[_{CP} 1 [_{DisjP} Ade\ or\ Kemi] 2 [_{C'} [Q\ t_{st,1}] [\lambda w. [_{FocP}\ t_{e,2} 2 [_{Foc'}\ ni] [_{TP}\ PRON_{e,2}\ buy\ cloth\ w}]]]]]]$
 b. $[[(13-a)]] = \lambda p. \exists x [(x = Kemi \vee x = Adebimpe) \wedge p = \lambda w. buy(cloth, x, w)]$

To derive polar questions under this approach, the disjunction contributes the same existential quantification, but unlike in alternative questions, it remains in a position within the scope of the Q-operator and thus does not affect the form of the resulting question set. This is spelled out below for the polar question in (3-b) which has the LF structure in (14-a) and derives the set in (14-b).

- (14) a. $[_{CP}\ Q\ \lambda w. [_{TP}\ [_{DisjP}\ Kemi\ or\ Ade] buy\ cloth\ w]]]$
 b. $[[(14-a)]] = \lambda p. p = \lambda w. \exists x [(x = K \vee x = A) \wedge buy(adire, x, w)]$

The set in (14-b) is a singleton set and a further step is required in order to obtain a two membered set. We leave it open how to derive the more standard two-membered polar question denotation, as there are a number of approaches on the market: The question denotation must be applied to a further operator, like the one used in Uegaki (2015), crediting George (2011) which partitions *W* based on the proposition(s) in the question set applied to it. Or, it must undergo coercion extra-compositionally, e.g via the coercion rule proposed by Biezma & Rawlins (2012) in (15) for singleton question denotations. A third, more standard option is to use a different Q-operator for polar questions, such as the one proposed in Hamblin (1973).

- (15) ANTI-SINGLETON COERCION (Biezma & Rawlins 2012, p. 33)
 If $[[\alpha]] = 1$, where α is of type $\langle s, tt \rangle$ and denotes $\{A\}$, then α can be coerced (as a last resort) into the denotation $\{\lambda w. A(w), \lambda w. \neg A(w)\}$

Under the quantificational approach the difference between polar and alternative question interpretations arises as a scope ambiguity from the relative scope of disjunction and the interrogative operator: If the disjunction takes wide scope, an alternative question is generated while an LF where it takes narrow scope relative to Q will derive a polar question. On the face of it, this correlates well with the observation that disjunction must undergo fronting in alternative but not polar questions. However, this cannot be the end of the story, since the fronted disjunction remains below the Q-particle *Şe* at surface syntax, even when it is fronted. If a quantificational analysis is to be pursued, something more needs to be said about how the disjunction receives wider scope than Q at LF in AltQs. There are a number of avenues which could be explored: It might be the case that the high DisjP can undergo further covert movement to a position higher than *Şe*. Another

possibility is that ζ_e is distinct from the (covert) Q operator, a plausible hypothesis in light of its absence in *wh*-questions. Whatever the final step in the argumentation, though, it needs to be available only for disjunction having undergone movement to FocP in order to explain the one-to-one correspondence observed between fronting and alternative question interpretations. We will come back to this point in the discussion in 3.3, but first we spell out the second analysis for disjunctive questions.

3.2. The Alternative Semantics Analysis

The second approach to disjunctive questions builds on an alternative semantics for questions, developed initially for *wh*-in-situ languages like Japanese (Shimoyama 2006, Kratzer & Shimoyama 2002) but which has also been pursued in *wh*-fronting languages (for example in Beck 2006). This approach derives question sets via a *wh*-pronoun, (16-a), that introduces alternatives, for example in a Roothian two-tiered framework, which compose with the rest of the material in the sentence via Hamblin Function Application, (16-c), until it forms a set of propositions which is taken as the question denotation by a Q-operator that triggers the meaning rule in (16-b)⁷.

- (16) a. $\llbracket who \rrbracket_{Alt}^g = \{x : x \in D_e \ \& \ person(x)\}$
 b. MEANING RULE Q
 For any node α such that $\alpha = [Q \ \beta]$, then $\llbracket \alpha \rrbracket_O^g = \llbracket \beta \rrbracket_{Alt}^g$
 c. POINTWISE FUNCTION APPLICATION (Kratzer & Shimoyama 2002)
 If α is a branching node with daughters β and γ and $\llbracket \beta \rrbracket_{Alt}^g \subseteq D_\sigma$ and $\llbracket \gamma \rrbracket_{Alt}^g \subseteq D_{\langle \sigma, \tau \rangle}$, then $\llbracket \alpha \rrbracket_{Alt}^g = \{a \in D_\tau : \exists b \exists c [b \in \llbracket \beta \rrbracket_{Alt}^g \ \& \ c \in \llbracket \gamma \rrbracket_{Alt}^g \ \& \ a = c(b)]\}$

Beck & Kim (2006) extend the above alternative semantics for interrogatives to alternative questions by proposing that disjunction introduces alternatives on the roothian alternative semantic tier, specifically, the two-membered set containing each disjunct. This is done via something like the meaning rule in (17)⁸. This two membered set combines via pointwise FA with the rest of the material in the sentence to yield a set of two propositions which, when they combine with the Q-operator, become the alternative question denotation. This is illustrated below for the sentence in (3-a), which is assigned the LF in (18-a) and receives the denotation in (18-b).

⁷Rules for Predicate Modification and Predicate Abstraction must also be modified for pairwise composition. There are questions about the validity of the rule for pairwise predicate abstraction. Kratzer & Shimoyama (2002) provide one version of a PA rule, but it is questionable whether this derives the right results (cf. Novel & Romero 2010). We will not address this issue here.

⁸This meaning rule is somewhat different from Beck & Kim's in that the ordinary semantic value of an focussed disjunction is undefined. We need this modification to account for the non-availability of *PolQ* interpretations in cases of intervention by negation discussed in 3.3.

(17) MEANING RULE FOR FOCUSSED DISJUNCTION:

For any focussed node α such that $\alpha = [\beta \text{ or } \gamma]_F$,

$\llbracket \alpha \rrbracket_{Alt}^g = \llbracket \beta \rrbracket_{Alt}^g \cup \llbracket \gamma \rrbracket_{Alt}^g$

and $\llbracket \alpha \rrbracket_O^g$ is undefined

- (18) a. $[_{CP} \text{Şe } [_{\lambda w} [_{FP} [_{DisjP} \text{Adebimpe tabi Kehinde}]] [_{F'} \text{ni } [_{TP} \text{o}_1 [_{VP} \text{ra adire}]]]]]]$
b. $\llbracket (18\text{-a}) \rrbracket_O^g = \{p : \exists x \in \{\text{Adebimpe, Taiwo}\} \& p = \lambda w. \text{buy.adire}(x, w)\}$

In polar questions, disjunction is taken to contribute the same existential quantifier as in the quantificational account above. None of the lexical items in the structure contribute a non-singleton on the alternative semantic tier, so the derivation proceeds just as in (14-a) and the resulting alternative semantic value of the sister to Q is the same singleton set derived by the quantificational account in (14-b). The Q-operator takes this set as the question denotation and then, as with the quantificational account, a further step or distinct Q operator is required to arrive at a two-membered polar question denotation.

Under this approach, the difference between the alternative question and polar question interpretation is the result of a lexical ambiguity: The focussed disjunction in the alternative questions triggers a meaning rule for disjunction which introduces alternatives, while an unfocussed disjunction contributes its usual quantificational meaning leading to a polar question interpretation. There is some crosslinguistic evidence for an account based on lexical ambiguity, since many languages employ two morphologically distinct disjunction operators for alternative and polar questions (cf. Erlewine 2014 for Mandarin, Biezma & Rawlins 2015), however it's worth noting that in many of these languages one of them can often still generate both alternative and polar questions. This account also sheds some light relationship between focus fronting and alternative question interpretations, since focus marking of the disjunction, which triggers the meaning rule that generates AltQ interpretations, also causes it to move to the specifier of FocP.

3.3. Arguments for an Alternative Semantics

We have introduced two analyses to derive the interpretation of disjunctive questions which can both successfully derive the alternative and polar question sets. We suggested above that under an alternative semantics account the correlation between an alternative question meaning and focus fronting is explained by the requirement that the meaning rule for disjunction be triggered by focus and therefore occurs in only those environments where the disjunction has undergone focus fronting. Under the quantificational approach, on the other hand, we did not have a principled way of explaining the obligatoriness of focus fronting in the case of alternative questions, although we do not claim that it wouldn't be possible to develop such an explanation. In the next section, we look more closely at evidence that will help us choose between the two proposals. We argue that

the strongest evidence in favour of the alternative semantics account comes from the presence of intervention effects in alternative questions in Yoruba but begin by considering a second argument based on the distribution of alternative-introducing material in Yoruba.

3.3.1. The Argument from Focus

A first argument in favour of the alternative semantics account of AltQs in Yoruba comes from the distribution of material that generates alternatives in the language. Elements which have been claimed in the formal semantic literature to introduce alternatives, including wh-pronouns (Beck 2006) and foci (Rooth 1992) undergo the same fronting as disjunction in AltQs to a position at the left of the clause, followed by the particle *ni*. This is obligatory for wh-pronouns and the associates of focus sensitive particles such as the exclusive particle *nikan* and the focus sensitive negation *kọ*⁹ and optional for answers to a QUD and contrastive foci. If the hypothesis that fronting marks constituents which introduce alternatives is correct, as the distributional evidence suggests, then the obligatory fronting of the disjunction in alternative questions provides a preliminary indication that an alternative semantic analysis of disjunction is on the right track.

- (19) a. *Iwe wo ni won ra?*
 Book which FOC 2.pl buy
 “Which book did you buy” (wh-question)
- (20) a. *Eja nikan ni Bolu ra.*
 Fish only FOC Bolu buy
 “Bolu only bought FISH” (# ‘only BOLU bought fish.’)
 b. **Bolu ra (nikan) Eja (nikan).* (associate of *only*)
- (21) a. *Adebimpe kọ ni o fo ferese.*
 Adebimpe NEG_{FS} FOC PRON break window.
 “It wasn’t Adebimpe who broke the window.”
 b. **Adebimpe kọ fo ferese.* (associate of *kọ*)
- (22) CONTEXT: Did you buy shoes?
 a. *Iwe ni mo ra.*
 Book FOC 1.sg buy.
 “I bought a BOOK.” (contrastive focus)

⁹Yoruba has two different negation particles *ko* and *kọ* (/ko/ and /kɔ/). The first corresponds to ordinary negation while the second obligatorily co-occurs with focus fronting and yields an interpretation similar to a negated cleft.

3.3.2. The Argument from Intervention Effects

A stronger argument in favor of an alternative semantics for disjunction comes from intervention effects with alternative questions. Beck & Kim (2006) note that in many languages including English, German and Korean alternative question interpretations are blocked when a focus sensitive operator intervenes between the disjunction in an alternative question and the interrogative complementizer, as schematized in (23-b). They propose that this is an instance of focus intervention, similar to the account of intervention in *wh*-questions proposed in Beck (2006). When a focus evaluating operator (\sim , diagnosed by the presence of a focus sensitive particle) is present at LF in a position between an alternative generating disjunction or *wh*-pronoun and the corresponding Q-operator, the alternatives they generate are evaluated by the focus evaluating \sim -operator. The meaning rule triggered by the \sim -operator, in (24), is defined in such a way that it resets the alternative semantic value of the node dominating it to the singleton set containing its ordinary semantic value. Depending on the way the meaning rule for disjunction is defined, this will either generate a singleton set corresponding to the polar question interpretation of the question, or will be undefined (as with our proposed meaning rule).

- (23) a. Did only Sally_F teach Syntax or Semantics? (# AltQ, ✓ PolQ)
 b. [Q ... [\sim ... [[...]_F [*DisjP* A or B]]]]

- (24) Meaning Rule \sim :
 For any node α such that $\alpha = [\sim C \beta]$,
 $\llbracket \alpha \rrbracket_O^g$ is defined if and only if $g(C) \subseteq \llbracket \beta \rrbracket_{Alt}^g$, if so:
 $\llbracket \alpha \rrbracket_O^g = \llbracket \beta \rrbracket_O^g$ and $\llbracket \alpha \rrbracket_{Alt}^g = \{ \llbracket \beta \rrbracket_O^g \}$

The possible interpretation(s) of configurations as in (23-b) can be used as evidence for or against an alternative semantics account, but in Yoruba they are difficult to test. The obligatory movement to Spec FocP in alternative questions would likely obviate intervention effects, as *wh*-fronting has been observed to do in other languages (Beck 1996, 2006). Negation, for example, is a crosslinguistically stable intervener, but in (25), where the disjunction has moved to a surface position higher than the negation, no intervention arises.

- (25) *Şe Adebimpe tabi Taiwo ni o ko fo ferese?*
 Q Adebimpe or Taiwo FOC PRON NEG break window
 ‘‘Was it Adebimpe or Taiwo who didn’t break the window?’’

It is however possible to test for intervention in configurations where a focus sensitive operator targets the disjunction in an AltQ, as in (26) for which the alternative semantics account also predicts an intervention effect caused by the squiggle accompanying the focus sensitive operator.

(26) $[_{CP} Q [Op_{FS} [\sim [[_{DisjP} A \text{ or } B]_F \dots]]]]$

This configuration does lead to intervention effects, as illustrated for the two reliably focus sensitive operators in Yoruba: the exclusive particle *nikan* and the focus sensitive negation *kọ*. With the exclusive particle *nikan*, this configuration yielded only a polar question interpretation, despite the fronting of the disjunction, as in (27). With the focus sensitive negation, on the other hand, it was rejected under any interpretation, (28).

(27) Context: You know that only one of your two sisters Taiwo or Kehinde will go to Lagos, but you're not sure which of the two will go. You ask your mother:

#*Şe Taiwo tabi Kehinde nikan ni o maa lo si Eko?*

Q Taiwo or Kehinde only FOC PRON will go to Lagos

Intended: "For which of Taiwo or Kehinde is it true that only they will go to Lagos?"

(Consultant's Comment: "You want to confirm if only one of them will go.")

(28) **Şe Adebimpe tabi Taiwo ko ni o fo ferese?*

Q Adebimpe or Taiwo NEG FOC PRON break window.

Intended: "which of Adebimpe or Taiwo didn't break the window?"

The quantificational account of AltQs does not predict any effect of the presence of a focus sensitive operator on the generation of an alternative question interpretation, and the judgements reported in (27) and (28) are unexpected. The alternative-semantic account on the other hand offers an explanation of these facts. The \sim -operator, which must be in a position higher than the disjunction, but within the scope of Q , blocks the alternatives generated within the disjunction from being used by Q . One unexpected fact under this account is the contrast between intervention by focus sensitive negation, causing ungrammaticality, versus intervention by the exclusive particle, which generates an acceptable polar question interpretation. If the meaning rule for negation proposed in section 3.2 is required for any instances in which the disjunction is focussed then all cases of intervention should pattern like the focus sensitive negation, because the ordinary semantic value of the disjunction is undefined, so the alternative semantic value generated from the meaning rule for \sim will be undefined as well, resulting in an undefined question denotation. If a quantificational disjunction can be used instead, then the polar question meaning is predicted to be available too, as with the exclusive particle. I leave an explanation of the differing behaviour of the exclusive particle and negation with respect to intervention for future work.

4. Deriving the Presuppositions of Alternative Questions

The previous section argued for a Hamblin semantics to derive the question set of alternative questions in Yoruba. Under the proposed analysis, focus marking of the disjunction played an important role in deriving the alternative question set by licensing the use of a meaning rule introducing al-

ternatives into the computation. The semantics proposed so far does not, however, explain the presence of the mutual exclusivity presupposition associated with Yoruba alternative questions. The relevant presupposition introduces the requirement that at least one of the alternatives in the question set be false, and is responsible for the infelicity of question below (repeated from 2.2):

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

Bolu ko mo boya Segun tabi Tunji ni o dibo fun Buhari.
 Bolu NEG know Q Segun or Tunji FOC PRON vote for Buhari.
 ‘‘Bolu doesn’t know whether SEGUN or TUNJI voted for Buhari.’’

Notably, a second presupposition associated with AltQs in other languages, requiring that one of the alternatives be true is absent in Yoruba, as illustrated by the acceptability of the alternative question in the context below (repeated from 2.2).

- (30) CONTEXT: Your family takes turns cooking dinner, but you’ve forgotten whose turn it is tonight. You know it’s not yours, but it could be your brother’s, your mother’s or your father’s. You ask:

Se Tunji tabi Baba ni o maa se ounje loni.
 Q Tunji or father FOC PRON will cook food today
 ‘Will TUNJI or DAD cook dinner today?’

In this section we put forward a proposal to account for the observed presuppositionality of AltQs in Yoruba. It locates the focus particle *ni* as the source of this presupposition, which we model as a homogeneity presupposition, inspired by the account of it-clefts in Büring & Križ (2013). This formalization has the advantage of predicting the mutual exclusivity requirement without requiring exhaustivity and as such is well suited to the Yoruba data. Our claim is supported by data from inferences present in cases of focus fronting beyond alternative questions. This account provides an interesting explanation for observed variation between English and Yoruba alternative questions with respect to their presuppositions: While focus marking is likely responsible for the generation of the alternative question set in both Yoruba and English (presumably by licensing the alternative-introducing meaning rule for disjunction), the precise nature of inferences introduced by focus-marking may vary crosslinguistically, leading to differences in the presuppositions triggered by alternative questions.

4.1. Deriving Mutual Exclusivity from the Homogeneity Presupposition

The account for the badness of a *both* answers to an alternative question draws heavily on the analysis of it-clefts proposed in Büring & Križ (2013). They argue that the exhaustivity inference

in it-clefts, which, in the example below is responsible for the inference that no one other than Nadine brought potato salad, is the result of a homogeneity presupposition introduced by the cleft. Technically, they spell this out via a null CLEFT-operator with the following denotation.

- (31) It was Nadine who brought potato salad.
 \rightsquigarrow Nobody else brought potato salad.

(32) $CLEFT = \lambda z. \lambda P : \forall x \in Max(P)[z \not\sqsubset x]. P(z)$ ¹⁰ (Büring & Križ 2013, p.9)

The presupposition introduced by the cleft will guarantee that either Nadine did not bring potato salad, or she is not a proper part of a plural individual who brought potato. Together with the assertion of the cleft (that Nadine brought potato salad) and the assumption that natural language predicates are closed under sum formation (Schwarzschild 1993, Champollion 2010), this delivers the exhaustivity presupposition, since if someone else brought potato salad, Nadine would be a proper part of the maximal individual who brought potato salad.

This presupposition can also deliver the mutual exclusivity inference that is associated with Yoruba alternative questions, when it is applied pairwise to each alternative. If Büring & Križ's CLEFT operator is applied to each disjunct of an AltQ, via pairwise function application, and each resulting function is then applied to the predicate created by movement of the disjunction it will deliver two homogeneity presuppositions: neither the first disjunct nor the second disjunct can be a proper part of the maximal plurality of which the predicated (created by fronting of the disjunction) is true. If the predicate were true of both alternatives in the disjunction, both would be proper parts of an element of Max(P), leading to presupposition failure if mutual exclusivity is not satisfied. This is illustrated below for an English clefted AltQ with the LF in (33-b), which is assigned the denotation in (33-c). The question set derived in this way does not introduce any requirement that one of the two alternatives, Sonja bringing a potato salad or Nadine bringing a potato salad, be true, as intended.

- (33) a. Was it Nadine or Sonja who brought potato salad?
 b. $[Q \lambda w [[CLEFT [DisjP \text{Nadine or Sonja}]]] [\text{Brought potato salad } t_1]]]$
 c. $\{ \lambda w. \forall x \in Max(\lambda y. y \text{ brought potato salad in } w) [\text{Sonja } \not\sqsubset x] : \text{Sonja brought potato salad in } w ; \lambda w. \forall x \in Max(\lambda y. y \text{ brought potato salad in } w) [\text{Nadine } \not\sqsubset x] : \text{Nadine brought potato salad in } w \}$

¹⁰Where \sqcup is the mereological sum operator (Link 1983) and:
 $X \sqsubseteq Y$ ('X is a mereological part of Y') iff $X \sqcup Y = Y$
 $X \sqsubset Y$ ('X is a proper mereological part of Y') iff $X \sqsubseteq Y$ and not $Y \sqsubseteq X$
 For any predicate P, Max(P) is the set of individuals x such that $P(x) \ \& \ \neg \exists y [P(y) \ \& \ x \sqsubset y]$

4.2. Locating the Source of the Homogeneity Presupposition

A homogeneity presupposition can derive the mutual exclusivity presupposition, but how does this presupposition arise in Yoruba alternative questions? The focus marker *ni* is a good candidate, as its use elsewhere in the language seems to correlate with the generation of similar inferences. For example, the copular use of *ni* is also associated with an exhaustivity requirement, as noted by Bisang and Sonaiya (2000), who give the examples in (34) to illustrate the requirement that *ni* not be used as a copula with predicates that hold of multiple individuals. Similarly, focus fronting of a constituent to a pre-*ni* position also yields an exhaustivity inference, which projects from within questions, accounting for the unacceptability of the question in (35-a) in the second but not the first context.¹¹

- (34) a. **Ade ni tisa.*
 Ade FOC teacher
 ‘Ade is a teacher.’
 b. *Ade ni tisa dara ju.*
 Ade FOC teacher good most
 ‘Ade is the best teacher.’ (Bisang & Sonaiya 2000)

- (35) CONTEXT 1: Ade is talking to someone in his office. You can hear them talking and you want to know if he is talking to Kemi.
 CONTEXT 2: Ade is talking to multiple people throughout the day. You want to know if your friend Kemi is among them.
 a. *Ṣe Kemi ni Ade mba-soro?*
 Q Kemi FOC Ade talk-to
 ‘Is Ade talking to KEMI?’ (✓ Context 1, # Context 2)

The data from copular sentences and focus fronting support the hypothesis that *ni* is responsible for the homogeneity presupposition observed in alternative questions. Our proposed lexical entry for *ni*, in (36), is a version of Büring & Križ’s CLEFT. The order of the arguments is reversed in this lexical entry to reflect the proposed syntax for alternative questions, in which *ni* is the head of a focus phrase whose specifier is filled by the fronted disjunction.

- (36) $\llbracket \text{ni} \rrbracket = \lambda P \lambda z : \forall x \in \text{Max}(P)[z \not\sqsubset x].P(z)$

¹¹There are some exceptions to this generalization which remain a puzzle under this account of *ni*. For example, it is also obligatorily present in mention some *wh*-questions and, more worryingly, can mark the associate of an additive particle. We leave it to future work to determine under what conditions the exhaustivity requirement associated with *ni* can be suppressed.

We assume that the focus particle combines first with the predicate formed by movement of disjunction out of the TP, and then with each disjunct via pairwise function application. The final proposal is spelled out for the example (3-a), associated with the LF in (37-b) in (38-e).

- (37) a. *Şe* [_{DisjP} *Kemi tabi Adebimpe*] *ni o ra adire naa*
 Q Kemi or Adebimpe FOC PRON buy cloth the
 “Did KEMI or ADEBIMPE buy the cloth”
 b. [_{CP} *Şe* [_{FocP} 2 [_{DisjP} *Adebimpe tabi Kehinde*] [_{Foc'} *ni* [_{TP} 1 o₁ [_{VP} *ra adire w₂*]]]]]]
- (38) a. $\llbracket \text{TP} \rrbracket_{Alt} = \{\lambda x. buy(x, adire, w_2)\}$
 b. $\llbracket \text{Foc}' \rrbracket_{Alt} = \{\lambda x'. \forall y \in Max(\lambda x. buy(x, adire, w_2))[x' \not\subseteq y] : buy(x', adire, w_2)\}$
 c. $\llbracket \text{DisjP} \rrbracket_{Alt} = \{Adebimpe, Kemi\}$
 d. $\llbracket \text{Foc}' \rrbracket_{Alt}(\llbracket \text{DisjP} \rrbracket_{Alt}) =$
 $\{f : \exists x[x \in \{A, K\}] \& f \text{ defined iff } \forall y \in Max(\lambda x. buy(x, adire, w_2))[x \not\subseteq y] \& f = buy(x, Adire, w_2)\}$
 e. $\llbracket \text{FocP} \rrbracket_{Alt} = \llbracket \text{CP} \rrbracket_{O=}$
 $\{p : \exists x[x \in \{Kemi, Adebimpe\}] \& p = \lambda w. \forall y \in Max(\lambda x'. buy(x', adire, w))[x \not\subseteq y] : buy(x, adire, w)\}$

The resulting question set, in (38-e) includes the same two propositions as before, but with the additional presuppositions that Kemi and Adebimpe both not be a proper part of a maximal individual of which $\lambda x. buy(x, adire, w)$ is true, which boils down to the mutual exclusivity requirement that both propositions not be true at the same time.

5. Conclusion

This paper developed a compositional account of disjunctive questions in Yoruba and argued on the bases of the distribution of alternative introducing constituents and intervention effects that a Hamblin semantics for alternative questions was best suited to explain the one-to-one correspondence between focus fronting and an alternative question interpretation observed in Yoruba. The alternative semantic account furthermore provided the basis for an account of the mutual exclusivity presupposition triggered by alternative questions in Yoruba. The homogeneity presupposition-introducing CLEFT of Büring and Križ (2013), when applied pointwise to each disjunct in the two-membered alternative set, was shown to deliver the mutual exclusivity requirement of alternative questions. The proposed semantics did not generate the exhaustivity presupposition associated with alternative questions in English, which we demonstrated were absent in Yoruba AltQs. The contrast between English and Yoruba here raises an interesting question. The observation that focus marking is crucial for the derivation of an alternative question interpretation is crosslinguistically stable (whether focus is marked syntactically, as in Yoruba, or intonationally, as in English). This fits well with the alternative semantic story we advocate here. Plausibly, variation arises as a result of subtle differences in the semantic contribution of focus marking in different languages.

While Yoruba employs a strategy for focus marking which closely resembles English it-cleft constructions, the semantic contribution of English intonational focus marking is different, resulting in the varying presuppositions observed in Yoruba and English.

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