

# Negation, Focus and Alternative Questions

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## 1. Introduction

This paper presents the observation that negative non-*wh*-questions with inverted negation do not have an alternative (alt-)question reading. In English, a simple question like (1) has two possible readings: a *yes-no* (*yn*-)question reading, paraphrased in (1a), and an alt-question reading, disambiguated in (1b). Under the *yn*-question reading, the question can be answered as in (2); under the alt-question reading, acceptable answers are (3).

- (1) Did John drink coffee or tea?  
a. “Is it the case that John drank any of these two things, coffee or tea?”  
b. “Which of these two things did John drink: coffee or tea?”
- (2) a. Yes, John drank coffee or tea.  
b. No, John didn’t drink coffee or tea.
- (3) a. John drank coffee.  
b. John drank tea.

When we turn to negative questions, both readings are available for examples with non-inverted negation, as in (4), but not for inverted negation examples as in (5) (Han, 1999): (5) has a *yn*-question reading, but it lacks the corresponding alt-reading.

- (4) Did John not drink coffee or tea?  
a. Yes, John did not drink coffee or tea. (*yn*-reading)  
No, he did drink coffee or tea.  
b. John did not drink coffee. (alt-reading)  
John did not drink tea.

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- (5) Didn't John drink coffee or tea?  
 a. No, John did not drink coffee or tea. (*yn*-reading)  
 Right, he did drink coffee or tea.  
 b. #John did not drink coffee. (alt-reading)  
 #John did not drink tea

The aim of this paper is to propose an analysis of the interpretive asymmetry between negative *yn*-questions with inverted negation and uninverted negation. We propose to derive this asymmetry from the interplay between effects of Focus on negation and the LF-syntax of alt-questions.

## 2. The crosslinguistic extent of the problem

The same interpretive asymmetry is found in a number of languages. Note, though, that the loss of alt-reading is not tied to negation being in  $C^0$ , but to negation being in some preposed position. For example, in Spanish and Modern Greek, though the preposed negation inverts with the subject, it has been convincingly argued by Suñer (1994) for Spanish and Alexiadou and Anagnostopoulou (1998) for Modern Greek that the verb along with negation is not in  $C^0$  in sentences with Verb-Subject-Object order in these languages.

- (6) Modern Greek  
 a. Den ipie o Yannis kafe i tsai?  
 Neg drank the Yannis coffee or tea  
 'Didn't Yannis drink coffee or tea?' (*yes-no* Q)  
 b. O Yannis den ipie kafe i tsai?  
 the Yannis Neg drank coffee or tea  
 'Did Yannis not drink coffee or tea?' (*yes-no*, alternative Q)
- (7) Spanish  
 a. ¿Juan no bebió café o té?  
 Juan Neg drank coffee or tea  
 'Did John not drink coffee or tea?' (*yes-no*, alternative Q)  
 b. ¿No bebió Juan café o té?  
 Neg drank Juan coffee or tea  
 'Didn't Juan drink coffee or tea?' (*yes-no* Q)
- (8) Bulgarian  
 a. Dali Ivan ne pie kafe ili caj?  
 Dali Ivan Neg drink coffee or tea  
 'Is Ivan not drinking coffee or tea?' (*yes-no*, alternative Q)  
 b. Ne pie li Ivan kafe ili caj?  
 Neg drink li Ivan coffee or tea  
 'Isn't Ivan drinking coffee or tea?' (*yes-no* Q)

In sum, crosslinguistically, questions with preposed negation do not have alt-reading, whereas questions with negation in canonical position do. Having pointed this out, for the rest of the paper, we will restrict our discussion to English.

### 3. Sharpening the nature of the problem: review of possible analyses

In this section, we will consider three possible analyses, and point out their problems. These analyses consist of extending Larson's (1985) scopal theory on disjunction, exploring the difference between constituent and sentential negation, and assigning scopal privilege to negation in  $C^0$ . We will then motivate our focus-based account.

#### 3.1. Larson's (1985) scopal theory of affirmative questions

According to Larson (1985), both *yn*- and alt-questions have a question operator: *whether* or null  $Q$ . Larson proposes that this operator originates in a disjunction phrase and moves to [Spec, CP], marking the scope of that disjunction. Moreover, a *yn*-question may have an unpronounced disjunction phrase *or not*. If the empty operator originates from the *or not* phrase, the *yn*-reading is derived. If the question operator originates from another kind of disjunction phrase (e.g., *coffee or tea*, *buy or sell*, etc.), the alt-reading is derived.

- (9) Did John drink coffee or tea?  
 a. *yes-no* question:  
 $Op_i (\epsilon_i \text{ or not}) [\text{did John drink } Op_j [\epsilon_j \text{ coffee or tea}]]$   
 {John drank coffee or tea, John didn't drink coffee or tea}  
 b. alternative question:  
 $Op_i [\text{did John drink } [\epsilon_i \text{ coffee or tea}]]$   
 {John drank coffee, John drank tea}

#### 3.2. A first extension of Larson's theory to negative questions

According to Larson, disjunction cannot take scope over negation. In (10), only the reading in (10a) is available.

- (10) John did not drink coffee or tea.  
 a. John did not drink  $Op_i [\epsilon_i \text{ coffee or tea}]$ . He drank juice.  
 (narrow scope *or*)  
 b.  $*Op_i$  John did not drink  $[\epsilon_i \text{ coffee or tea}]$ . But I don't know which.  
 (wide scope *or*)

If we extend Larson to negative questions, he makes correct predictions for questions with inverted negation, as shown in (11). However, for questions

with uninverted negation, while the *yn*-reading is correctly predicted to be available, the alt-reading is incorrectly predicted not to be available.

- (11) Didn't John drink coffee or tea?  
 a. *yes-no* question:  
 $Op_i (\epsilon_i \text{ or not}) [\text{didn't John drink } Op_j [\epsilon_j \text{ coffee or tea}]]$   
 b. \*alternative question:  
 $Op_i [\text{didn't John drink } [\epsilon_i \text{ coffee or tea}]]$
- (12) Did John not drink coffee or tea?  
 a. *yes-no* question:  
 $Op_i (\epsilon_i \text{ or not}) [\text{did John not drink } Op_j [\epsilon_j \text{ coffee or tea}]]$   
 b. alternative question:  
 $Op_i [\text{did John not drink } [\epsilon_i \text{ coffee or tea}]]$

Let us also note that disjunction should be allowed to take scope over negation, if we consider a wider range of examples. For example, assume that I had to take the car out of the tire shop before the mechanics were done with it. In this context, I can utter the sentence in (13), where negation clearly takes scope over the disjunction. (Muffy Siegel, p.c.)

- (13) So, they didn't rotate or balance the tires. But I don't know which.

Therefore, in the right context, disjunction can scope over negation. But if we allow disjunction to take scope over negation, then questions with inverted negation are wrongly predicted to have alt-question reading. Thus, Larson's analysis *per se* cannot account for the contrast between inverted and non-inverted negation questions.

### 3.3. Sentential vs. constituent negation will not do it.

One may think that inverted negation is sentential negation and uninverted negation is constituent negation negating the event contributed by the VP, and that this difference corresponds to meaning difference. But in (14), even though negation is not just negating the event contributed by the VP and is more like a sentential negation negating the entire modal proposition, the alt-reading is available.

- (14) Does John not have to eat chicken or beef? ( $\neg \square$ )

One could say that negation in (14) is indeed constituent negation. It is just that it is negating a bigger constituent than VP. But if we make this move, the distinction between constituent and sentential negation becomes murky.

### 3.4. Wide scope vs. non-wide scope within a clause

Another possible analysis we can consider is to take Larson's scopal theory and then somehow derive the contrast between inverted negation and non-inverted negation by postulating that  $C^0$  gives special scopal privileges to its occupant at Spell-Out. That is,  $C^0$  guarantees that its guest, negation, will maintain its wide scope status over the rest of the clause throughout LF, allowing only the reading represented in (11a) for the question in (11).

However, we will pursue a different line of attack: what is responsible for the wide scope effect is not the surface  $C^0$  position per se, but the presence of Focus stress. This is suggested by the fact that parallel effects to the ones associated with inverted negation can be reproduced in affirmative questions with focus on the auxiliary verb, for example on *did* as in (15). Recall from (1) that the non-stressed auxiliary versions are not biased in these ways.

- (15) DID John drink coffee or tea?  
 a. Yes, John drank coffee or tea. (*yn*-reading)  
     No, he did not drink coffee or tea.  
 b. #John drank coffee. (alt-reading)  
     #John drank tea.

In non-inverted negation examples, the inverted negation effects arise to some extent if we place Focus stress on *not* (and on nothing else): the alt-reading is lost.

- (16) Did John NOT drink coffee or tea?  
 a. Yes, John did not drink coffee or tea. (*yn*-reading)  
     No, he did drink coffee or tea.  
 b. ??John did not drink coffee. (alt-reading)  
     ??John did not drink tea.

Our goal is to propose a unified focus-based account of all the cases above. To this end, we will assume that inverted negation bears Focus marking too in *yn*-questions, and that it does so necessarily. Given this, we will pursue the idea that, in all the cases above, the lack of alt-reading is derived, directly or indirectly, from the presence of Focus on the polarity (Verum Focus). The specific questions to be answered are: (i) Why does Focus on polarity prevent the alt-reading scopal configuration? (ii) Why does negative inversion trigger Focus marking necessarily?

## 4. Focus

Besides its ordinary semantic value ( $\llbracket \cdot \rrbracket$ ), a sentence containing focused material has a Focus semantic value, also called Focus set of alternatives ( $\llbracket \cdot \rrbracket^F$ ). The Focus semantic value of a sentence is the set of alternative propo-

sitions construed by replacing the denotation of the focused expression with an object of the same semantic type ((Rooth, 1985), (Rooth, 1992)). For example, the ordinary semantic value of (18) is the single proposition in (19), whereas its Focus semantic value is a set of propositions as in (20).<sup>1</sup>

(18) John visited SUE for Christmas.

(19) Semantic value:  
 $\llbracket \text{John visited SUE for Christmas} \rrbracket$   
 $= \lambda w. \text{John visited Sue for Christmas in } w$   
 $= \text{“that John visited Sue for Christmas”}$

(20) Focus semantic value:  
 $\llbracket \text{John visited SUE for Christmas} \rrbracket^F$   
 $= \{ \lambda w. \text{John visited } x \text{ for Christmas in } w : x \in D_e \}$   
 $= \{ \text{“that John visited Sue for Christmas”, “that John visited Mary for Christmas”, “that John visited Tonia for Christmas”} \}$

For Focus stress to be felicitous, the adequate Focus set of alternatives has to be salient in the discourse (or else it is accommodated). Following Rooth (1985, 1992), this Focus may have two main functions, depending on how the uttered sentence is understood against the salient set of alternatives: exhaustive Focus (subset condition) and contrastive Focus (membership condition).

We have exhaustive Focus when the function of the phonological stress is to signal that the uttered sentence is the only one that is true out of the set of Focus alternatives, e.g. in question/answer pairs like (21). Formally, this is achieved by adjoining to the focused sentence the squiggle operator  $\sim$  plus a variable C that stands for the meaning of some previous utterance (e.g., a question), as indicated in (22a-b). The sequence IP  $\sim$ C is felicitous if C is a subset of the Focus semantic value of the IP, as required by the subset condition in (22c).<sup>2</sup>

(21) Q: Who did John visit for Christmas?  
 A: John visited SUE for Christmas.

1. The formal definition of Focus semantic value is as follows:
  - (17) a. If  $\alpha$  is a non-focused lexical item, then  $\llbracket \alpha \rrbracket^F = \{ \llbracket \alpha \rrbracket \}$ .
  - b. If  $\alpha$  is a focused lexical item, then  $\llbracket \alpha \rrbracket^F = D_\sigma$ , where  $\sigma$  is the type of  $\llbracket \alpha \rrbracket$ .
  - c. If the node  $\alpha$  has the daughters  $\beta$  and  $\gamma$  (order irrelevant), and there are types  $\sigma$  and  $\tau$  such that  $\langle \sigma, \tau \rangle$  is the type of  $\llbracket \beta \rrbracket$  and  $\sigma$  is the type of  $\llbracket \gamma \rrbracket$ , then  $\llbracket \alpha \rrbracket^F = \{ x \in D_\tau : \exists y, z [ y \in \llbracket \beta \rrbracket^F \wedge z \in \llbracket \gamma \rrbracket^F \wedge x = y(z) ] \}$
2. Exhaustivity follows once we apply Grice's (1975) maximality principle to the analysis in (22).

A': It was SUE (that John visited for Christmas).

- (22) a.  $[_{IP} \text{John visited SUE for Christmas}] \sim C$   
 b.  $C = \llbracket \text{Who did John visit for Christmas} \rrbracket$   
 c.  $[\alpha \sim C]$  is felicitous if  $C \subseteq \llbracket \alpha \rrbracket^F$

In contrastive Focus, instead, the stress signals that the focused sentence contrasts with a previously uttered member of the Focus set of alternatives. For example, in (23), the two sentences contrast because their LFs differ only with respect to the focused subject Noun Phrase and polarity. To formalize this relation, we again adjoin the squiggle operator and find an antecedent for C (24a-b). Now the condition imposed by  $IP \sim C$  is that C be a member of the Focus semantic value of IP: the membership condition in (24c).

(23) Pat visited Sue for Christmas, but JOHN DIDN'T.

- (24) a.  $[_{IP} \text{JOHN DIDN'T visit Sue for Christmas}] \sim C$   
 b.  $C = \llbracket \text{Pat visited Sue for Christmas} \rrbracket$   
 c.  $[\alpha \sim C]$  is felicitous if  $C \in \llbracket \alpha \rrbracket^F$

Note that Focus stress can be placed on expressions of different semantic types. Höhle (1992) argues that the polarity of a sentence can be focused in German by placing stress on the verb or on negation (and sometimes on the embedding  $C^0$ ). Examples parallel to Höhle's can be constructed for English: (25)-(26). In these examples, the Focus on the polarity is exhaustive. This is called Verum Focus. Contrastive Polarity Focus was illustrated by (23).

(25) A: I wonder whether he is writing a book.  
 B: He IS writing a book.

(26) Q: Is he writing a book?  
 A: No, he's NOT (writing a book).

## 5. Our proposal

We propose that inverted negation in *yn*-questions contributes focus-marking on the polarity, and that the lack of alt-reading results as a by-product of the interaction of polarity focus and the LF syntax of alt-questions. The key ingredients of our analysis are: (i) alt-questions involve ellipsis (extension of Schwarz (1999)), (ii) polarity Focus in  $C^0$  is always exhaustive, never contrastive, and (iii) Focus-marked constituents (in the relevant domain) cannot be deleted (Heim, 1997).

### 5.1. Alt-questions involve ellipsis

The disjunct associated with *whether/Q* bears Focus stress. As noted in Romero (1998), usually there is a pitch accent on the disjunctive NP phrase in order for alt-readings to obtain. For example, in (27), each disjunct has focus pitch.

(27) Did John drink COFfee or TEA?

Also, a *yn*-reading in a question with overt *or not* correlates with the presence of stress on the verb and on *not*. (In the case where *or not* is covert, the Focus lies presumably at the edge of the VP).

(28) Did John DRINK or NOT?

What then is the function of this double Focus? We propose that *whether/Q...or* disjunctive structures involve ellipsis, with the corresponding contrastive Foci on the remnants. This is illustrated for bare argument ellipsis in (30a-b), and for gapping in (30c).<sup>3</sup>

- (30) a. Did John drink COFfee or ~~did he drink~~ TEA?  
 b. Did John DRINK or ~~John did~~ NOT ~~drink~~?  
 c. Did JOHN drink COFfee or MARY ~~drink~~ TEA?

### 5.2. Licensing an extra Focus

What happens if, besides the focus on the disjuncts associated with *whether/Q*, there is another focus in the interrogative clause? There are, in principle, three main possible ways to license this extra focus: (i) as contrastive focus with the previous discourse, (ii) as exhaustive focus within the first disjunct, and (iii) as exhaustive focus within both disjuncts.

3. Similar ellipsis analysis has been proposed for *either...or* constructions by Schwarz (1999). According to Schwarz, *either* marks the left periphery of the first disjunct, and some materials in the second disjunct are deleted under identity with the first disjunct.

- (29) Either John ate rice or beans.  
 either [<sub>IP</sub> John ate rice] or [<sub>IP</sub> ~~John ate~~ beans].

Schwarz however did not extend the ellipsis account to *whether/Q...or* constructions, because the two constructions show asymmetries in the types of ellipsis allowed. In Han and Romero (in prep.), however, we argue that the asymmetries fall out from the fact that *whether* is a *wh*-phrase that undergoes movement, and so the ellipsis account for *either...or* constructions can straightforwardly be extended to *whether/Q...or* constructions. Alternatively, taking Schwartz's view that alt-questions do not involve ellipsis, Yoo (2000) proposes instead that a disjunctive phrase in alt-questions is associated with a disjunctive operator and derives their interpretation with quantifier storage in the framework of HPSG.

**As contrastive with the previous discourse** In this case, the extra focus signals contrast between two questions: a previous question (invoked by the mini-discourse in the examples below), and a new question. Let us start by placing the extra focus on a Noun Phrase, e.g., *Lola* in (32). To generate the desired reading, the squiggle-operators associated with each focus-marking are positioned as in (33).<sup>4</sup> The membership condition is met by the inferred previous question, as sketched under (34).<sup>5</sup>

- (32) I know Mary bought flowers for Joanna and not for Paquita. Now I want to know this: Did LOLA buy flowers for JOANNA or for PAQUITA?
- (33) Did LOLA buy flowers for JOANNA or for PAQUITA?  
 [  $Q$  [ $IP_1$  Lola<sub>F</sub> bought flowers for Joanna<sub>F1</sub> ]  $\sim C1$  or  
 [ $IP_2$  ~~she bought flowers~~ for Paquita<sub>F2</sub> ]  $\sim C2$  ]  $\sim C$
- (34) a.  $C = \llbracket \text{Did Mary buy flowers for Joanna or for Paquita?} \rrbracket$   
 b.  $C \in \llbracket [ Q [IP_1 \text{ Lola}_F \text{ bought flowers for Joanna}_{(F1)} ] \text{OR}$   
 $[IP_2 \text{ she bought flowers for Paquita}_{(F2)} ] ] \rrbracket^F$

Let us now turn to cases where the extra Focus is on polarity. According to our informants, contrastive licensing is marginally possible for *NOT*, but impossible for *didn't<sub>F</sub>* and *DID* in  $C^0$ :

- (35) ??I know that John drank whiskey and not vodka. Now I want to know this: Did John NOT drink COFfee or TEA?
- (36) #I know that John drank whiskey and not vodka. Now I want to know this: Didn't<sub>F</sub> John drink COFfee or TEA?
- (37) #I know that John didn't drink whiskey. He drank vodka. Now I want to know this: DID John drink COFfee or TEA?

Interestingly, similar effects obtain for polarity focus in English and German *if*-clauses: focus pitch on the complementizer cannot express bare contrastive polarity focus in (38)-(39).<sup>6</sup>

4. In the examples in the main text in §5.2,  $\sim C1$  will consistently associate with *JOANNA*,  $\sim C2$  will associate with *PAQUITA* and  $\sim C$  will associate with the extra focus-marking, in this case in *LOLA*.

5. The same analysis applies to *yn*-questions involving ellipsis and contrast between the positive and negative polarity:

- (31) I know that Mary didn't buy you flowers. Now I want to know this: Did LOLA buy flowers for you or NOT?

6. The Focus in (b)-examples is not contrasting with the previous sentence, but it instead contributes the implicature that the content of the *if*-clause is likely to be false.

- (38) If Kim does NOT drink, we'll go home.  
 a. ... If he DOES drink, we'll go to the bar.  
 b. #... IF he drinks, we'll go to bar. (Ellen Prince, p.c.)
- (39) Wenn Kim NICHT trinkt, gehen wir nach Hause.  
 if Kim not drinks, go we to home  
 a. ... Wenn er TRINKT, gehen wir in die Kneipe.  
 if he drinks, go we to the bar  
 b. #...WENN er trinkt, gehen wir in die Kneipe.

From these data, we conclude that the polarity focus on *NOT* can be contrastive, but the polarity focus on *didn't<sub>F</sub>* and *DID* in  $C^0$  cannot. These can only have *exhaustive* polarity focus, i.e. Verum Focus proper.

**As exhaustive focus within the first disjunct** Let us see what happens if we try to understand the extra focus on *LOLA* as exhaustive focus within the first disjunct. That would give us the unavailable reading in (40a).

- (40) Did LOLA buy flowers for JOANNA or for PAQUITA?  
 a. \*"Which of these is true: it was Lola that bought flowers for Joanna, or Lola –and possibly others– bought flowers for Paquita."  
 b. \* $[Q [IP_1 [Lola_F \text{ bought flowers for Joanna}_{F1} ] \sim C] \sim C1$  or  
 $[IP_2 \text{ she bought flowers for Paquita}_{F2} ] \sim C2$  ]

We argue that this reading is impossible because, in the source LF (40b),  $IP_1$  and  $IP_2$  are semantically unbalanced and, hence, not good contrasts to each other. Consequently, the felicity conditions of  $[IP_1 \sim C1]$  and  $[IP_2 \sim C2]$  are not met. This can be seen intuitively under (42).<sup>7</sup>

- (42) a.  $[IP_1 \sim C]$  implies "that Lola and no one else bought flowers for Joanna"  
 b.  $[IP_2]$  = "that Lola and possibly someone else bought flowers for Paquita"

The same problem arises if we try to license the extra focus-marking on *didn't<sub>F</sub>* or *DID* in  $C^0$ , or on *NOT* this way:

- (43) \**Didn't<sub>F</sub>* you buy flowers for JOANNA or for PAQUITA?

In §6, we will see that preposed *didn't* in questions induces a similar implicature.

7. Again, the same reasoning applies in *yn*-questions with ellipsis:

- (41) Did LOLA buy flowers for you or NOT?  
 a. \*"Which of these is true: it was Lola that bought flowers for you, or Lola –and possibly others– did not buy flowers for you."

- a. \*‘‘Which of these is true: it is false that you bought flowers for Joanna or you didn’t buy flowers for Paquita.’’
- b. \* $[ Q [IP_1 [ \text{you did not}_F \text{ buy flowers for Joanna}_{F1} ] \sim C ] \sim C1 \text{ or } [IP_2 \text{ you did not buy flowers for Paquita}_{F2} ] \sim C2 ]$
- (44) a.  $[IP1 \sim C]$  implies ‘‘that it is false (and not true, probable, possible, etc.) that you bought flowers for Joanna’’
- b.  $[IP2]$  = ‘‘that you did not buy flowers for Paquita’’

**As exhaustive focus within each disjunct** In this case, the extra focus would stay inside each disjunct at LF, as paraphrased in (48a) and represented in (48b). This reading is not available. We argue that this last licensing possibility cannot obtain because it would involve deleting a Focus marked constituent in the second disjunct, and focused material cannot be deleted without deleting its associated  $\sim$  as well (cf., Heim (1997) for VP-Ellipsis). This view is supported by the oddness of (49), where the Focus-marked clefted constituent is deleted in the second disjunct.<sup>8</sup>

- (48) Did LOLA buy flowers for JOANNA or for PAQUITA?
- a. \*‘‘Which of these is true: it was Lola that bought flowers for Joanna or it was Lola that bought flowers for Paquita.’’
- b. \* $[ Q [IP_1 [Lola_F \text{ bought flowers for Joanna}_{(F1)} ] \sim C ] \sim C1 \text{ or } [IP_2 [ \text{Lola}_F \text{ bought flowers for Paquita}_{(F2)} ] \sim C' ] \sim C2 ] ]$
- (49) \*Was it LOLA that bought flowers for JOANNA or for PAQUITA?

The same reasoning applies when the extra focus falls on *didn’t<sub>F</sub>* or *DID* in  $C^0$ , or on *NOT*. The ban against deleting focus-marked constituents, while

8. Once more, this ban also operates in *yn*-questions involving ellipsis. (45) does not have the reading spelled out in (46) because, as in the previous cases, it involves deletion of a focus-marked constituent (*Lola*) without deleting the squiggle-operator associated with it ( $\sim$  in  $\sim C'$ ). However, (45) may also be assigned the LF in (47b). Since this would involve deleting *Lola<sub>F</sub>* together with its associated squiggle operator, we predict (47a) to be a possible reading. This prediction is borne out.

- (45) Is he married to LOLA or NOT?
- (46) a. \*‘‘Which of these is true: it is Lola that he is married to or it is Lola that he is not married to.’’
- b.  $Q [IP [ \text{he is}_{(F)} \text{ married to Lola}_F ] \sim C ] \sim C1 \text{ or } [IP [ \text{he is not}_{(F)} \text{ married to Lola}_F ] \sim C' ] \sim C2$
- (47) a. ‘‘Which of these is true: it is the case that it is Lola that he is married to or it is not the case that it is Lola that he is married to.’’
- b.  $Q [POS_{(F)} [IP \text{ it is Lola}_F \text{ he is married to} ] \sim C ] \sim C1 \text{ or } [not_{(F)} [IP \text{ it is Lola}_F \text{ that he is married to} ] \sim C' ] \sim C2 ]$

leaving their squiggles, prevents us from understanding these Foci as exhaustive Foci internal to each disjunct.

- (50) \*Didn't<sub>F</sub> you buy flowers for JOANNA or for PAQUITA?  
 a. \*"Which of these is true: it is false that you bought flowers for Joanna or it is false that you bought flowers for Paquita."  
 b. \*[ *Q* [*IP*<sub>1</sub> [ you did not<sub>F</sub> buy flowers for Joanna<sub>(F1)</sub> ] ~C ] ~C1 or [*IP*<sub>2</sub> [ ~~you did not<sub>F</sub> buy flowers~~ for Paquita<sub>(F2)</sub> ] ~C' ] ~C2 ]

**Conclusion on the licensing of the extra focus** In sum, inverted negation in a *yn*-question contributes an extra focus that cannot be licensed under the alt-reading, neither as contrastive Focus (focus-marking in C<sup>0</sup> is only exhaustive) nor as exhaustive Focus within the first or both disjuncts. That is why questions with inverted negation cannot have an alt-reading. The same reasoning applies to DID in C<sup>0</sup>, and, to some degree to NOT (the latter is marginally acceptable as contrastive Focus).

### 5.3. Obligatory verum focus on inverted negation

Why does inverted negation necessarily contribute verum focus in *yn*-questions, but non-inverted negation does not necessarily do so? Although we do not presently have a deep answer to this question, we would like to point out that the properties of inverted negation simply illustrate a much broader phenomenon: syntactic encoding of discourse functions.

Languages in general associate a fixed discourse function with sentences with non-canonical order, such as scrambling in Korean and Japanese, left-dislocation, topicalization, VP fronting in English, and focus movement in Yiddish and Hungarian ((Kiss, 1981), (Ward, 1988), (Prince, 1998), (Prince, 1999)).

- (51) a. Sam, he doesn't like. (topicalization)  
 b. My wife, somebody stole her handbag last night. (Left Dislocation)

But discourse functions of sentences with canonical order can vary depending on the position of the pitch accent.

- (52) a. JOHN made the pie.  
 b. John made the PIE.  
 c. John MADE the pie.

Similarly, when negation is inverted in *yn*-questions, it has a fixed discourse function of focus-marking the polarity with exhaustive focus. But when negation occupies its canonical position, the speaker is free to assign focus to any part of the question by manipulating the position of the pitch

accent, thereby permitting more readings.<sup>9</sup>

## 6. Conclusions and further extensions

We have proposed that the lack of alt-reading in non-*wh*-questions with inverted negation follows from the interaction between the felicity conditions of Focus and the LF-syntax of alt-questions. More specifically:

1. Inverted negation carries syntactically hard-wired focus marking in *yn*-questions. When polarity focus is in  $C^0$ , it has to be interpreted as exhaustive focus.
2. Alt-readings cannot be obtained when we have focus-marked inverted *didn't<sub>F</sub>* and focused *DID* in  $C^0$  because this type of exhaustive focus cannot be licensed in the LF of alt-questions, which crucially involves ellipsis.
3. Focused *NOT* marginally accepts a contrastive interpretation. Only in this case, it is compatible with alt-reading.

Let us further note that the relative positions of negation have another effect in the interpretation of *yn*-questions. Inverted negation in *yn*-questions contributes a negative implicature, namely the implicature that the speaker expects the answer to be in the affirmative ((Ladd, 1981), (Han, 1998), (Gunnlogson and Büring, 2000)). For instance, the intuition is that (54a) asks whether John drinks, and implies that the speaker believes or at least expects that John drinks. Han (1999) makes the further point that *yn*-questions with non-inverted negation do not necessarily have this implicature. (54b) can be another way of seeking information on whether John is a teetotaler.

- (54) a. Doesn't John drink?  
b. Does John not drink?

The following examples suggests that it is again Focus that is responsible for this implicature.

- (55) a. DOES John drink?  
Neg. implicature: The speaker believes that John does not drink.  
b. Does John NOT drink?  
Pos. implicature: The speaker believes that John drinks. (unless *NOT* is contrastive with previous discourse)

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9. Note that embedded negative *yn*-questions in English, where negation is in its canonical position, is ambiguous between *yn*- and alt-readings.

(53) I asked John whether he doesn't eat beef or chicken.

In Romero and Han (in prep.), we extend our focus-based approach to give a unified account of the (un)availability of alt-reading and the presence of a positive/negative implicature in *yn*-questions.

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